DEVELOPMENT OF SMALL AND MEDIUM ENTERPRISES IN UKRAINE UNDER REGULATORY CONSTRAINTS

by

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A thesis submitted in partial fulfilment
of the requirements for the degree of

Master of Arts in Economics

Economics Education and Research
Consortium

2002

Approved by _____
Chairperson of Supervisory Committee

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Program Authorized
to Offer Degree_____

Date _____

Economics Education and Research

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Abstract

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The importance of small and medium enterprises (SMEs) in the process of transition from a centrally planed to a market economy is now widely recognized in the literature. This paper investigates the state of small and medium enterprises in Ukraine. The goal of the analysis is to determine the factors that foster and factors that hinder further development of the sector of small and medium enterprises in Ukraine. The hypothesis tested is whether enterprise managers' decisions to invest into new equipment and/or to use barter transactions differ significantly between SMEs and large enterprises, with respect to the constraints they face. We find that among the basic factors that determine economic performance of firms in Ukraine is ownership structure, level of product market competition, and various administrative and financial constraints. We also hypothesise that increase in administrative intrusions do not foster development of enterprises. These hypotheses are tested on a sample of 3198 enterprises developed by Kyiv International Institute of Sociology that gives statistically valid picture of SMEs in Ukraine in 1999. While financial stringency is obvious at case of SMEs, the regulatory environment was found not to decrease the probability of making investments. Explanations of the obtained results as well as some policy implications for improvement of business environment for SMEs in Ukraine are proposed.

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ACKNOWLEDGMENTS

The author wishes to express sincere appreciation to Professor Ghaffar Mughal for his thorough guidance in the preparation of this paper. In addition, special thanks to Professor Stefan Lutz for his valuable comments on the earlier drafts of this paper. Thanks also to the classmates for their valuable input. I thank my friend Serhiy Kasianenko, EERC student, for inspiring comments and suggestions. No one but the author is responsible for the mistakes in this paper.

GLOSSARY

Barter – practice of exchanging goods without using money as a medium to exchange.

Insider ownership – if the ownership of enterprise is concentrated in the workers of this enterprise

Hard budget constraints – the conditions under which the enterprise has no outside support from the state in form of subsidies or tax exemptions, but need to employ only available resources.

Regulative intrusion – actions of the regulating authorities, that interfere production process of enterprise.

Restructuring – a process to maintain profitability in the face of a changing economic environment, technological progress, and competition from other firms

SMEs - Small and medium-size enterprises are a very heterogeneous group which includes a wide variety of firms – village handicraft makers, small machine shops, restaurants, and computer software firms – that possess a wide range of sophistication and skills, and operate in very different markets and social environments. The statistical definition of SMEs varies by country, and is usually based on the number of employees or the value of assets (Hallberg, 1999).

Soft budget constraints – various kinds of support of enterprises from the state via subsidies, tax exemptions, tax holidays, writing off debts.

Transaction costs - costs of search and negotiation with business partners, contract construction and enforcement.

Chapter 1

INTRODUCTION

The importance of small and medium enterprises (SMEs) in the process of transition from a centrally planed to a market economy is now widely recognized in the literature. It lies in its quick adjustment to the needs of the market. With the end of the central planning system, SMEs have become the major driving force for the development of the economy in many transition countries. In Czech Republic, for example, manufacturing firms with fewer than 25 employees were almost non-existent in 1989 (0.8% of all firms accounting for 0.01% of total manufacturing output). By 1995, such firms constituted 89.9% of all manufacturing firms accounting for 10.6% of the total manufacturing output (Pissarides, Singer, Svejnar 2000). Gomulka (1994) estimated that the output in Poland in 1992 and 1994 was growing due to booming SME sector. Winiecki (2001) argues that newly created private firms decreased the time-span of transformational recession and increased the potential of subsequent recovery. As noted by Pissarides (1998), SMEs are the most dynamic firms and they are the most likely to take any available niche where a comparative advantage exists, however constrained they are by economic, institutional and legal factors. These obstacles vary from one that are linked to production, like limited access to capital and credits, to those that shape the overall business environment, like excessive regulation, weak contract enforcement, inadequate infrastructure, etc.

The influence of specific constraining mechanisms on a firm depends on a variety of factors, factors that are particular to the firm and its management, and/or factors, that characterize environment the firm operates in. A leading crusader for the small enterprises, Hernando de Soto argues that the inability to produce capital out of the assets that the poor part of the population possesses is determined mainly by the inadequate system of property rights, excessive

regulation, and high cost of getting out of the shadow (De Soto 2000). Legalizing of these small enterprises might stimulate growth of the economy and increase the welfare of the society as a whole[1]. Ukraine is a case where the entrepreneurial talent by itself is not enough for fast evolution of small and medium-sized enterprises. The shadow economy in Ukraine has remained fairly stable over the years. It constitutes 60% of official GDP (Dzvinka 2002). Thus, we need to find out the obstacles that impede development of the SME sector in Ukraine. This, however, cannot be done without an identification of managers' objectives.

The objectives of managers usually vary from profit or output maximization, to the minimization of costs or increased non-wage benefits. The onset of transition poses some unique problems, such as high information costs and uncertain legal environment. This, in turn, requires the firm to adjust quickly to a changing environment. Thus, in order to take its place in a highly competitive market, the firm should adjust its factors of production and technological processes accordingly. Therefore, investments into new premises, vehicles, equipment, land are considered here as inevitable part of the enterprise that want to expand, adjust to the changing demand, and take its position on the market. On the other extreme, enterprise managers may use non-monetary transaction in sales of products and purchase of inputs. All these actions of enterprise managers depend on the financial, legal, and contract-enforcing constraints, as well as on the market environment. For example, high level of regulation or taxation forces entrepreneurs to pursue activities that might be considered as unofficial, thus, social welfare is decreased in the struggle of enterprises with governmental bodies. Identification of the constraints that enterprises face will help us assess the overall business environment in Ukraine and suggest ways to strengthen the SMEs sector of the economy. Building of an appropriate legal system in Ukraine is expected to create conducive conditions for steady development of the enterprise sector due to changed incentives of the entrepreneurs.

[1] De Soto (2000) calculated that in Peru 53 percent of city dwellers and 81 percent of people in countryside live in extralegal dwellings. He calculated that the total value of the real estate held but not legally owned by poor of the Third World and former communist nations is at least $9,3 trillion.

The present study test the hypothesis that firms significantly alter their behaviour under regulatory constrains. These changes include decreased investments and increased proportion of non-monetary transactions in exchange. Since the effect of regulatory constraints may vary with firm size, we distinguish between SMEs and large enterprises. This hypothesis is tested on a sample of 3198 enterprises provided by Kyiv International Institute of Sociology that gives statistically valid picture of enterprises in Ukraine in 1999.

The structure of the rest of the paper is as follows. Next chapter describes the conditions in which small and medium enterprises in Ukraine work. Chapter 3 is concerned with explanation of factors that affect performance of enterprises. We review literature that is relevant to the topic. The empirical model developed to test our hypothesis, the data an variables used, and the estimation techniques applied are presented in chapter 4. Conclusions and policy implications from the results are given in the concluding chapter.

Chapter 2.

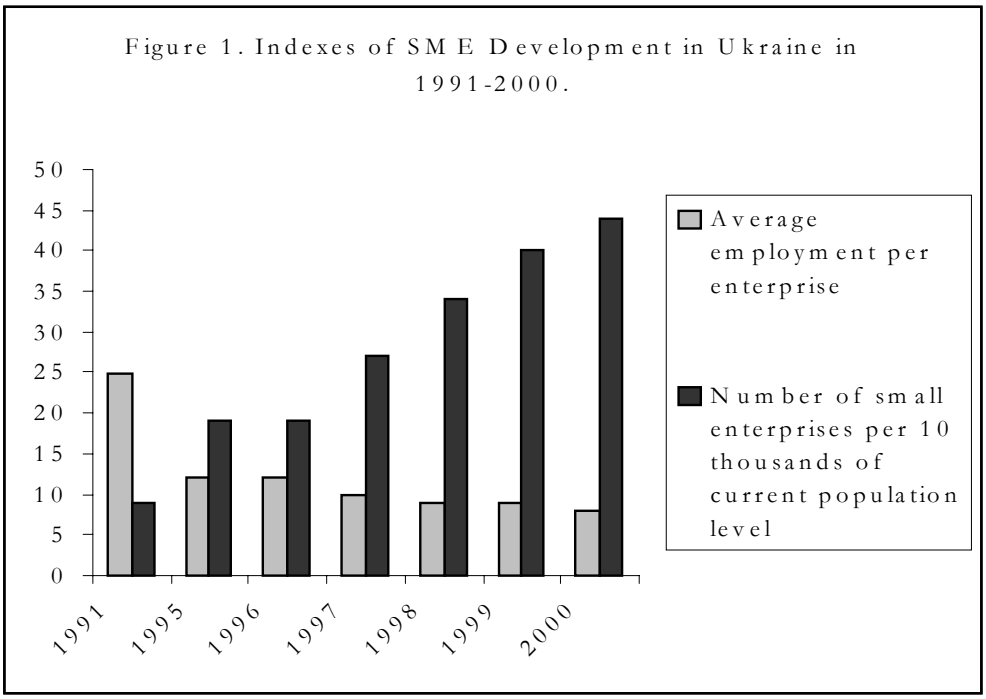
UKRAINIAN SECTOR OF SMALL AND MEDIUM ENTERPRISES

The sector of small and medium enterprises is the most dynamic and mobile sector in Ukraine. It started its development a little more then 10 years ago and have shown inspiring pattern of growth. Small and medium-size enterprises in Ukraine in 2000 gave work to 9.5% of employed people (6% of working age population) and produced 8.6% of GDP of Ukraine (ICS 2001). The shares of the entrepreneurial firms in aggregate output and employment does not completely reflect all the progress of the sector. The density of small and medium-sized firms matter. This can be measured as their number per thousand of population, and give a clear picture whether these firms are sufficiently dense to cope with the task set by market economy. For example, small and medium enterprises might be the only source of new jobs for the unemployed people in the economy in the initial phase transforming from a planned to a market system. Patterns of development of SMEs in Ukraine for the last 10 years can be seen in Table A1 and in Figure 1. The number of average employment decreased over time, while number of enterprises per thousand of population increased. This suggests that initially small enterprises were separated from big state enterprises. Over time, the new enterprises were created.

Before going into details, we should precisely define small and medium-size enterprises. "Small- and medium-scale enterprises are a very heterogeneous group. They include a wide variety of firms – village handicraft makers, small machine shops, restaurants, and computer software firms – that possess a wide range of sophistication and skills, and operate in very different markets and social environments. ... The statistical definition of SMEs varies by country, and is usually based on the number of employees or the value of assets" (Hallberg, 1999). Ukrainian legislation uses both number of employees and the level of

income to divide enterprises. For example, the Law on state support of small entrepreneurs defines a small enterprise as one with number of employees that do not exceed 50 persons, and yearly income that does not exceed 500,000 Euro[2]. The importance of this division can be seen from the nature of the Law itself that was initially introduced to promote the development of small enterprises in Ukraine, in particular, this law describes the pattern of support for small and medium enterprises.

Figure 1. Indexes of SME Development in Ukraine in 1991-2000.



Source: Derzhcomstat.

