

ABSTRACT

Title of dissertation: PRIVATIZATION AND NEW ENTRY IN
 POST-COMMUNIST TRANSITION:
 THE IMPACT ON RESTRUCTURING

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This work suggests a connection between the lack of restructuring of the privatized firms in transition and the high level of regulatory barriers faced by the private sector. In this work I suggest that the potential entry of the newly created private firms significantly affects the incentives of the privatized firms regarding restructuring. Since the entry of new businesses is threatening to the inefficient existing enterprises, managers of these enterprises have an incentive to use their political power to restrict the new entry. Given that the restructuring often involves politically unpopular measures, such as shedding of excess labor, politicians may prefer to see no restructuring of the privatized firms, thus creating a possibility for the privatized enterprises to lobby with politicians for the creation of entry barriers.

The first chapter presents the background on privatization and restructuring in transition and reviews the existing literature on the subject. It also outlines the argument for the connection between new entry and the behavior of the existing enterprises.

The second chapter presents an analytical model that investigates the conditions under which managers of the existing enterprises are likely to be successful in lobbying with politicians for the restriction of new entry. This chapter also discusses some examples

of policies that would make such lobbying less likely, thus bringing an economy closer to the efficient equilibrium with more restructuring and low entry barriers.

The third chapter uses data from the World Business Environment Survey to explore whether the threat of new entry induces managers of the existing firms to lobby with politicians, resulting in high entry barriers and low restructuring by the existing firms. Specifically, I investigate how the competition created by the new entrants affects the probability that high regulatory barriers are erected. The results indicate that the presence of excess employment (i.e. lack of restructuring) at the existing firms coincides with the new entrants facing high regulatory barriers. Furthermore, higher competition from the new entrants may result in new firms facing higher entry barriers, lending support to the argument that the level of regulatory barriers is influenced by the existing firms via lobbying.

PRIVATIZATION AND NEW ENTRY IN POST-COMMUNIST
TRANSITION: THE IMPACT ON RESTRUCTURING

by

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Chapter 1

Introduction

1.1 Background and Literature on Privatization and Restructuring in Transition

Large-scale privatization of state-owned enterprises is one of the major ingredients of the market-oriented reforms in most transition countries. State-owned enterprises are privatized in order to introduce market incentives for the firm and its manager in hopes that it will improve efficiency and performance of the firm. However, success of privatization programs varies widely across countries. A large literature on privatization in transition generally finds that success of policies aimed at inducing enterprise restructuring varies widely depending on reform strategy and, furthermore, similar policies have different effects in different regions and countries.

Across transition countries we observe that privatization has not always led to the restructuring and improvement in performance of the privatized firms. A large number of empirical studies investigated performance of privatized firms in transition economies trying to identify factors that influence restructuring. An extensive survey of empirical studies on the determinants of enterprise restructuring in transition economies with quantitative summary of the results can be found in Djankov and Murrell (2002). They identify a number of factors affecting enterprise restructuring: ownership structure of the enterprise (state owned, privatized, concentration of ownership shares among different owners), identity of the owners (most notably, insiders vs. outsiders in privatized enterprises), extent of the competition faced by the enterprise, presence of the soft budget constraints, etc. In addition, the impact of these factors seems to differ by region. Usually regional comparison is drawn between Eastern Europe and countries of the Commonwealth of Independent States (denoted *CIS*, it includes all former republics of the Soviet Union except for Estonia, Latvia and Lithuania).

The main empirical findings of the literature on enterprise restructuring can be summarized as follows (this summary closely follows summary findings in Djankov and Murrell (2002)). Privatization leads to more enterprise restructuring on average, but the effect depends on the identity of owners. Privatization to outsiders with concentrated ownership (as opposed to insiders, such as managers and workers) has the largest positive effect on restructuring, both in Eastern Europe and in the CIS. Privatization to workers

did not have positive effect on restructuring in Eastern Europe and had a significant negative effect in the CIS. For example, Frydman et al. (1999) finds that privatization has no beneficial effect on firm performance for the firms controlled by insider owners, but has pronounced positive effect on firms with outsider owners. They also found that insider-owned firms are virtually indistinguishable in their performance from state-owned firms, except that they increase their employment by more (!!!) than the state-owned firms do. Empirical studies also find that elimination (or reduction) of soft budgets has a positive effect on restructuring. Increased competition enhances restructuring in Eastern Europe, but not in the CIS. Furthermore, import competition was even damaging to the restructuring in many CIS countries.

Several studies have attempted to consider the effect of privatization taking into account other reforms necessary in transition. They usually find that privatization alone may not be enough to produce improvements in enterprise performance – other complementary reforms, such as hardening of the soft budgets, institutions for protection of property rights, and the ability of owners to monitor and control management, have to be in place for privatization to have a positive effect (see, for example, Sachs, Zinnes and Eilat (2000)).

Finally, several findings in the literature support the view that bringing in new managers (new human capital), as opposed to simply giving ownership incentives to the old managers, leads to restructuring and improved performance of the enterprises (Djankov and Murrell (2002), Barberis, N. *et al.* (1996)).

Several theoretical models exist that predict outcomes consistent with these empirical findings. There is a strand of literature that argues that privatization leads to improved enterprise performance to the extent that it provides equity incentives to the manager. If managerial effort is not observable then giving the manager high ownership of the enterprise induces him to exert higher effort, thus increasing enterprise efficiency (see Holmstrom (1979)). However, empirical literature on transition economies demonstrates that privatization does not always lead to restructuring, which means that giving equity incentives to the managers does not always work. Thus, in the context of transition economies, there are theoretical models demonstrating that giving ownership incentives to the managers may not produce restructuring. Specifically, Shleifer and Vishny (1994) and Boycko, Shleifer, Vishny (1996) show that politicians may influence managers of the

privatized enterprises and thus prevent them from restructuring. Specifically, they argue that politicians may have political reasons to prefer no restructuring, for example, if politician derives political benefits from high employment at the enterprise and restructuring involves layoffs. In such case, the politician will try to affect employment decision of the privatized enterprise to get them to employ more workers than is economically efficient. In exchange the politician would provide subsidies to the enterprise. Such collusion is possible as long as marginal benefits from extra employment for the politician is higher than his marginal cost of providing subsidies to the firm. Thus, these models provide an explanation as to why privatization does not necessarily lead to restructuring.

A different theoretical argument calls attention to what can be termed *the human capital argument* for restructuring. This argument emphasizes that managers need to not only have correct incentives, but also an appropriate human capital to be able to function effectively, thus role of managerial turnover is important (see Rosen (1992)). Under this argument privatization works because it brings new managers with the appropriate human capital to the enterprise. Without the right human capital, giving cash flow incentives to the manager would not be conducive to restructuring. This theoretical argument was tested in Barberis, N. *et al.* (1996) for the case of privatization in Russia and they found that bringing in new managers (the ones with the new human capital) is more likely to lead to restructuring than privatizing the business to the existing manager.

One of the “stylized facts” of empirical privatization literature repeated in many studies is that privatization to outsiders is more conducive to restructuring than privatization to insiders (managers and workers). However, I am not aware of theoretical models that specifically explain why this must be the case.

Another empirical finding mentioned above is concerned with the effects of competition. As was indicated above, increased competition had a positive effect on restructuring in the Eastern Europe but negative in the CIS (especially for the case of the import competition). Again, I am not aware of a convincing theoretical explanation of this result.

Thus, here are some questions and empirical “stylized facts” that a theoretical model of privatization should be able to explain:

1. Why is it that privatization does not always lead to restructuring?
2. Why are the outside owners more conducive to restructuring than insiders?

3. Why are the new managers more likely to undertake restructuring than the old managers, even if the old managers are given ownership incentives?
4. Why does an increased competition sometimes lead to less rather than more restructuring?
5. Why do effects of seemingly similar reforms differ in Eastern Europe and CIS?

Answers to some of these questions were given in the theoretical literature to various extent. For example, Shleifer and Vishny (1994) provides a convincing explanation for why privatization may not always work (question 1 above). Also, one possible answer to question 3 is provided by the *human capital argument*. In a centrally planned economy managers of the state enterprises were presumably selected for their ability to deal with ministerial official, negotiate favorable terms for allocation of inputs in the shortage economy, address political concerns, lobby for assistance etc. In contrast, managers of private firms are selected for their ability to run the firms efficiently in economic terms. Thus, privatization works to the extent that it brings such new managers to run the privatized enterprises. This gives a reason why new managers might be more likely to restructure. However, I feel that there is a room for additional theoretical explanations. I hope to convince the reader that the theoretical framework developed here can be fruitfully applied to answer several questions on the list above.

1.2 Incorporating New Entry – Description of the Theoretical Framework

Here I propose a theoretical framework for analyzing privatization in the transition economies that will provide answers to some of the questions posed at the end of the previous section.

We start with two key observations:

- In many transition countries privatization of state enterprises coincided with liberalization reform that allowed creation and entry of new private firms, which was forbidden or restricted under the centrally planned system.
- While the development of the private sector is widely believed to be essential for successful transition reforms, often the new private businesses face many obstacles - extensive regulations, high taxation, corruption etc – when trying to establish and operate their business.

I believe that these two observations are interconnected. The entry of new private firms, or even simply the possibility of such entry, affects incentives of the existing firms regarding restructuring. Since, in transition countries, the new entering firms are likely to be much more efficient than the existing ones, existing firms realize that they would suffer from competition created by the new entrants. Therefore, the existing firms (whether state-owned or privatized) would like to see the entry of new firms restricted. One way to restrict the new entry would be for the existing firms to lobby with politicians demanding creation of the entry barriers which would limit the creation of new firms. This would explain why the entry barriers for new businesses are high in many transition countries. But why would such lobbying necessarily lead to less restructuring? When the existing firms lobby with politicians demanding the creation of entry barriers, they have to provide politician with incentives to fulfill their demands. In many cases, a politician may be interested in preventing firms from restructuring, e.g. for the same reasons as in Shleifer and Vishny (1994) – politician derives political benefits from excess employment and restructuring involves layoffs. Thus, managers of the existing firms would lobby with politicians demanding the creation of entry barriers in exchange for keeping their employment high (i.e. not restructuring).

Why do I think that such lobbying is likely to occur and is likely to be successful? First, we know that in many transition countries the politicians often did not get replaced since the pre-reform period. By "politicians" here I mean ministry officials, local government officials etc. In many transition countries, certainly in the former Soviet Union, many of these "lower level politicians" did not change, they are the same people holding essentially the same responsibilities even if the title of their job has changed. In addition to large amounts of anecdotal evidence, Shleifer (1997) refers to a study that compared political and economic elites in Poland and Russia in 1993¹. The study found that in Russia 83% of the current political elite and 53% of the current economic elite were former Communist Party members. For comparison, in Poland they found that only 30% of the current political elite were former Party members. This provides evidence that in some transition countries the politicians in power (whether in political or economic elite) have not changed much since the pre-transition period.

¹Szelenyi et al. (1995), reviewed by Karpinski (1996)

Second, in many transition countries state enterprises were privatized to their managers. The managers of enterprises in a centrally planned economy are selected for their ability to negotiate with ministry officials, lobby for assistance, get preferred allocation of inputs etc., and thus they have good ties with the politicians. When, during privatization, these managers get ownership of the firm they would still retain their ties with the politicians. Furthermore, the fact that many politicians did not get replaced since the pre-reform period, makes it even easier for the managers of (now privatized) firms to lobby with politicians for their preferred policies. Clearly, the old managers (the managers that kept their position since pre-transition period) will find it easier to lobby with the politicians than the new managers. This may be an additional reason why the old managers are less likely to restructure.

The idea that formerly state-owned firms have good ties with politicians is supported by Hellman *et al* (2000). They look at three types of interactions between firms at the state: administrative corruption (payment of bribes “to get things done”), state capture (purchase of laws, decrees and regulations), and influence (ability to influence content and application of laws and regulations without necessarily resorting to unofficial payments). Here I argue that the existing firms would use their *influence* to restrict new entry. This is consistent with the finding in Hellman *et al* (2000) that “Influential firms appear to be classic incumbent firms inherited from the socialist system. They are large, usually state-owned, with good access to public officials and a dominant position in their own market.” (Hellman *et al* (2000), p.15)

Thus, under certain plausible conditions, managers of privatized firms would lobby for the creation of entry barriers. The politician would agree to such demands if the firms can provide him with some political benefits. For example, if the firms are able to organize their workers to vote for a particular politician, then the politician would be interested in keeping these firms happy and he also would want to have employment at these firms high. Therefore, an economy can end up in a situation when existing firms lobby with politicians demanding creation of entry barriers and in exchange they are offering political benefits in the form of inefficiently high employment, which means that these firms do not restructure. As a result of such lobbying, economy ends up in an equilibrium with high entry barriers and no restructuring.

In order for this story to convincingly apply to transition countries, we have to establish the following points:

- Entry of new firms is threatening for the existing firms
- Managers of the existing firms prefer to lobby for the creation of entry barriers rather than to undertake restructuring and compete with the new entrants in the market setting
- We indeed observe high entry barriers in transition countries

I will now try to provide evidence in support of these points. The new entering firms can affect the existing firms in one of three ways:

1. Product competition – new firms either produce or import products that are substitutes to the ones produced by the existing firms. It is often argued that because of high fixed capital requirements, new firms would not be able to produce products competing with the existing producers. However, this does not mean that entry of new firms would not create any competition at all – new firms can always import products, since organizing an enterprise for importing finished goods has much lower capital requirements. Given the widespread shortages and poor quality of consumer products produced in the Soviet Union, imported products became major competitors for the domestic producers starting in the earliest years of transition.
2. Competition for suppliers – this type of competition would be damaging to the existing firms if their production process requires multiple suppliers and the output cannot be produced unless all inputs are supplied. Because of the way centrally planned economies were structured, most large enterprises in transition countries are likely to have this type of supply structure. As shown in Blanchard and Kremer (1997), when existing firms have this type of supply structure increased opportunities in the private sector may cause breakdown in the supply chain resulting in a dramatic decrease in output. Entry of new private firms presents exactly this type of “increased private sector opportunities”.
3. Competition for skilled labor. In centrally planned economies, most certainly in the Soviet Union, salaries paid to employees essentially did not vary with level of effort.

Consequently, the level of effort exerted by most employees was low. However, some employees have better qualifications and/or ability for their jobs, but under the socialist system they still get the same (usually, low) wage. In contrast, at a private firm such employees would be more valuable and therefore would receive higher wages. At the start of transition reforms in the Soviet Union it was widely believed that private companies would pay much higher wages to the qualified employees than the state-owned enterprises. This belief turned out to be true, and in many state-owned enterprises (especially in the service sector, where skilled employees are the main asset of the enterprise) employees with best skills left as soon as any opportunities were available in the private sector.

Faced with such competition (or a possibility of such competition), manager of an existing enterprise has two possible courses of action: make his firm more efficient, so that it will be able to successfully compete in the marketplace (that is, restructure) or try to restrict the competition, for example, by lobbying for creation of entry barriers². Which of these two action the manager would take depends on their relative costs and benefits. I argue that under certain conditions lobbying for the creation of entry barriers will be chosen over restructuring. Some of these conditions are:

- Human capital of the manager – if the manager simply does not know how to create an enterprise that functions efficiently in the market economy, his chances of beating the competition are slim, and thus he is more likely to choose to lobby for the entry barriers.
- Lobbying skills or political ties of the manager – as argued above, managers that remained since the planning era are likely to have very good ties with politicians because they have been involved in negotiations with politicians throughout their career. This makes lobbying for the creation of entry barriers relatively less costly, possibly making it a preferred choice. This argument essentially says that managers have “comparative advantage in politics” – it is relatively less costly for them to lobby than to undertake restructuring.

²I would like to note here that incentives of privatized enterprises are potentially different from those of the state-owned enterprises. To the extent that the state-owned enterprises are more likely to obtain subsidies if needed, competition from new entrants would be more of a problem for privatized firms than state-owned firms.

- Unprofitable enterprises – some of the state-owned enterprises in transition economies are not profitable and, furthermore, some of these enterprises cannot be made profitable even if restructured (they are termed *negative value added enterprises* in the transition literature). Obviously, managers of such enterprises have only one choice for keeping their enterprise in existence – lobby for assistance and restrict competition by creating the entry barriers.

Given that conditions described above can plausibly exist, can we find evidence of high entry barriers for the new firms in transition economies? Djankov et al. (2002) look at the official regulation of entry of start-up firms in 75 countries. They measure the number of procedures that a new firm has to go through in order to become operational (business registration and post-registration procedures), the length of time it takes, and the official cost of this process. They find that in most countries the cost of entry is substantial. In transition countries cost of entry is also high. For example, they find that in Ukraine a firm has to go through 11 procedures, which take 21 business days and cost 20% of per capita GDP. In Georgia, a new firm has to go through 12 procedures, which take 70 business days and cost 28% of per capita GDP, while in Russia a new firm has to go through 16 procedures, which take 69 business days and cost 37% of per capita GDP. For comparison, a new firm in United States has to complete 4 procedures, which take seven business days and cost less than 1% of per capita GDP.

It should be emphasized that Djankov et al. (2002) consider *official* number of procedures, and *official* time and cost. To the extent that actual experience differs from official regulations, due to delays as well as side payments and bribes that may be required in order to complete the registration process, their estimates of time and cost of entry may be understated. It is indeed easy to find anecdotal evidence that delays, bureaucratic barriers and side payments are widespread in some countries. Consider the following quote from Shleifer (1997):

Many Russian entrepreneurs, particularly founders of small businesses, complain about the difficulties of starting and operating a business in Russia. They always point to multiple permits, inspections, and registrations, all requiring interactions with multiple officials many of whom need to be bribed before the necessary documents are issued. . . . To compare with the sit-

uation in Poland, consider the February 1996 comment of a wealthy Polish businessman on the difficulty of opening a shop in Poland: "Oh, it is very, very difficult. There are so many shops and so much competition that it is impossible to make money."

Entrepreneurs in other transition economies also complain about the difficulty of starting and operating a business because of difficult registration procedures, excessive regulation and taxation, and widespread corruption. Kaufmann (1997) describes a number of barriers that prevent development of private businesses in Ukraine. He lists a number of factors that are seen by private firms as significant barriers to their development: non-transparent and time consuming company registration, cumbersome and ambiguous tax laws, customs regulations, and specialized licensing procedures; very high payroll taxes (in Ukraine employer-paid payroll taxes reached up to 40% of the total wage bill at that time); highly varying corporate profit taxes with tax exemptions that are significant and discriminatory. Many private firms in Ukraine indicate that corruption is widespread, and practice of unofficial payments to officials, such as tax or health inspectors, is commonplace and these payments are often sizable.

Hashi and Mladek (2000) use a survey of small and medium businesses in five Eastern European countries to determine which fiscal and regulatory measures impede the entry of new firms in the early stages of transition. They consider entry barriers by the following categories: registration and licensing, real estate regulations, labor and employment laws, fiscal regulations (taxes and social security contributions), and export/import regulations. They found that taxes and other contributions are seen by the enterprises as creating the largest obstacles, closely followed by renting and leasing of real estate, registration and licensing, and export-import regulations.

From the above description, we can summarize that new firms in transition economies are faced with the following types of barriers:

- Complicated, time-consuming and poorly defined registration and licensing procedures; many of these regulations are ambiguous, thus creating opportunities for corruption.
- Complicated and ambiguous tax laws that change frequently; often high taxes and social security contributions.

- Limited access to commercial real estate. Often in transition countries the real estate is owned by local governments, which gives the politicians additional power over local businesses and creates further opportunities for corruption. Hashi and Mladek (2000) report that the majority of surveyed firms saw rent increase at short notice and shortage of premises as two main problems with real estate.
- Export-import and foreign exchange regulations that disrupt foreign trade. For example, Kaufmann (1997) reports that in Ukraine customs regulations are extensive and foreign currency purchases and private foreign currency loans are under administrative control.
- Finally, corruption is reported to be widespread in many of these countries, with extralegal payments to officials as an established practice.

In conclusion, descriptive evidence presented here seems to indicate that new firms face substantial barriers to entry in many transition countries. I also tried to demonstrate that the entry of new firms is likely to be damaging to the existing firms, and moreover, managers of the existing firms are likely to use their political ties to restrict competition from new firms by creating the high entry barriers observed in these countries.

1.3 Outline of Thesis

The rest of the thesis is organized as follows. Chapter 2 presents a theoretical model that describes the interactions between manager of the existing firm and a politician. The model is used to determine which factors affect whether the bargaining between the managers and the politician takes place as well as the likely outcome of such bargaining for the restructuring and the presence of entry barriers. The model is then used to explain the empirical stylized facts presented in section 1.1 above and to offer some examples of policies that can improve the outcome in terms of restructuring and promotion of new entry.

Chapter 3 offers empirical support for the model presented in chapter 2. Using data from the World Business Environment Survey conducted by the World Bank, I show that in transition countries high entry barriers faced by the new firms do coincide with the old firms not restructuring, and, additionally, higher competitive threat from the new entrants

sometimes results in higher entry barriers for the new firms. Such findings are consistent with the bargaining equilibrium where the existing firms lobby with the politician for the creation of entry barriers in the face of a threat from new entry.

Appendices A and B contain some extensions and the technical derivations related to the model in chapter 2.

