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# Objectives and constraints of entrepreneurs: evidence from small and medium size enterprises in Russia and Bulgaria

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**Pissarides, Francesca, Singer, Miroslav, and Svejnar, Jan**—Objectives and constraints of entrepreneurs: evidence from small and medium size enterprises in Russia and Bulgaria

We analyze the principal objectives and constraints of small and medium enterprises (SMEs), using data from a survey of 437 top managers (CEOs) of SMEs in Russia and Bulgaria. The CEOs display similar views and identify a small number of specific constraints as being the most important ones. The constraint on external financing is a particularly serious one, while payments for licenses or government services (insecure property rights) are not. Our analysis indicates that characteristics of the entrepreneur, the firm and the firm's environment are important but varying determinants of which constraints are most important. The nature of both the disruption of production and the financial constraints after the fall of planning also appears to have been more ubiquitous in Russia than in Bulgaria. *Journal of Comparative Economics* **31** (3) (2003) 503–531. European Bank for Reconstruction and Development, London, UK; PriceWaterhouseCoopers, Prague, Czech Republic; Center for Economic Research and Graduate Education, Economics Institute (CERGE-EI), Charles University, Prague, Czech Republic; The William Davidson Institute, University of Michigan Business School, Ann Arbor, MI 48109, USA; University of Michigan, Department of Economics, Ann Arbor, MI 48109-1234, USA.


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## 1. Introduction

Entrepreneurs, start-up companies and small and medium size enterprises (SMEs) played a very limited part under central planning. Their relative absence reflected the planners' difficulties in controlling a large number of small and independent agents, as well as their belief in the existence of economies of scale.[1] As central controls were lifted, new entrepreneurs emerged rapidly and, in a number of countries, they became a principal driving force of economic development. In the Czech Republic, manufacturing firms with fewer than 25 employees constituted 0.8% of all firms and accounted for a negligible percent of total manufacturing output in 1989. By 1993, these firms constituted 89.9% of all manufacturing firms and produced 10.6% of manufacturing output (Zemplinerová and Stíbal, 1995). Many of these small firms also grew rapidly in size. By 1994, many of them moved into the next size category of firms with between 25 to 200 employees, accounting for the growth in this category's share of output from 0.1% in 1989 to 11.3% in 1993 and 14.2% in 1994. Similarly, EBRD (1993) estimates that over 1.5 million small businesses were in existence in Poland by the end of 1992 and Gomulka (1994) reports that the growth of output in Poland between 1992 and 1994 was accounted for primarily by the booming SME sector. Bulgaria also experienced fast growth of the small enterprise sector during the first half of the 1990s. In 1989 less than 23,000 private enterprises were registered. By the time our survey was implemented in 1995, the number had grown to 513,504.[2] Progress can also be observed through the growth of the share of private sector in Bulgarian GDP, which increased from 5% to 50% during the same time span, and through the growth of the share of private sector in total employment, which also rose from 5.5% in 1989 to 34.7% in 1994 (EBRD, 1994). In Russia, privatization of small, medium and large-scale enterprises was advanced, although by no means complete, by mid-1995, when around one million small enterprises were registered officially. Estimates suggest that another two to three million unregistered small businesses were also operating. The 1995 private sector share in GDP is estimated by EBRD (1999) to have been 55%.

While SMEs are very dynamic firms, their behavior is not yet well understood. Limited evidence suggests that they often face economic, institutional and legal obstacles, including limited access to working capital and long term credit, legal and regulatory restrictions, inadequate infrastructure, and limited managerial and technical expertise. This issue has received some attention from economists, but theoretical predictions and empirical evidence are sketchy.

[1] For example, EBRD (1995) reports that, while SMEs accounted for over two-thirds of the labor force in Czechoslovakia and Hungary in the early 1930s, by 1989 this share fell to less than one-third. Moreover, while the average size of an enterprise in these two economies grew to 2000 workers by 1989, the corresponding figure in the European Union was seven workers.

[2] However, EBRD (1994) estimates that in 1993 only 50% of the registered enterprises in Bulgaria were active. During the sampling for the current survey, the share of active enterprises in the manufacturing sector was estimated at a very low 20%.

The present study contributes to the understanding of the principal objectives of SMEs and of the main constraints that affect their behavior. Our work has been motivated by the premise that, in order to formulate a coherent strategy *vis-à-vis* entrepreneurs and the SME sector, it is necessary to understand the objectives of these firms, comprehend how different constraints affect SME formation and performance, and rank the relative severity of these constraints. In order to achieve these objectives, we designed a flexible survey instrument and administered it to top managers (CEOs) of SMEs in Russia and Bulgaria. The survey allows us to identify the principal objectives of SMEs, rate and rank the severity of different types of constraints faced by the SMEs without needing to resort to our subjective interpretation of commonly used open-ended questions, and employ the instrument in a comparative setting across different economies. We carry out an econometric analysis of the information obtained from the questionnaire and draw conclusions about the behavior of SMEs in transition economies.