Development of the SME sector is closely connected to the development of private property in the country. After privatization many enterprises were split into smaller units, and new small enterprises were created to facilitate the distribution or even produce part of the output of the bigger enterprise. But the most important source of growth of the sector is creation of new enterprises that

[2] The Law distinguish between enterprises and entrepreneurs – physical entities or individuals. According to the State Tax Administration at the beginning of 2001 there were more than 1200000 private entities registered as entrepreneurs.

take their own niche on the market, that explore possibilities for profits and take the economic activities that are better done within a small firm. They take up the activities like retail trade, construction, services, etc. The distribution of small and medium enterprises across different sectors of Ukraine can be found in Table 1. The share of enterprises engaged in rent lease and revises increased over 1998-2000, while the share of enterprises in retail and wholesale trade sector decreased. This suggests high level of competition in these sectors.

Table 1

Distribution of Small-Scale Enterprises by Type of Economic Activity in Ukraine in 1998-2000

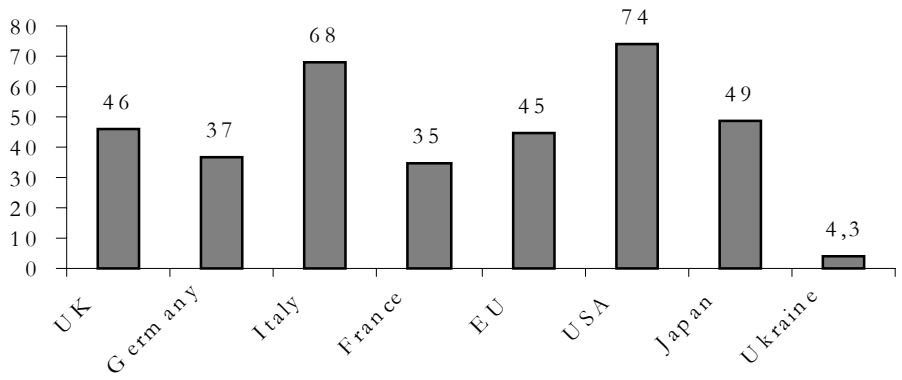
	Number of Enterprises			Share to Total		
	1998	**1999**	**2000**	**1998**	**1999**	**2000**
Total	173404	197127	217930	100.0	100.0	100.0
Including						
Agriculture	3440	4589	7839	2.0	2.3	3.6
Manufacturing	26166	30253	34497	15.1	15.3	15.8
Construction	14873	16175	18323	8.6	8.2	8.4
Retail and wholesale trade	89928	100148	101113	51.9	50.8	46.4
Hotels and restaurants	5959	6655	7538	3.4	3.4	3.5
Transportation	5363	6595	8483	3.1	3.3	3.9
Rent, lease, services	17140	20827	26371	9.9	10.6	12.1
Education	1182	1439	1672	0.7	0.7	0.8
Health care and social help	1591	1859	2042	0.9	0.9	0.9
Individual services	6495	7209	7467	3.7	3.7	3.4

Source: Statistical Yearbook, Ukraine 2000, Derzhkomstat, own calculations.

Although the sector of small and medium enterprises has been developing quite dynamically its share is quite small. For example, the number of SMEs in developed countries is 10-20 times higher than in Ukraine. The average number

of Small enterprises in countries of European Union is 45 per 1000 of population (ISC 2001, p. 18). Thus entrepreneurial sector does not play the role compared with other countries.

Figure 2. Number of Small-Scale Enterprises per Thousand of Population, 2000. (Source: ICS 2001)



Institute of Competitive Society (ICS 2001) proposes to subdivide the small-scale enterprises in Ukraine according to its social and economic power:

- *Small enterprises "against poverty"* are entrepreneurs - physical entities (private persons) that trade on markets, provide small-scale individual services and amenities. It is mostly self-employed people, who do their business in order to survive, and mostly do not have too much ambitions to expand.

- *Stable small enterprises* are the enterprises that are engaged in retail trade, provide services as well as are engaged in manufacturing activities. They have relatively small but stable profits, basic assets, but also do not want to expand its business.

- *Tigers of small enterprise* sector are the enterprises which revenues and level of employment satisfy the definition of small enterprise but grow fast and have quite big ambitions. These companies are more likely to find their own "know-

how" to introduce new methods of management and are the best place for innovations.

All these kinds of enterprises have different qualities. The biggest one - "enterprise against poverty" has a very important social role, but, at the same time, it is most vulnerable to any economic or political upheavals. This fraction of the enterprises needs attention of the state, especially that concerns creation of stable legal environment, simple and transparent rules of doing business. These problems are also important for the second group - stable enterprises, although they face even more stringent regulatory requirements. The third subdivision along with problems mentioned above needs well-functioning financial markets in order to satisfy the potential for development.

Table 2

Distribution of Small-Scale Enterprises by Ownership Type in Ukraine in 1998-2000

	Number of Enterprises			Share to Total		
	1998	**1999**	**2000**	**1998**	**1999**	**2000**
Total	173404	197127	217930	100.0	100.0	100.0
By ownership form						
State	3032	3061	3331	1.7	1.6	1.5
Public	5650	5995	6190	3.3	3.0	2.8
private	51029	61064	70448	29.4	31.0	32.3
Collective	112748	125867	136855	65.0	63.9	62.8
Owned by international organizations	945	1140	1106	0.5	0.6	0.5

Source: Statistical Yearbook, Ukraine 2000, Derzhkomstat, own calculations.

Taking into account the distribution of SMEs across ownership type (see Table 2), we clearly say that these enterprises are mostly private. Enterprises with limited responsibility are the most popular. At the same time, private ownership is fairly

developed in Ukraine: according to State Statistical Committee the share of privatized enterprises in Ukraine is more then 60% in year 2000. Although this figure pertains more to large enterprises, it reveals the overall pattern of development of the economy, where private property plays an important role. Moreover, development of SME sector may mean that correct incentives are created for the development of markets.

The incentives for sound development of the markets includes not only the rents that can be obtained by newcomers, but also clearly specified rules of the game, that are the same for everybody. These rules are created in order to extract enough tax payments, but, at the same time, they should not distort the desire to work officially. Although regulatory bodies aim to facilitate creation of the favorable conditions for the work of firms, they, instead, might create incentives for enterprise managers to cheat. Clearly defined non-discriminatory rules of the game for all economic agents are prerequisites of a well functioning private property, that will give rise to the most efficient use of resources. All firms should be equally treated, so that possibilities of discrimination do not arise (Johnson and Kaufman 2000). The business environment depends on the ability of the government to create the conditions that foster development of enterprises. This includes creation of institutions that are needed for firms. The problems that firms mostly face are weak property rights and contract enforcing, high tax burden, and excessive regulation. The firms that might be affected the most by government policies are small and medium enterprises.

There is a number of factors that might influence the decision-making process of the managers of the small and medium enterprises in Ukraine. Those are government intervention such as i) laws concerning the creation of new enterprises (this can be measured by the number of permits that should be obtained, time spent on registering a new enterprise, different payments that must be paid officially as well as unofficially); ii) intervention in the activities of enterprise (this can be measured by a number of inspections by different authorities); iii) interventions in the activities, that decrease the level of

competition in the market or introduce the practice of unfair competition, like tax holidays for competitors, diverse enterprise support forms; iv) ease of exit from the market, such as bankruptcy laws, court enforcement, etc.

Akimova (2001) proposes to distinguish the differences between enterprises that are systematic: they are developed because of ongoing legal support of some share of enterprises from the state, like subsidies, tax holidays, or special treatment of the laws. These rules most probably apply to big enterprises. At the same time small and medium enterprises are subject to nonsystematic variations, because of frequent changes in the laws and different cost of adjustment to new rules. Thus we can clearly compare these two groups of enterprises.

In order to compare the development of the sector in Ukraine with the process in other countries we can use the results of the Worldwide Private Sector Survey (Brunetti, Kisunko, Weder 1997b), EBRD Transition report (EBRD 1999) and Business Environment and Enterprise Performance Survey (BEEPS) (Hellman et al. 2000). According to the Worldwide Private Sector Survey (Brunetti, Kisunko, Weder 1997b) most of the unpredictable changes in the rules and policies affect 80% of entrepreneurs in CIS. This creates the atmosphere in which the credibility of government policies is seriously brought into question and enterprises do not affect the decisions of the government. This is tied with high uncertainty in government changes and consequent business disruption. The enterprises ranked the problems connected with tax regulations and/or high taxes to be the most severe in CIS countries, the other important constraint to the development of the private sector were policy instability, corruption, general uncertainty on costs of regulations, and financing (Brunetti, Kisunko, Weder 1997b). Extent of this problems comparing with other countries of transition can be clearly seen from the Figure A1 of appendix. These estimations are based on the BEEPS database (Hellman et al. 2000). We can notice that enterprise managers rank the obstacles tied with excessive taxes and regulation, financial instability, and policy instability far higher than other countries of the former Soviet Union.

Chapter 3.

LITERATURE REVIEW

3.1. Firms in Transition

Creation and development of enterprise is quite an interesting process. Coase (1937) articulated the classic rationale for the existence of firms: the need to internalize transaction costs. Transition created some unique problems that needed to be addressed by enterprises in order to remain solvent and generate profits. The latter task, however, becomes quite burdensome, because existing problems should not only be solved within one firm, but the effort of all economic agent, as well of the State is needed. The role of big (previously state) enterprises diminishes over time, and new agents – small and medium firms start to be important. The importance of small and medium enterprises (SME) for economic development does not lie in the size of the firm but in the inherent desire to maximize the welfare of owners. The profit maximizing kind of behavior is consistent with private ownership (Akimova and Schwödiauer 2000; Andreyeva 2000; Estrin and Rosevear 1999; Frydman et al. 1997; Frydman et al. 1999; Grigorian 2000).

Privatization is one of the steps to create new owners, who would be interested in maximizing profits and minimizing costs. The speed of creation of new owners depends on the privatization procedure that the country adopts. Havrylyshyn and McGettigan (1999) and Megginson and Netter (2000) summarize the studies on privatization in transition countries. Although change in ownership form is important it is not sufficient to create efficient producers. As noted in the literature "privatization involving change-of-title alone is not enough to generate economic performance improvements" (Sachs et al. 2000 p.39). Moreover, full gains from privatization can be achieved with the support of institutions that are needed for economic development. These institutions are those responsible for

shareholders protection, banking adequacy, creditor protection and bankruptcy courts, capital market supervision, and commercial code enforcement (Pistor 1999). Big enterprises in transition often require some time for restructuring process to take hold. Restructuring is defined as "a complex process to maintain profitability in the face of a changing economic environment, technological progress, and competition from other firms" (Akimova and Schwödiauer 2000). Thus, big enterprises in transition face challenges of transformation of their cost structure, and increased market orientation forced by competition. The speed of restructuring however, depends on ownership structure. While pioneering studies on Ukraine found no evidence that privatization influences enterprise performance, they showed that insider ownership is connected with better performance (Estrin and Rosevear 1999). Concentrated outside ownership does have significant positive impact on the firm's performance (Akimova and Schwödiauer 2000; Andreeva 2000).

Small firms are expected to react most quickly to changes of the environment, but at the same time the constraints divert their activities into socially inefficient channels. It is not questionable that growth of the economy is associated with the growth of the private sector, while excessive taxation, unstable legislation and different regulatory constraints are serious impediments for the development of the private enterprises (Kaufmann 1997a). Pissarides et al. (2000) propose to classify that factors affecting firm creation and enterprises performance into three groups: those that concerns entrepreneur, the structure of the firm, and the institutional environment in which entrepreneur and firm operates. Individual characteristics of entrepreneur include education, ethnicity, and social background. Peculiarities of the entrepreneur's enterprises and property rights transition are analyzed in Williamson (1985) and Hart and Moore (1990). These papers show how the changes of ownership altered incentives of employees as well as owner-manager. Firms' behavior is affected by bounded rationality, agency problem, and strategic behavior (Hurvizc 1973, Migrom and Roberts 1990). The environment in which the firm operates depends on the functioning of the

financial markets, development of infrastructure, legal enforcement, and development of other institutions.