Chapter 2

Theoretical Model

2.1 Overview

In this section I set up a model in which the existing firms lobby with politicians demanding the creation of entry barriers in exchange for keeping their employment high. Such a model would help us understand which factors affect whether such lobbying takes place and provide insights into which institutional features are important for avoiding such inefficient outcomes.

Here is the basic argument. The existing firms want to have high entry barriers because new entry creates competition and hurts their profits. The politician wants to have employment at state and privatized firms as high as possible because he derives personal political benefits from it. I will make the nature of these benefits more precise below. I assume that existing state/privatized firms are politically organized and thus can collectively bargain with the politician. This is consistent with the earlier argument I made about managers of privatized firms having good ties with politicians and it is supported by findings in Hellman *et al.* (2000) about the influential firms. The new entering firms, on the other hand, are assumed to not be politically organized and thus they do not engage in lobbying with the politician. Bargaining between managers of the existing firms and the politician determines the level of employment at the existing firms and the level of entry barriers that the new firms would face if they tried to enter.

A note on terminology. In the remainder of this document, by *the existing state or privatized firms* I mean those enterprises that existed before the start of transition reforms and before substantial new entry was allowed. From now on, I will call these enterprises *the old firms*. These old firms may be completely or partially privatized or even completely state-owned. The new entering firms will be called *the new firms* and they are private by definition. These are the firms that were created after the start of transition reforms once the creation of private businesses was allowed.

I will set up two versions of the model. The difference between them is in the specification of how the politician derives benefits from high employment at the old firms.

2.2 Political Benefits from Excess Employment

2.2.1 General setup

The model has the following players¹: manager of an old firm, politician, Treasury and the new firms. The manager of an old firm has control over employment at that firm, and the politician has control over the entry barriers. The manager and the politician are active players – they can engage in bargaining, which determines the level of entry barriers and employment at the old firms. The new firms are passive players, they do not engage in bargaining, they take the level of entry barriers as given and decide whether or not to enter and operate their business. If they do enter, they pay taxes to the Treasury. The Treasury is also a passive player, it does not attempt to influence the old firms or the politician. It collects revenues from both the old and the new firms in the manner described below.

We assume that the manager of the old firm receives fraction α of its net profits, and thus he cares about maximizing net profits of the firm. Fraction $(1 - \alpha)$ of net profits of the old firm goes to the Treasury. Varying α from 0 to 1 allows the model to incorporate partial privatization: α close to zero means that the firm is almost completely state owned and the manager's ownership of cash flows is low, while α close to unity means that the firm is almost completely private. $(1 - \alpha)$ can also be used to represent the tax on profits collected by the Treasury.

The entry of new firms negatively impacts the profits that the old firm can earn. Since higher entry barriers reduce new entry, the profit of the old firm increases with the level of entry barriers.

Thus, the objective function of the manager of an old firm is assumed to be:

$$U_m = \alpha(\pi(R) - wL) \tag{2.1}$$

where

$\pi(R)$ – maximum profit that the firm can earn with no excess employment;

L – excess employment; $L \geq 0$

w – wage;

R – level of entry barriers, $R \geq 0$; lower barriers lead to more new firms entering and thus

¹This version of the model is based on Shleifer and Vishny (1994).

profits of the existing firms suffer: $\pi'(R) > 0$ and $\pi''(R) < 0$. We also assume: $\pi(0) = 0$, $\lim_{R \rightarrow 0} \pi'(R) = \infty$, and $\lim_{R \rightarrow \infty} \pi'(R) = 0$.

Faced with some level of entry barriers, the manager, in the absence of bargaining with the politician, will choose some level of employment to maximize profits. This employment does not show up in the objective function (2.1) because we assume that $\pi(R)$ is already optimized over employment. L denotes only the excess employment, which represents any workers employed in excess of the profit maximizing level of employment. We assume for simplicity that the production function is Leontief and therefore the excess workers cannot be productively employed. Thus, the excess workers do not produce anything, they are simply paid wage w . Figure 2.1 depicts a function $\pi(R)$, the shape of which is consistent with our assumptions about its derivatives.

The politician in this model cares about his personal political benefits and about the Treasury's revenue. The Treasury's revenue consists of $(1 - \alpha)$ fraction of the old firm's profit plus the tax collections from the new firms. The politician's preferences are summarized by the following objective function:

$$U_p = B(L) + m\{(1 - \alpha)(\pi(R) - wL) + N(R)\} \quad (2.2)$$

where

$B(L)$ – political benefits from excess employment; $B'(L) > 0$, $B''(L) < 0$; $B(0) = 0$, $\lim_{L \rightarrow 0} B'(L) = \infty$, and $\lim_{L \rightarrow \infty} B'(L) = 0$;

$N(R)$ – represents taxes collected from the new entering firms; higher barriers mean that fewer firms enter and thus tax collections are lower: $N'(R) < 0$, $N''(R) < 0$; $N(0) = \bar{N}$, where \bar{N} is the maximum amount of taxes that can be collected from the new firms, $\lim_{R \rightarrow 0} N'(R) = 0$, and $N'(R = R_{max}) \rightarrow \infty$, where R_{max} is the level of barriers at which no new firms are entering ²;

m – weight that the politician puts on Treasury's revenues.

In this section we assume that the politician derives political benefits $B(L)$ only from excess employment at the old firms (not from total employment). Such assumption is consistent with a story where these excess jobs are "patronage jobs" – the excess workers are "friends and family" of the politician and he derives benefits if they are employed.

²Figures 2.2 and 2.3 depict functions $B(L)$ and $N(R)$ consistent with our assumptions on their derivatives.

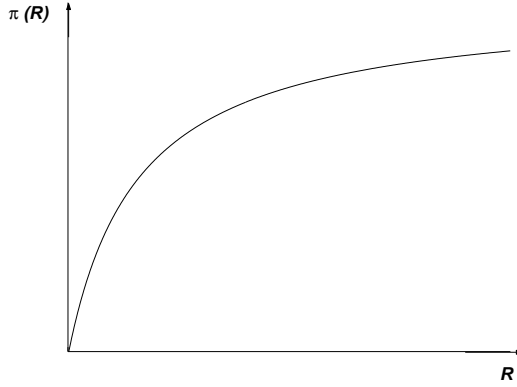


Figure 2.1: Profit of an old firm as a function of entry barriers.

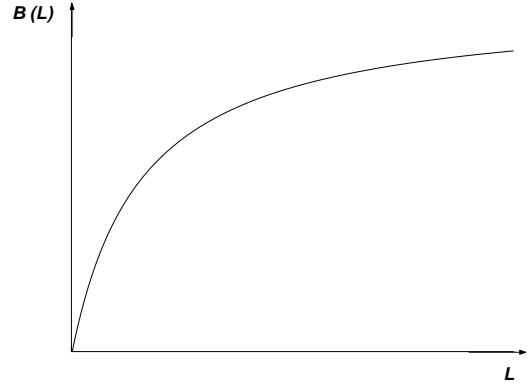


Figure 2.2: Politician's benefits from excess employment.

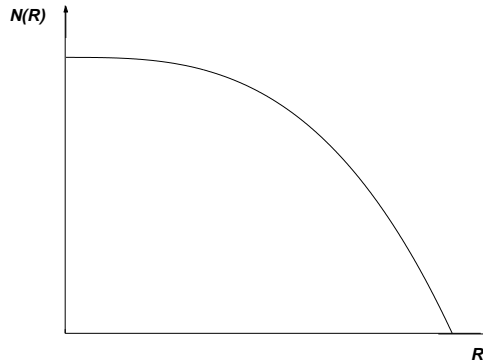


Figure 2.3: Tax collections from the new firms as a function of entry barriers.

Another story consistent with this formulation of political benefits is the case when these “excess workers” realize that they hold their jobs only due to the politician’s influence, and thus they are more likely to support this politicians in an election.

An alternative interpretation of the objective function of the politician can be given as follows. $B(L)$ represents some personal benefits that the politician receives from excess employment, while the term in curly braces is a form of “social welfare”. $(1 - \alpha)(\pi'(R) - wL)$ enters social welfare because it represents the surplus produced by the old firms, and, similarly, $N(R)$ represents the surplus produced by the new firms. In this interpretation, the politician cares about his personal benefits and about the social welfare, and m represents the weight he puts on social welfare.

We now determine the equilibrium values for excess employment and the entry barriers in the absence of bargaining. This would be our baseline case and would tell us

the threat points of the manager and the politician.

For a given level of entry barriers, \bar{R} , the manager solves:

$$\begin{aligned} \max_L \quad & \alpha(\pi(\bar{R}) - wL) \\ \text{s.t.} \quad & L \geq 0 \end{aligned} \tag{2.3}$$

Obviously, the solution is $L^* = 0$. Thus, for any level of entry barriers, in the absence of bargaining the manager will always choose zero excess employment, which is the economically efficient outcome.

For a given level of excess employment, \bar{L} , politician solves:

$$\begin{aligned} \max_R \quad & B(\bar{L}) + m\{(1 - \alpha)(\pi(R) - w\bar{L}) + N(R)\} \\ \text{s.t.} \quad & R \geq 0 \end{aligned} \tag{2.4}$$

FOC: $(1 - \alpha)\pi'(R) = -N'(R)$.

If $\alpha = 1$, then solution is $R^* = 0$.

If $\alpha < 1$, then we can always find such $R^* > 0$ that FOC holds³. Moreover,

$$\frac{\partial R^*}{\partial \alpha} < 0 \tag{2.5}$$

Thus, in the absence of bargaining the politician will choose a positive level of entry barriers as long as $\alpha < 1$.

In order to analyze the effect of bargaining we will derive the indifference curves of the manager and the politician in (R, L) space. Totally differentiating the manager's utility function (2.1), we get the following expressions for the slope of the manager's indifference curve:

$$\frac{dR}{dL} = \frac{w}{\pi'(R)} > 0 \tag{2.6}$$

$$\frac{d^2R}{dL^2} = -\frac{w\pi''(R)}{[\pi'(R)]^3} > 0 \tag{2.7}$$

Similarly, the expression for the slope of the politician's indifference curve is:

$$\frac{dR}{dL} = -\frac{B'(L) - mw(1 - \alpha)}{m[(1 - \alpha)\pi'(R) + N'(R)]} \tag{2.8}$$

³Given our assumptions on derivatives, $-N'(R)$ is everywhere upward sloping and $(1 - \alpha)\pi'(R)$ is everywhere downward sloping. Moreover, $-N'(0)$ is close to zero, while $\pi'(0)$ is very large. Therefore, there will always be a positive value $R^* > 0$ that satisfies FOC above. Figure 2.4 shows how the solution for R^* depends on the value of α .

The first derivative does not have a monotonic sign and its shape changes with the value of α . Putting a sign on the second derivative is even harder. Therefore, here I will analyze a simpler version of the model where we restrict $\alpha = 1$ ⁴.

Assuming $\alpha = 1$, the politician's indifference curve has the following derivatives:

$$\frac{dR}{dL} = -\frac{B'(L)}{mN'(R)} > 0 \quad (2.9)$$

$$\frac{d^2R}{dL^2} = -\frac{B''(L)mN'(R) + [B'(L)]^2 \frac{N''(R)}{N'(R)}}{[mN'(R)]^2} < 0 \quad (2.10)$$

Recall that with $\alpha = 1$, politician's threat point is $R^* = 0$. We can now plot indifference curves of the politician and the manager, which is done in figure 2.5.

When bargaining is not allowed the equilibrium point is the origin, with $R^* = 0$ and $L^* = 0$ – no entry barriers and no excess employment. However, when bargaining between the manager and the politician occurs, the resulting equilibrium will be somewhere on the contract curve between points A and A' in figure 2.5. The exact allocation will depend on the relative bargaining strengths of the manager and the politician. The important thing to note is that with bargaining, irrespective of where on the contract curve the equilibrium point is, we will always have $R^* > 0$ and $L^* > 0$, that is, we have entry barriers and positive excess employment. Such outcome is not economically efficient since it does not promote restructuring of the old firms and prevents entry of the new, more efficient, firms.

2.2.2 Comparative Statics

Certain parameters in the model affect the slope of the indifference curves and thus can affect the equilibrium allocation. The manager's indifference curve shifts if:

- $w \uparrow$ – excess labor becomes more costly to the firm $\Rightarrow IC_m$ becomes steeper; this case is depicted on figure 2.6;
- $\pi'(R) \uparrow$ – entry of the new firms is more damaging $\Rightarrow IC_m$ becomes flatter; this case is depicted on figure 2.7.

First we consider case of an increase in w . As w increases, excess labor becomes more costly to the firms, and the manager becomes less willing to trade excess labor for the

⁴Appendix A contains the derivation of politician's indifference curve for the case of $\alpha < 1$.

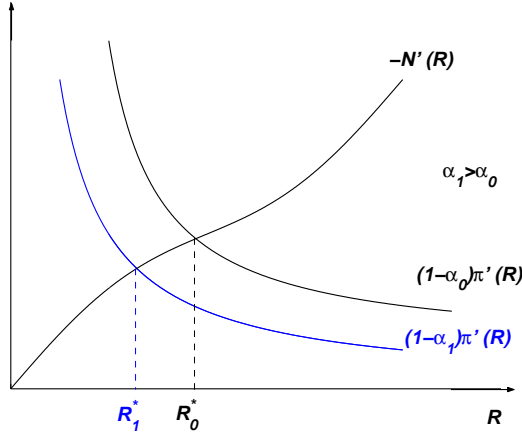


Figure 2.4: Politician will choose $R^* \geq 0$ for any given level of excess employment \bar{L} ; $\frac{\partial R^*}{\partial \alpha} < 0$

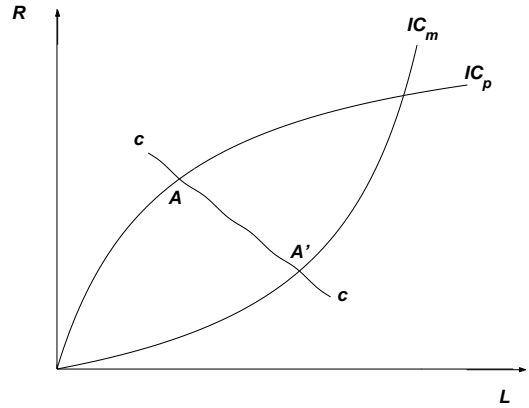


Figure 2.5: Manager's and politician's indifference curves with $\alpha = 1$.

entry barriers. This results in a shift of the manager's indifference curve up from IC_m to IC'_m and a shift of the contract curve from cc to $c'c'^5$, all of which is depicted on figure 2.6. Notice that if the initial bargaining equilibrium was located between points A' and A'' on the initial contract curve cc , then after the shift in IC_m the new bargaining equilibrium, which will be located on the BB' portion of the new contract curve will definitely have a lower level of L . The bargaining equilibrium is more likely to be on $A'A''$ section of the initial contract curve if the politician has greater bargaining power and is able to capture almost the entire surplus from bargaining. At the opposite extreme, if the manager has greater bargaining power and is able to force the politician to his reservation utility, an increase in w would result in both lower L and lower R (movement from pt. A to pt. B on the graph). The effect of an increase in w on the level of barriers for other combinations of relative bargaining powers is harder to determine, since it would depend not only on the relative bargaining strength of the manager and the politician but also on the size of the shift in IC_m .

Thus, when excess labor becomes more costly for the old firm, the equilibrium level of excess employment resulting from the bargaining process is likely to fall, and it is more likely to do so if the equilibrium is located at the extremes of the bargaining range, i.e. either the politician has all of the bargaining power or the manager does. The effect on

⁵Shifts of the contract curve are derived in Appendix B

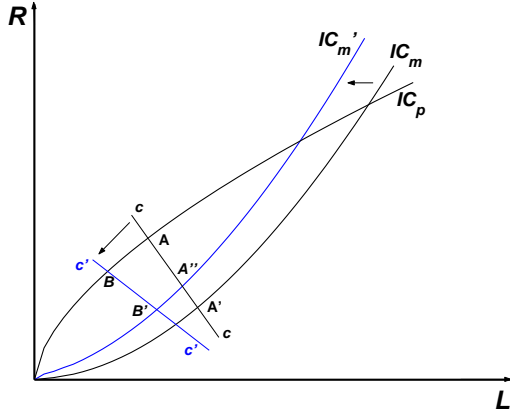


Figure 2.6: As $w \uparrow$, IC_m becomes steeper. $\alpha = 1$.

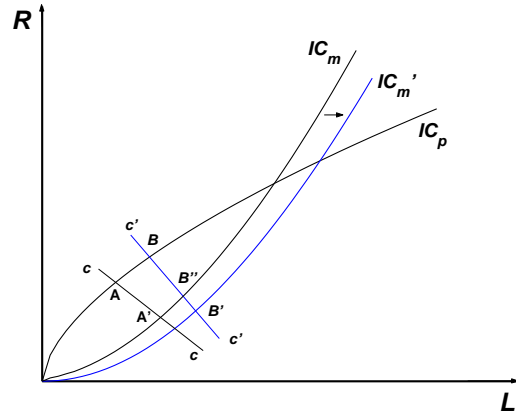


Figure 2.7: As $\pi'(R) \uparrow$, IC_m becomes flatter. $\alpha = 1$.

the equilibrium level of barriers is definite only in the case when the manager has greater bargaining power and is able to force the politician to his reservation utility – in that case the equilibrium level of barriers will fall in response to an increase in wages. For other combinations of relative bargaining powers the effect on the level of barriers is ambiguous.

Similarly, when $\pi'(R)$ increases the entry of new firms becomes more damaging to the old firms and IC_m becomes flatter (figure 2.7). In this case, the entry barriers become more valuable for the manager, and he would be willing to trade more excess employment for them. Note that there is a part of the new contract curve (section $B'B''$ on the graph) that lies outside the initial bargaining range, AA' . The level of excess employment is higher on $B'B''$ than on any part of AA' . If the manager has most of the bargaining power and is able to force the politician to his reservation utility, then an increase in $\pi'(R)$ will result in higher L and higher R (movement from pt. A to pt. B on the graph). On the other hand, if the politician has most of the bargaining power and is able to force the manager to his reservation utility, then an increase in $\pi'(R)$ will result in higher L , but the effect on R is ambiguous (movement from pt. A' to pt. B'). Thus, as the new entry becomes more damaging for the existing firms, the level of excess employment resulting from the bargaining process is likely to increase if the distribution of bargaining powers between the manager and the politician is very uneven, while level of barriers is likely to increase only if the manager has most of the bargaining power.

The politician's indifference curve shifts for the following reasons:

- $B'(L) \uparrow$ – politician's marginal benefits from excess employment increase $\Rightarrow IC_p$ becomes steeper
- $|N'(R)| \uparrow$ – with higher barriers Treasury loses tax revenues faster $\Rightarrow IC_p$ becomes flatter
- $m \downarrow$ – politician puts smaller weight on Treasury revenue $\Rightarrow IC_p$ becomes steeper

Figure 2.8 shows the case of an increase in $B'(L)$, i.e. when the politician's marginal benefits from excess employment increase thus making excess employment more valuable to the politician. Note that there is a portion BB'' of the new contract curve that lies completely outside of the initial bargaining range AA' and the level of entry barriers on BB'' is higher than anywhere on AA' . Therefore, if the manager has most of the bargaining power, an increase in $B'(L)$ would result in higher R but the effect on L is ambiguous (movement from pt. A to pt. B). On the other hand, if the politician has most of the bargaining power and is able to force the manager to his reservation utility, an increase in $B'(L)$ would result in both higher L and higher R (movement from pt. A' to pt. B' on the graph). Thus, as politician's marginal benefits from excess employment increase, the level of barriers resulting from the bargaining process is likely to increase, while the level of excess employment would increase only if the politician has most of the bargaining power.

Figure 2.9 shows the case when IC_p becomes steeper due to a decrease in m , i.e. when the weight on the Treasury's revenue in the politician's utility function drops, thus making entry barriers less costly to the politician. This case is similar to the case of an increase in $B'(L)$, the only different being the slope of the new contract curve. The effect on the level of barriers and excess employment is also similar. Specifically, as m decreases, the level of barriers resulting for the bargaining process is likely to increase for any relative bargaining strengths of the manager and the politician, while the level of excess employment is more likely to increase if the politician has most of the bargaining power.

Figure 2.10 shows the case when IC_p becomes flatter due to an increase in $|N'(R)|$. In this case an increase in the entry barriers results in larger loss of revenues for the

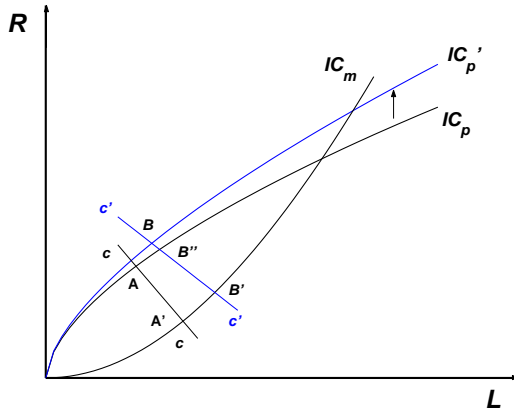


Figure 2.8: IC_p becomes steeper due to $B'(L) \uparrow$. $\alpha = 1$.