## 2. Economic situation at the time of the surveys

The two surveyed countries were selected according to three criteria. First, we decided to investigate enterprise development where private sector entry and activity was occurring, albeit with difficulty. Second, we chose countries or regions that had not been the object of similar investigations recently. Third, to allow for a degree of generalization to other transition countries, we avoided economies characterized by peculiar structures or suffering very adverse developments, such as mainly agricultural economies, regions dominated by state-owned companies, or areas afflicted by civil war. Russia and Bulgaria fit all three criteria and were at an intermediate stage of transition in relation to other countries in the region (EBRD, 1996).

In Bulgaria, a market-oriented reform and program of macroeconomic stabilization were launched in 1991. However, government intervention into markets and into enterprise finances remained significant and there was backtracking on price reform and foreign trade liberalization. New small enterprises emerged quickly in the trade and services sectors, but restructuring and privatization of large enterprises and banks was slow. While direct budgetary subsidies to state-owned enterprises were largely eliminated, financing of losses through the banking system and through payment arrears remained pervasive. A bankruptcy law, in existence since July 1994, had hardly been implemented by the time of the survey. In 1994 and 1995, the economy was experiencing moderate growth and a sharp slowdown in the pace of price increases, although it continued to have the highest rate of inflation in Eastern Europe as consumer prices increased by about 60 percent in the 12 months to July 1995. Real interest rates turned positive for the first time in the first quarter of 1995 and the lending–deposit rate spread was significantly reduced as tightened monetary policy led to increased competition for deposits.

In Russia, partial reforms were introduced from 1987 to 1991 in the guise of perestroika. A radical reform package centered on privatization and economic liberalization was adopted in 1992. By 1995, significant progress was made on a wide spectrum of structural reforms. Financial discipline for the enterprise sector strengthened dramatically after 1992 and bankruptcy legislation, despite its uneven implementation, appeared to be influencing

enterprise behavior. However, drastic cuts in federal financial transfers to the enterprise sector were offset partly by local government subsidies, widening tax exemptions and enterprise arrears. In 1995, a comprehensive stabilization program was launched with the assistance of an IMF Stand-by Agreement. By mid-1995, the pace of output decline was subsiding and inflation fell to 5% on a monthly basis. Interest rates were liberalized early on and since October 1993, real interest rates on credits have been positive with the exception of the period from November 1994 to January 1995.

The Krasnodar region of Russia was selected as a region characterized by few large state enterprises and a nascent manufacturing sector, mainly machinery and metal processing, wood processing, production of construction materials, light industry, food processing and chemical and oil production. Its economic structure, a pro-reform local government, and the fact that it had not been investigated previously by other analysts made Krasnodar an appealing candidate for our survey.[3]

The different reform path experienced by the two countries is reflected in marked differences between Russian and Bulgarian enterprises both in terms of their characteristics and their ability to deal with specific adversities. In particular, the different models of privatization are the most influential factors determining enterprise characteristics and performance. Whereas, in the case of small-scale privatization both countries progressed more or less at the same pace, at the time of the survey, Russia had progressed with large-scale privatization and the unbundling of large state-owned companies relatively more than Bulgaria, thus generating a greater proportion of spin-offs in its SME sector. Bulgaria experienced significant resistance to large-scale privatization from both ministry officials and management of state enterprises and carried out virtually no restructuring. Thus, the impetus to private sector development in that country found its outlet in the creation of new companies. This difference in the origin of enterprises has significant consequences at a point in time relatively close to privatization and to the start of private sector activity. Due to their previous linkages with the former state-owned company, spin-offs tend to benefit relatively more than start-ups from the fact that they inherit capital equipment, labor, and management that are appropriate for their lines of business (Webster and Charap, 1993). Spin-offs do not need to struggle for initial finance to acquire new premises or machinery and do not have to train their workers. In other words, start-up costs are significantly reduced compared to those of *de novo* firms. Moreover, because spin-offs already existed as a different entity working in the same sector and region, they enjoy useful connections with other market players, which make their existence easier. On the other hand, spin-offs also inherit problems of labor hoarding and production inefficiencies that characterized their state-owned mother companies and in the longer run; *de novo* firms may prove to be better performers than spin-offs (Richter and Schaffer, 1996). As we discuss below, the different origin of private sector enterprises in the two countries is reflected in the findings of this survey, in particular with regard to the firms' perception of the constraints of doing business.

[3] Moreover, Krasnodar was at the time one of the key regions of interest in Russia for the EBRD, which sponsored partly this study.

## 3. Methodology

### *3.1. The theoretical and empirical setting*

The large literature dealing with the factors that affect the emergence, structure, and behavior of firms has several disparate strands. Broadly speaking, the factors can be divided into those dealing with the entrepreneurs and managers, the origin, age (i.e., the stage in a life cycle) and ownership of the firm, and the environment in which the entrepreneurs and managers operate. The issue of what personal or group characteristics make good entrepreneurs and managers is an unresolved one. Among individual characteristics, education is given emphasis in the human capital literature, while factors such as ethnicity and social background are featured in anthropological and sociological studies. Personal, group, and institutional characteristics of entrepreneurs and managers are analyzed in the literatures dealing with owner-managed firms, separation of ownership and control, labor-managed or worker-owned firms, state-owned enterprises, and nonprofit organizations, e.g., Williamson (1985), Hart and Moore (1990), and Bonin et al. (1993). The structure or internal organization of firms is studied primarily from the standpoints of bounded rationality, agency problems, and strategic behavior, e.g., Hurwicz (1973), Milgrom and Roberts (1990), and Ben-Ner et al. (1993). The predicted effects of these various factors on the behavior of the firm are usually ambiguous and researchers have resorted to empirical investigations to obtain greater insights.