The enterprises in transition can be roughly divided into two parts: those that were privatized, and newly created firms. They selected different patterns of development, but both play their important and unique role, and competition between these sectors may lead to a more efficient use of resources. Although private enterprises are mostly small ones, some of the enterprises might have been created in the process of privatization. There may be behavioral differences between the two. Most of the literature on the performance of enterprises proposes not to include de novo firms into the sample, due to discrepancies that might arise. While analyzing development of small and medium enterprises we should take into account newly created firms, because they constitutes a large portion of these enterprises. "In *de novo* generic private firms, the structure of ownership and relations between owners and management (when they are not the same person) reflect the requirements of the capitalist market economy" (Winiecki 2001, p. 12). And newly created firms are more sensitive to the market changes and developments. The performance of these firms is not hindered by old habits that might pervade at state owned or recently privatized enterprises.

Institute of competitive society (ICS 2001) reveals that development of enterprise depend on its corporate culture. Thus the personal qualities of managers of the firm make important role in the further development. Market rules and competition decide what qualities are necessary for the viability of the firms. Thus the managers can react on the incentives provided by the economy. The investments are the natural mechanism of selection of better enterprises, and banking crediting, financial intermediaries facilitates this process. Even if the financial institutions are not developed, in the presence of hard budget constraints, only the most efficient firms can invest and, as a result, expand further. Over time less efficient enterprises go bankrupt and more efficient one acquires their assets, labor force and markets. Thus step-by-step more efficient management of enterprises is created.

3.2. Constraints of Enterprises

The activities of firms toward achieving their objectives are constrained by a variety of different factor. Hallberg (1999) proposes a range of criteria that can be taken into account while examining market environment for SMEs. They are:

i) barriers to entry and non-competitive behavior;

ii) expensive and time-consuming regulatory requirement such as licensing and registration;

iii) official and unofficial levies that discourage small enterprises from growing and becoming formal;

iv) laws governing the protection of business and intellectual property and the use of property as collateral;

v) tax structure that distorts incentives and discriminate against small firms;

vi) labor market rigidities that make hiring and firing workers difficult and expensive, and limit the flexibility and mobility of the labor force;

vii) infrastructure that opens access to information and markets, particularly transportation, market facilities, and communication infrastructure.

Entry barriers. The life of enterprise starts from its registration. This process, however, might be so complicated that some of the potential newcomers give up the idea of opening a new business. These complications are brought about by various entry constraints. Djankov et al. (2000) examine them in detail. They include the number of procedures that should be accomplished by a person who wants to open new business, as well as financial expenditures and time required for completion of all procedures. These regulations are created in order to reduce "market failures such as low quality products from fly-by-night operators and externalities such as pollution" (Djankov et al. 2000, 2). Thus higher regulation

should be associated with socially superior outcomes. But, regulation of entry may keep the potential rivals out of the market. Thus, more regulation helps to increase market power and profits and might even decrease benefits to consumers. De Soto (2000) argues that regulation of entry benefits only politicians and bureaucrats, that use political power in order to put into better position the firm that support them and consequently obtain campaign contributions and votes. Djankov et al. (2000) showed that "stricter regulation is associated with sharply higher levels of corruption, and greater relative size of unofficial economy" (Djankov et al. 2000, 4).

Regulatory constraints. According to the survey of the small businesses conducted by International Finance Corporation in 1997, "majority of small business owners consider governmental policies and actions to be the greatest obstacles they face in trying to make their small businesses succeed" (IFC 1998, 4). Simon Johnson and Daniel Kaufmann (2000) while analyzing the institutional problems that promote underground economy in Russia and Ukraine, noted that "the most important problem appears to be not high marginal corporate or personal income tax rates but rather high levels of regulation, bureaucratic discretion, and corruption" (Johnson, Kaufmann 2000, 212). This might lead to an equilibrium where there is no possibility for budget to get money from taxes, and enterprises in turn do not want to reveal their activities. While summarizing the evidence for 69 countries, Johnson and Kaufmann (2000) comes to conclusion that corruption, bribery, more regulation, weak legal environment are the forces that are associated with unofficial economy.

"State set and enforces the fundamental rules that govern exchange" (Eggertsson 1990, p.59). As it is costly for firms to enforce agreements and rules themselves, "by providing order at relatively low cost, the state expands the communities frontier or production possibilities" (Eggertsson 1990, p.60). Rules and policies can affect a class of economic agents directly (frequently this effect differs between agents) or affect all economic agents indirectly (Winiecki 2001, 18). We can treat the firm in the New Institutional context as "a complex structure of

contracts designed by maximizing agents who take into consideration risk, transaction costs, and competitive forces", this might create "unintended side effects of government regulation" (Eggertsson 1990, p.143).

Unofficial economy. Most scientists agree that economic growth is highly constrained by big 'unofficial economy'. De Soto (2000) and Johnson at al. (2000) describe the main shortfalls of being in the dark side of the economy like i) unavailability of institutional arrangements that are on the market; ii) resources are wasted to avoid detection and punishment; iii) lower tax revenues. But they also consider the forces that make firms go underground: i) high statutory tax rates and burdensome official regulations; ii) "predatory behavior by government officials, seeking bribes from anyone with officially registered economic activity"; iii) to escape extortion by criminal gangs; iv) inadequate development of institutional environment (Johnson at al. 2000, p.496).

Financial constraints. The recent development of empirical literature suggests some explanations of the weak state of SMEs in Ukraine. They are found to be constrained by lack of funding, namely unsatisfactory access to short-term bank loans (Shvydko 2001). Levine (1997) surveyed the literature and pointed out the importance of financial sector for economic growth. He argues that enterprises lack good identification of investment projects, availability and lower of costs of external financing to firms. This idea is clearly supported by Rajan and Zingales (1998) that emphasize the negative link between the need for external finances and development of the firm in the presence of weak financial markets.

3.3. Development under Constraints that Firm Face.

One of the first studies of obstacles for the development of SME is by Brian Levy (Levy 1991). It recognizes the problems that should be solved by the government in the sector of SMEs development. He compares the influence of financial, technological, marketing and other constraints for SME in Sri Lanka and Tanzania. The aim of the paper is to have a deeper understanding of the strategies of the development of enterprises.

There is also a wide array of papers that study the obstacles for development of enterprises in transition. Some of them make comparison between countries, others examine one country. For example, Brunetti et al. (1997) tried to reveal the institutional obstacles for promoting development of private sector, and this study can be used while comparing development of enterprises in CIS with that of abroad. The studies that are concerned with countries of former Soviet Union viewed complex tax system, excessive regulation, and inadequate legal infrastructure to be the major obstacles to growth (Buckberg 1997). While Johnson et al. (2000) argue that higher tax rates, corruption, unfair legal system is more likely to influence the firm to shift their production into unofficial activities.

The studies that discover constraints for development of enterprise sector are summarized in Table A14 of the appendix. This list includes studies that identify broad variety of constraining factors, as well as those that examine only some of them.

Most of the entrepreneurial activities are concentrated in the sector of small and medium enterprises. They face a very high degree of competition. Given the availability of investment funds, the small enterprises that have a profitable business idea and skilled management can expand into big enterprises. Thus, it can well be the case that SME sector is a training ground for new managers. Moreover, the SME sector can mitigate the effect of social hardships and inequalities. Notwithstanding the significance of SMEs, the government may be captured by large enterprises that are able to finance political campaigns. Market system is significantly different from the soviet type economy, because of the soft-budget constraints of firms in the latter. Prevalence of SBC introduces distortions, as resources are shifted to less efficient users.

Iryna Akimova summarizes the institutional, legal and regulatory factors as business environment that influences the development of small and medium-scale enterprises in Ukraine. (Akimova 2001). This study reveals the problem of the

sector of small enterprises among them excessive regulation, weak contract enforcing in courts.

Constraints of the enterprises should be taken into account when policymakers want to create conditions that will foster development of economy. Winiecki proposes to divide the conditions that should promote the sector of enterprises into three levels (Winiecki 2001, 18):

- Low level - consist of clear rules and subsequent polices.
- Intermediate Level - developed within the framework of stabilization, liberalization and privatization.
- High level - undermining political, economic and societal fundamentals.

Furthermore, according to Winiecki, these levels of rules can be split into "rules and policies affecting establishment and those affecting operations" (Winiecki 2001, 19). Rules of establishing the economic entity might be the most important ones in the process of creating new enterprises. These are among the first things that impede entrepreneurs from entering the market. Prospective enterprise owners take into account complexity of required operations, speed of procedure, cost of establishment.

The key point in the development of enterprises is creation of policy that will "discipline old enterprises and encourage new enterprises" (World Bank 2002, p.26). World Bank Development Report (World Bank 2002) proposes to consider old enterprises as those that were created until 1991. This is important if we take into account the fact that most of the literature reveals that "new enterprises in the transition economies are more productive than old enterprises" (World Bank 2002, p. 26). This implies that it is possible to achieve higher levels of growth by transferring resources from old enterprises to new ones.

The policy influences are divided into two areas: discipline and encouragement. "Discipline entails hardening of budget constraints, introducing competition to product markets, monitoring managerial behaviour to generate incentives for efficient resource use and prevent such abuse as asset stripping and tunneling, and providing viable exit mechanisms for inefficient enterprises" (World Bank 2002, p.26). Encouragement reduces excessive tax rates, simplify regulatory procedures, establish secure property rights, and providing basic infrastructure.

The transition from command to market economy should create the policy that develops institutions responsible for efficient allocations of investment funds and selection of well-functioning enterprises. Thus, the investment selection process under hard budget constraints will lead to the selection of more efficient enterprises.

3.4. Barter and Enterprises

There are some factors that explain widespread use of barter transactions in transition countries. Those are of macroeconomic monetary nature as well as pertinent to the individual firm. The array of studies ties existence of barter to macroeconomic shocks and policies. According to Snelbecker (2001), barter is mainly caused by prices set above their market level. One of the sources for barter is poorly developed financial sector. And its existence helps enterprises to increase their efficiency and provide some market liquidity. High level of barter in economy gives possibility for less efficient enterprises to produce the output "no one wants to buy for money". This is clearly the case for inefficient allocation of resources and distortion of market mechanisms. Inefficiency can be also created because of mutual settlements between enterprises and budget (Szyrmer, 2000). Existence of such settlements promotes nonpayments, arrears, bad credits, barter, in-kind wages and pensions, shadow, and corruption. This gives possibility for bureaucrats to extract rents based on the power they have.

According to Toritsyn (2000), existence of high level of non-monetary transactions in the country can be clearly explained by the objectives that different

agents put behind them. On the one hand, bureaucrats want to maximize their own rents, while managers of large, although inefficient, enterprises are interested in existence of their enterprises and maximization of their own welfare. This group clearly supports the existence of barter transactions between enterprises as well as with the state. Thus, big enterprises create rules of the game and more efficient small and medium enterprises, privatized or newly created firms should take these conditions as given.