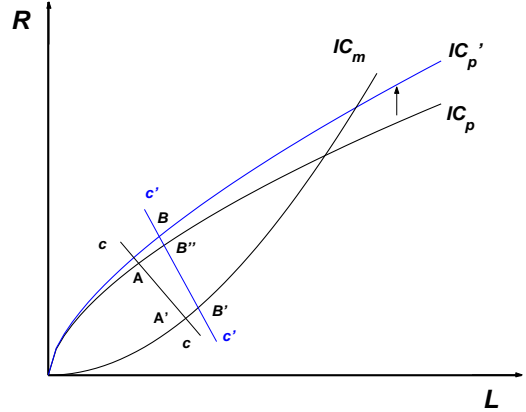


Figure 2.9: IC_p becomes flatter due to $m \downarrow$. $\alpha = 1$.

Treasury, thus entry barriers become more costly to the politician. We now have a portion AA'' of the initial contract curve that lies completely outside of the new bargaining range BB' and has a higher level of R . The bargaining equilibrium is more likely to be on the AA'' portion of the initial contract curve if manager has most of the bargaining power. In this case, increase in $|N'(R)|$ would result in lower R , while level of L might increase or decrease (movement from pt. A to pt. B on the graph). At the other extreme, if the politician is able to force the manager to his reservation utility, an increase in $|N'(R)|$ would result in both lower R and lower L (movement from pt. A' to pt. B'). Thus, as tax collections from the new firms become more sensitive to the level of barriers, the level of barriers resulting for the bargaining process would likely decrease, while the level of excess employment would decrease only if the politician has most of the bargaining power.

Finally, it is possible to have an extreme case where slopes of IC_m and IC_p are such that no bargaining between the manager and the politician is possible. Such case is depicted on figure 2.11. In this case, even if lobbying is allowed it will not occur and the economy will not deviate from the efficient equilibrium of $R = 0$ and $L = 0$. Therefore, any policies that change slopes of IC_m and IC_p such as to bring the economy closer to the case depicted in figure 2.11 are desirable from the economic efficiency standpoint. Based on the above discussion, IC_m and IC_p are likely to be closer to the case depicted on figure 2.11 if the excess labor is costly or the new entry is not damaging for the existing firms, and if politician's marginal benefit from excess employment is low, if the politician puts a high weight on the tax collection and if the entry barriers hurt tax collection considerably.

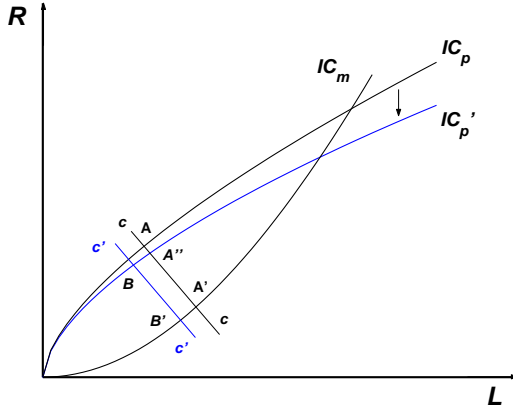


Figure 2.10: IC_p becomes flatter due to $|N'(R)| \uparrow$. $\alpha = 1$.

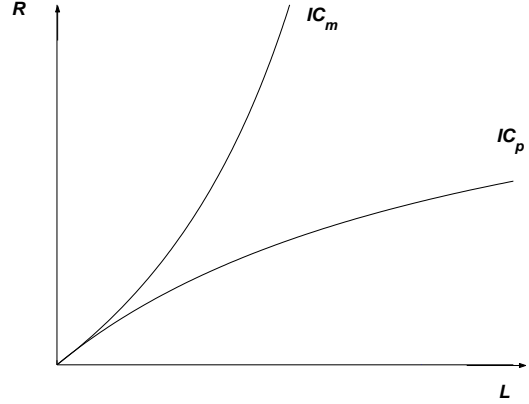


Figure 2.11: No bargaining is possible. $\alpha = 1$.

Some examples of policies that would produce such outcomes are described in section 2.4.

2.2.3 Conclusion

To summarize, the factors described in the comparative statics section influence the level of entry barriers and the level of excess employment achieved in the equilibrium through two channels:

1. by affecting whether the bargaining is possible, i.e. whether we are in the situation depicted on figure 2.11 or not
2. by affecting the equilibrium outcome given that the bargaining takes place

Taking into account both of these channels, policies that make excess employment more costly (increase w) are likely to lead to lower excess employment – both because the bargaining is less likely to occur and because the bargaining outcome is likely to result in lower L . Such policies may also lead to a lower level of entry barriers by making bargaining less likely to occur.

Similarly, a higher competitive threat from new entry (higher $\pi'(R)$) is likely to lead to higher excess employment (both because bargaining is more likely to take place and because the bargaining outcome is likely to result in higher level of L) and possibly a higher level of entry barriers (because of higher probability that the bargaining will take place). This does not mean, however, that competition should be discouraged. It

calls to our attention the fact that high competition from the new entrants does not automatically lead to more restructuring by the old firms. If bargaining between the old firms and the politician is possible, a higher competitive threat from new entry would give the old firms stronger incentives to lobby for the creation of entry barriers. Therefore, in order for the competition to promote restructuring some additional steps (such as legal and administrative reform) need to be taken to eliminate the possibility of bargaining.

Our model also indicates that higher marginal political benefits from excess employment, such as higher benefits from holding office, are likely to lead to a higher level of the entry barriers (both due to higher likelihood of bargaining and a higher level of R in the bargaining outcome) and possibly a higher level of excess employment (since bargaining is more likely to occur). For the same reasons, a lower weight put by the politician on Treasury's tax collections is also likely to lead to a higher level of barriers and possibly a higher level of excess employment.

Finally, higher responsiveness of the tax collections from new firms to the level of barriers or higher effectiveness of barriers in preventing entry (higher $|N'(R)|$) is likely to lead to a lower level of barriers (both because of the lower probability of bargaining taking place and a lower R in the bargaining outcome) and possibly a lower level of excess employment.

Some examples of policies that would affect w , $\pi'(R)$, $B'(L)$, m , and $|N'(R)|$ are discussed in the section 2.4.

2.3 Political Benefits From Total Employment

2.3.1 General Setup

In this section I modify the model developed above. We now assume that the politician derives benefits from *total* employment at the old firms. This could be the case, for example, if people are more likely to vote for the politician if they are employed, or if the old firms are better at organizing their workers to vote for a particular politician ⁶.

This new assumption requires some changes in the objective functions. We introduce new notation. \hat{L} denotes the profit maximizing level of employment, that is, the level of

⁶There is anecdotal evidence that the old firms in the former Soviet Union do try to influence the voting behavior of their employees, whereas newly created private firms never make such attempts.

employment that the old firm would choose in the absence of bargaining. L stand for excess employment, as before. Again, as before, we assume that the excess workers do not produce anything. In this model the politician derives benefits from the total employment $L^{total} = \hat{L} + L$. With these modifications, the objective functions of the manager and the politician can be written as follows:

$$U_m = \alpha(\pi(R, \hat{L}) - wL) \quad (2.11)$$

$$U_p = B(\hat{L} + L) + m\{(1 - \alpha)(\pi(R, \hat{L}) - wL) + N(R)\} \quad (2.12)$$

For this version of the model I will again consider the simpler case with $\alpha = 1$. With $\alpha = 1$ the objective functions become,

$$U_m = (\pi(R, \hat{L}) - wL)$$

$$U_p = B(\hat{L} + L) + mN(R)$$

We assume:

- $\pi_{LL} < 0$; $\pi_R > 0$, $\pi_{RR} < 0$; $\pi_{LR} > 0$
- $B'(\cdot) > 0$, $B''(\cdot) < 0$
- $N'(R) < 0$, $N''(R) < 0$

Assumptions on the derivatives of $N(\cdot)$ and $B(\cdot)$ are the same as in the earlier version of the model. Assuming $\pi_{LL} < 0$ is standard for profit functions and represents diminishing marginal product of labor. Assumptions $\pi_R > 0$ and $\pi_{RR} < 0$ correspond to similar assumptions about profit function $\pi(R)$ in the previous section. Assumption $\pi_{LR} > 0$ means that as the level of entry barriers increases, the marginal product of labor increases at the old firms. In particular, this means that as the level of entry barriers rises, the profit maximizing level of employment will also rise, and the manager of the old firm will choose to employ more workers even without bargaining. This assumption is important for the derivations that follow.

We now proceed as in the previous section: we derive the threat points of the manager and the politician, derive the shape of their indifference curves and see how shifts in the indifference curves might affect the bargaining outcome.

Threat Points.

Maintaining the assumption of $\alpha = 1$, for any given level of barriers, \bar{R} , the manager solves:

$$\begin{aligned} \max_{\hat{L}, L} \quad & (\pi(\bar{R}, \hat{L}) - wL) \\ \text{s.t.} \quad & L \geq 0, \hat{L} \geq 0 \end{aligned} \tag{2.13}$$

FOC:

$$\pi_L(\bar{R}, \hat{L}) = 0$$

FOC implicitly defines the level of employment that the manager would choose with no bargaining as a function of the level of barriers. We represent this relationship by the reaction function $\hat{L}^{RF} = \hat{L}(R)$. This reaction function represents the level of employment that the manager would choose for any given level of entry barriers without any interaction with the politician. Thus, this function represents the manager's "threat curve".

The solution for excess employment is, obviously, $L = 0$.

The slope of the reaction function $\hat{L}^{RF} = \hat{L}(R)$ is⁷:

$$\frac{dR}{dL} = -\frac{\pi_{LL}}{\pi_{LR}} > 0 \tag{2.14}$$

For any given level of excess employment, \bar{L} , and any given reaction function $L^{\hat{R}F}$, the politician solves:

$$\begin{aligned} \max_R \quad & B(L^{\hat{R}F} + \bar{L}) + mN(R) \\ \text{s.t.} \quad & R \geq 0 \end{aligned} \tag{2.15}$$

FOC for an interior solution is:

$$-\frac{B'(\cdot)}{mN'(R)} = -\frac{\pi_{LR}}{\pi_{LL}}$$

FOC says that the politician's indifference curve has to be tangent to the manager's reaction function. Thus, the resulting level of barriers will be $R^* \geq 0$. Figure 2.13 shows the case when the politician chooses a positive level of entry barriers in the absence of bargaining, and figure 2.14 shows a case when the politician chooses zero barriers in the absence of bargaining.

⁷Our assumption of $\pi_{LR} > 0$ is crucial for deriving the slope of the reaction function. The reaction function is shown in figure 2.12, where it is drawn as a straight line for simplicity.

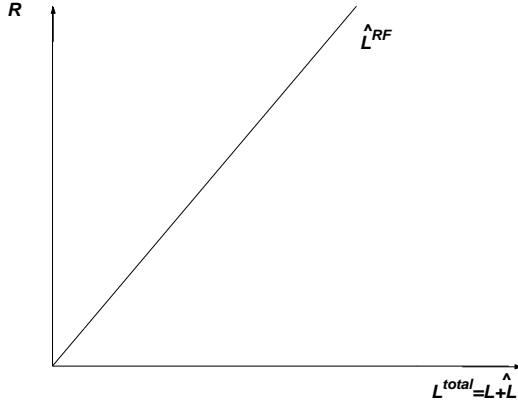


Figure 2.12: For any given level of barriers R , manager would choose employment on \hat{L}^{RF} without bargaining.

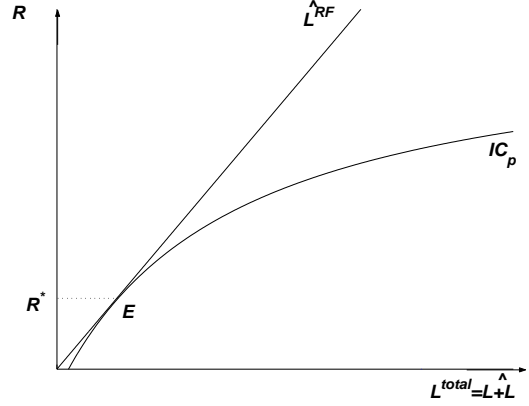


Figure 2.13: Politician chooses $R^* > 0$ if bargaining is not allowed. $\alpha = 1$.

Indifference Curves.

We now derive the shape of the indifference curves for the manager and the politician. The slope of manager's indifference curve is given by

$$\frac{dR}{d(\hat{L} + L)} = \frac{w - \pi_L(\cdot, \cdot)}{\pi_R(\cdot, \cdot)} \quad (2.16)$$

and the slope of the politician's indifference curve is given by

$$\frac{dR}{d(\hat{L} + L)} = -\frac{B'(\hat{L} + L)}{mN'(R)} > 0 \quad (2.17)$$

The expression for the slope of the politician's indifference curve is almost identical to that in the previous section (see equation (2.9)), therefore, we can easily draw it. In order to draw the indifference curve for the manager, note that at the intersection with the reaction function \hat{L}^{RF} , $\pi_L(\cdot, \cdot) = 0$ since the reaction function represents those values of \hat{L} that maximize profit. If $\pi_L(\cdot, \cdot) = 0$, then the slope of the manager's indifference curve is positive, according to equation (2.16). So, at the intersection with the reaction function \hat{L}^{RF} , IC_m is upward sloping. Also notice that for all levels of employment higher than \hat{L}^{RF} we have $\pi_L(\cdot, \cdot) < 0$ and thus IC_m is definitely upward sloping. IC_m can be downward sloping only for very low levels of L^{total} , which we do not depict on the graphs.

Figure 2.15 shows managers reaction function \hat{L}^{RF} and the indifference curves for the manager and the politician. If bargaining is not allowed the equilibrium point is

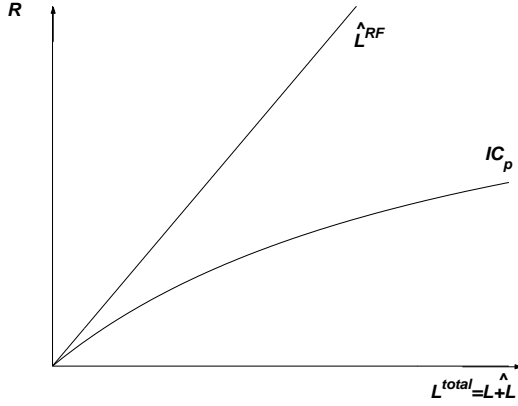


Figure 2.14: Politician chooses $R^* = 0$ if bargaining is not allowed. $\alpha = 1$.

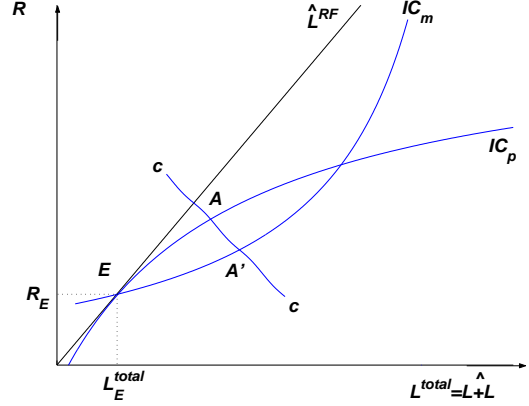


Figure 2.15: Indifference curves for manager and politician. $\alpha = 1$.

point E . However, if bargaining is allowed, the equilibrium will be somewhere on the AA' portion of the contract curve, and the levels of entry barriers and employment will be higher than in the no-bargaining case. On the graph, the level of excess employment is the difference between the value of L^{total} on the contract curve and the value of \hat{L}^{RF} corresponding to the same level of R . Of course, excess employment is positive for all points on the contract curve AA' , which means that bargaining between the manager and the politician results in some excess employment, as well as a higher level of barriers.

2.3.2 Comparative Statics

We now explore the effects of shifts in the indifference curves. The manager's indifference curve becomes steeper if either w increases (excess labor becomes costlier) or π_R decreases (new entry becomes less damaging). Such shift in the indifference curve is shown in figure 2.16⁸. Similar to the earlier version of the model, after the shift in IC_m the level of excess employment (and the level of total employment) is likely to fall if the distribution of bargaining strengths between the manager and the politician is very uneven. In addition, if the manager has higher bargaining strength and is able to force the politician to his reservation utility, the equilibrium level of entry barriers is also likely to fall.

The politician's indifference curve becomes steeper if $B'(\cdot)$ increases (marginal political benefits from employment increase), m decreases (politician puts lower weight on Treasury's revenue), or $|N'(\cdot)|$ decreases (tax collections from the new firms are less sen-

⁸The shift in the contract curve is not shown on the figure to keep it visually simple.

sitive to the level of barriers). The effect of such shift in the indifference curve is shown on figure 2.17. Original IC_p was tangent to \hat{L}^{RF} at point E . When IC_p becomes steeper, it will be tangent to \hat{L}^{RF} at a different point, E' . Even with no bargaining, the politician will now choose higher level of barriers corresponding to the allocation at E' , which makes sense since the barriers are now less costly and employment is more valuable for the politician. In addition, bargaining can still occur. In the case drawn in figure 2.17, once IC_p shifts to IC'_p the equilibrium level of barriers will be higher. Moreover, the level of barriers will be higher irrespective of the relative bargaining strengths of the politician and the manager, since the new contract curve lies entirely above the original contract curve. The effect on the excess employment is ambiguous and depends on the size of the shift in IC_p and on the slope of the reaction function $L^{\hat{R}F}$.

Of course, it is possible that the shift in IC_p is very slight, in which case the new point of tangency to the reaction function, E' , would be very close to the original point E and the new “bargaining lens” will be very close to the initial one, except that it will be shifted up somewhat. In such case, it is still possible to get a higher level of barriers in the new equilibrium if the bargaining outcome is located at the extremes of the contract curve – either close to IC_p or close to IC_m . Therefore, as long as the distribution of bargaining powers between the manager and the politician is very uneven, we should see an increase in the level of barriers in this case.

Finally, in this specification of the model, similar to the previous section, it is possible to have slopes of IC_m and IC_p such that no bargaining between the manager and the politician is possible. Steeper IC_m and flatter IC_p move us closer to this case and thus policies that have this effect on the slopes of indifference curves are desirable.

To summarize, conclusions from the model where the politician derives political benefits from total employment are generally similar to the conclusions from the model where the politician derives benefits from excess employment only (see section 2.2.3). Lower w , higher π_R , higher $B'(\cdot)$, lower m , and lower $|N'(\cdot)|$ make it more likely that the bargaining would take place, thus leading to both higher barriers and higher excess employment. In addition, given an uneven distribution of the bargaining strengths between the manager and the politician, lower w or higher π_R is likely to lead to higher excess employment and higher total employment, while higher $B'(\cdot)$, lower m , or lower $|N'(\cdot)|$ is likely to lead to a higher level of barriers.

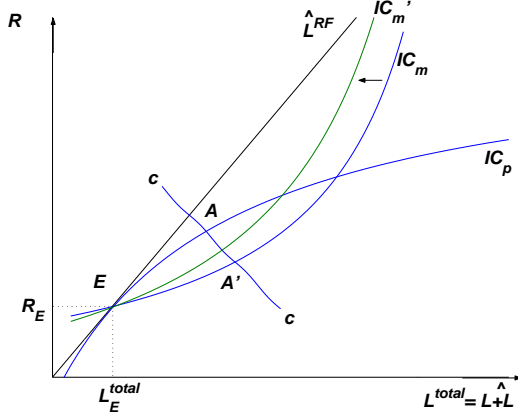


Figure 2.16: IC_m shifts due to $w \uparrow$ or $\pi_R \downarrow$. $\alpha = 1$.

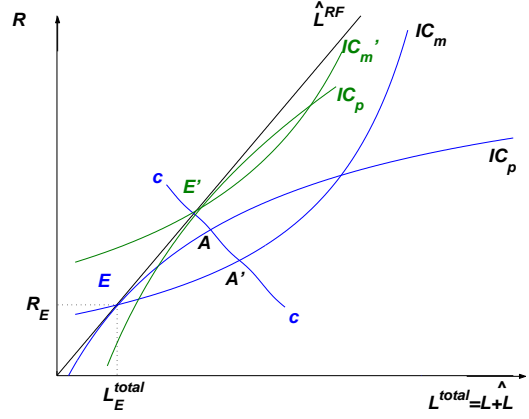


Figure 2.17: IC_p shifts due to $B'(\cdot) \uparrow$ or $m \downarrow$ or $|N'(\cdot)| \downarrow$. $\alpha = 1$.

2.4 Applications and Policy Relevance

2.4.1 Stylized Facts Revisited

In this section I will demonstrate how the theoretical framework developed above can be used to explain the “stylized facts” found in the empirical literature on enterprise restructuring (listed on page 3).

Outsiders vs. Insiders as Owners.

Insider owners are most often the managers of the enterprise who also were its managers before privatization. Thus, the insider owners usually have better ties with the politicians than outsiders do, because they were originally selected for their ability to deal with officials, they have dealt with these politicians previously, etc. Outsider owners, on the other hand, are less likely to have good ties with the politicians. Thus, insider owners are more likely to engage in lobbying with the politician making the equilibrium with bargaining a more likely outcome, which results in higher levels of both entry barriers and excess employment (less restructuring).

New vs. Old Managers.

Here the reasoning is similar to the above example, except that it is even more straightforward. An old manager, by definition has been the manager of the enterprise under the old planning system. Thus he has all the characteristics (the ability to negotiate with officials, to lobby for allocation of inputs, etc.) that would make it easy for him to lobby with the politician. Moreover, an old manager is unlikely to have the human capital

required to function efficiently in the market economy. This would make him more likely to choose lobbying for the entry barriers instead of restructuring and facing the competition. Thus, with old managers we are much more likely to end up in the equilibrium with bargaining, while new managers may choose to improve efficiency of the enterprise instead and face the competition in a market setting. As shown above, the equilibrium with bargaining implies less restructuring by the enterprise.