The impact of the origin of the firm on its behavior is investigated using firm survey techniques by a number of authors. Richter and Schaffer (1996) use a mid-1994 survey data of 439 Russian industrial firms to find that newly created, *de novo* private firms perform better than the state-owned and privatized firms in terms of growth, higher levels of capacity utilization, employment expansion, and amounts invested. Overall, these differences appeared to be inherent to the *de novo* character of the firms and unrelated to their size, location, or the sector in which they operate. Bilsen and Konings (1998) collected data on a sample of 431 firms in Romania, Bulgaria and Hungary. After controlling for size and life cycle effects, they found that *de novo* private firms consistently outperformed the state-owned and privatized enterprises. EBRD (1999) analyzes results from the Business Environment and Enterprise Performance Survey on 3000 enterprises in 20 transition countries and finds that start-ups outperform privatized and state-owned enterprises in terms of employment growth. However, EBRD (1999) also finds that most obstacles to enterprise expansion are skewed toward the start-ups.

The environmental factors usually refer to the existence and functioning of the financial and other markets, the extent of development of infrastructure, and the presence of a legal framework, government regulation and institutions of enforcement. A major concern is the effects on firms of financial constraints resulting from underdeveloped financial markets. A large theoretical literature, reviewed by Levine (1997), points to the importance of financial sector development for economic growth through better identification of investment projects, better availability and lower cost of external financing, improved risk taking, and technological innovation. In this context, Rajan and Zingales (1998) present industry-level evidence from a large sample of countries showing that firms needing external finance tend to develop slower in countries with less developed financial markets.

Similarly, in their analysis of the entire population of Czech industrial firms with 25 or more workers, Lizal and Svejnar (2002) find that smaller firms, especially cooperatives and limited liability companies, have lower rates of investment than large firms and show signs of capital rationing in that their investment depends on the availability of internal funds. Johnson et al. (2000, 2002) find in a survey of private manufacturing firms in Poland, Romania, Slovakia, Ukraine, and Russia that the absence of external financing does not prevent firms from investing. They conclude that the financial constraint is not restrictive in that internal finance can substitute for external finance. Our assessment is that this conclusion represents a conjecture, or testable hypothesis, because firms could be operating under a restrictive financial constraint while still using internal funds for investment.[4] Johnson et al. (2000, 2002) also find that a large proportion of firms in Russia and Ukraine, and a much smaller proportion in Poland, Romania, and Slovakia, report that they make extralegal payments for licenses and government services, as well as payments for protection. They conclude that this implies that property rights are much less secure in the two former Soviet Union countries than in Central and Eastern Europe. From their analysis, the authors conclude that the insecurity of property rights rather than financial constraints is the main problem for investment and development of firms in the transition economies.

In this paper, we examine the absolute and relative importance of potential constraints facing small and medium size firms. Our results indicate that several constraints are viewed almost uniformly as greatly restricting SME operations, with the lack or high cost of external financing being ranked at the top of the list. We also find that firms reinvest profits while operating under the external financing constraint. Unlike Johnson et al. (2000, 2002), we conclude that financial constraints hamper SME growth and that the use of available internal funds for investment is consistent with SMEs facing constraints on external finance. We also find that, while extralegal payments may be present, problems and costs associated with obtaining licenses and dealing with government institutions and state-owned firms are not ranked as being important by the Russian and Bulgarian firms in our sample. Hence, the firms we sampled do not identify insecure property rights as a problem in the sense that their functional operations are not particularly constrained or made costly by their payments for licenses or government services. Moreover, we find that two-thirds of the Bulgarian but only 44 percent of the Russian firms report paying for protection of their premises and the cost or constraint associated with this activity is not reported to be important. Our results, based on intensity or imputed cost of constraints, are hence different than those of Johnson et al. (2000, 2002) based on the presence or absence of the phenomena.

[4] To see this, let $R$ be the borrowing rate for the firm at the bank, $r$ the deposit rate that a firm can get at the bank, and $\rho$ the internal rate of return on the firm's project. When the firm considers how to use its internal funds, it considers the return $\rho$ on its best internal project, as compared to the deposit rate $r$. If $\rho > r$, the firm invests internally. It does the same with the second project and keeps doing so until it runs out of internal funds or reaches the point where $r > \rho$. In the former case, it will seek and take external financing if $\rho > R$, and it will not take external financing if $R > \rho > r$. In the latter case, the firm will stop investing, it will deposit its remaining internal funds in the bank, and will not seek external financing since $R > r > \rho$. As this discussion indicates, a firm that uses its internal funds for investments and faces a high borrowing rate $R$ ($R > \rho > r$) would like to borrow, e.g., at the deposit rate $r$, but it does not do so because it faces too high a borrowing rate $R$.