Barter increases the cost for society that uses it. The negative consequences of existence of barter depend of the parties engaged in these transactions. If the enterprises use non-monetary transactions while trading with state, the state might obtain the goods or services at quite distorted prices. The state will pay higher than market price (Zhylaev and Orlova, 2000). This can lead to hidden subsidizing of enterprises. If barter is used in transactions between two enterprises, the cost structure is affected, because some resources are used in order to facilitate the transactions, and consumers are adversely affected. The other costs defined by Zhylaev and Orlova (2000) are deformation of budget, decreased transparency, lack of balance between branches of administrative bodies, change in budget priorities, increased rent-seeking when resources are devoted not to increasing efficiency but to creation of new barter schemes, relying upon individual agreements; distorted demand and supply mechanisms; distorted tax pressure on different agents; increased expectations of further lack of reforms of this issue (any threats of the government are not credible); deformation of the role of financial system; lost revenues due to difference in prices; increased transaction costs; increased incentives for violation of law. At the same time, the enterprise itself incurs search cost and high inventory costs (Kiyotaki and Wright 1989). Moreover, the other costs that enterprises might face if it uses barter transactions are "wage arrears, weakening product market competition and slowing down enterprise restructuring" (Gaddy and Ickes, 1998).

We can also find out the incentives of the firms to use barter transactions and mutual settlements with budget authorities. Zhylaev and Orlova (2000) explain

prevailing structure of the transactions by existence of debts and the need to service them. Makarov (2000) proposes the view that indebted firms use barter transactions in order to avoid payments to creditors, given the lack of effective bankruptcy procedures. At the same time, enterprise managers uses informal relations and as a result barter schemes in order to increase the costs of their replacement. Or barter is used for price discrimination, where share of barter in sales is positively correlated with concentration of market power (Guriev and Kvasov 2001).

The other point on the existence of barter transactions is suggested by Gaddy and Ickes (1998). They argue that barter is a substitute for restructuring. Managers decide whether to invest into barter facilitating "relational" capital or into "restructuring" that will help their firms to produce better and more competitive goods.

It is mostly assumed that barter is developed in response to the factors that are not controlled by enterprise managers. Macroeconomic approach leads to the conclusion that the forces of barter lie outside the firms' decision domain. This assumption, however, might not be the best one if we deal with the firm level evidence. Barter helps enterprises adjust the cost of production. Thus is it necessary to look at this phenomenon taking into account all the choices faced by firm. This was proposed by Guriev and Ickes (2000). Thus decision to pursue barter transaction is clearly influenced by the cost incurred and benefits obtained. Although barter increases transaction cost, it may give the buyer the opportunity to pay lower price. These opportunities may create incentives to use barter schemes instead of monetary transactions. At the same time, Guriev and Ickes (2000) proposes that liquidity constraint source of barter may create incentives for pretending to be financially stringent. And imperfect information about financial situation can be the result of the desire to be eligible for non-monetary transactions. Thus those agents that have bigger negotiation potential are more likely to obtain favorable conditions for themselves. Thus barter is an endogenous variable.

The division of the decisions of enterprise managers into investments and those that force to make barter transactions are connected with the existence of "real" and "virtual" economies. This creates incentives to switch between the two or to work simultaneously in both of them.

The evidence presented by Gorochovskij, Kaufmann and Marin (1999) supports the idea that Ukrainian barter is mainly caused by financial considerations. The lack of cash creates inter-firm arrears which firm tries to avoid increasing the trade credits. The excessive trade credit leads in turn to increased non-monetary transactions.

Chapter 4.

DATA, MODELLING STRATEGY, ESTIMATION TECHNIQUES, AND RESULTS

The purpose of this paper is to investigate the state of small and medium enterprises in Ukraine. The goal of the analysis is to determine the factors that foster and factors that hinder further development of the sector of small and medium enterprises in Ukraine. The hypothesis tested is whether enterprise managers' decisions to invest into new equipment and/or to use barter activities differ significantly between small and medium enterprises. We hypothesise that increase in administrative intrusions do not foster development of enterprises. First, we describe the data used and after that formulate the model employed. In the next section there is discussion of the model in question.

4.1 Data description.

The empirical section of the research is based on the data set of "Ukrainian Enterprise Survey 1999" conducted by Kyiv International Institute of Sociology in 1999. The size of the sample, that covers 200 cities, is 3198 enterprises. It provides a statistically valid picture at the micro level for small and medium enterprise population in Ukraine. The companies represent all types of ownership created in the process of privatization in Ukraine, as well as state owned enterprises, and newly created enterprises. It is possible to divide the data into two parts: SMEs, and large enterprises respectively. To be specific, there are 497 enterprises with 1-5 people employed, 398 enterprises with 6-10 people employed, 782 firms with 11-50 employees, 771 economic entities with 51-250 workers, and 750 firms with over 250 employees.

Of the small enterprises, 84.4% are either private enterprises owned by physical entity or joint stock companies owned by Ukrainian or foreign physical or legal

entity, 8.4% have more than 50% of stock owned by state, 2.1% are enterprises with less than 50% of stock in the hands of the state. The distribution of enterprises by ownership type across sample is given in Appendix Table A2.

The data in the sample might exhibit some measurement error, as the enterprises were not forced to present any evidence of the correctness of their answers. Contrary to the data that might be provided by the enterprises to the recording authorities the dataset includes share of barter, and share of taxes paid. At the same time, we might hope that enterprise managers provided the answers that were at least not lower than provided to tax authorities.

Our data may exhibit selection bias because of nonresponse. For example, enterprises that refused to reveal their barter share in sales might have very high share in reality. This missing values might distort the sample properties.

While analyzing the effects of taxation and regulation on firm performance we should take into account that not all of the firms in the sample are registered. There are 236 small firms, two medium and six large firms that are not officially registered. These firms do not have to pay taxes, although they might have some problems with regulatory authorities. They, for example, might need to pay bribes, or to have some protection provided by some influential people.

The decision of the enterprise to invest are represented by the binary data: one if firm did invest into new production premises, vehicles, equipment, fixtures, furniture, land, or improved building, zero otherwise. Thus we need to use univariate dichotomous models to reveal the decisions of enterprise to invest. The decision of enterprise to invest should clearly depend on the profitability of the current business.

4.2 Model specification.

Assume that we want to consider the forces that drive enterprise managers to invest in new equipment. What we observe is whether enterprise in fact invests or not. Let denote this variable as y.

y=1 if firm invests into new equipment, (4.1)

y=0 if firm does not invest.

The manager of enterprise makes marginal benefit–marginal cost calculations based on firm specific characteristics. Thus, the probability of occurrence of event in question depends on a vector of independent variables $\boldsymbol{x}$ and a vector of unknown parameters $\boldsymbol{\beta}$. Thus, we develop an index function (Greene 2000, p. 820). Since marginal benefit might not be observable, we can model the difference between benefit and cost as an unobserved variable y*, such that

$$y^* = \boldsymbol{\beta}'\boldsymbol{x} + \varepsilon. \quad (4.2)$$

We assume that ε has a logistic or a normal distribution with mean 0 and variance 1. We do not observe net benefit from investing into new equipment, but only whether the firm performed investment or not, therefore:

y=1 if y*>0, (4.3)

y=0 if y*≤0.

Therefore,

$$\text{Prob}(Y=1) = \text{Prob}(y^* > 0) = \text{Prob}(\boldsymbol{\beta}'\boldsymbol{x} + \varepsilon > 0) = \text{Prob}(\varepsilon > -\boldsymbol{\beta}'\boldsymbol{x}) =$$

$$= \text{Prob}(\varepsilon > \boldsymbol{\beta}'\boldsymbol{x}) = F(\boldsymbol{\beta}'\boldsymbol{x}) \quad (4.4)$$

$$\text{Prob}(Y=0) = 1 - F(\boldsymbol{x}, \boldsymbol{\beta})$$

Where $\boldsymbol{x}$ is array of firm specific characteristics, and $\boldsymbol{\beta}$ is a set of parameters that reflect changes of $\boldsymbol{x}$ on probability.

Other method to develop the model is to use a random utility model (Greene 2000, p. 820). Let y_a and y_b represent utility for the manager of enterprise from investing or not, we might denote it U_a and U_b. The choice that we can observe represent the greater observed utility. So observed indicator is equal to one if $U_a > U_b$ and zero if $U_a \leq U_b$. Let $U_a = \boldsymbol{\beta}_a'\boldsymbol{x} + \varepsilon_a$ and $U_b = \boldsymbol{\beta}_b'\boldsymbol{x} + \varepsilon_b$. Therefore, if we denote Y=1, the enterprise manager's choice, we will obtain:

$$\text{Prob}(Y=1 \mid x) = \text{Prob}(U_a > U_b) = \text{Prob}(\boldsymbol{\beta}_a'\boldsymbol{x} + \varepsilon_a - \boldsymbol{\beta}_b'\boldsymbol{x} - \varepsilon_b \mid x) =$$

$$= \text{Prob}((\boldsymbol{\beta}_a - \boldsymbol{\beta}_b)'\boldsymbol{x} + \varepsilon_a - \varepsilon_b \mid x) = \text{Prob}(\boldsymbol{\beta}'\boldsymbol{x} + \varepsilon > 0) \tag{4.5}$$

For computational reference we can use three models as described by Amemiya (1981)

i) linear probability model;

$$F(\boldsymbol{\beta}'\boldsymbol{x}) = \boldsymbol{\beta}'\boldsymbol{x} \tag{4.6}$$

ii) probit model;

$$\Pr(Y=1) = \int_{-\infty}^{\beta' x} \phi(t)dt = \Phi(\beta' x) \tag{4.7}$$

where $\Phi(.)$ is standard normal distribution.

iii) logit model:

$$\Pr(Y=1) = \frac{e^{\beta' x}}{1+e^{\beta' x}} = \Lambda(\beta' x) \tag{4.8}$$

Although probit and logit estimation techniques provide us similar results, we should determine which model is better depending on distribution of the

variables. Logistic distribution is similar to normal one, but it has heavier tails (Greene 2000). It is difficult to justify the use of specific model solely on theoretical grounds. Some of the approaches to distinguish between the two are described by Amemiya (1981). In this paper we present estimation results for al three computational methods.

4.3 Description of variables.

The capital investments of the firm are the variable that shows if the firm bought new equipment, invested into vehicles, new premises, furniture, land, or improved current buildings (*CAP_EXPY*). This behaviour of enterprise suggest its desire to develop further, to expand and to take its market share. This is one of the proxies for firm's performance. Next we specify the factors that influence functioning of the firm.

Origin of enterprise. The famous North's phrase "History matters" (North 1990, vii) can be applied to the factors that determine performance of the firm. The governance of the firm depends on how the enterprise was created. For example, newly created firms have incentive structure that is different from the one of old enterprises (Winiecki 2001). Thus, in our estimations we take into account how the firm originated: whether it is newly created firm (*NEW*), or if it was privatised or separated from bigger enterprise (*SEPARATE*). This determines how enterprise managers react to various exogenous shocks.

Ownership structure. While performing all the tests, we should take into account different types of ownership form, because, they have different effect on enterprise performance. For example, initially enterprises have inherited excessive labor employment, therefore, they should shed labor to decrease marginal costs and perform restructuring of their input allocation. This process, however, is widely constrained by the pressure of coalitions between workers and managers that arose, mainly, as a result of the privatization rules that tend to favor redistribution of ownership among insiders. Therefore, labor shedding is considered to be one of the basic restructuring procedures, that depends on the

ownership type (Akimova and Schwödiauer 2000). At the same time state-owned enterprises have patterns of behaviour that differs from private enterprises (Katsoulacos 1994, Pohl et al. 1997). This distinction may be even more obvious in the sample of small enterprises that are quite flexible. But at the same time we distinguish the effects of private enterprise and privately owned joint-stock companies. The performance of these enterprises can be different on the basis of agency problem that might arise in joint stock, but do not exist in the private company where the owner is physical entity. So, we use the dummy variables *STATE* for enterprises with more than 50% of stock owned by the state; *MIXED* for enterprises with less than 50% of stock held by the state and *PRIV_JS* includes joint-stock enterprises with shares owned by private legal or physical entities both domestic and/or foreign. The *PRIV* variable is the base category, it includes private enterprises. Distribution of enterprises by different ownership type and size is given in Tables A2 and A3. We also distinguish between insider and outsider ownership. Andreeva (2001) provides evidence that insider ownership is associated with better management. Thus we introduce *INSIDER* variable, it is one if the manager of the firms is an owner or one of them and zero otherwise.