Increased Competition Sometimes Leads to Less Restructuring.

Increased competition can be captured by an increase in $\pi'(R)$ in the model. The effect of $\pi'(R) \uparrow$ is depicted on figure 2.7. If the relative bargaining powers of the manager and the politician are very uneven and, in particular, if the politician has most of the bargaining power and is able to force the manager to the allocation close to his reservation utility, then $\pi'(R) \uparrow$ would lead to an increase in the excess employment L , which means less restructuring. To the extent that politicians have more bargaining power in CIS than in Eastern Europe, increased competition will tend to produce less restructuring in CIS but not in Eastern Europe.

In addition, an increase in $\pi'(R)$ may move the equilibrium from the case where no bargaining is possible (depicted on figure 2.11) to the case where there is scope for bargaining (depicted on figure 2.5), thus leading to higher excess employment and higher barriers.

Finally, increased competition may shift the manager's choice toward choosing lobbying for entry barriers instead of becoming competitive by restructuring. With increased competition, restructuring in order to successfully face the competition requires more effort and better skills in the efficient operation of the firm. Thus, if managers compare their skills in the efficient operation of the firm to their lobbying skills, with increased competition some managers may decide to switch to lobbying.

CIS vs. Eastern Europe.

I will offer some observations that may explain why similar reform policies may have different effects in CIS and Eastern Europe. This can perhaps be explained by systematically different values of certain institutional parameters in Eastern Europe and in CIS:

- Eastern Europe may have higher m – politicians are more accountable in Eastern Europe and therefore they put higher weight on social welfare. Higher m makes the

indifference curve of the politician flatter and may eventually lead to the situation when no bargaining is possible (depicted on figure 2.11).

- Some Eastern European countries allowed limited creation of small private businesses in years prior to the transition reforms and mass privatization, thus an additional entry of new private businesses may not be as damaging to the exiting firms. This means that $\pi'(R)$ is lower in Eastern Europe than in the CIS and, consequently, the equilibrium level of excess employment is lower (the effect is opposite from the one depicted on figure 2.7).
- Eastern European countries undertook more decentralization in the last decades of the planning system than did Soviet Union. As a result, managers of enterprises in Eastern Europe did not have to rely on politicians for the routine decisions about operations of the enterprise. Thus, managers' ties with politicians are arguably not as strong in Eastern Europe as in CIS. In addition, in Eastern European countries a larger fraction of politicians was replaced during the democratic reforms, which would further weaken the ties between existing firms and politicians. Hence, the managers in Eastern Europe are less likely to lobby with politicians, making the equilibrium with no bargaining more likely.
- Various institutional details may make $B'(L)$ lower in Eastern Europe than in the CIS. For example, more active media may expose collusion and deals between managers and politician, threatening politician's career; elections are better supervised, thus making it more difficult for managers to deliver votes in support of the politician. Also, it is possible that politician's "private value of holding an office" is much higher in the CIS than in the Eastern Europe, for example, because holding a political office in CIS opens up extensive opportunities for corruption and private enrichment. $B'(L)$ represents politician's benefits from excess employment, which may be thought of as a product of the increased probability of being (re)elected and the value of holding an office. If the value of holding office is much higher in CIS than in Eastern Europe, $B'(L)$ will also be higher in CIS. All this would make $B'(L)$ lower in Eastern Europe than in the CIS, making politician's indifference curve flatter. As a result, bargaining is less likely to take place, and even with bargaining the equilibrium level of entry barriers and of excess employment may be lower in

Eastern Europe.

2.4.2 Policy Relevance

The theoretical framework presented here can be used to evaluate which policies would reduce the possibility of the existing firms lobbying for entry barriers and thus would promote restructuring and growth of the new private sector. We have shown that in certain cases lobbying between the manager and the politician is impossible (such case is depicted on figure 2.11). Any policies that make the manager value high entry barriers relatively less than low excess employment (making his indifference curve steeper) and/or policies that make the politician value tax collections relatively more than the personal benefits he derives from excess employment (making his indifference curve flatter) would bring us closer to this case. Some examples of these policies are:

- Elimination of barter payments and wage arrears. When excess labor is more costly to the firm (high w), the manager is less willing to trade excess labor for barriers and thus less likely to lobby with the politician. Barter payments, especially for wages, and toleration of wage arrears make excess labor less costly to the firm. Therefore, elimination of the barter payments is a desirable policy.
- Unofficial economy. When marginal benefits from barriers are low for the existing firms (low $\pi'(R)$), managers are less willing to “pay for barriers” with excess employment. $\pi'(R)$ is low when either the new entry is not damaging for the existing firms or barriers are not effective in preventing the new entry. Strangely enough, unofficial economy may help in this case. If it is very easy (not costly) for a firm to operate unofficially, then high barriers to entry into the *official* sector are irrelevant. With extensive unofficial economy, the new firms *are* threatening to the existing ones but high entry barriers will not eliminate this threat, thus the existing firms would not expend resources to create them.

There is another way in which unofficial economy can influence the situation. According to our model, if tax collections fall sharply with a rise in the entry barriers (high $|N'(R)|$), then politician may not be willing to erect entry barriers. Once again, if it is relatively easy for the new firms to operate in unofficial economy, then they would escape into unofficial economy whenever “official” entry barriers rise.

Therefore, any increase in the entry barriers would lead to a sharp drop in tax collections from the new firms⁹. Of course, this effect matters only if politician puts a positive value on tax collections, i.e. if $m > 0$.

- Financing local budgets from local tax collections. When the politician cares a lot about Treasury's tax collections (high m), he is less willing to create entry barriers since they hurt tax collections. An example of policy that would make a local politician put a very large weight on the tax collection is a fiscal arrangement where the local budget is financed entirely by tax collection from local small and medium enterprises (as opposed to allocations from a central budget). Since most of the new firms are small and medium enterprises, such policy would give the local politician incentives to promote development of the new private sector.
- Transparent election process and active media. When the politician's benefits from excess employment are low (low $B'(L)$), he is less willing to trade the entry barriers, which are costly, for the excess employment, which is not very valuable to him. More transparent election process, more active media, and low corruption may make $B'(L)$ lower by exposing illegal dealings between managers and the politician and reducing potential private gains from holding an office. All of this reduces the probability that the bargaining will take place, leading to lower barriers for the new firms and more restructuring by the old firms.

2.5 Conclusions

This chapter presented a model of interaction between the politician and the manager of an existing enterprise in the environment where new entry is allowed and is potentially harmful to the existing enterprises. In such environment, managers of the existing enterprises have incentives to bargain with the politician for the creation of entry barriers. We have shown that managers of privatized enterprises are more likely to lobby for the creation of entry barriers if their firms would be substantially harmed by the new entry, or if the cost of excess employment is low for the firms. At the same time, the politician is more likely to agree to the creation of entry barriers if he derives substantial benefits

⁹This in no way implies that steps should be taken to promote unofficial economy. I am simply pointing out that the existence of unofficial economy may have positive consequences.

from the political support provided by the privatized firms, if he puts low weight on the Treasury's tax collections, or if the level of entry barriers does not significantly affect tax revenues collected from the new firms. When managers of the existing firms are successful in their bargaining with the politician, the economy ends up in an equilibrium with a higher level of barriers, fewer new firms entering, and a higher level of excess employment (lower restructuring) at the old firms.

These findings emphasize that allowing, or even promoting, the entry of new businesses may not be enough to stimulate development of the new private sector and to promote competition and restructuring of the old firms. Attention should be paid to additional institutional and administrative reforms that would prevent the possibility of old firms bargaining with politicians.

Chapter 3

Empirical Evidence

3.1 Overview

Having presented the theoretical argument in chapter 2, in this chapter we will turn to providing relevant empirical evidence. The theoretical model outlined in chapter 2 argues that, under certain conditions, managers of the old firms would lobby with politicians demanding creation of high entry barriers in exchange for keeping employment at their enterprises at levels above economically efficient (i.e. not restructuring). Such collusion is more likely to occur when the new entry is threatening and/or excess employment is not costly to the old firms, and when the politician derives high political benefits from excess employment and does not have incentives to raise the Treasury's tax collections. Unfortunately, some of these things are very difficult to measure. Therefore, I will take the following approach in this empirical exercise.

On the very basic level the model argues that the level of barriers faced by the new firms is influenced by what the old firms do, i.e. whether they lobby with politicians. Since lobbying is difficult to observe, we will look at the factors that would make such lobbying likely (such as new entry being threatening to the old firms, etc) and see if they can explain the level of barriers faced by the new firms. In addition, if the lobbying takes place, we would expect to see both excess employment and a high level of entry barriers. Without structurally modeling the channel through which the political lobbying operates, I will try to see if the presence of excess employment at the old firms explains the level of barriers faced by the new ones.

3.2 Data and Variables

I use data from the World Business Environment Survey (WBES)¹, conducted by the World Bank in late-1999 to mid-2000. The survey covers over 10,000 firms in 80 countries, among them nine countries of Eastern Europe and twelve countries of the former Soviet Union. The list of countries and the number of firms surveyed in each country can be found in table 3.1. The summary of survey questions used to create relevant variables is

¹©“The World Business Environment Survey” (WBES) 2000, The World Bank Group

given in tables 3.2 and 3.3².

The objective of our analysis is to see how the level of barriers faced by the new firms is influenced by the characteristics of the old firms, including their level of excess employment. However, we need to define more carefully which old firms might be interested in preventing entry of a specific new firm, i.e. we need to determine what is the “relevant group” of the old firms for each new firm. For example, old firms in Poland are not likely to lobby for the creation of entry barriers to limit new entry in Uzbekistan. Similarly, even within the same country, old firms in car manufacturing are not likely to lobby for barriers to restrict new entry into the construction industry. Conceptually, the old firms in the same industry and the same country would have incentives to act together to prevent entry of the new firms in this industry³. WBES survey has some limited information about industry classification of firms: it classifies all firms into five broad sectors – manufacturing, services, agriculture, construction, and other. We will use this information to create variables characterizing “relevant old firms”.

The data is organized as follows. Each new firm is a unit of observation (which firms are considered “new” is precisely defined below). For each new firm we observe its characteristics, such as the level of barriers it faces, its age, size, the country and the sector it belongs to. We also observe characteristics of the old firms in the same country and sector (country-sector cell) as this new firm. The idea is that certain characteristics of the old firms in the country-sector cell influence the level of barriers faced by the new firms in the same country-sector cell.

²Hellman *et al.* (2000) describe this data set for transition countries in more detail. They also indicate that “The sample was structured to be fairly representative of the domestic economies, with specific quotas placed on size, sector, location, and export orientation.” The sample was heavily weighted toward privately owned firms. (Hellman *et al.* (2000) p. 5)

³This is not strictly true. Domestic manufacturers might be interested in preventing entry of the firms that would import competing products, and these importing firms would fall under retail sector, thus making the old firms in manufacturing trying to prevent new entry into the retail services sector. Therefore, the analysis here would miss this important channel through which new entry influences the old firms. However, were we able to include this channel, we should find an even stronger relationship between the characteristics of the old firms and the level of barriers faced by the new firms. Unfortunately, in this dataset it is impossible to determine which firms are importing competing products, which would bias our results *against* finding a relationship between the behavior of the old firms and the entry barriers faced by the new ones.

I will now describe in more detail how the variables are constructed.

New vs. Old Firms. The new firms are those firms that were established as “originally private from the time of start up” (see table 3.3). All other firms are treated as the old firms⁴. The fraction of old and new firms by country is presented in table 3.1. A consistency check was performed using the age of firms. Those firms that claim to be “originally private from the time of start up” and were established prior to 1989 were removed from the sample because they would not constitute “the new firms” in the sense of the model described here, and, furthermore, it was impossible for any private firms to exist in Soviet Union prior to 1989.⁵

Barriers. The measures of barriers are constructed only for the new firms. There are several alternative measures of barriers that can be constructed given the questions in WBES survey (see table 3.2). These questions ask how problematic are various regulations and anti-competitive practices for the operation of a firm, ranging from “no obstacle” to “major obstacle”. Since it is difficult to say *a priori* that one measure is better than others, and it is also difficult to construct a meaningful aggregation of these measures, I will consider each variable as a separate measure of the level of barriers, with one important exception.

Two types of regulatory barriers considered in the survey, namely customs regulations and foreign currency/exchange regulations (variables *cus_reg* and *frk_reg*), are only relevant if a firm is engaged in the international trade. Since not all firms are engaged in international trade, these variables may have systematic measurement errors. Specifically, some firms may indicate that these types of regulations are no obstacle to the operation of their business not because there are no barriers in these areas, but simply because the firms are not engaged in the international trade and therefore these barriers are irrelevant.

⁴This definition of the new firms might still include some firms that should be classified at “old”. It has been a common practice in transition countries for managers of large state-owned enterprises to register new firms on the basis of their existing enterprises as means of diverting assets. Such falsely new firms are likely to have extremely good ties with politicians and would behave like the old firms in our model, making it more difficult for us to find the expected relationship between the characteristics of the old firm and level of barriers faces by the new ones. Unfortunately, it is impossible to identify such firms in the data, but we should keep this in mind when interpreting the results.

⁵This procedure removed 60 observations from the total of 1673 observations for new firms.

Country	Number of Firms	Old Firms (fraction)	New Firms (fraction)
CIS			
Armenia	125	49.6%	50.4%
Azerbaijan	128	35.2%	64.8%
Belarus	125	65.6%	34.4%
Georgia	129	44.2%	55.8%
Kazakhstan	127	61.4%	38.6%
Kyrgyzstan	125	68.8%	31.2%
Moldova	125	70.4%	29.6%
Russia	525	51.0%	49.0%
Ukraine	225	45.3%	54.7%
Uzbekistan	125	70.4%	29.6%
Baltics			
Estonia	132	47.0%	53.0%
Lithuania	112	25.0%	75.0%
Eastern Europe			
Bulgaria	125	39.2%	60.8%
Croatia	127	73.2%	26.8%
Czech Rep	137	27.0%	73.0%
Hungary	129	38.0%	62.0%
Poland	225	39.1%	60.9%
Romania	125	33.6%	66.4%
Slovakia	129	41.1%	58.9%
Slovenia	125	68.0%	32.0%
Albania	163	44.2%	55.2%
Total	3288	49.1%	50.9%

Table 3.1: Transition countries in WBES dataset: number of firms and fraction of old and new firms by country

Variables and Relevant Survey Questions

Survey Question	Possible Answers	Variable Values
Measures of Barriers		
<i>TxReg</i> – General measure of regulatory barriers		
<i>AntComp</i> – General measure of anti-competitive barriers		
How problematic are these different factors for the operation and growth of your business: financing, infrastructure, <i>taxes and regulations</i> , policy instability, inflation, exchange rate, functioning of the judiciary, corruption, street crime, organized crime, <i>anti-competitive practices by gov't or private enterprises</i> ?	1 – no obstacle 2 – minor obstacle 3 – moderate obstacle 4 – major obstacle	Answers about <i>taxes and regulations</i> and <i>anti-competitive practices</i> are recorded as ordered variables with values {1,2,3,4}.
<i>bl_reg</i> – Business Licensing Regulations <i>cus_reg</i> – Customs/Foreign Trade Regulations <i>lab_reg</i> – Labor Regulations <i>frk_reg</i> – Foreign Currency/Exchange Regulations <i>env_reg</i> – Environmental Regulations <i>fir_reg</i> – Fire, Safety Regulations <i>tadm_reg</i> – Tax Regulations/Administration <i>hit_reg</i> – High Taxes		
How problematic are these different regulatory areas for the operation and growth of your business: business licensing, customs/foreign trade regulations, labor regulations, foreign currency/exchange regulations, environmental regulations, fire, safety regulations, tax regulations/administration, high taxes?	1 – no obstacle 2 – minor obstacle 3 – moderate obstacle 4 – major obstacle	The answers are recorded as ordered variables with values {1,2,3,4}.
Measures of Excess Employment		
<i>LgrS</i>, <i>LgeS</i>, <i>LiSni</i>, <i>LndSni</i>		
Have your company's sales, investment, exports, imports, employment and debt changed in real terms over the last three years? By what percentage have they increased or decreased?	Increased Decreased Did not change Percentage change is given	<i>LgrS</i> =1 if empl-t increased by more (decreased by less, in %) than sales; 0 otherwise. <i>LgeS</i> =1 if change in empl-t is greater than or equal to the change in sales; 0 otherwise <i>LiSni</i> =1 if empl-t increased while sales decreased or stayed constant; 0 otherwise <i>LndSni</i> =1 if empl-t increased or stayed constant while sales decreased or stayed constant; 0 otherwise

Table 3.2: Variables and Relevant Survey Questions

Variables and Relevant Survey Questions (cont'd)

Survey Question	Possible Answers	Variable Values
Measures of Competition		
<i>comp_hi</i> – Intensity of Competition		
Thinking of your firm's major product line in the domestic market, how many competitors do you face?	None 1-3 More than 3	<i>comp_hi</i> =1 if the answer is "More ; than 3"; 0 otherwise
<i>comp_SME</i> – Identity of Major Competitor		
From which of the following would you say your company faces the biggest competitive threat?	1 - Domestic small and medium enterprise 2 - Domestic large private enterprise 3 - Foreign firm producing in domestic market 4 - State-owned enterprise 5 - Micro-enterprise/informal sector 6 - Legal imports 7 - Smuggled goods 8 - My firm has no effective competitors	<i>comp_SME</i> =1 for answer #1; 0 otherwise.
Controls		
<i>new</i> – Indicator variable for new firms		
How was your firm established?	1 - Originally private, from time of start up 2 - Privatization of a stated-owned firm 3 - Private subsidiary of a formerly state-owned firm 4 - Joint venture, domestic and foreign private owners 5 - State-owned company 6 - State owned some stock in the company 7 - Agricultural co-operative 8 - State collective farm 9 - Transportation co-operative	<i>new</i> =1 for answer #1; 0 otherwise.
<i>age</i> – Age of the firm in years		
In what year was your firm founded?	actual year is given	<i>age</i> = 2000 – <i>year</i>
<i>sector</i> – Sector/industry to which the firm belongs		
	1 - manufacturing 2 - services 3 - other 4 - agriculture 5 - construction	Used to create dummy variables for sectors
<i>size</i> – Size of the firm		
Based on number of employees	1 - small (< 50 employees) 2 - medium (between 50 and 500) 3 - large (over 500 employees)	Used to create dummy variables for size

Table 3.3: Variables and Relevant Survey Questions (cont'd)

For this reason, I will not use measures of barriers based on variables *cus_reg* and *frk_reg*.

Each measure of barriers is used as a separate dependent variable in the regressions.

It should be noted that these several measures of barriers may be measuring conceptually different things. Generally speaking, regulations can act as the *entry* barriers *per se* (meaning that they make it more difficult to *start* a business) or as an additional burden on businesses that already exist. While both types of regulatory intervention can be used to limit the development of the new private firms, regulations that are specifically designed as the entry barriers would be a preferred choice if the old firms are trying to prevent new entry. Regulations that put an additional burden on an already existing business might also be used to drive out the new private firms, therefore, old firms may also be interested in seeing such regulation created. One of the variables in the dataset – *bl_reg*, business registration and licensing regulations – is the closest measure available of the purely *entry* barriers. Therefore, if lobbying between the old firms and the politician takes place, we would expect the effect of it to be most visible in *bl_reg* variable. We will still use the other measures of barriers since the old firms might still want to lobby for the creation of these regulation in order to drive out the existing new firms.

Excess Employment. The measures of excess employment are constructed only for the old firms. The WBES survey provides information on whether company’s sales, employment, investment, exports, imports, and debt changed over the past three years and by what percentage they have changed (see table 3.2). In order to create the excess employment variables I look at the relative movement of sales and employment. Obviously, excess employment can be present with any combination of movement in sales and employment, even if both sales and employment decrease (or increase). Therefore, I try to identify those cases where excess employment is *most likely* to be present. I consider several alternative measures of excess employment:

- *LgrS* is a dummy variable that equals one if employment at the firm has increased by more (or decreased by less, in percentage terms) than sales did, i.e. if the change in employment is greater than the change in sales with decrease denoted by a negative change
- *LgeS* is a dummy variable that equals one if the change in employment at the firm is greater than or equal to the change in sales, with decrease denoted by a negative

change

- *LiSni* is a dummy variable that equals one if employment at the firm has increased, while sales decreased or stayed constant
- *LndSni* is a dummy variable that equals one if employment at the firm has increased or stayed constant, while sales decreased or stayed constant

Clearly, the firms that increase their employment while experiencing a decline (or no change) in sales are most likely not restructuring – these firms are captured by the variable *LiSni*. However, even if sales of a firm do increase, but at the same time the firms increases its employment even more, this might indicate the lack of restructuring as well. I capture this case with the variable *LgrS*. Finally, excess employment might also be present in cases when a firm experiences no change in either sales or employment. Since we are looking only at the old firms, if their level of employment relative to sales did not change, they are likely to have the same level of excess employment that they had prior to privatization, and most firms under the centrally planned system had some excess employment. This is the reason for using variables *LgeS* and *LndSni*.