### 3.2. The survey

During the summer of 1995, we administered an extensive, face-to-face questionnaire survey to chief executive officers (CEOs) in a sample of 216 firms in the Krasnodar region of Russia (hereafter, Russia) and 221 firms in Bulgaria.[5] The goal was to obtain information about the objectives of the firms and about the absolute and relative importance of the principal constraints faced by the firms. In order to assess the factors that lead managers to select particular constraints as being the most severe, we also collected information on the characteristics of the CEO, the firm, and the sector of the firm's operation.

In the main body of our questionnaire, we focused on identifying the absolute and relative severity of the constraints faced by the SMEs in the ten areas of current operations, i.e., production, expanding production, obtaining technology, procurement of non-labor inputs, sales, obtaining financing, securing infrastructure, regulation and taxation, labor, and business services. Since there is interest in factors that affect the ability of the firm to carry out existing production as well as in factors that affect the firm's ability to expand production, the CEOs were asked about constraints in each of these two areas. In order to obtain detailed information on whether and how financial constraints affect the firms, we asked the CEOs what types of constraints they faced in obtaining financing, but financing problems also appeared as a possible constraint in each of the other operational areas.

Within each of these areas, each CEO was asked to rate on a scale from 1 (unimportant) to 5 (very important) the severity of several specific constraints. Each CEO was provided with a complete list of the specific constraints that he had rated as very important (5) and, for questions in which he had rated no constraint as very important, he was also presented with constraints that he had rated as important (number 4 on the scale). The CEOs were asked to examine this list of highly rated constraints from all the areas and to identify and rank the ten most important ones. In this way we obtained the absolute rating of the various specific constraints and information on the most important constraint within each area, and the relative ranking for the top ten highly rated specific constraints, irrespective of area.[6] In addition to tabulating the responses, we use multinomial logit regressions to evaluate the extent to which CEO-specific, firm-specific, and sectoral variables explain which constraints the CEOs identify as being the most important ones in a given area.

### 3.3. The samples

The samples constitute regionally stratified random samples based on the best data that we could obtain on the population of SMEs in Bulgaria and Russia.[7] As we discuss in Appendix A, we used a multitude of registries and other sources of firm-level data to

[5] Some CEOs were also majority owners of the firms.

[6] Note that the CEOs could, and often did, rate more than one constraint in a given area as very important. As a result, more than one constraint in a given area could be selected among the 10 most important constraints overall.

[7] In Russia the firms are located within the Krasnodar region, while in Bulgaria the firms are located mostly in the greater Sofia region.

generate sets of firms that would approximate the overall populations. By the very nature of SMEs, we could not be completely successful in this endeavor.

As has been done in other enterprise-level surveys, the lack of historical data has forced us to sample existing firms and to collect current and retrospective information about them. This approach has the advantage of being feasible and affordable. Its drawback is that it produces duration bias. The bias stems from the fact that some firms did not perform well and closed down before the date of sampling, while others were very successful and outgrew the category of small and medium sized firms. Thus, the usual sampling procedure excludes the worst and best performing enterprises and oversamples firms that survive in a given category for relatively long periods of time. In order to minimize the duration bias, we set a relatively high upper limit on the number of workers, i.e., 200 vs. the usual 100, in the selection of SMEs.[8] The summary statistics related to the sampled firms are reported in Appendix A: as may be seen there, the SMEs in the two economies are primarily recently created and privately owned firms that are characterized by highly concentrated ownership.

### *3.4. Objectives of the firms*

The CEOs were presented with a list of possible objectives and were asked to rate each objective as well as to identify the most important one.[9] The results are presented in Table 1.

In each country, there is virtually no difference between the objectives identified as important by the entire sample of firms and by the sub-sample composed of private firms only. However, although both the Russian and Bulgarian SMEs tend to identify output and profit as very important or most important objectives, Russian SMEs place somewhat more emphasis on profit, while Bulgarian firms place more emphasis on output. Indeed, while 71% of Russian firms rate profit and output as very important, 72% of Bulgarian firms rate output, but only 44% rate profit as very important. Moreover, while 49% of the Russian firms identify profit and 38% output as the most important objective, the respective percentages in the Bulgarian sample are 26% and 52%. Our retrospective questions indicate that the objectives appear to be stable over time and unrelated to company ownership.

Overall, the SMEs place emphasis on both profit and output maximization. For small firms, the two goals may of course be mutually consistent as growth may lead to increased profitability and improved likelihood of survival.[10] Consistent with this view, a possible explanation for the difference between Bulgaria and Russia is that relatively more Bulgarian firms are start-ups that need to grow, while relatively more Russian SMEs are spin-offs that may already be near the optimal scale of operation. Nevertheless, in future research it will be desirable to examine more systematically the almost universally

[8] We have also made considerable effort to trace some of the extinct firms but this effort eventually proved unsuccessful.

[9] For example, the list consisted of the following objectives: achieve highest possible profit, output, employment, wages, and non-wage benefits; prepare for privatization, if state-owned; and prevent social conflict.