Sector dummies. In order to control the industry effect, we introduce dummies for different sectors of the economy that enterprises represent. The sector dummy *SERVICES* shows if the firm provides transportation, communication, or other services; *FINSERV* dummy represents firms that provide business services, like consulting, financial advisory, insurance; *CONSTR* stands for firm in construction industry; *MANUF* for the firm in production or mining. *TRADE* is a base category, it includes firms that are engaged in retail or wholesale trade. Distribution of enterprises by sector and size is given in Tables A4 and A5.

Scale of operations control. The other important factor for firm's behavior is the fact that government buys some part of output from the firm (*GOV*). This implies that the enterprise has some relations with authorities, and can negotiate

favorable conditions for itself. We also take into account the fact that enterprise practice export activities (*EXPORT*).

Promotional effort. Quality of management determines the response of the firm to changes in economic factors. We might expect that those firms that obtained assistance from management training, business consulting or in obtaining the credit (*ASSIST*) are more efficient and have better performance. The firm might perform other contemporary steps that will decrease the information uncertainty. Thus, we should construct a dummy variable that measures if the firm prepared a written detailed business plan, prepared a request for financing, conducted market research, prepared marketing plan, and worked with business consultant (*DEVELOPM*).

Regulatory constraints. We use several factor to reveal the constraint that enterprises face. We take into account financial and regulatory impediments to the development of the firms. To address the issue of intrusion of the regulatory bodies into the life of enterprises we propose to use the aggregated variable that describes how often different authorities interfere the process of production. This variable is measured as number of inspections by state agencies during the year in question (*INSP_NU*). We take into account the actions by Tax Agency, Fire Department, Police Department, Sanitary-Epidemic station, Ministry of Environment, Committee of Standardisation, Consumer Protection Committee, Anti-Monopoly Committee, and Department of Architecture etc. This is additive index (its mean is 20.4, standard deviation 43.4 for large enterprises subsample and 11.4 and 21.1 respectively for SMEs subsample). It can be seen as proxy for a time spent by enterprise officials in negotiations with regulatory bodies. It may be noted that there are two kinds of negotiations with authorities. First one is a part of the production process regulations prescribed by law. Initiator of this action is mostly enterprise itself. For example, the need to make licenses if trading with food, accountant makes reports for the tax administration, etc. The second is the actions taken by the regulatory bodies in order to reveal the correctness of the actions taken by the firm. This process might be quite painful for the firm because

manager should devote some of his quite valuable time for this procedure, moreover, if mistakes are found, firm should spend some of its financial resources. The vulnerability of enterprises to inspections varies with the size of enterprises. Small enterprises might have fewer resources to defend their rights in courts.

Financial constraints. Availability of external finance is an important factor for the enterprise development. The firms that are financially stringent cannot afford themselves higher investment level. This depend on the structure of property rights and size of enterprises (Shvydko 2001, Pissarides 1998). Thus, we should take into account some factors that describe the availability of finances as well as the need for finances. To reveal whether enterprise consider its capital equipment not sufficient to be engaged in this business, we use dummy variable *LACK_CAP* (one if firm consider lack of equipment to be the most important problem facing it; zero otherwise). In the developed countries, the major source of finances is borrowing, so we can see if the firm attempted to borrow money and if its attempt was successful (*BORROW*).

4.4 Investments Model Estimation.

So, the following linear probability model that we estimate in the next section can represent the above-discussed empirical model:

$$CAP\_EXPY = C + \alpha_1 DEMPL + \alpha_2 INSP\_NU + \alpha_3 DEVELOPM + \alpha_4 ASSIST + \alpha_5 GOVPURCH + \alpha_6 EXPORT + \sum_l \lambda_l HISTORY + \sum_i \beta_i INDUSTRY + \sum_j \gamma_j OWNFORM + \sum_k \varphi_k FINCONSTR + \varepsilon. \quad (4.9)$$

Where *CAP_EXPY* represent the variable that reveals if enterprise made capital investment or not; $\sum_i \beta_i INDUSTRY$, $\sum_j \gamma_j OWNFORM$, $\alpha_1 DEMPL$ represents the effects of the different industries, ownership forms of enterprise and the effects from change in employment; $\sum_l \lambda_l HISTORY$ describes the effect

of the history of enterprise, it measures if the enterprise was privatized, separated from bigger enterprise, or it is newly created firm. The variables *INSP_NU*, *DEVELOPM*, *ASSIST*, *GOVPURCH*, and *EXPORT* measure the effect of the business environment for the development of enterprises. Detailed description of the variables used in regression can be found in Table A5.

The problem with using linear probability model is that the error terms are not homoskedastic, [3] thus correct inferences about the coefficients cannot be done. The other problem is that predictions are not bounded between zero and one. Therefore, we should use model that were specially developed for limited dependent variables. These are Logit and Probit models. In this work we will base our findings on the results from Probit estimations after checking for normality. So we can run regressions using the formula (4.7) where $\boldsymbol{x}$ is vector of regressors specified above. The regression results for all three models can be found in appendix Tables A8-A10. Table 3 present probability effects from the Probit estimations.

The positive coefficient on *DEMPL* suggests that capital expenditures in both subsamples are correlated with increase in number of workers. Thus those enterprises that increased their employment are more likely to make investments.

The coefficient on *INSP_NU* shows that higher number of inspections by regulatory bodies has positive effect on probability of SMEs to invest into new equipment. This effect is positive for large enterprises, although it is not significant. Thus different actions by regulatory bodies do not decrease probability of investments. Firms try to avoid adverse effect of regulations and make their investment decisions according to other factors.

From a negative coefficient on *LACK_CAP,* we infer that, if the enterprise considers itself to be constrained by capital, the probability of making capital

[3] Since $\boldsymbol{\beta}'\boldsymbol{x}$ is either 1 or 0, ε is either $(1 - \boldsymbol{\beta}'\boldsymbol{x})$ or $-\boldsymbol{\beta}'\boldsymbol{x}$, with probabilities F and $(1 - F)$ respectively, thus $\mathrm{Var}[\varepsilon|\boldsymbol{x}] = \boldsymbol{\beta}'\boldsymbol{x}(1 - \boldsymbol{\beta}'\boldsymbol{x})$.

investments decreases. But the positive coefficient on *BORROW_Y* implies that borrowed funds are important for the performance of the firms. This coefficient is significant for both subsamples: SMEs and large enterprises. But it is higher in case of large enterprises. Thus they face fewer financial constraints for borrowing funds.

Table 3

Weighted Regression Results.
Dependent Variable: Capital Expenditures

Explanatory variable	SME subsample		Large enterprises subsample	
	df/dx	**Robust St.Err.**	**df/dx**	**Robust St.Err.**
dempl	.0041538***	.0009889	.0006043**	.0002552
insp_nu	.0028152***	.0008267	.0002482	.0005175
developm*	.1993514***	.0220532	.1136548**	.0458935
assist*	.0944114***	.0361804	.1057115**	.0483186
lack_cap*	-.0493844**	.0234407	-.0487887	.0391637
borrow_y*	.1471895***	.040494	.1649724***	.0485772
insider*	.0307621	.0254347	.0414256	.0422848
export*	.1048459**	.0434599	.0682256	.0446649
gov*	.0957886***	.029751	-.0326503	.0430597
new*	.0115857	.027253	.0828142	.0525634
separate*	-.0383387	.0329425	-.1215613**	.0605629
small*	-.0442751	.0287811		
mixed*	-.1478024**	.0538802	.0305592	.0773691
state*	-.1248625***	.0382718	.0135425	.0671474
priv_js*	.0054311	.0250105	.0444031	.0622178
constr*	-.1246514***	.0349024	-.0052281	.0818199
agri*	-.1020444	.0615489	.1079748	.1127673
manuf*	.006934	.0343607	-.0277302	.0667493
serv*	.0598571**	.0302969	.0818286	.0708671
finserv*	.0297565	.0444376	.0404698	.1027832
Observed P	.4701797	-	.5454545	-
Predicted P (at x-bar)	.467367	-	.5495191	-
N	2448	-	750	-
Wald Chi2	$\chi^2(20)=251.29$	P=0.0000	$\chi^2(19)=53.40$	P=0.0000
Log likelihood	-1547.3951	-	-485.82651	-
Pseudo R2	0.0857	-	0.0573	-

***, (**), (*) - statistically significant at 1%, (5%), (10%) level
† dF/dx is for discrete change of dummy variable from 0 to 1

From large and positive coefficient on *DEVELOPM* and *ASSIST* we infer that, probability of making capital investments increases if firm uses contemporary methods of increasing the quality of its management, its viability, and financial soundness. These methods include preparation of written business and marketing plan, conducting market research, and working with business consultants. There actions tend to decrease information uncertainty the firm faces. The fact that enterprise obtained assistance from management training, business consulting and in obtaining a credit decrease the cost for firm.

Signs of coefficient of *GOV* and *EXPORT* are positive for the SME subsample. Thus, the firm that sells their output to the state or abroad has higher probability of investing into new capital. This might be an effect of higher competition on the international markets.

The dummy variables *MIXED* and *STATE,* which indicate the fraction of enterprise shares owned by a state, have negative effect on performance of enterprises measured by investments. This result is true only in SME subsample. For the large enterprises this effect is positive but not significant. This result supports the idea that, due to bad corporate governance, small and medium-scale enterprises that are controlled by state have worse performance and cannot adjust their capital accordingly. This support the view that state ownership is inferior in comparison with private one.

The coefficients on the sector dummies (*SERV* and *FINSERV*) suggest that sector of services and financial services develop quickly. While construction and agriculture (*CONSTR* and *AGRI*) grows slowly than a base category - retail and wholesale trade.

4.5 Barter and Enterprises.

In addition to investments, the other aspect of interest for us is usage of non-monetary transactions between enterprises. We use the approach that considers the barter element to be choice variable for the managers (Gaddy and Ickes 1998;

Guriev and Ickes 2000; Makarov 2000). We use binary variable that shows if the enterprise uses barter in purchases of its materials or not. The estimation techniques employed are the same as in previous section, but at the vector of regressors we use number of inspections by tax authorities instead of *INSP_NU* used before. This change is predetermined by direct influence of tax administration on the enterprise decisions about pursuing non-monetary transactions. The results from probit regression are presented in table 4. The tables A9-A10 present the estimation results for logit and linear probability models.

The results from the regressions show that change in employment (*DEMPL*) is negatively related to the probability of barter. Thus, enterprises that increase their employment are less likely to use different barter transactions. This suggests that those enterprises that increase their employment are more efficient and try to shift their transactions into monetary units. This result holds for large as well as small and medium enterprises..

Negative coefficient on number of inspections by tax administration for SME subsample (*INSP_TAX*) suggest that, inspections by regulatory agencies decreases probability to use barter. This effect is positive but insignificant for large enterprises subsample.

Patterns of barter transactions are influenced by overall economic and business environment. High and positive coefficient on *EXPORT* dummy suggests that, those enterprises that pursue export activities are more likely to have a higher level of barter activities. Thus, there might be some kind of support or special treatment for those enterprises that work with foreign clients. The hypothesis of special treatment is supported by the fact that enterprises that sell some fraction of their output to government (*GOV*) are also more likely to have a higher level of barter transactions. These results are significant for both subsamples. These support the evidence presented by Guriev and Ickes (1999) for Russia.