A note of caution is necessary here. Since the data on change in sales and employment comes from an answer to a survey question given by the management of the firm rather than from an independent source of data, the usual concerns of misreporting are present and magnified by the fact that in the transition countries unofficial economy is often substantial and thus the firms might misrepresent their sales and employment considerably. In addition, the information on the percentage change in sales comes from a question that asks: “By what percentage have sales changed *in real terms* over the last three years?” Such question may be especially difficult to answer for firm managers in the transition countries because these countries have experienced periods of high and volatile inflation ⁶. It may be easier to determine whether sales have increased or decreased in real terms than to give a specific percentage of the increase (decrease). Therefore, the variables *LiSni* and *LndSni*, which are based on the answer to the questions of whether the sales

⁶In addition, many managers of firms in the formerly centrally planned economies may have a limited understanding of economic concepts and therefore are likely to misunderstand what is meant by the phrase “in real terms”.

(employment) have increased (decreased), are likely to be based on more accurate information. Thus, these variables might be more reliable, even though they provide less precise measurements since they measure only the discrete changes in sales and employment.

Finally, I should point out that since the measures of excess employment are based only on the relative changes in sales and employment they basically measure changing labor productivity and thus should be interpreted with caution. There may be cases when the excess employment variables indicate the presence of excess employment for the firms that actually do restructure. For example, if a firm engages in restructuring in the form of introducing new product line, modernizing its equipment, etc., it would require additional workers but the results would not show up in the increased sales right away. Our measures of excess employment may mistakenly indicate presence of excess employment at such firms. We try to address such concerns below in section 3.4.2 where we perform some robustness checks for our results.

Excess employment enters our regressions only through the characteristics of the old firms in each country-sector cell. Thus, for each new firm in country i and sector j , we calculate the fraction of the old firms with excess employment in the same country-sector cell (out of *all old firms* in that country-sector cell). This fraction is calculated for each measure of excess employment, and resulting variables are: $LgrS_F$, $LgeS_F$, $LiSni_F$, $LndSni_F$. These variables enter as explanatory variables in the regressions.

Competition and Treat from New Entry. The measures of competition are constructed for the old firms only, because it is the competition from new entrants or the possibility of such competition that can induce the old firms to lobby for the creation of entry barriers. I will use three measures of competition, reflecting both the level of competition and the identity of the major competitor (see table 3.3).

The level of competition is defined as high if an old firm faces more than three competitors for its major product line in the domestic market. The dummy variable $comp_hi = 1$ for the old firms that face high competition. We are also interested to know if the old firms face competition primarily from the new firms. While precisely this question is not asked in the survey, a close approximation can be obtained with the questions about identity of the major competitor. If the major competitor of an old firm is a “domestic small and medium private enterprise” – it is most likely a new entrant. Thus, the dummy variable $compSME = 1$ for those old firms whose major competitor is

a “domestic small and medium private enterprise” (SME).

For each new firm, we calculate the fraction of the old firms that face high competition (out of all old firms in the same country-sector cell); the resulting variable is *comp_hiF*. Similarly, for each new firm, we also calculate the fraction of the old firms whose major competitor is a private domestic SME (out of all old firms in the same country-sector cell); the resulting variable is *compSME_F*. *comp_hiF* and *compSME_F* enter as explanatory variables in the regressions.

Another variable – relative number of new vs. old firms in a sector – can be thought of as an alternative measure of the competition from new firms. A larger fraction of new firms in a sector means that the new firms are more likely to create significant competition for the old firms, and thus the old firms would have even more incentives to create entry barriers, leading to a higher level of barriers faced by the new firms. This variable, *New_F*, is measured as a fraction of new firms in each country-sector cell (out of all firms in that country-sector cell), and it enters as an explanatory variable in the regressions.

It should be noted that all three variables used to measure the level of competition (*comp_hiF*, *compSME_F*, and *New_F*) are potentially endogenous, i.e. the level of entry barriers can influence the values of these variables. This issue is addressed in more detail below.

3.3 Estimation Procedure

Our model argues that under certain conditions (high threat from new entry, low cost of excess employment, etc.) the managers of the old firms will lobby with politicians for the creation of entry barriers. If such lobbying takes place, we should observe both excess employment and a high level of entry barriers. Therefore, our empirical exercise will be structured as follows.

First, we want to check whether we indeed observe that high level of entry barriers faced by the new firms corresponds to presence of excess employment (i.e. non-restructuring) at the old firms. If we observe this correspondence, it means that there is a possibility that lobbying between the managers of old firms and the politician takes place. Having established that a high level of entry barriers corresponds to the presence of excess employment, we will then focus on one of the factors that induces the old firms to create

entry barriers – the threat from new entry. If new entry is very threatening, managers of the old firms will lobby with the politician for the creation of entry barriers, and we should observe a high level of barriers.

Since all dependent variables in our data are ordered qualitative variables, we use ordered probit estimation procedure. We run regressions using observations for the new firms only. Tables 3.2 and 3.3 provide summary of the survey questions used to create all variables.

The following measures of barriers were used as dependent variables (higher values mean more severe burden of regulations):

- *TxReg* - taxes and regulations in general; ordered variable with values {1, 2, 3, 4}
- *AntComp* - anti-competitive practices by government and private enterprises; ordered variable with values {1, 2, 3, 4}
- *bl_reg* - business registration and licensing regulations; ordered variable with values {1, 2, 3, 4}
- *lab_reg* - labor regulations; ordered variable with values {1, 2, 3, 4}
- *env_reg* - environmental regulations; ordered variable with values {1, 2, 3, 4}
- *fir_reg* - fire, safety regulations; ordered variable with values {1, 2, 3, 4}
- *hit_reg* - high taxes; ordered variable with values {1, 2, 3, 4}
- *tadm_reg* - tax administration and regulations; ordered variable with values {1, 2, 3, 4}

The independent variables in the regressions are:

- *EE* - equals to 1 if the new firm is located in Eastern Europe, 0 otherwise;
- *Balt* - equals to 1 if the new firm is located in the Baltic states of the former Soviet Union, 0 otherwise;
- *SizeS* - equals to 1 if firm is *small* size, 0 otherwise;
- *SizeM* - equals to 1 if firm is *medium* size, 0 otherwise (the omitted category is *large size*);

- *sector1*, *sector2*, *sector3*, *sector4* - dummy variable for each sector (the omitted category is sector 5 (construction));
- *Age* - age of the new firm in years in 2000 (the time when the survey was taken);
- *New_F* - fraction of new firms out of all firms in the country-sector cell;
- *compSME_F* - fraction of old firms whose major competitor is domestic private SME out of all old firms in the country-sector cell;
- *comp_hiF* - fraction of old firms who face high competition out of all old firms in the country-sector cell;
- *LgrS_F*, *LgeS_F*, *LiSni_F*, *LndSni_F* - fraction of old firms with excess employment (according to measures *LgrS*, *LgeS*, *LiSni*, *LndSni* described above) out of all old firms in the country-sector cell

We run two sets of regressions. The first one regresses the level of barriers faced by the new firms on the excess employment measures (and the region, size, age, and sector controls). These regressions would establish whether there is a positive correspondence between the level of barriers faced by the new firms and the presence of excess employment at the old firms. The results for these regressions are presented in tables 3.4 through 3.11. The second set of regressions regresses the level of barriers on the measures of competition from new entry (and the region, size, age, and sector controls). These regressions would establish if higher competition from the new entry results in a higher level of entry barriers. The results for these regressions are presented in tables 3.16 through 3.20. If we establish both that higher competition from the new entry results in a higher level of barriers *and* that the higher level of barriers corresponds to the presence of excess employment, then we can take it as an indirect evidence that competition from new entry prompts the old firms to lobby with politicians for the creation of entry barriers in exchange for keeping excess employment.

I will now discuss the expected signs for the explanatory variables in the regressions.

The regional dummies, *EE* and *Balt*, are intended to capture the difference between regions in the general level of barriers and regulations that is due to factors unrelated to economics (cultural traditions, historical developments, legal systems etc.) as well as factors related to economics but not captured by the model. Literature on transition

economies generally concludes that Baltic states resemble countries of Eastern Europe much more than they do other countries of the former Soviet Union, therefore, I do not group Baltic states⁷ with other countries of the former Soviet Union. Our model does not predict a specific sign for these dummy variables, but anecdotal evidence would suggest that the level of entry barriers is lower in the Eastern Europe than in the former Soviet Union.

Likewise, the size dummies and sector dummies are intended to capture differences in the general level of regulations faced by firms due to their size and the nature of their business. For example, large firms might face more labor regulations due to the number of their employees, or firms in agriculture might face more licensing regulations, since they have to deal with the land ownership and handling of food products. Our model does not predict a specific sign for these variables.

Age variable is introduced to capture the fact that some barriers are more of an issue for young firms that are just starting out (such as the business registration and licenses that are required to open a business). Therefore, burden of some barriers might diminish with the age of the firm.

The competition measures New_F , $compSME_F$, and $comp_hiF$, would have a positive sign if higher competition from the new entrants induces the old firms to lobby with politicians for the creation of entry barriers. On the other hand, the level of barriers can also influence these competition measures (even if no lobbying by the old firms takes place): if the entry barriers are high, we would expect fewer new firms to enter the sector, leading to lower values of New_F and $compSME_F$, and lower values of $comp_hiF$ if competition comes at least in part from new entrants. Note that higher level of barriers in the absence of lobbying by the old firms would lead to lower competition, thus implying *negative* coefficients on New_F , $compSME_F$, and $comp_hiF$. But, if the lobbying by the old firms takes place, higher values of New_F , $compSME_F$, and $comp_hiF$ would lead to higher level of entry barriers, implying *positive* coefficients. Thus, because of the endogeneity of our competition measures, we are biased against finding a positive relationship between the level of barriers and competition from new entry. This means that if we do find a positive relationship despite the bias, we can interpret it as evidence supporting the idea that higher competition from the new firms induces the old firms to

⁷Estonia and Lithuania in our sample.

lobby for entry barriers.

If the measures of excess employment, $LgrS_F$, $LgeS_F$, $LiSni_F$, and $LndSni_F$, have positive coefficients, it would provide support to the idea that the old firms lobby for the creation of entry barriers in exchange for excess employment. If the coefficient is negative or not significant, then either the lobbying does not take place or the old firms reward politicians by means other than excess employment.

It is possible, however, that even if the old firms do lobby with politicians for the creation of entry barriers in exchange for excess employment, it would be difficult to find this relationship in our data. If one large existing firm lobbies for the creation of entry barriers in exchange for excess employment, the other existing firms in the same sector would get the benefit of lower new entry without providing excess employment. Since we measure excess employment as a fraction of the old firms in the sector with excess employment, such “free-riding” by some old firms would obscure the relationship between the entry barriers and excess employment, once again biasing us against finding a positive relationship between the level of barriers the new firms face and the presence of excess employment at the old firms.

3.4 Interpretation of Results

3.4.1 Barriers faced by new firms vs. Excess employment at old firms

We first run regressions of the level of barriers faced by the new firms on excess employment at the old firms. For each measure of barriers, we run an ordered probit regression with the regional dummies, size dummies, sector dummies, age, and the measures of excess employment as independent variables. The results for these regressions for each measure of barriers are presented in tables 3.4 through 3.11.

The obvious result is that excess employment measures do not have uniformly positive and statistically significant coefficients in all equations. Only the equations with bl_reg (business registration and licensing regulations) as the dependent variable have positive and significant coefficients for all measures of excess employment (see table 3.6). Thus, it seems that as more old firms in a sector have excess employment, the new firms in that sector are more likely to face high burden of business registration and licensing regulations.

Dependent variable - *TxReg*

<i>ExEmpl</i> =	<i>LgrS_F</i>	<i>LgeS_F</i>	<i>LiSni_F</i>	<i>LndSni_F</i>
<i>Const</i>	1.1086*** [.000]	1.0644*** [.001]	1.1524*** [.000]	1.1982*** [.000]
<i>EE</i>	-0.0994 [.137]	-0.1134* [.086]	-0.1271* [.052]	-0.1301** [.047]
<i>Balt</i>	-0.4149*** [.000]	-0.3801*** [.000]	-0.4053*** [.000]	-0.4166*** [.000]
<i>SizeS</i>	0.6497** [.025]	0.6646** [.022]	0.6861** [.018]	0.6953** [.016]
<i>SizeM</i>	0.6172** [.035]	0.6249** [.033]	0.6362** [.029]	0.6409** [.028]
<i>sector1</i>	-0.0526 [.653]	0.0030 [.979]	0.0161 [.886]	0.0114 [.919]
<i>sector2</i>	-0.1990* [.060]	-0.1578 [.124]	-0.1367 [.178]	-0.1390 [.170]
<i>sector3</i>	-0.2028 [.452]	-0.2133 [.429]	-0.1864 [.489]	-0.2014 [.456]
<i>sector4</i>	-0.1256 [.392]	-0.0743 [.605]	-0.0553 [.701]	-0.0558 [.695]
<i>Age</i>	-0.0034 [.779]	-0.0029 [.814]	-0.0039 [.752]	-0.0045 [.712]
<i>LgrS_F</i>	0.4719** [.037]			
<i>LgeS_F</i>		0.2307 [.150]		
<i>LiSni_F</i>			0.0390 [.922]	
<i>LndSni_F</i>				-0.1508 [.419]
μ_3	0.6886*** [.000]	0.6892*** [.000]	0.6884*** [.000]	0.6887*** [.000]
μ_4	1.5957*** [.000]	1.5953*** [.000]	1.5937*** [.000]	1.5944*** [.000]
Nobs	1577	1577	1577	1577
LR(zero slopes)	33.84*** [.000]	31.50*** [.000]	29.44*** [.001]	30.08*** [.001]

p-values in brackets

* signif. at 10%, ** signif. at 5%, *** signif. at 1%

μ_3 and μ_4 are cutoff parameters in ordered probit regression

Table 3.4: Barriers (*TxReg*) faced by the new firms and excess employment at the old firms (ordered probit regressions).

Dependent variable - *AntComp*

<i>ExEmpl</i> =	<i>LgrS_F</i>	<i>LgeS_F</i>	<i>LiSni_F</i>	<i>LndSni_F</i>
<i>Const</i>	0.9768*** [.002]	0.9736*** [.002]	1.0049*** [.001]	1.0304*** [.001]
<i>EE</i>	-0.2445*** [.000]	-0.2667*** [.000]	-0.2784*** [.000]	-0.2756*** [.000]
<i>Balt</i>	-0.2625** [.015]	-0.2339** [.032]	-0.3047*** [.006]	-0.2472** [.023]
<i>SizeS</i>	-0.0881 [.756]	-0.0629 [.824]	0.0741 [.794]	-0.0497 [.861]
<i>SizeM</i>	-0.1444 [.614]	-0.1313 [.646]	-0.1359 [.635]	-0.1245 [.663]
<i>sector1</i>	-0.2354** [.037]	-0.1723 [.115]	-0.1679 [.121]	-0.1596 [.141]
<i>sector2</i>	-0.2573** [.012]	-0.2026** [.040]	-0.1987** [.042]	-0.1903* [.052]
<i>sector3</i>	-0.0112 [.968]	-0.0096 [.972]	0.0227 [.935]	-0.0061 [.983]
<i>sector4</i>	-0.1232 [.389]	-0.0590 [.673]	-0.0942 [.503]	-0.0471 [.735]
<i>Age</i>	-0.0063 [.604]	-0.0062 [.611]	-0.0050 [.680]	-0.0069 [.574]
<i>LgrS_F</i>	0.5312** [.020]			
<i>LgeS_F</i>		0.1474 [.367]		
<i>LiSni_F</i>			0.9767** [.018]	
<i>LndSni_F</i>				0.0065 [.973]
μ_3	0.6612*** [.000]	0.6601*** [.000]	0.6613*** [.000]	0.6601*** [.000]
μ_4	1.3349*** [.000]	1.3319*** [.000]	1.3352*** [.000]	1.3315*** [.000]
Nobs	1409	1409	1409	1409
LR(zero slopes)	36.99*** [.000]	32.37*** [.000]	37.16*** [.000]	31.55*** [.000]

p-values in brackets

* signif. at 10%, ** signif. at 5%, *** signif. at 1%

μ_3 and μ_4 are cutoff parameters in ordered probit regression

Table 3.5: Barriers (*AntComp*) faced by the new firms and excess employment at the old firms (ordered probit regressions).

Dependent variable - bl_reg

$ExEmpl =$	$LgrS_F$	$LgeS_F$	$LiSni_F$	$LndSni_F$
<i>Const</i>	0.3499 [.282]	0.2834 [.392]	0.4040 [.213]	0.3204 [.330]
<i>EE</i>	-0.2946*** [.000]	-0.3195*** [.000]	-0.3486*** [.000]	-0.3349*** [.000]
<i>Balt</i>	-0.2425** [.023]	-0.1804* [.094]	-0.3233*** [.003]	-0.1837* [.088]
<i>SizeS</i>	-0.1019 [.734]	-0.0711 [.813]	-0.0827 [.782]	-0.0531 [.859]
<i>SizeM</i>	-0.2788 [.357]	-0.2605 [.389]	-0.2636 [.383]	-0.2490 [.411]
<i>sector1</i>	-0.0678 [.552]	0.0223 [.840]	0.0354 [.748]	0.0644 [.560]
<i>sector2</i>	-0.0849 [.412]	-0.0090 [.929]	0.0057 [.954]	0.0308 [.758]
<i>sector3</i>	-0.0630 [.821]	-0.0708 [.798]	-0.0169 [.952]	0.0000 [.999]
<i>sector4</i>	0.3904*** [.006]	0.4715*** [.001]	0.4210*** [.003]	0.5077*** [.000]
<i>Age</i>	-0.0234** [.054]	-0.0224* [.066]	-0.0218* [.074]	-0.0226* [.063]
$LgrS_F$	0.8847*** [.000]			
$LgeS_F$		0.3963** [.013]		
$LiSni_F$			1.7134*** [.000]	
$LndSni_F$				0.4157** [.024]
μ_3	0.5863*** [.000]	0.5848*** [.000]	0.5870*** [.000]	0.5849*** [.000]
μ_4	1.3488*** [.000]	1.3415*** [.000]	1.3485*** [.000]	1.3401*** [.000]
Nobs	1540	1540	1540	1540
LR(zero slopes)	87.30*** [.000]	77.19*** [.000]	89.78*** [.000]	76.09*** [.000]

p-values in brackets

* signif. at 10%, ** signif. at 5%, *** signif. at 1%

μ_3 and μ_4 are cutoff parameters in ordered probit regression

Table 3.6: Higher barriers (bl_reg) faced by the new firms correspond to higher fraction of the old firms with excess employment (ordered probit regressions).

Dependent variable - *lab_reg*

<i>ExEmpl</i> =	<i>LgrS_F</i>	<i>LgeS_F</i>	<i>LiSni_F</i>	<i>LndSni_F</i>
<i>Const</i>	0.0483 [.883]	-0.0185 [.956]	-0.0067 [.984]	-0.1106 [.740]
<i>EE</i>	0.5312*** [.000]	0.5568*** [.000]	0.5526*** [.000]	0.5619*** [.000]
<i>Balt</i>	0.6085*** [.000]	0.5984*** [.000]	0.5729*** [.000]	0.6248*** [.000]
<i>SizeS</i>	0.1162 [.703]	0.0802 [.793]	0.0765 [.802]	0.0688 [.821]
<i>SizeM</i>	0.1206 [.695]	0.1017 [.741]	0.1007 [.743]	0.0971 [.752]
<i>sector1</i>	-0.1984* [.079]	-0.2619** [.016]	-0.2604** [.016]	-0.2436** [.025]
<i>sector2</i>	-0.2870*** [.005]	-0.3461*** [.000]	-0.3454*** [.000]	-0.3358*** [.001]
<i>sector3</i>	-0.0718 [.790]	-0.0874 [.746]	-0.0773 [.774]	-0.0449 [.868]
<i>sector4</i>	0.0189 [.894]	-0.0547 [.694]	-0.0693 [.620]	-0.0472 [.732]
<i>Age</i>	-0.0171 [.161]	-0.0163 [.184]	-0.0159 [.194]	-0.0148 [.225]
<i>LgrS_F</i>	-0.4237* [.053]			
<i>LgeS_F</i>		0.0537 [.736]		
<i>LiSni_F</i>			0.3430 [.383]	
<i>LndSni_F</i>				0.3756** [.044]
μ_3	0.7319*** [.000]	0.7307*** [.000]	0.7307*** [.000]	0.7316*** [.000]
μ_4	1.5634*** [.000]	1.5618*** [.000]	1.5623*** [.000]	1.5654*** [.000]
Nobs	1545	1545	1545	1545
LR(zero slopes)	96.82*** [.000]	93.18*** [.000]	93.83*** [.000]	97.13*** [.000]

p-values in brackets

* signif. at 10%, ** signif. at 5%, *** signif. at 1%

μ_3 and μ_4 are cutoff parameters in ordered probit regression

Table 3.7: Barriers (*lab_reg*) faced by the new firms and excess employment at the old firms (ordered probit regressions).