[10] The overwhelming majority of enterprise closures takes place in enterprises with less than 10 employees not only in the transition countries but also in the EU economies (Eurostat, 1998).

Table 1
Importance placed on various objectives by the CEO

| | Russia | | | | | | | | Bulgaria | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | All firms | | | | Private firms | | | | All firms | | | | Private firms | | | |
| | Very important[a] | | Most important[b] | | Very important[a] | | Most important[b] | | Very important[a] | | Most important[b] | | Very important[a] | | Most important[b] | |
| | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % |
| Achieve highest possible | | | | | | | | | | | | | | | | |
| output | 154 | 71 | 82 | 38 | 136 | 72 | 73 | 39 | 158 | 72 | 114 | 52 | 138 | 73 | 101 | 54 |
| profit | 153 | 71 | 106 | 49 | 134 | 71 | 93 | 49 | 96 | 44 | 56 | 26 | 84 | 45 | 50 | 27 |
| wages | 87 | 40 | 13 | 6 | 72 | 38 | 10 | 5 | 57 | 26 | 11 | 5 | 48 | 26 | 10 | 5 |
| employment | 47 | 22 | 3 | 1 | 42 | 22 | 3 | 2 | 21 | 10 | 3 | 1 | 19 | 10 | 2 | 1 |
| non-wage benefits | 33 | 15 | 2 | 1 | 26 | 14 | 2 | 1 | 30 | 14 | 1 | 0.5 | 20 | 11 | 1 | 0.5 |
| Prepare privatization (if SOE) | 9 | 4 | 0 | 0 | – | – | – | – | 5 | 2 | 5 | 2 | – | – | – | – |
| Prevent social conflict | 59 | 27 | 4 | 2 | 51 | 27 | 4 | 2 | 16 | 7 | 3 | 1 | 13 | 7 | 2 | 1 |
| Other objectives | 15 | 7 | 4 | 2 | 13 | 7 | 3 | 2 | 36 | 16 | 20 | 10 | 27 | 14 | 17 | 9 |
| Not answered | 0 | | 2 | 1 | 0 | | 1 | | 0 | | 5 | 2 | 0 | | 5 | 3 |
| Total | 557 | | 216 | 100 | 474 | | 189 | 100 | 419 | | 219 | 100 | 349 | | 188 | 100 |

[a] The number and percentage of firms that considered a given objective as very important, where very important equals 5 on a scale from 1 (unimportant) to 5. More than one objective could be rated very important.

[b] The number and percentage of firms that ranked a given objective as the most important from all the objectives.

accepted assumption that the newly created firms in the transition economies behave as profit maximizers.

## 4. Obstacles and constraints faced by the entrepreneurs

### *4.1. The analytical approach*

In this part of the analysis, we examine the frequency with which the CEOs select a given constraint as the most important one and estimate the determinants of the probability that a CEO selects a given constraint as the most important one. In estimating the determinants of the probability that the CEO selects a given constraint as the most important one, we employ multinomial logit regressions.[11] However, we are not assessing probabilities with which constraints are rated on the scale from unimportant to very important, which is a different issue.[12]

From the academic and policy standpoints, identifying the most important constraints faced by SMEs and designing policies to relax them is a top priority. Once having identified what is generally perceived to be the most important constraint in a given area, we consider the extent to which systematic factors affect the probability that a firm of a certain type views this constraint as the most important one. As we mentioned in discussing the conceptual background in Section 2, the existing literature does not yield strong testable predictions for this issue. A natural baseline hypothesis is that the most important constraint in a given area is being viewed as most important by all SMEs, except for stochastic disturbances. This is an interesting null hypothesis from a policy standpoint, since it implies that a policy aimed at alleviating this constraint benefits significantly all types of SMEs. We use this hypothesis as a benchmark against which we test whether variables capturing the characteristics of the entrepreneur, the firm, and the environment in which the firm operates also affect the probability that the CEO cites this constraint as being the most important one. In doing so, we approximate the characteristics of the entrepreneur by the education level of the CEO. Characteristics of the firm are captured by the number of years since the firm acquired its current legal status (age of the firm), percentage of the firm's capital owned by all private parties, number of employees, capital per employee, and sales per employee. Environment of the firm is proxied by the share of firm's output in manufacturing and the share of firm's output in trade. The shares of the firm's output in manufacturing and trade are classified as variables reflecting the environment because the government's trade, licensing, tax, and other policies frequently vary by sector. Obviously, some aspects of the firm's location in a given sector may be considered as characteristics of the firm rather than its environment, a distinction that is not too important from our standpoint.

[11] The corresponding OLS and Probit regressions yield similar results.

[12] To analyze this question of what are the determinants of the probabilities that any given constraint is rated on the scale from unimportant to very important, ordered logit or Probit would be an appropriate estimating technique (Maddala, 1983).