Enterprises might negotiate some offsetting barter activities, if they have some informal ties.

Negative coefficient on *NEW* suggests better performance of newly created enterprises. They have a lower probability of using barter transactions due to quality of management in new enterprises.

Table 4

Weighted Regression Results.
Dependent Variable: Barter

Explanatory variable	SME subsample		Large enterprises subsample	
	df/dx	**Robust St.Err.**	**df/dx**	**Robust St.Err.**
dempl	-.0001725	.0005932	-.000412*	.000211
insp_tax	-.0037548**	.0017762	.0001055	.0010496
developm*	.0793372***	.0219466	.1994271***	.0463651
assist*	.0200828	.0344916	-.0579886	.0506508
lack_cap*	.0980797***	.0230539	.0302703	.0377944
borrow_y*	.0026574	.0391689	-.1149228**	.0528282
insider*	-.0060055	.0246083	-.0429711	.041575
export*	.1180007***	.0432755	.1713101***	.0391372
gov*	.1190199***	.0304014	.0646976	.0404426
new*	-.0852284***	.0253763	-.1512034***	.0569046
separate*	.0053905	.0310742	.0053636	.0581869
small*	-.2513825***	.0270839	-	-
mixed*	.0639066	.0588861	-.1239027	.0843509
state*	-.0902629**	.0339943	-.0531511	.068205
priv_js*	.0064399	.0245548	-.0527993	.0621719
constr*	.1761018***	.0366124	.2331482***	.0481181
agri*	.2519756***	.0664269	.265122***	.0523417
manuf*	.2008825***	.0342255	.2117129***	.0601018
serv*	-.0959914***	.0269196	.0796969	.0627354
finserv*	-.1516902***	.0355138	-.2365737**	.1117296
eatdrink*	-.1936311***	.0379565	-.0252821	.3357589
Observed P	.3361928	-	.6533333	-
Predicted P (at x-bar)	.3076758	-	.674938	-
N	2448	-	750	-
Wald Chi²	$\chi^2(21)=534.2$	p=0.0000	$\chi^2(20)=110.73$	p=0.0000
Log likelihood	-1254.1741	-	-415.13579	-
Pseudo R^2	0.1976	-	0.1423	-

***, (**), (*) - statistically significant at 1%, (5%), (10%) level
† dF/dx is for discrete change of dummy variable from 0 to 1

Sector dummies suggest that behavior of enterprises depend on industry the firm act. Positive coefficients on manufacturing and agricultural sector (*MANUF* and *AGRI*) and negative coefficients in services (*SERV* and *FINSERV*) suggest that the behavior of firms in these sectors is determined by overall economic conditions and lack of capital (*LACK_CAP*).

Finally, small and medium enterprises have a lower level of barter transactions than large enterprises. The intercept in the regression is much lower. And *SMALL* dummy reveals that enterprises that have the employment of 1-50 person have much lower probability of using barter transactions. Thus, if we take away the impact of other factors we can conclude that SMEs are more efficient at financial management and planning. But, we should be cautious because many of small enterprises are engaged in retail trade, where there is no need for barter transactions. Although small enterprises are more vulnerable to different shocks, they are better managed.

Chapter 5.

CONCLUSIONS

The importance of small and medium enterprises (SMEs) in the process of transition from a centrally planed to a market economy is now widely recognized in the literature. This paper tries to analyze the influence of different factors on the investment and barter activities of enterprises. Constraints that might influence these decisions are taken into account. We take a look at the regulatory and financial constraints.

- Regulatory constraints, measured as number of inspections by different governmental agencies, are not found to decrease probability of capital investments for both SMEs and large enterprises. Although they decrease probability of using barter transactions by SMEs, their influence on large enterprises is insignificant.

- Financial stringency is more obvious in the case of small and medium-scale enterprises. Lack of capital for the development of the firm is more important in case of small enterprises compared to large enterprises. SMEs also have lower probability to borrow money from external sources.

- The better performance of the firm is correlated with its usage of contemporary methods of decreasing information uncertainty it faces. These methods include preparation of written business and marketing plan, conducting market research, and working with business consultants. Assistance from management training, business consulting and in obtaining a credit increase quality of management of the enterprise.

- Governmental purchases of outcome of the firm increase probability of making investments, and increase probability of using barter transactions.

- We found that sector dummies have significant effect. Thus, behavior of enterprise is determined by the prevailing behavior of its rivals.

- Taking into account these constraints we conclude that SMEs developed manly the same pattern of response to changes in environment as large enterprises, although the effect of impediments they face is different.

Results from this paper coincide with recent study of Akimova (2001), where she found that regulatory constraints are not significant for the enterprise desire to develop further. But, contrary to her study, we have found the sector effect to be significant for the probability of enterprise to increase investments or use barter transactions.

The study also supports the argument that managers of small and medium-scale enterprises are more able to adjust to new situation, although these enterprises are more vulnerable to different shocks. This supports the idea that "new enterprises in the transition economies are more productive than old enterprises" (World Bank 2002). Relations with governmental bodies change the pattern of response of the state that supports the idea for presence of soft-budget constraints.

Recognition of enterprise's constraints is necessary in order to develop policy that will foster development of the sector:

- Little impact of regulatory bodies on the development of enterprises suggests that the policy should be dedicated to the creation of the business environment that will foster the growth of the enterprises. This includes clear rules for all enterprises. The practice of support of some fraction of enterprises distorts incentives of enterprise mangers, and creates possibility for inefficient use of resources.

- Higher level of growth can be achieved by transferring resources from old enterprises to new one. The policy environment should discipline the low-

productivity old enterprises, especially in the case where the state can influence the situation via better management of its corporate rights.

- Management of enterprise improves with reduced information uncertainty. This might be done in the form of special publication, seminars, programs, or courses that will explain all the possibilities that are available to firms, that will improve basic skills of creating a business plan, etc.

Unfortunately, this study has a set of limitations that should be discussed. We think that it is necessary to perform the same analysis using time series or panel data. This will allow investigation of the dynamic impact of regulatory changes on the performance of Ukrainian SMEs in contrast to large enterprises. The dynamic model would allow one to test the impact of changes of regulatory activities on enterprise performance, while controlling for initial levels. This will also give possibility to solve the problem of unobserved heterogeneity. Moreover, performance indicators can be extended to include labour productivity and profitability of the firm.

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APPENDIX TABLES

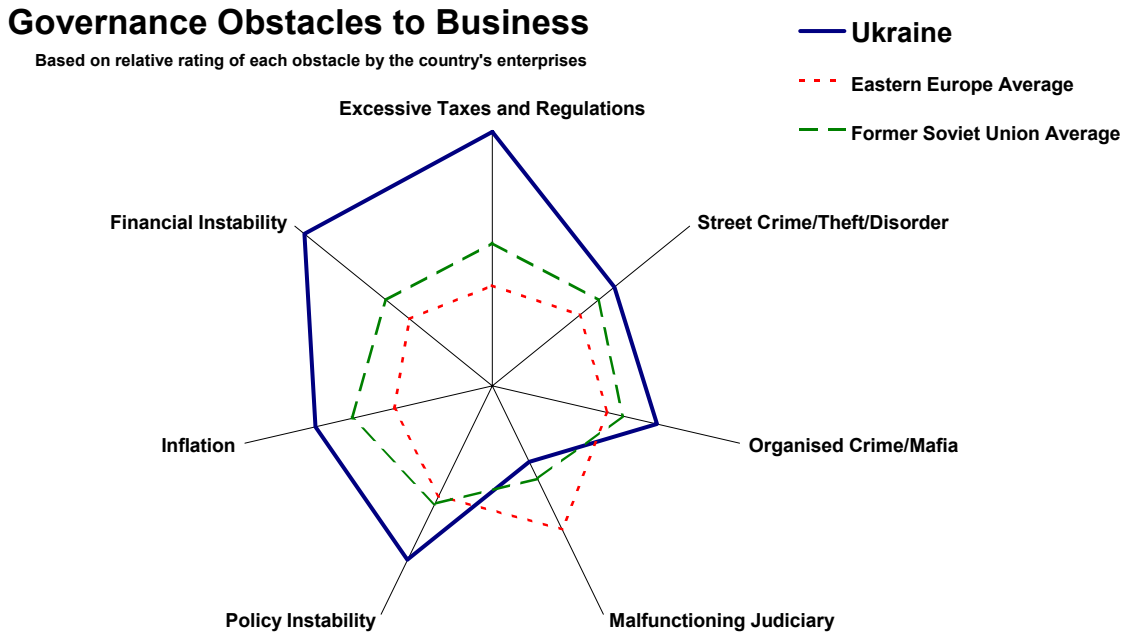
Table A1

Main Indexes of Development of Small Enterprises in Ukraine in 1991-2000

Index	1991	1995	1996	1997	1998	1999	2000
Number of small enterprises	47084	96019	96270	136238	173404	197127	217930
Total employment in small enterprises, (in thousands)	1192.4	1124.9	1178.1	1395.5	1559.9	1677.5	1709.8
Average employment per enterprise	25	12	12	10	9	9	8
Number of small enterprises per 10 thousands of current population level	9	19	19	27	34	40	44

Source: Statistical Yearbook, Ukraine 2000, Derzhkomstat.

Figure A1.



Note: The thick blue line represents the severity of each obstacle for business performance in the country you chose. Distance from the origin indicates higher obstacles, and thus poorer governance performance on each dimension. The thin green line represents the average severity of each obstacle in the countries in the Former Soviet Union. The thin red line indicates the average severity of each obstacle for the countries in Eastern Europe (outside the Former Soviet Union). To select a different country, please click on the "Input" tab below.

Source: "Seize the State, Seize the Day: State Capture, Corruption, and Influence in Transition" (PRWP 2444, http://www.worldbank.org/wbi/governance/).

Table A2[4]

The Distribution of Sample Enterprises by Ownership Type

	Small		Medium		Large		Total
	Freq.	%	Freq.	%	Freq.	%	Freq.
Private firm, owned by physical entity	826	49,3	90	11,7	72	9,6	988
Joint-stock companies with more than 50% of shares owned by state **(state dominated firms)**	141	8,4	184	23,9	242	32,3	567
Joint stock companies with less than 50% of stock owned by state **(mixed firms)**	35	2,1	68	8,8	89	11,9	192
Joint stock companies owned by Ukrainian or foreign physical or legal entities **(private firms)**	589	35,1	390	50,6	329	43,9	1308
TOTAL	1677	100	771	100	750	100	3198

Source: author's calculations based on the Ukrainian Enterprise Survey 1999 provided by Kyiv International Institute of Sociology.

[4] This and all consequent tables are based on the Ukrainian Enterprise Survey 1999 provided by Kyiv International Institute of Sociology.