Dependent variable - *env_reg*

<i>ExEmpl</i> =	<i>LgrS_F</i>	<i>LgeS_F</i>	<i>LiSni_F</i>	<i>LndSni_F</i>
<i>Const</i>	0.1355 [.688]	0.0359 [.917]	0.1193 [.723]	0.0141 [.967]
<i>EE</i>	-0.0147 [.832]	0.0118 [.864]	0.0009 [.988]	0.0067 [.922]
<i>Balt</i>	-0.0616 [.584]	-0.0483 [.671]	-0.0459 [.689]	-0.0400 [.724]
<i>SizeS</i>	0.1146 [.714]	0.0725 [.817]	0.1021 [.744]	0.0735 [.814]
<i>SizeM</i>	0.2002 [.525]	0.1751 [.578]	0.1914 [.543]	0.1764 [.575]
<i>sector1</i>	-0.1799 [.118]	-0.2294** [.040]	-0.2123* [.056]	-0.2045* [.065]
<i>sector2</i>	-0.2730*** [.009]	-0.3204*** [.002]	-0.3017*** [.003]	-0.2978*** [.003]
<i>sector3</i>	-0.4259 [.153]	-0.4572 [.126]	-0.4379 [.142]	-0.4046 [.175]
<i>sector4</i>	0.1646 [.256]	0.1102 [.438]	0.1464 [.306]	0.1309 [.354]
<i>Age</i>	-0.0126 [.325]	-0.0113 [.380]	-0.0129 [.314]	-0.0107 [.403]
<i>LgrS_F</i>	-0.2630 [.246]			
<i>LgeS_F</i>		0.1818 [.275]		
<i>LiSni_F</i>			-0.3750 [.366]	
<i>LndSni_F</i>				0.3186* [.098]
μ_3	0.6569*** [.000]	0.6564*** [.000]	0.6570*** [.000]	0.6565*** [.000]
μ_4	1.3898*** [.000]	1.3904*** [.000]	1.3896*** [.000]	1.3917*** [.000]
Nobs	1463	1463	1463	1463
LR(zero slopes)	28.67*** [.001]	28.51*** [.001]	28.14*** [.002]	30.05*** [.001]

p-values in brackets

* signif. at 10%, ** signif. at 5%, *** signif. at 1%

μ_3 and μ_4 are cutoff parameters in ordered probit regression

Table 3.8: Barriers (*env_reg*) faced by the new firms and excess employment at the old firms (ordered probit regressions).

Dependent variable - *fir_reg*

<i>ExEmpl</i> =	<i>LgrS_F</i>	<i>LgeS_F</i>	<i>LiSni_F</i>	<i>LndSni_F</i>
<i>Const</i>	-0.0184 [.959]	-0.1396 [.701]	-0.0419 [.907]	-0.1821 [.615]
<i>EE</i>	-0.0815 [.225]	-0.0583 [.382]	-0.0759 [.251]	-0.0668 [.313]
<i>Balt</i>	0.0269 [.798]	0.0497 [.640]	-0.0072 [.947]	0.0661 [.534]
<i>SizeS</i>	0.3586 [.289]	0.3084 [.360]	0.3272 [.332]	0.3105 [.356]
<i>SizeM</i>	0.4455 [.190]	0.4140 [.222]	0.4278 [.207]	0.4169 [.218]
<i>sector1</i>	-0.1689 [.136]	-0.2086* [.057]	-0.1920* [.078]	-0.1691 [.122]
<i>sector2</i>	-0.2946*** [.004]	-0.3336*** [.001]	-0.3157*** [.002]	-0.2988*** [.003]
<i>sector3</i>	-0.3482 [.214]	-0.3740 [.183]	-0.3414 [.224]	-0.2916 [.299]
<i>sector4</i>	-0.1126 [.431]	-0.1598 [.253]	-0.1633 [.247]	-0.1284 [.356]
<i>Age</i>	-0.0238* [.054]	-0.0221* [.074]	-0.0226* [.068]	-0.0212* [.086]
<i>LgrS_F</i>	-0.1366 [.534]			
<i>LgeS_F</i>		0.2881* [.076]		
<i>LiSni_F</i>			0.5019 [.204]	
<i>LndSni_F</i>				0.5304*** [.005]
μ_3	0.7678*** [.000]	0.7684*** [.000]	0.7682*** [.000]	0.7697*** [.000]
μ_4	1.5081*** [.000]	1.5099*** [.000]	1.5086*** [.000]	1.5127*** [.000]
Nobs	1552	1552	1552	1552
LR(zero slopes)	25.28*** [.005]	28.03*** [.002]	26.50*** [.003]	32.82*** [.000]

p-values in brackets

* signif. at 10%, ** signif. at 5%, *** signif. at 1%

μ_3 and μ_4 are cutoff parameters in ordered probit regression

Table 3.9: Barriers (*fir_reg*) faced by the new firms and excess employment at the old firms (ordered probit regressions).

Dependent variable - *hit_reg*

<i>ExEmpl</i> =	<i>LgrS_F</i>	<i>LgeS_F</i>	<i>LiSni_F</i>	<i>LndSni_F</i>
<i>Const</i>	1.5333*** [.000]	1.6199*** [.000]	1.5407*** [.000]	1.6309*** [.000]
<i>EE</i>	-0.2619*** [.000]	-0.2756*** [.000]	-0.2638*** [.000]	-0.2711*** [.000]
<i>Balt</i>	-0.4148*** [.000]	-0.4348*** [.000]	-0.4068*** [.000]	-0.4406*** [.000]
<i>SizeS</i>	0.3225 [.301]	0.3451 [.268]	0.3300 [.289]	0.3416 [.272]
<i>SizeM</i>	0.2965 [.346]	0.3074 [.328]	0.2999 [.340]	0.3049 [.332]
<i>sector1</i>	0.0893 [.484]	0.1077 [.385]	0.0969 [.432]	0.0802 [.517]
<i>sector2</i>	-0.0384 [.739]	-0.0186 [.868]	-0.0313 [.779]	-0.0432 [.699]
<i>sector3</i>	-0.2739 [.330]	-0.2541 [.367]	-0.2746 [.329]	-0.3061 [.278]
<i>sector4</i>	-0.2019 [.203]	-0.1769 [.252]	-0.1857 [.234]	-0.2022 [.188]
<i>Age</i>	-0.0081 [.544]	-0.0092 [.493]	-0.0084 [.530]	-0.0096 [.475]
<i>LgrS_F</i>	0.0408 [.862]			
<i>LgeS_F</i>		-0.1972 [.251]		
<i>LiSni_F</i>			-0.1373 [.742]	
<i>LndSni_F</i>				-0.2918 [.146]
μ_3	0.4401*** [.000]	0.4399*** [.000]	0.4403*** [.000]	0.4399*** [.000]
μ_4	1.1700*** [.000]	1.1700*** [.000]	1.1701*** [.000]	1.1704*** [.000]
Nobs	1570	1570	1570	1570
LR(zero slopes)	32.99*** [.000]	34.28*** [.000]	33.07*** [.000]	35.06*** [.000]

p-values in brackets

* signif. at 10%, ** signif. at 5%, *** signif. at 1%

μ_3 and μ_4 are cutoff parameters in ordered probit regression

Table 3.10: Barriers (*hit_reg*) faced by the new firms and excess employment at the old firms (ordered probit regressions).

Dependent variable - *tadm_reg*

<i>ExEmpl</i> =	<i>LgrS_F</i>	<i>LgeS_F</i>	<i>LiSni_F</i>	<i>LndSni_F</i>
<i>Const</i>	0.7711** [.013]	0.7452** [.018]	0.8017*** [.010]	0.8262*** [.009]
<i>EE</i>	-0.1873*** [.004]	-0.1967*** [.002]	-0.2048*** [.001]	-0.2063*** [.001]
<i>Balt</i>	-0.3094*** [.002]	-0.2875*** [.005]	-0.2993*** [.004]	-0.3059*** [.003]
<i>SizeS</i>	0.4177 [.143]	0.4289 [.133]	0.4419 [.121]	0.4455 [.118]
<i>SizeM</i>	0.4700 [.102]	0.4753* [.098]	0.4821* [.094]	0.4838* [.092]
<i>sector1</i>	-0.0816 [.468]	-0.0489 [.653]	-0.0382 [.725]	-0.0414 [.703]
<i>sector2</i>	-0.1766* [.083]	-0.1494 [.132]	-0.1372 [.163]	-0.1392 [.157]
<i>sector3</i>	-0.4650* [.075]	-0.4707* [.072]	-0.4561* [.081]	-0.4641* [.076]
<i>sector4</i>	-0.2194 [.123]	-0.1827 [.188]	-0.1688 [.228]	-0.1703 [.217]
<i>Age</i>	0.0159 [.179]	0.0163 [.168]	0.0156 [.188]	0.0153 [.198]
<i>LgrS_F</i>	0.3055 [.153]			
<i>LgeS_F</i>		0.1402 [.367]		
<i>LiSni_F</i>			-0.0043 [.991]	
<i>LndSni_F</i>				-0.0798 [.660]
μ_3	0.5568*** [.000]	0.5566*** [.000]	0.5567*** [.000]	0.5568*** [.000]
μ_4	1.3782*** [.000]	1.3777*** [.000]	1.3775*** [.000]	1.3776*** [.000]
Nobs	1574	1574	1574	1574
LR(zero slopes)	29.50*** [.001]	28.27*** [.002]	27.46*** [.002]	27.65*** [.002]

p-values in brackets

* signif. at 10%, ** signif. at 5%, *** signif. at 1%

μ_3 and μ_4 are cutoff parameters in ordered probit regression

Table 3.11: Barriers (*tadm_reg*) faced by the new firms and excess employment at the old firms (ordered probit regressions).

Since *bl_reg* is the variable which is closest to measuring purely *entry* barriers, this result is consistent with the old firms lobbying with politicians to restrict new entry through the creation of entry barriers.

Other measures of barriers are positively related to some of the measures of excess employment. Specifically, equations for *TxReg* have positive and significant coefficient on *LgrS_F*, and equations for *AntComp* have positive and significant coefficients on both *LgrS_F* and *LiSni_F*, while coefficients on other excess employment measures are not statistically significant. Equations for *env_reg* have positive and significant coefficient on *LndSni_F*, and equations for *fir_reg* have positive and significant coefficients on both *LgeS_F* and *LndSni_F*. None of the excess employment measures has a statistically significant coefficient in the equations with *hit_reg* and *tadm_reg* as the dependent variables. Therefore, there might be a relationship between excess employment at the old firms and the extent to which taxes and regulations, anti-competitive practices, environmental regulations, and fire/safety regulations create obstacles for the new firms. However, there seems to be no relationship between the level of excess employment and the extent to which tax administration or high taxes are obstacles for the new firms⁸.

The equations with *lab_reg* as dependent variable differ from other equations in this group in several respects. First of all, there is a positive and significant coefficient on *LndSni_F* but negative and significant coefficient on *LgrS_F*. Therefore, we cannot say if excess employment corresponds to higher or lower level of labor regulation barriers. In addition, both *EE* and *Balt* have positive and statistically significant coefficients in regressions with *lab_reg* as a dependent variable, while in all other regressions in this group *EE* and *Balt* have either negative and significant coefficients, or coefficients that are not statistically significant. It would seem that Eastern Europe and Baltic states usually have lower level of regulations, except for labor regulations⁹.

We have established that there is a strong positive relationship between the level

⁸This does not mean, however, that high taxes or the tax administration do not create obstacles for the enterprise development in these countries. To the contrary, in the survey the majority of firms surveyed, both old and new, indicated that high taxes and tax administration present either moderate or major obstacle for the operation of their enterprise.

⁹This may be due to the fact that most labor regulations are not enforced in the former Soviet Union, and thus most firms simply ignore them.

of business licensing regulations faced by the new firms (measured by *bl_reg*) and excess employment at the old firms. Our results also suggest that there might be a positive relationship between the barriers measured by *TxReg*, *AntComp*, *env_reg*, and *fir_reg* and at least some measures of excess employment. There is, however, no relationship between the barriers measured by *hit_reg* or *tadm_reg* and excess employment, and the direction of relationship between the labor regulations and excess employment depends on which measure of excess employment is used.

The coefficients on other variables in the regressions also have intuitive signs, which I will describe using the equation with business registration and licensing regulations as an example (results are presented in table 3.6). Eastern Europe and Baltic states seems to have lower level of regulatory barriers than the former Soviet Union, in line with the anecdotal evidence. Size (number of employees) of the firms does not seem to influence the burden of business licensing regulations, while sector does influence the burden of regulations, with agricultural firms (sector 4) facing higher burden of business registration and licensing regulations, which is not surprising. Also, the burden of business registration and licensing regulations diminishes with the age of the firm, which should be expected.

If we look at the general burden of taxes and regulations (regression with *TxReg* as the dependent variable, presented in table 3.4), we find that, once again, Eastern Europe and Baltic states have lower level of barriers, that small and medium firms are more likely to find taxes and regulations to be a major obstacle, and the burden of taxes and regulations does not seem to change much with the age of the firm.

To summarize, according to our results, it is very likely that the old firms engage in lobbying for the creation of the business registration and licensing regulations. This is not surprising, since business registration and licensing regulations are closest to the purely *entry* barriers. It is less likely but also possible that they lobby for the creation of environmental or fire/safety regulations, as well as the general anti-competitive practices. It is unlikely that the old firms lobby for the creation of labor regulations, for high taxes, or complicated tax administration regulations.

3.4.2 Alternative Specifications and Robustness Checks

We will now perform several robustness checks on our results.

First, our measures of excess employment may simply reflect poor performance by the old firms, even if their poor performance is not related to any lobbying activities. In other words, it is possible that excess employment at old firms is influenced by the level of regulatory barriers in the sector. If the level of regulations and barriers is determined exogenously (not through lobbying by the old firms), then high level of regulations and barriers would adversely affect all firms in the sector, whether new or old. As a result, given the way our variables are constructed, we may see a positive relationship between the level of barriers faced by the new firms and poor performance (excess employment) at the old firms. We can check for this possibility by regressing the level of barriers faced by the *old* firms on the excess employment at the old firms. If the old firms do not engage in lobbying, then high level of barriers faced by the old firms should lead to poor performance by these firms and thus should be positively related to our measures of excess employment at the old firms. However, if the old firms do lobby for the creation of barriers designed to restrict new entry, then such entry barriers should not be damaging to the old firms themselves and we should see either negative or non-significant coefficients on the excess employment measures.

Summary results for these regressions are presented in table 3.12, where we present only the coefficients on the excess employment variables. The regression specification in these equations is identical to that in tables 3.4 through 3.11, except that we use observations for the *old firms only*¹⁰.

Most coefficients in table 3.12 are not statistically significant and some of them are negative and statistically significant. This seems to indicate that there is no strong positive correspondence between the level of barriers faced by the old firms and the presence of excess employment at these firms, i.e. high level of regulatory barriers does not induce poor performance among the old firms. This finding is consistent with the level of regulatory barriers being determined by the old firms lobbying with politicians.

However, some coefficients in table 3.12 corresponding to *LiSni_F* measure of excess employment are positive and significant. This may be due to the fact that our definition of the old firms might include some firms that are actually new, such as joint ventures. As a consistency check, we run the same specification of regressions, but restrict our sample to the old firms that were established in 1991 or earlier, because these are more likely

¹⁰Full regression results are available from the author.

Observations for OLD firms only

Variables	<i>LgrS_F</i>	<i>LgeS_F</i>	<i>LndSni_F</i>	<i>LiSni_F</i>	N of Obs
<i>TxReg</i>	0.3742 [.183]	0.3117* [.097]	-0.5101** [.033]	-0.7249 [.207]	1546
<i>AntComp</i>	-0.0419 [.885]	-0.2149 [.266]	-0.5625** [.026]	0.8324 [.177]	1378
<i>bl_reg</i>	0.3515 [.234]	0.1167 [.554]	0.0593 [.814]	1.1543* [.072]	1476
<i>lab_reg</i>	-0.0844 [.751]	-0.1277 [.500]	0.0191 [.938]	1.3696** [.207]	1533
<i>env_reg</i>	0.1044 [.708]	-0.0832 [.658]	-0.0142 [.953]	1.6975*** [.004]	1493
<i>fir_reg</i>	-0.2357 [.398]	-0.0658 [.727]	0.2211 [.358]	1.6456*** [.004]	1535
<i>hit_reg</i>	0.2041 [.516]	-0.1227 [.550]	-1.1024*** [.000]	-0.8153 [.191]	1543
<i>tadm_reg</i>	0.2309 [.396]	0.0351 [.847]	-0.6324*** [.007]	-0.3481 [.538]	1545

- measures of barriers are dependent variables in the regressions
- using observations for old firms only
- p-values in brackets
- * signif. at 10%, ** signif. at 5%, *** signif. at 1%
- full regression specification can be seen in table 3.4

Table 3.12: Level of barriers faced by the old firms is not systematically positively related to the presence of excess employment at the old firms (ordered probit regressions).

to be the classic incumbent firms and therefore likely to have political influence and be able to lobby for their preferred policies. Summary of the results from this estimation is presented in table 3.13, where we again present only the coefficients on the excess employment variables. In the restricted sample, none of the coefficients are positive and statistically significant.

Thus, our results suggest that it is unlikely that the regulatory barriers are determined exogenously. Instead, our results are consistent with the argument that old firms lobby for the creation of entry barriers, which is why these regulatory barriers do not affect the old firms adversely.

It was mentioned earlier (see page 44) that our measures of excess employment may mistakenly indicate the presence of excess employment at the firms that actually do restructure by engaging in expansion and investment activities, which require additional workers but affect sales only with a long lag. It is also possible that lobbying for the creation of entry barriers leads to the lack of restructuring by the old firms, as measured

Observations for OLD firms established prior to 1992 only

Variables	<i>LgrS_F</i>	<i>LgeS_F</i>	<i>LndSni_F</i>	<i>LiSni_F</i>	N of Obs
<i>TxReg</i>	0.2317 [.630]	0.4491 [.138]	-0.1485 [.708]	-0.1294 [.895]	1546
<i>AntComp</i>	-0.5888 [.243]	-0.7777** [.014]	-0.7234* [.085]	1.4045 [.175]	1378
<i>bl_reg</i>	-0.2031 [.722]	-0.1663 [.613]	-0.0391 [.926]	-0.1179 [.921]	1476
<i>lab_reg</i>	-0.3494 [.466]	-0.0784 [.794]	0.3147 [.415]	1.0997 [.259]	1533
<i>env_reg</i>	-0.3661 [.456]	-0.0515 [.866]	-0.0029 [.994]	1.0895 [.269]	1493
<i>fir_reg</i>	-0.8569* [.090]	0.0746 [.806]	0.3847 [.332]	0.3457 [.730]	1535
<i>hit_reg</i>	0.9058 [.104]	0.4979 [.133]	-0.6403 [.130]	-0.0635 [.953]	1543
<i>tadm_reg</i>	-0.2038 [.671]	-0.0024 [.994]	-0.5128 [.184]	-1.3657 [.167]	1545

- measures of barriers are dependent variables in the regressions
- using observations for old firms established prior to 1992 only
- p-values in brackets
- * signif. at 10%, ** signif. at 5%, *** signif. at 1%
- full regression specification can be seen in table 3.4

Table 3.13: Level of barriers faced by the old firms is not positively related to the presence of excess employment at the old firms (ordered probit regressions, sample of old firms restricted to firms established prior to 1992).

by aspects other than excess employment. Therefore, we want to check that our result – high entry barriers for the new firms corresponding to the lack of restructuring by the old firms – does not depend solely on our definition of the excess employment variables. We do this by using an alternative measure of non-restructuring based on the change in investment:

- *InvD_F* is a fraction of old firms in the country-sector cell whose investment has decreased in real terms over the past three years
- *InvCD_F* is a fraction of old firms in the country-sector cell whose investment has decreased or stayed constant in real terms over the past three years

We then regress the level of barriers faced by the new firms on the region dummies, size dummies, sector dummies, age, and these investment measures, using observations for the new firms only. Results are presented in table 3.14, where we present only the coefficients

Measure lack of restructuring by change in investment

Dependent Variables	<i>InvD_F</i>	<i>InvCD_F</i>	N of Obs
<i>TxReg</i>	0.4719** [.037]	0.2307 [.150]	1577
<i>AntComp</i>	0.5312** [.020]	0.1474 [.367]	1409
<i>bl_reg</i>	0.8847*** [.000]	0.3963** [.013]	1540
<i>lab_reg</i>	-0.4237* [.053]	0.0537 [.736]	1545
<i>env_reg</i>	-0.2630 [.246]	0.1818 [.275]	1463
<i>fir_reg</i>	-0.1366 [.534]	0.2881* [.076]	1552
<i>hit_reg</i>	0.0408 [.862]	-0.1972 [.251]	1570
<i>tadm_reg</i>	0.3055 [.153]	0.1402 [.367]	1574

- measures of barriers are dependent variables in the regressions
- using observations for new firms established in 1989 and later
- p-values in brackets
- * signif. at 10%, ** signif. at 5%, *** signif. at 1%
- full regression specification can be seen in table 3.4

Table 3.14: Barriers faced by the new firms and non-restructuring by the old firms, as measured by the change in investment (ordered probit regressions).

on the investment measures.

The key result is the same as before – the level of business licensing regulations faced by the new firms is positively related to the fraction of the old firms in the same sector that do not restructure. There is also some evidence that taxes and regulations (*TxReg*) and anti-competitive measures (*AntComp*) faced by the new firms are positively related to non-restructuring by the old firms.

As a final robustness check, we allow for country fixed effects, instead of grouping countries into regions. Specifically, we regress the level of barriers faced by the new firms on the country-specific intercept, size dummies, sector dummies, age, and the excess employment measures. Summary of the results is presented in table 3.15, where we present only the coefficients on the excess employment variables.