Turning to specific hypotheses, we expect that what is generally perceived to be the most important constraint in a given area is less likely to be identified as such by a firm with a better-educated CEO. Schultz (1975) argues that more-educated individuals are better able to orient themselves in new, challenging situations and succeed where others would not. Hence, more-educated individuals may be better able to overcome what is generally identified to be the most problematic constraint in a given area than less-educated persons.[13] Obviously, this hypothesis needs to be calibrated for the type of education needed in a particular situation. For instance, if a technical production constraint is viewed as being the most severe one, apprenticeship or secondary technical education may enable the CEO to alleviate the constraint better than if he had a non-technical university education.

In terms of firm characteristics, we hypothesize that the age of the firm has a negative effect on the probability that the CEO views the constraint that is generally perceived to be the most crucial one as being also the most important constraint for his firm. Age is a proxy for experience and the acquired ability to overcome the most problematic constraints. Moreover, the main constraints tend to be alleviated with a firm's age because any asymmetry of information declines over time.[14]

The effects of the other firm characteristics cannot be signed by prior expectations, but we indicate how specific underlying factors affect the sign. Private ownership is expected to have a negative effect because private owners have stronger incentives than public ones to overcome the most important constraints. However, if private firms are discriminated against by the government or banks, the generally perceived most important constraint may affect them more stringently than their state-owned counterparts. In this case, the effect of private ownership may be positive, as the greater stringency of the constraint may more than offset the incentive effect to resolve the problem. Discrimination may also affect smaller firms more than larger ones. In particular, if the widespread belief that smaller firms are discriminated against by existing institutions more than larger firms is true, firm size will have a negative effect. However, if the relative severity of what is widely perceived to be the most important constraint increases with firm size, the effect of size will be positive. The coefficient on firm size may also be positive for those constraints that can be more easily circumvented by smaller, more flexible firms. For example, smaller firms, which are frequently tax evaders, are less likely than larger firms to rank tax-related constraints as being the most important ones. Capital intensity of a firm's production process may be expected to increase the probability that the CEO views a given constraint as the most important one if the relative severity of the constraint is positively related to the lack or high cost of finance. However, if capital intensity also proxies for the degree of sophistication of production and business skills, the effect will be negative based on the arguments advanced with respect to CEO education and age of firm. Finally, sales per employee, proxying for

[13] If they are able to alleviate the most important constraints, *ceteris paribus*, the more-educated people will tend to have more uniform preferences over all the constraints in a given area than less-educated persons; hence, they will be more likely to view other constraints as the most important ones.

[14] The credit rationing literature considers incomplete or asymmetric information, according to which younger firms suffer relatively more than older firms from credit rationing, to be a partial explanation of the phenomenon (Jaffee and Stiglitz, 1990).

the ability of the firm to orient itself in new circumstances, find markets, and produce commodities that it can sell, are likely to have a positive probability effect in areas in which the firms with greater sales per employee reach binding constraints more often than other firms, e.g., in input availability. However, the effect will be negative in areas where these firms' abilities enable them better to overcome this type of constraints, e.g., in finding markets.

The effects of environmental factors, captured by the share of a firm's production in different sectors of the economy, depend on the relative importance of government policies *vis-à-vis* the various sectors and on the nature of sectoral activities, e.g., the extent to which the output is tradable. The net effect of these numerous factors is difficult to sign in general. However, the two countries differ somewhat in the origin and linkages of their SMEs. In Russia, a number of SMEs emerged as spin-offs of large manufacturing state-owned enterprises and tend to enjoy pre-existing linkages with suppliers and parent companies that are often also privatized spin-offs. In contrast, Russia's service sector SMEs and all SMEs in Bulgaria, regardless of sectors, tend to be start-ups. Hence, one would expect that Russian manufacturing SMEs will be less likely to cite supply problems as their most important constraint compared to Bulgarian and other Russian SMEs.

The estimation of the parameters of the linear multinomial logit models is based on the following specification:

$$\text{Prob}[y_i = j] = \frac{\exp(\beta_j' x)}{\sum_j \exp(\beta_j' x)}, \quad j = 0, 1, \ldots, J,$$

where $\text{Prob}[y_i = j]$ is the probability that the CEO cites a given constraint as being the most important one, $x$ is a vector of explanatory variables, and $\beta_j$ is a vector of associated parameters. While the estimation of the multinomial logit model is based on a straightforward numerical optimization, provided that it is possible to identify the large number of parameters, the interpretation of the estimated coefficients is more complex. In contrast to the binomial models, the signs of the coefficients on individual variables do not necessarily correspond to the signs of their corresponding probability derivatives.[15] In particular, let $p_j$ stand for $\text{Prob}[Y = j]$ for all $J$, and calculate the estimated asymptotic probability derivatives $\partial p_j/\partial x$ and their asymptotic variance-covariance matrices $V(\partial p_j/\partial x)$. Given the large number of coefficients that we need to estimate in our system of logit equations, we express the estimates of $\partial p_j/\partial x$ as

$$p_j(\beta_j - \bar{\beta}) \quad \text{where } \bar{\beta} = \sum_j p_j \beta_j,$$

and the estimate of $V(\partial p_j/\partial x)$ as

$$\text{Asy. } V(\partial p_j/\partial x) = \sum_l \sum_m V_{jl} \,\text{Asy. Cov.}[\beta_l, \beta_m'] V_{jm}', \quad j = 1, \ldots, J,$$

[15] For example, if the coefficient on age of firm in a linear model for the third constraint is positive, this does not mean that the probability of the third constraint being selected as most important increases with the firm's age.

where $V_{jl} = p_j[1(j = l) - p_l]I + [1(j = l) - 2p_l]\partial p_j/\partial x\, x'$, with $1(j = l) = 1$ if $j = l$ and 0 otherwise, and $I$ is a vector of 1's. Hence, the coefficients and standard errors reported in the tables are the asymptotic probability derivatives and their asymptotic standard errors.