Table A3

Distribution of Firms that Invested into New Capital, by Ownership Type and Size

	Small		Medium		Large		Total
	Freq.	%	Freq.	%	Freq.	%	Freq.
Private firm, owned by physical entity	405	53,7	59	16,2	40	10,1	504
Joint-stock companies with more than 50% of shares owned by state **(state dominated firms)**	45	6,0	78	21,4	121	30,4	244
Joint stock companies with less than 50% of stock owned by state **(mixed firms)**	13	1,7	24	6,6	48	12,1	85
Joint stock companies owned by Ukrainian or foreign physical or legal entities **(private firms)**	291	38,6	203	55,8	189	47,5	683
TOTAL	754	100	364	100	398	100	1516

Source: author's calculations

Table A4

Distribution of Firms that Use Barter Transactions by Ownership type and Size

	Small		Medium		Large		Total
	Freq.	%	Freq.	%	Freq.	%	Freq.
Private firm, owned by physical entity	174	49,4	50	11,4	49	10,3	273
Joint-stock companies with more than 50% of shares owned by state **(state dominated firms)**	24	6,8	91	20,7	151	31,6	266
Joint stock companies with less than 50% of stock owned by state **(mixed firms)**	13	3,7	44	10,0	58	12,1	115
Joint stock companies owned by Ukrainian or foreign physical or legal entities **(private firms)**	141	40,1	255	58,0	220	46,0	616
TOTAL	352	100	440	100	478	100	1270

Source: author's calculations

Table A5

Description of Variables

Dependent variables

CAP_EXPY	One if enterprise made capital investments, zero otherwise
BARTER	One if enterprise uses non-monetary transaction for purchase of materials, zero otherwise

Explanatory variables

DEMPL	Employment change for the period
INPS_NU	Additive index that describes the number of inspections by tax administration, fire department, police department, sanitary-epidemic station, ministry of environment, committee of standardization, consumer protection committee, anti-monopoly committee.
INSP_TAX	Index that describes the number of inspections by tax administration
DEVELOPM	One if firm Prepared a written business plan, prepared request for financing, conducted formal market research, prepared marketing plan, worked with business consultant or use other methods that might help it to develop more rigorously on the market; zero otherwise.
ASSIST	Received assistance from management training, business consulting or in obtaining a credit.
LACK_CAP	One if firm determines lack of capital to be its main obstacle, zero otherwise
BORROW_Y	One if firm managed to borrow fund from external sources, zero otherwise
INSIDER	One if owner is insider, zero otherwise
EXPORT	One if enterprise is engaged in export activities, zero otherwise
GOV	One if state makes purchases from this firm, zero otherwise
NEW	One if the firm is newly created, zero otherwise
SEPARATE	One if firm was separated from state owned enterprise, zero otherwise
SMALL	One if employment <50, zero otherwise
MIXED	One if Joint-Stock company where state has **00**-50%, zero otherwise
STATE	One if Joint-Stock company where state has more than 50% of shares, zero otherwise

PRIV_JS	One if Joint-Stock owned by mostly by private people, zero otherwise
SME	One if employment < 250, zero otherwise
CONSTR	One if firm is engaged in construction industry, zero otherwise
MANUF	One if firm is engaged in manufacturing or mining industry, zero otherwise
SERV	One if firm provides services (transportation, communication, hotels, recreation, social and cultural services), zero otherwise
FINSERV	One if firm provides business services (consulting, real estate, insurance and other business services), zero otherwise
TRADE	One if firm is engaged in wholesale or retail trade, zero otherwise
AGRI	One if firm is agricultural, zero otherwise
EATDRINK	One if firm is eating or drinking place, zero otherwise

Table A6

Summary Statistics for Variables Used in Empirical Model for Subsample of 2448 Small and Medium-Scale Enterprises.

Variable	Mean	Std.Dev.	Min	Max
cap_expy	.4701797	.4992119	0	1
barter	.3361928	.4725023	0	1
dempl	-3.633987	17.63692	-300	101
insp_nu	11.39216	21.09658	0	486
insp_tax	3.908497	7.897471	0	180
developm	.5347222	.4988948	0	1
assist	.1062092	.3081681	0	1
lack_cap	.2867647	.4523431	0	1
borrow_y	.0755719	.2643659	0	1
insider	.6462418	.4782329	0	1
export	.0751634	.2637087	0	1
gov	.1695261	.3752926	0	1
new	.5020425	.500098	0	1
separate	.1495098	.3566631	0	1
priv	.374183	.4840101	0	1
mixed	.0420752	.2008017	0	1
state	.1327614	.339386	0	1
priv_js	.3999183	.4899814	0	1
trade	.3288399	.4698876	0	1
constr	.1323529	.3389433	0	1
agri	.0298203	.1701259	0	1
manuf	.1531863	.3602405	0	1
serv	.1997549	.3998977	0	1
finserv	.0686275	.2528712	0	1
eatdrink	.0404412	.1970318	0	1

Table A7

Summary Statistics for Variables Used in Empirical Model for Subsample of 750 Large Enterprises.

Variable	Mean	Std.Dev.	Min	Max
cap_expy	.544	.4983926	0	1
barter	.6533333	.4762261	0	1
dempl	-29.64133	99.44074	-1200	400
insp_nu	20.39373	42.46158	0	625
insp_tax	7.681333	18.22456	0	180
developm	.7226667	.4479812	0	1
assist	.1986667	.3992628	0	1
lack_cap	.408	.4917911	0	1
borrow_y	.1746667	.3799351	0	1
insider	.4306667	.4955	0	1
export	.2813333	.4499498	0	1
gov	.3	.4585634	0	1
new	.16	.3668507	0	1
separate	.1173333	.3220318	0	1
priv	.096	.2947878	0	1
mixed	.1186667	.3236117	0	1
state	.3226667	.4678084	0	1
priv_js	.4386667	.4965551	0	1
trade	.0813333	.2735288	0	1
constr	.108	.3105875	0	1
agri	.036	.1864144	0	1
manuf	.5186667	.4999849	0	1
serv	.176	.3810743	0	1
finserv	.048	.2139089	0	1
eatdrink	.0026667	.0516053	0	1

Table A8

Weighted Regression Results for Whole Sample.
Dependent Variable: Capital Expenditures

Explanatory variable	LPM (1)		Probit (2)		Logit (3)	
	Coefficient	Robust St. Error	Coefficient	Robust St.Error	Coefficient	Robust St.Error
dempl	.000775***	.0002274	.002320***	.000763	.0044648**	.0017553
insp_nu	.0009783**	.0004218	.0025885**	.0013047	.0053889*	.0029058
developm	.175199***	.0190831	.460936***	.050658	.743077***	.0821573
assist	.088331***	.0264049	.240763***	.0739845	.395460***	.1209839
lack_cap	-.0485223**	.0186701	-.132266***	.0504619	-.2123595**	.0822406
borrow_y	.140955***	.0287734	.392225***	.0823727	.637232***	.1376249
insider	.0282713	.0200992	.0781622	.0542747	.1300269	.0881392
export	.0694272**	.0286089	.1922468**	.0784483	.3211596**	.1298723
gov	.0539606**	.0225205	.1485398**	.0613784	.2415248**	.0998791
new	.0302319	.0220346	.081757	.0596108	.1344603	.0970679
separate	-.0428671	.0265303	-.1153863	.0720344	-.1934927	.1181624
mixed	-.0913012**	.0404687	-.2465727**	.1097296	-.3969544**	.1798544
State	-.079829***	.03002	-.2116644**	.0819674	-.346827***	.1335019
priv_js	.0015208	.0214822	.0048756	.0576516	.010261	.0933449
constr	-.100885***	.02942	-.283898***	.0817998	-.447439***	.1330144
agri	-.0478042	.0516003	-.133678	.138941	-.2097739	.2259056
manuf	-.0209862	.0268522	-.0548036	.0725885	-.0825153	.1180493
serv	.0519847**	.0254867	.138833**	.0686048	.2351318**	.1111792
finserv	.0290842	.0380132	.0725845	.1011663	.1250871	.1645355
eatdrink	.0670432	.0515317	.178897	.1355579	.2832201	.221183
small	-.074982***	.0286654	-.20707***	.0781161	-.339638***	.1290795
medium	-.0323028	.0260197	-.0913167	.070745	-.1534726	.1161329
_cons	.399295***	.0395069	-.2596377**	.1073206	-.4337685**	.1789784
F-statistics	F(22,3175) =16.11 p=0.0000	-	-	-	-	-
R-squared	0.0907	-	-	-	-	-
RootMSE	.47837	-	-	-	-	-
Pseudo R2	-	-	0.0686	-	0.0693	-
Log likelihood	-	-	-2063.6522	-	-2062.0552	-
Wald Chi2	-	-	$\chi^2(22)$ =268.82 p=.0000	-	$\chi^2(22)$ =249.83 p=.0000	-

Observations =3198; ***, (**), (*) - statistically significant at 1%, (5%), (10%) level

Table A9

Weighted Regression Results for SMEs Subsample.
Dependent Variable: Capital Expenditures

Explanatory variable	LPM (1)		Probit (2)		Logit (3)	
	Coefficient	Robust St. Error	Coefficient	Robust St.Error	Coefficient	Robust St.Error
dempl	.002852***	.0005374	.010447***	.002489	.018485***	.005016
insp_nu	.002018***	.0004959	.007080***	.0020781	.012624***	.0040616
developm	.188592***	.0212851	.507522***	.0574702	.817689***	.093634
assist	.088815***	.032224	.237225***	.0914364	.391584***	.1505472
lack_cap	-.0450094**	.0215125	-.1245983**	.0593865	-.1991967**	.0973734
borrow_y	.133139***	.0360727	.372142***	.1048309	.620375***	.173402
insider	.0276303	.0232971	.077464	.0641454	.126632	.1047353
export	.0899638**	.0389242	.2636903**	.1103173	.4311747**	.1850432
gov	.088073***	.0266671	.240686***	.0751029	.395293***	.122911
new	.0128022	.0248189	.0291398	.0685503	.0521546	.1122639
separate	-.0290706	.0298387	-.0967846	.0835552	-.1616904	.1375202
small	-.0407942	.0255041	-.111247	.0723045	-.1847908	.1190941
mixed	-.138434***	.0516037	-.385267**	.1489016	-.651539***	.2502186
state	-.11479***	.0356604	-.320596***	.1015016	-.528354***	.1665534
priv_js	.0039974	.0230249	.0136581	.06289	.0171773	.1021309
constr	-.115048***	.0319945	-.320045***	.0925416	-.507779***	.152101
agri	-.0890789	.0566725	-.2619371	.1629861	-.4138739	.2664335
manuf	.002716	.0312999	.0174313	.0863411	.0337929	.1414694
serv	.0543849*	.0279516	.1502821**	.0760821	.2582137**	.1244808
finserv	.0271577	.041398	.0746978	.1114245	.1317454	.1824504
eatdrink	.0649936	.0519394	.1560383	.139006	.2618688	.2264552
_cons	.358014***	.0400259	-.388836***	.1138852	-.641569***	.1887714
F-statistics	F(21, 2426) =17.48 p=0.0000	-	-	-	-	-
R-squared	0.1092	-	-	-	-	-
RootMSE	.47321	-	-	-	-	-
Pseudo R2	-	-	0.0857	-	0.0861	-
Log likelihood	-	-	-1547.3951	-	-1546.6719	-
Wald Chi2	-	-	$\chi^2(21)$ =251.29 p=0.0000	-	$\chi^2(21)$ =230.04 p=0.0000	-

Observations = 2448 ***, (**), (*) - statistically significant at 1%, (5%), (10%) level

Table A10

Weighted Regression Results for Large Enterprises Subsample.
Dependent Variable: Capital Expenditures