Our key result still survives – the level of business licensing regulations faced by the new firms is positively related to the fraction of the old firms with excess employment. Thus, our results suggest that old firms do lobby for the creation of business licensing

Observations for NEW firms only, Country Effects

Variables	<i>LgrS_F</i>	<i>LgeS_F</i>	<i>LndSni_F</i>	<i>LiSni_F</i>	N of Obs
<i>TxReg</i>	0.1685 [.576]	0.2239 [.382]	0.0070 [.981]	-0.0253 [.963]	1577
<i>AntComp</i>	-0.0060 [.242]	-0.0362 [.885]	-0.0336 [.908]	0.0285 [.958]	1409
<i>bl_reg</i>	0.9222*** [.002]	0.6183** [.017]	0.6939** [.019]	1.0303* [.053]	1540
<i>lab_reg</i>	-0.2243 [.444]	0.1242 [.621]	0.0774 [.789]	-0.2055 [.695]	1545
<i>env_reg</i>	0.0233 [.939]	0.1899 [.475]	0.3071 [.312]	-0.2636 [.643]	1463
<i>fir_reg</i>	0.2162 [.465]	0.3268 [.208]	0.4335 [.136]	0.2868 [.593]	1552
<i>hit_reg</i>	0.1701 [.591]	0.2442 [.383]	0.1285 [.690]	0.2512 [.655]	1570
<i>tadm_reg</i>	0.2446 [.391]	0.2107 [.390]	-0.0621 [.826]	0.0688 [.893]	1574

- measures of barriers are dependent variables in the regressions
- using observations for new firms established after 1989 only
- p-values in brackets
- * signif. at 10%, ** signif. at 5%, *** signif. at 1%
- regressions include country-specific intercept

Table 3.15: Barriers faced by the new firms and excess employment at the old firms (ordered probit regressions with country-specific intercept).

regulations to prevent entry of the new firms.

3.4.3 Barriers faced by the new firms vs. Threat to the old firms from new entry

In the next step we investigate whether the competitive threat from new entry results in a higher level of barriers for the new firms, which would be consistent with old firms lobbying for the creation of entry barriers. Clearly, this exercise makes sense only for those measures of barriers that were positively related to excess employment in the first group of regressions, namely *bl_reg* and maybe *TxReg*, *AntComp*, *env_reg*, and *fir_reg*. For these measures of barriers, we run an ordered probit regression with the regional dummies, size dummies, sector dummies, age, and the measures of competition from new entry as independent variables. The results for these regressions are presented in tables 3.16 through 3.20. For each measure of barriers we run two specifications: with and without interaction

terms between the competition measures and the regional dummies¹¹.

In all equations at least one measure of competition from new entry has a positive and statistically significant coefficient. Higher fraction of new firms in a sector (higher *New_F*) results in higher barriers for new firms as measured by *TxReg*, *bl_reg*, *env_reg*, and *fir_reg*.

As more old firms in a sector face high competition (*comp_hiF* increases), the new firms in those sectors are more likely to face high barriers as measured by *AntComp*, *bl_reg*, and *fir_reg*. This effect is smaller in Eastern Europe, i.e. in Eastern Europe high competition is less likely to translate into high barriers for the new firms.

As more old firms in a sector face competition primarily from private domestic SMEs (*compSME_F* increases), the new firms in those sectors are more likely to face high barriers as measured by *TxReg*, but less likely to face high barriers as measured by *AntComp* and *bl_reg*. This relationship differs by region: in Eastern Europe high *compSME_F* is less likely to translate into high *TxReg* barriers but more likely to translate into high *AntComp* and *bl_reg* barriers. As mentioned earlier, negative relationship between the level of barriers and *compSME_F* may be due to reverse causality: lower *AntComp* and *bl_reg* barriers lead to more new firms entering, increasing the number of private domestic SMEs, which leads to higher *compSME_F*. However, even with this possibility of reverse causality, in all equations at least one of the competition measures has a positive and statistically significant coefficient.

The effect of competition from the new firms on each measure of barriers can be summarized as follows. For *bl_reg*: as the fraction of new firms in a sector increases and/or as the fraction of old firms facing high competition increases, the new firms in those sectors are more likely to face high barriers in the form of business licensing regulations, but this is less of a problem in Eastern Europe. This finding is consistent with the result previously found in the literature on transition – competition promotes restructuring in Eastern Europe but does not do that in CIS. On the other hand, as the fraction of old firms facing competition primarily from private domestic SMEs increases, the new firms are less likely to face high barriers if they are in the former Soviet Union, but more likely to face high barriers if they are in the Eastern Europe or the Baltic states, which could be

¹¹We run regressions with regional dummy variables instead of country fixed effects in order to be able to introduce these interaction terms.

Dependent variable - *TxReg*

Variables	I	II
<i>Const</i>	0.5763 [.127]	0.4857 [.250]
<i>EE</i>	-0.1715** [.017]	0.4381 [.108]
<i>Balt</i>	-0.4460*** [.000]	-1.0584** [.024]
<i>SizeS</i>	0.6865** [.018]	0.6789** [.019]
<i>SizeM</i>	0.6529** [.026]	0.6489** [.027]
<i>sector1</i>	0.1626 [.182]	0.0774 [.534]
<i>sector2</i>	-0.2007** [.051]	-0.2897*** [.007]
<i>sector3</i>	-0.0162 [.953]	-0.1945 [.486]
<i>sector4</i>	0.0829 [.580]	-0.0520 [.739]
<i>Age</i>	-0.0006 [.960]	0.0012 [.922]
<i>New_F</i>	0.6019*** [.009]	0.3735 [.132]
<i>Comp_hiF</i>	0.0688 [.702]	0.2494 [.467]
<i>EE</i> × <i>Comp_hiF</i>		-0.4410 [.290]
<i>Bl</i> × <i>Comp_hiF</i>		0.7430 [.355]
<i>CompSME_F</i>	0.5815*** [.005]	1.1258*** [.002]
<i>EE</i> × <i>CompSME_F</i>		-0.9234** [.038]
<i>Bl</i> × <i>CompSME_F</i>		0.3622 [.751]
μ_3	0.6939*** [.000]	0.7000*** [.000]
μ_4	1.6059*** [.000]	1.6192*** [.000]
Nobs	1577	1577
LR(zero slopes)	44.79*** [.000]	62.84*** [.000]

p-values in brackets

* signif. at 10%, ** signif. at 5%, *** signif. at 1%

μ_3 and μ_4 are cutoff parameters in ordered probit regression

Table 3.16: Higher barriers (*TxReg*) faced by the new firms correspond to higher competition faced by the old firms (ordered probit regressions).

Dependent variable - *AntComp*

Variables	I	II
<i>Const</i>	0.6427* [.085]	0.8508** [.041]
<i>EE</i>	-0.2618*** [.000]	-0.0732 [.787]
<i>Balt</i>	-0.2862** [.012]	-1.9367*** [.000]
<i>SizeS</i>	-0.0218 [.939]	-0.0555 [.845]
<i>SizeM</i>	-0.0927 [.746]	-0.1014 [.723]
<i>sector1</i>	-0.0949 [.425]	-0.1269 [.296]
<i>sector2</i>	-0.2043** [.040]	-0.1329 [.205]
<i>sector3</i>	0.0876 [.759]	0.0213 [.941]
<i>sector4</i>	-0.0046 [.975]	-0.0719 [.638]
<i>Age</i>	-0.0074 [.546]	-0.0055 [.653]
<i>New_F</i>	0.2010 [.391]	-0.0979 [.694]
<i>Comp_hiF</i>	0.3445* [.060]	0.5449 [.107]
<i>EE × Comp_hiF</i>		-0.6886* [.098]
<i>Bl × Comp_hiF</i>		2.3058*** [.007]
<i>CompSME_F</i>	-0.0352 [.876]	-0.6673* [.063]
<i>EE × CompSME_F</i>		0.9765** [.029]
<i>Bl × CompSME_F</i>		-0.6798 [.590]
μ_3	0.6612*** [.000]	0.6675*** [.000]
μ_4	1.3338*** [.000]	1.3459*** [.000]
Nobs	1409	1409
LR(zero slopes)	35.97*** [.000]	56.99*** [.000]

p-values in brackets

* signif. at 10%, ** signif. at 5%, *** signif. at 1%

μ_3 and μ_4 are cutoff parameters in ordered probit regression

Table 3.17: *AntComp* barriers faced by the new firms and competition from new entry faced by the old firms (ordered probit regressions).

Dependent variable - *bl_reg*

Variables	I	II
<i>Const</i>	-0.1042 [.787]	-0.1402 [.742]
<i>EE</i>	-0.3975*** [.000]	-0.164 [.545]
<i>Balt</i>	-0.3157*** [.005]	-1.2835** [.011]
<i>SizeS</i>	-0.0074 [.980]	-0.0242 [.936]
<i>SizeM</i>	-0.2001 [.510]	-0.2006 [.508]
<i>sector1</i>	0.1845 [.123]	0.2130* [.084]
<i>sector2</i>	-0.0023 [.982]	0.0684 [.521]
<i>sector3</i>	0.1264 [.657]	0.1007 [.729]
<i>sector4</i>	0.6381*** [.000]	0.6171*** [.000]
<i>Age</i>	-0.0222** [.069]	-0.0183 [.136]
<i>New_F</i>	0.6624*** [.004]	0.5463** [.026]
<i>Comp_hiF</i>	0.1762 [.333]	0.5918* [.077]
<i>EE × Comp_hiF</i>		-0.8721** [.035]
<i>Bl × Comp_hiF</i>		0.0473 [.956]
<i>CompSME_F</i>	-0.0274 [.893]	-0.8567** [.012]
<i>EE × CompSME_F</i>		1.2171*** [.005]
<i>Bl × CompSME_F</i>		3.2439*** [.009]
μ_3	0.5861*** [.000]	0.5911*** [.000]
μ_4	1.3408*** [.000]	1.3530*** [.000]
Nobs	1540	1540
LR(zero slopes)	79.82*** [.000]	103.47*** [.000]

p-values in brackets

* signif. at 10%, ** signif. at 5%, *** signif. at 1%

μ_3 and μ_4 are cutoff parameters in ordered probit regression

Table 3.18: Higher barriers (*bl_reg*) faced by the new firms correspond to higher competition from new entry faced by the old firms (ordered probit regressions).

Dependent variable - *env_reg*

Variables	I	II
<i>Const</i>	-0.3175 [.431]	-0.2391 [.591]
<i>EE</i>	-0.0175 [.814]	-0.3391 [.226]
<i>Balt</i>	-0.1128 [.341]	0.1763 [.735]
<i>SizeS</i>	0.1063 [.734]	0.1198 [.702]
<i>SizeM</i>	0.2105 [.505]	0.2214 [.483]
<i>sector1</i>	-0.1204 [.322]	-0.0892 [.473]
<i>sector2</i>	-0.3332*** [.001]	-0.3098*** [.004]
<i>sector3</i>	-0.3086 [.311]	-0.2317 [.452]
<i>sector4</i>	0.2130 [.153]	0.2805* [.071]
<i>Age</i>	-0.0110 [.392]	-0.0116 [.369]
<i>New_F</i>	0.3822 [.109]	0.4960** [.050]
<i>Comp_hiF</i>	0.1725 [.366]	-0.0052 [.988]
<i>EE × Comp_hiF</i>		0.3487 [.419]
<i>Bl × Comp_hiF</i>		-0.4946 [.572]
<i>CompSME_F</i>	0.1746 [.414]	0.0313 [.930]
<i>EE × CompSME_F</i>		0.2260 [.620]
<i>Bl × CompSME_F</i>		0.3269 [.785]
μ_3	0.6574*** [.000]	0.6581*** [.000]
μ_4	1.3932*** [.000]	1.3952*** [.000]
Nobs	1463	1463
LR(zero slopes)	31.77*** [.001]	34.55*** [.005]

p-values in brackets

* signif. at 10%, ** signif. at 5%, *** signif. at 1%

μ_3 and μ_4 are cutoff parameters in ordered probit regression

Table 3.19: *env_reg* barriers faced by the new firms and competition from new entry faced by the old firms (ordered probit regressions).

Dependent variable - *fir_reg*

Variables	I	II
<i>Const</i>	-1.0319** [.014]	-1.1246** [.014]
<i>EE</i>	-0.1415* [.052]	-0.0691 [.802]
<i>Balt</i>	-0.1399 [.209]	0.0486 [.921]
<i>SizeS</i>	0.4033 [.234]	0.3939 [.245]
<i>SizeM</i>	0.5176 [.129]	0.5110 [.134]
<i>sector1</i>	0.0406 [.734]	0.0606 [.619]
<i>sector2</i>	-0.3599*** [.000]	-0.3314*** [.002]
<i>sector3</i>	-0.0666 [.816]	-0.0506 [.862]
<i>sector4</i>	0.0773 [.597]	0.0865 [.571]
<i>Age</i>	-0.0209* [.091]	-0.0208* [.095]
<i>New_F</i>	1.0533*** [.000]	1.0766*** [.000]
<i>Comp_hiF</i>	0.4300** [.020]	0.6358* [.064]
<i>EE × Comp_hiF</i>		-0.2922 [.490]
<i>Bl × Comp_hiF</i>		-0.3897 [.633]
<i>CompSME_F</i>	-0.0217 [.918]	-0.2997 [.398]
<i>EE × CompSME_F</i>		0.4308 [.334]
<i>Bl × CompSME_F</i>		0.3466 [.760]
μ_3	0.7762*** [.000]	0.7765*** [.000]
μ_4	1.5262*** [.000]	1.5267*** [.000]
Nobs	1552	1552
LR(zero slopes)	48.61*** [.000]	49.69*** [.000]

p-values in brackets

* signif. at 10%, ** signif. at 5%, *** signif. at 1%

μ_3 and μ_4 are cutoff parameters in ordered probit regression

Table 3.20: *fir_reg* barriers faced by the new firms and competition from new entry faced by the old firms (ordered probit regressions).

due to reverse causality as explained above. Another possible explanation of this result comes from the fact that the variable *bl_reg* measures mainly the *entry* barriers, i.e. the regulations designed to prevent the entry of new businesses. If a new firm has already entered (and has already gone through the business registration and licensing) and is strong enough to be a major competitor, creating business registration and licensing regulations may not be helpful for the old firms at this point. The old firms may choose to lobby for the creation of some other type of regulations that can drive out an already existing new firm. Thus, an increase in *compSME_F* may not lead to a higher level of business registration and licensing regulations, but may lead to an increased level of other types of regulations.

For *TxReg*: as the fraction of the new firms in a sector increases and/or as the fraction of the old firms facing competition primarily from private domestic SMEs increases, the new firms in those sectors are more likely to face high barriers in the form of taxes and regulations, but this is less of a problem in Eastern Europe.

For *AntComp*: as the fraction of old firms facing high competition in a sector increases, the new firms in that sector are more likely to face anti-competitive measures. This is less of a problem in Eastern Europe, but more of a problem in Baltic states. In addition, as the fraction of old firms facing competition primarily from domestic private SMEs increases, the new firms in that sector are less likely to face anti-competitive measures, except in Eastern Europe.

For *env_reg*: as the fraction of new firms in a sector increases, the new firms in the sector are more likely to face high barriers in the form of environmental regulations. High competition and competition from private domestic SMEs seems to have no effect.

For *fir_reg*: as the fraction of new firms in a sector increases and/or as the fraction of old firms facing high competition increases, the new firms in those sectors are more likely to face high barriers in the form of fire/safety regulations.

3.5 Conclusions

Overall, our empirical results show that a higher threat from new entry leads to a higher level of barriers faced by the new firms (as measured by *TxReg*, *AntComp*, *bl_reg*, *env_reg*, and *fir_reg*), and simultaneously, higher levels of barriers are positively related to at least

one measure of excess employment at the old firms. The effect is especially clear for business licensing regulations measure, which is positively related to all four measures of excess employment. Our findings are consistent with the idea that a higher threat from new entry creates incentives for the old firms to lobby with politicians for the creation of entry barriers in exchange for excess employment, thus resulting simultaneously in the high level of barriers faced by the new firms and the presence of excess employment at the old firms. Our results also suggest that the effect of the threat from new entry on the level of barriers may vary by region, possibly due to the institutional and cultural differences that make it more difficult for old firms to lobby with politicians in some countries. These results are consistent with the empirical findings previously established in the literature on privatization and restructuring in transition.

Conclusions

In this paper we have argued that allowing creation and entry of the new private businesses at the start of transition reforms had an important impact on the incentives of the existing firms to restructure. Privatization coinciding with opening up of new entry may create incentives for the managers of the existing (state-owned or privatized) firms to lobby with politicians for the restrictions on new entry resulting in slow restructuring of the old firms, high level of administrative barriers to entry, and slow development of the new private sector. This does not mean, however, that the new entry should not be allowed. On the contrary, those new firms that enter despite the high entry barriers are more efficient than old firms and their entry increases overall efficiency of the economy. This model calls our attention to the fact that simply allowing the entry of new businesses will not necessarily result in substantial new entry and higher competition for the old firms. In order to ensure that new entry will create competition and promote restructuring at the old firms, policymakers should pay attention to the complimentary institutional reforms designed to prevent collusion between politicians and managers of the existing old firms.

Certain reforms can be undertaken to reduce the probability of managers of the old firms successfully lobbying with politicians. Such lobbying is less likely to succeed if the excess labor is costly for the old firms (e.g. barter payments are eliminated), if the barriers are not effective in preventing new entry or the tax collections are very sensitive to the level of barriers (e.g. because of unofficial economy), if the politician is more accountable to the treasury for tax collections (e.g. if local budgets are financed entirely through local tax collections), or if the politician's benefits from excess employment are low (e.g. because of more transparent election process and less corruption).

The empirical evidence, based on data from the World Business Environment Survey by World Bank, is consistent with the idea that competitive threat from the new entrants may lead the old firms to lobby for the creation of entry barriers. Specifically, we see that the new firms in sectors with a large proportion of old firms facing high competition or competition primarily from the private domestic SMEs, or in sectors with a large number of new firms relative to the old firms are more likely to encounter high administrative and regulatory barriers. Since higher level of barriers faced by the new firms corresponds to the presence of excess employment at the old firms, especially for the business registration and licensing barriers, our findings are consistent with the model where the old firms provide

excess employment in exchange for the desired level of barriers set by the politician.

Our results also suggest that the effect of the threat from new entry on the level of barriers may vary by region, possibly due to the institutional and cultural differences that make it more difficult for old firms to lobby with politicians in certain countries.

Appendix A

Indifference Curves for the Case of $\alpha < 1$.

A.1 Objective Functions and General Setup

In chapter 2 we assumed that $\alpha = 1$, that is, old firms are entirely private. $\alpha = 1$ also implies that the Treasury does not receive any revenue from the old firms (does not receive any tax collections). This is unrealistic and thus we would like to relax this assumption on the value of α .

Here I will derive the indifference curves for the manager and the politician for the case when α is allowed to vary between 0 and 1 and the politician derives benefits from excess employment only. Recall that in this case utility functions of the manager and the politician are¹:

$$U_m = \alpha(\pi(R) - wL) \quad (\text{A.1})$$

$$U_p = B(L) + m\{(1 - \alpha)(\pi(R) - wL) + N(R)\} \quad (\text{A.2})$$

Indifference curves have the following slopes (see equations (2.6) and (2.8)).

The manager's indifference curve:

$$\frac{dR}{dL} = \frac{w}{\pi'(R)} > 0 \quad (\text{A.3})$$

The politician's indifference curve:

$$\frac{dR}{dL} = -\frac{B'(L) - mw(1 - \alpha)}{m[(1 - \alpha)\pi'(R) + N'(R)]} \quad (\text{A.4})$$

Note that the slope of the manager's indifference curve does not depend on α . Thus, as α changes between 0 and 1, manager's preferred combination of entry barriers R and excess employment L does not change. This also means that the manager's threat point stays at $L^* = 0$ (see page 17 for derivation of the threat points for the manager and the politician). Of course, even though the slope of the manager's indifference curve is not affected by changes in α , the value of manager's utility will be affected (e.g. as $\alpha \uparrow$, if R and L stay unchanged, U_m will increase). The situation is different for the politician. Changes in α would lead to changes in the value of U_p (if R and L are kept constant) and to changes in the slope of politician's indifference curve.

¹these are equations (2.1) and (2.2) from chapter 2

Let's see how the politician's indifference curve looks like for $\alpha \in (0, 1)$. Recall that we made certain assumptions on the functional forms of functions $B(\cdot)$, $\pi(\cdot)$, and $N(\cdot)$ (see page 14 and figures 2.1, 2.2, and 2.3). Under these assumptions ($B'(\cdot) > 0$, $\pi'(\cdot) > 0$, and $N'(\cdot) < 0$) we cannot put a definite sign on the slope of the politician's indifference curve in equation (A.4).

However, using our assumptions on functional forms we can make the following arguments. For very low values of L , $B'(L)$ is positive and very large, therefore for very low values of L we will have $B'(L) > mw(1-\alpha)$ and thus the numerator in (A.4) is positive for low values of L . As $L \uparrow$, $B'(L) \downarrow$ and eventually we will get $B'(L) < mw(1-\alpha)$. We can summarize this argument in the following proposition.