Some of the explanatory variables may be endogenous. We tried to find suitable instrumental variables, but we could not find any variables that could legitimately serve this purpose and, at the same time, allow us to retain enough observations to preserve a reasonable sample size. For example, past values of the explanatory variables could be used as instruments under certain assumptions, but relatively few firms provided us with lagged values of variables. Hence, if we use lagged values as instruments, we would restrict our sample to so few observations that the resulting selection bias could be severe and the estimates could be insignificant on account of a small sample size. Another approach would be to separate the explanatory variables into those that suffer from endogeneity and those that do not, or that suffer less, and compare the results based on the entire set of variables with those based on the subset of relatively exogenous variables. The problem is that the behavior of SMEs is not sufficiently understood to permit us to conjecture with any degree of confidence which variables suffer more and which less from endogeneity. For example, firm size or employment might be more endogenous than the industry in which the firm operates. Yet, SMEs often switch their operations and products across industries and employment variation depends largely on how successful firms are at finding new niches, products and markets. Another problem is that the restricted equations suffer from the usual omitted variable problem, thus making valid comparisons difficult.[16] Given these considerations, we treat all the explanatory variables as predetermined and leave the issue of endogeneity to future research.

### *4.2. Ranking the highly rated constraints*

In Table 2, we present the CEOs' relative rankings of the ten most highly rated constraints. The rows in Table 2 denote constraints, while the entries in the three columns show the number of firms that ranked the given constraint as being the most important one, i.e., number 1, among the three most important constraints, i.e., numbers 1 through 3, and among the ten most important constraints, i.e., numbers 1 through 10, respectively.[17] The entries within each column give the five most often cited constraints. Since the number of sampled SOEs in Bulgaria is relatively large at 22, we provide the Bulgarian results separately for private and state-owned firms. In Russia, the number of sampled SOEs is small so that we group all firms together.

As may be seen from Table 2, there is a complete overlap across the countries in the five constraints that are most often cited by the CEOs as being the most important constraint or among the three most important constraints. The most important constraint

[16] In some runs, we encountered problems of singularity of the likelihood function, which necessitated the exclusion of some regressors. This procedure is different from the elimination of variables due to endogeneity.

[17] For example, in the row *production: suppliers are often not willing to deliver*, we observe that 12 firms identified this constraint as being the most important one and 29 firms cited it as being among the three most severe constraints in Russia.

Table 2
Relative ranking of most highly rated constraints[a] (results based on 5 most often cited constraints)

| Constraints | Russia ($N = 216$) | | | Bulgaria private ($N = 190$) | | | Bulgaria state ($N = 22$) | | |
|---|---|---|---|---|---|---|---|---|---|
| | No. 1 | Nos. 1–3 | Nos. 1–10 | No. 1 | Nos. 1–3 | Nos. 1–10 | No. 1 | Nos. 1–3 | Nos. 1–10 |
| Current operations (production) | | | | | | | | | |
| suppliers are often not ready to deliver | 12 | 29 | | 11 | 27 | | 1 | | |
| equipment is too old or unreliable | | | | | | | 1 | 4 | |
| other | 26 | 33 | | 22 | 29 | | 4 | 4 | |
| Expanding production | | | | | | | | | |
| financing problems | 15 | 35 | 58 | 14 | 32 | 50 | | | 7 |
| taxes | | | | | | | | 3 | |
| bad access to foreign markets | | | | | | | | 3 | |
| Obtaining financing | | | | | | | | | |
| level of interest rates | 18 | 38 | 101 | 16 | 34 | 89 | | | 7 |
| Securing infrastructure | | | | | | | | | |
| getting land, office space, buildings | 11 | 25 | 79 | 11 | 24 | 75 | | | |
| other | | | | | | 58 | | | |
| Local purchases | | | | | | | | | |
| prices of local goods change in | | | | | | | | | |
| a frequent and unpredictable manner | | | 80 | | | 69 | | 3 | 8 |
| Taxes | | | | | | | | | |
| value added taxes | | | 66 | | | | | | |
| other | | | | | | | | | 7 |
| Labor regulation | | | | | | | | | |
| trade unions | | | | | | | 2 | | |
| Imports | | | | | | | | | |
| prices of imported goods are too high | | | | | | | 1 | | 6 |

[a] The number of firms ranking a given constraint as No. 1, Nos. 1–3 and Nos. 1–10.