Explanatory variable	LPM (1)		Probit (2)		Logit (3)	
	Coefficient	Robust St. Error	Coefficient	Robust St.Error	Coefficient	Robust St.Error
dempl	.0005418**	.0002091	.0015266**	.0006441	.0026641**	.0012969
insp_nu	.0002713	.0005267	.000627	.0013073	.0011137	.0024335
developm	.1086102**	.0446378	.2863912**	.1159752	.4654152**	.187401
assist	.09577**	.0453751	.2714637**	.1269443	.4292154**	.2066294
lack_cap	-.0459863	.0376085	-.1231541	.0988391	-.1971059	.1610629
borrow_y	.155452***	.0469301	.431344***	.1340426	.704709***	.225584
insider	.0381098	.0404158	.1047925	.1071688	.1704942	.1740126
export	.0629352	.0426916	.1734939	.1145494	.2792848	.1862243
gov	-.0318356	.0412453	-.0823442	.1084562	-.1340674	.177038
new	.078021	.0500164	.2120097	.1369806	.3461707	.2229781
separate	-.115752***	.0583365	-.3059051**	.1534699	-.5012778**	.2524341
mixed	.0296892	.07523	.0775331	.1972854	.1385715	.3189218
state	.010821	.0644911	.034238	.1699144	.0548201	.2741838
priv_js	.0423238	.0592797	.1123245	.1576977	.1925807	.2559207
constr	-.0021104	.0778343	-.0131986	.2064342	-.0209627	.3329225
agri	.1133481	.1152658	.2804206	.3047902	.4805903	.5050525
manuf	-.0259289	.063488	-.0700762	.1687764	-.1087382	.2741324
serv	.0766305	.0683775	.2093034	.1842721	.3430305	.2975184
finserv	.0403038	.0979582	.1029806	.2638687	.1739058	.4238891
_cons	.394993***	.0877805	-.2805267	.2307561	-.464364	.3758766
F-statistics	F(20, 729)=8.87 p=0.000	-	-	-	-	-
R-squared	0.0781	-	-	-	-	-
Root MSE	.48505	-	-	-	-	-
Pseudo R2	-	-	0.0573	-	0.0576	-
Log likelihood	-	-	-485.82651	-	-485.71817	-
Wald Chi2	-	-	$\chi^2(19)$ =53.40, p=0.0000	-	$\chi^2(19)$ =49.44 p=0.0000	-

Observations = 750; ***, (**), (*) - statistically significant at 1%, (5%), (10%) level

Table A11

Weighted Regression Results for Whole Sample.
Dependent Variable: Barter

Explanatory variable	LPM (1)		Probit (2)		Logit (3)	
	Coefficient	**Robust St. Error**	**Coefficient**	**Robust St.Error**	**Coefficient**	**Robust St.Error**
dempl	-.0003145**	.00012	-.0011198**	.0005407	-.0019348**	.0009456
insp_nu	-.0003977	.0002656	-.0012533	.0008572	-.0021234	.0014057
developm	.090390***	.0170303	.301726***	.055319	.504952***	.0944741
assist	-.0062527	.0244426	-.0223367	.0785651	-.0273265	.1333065
lack_cap	.069821***	.0167839	.220958***	.0536938	.384145***	.0911901
borrow_y	-.042984	.0277476	-.1342431	.0875614	-.24816	.1512368
insider	-.0077016	.0180976	-.0175166	.059401	-.0377555	.1018486
export	.125782***	.0251782	.398785***	.0821966	.690894***	.1401695
gov	.089690***	.0212399	.272761***	.0653422	.470805***	.1105479
new	-.084913***	.0197174	-.264297***	.0636407	-.451066***	.1073714
separate	.0035287	.0237971	.0109738	.0757922	.0339055	.1270104
mixed	-.0076712	.0389364	-.0266855	.1218862	-.0201453	.2126584
state	-.0667456**	.026833	-.1791349**	.0877465	-.3009868**	.1485894
priv_js	-.0059029	.0188425	-.0121466	.0638159	-.0132599	.1090549
constr	.189080***	.0288708	.513736***	.084708	.857077***	.141521
agri	.254024**	.0479046	.709317***	.1507421	1.21279***	.2547029
manuf	.184678***	.0253814	.493239***	.0749928	.809859***	.1250311
serv	-.0496664**	.0217393	-.1830464**	.0745194	-.2940282**	.1266046
finserv	-.143630***	.0297658	-.536276***	.1245279	-.938196***	.2224035
eatdrink	-.147894***	.0324056	-.645927***	.1725285	-1.10332***	.3159437
small	-.242848***	.0269102	-.702079	.0801867	-1.15458***	.1340829
medium	-.0159743	.0244859	-.0415212	.0727912	-.0713439	.121467
_cons	.444276***	.0353708	-.1782883	.1116641	-.3129321*	.1876977
F-statistics	F(22, 3175) =2.07 p=0.0000	-	-	-	-	-
R-squared	0.2746	-	-	-	-	-
RootMSE	.4205	-	-	-	-	-
Log likelihood	-	-	-1686.7294	-	-1686.1075	-
Pseudo R2	-	-	0.2210	-	0.2213	-
Wald Chi2	-	-	$\chi^2(22)$ =802.46 p=0.0000	-	$\chi^2(22)$ =699.78 p=0.0000	-

Observations = 3198 ***, (**), (*) - statistically significant at 1%, (5%), (10%) level

Table A12

Weighted Regression Results for SMEs Subsample.
Dependent Variable: Barter

Explanatory variable	LPM (1)		Probit (2)		Logit (3)	
	Coefficient	Robust St. Error	Coefficient	Robust St.Error	Coefficient	Robust St.Error
dempl	-.0002001	.0005998	-.0004906	.0016868	-.0005575	.002938
insp_tax	-.002615**	.0010447	-.0106782**	.0050532	-.0180252*	.010555
developm	.062880***	.018742	.226886***	.063226	.374119***	.1088341
assist	.018695	.0301508	.0564976	.0960334	.0999899	.1630964
lack_cap	.084196***	.0194805	.272041***	.0627175	.467008***	.106602
borrow_y	-.0020036	.034991	.0075451	.111034	-.007688	.1922668
insider	-.0078405	.0208164	-.0170577	.0698064	-.0404984	.1201337
export	.102920***	.036189	.317600***	.1118065	.560269***	.1912426
gov	.104536***	.0260313	.323790***	.0799054	.553065***	.1354385
new	-.075167***	.0217612	-.242763***	.0726234	-.418869***	.123354
separate	.005277	.0274561	.0152891	.0879002	.0383011	.1484374
small	-.233384***	.0246308	-.687542***	.0730217	-1.13280***	.1224881
mixed	.056499	.0503925	.1753051	.1565382	.3240776	.2733231
state	-.090350***	.0319456	-.271777**	.1091053	-.456707***	.1862311
priv_js	.0056167	.0203728	.0182977	.0697098	.0423361	.1197515
constr	.174701***	.0321997	.469901***	.0939723	.783600***	.1580626
agri	.235868***	.0571092	.654762***	.1685724	1.10320***	.283761
manuf	.196164***	.0299321	.535149***	.0879696	.877431***	.1472892
serv	-.076716***	.0227322	-.286755***	.0850654	-.482584***	.1475768
finserv	-.126073***	.0312582	-.493539***	.1376935	-.870102***	.2518999
eatdrink	-.151465***	.0324155	-.681305***	.1806371	-1.18830***	.3341728
_cons	.439789***	.036682	-.1691512	.1194771	-.2827154	.2062257
F-statistics	F(21, 2426) =44.10 P=0.0000	-	-	-	-	-
R-squared	0.2408	-	-	-	-	-
Root MSE	.41347	-	-	-	-	-
Pseudo R2	-	-	0.1976	-	0.1975	-
	-	-	-1254.1741	-	-1254.3529	-
Wald Chi2	-	-	$\chi^2(21)$ =534.29 p=0.0000	-	$\chi^2(21)$ =469.03 p=0.0000	-
Log likelihood	-	-	-1057.5974	-	-1057.8672	-

Observations = 2448; ***, (**), (*) - statistically significant at 1%, (5%), (10%) level

Table A13

Weighted Regression Results for Large Enterprises Subsample.
Dependent Variable: Barter

Explanatory variable	LPM (1)		Probit (2)		Logit (3)	
	Coefficient	Robust St. Error	Coefficient	Robust St.Error	Coefficient	Robust St.Error
dempl	-.0003024**	.0001188	-.0011448*	.000588	-.0020878**	.0010403
insp_tax	-8.96e-06	.0008629	.0002931	.0029158	.000391	.0050281
developm	.183315***	.0417893	.534265***	.1218811	.897942***	.2050105
assist	-.0472015	.0421192	-.1579794	.1355341	-.2450549	.2343997
lack_cap	.0245032	.0340087	.0844167	.1058726	.1414403	.1793595
borrow_y	-.0998918**	.0462433	-.307699**	.1376312	-.5312793**	.2352817
insider	-.0361388	.0364971	-.1189975	.1147941	-.20007	.1951704
export	.151151***	.0354964	.507269***	.1263854	.883732***	.21999
gov	.063455*	.0371625	.1830708	.1169595	.3307867*	.200239
new	-.137939***	.0502671	-.400975***	.1461468	-.667008***	.2455627
separate	.0070727	.0483373	.0149404	.1625172	.0540899	.2759798
mixed	-.1006166	.0703428	-.3290735	.2168952	-.5439667	.3713585
state	-.0511701	.0577195	-.1460953	.1857334	-.2719797	.3160797
priv_js	-.0484288	.0529597	-.1462031	.1717649	-.2584191	.2910989
constr	.283121***	.0730329	.790851***	.2132068	1.28414***	.3546399
agri	.343244***	.0923746	1.03419***	.3523835	1.81718***	.640004
manuf	.218831***	.0617591	.592166***	.1709009	.970848***	.2824808
serv	.0937068	.0700279	.2300308	.188952	.389355	.3138726
finserv	-.1995622**	.090553	-.6114894**	.2837488	-1.033969**	.4700872
eatdrink	-.0158218	.3636787	-.0692035	.9062911	-.1036144	1.440376
_cons	.390423***	.0791962	-.2923885	.236223	-.4983264	.3924857
F-statistics	F(20, 729) =8.72 P=0.0000	-	-	-	-	-
R-squared	0.1745	-	-	-	-	-
Root MSE	.43859	-	-	-	-	-
Pseudo R2	-	-	0.1423	-	0.1431	-
Log likelihood	-	-	-415.13579	-	-414.77227	-
Wald Chi2	-	-	$\chi^2(20)$ =110.73	-	$\chi^2(20)$ =98.95	-

Observations = 750; ***, (**), (*) - statistically significant at 1%, (5%), (10%) level

Table A14. Overview of the Literature that Identify Constraints for Development of Enterprise Sector in Transition Economies.

	Akimova 2001	Beck et al. 2002	Broadman 2000	Brunetti et al. 1997	Buckberg 1997	Djankov et al. 2000	De Soto 2000	Eggertsson 1990	Hallberg 1999	Hellman et al. 2000*	IFC 1997*	Johnson et al. 1999	Johnson, Kaufman 1999*	Johnson et al 2000	Levine 1997	Levy 1991	Pissarides et al. 2000	Pissarides 1998	Winiecki 2001	Yacoub et al. 2001*
Regulatory constraints:					x					x	x		x					x		x
licenses			x						x		x									
inspections											x									
excessive tax structure				x	x					x	x							x		x
discriminatory tax system				x					x	x	x									x
Entry barriers			x			x	x		x											
Non-competitive behavior									x		x									x
Corruption:	x	x	x	x									x	x						x
official and unofficial levies	x								x	x				x						
Not stable legal environment		x			x					x	x							x	x	
Policy instability				x																
Lack of laws that support protection of business and intellectual property			x				x		x										x	
Insecure property right	x			x			x	x				x	x						x	
Weak contract enforcement	x		x					x			x		x						x	
Financial Constraints: weak financial markets		x	x							x					x			x		
lack of external finances			x							x					x		x	x		
high costs of financing																	x			
Underdeveloped business infrastructure low access to information, consulting, business services, Information uncertainty				x					x						x	x			x	
Labor market rigidities, lack of skilled labor									x									x		
Crime				x										x						
Technological impediments																x				
Low access to land, buildings, office space																	x			
Low demand			x								x									x

x - the study have found the constraint to be important factor that adversely influences the behavior of enterprise.

* - The most important factors are taken.