Proposition 1 *For any given values of m , w , and α , such that $mw(1-\alpha) \neq 0$, we can find such value of $L > 0$, denote it by L^{**} , that $B'(L^{**}) = mw(1-\alpha)$ and*

$$\forall L < L^{**} \text{ we have } B'(L) > mw(1-\alpha)$$

$$\forall L > L^{**} \text{ we have } B'(L) < mw(1-\alpha)$$

Note that, if the values of m , w , and α are such that $mw(1-\alpha) = 0$, then $B'(L) > mw(1-\alpha)$ for all values of L , that is, $L^{**} = \infty$ (recall our assumption that $B'(L) \rightarrow 0$ as $L \rightarrow \infty$). This was the case when we assumed the value of $\alpha = 1$.

Similarly, for very low levels of R , $\pi'(R)$ is large and positive, while $N'(R)$ is small in absolute value and negative. Thus, for low levels of R we have $|(1-\alpha)\pi'(R)| > |N'(R)|$ and the denominator in equation (A.4) is positive (see also figure 2.4). As $R \uparrow$, $\pi'(R) \downarrow$ and $|N'(R)| \uparrow$, and thus eventually we will have $|(1-\alpha)\pi'(R)| < |N'(R)|$ and the denominator of (A.4) will be negative. We can summarize this argument in the following proposition.

Proposition 2 *For any given value of $\alpha \in (0, 1)$, we can find such value of $R > 0$, denote it by R^{**} , that $(1-\alpha)\pi'(R^{**}) = -N'(R^{**})$ and*

$$\forall R < R^{**} \text{ we have } (1-\alpha)\pi'(R) + N'(R) > 0$$

$$\forall R > R^{**} \text{ we have } (1-\alpha)\pi'(R) + N'(R) < 0$$

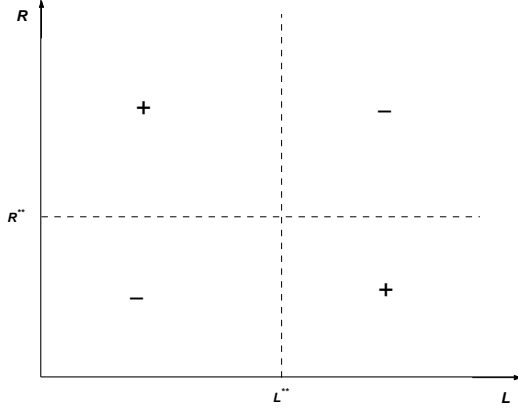


Figure A.1: Slope of the politician's indifference curve for case $\alpha < 1$.

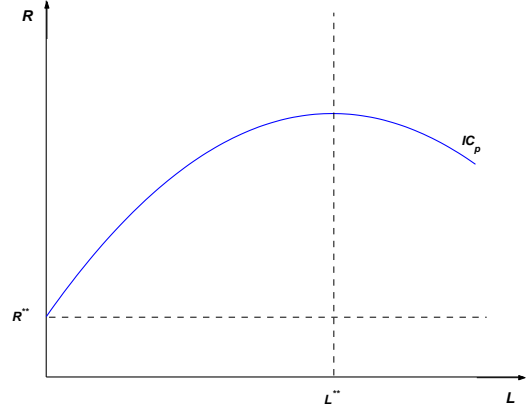


Figure A.2: Politician's indifference curve for case $\alpha < 1$.

Note that at $R = R^{**}$ the denominator of (A.4) is equal to zero and thus $\frac{dR}{dL}$ is undefined at that point. Also, notice that the condition that defines R^{**} in proposition 2 is identical to the first order condition in the politician's optimization problem (equation (2.4)), where politician chooses R for a given level of L . Thus, our R^{**} is identical to R^* , which is the politician's threat point for $\alpha < 1$.

Combining signs for the numerator and the denominator of the expression in (A.4) (and not forgetting the overall minus sign), we can determine the slope of the politician's indifference curve depending on the values of R and L (see figure A.1).

Further, note that R^{**} is the threat point of the politician. That is, for any level of excess employment L chosen by the manager, the politician would choose the level of barriers R^{**} in the absence of bargaining. If bargaining does occur the politician may choose a different level of barriers. However, manager of the old firm will *never* engage in bargaining trying to set a lower level of entry barriers (given the utility function of the manager). Thus, the level of entry barriers will never be below R^{**} . Therefore, the relevant space for the politician's indifference curve is values of $R > R^{**}$. Hence, IC_p should have the shape depicted on figure A.2 (here we show the indifference curve that goes through the point corresponding to the uncooperative equilibrium of $R = R^{**}$ and $L = 0$).

This shape can also be derived mathematically. Along the politician's indifference

curve

$$\begin{aligned}
\frac{d^2 R}{dL^2} &= \frac{d}{dL} \left(-\frac{B''(L) - mw(1 - \alpha)}{m(1 - \alpha)\pi'(R) + mN'(R)} \right) = & (A.5) \\
&= \frac{-1}{\{m[(1 - \alpha)\pi'(R) + N'(R)]\}^3} \times \\
&\times \{B''(L)[m(1 - \alpha)\pi'(R) + mN'(R)]^2 + \\
&\quad + [B'(L) - mw(1 - \alpha)]^2 [(1 - \alpha)\pi''(R) + N''(R)]\}
\end{aligned}$$

The long term in curly braces is negative, given our assumptions about functions $B(\cdot)$, $\pi(\cdot)$, and $N(\cdot)$. Thus, sign of $\frac{d^2 R}{dL^2} = \text{sign of } [(1 - \alpha)\pi'(R) + N'(R)]$. For $R > R^{**}$ we have $(1 - \alpha)\pi'(R) + N'(R) < 0$ (see proposition 2) and thus, along the politician's indifference curve,

$$\frac{d^2 R}{dL^2} < 0 \text{ for } R > R^{**},$$

which corresponds to the shape of IC_p depicted in the figure A.2. We can also show the indifference curves for politician and manager together, which is done on figure A.3. Here, again, I have shown the indifference curves going through the point corresponding to the uncooperative equilibrium of $R = R^{**}$ and $L = 0$.

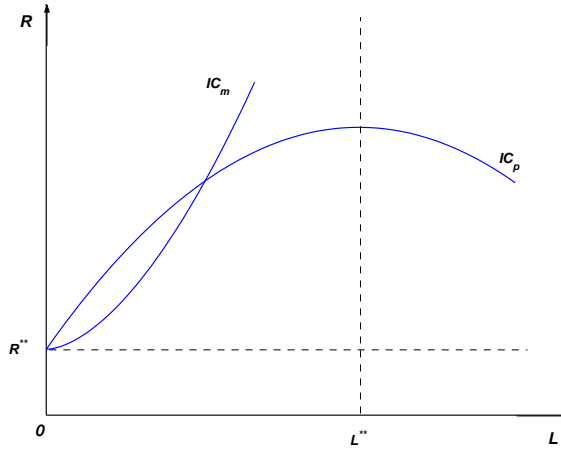


Figure A.3: Indifference curves of the manager and the politician for the case of $\alpha < 1$.

A.2 Effect of $\alpha \uparrow$ on IC_m and IC_p

As mentioned above, changes in the value of α do not affect the manager's indifference curve, they only affect the manager's level of utility, U_m .

A change in α affects the politician's indifference curve in three ways:

- it affects the slope of the indifference curve, $\frac{dR}{dL}$ given in equation (A.4), for any given value of R and L
- it affects the value of L^{**} , as defined in proposition 1
- it affects the value of R^{**} , as defined in proposition 2

We consider these effects in turn.

1. *Slope* – as α increases, if R and L are kept constant, $\frac{dR}{dL}$ will also increase. Thus the slope of IC_p becomes steeper on the upward sloping part ($L < L^{**}$), may change from downward to upward sloping for some values of L around L^{**} , and becomes flatter (less negative) on the downward sloping part.
2. *Value of L^{**}* – L^{**} is defined by $B'(L^{**}) = mw(1 - \alpha)$ (see proposition 1). Thus, as α increases, L^{**} increases as well.
3. *Value of R^{**}* – R^{**} is defined by $(1 - \alpha)\pi'(R^{**}) + N'(R^{**}) = 0$ (see proposition 2). Thus, as α increases, R^{**} will decrease.

This means that when α increases, new IC_p will cross the old IC_p once and only once. However, it is impossible to tell (without knowing the functional form for the indifference curve) where they would cross: on the upward sloping part before old L^{**} , between old L^{**} and new L^{**} , or on the downward sloping part after new L^{**} . Two of these cases are depicted on figures A.4 and A.5.

A.3 Effect of $\alpha \uparrow$ on equilibrium values on R and L

Now that we know how change in α affects the indifference curves of the manager and the politician, we can analyze the effects of an increase in α on the equilibrium level of entry barriers and excess employment.

Because the value of α affects the politician's threat point R^{**} , an increase in α would lead to a lower equilibrium level of barriers even in the absence of bargaining. That is, as the manager's share of the firm's profit increases (firm moves closer to being

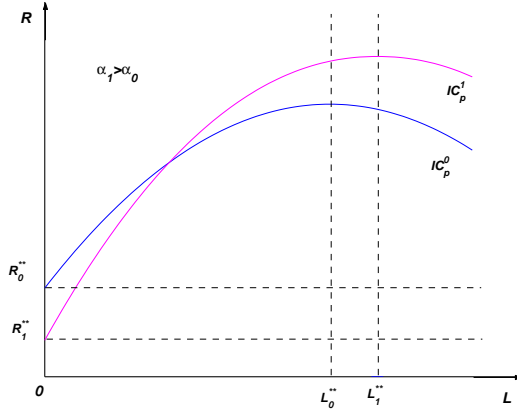


Figure A.4: Shift in the politician's indifference curve when $\alpha \uparrow$; $\alpha_1 > \alpha_0$.

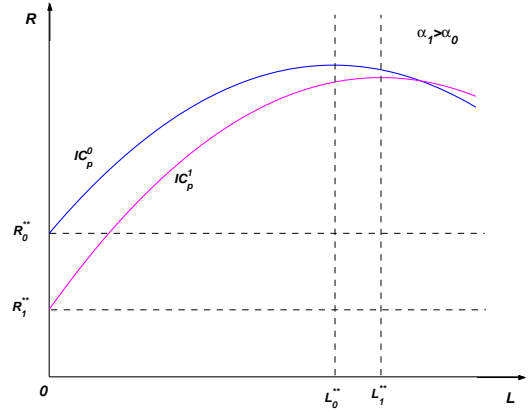


Figure A.5: Shift in the politician's indifference curve when $\alpha \uparrow$; $\alpha_1 > \alpha_0$ (different case).

completely private), in the absence of bargaining the politician will choose lower level of entry barriers.

If bargaining does take place, then with an increase in α IC_p becomes steeper, while slope of IC_m does not change. However, since R^{**} decreases, the point of the uncooperative equilibrium ($R = R^{**}$ and $L = 0$) also shifts down, forcing IC_m to shift down without changing its slope. As a result, if the politician has higher bargaining power and the equilibrium allocation is at the point on the contract curve close to IC_m , an increase in α is likely to produce a (large) increase in excess employment. The effect on the equilibrium level of entry barriers is ambiguous.

Appendix B

Characterization of the Contract Curve.

Here I will consider the contract curve for the case when the politician derives benefits from excess employment only. The objective is to derive the shape of the contract curve (its slope) and to characterize how the contract curve shifts when the indifference curves of the manager and/or politician shift due to change in the model parameters.

Along the contract curve we have slope of $IC_m = \text{slope of } IC_p$. Using the expressions for slopes of the indifference curves (see equations (2.6) and (2.8)), we get:

$$\frac{w}{\pi'(R)} = -\frac{B'(L) - mw(1 - \alpha)}{m[(1 - \alpha)\pi'(R) + N'(R)]} \quad (\text{B.1})$$

Multiplying through, we get:

$$wm(1 - \alpha)\pi'(R) + wmN'(R) = -\pi'(R)B'(L) + wm(1 - \alpha)\pi'(R) \quad (\text{B.2})$$

Note that the terms containing α cancel out and the resulting expression, which implicitly defines R as a function of L along the contract curve, is:

$$wm(-N'(R)) = \pi'(R)B'(L) \quad (\text{B.3})$$

Totally differentiating expression (B.3) we obtain the expression for the slope of the contract curve:

$$\left. \frac{dR}{dL} \right|_{cc} = \frac{B''(L)\pi'(R)}{wm(-N''(R)) - B'(L)\pi''(R)} \quad (\text{B.4})$$

Given our assumptions on the shape of $B(\cdot)$, $\pi(\cdot)$, and $N(\cdot)$ functions, we can show that

$$\left. \frac{dR}{dL} \right|_{cc} < 0.$$

Thus, the contract curve is downward sloping, which should not be a surprise.

Can we find $\left. \frac{d^2R}{dL^2} \right|_{cc}$? The expression for the second derivative along the contract curve is:

$$\left. \frac{dR}{dL} \right|_{cc} = \frac{1}{[wm(-N''(R)) - B'(L)\pi''(R)]^2} \times \quad (\text{B.5})$$

$$\times \left\{ \left[B'''(L)\pi'(R) + B''(L)\pi''(R) \frac{dR}{dL} \right] [wm(-N''(R)) - B'(L)\pi''(R)] - (\text{B.6}) \right.$$

$$\left. - B''(L)\pi'(R) \left[wm(-N'''(R)) \frac{dR}{dL} - B''(L)\pi''(R) - B'(L)\pi'''(R) \frac{dR}{dL} \right] \right\} (\text{B.7})$$

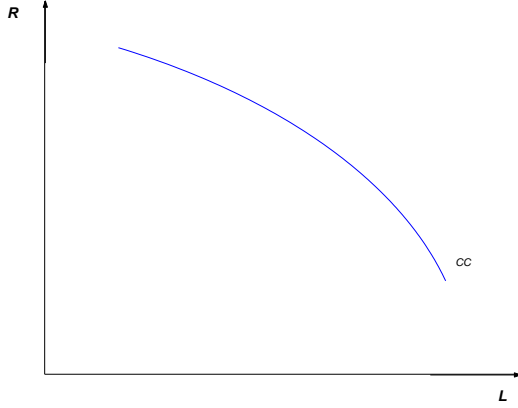


Figure B.1: Contract curve assuming $B'''(L) < 0$, $\pi'''(R) > 0$, $-N'''(L) < 0$.

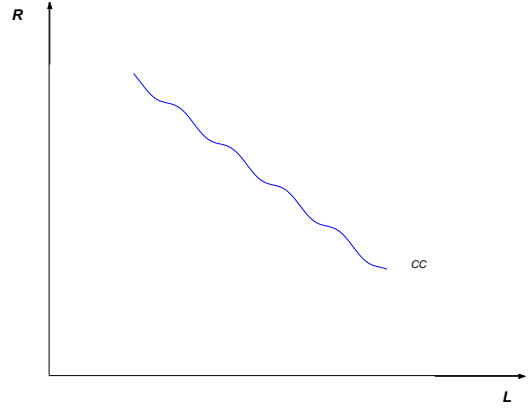


Figure B.2: Contract curve in the general case.

In order to be able to evaluate the sign of $\left. \frac{d^2 R}{dL^2} \right|_{cc}$ we need to know the signs of $B'''(\cdot)$, $\pi'''(\cdot)$, and $N'''(\cdot)$. I am reluctant to make any assumptions about the signs of third derivatives, especially because I am not sure what the interpretation of the third derivative is in this case. I can only point out that the sign of $\left. \frac{d^2 R}{dL^2} \right|_{cc}$ will be unambiguous only if we assume the following:

$$\begin{aligned} B'''(L) &< 0 \\ \pi'''(R) &> 0 \\ -N'''(L) &< 0 \end{aligned}$$

Under these assumptions $\left. \frac{d^2 R}{dL^2} \right|_{cc} < 0$ and the contract curve looks like the one pictured on figure B.1.

If we do not assume the above signs for the third derivatives, then the sign of $\left. \frac{d^2 R}{dL^2} \right|_{cc}$ is ambiguous and the contract curve does not have a uniform second derivative and probably looks like the one pictured on figure B.2, i.e. it is downward sloping, but the second derivative changes its value.

We now consider the shifts in the contract curve in response to changes in the model parameters¹.

¹When depicting shift of the contract curve on the figures, I show contract curve as a downward sloping straight line for simplicity.

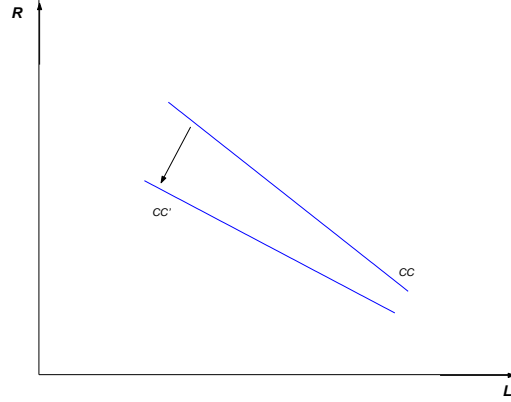


Figure B.3: Shift in the contract curve when $w \uparrow$.

1. $w \uparrow - \left| \frac{dR}{dL} \right| \downarrow$, contract curve shifts down and becomes flatter (figure B.3)
2. $\pi'(R) \uparrow$ – assuming that $\pi''(\cdot)$ does not change, $\left| \frac{dR}{dL} \right| \uparrow$, contract curves shifts up and becomes steeper (figure B.4)
3. $B'(L) \uparrow$ – assuming that $B''(\cdot)$ does not change, $\left| \frac{dR}{dL} \right| \downarrow$, contract curves shifts up and becomes flatter (figure B.5)
4. $|N'(R)| \uparrow$ – assuming that $N''(\cdot)$ does not change, $\left| \frac{dR}{dL} \right|$ does not change, contract curves shifts down and does not change its slope unless $N''(\cdot)$ changes (figure B.6)
5. $m \uparrow - \left| \frac{dR}{dL} \right| \downarrow$, contract curves shifts down and becomes flatter (figure B.7)
6. $\alpha \uparrow$ – since the expression that implicitly defines the contract curve (equation (B.3)) does not depend on α , changes in α do not affect either the slope or the position of the contract curve.

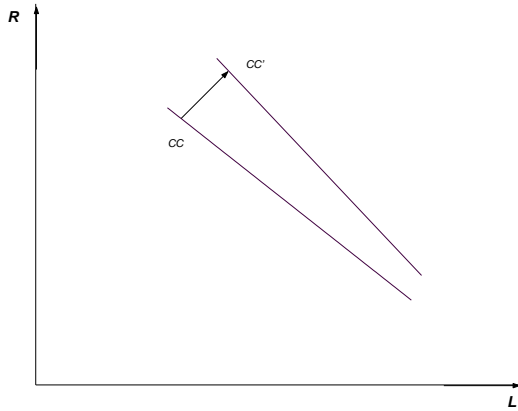


Figure B.4: Shift in the contract curve when $\pi'(\cdot) \uparrow$ (assuming $\pi''(\cdot)$ does not change).

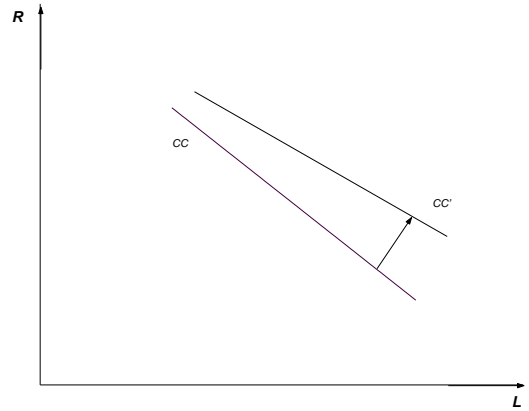


Figure B.5: Shift in the contract curve when $B'(\cdot) \uparrow$ (assuming $B''(\cdot)$ does not change).

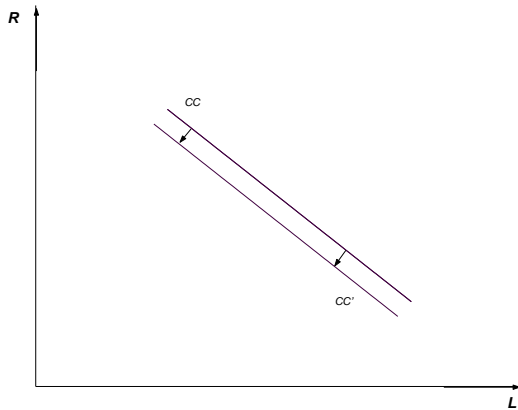


Figure B.6: Shift in the contract curve when $|N'(\cdot)| \uparrow$ (assuming $N''(\cdot)$ does not change).

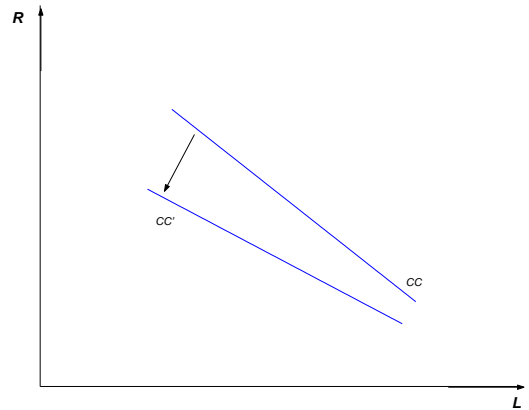


Figure B.7: Shift in the contract curve when $m \uparrow$.

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