and the three most important constraints are found most frequently in the areas of current operations or production, expanding production, obtaining financing, and securing infrastructure. Within these areas, the specific most important constraints are suppliers are often not ready to deliver, financing problems that hinder expanding production, the level of interest rates as a major constraint in obtaining financing, and constraints on getting land, office space and buildings. In both countries, other constraints on current operations is most frequently cited as the most important constraint, but the level of interest rates as the major constraint in obtaining financing is the most widely cited constraint in the group of the three most important constraints, closely followed by financing problems in expanding production. The findings with respect to the level of interest rates and financing problems in expanding production are not particularly surprising, given the widespread reluctance of commercial banks to lend to smaller firms and the limited supply of credit to SMEs from non-commercial sources in the first half of the 1990s. Both financial constraints are the two most frequently quoted in the group of top three constraints, and account for the second and third most important constraint. On the other hand, problems with procurement of land, office space and buildings are consistently at the bottom of these two groups in both countries. Interestingly, problems or costs associated with obtaining licenses or government services are never ranked as very important constraints. Hence, our findings contradict those of Johnson et al. (2000, 2002); we find that financial constraints affect the entrepreneurs more than barriers related to property rights issues.

When one considers the five constraints that are most often cited by the Russian and Bulgarian firms as being among the ten most important constraints, four constraints, three of which are in the original five constraints, remain in the set. In particular, the level of interest rates as the major constraint in obtaining financing continues as the most frequently cited constraint[18] and both financing problems that hinder expanding production and getting land, office space and buildings remain in the set.[19] The importance of the level of interest rates as a constraint is greatly enhanced as it becomes by far the most frequently cited constraint and the problem of getting land office space and buildings is also cited relatively more frequently than before. The new and second most frequently cited constraint in both countries is frequent and unpredictable changes in prices of local goods, which is not surprising because both countries experienced hyperinflation in the early 1990s. Based on these rankings, we focus on the following four areas: carrying out production, expanding production, obtaining financing, and securing infrastructure.

[18] As nominal rates have a significant impact on the liquidity of SMEs, the relevance of the level of interest rates as a major constraint to obtaining finance is not surprising, given that bank lending rates to the enterprise sector amounted to 320 percent in Russia in 1995, and ranged from 51 and 118 percent between 1992 and 1995 in Bulgaria.

[19] Our investigation suggests that the constraint of getting land, office space and buildings reflects the fact that no restitution had taken place in Russia and that legislation restricted the ability to sell restitutive land and property in Bulgaria. Note that the inability to sell restitutive property affects only private enterprises.

### *4.3. Carrying out and expanding production and obtaining finance*

In the area of carrying out production, the CEOs were asked to rate eight potential constraints and to identify the most important one among them.[20] The main constraints identified by the SMEs are suppliers are often not ready to deliver, which is identified as the most important constraint by 33% Bulgarian and 11% percent Russian SMEs, equipment is too old and/or unreliable, which is identified as the most important constraint by 25% of Russian and 8% of Bulgarian managers, and other. The first and third among these constraints also appear among the most highly ranked constraints in the overall ranking exercise reported in Table 2. Since the CEOs were rating and ranking eight potential constraints, we estimate a system of eight multinomial logit equations to determine which factors influence the probability that the CEOs select any given constraint as the most important one. The explanatory variables, which are listed in Section 4.1, reflect the characteristics of the CEO, firm and firm's environment.

The estimated derivatives from the logit dealing with what is widely perceived as the most important constraint, namely suppliers are often not ready to deliver, are given in Table 3. In Russia, the only significant coefficients are a positive coefficient on firm size measured by number of employees and a negative, but very small, coefficient on the percentage of output in manufacturing.

The results indicate that the probability that a Russian SME selects this constraint as the most important one is not systematically related to most observable attributes of the firm and the CEO. Hence, the baseline hypothesis that the relatively high severity of this constraint is fairly uniform across Russian SMEs is supported. In terms of alternative hypotheses, the positive estimated coefficient on firm size indicates that larger firms have a greater problem securing supply deliveries, relative to other constraints on production, than do smaller firms so that discrimination against smaller firms is not an overwhelming factor in this area. The effect of being in manufacturing is negative, as hypothesized, but the economic effect is small.

In Bulgaria, a strong relationship between all the explanatory variables and the probability that the constraint is cited as the most important one is found. As hypothesized, the selection of this constraint is negatively related to the university education of the CEO and the age of the firm in the relevant range. It is also negatively associated with the extent of private ownership and capital intensity of the firm, indicating that these characteristics reduce the relative importance of the constraint in a similar way as does education of the CEO and age of the firm. The coefficient on firm size is positive and significant, as in Russia, and the effect of sales per employee is also positive, suggesting that Bulgarian firms with a large value of sales per employee tend to find the constraint in securing delivery of supplies more important, relative to other constraints, than firms with smaller sales per employee. Unlike in Russia, the effect of being a producer in the manufacturing and trade sectors has a positive effect on this probability in Bulgaria. The difference may be related

[20] The eight potential constraints included in this area are: suppliers are often not ready to deliver; deliveries of raw materials are often delayed due to transport problems; cannot find spare parts; difficult to repair production equipment due to lack of know-how; equipment is too old and/or unreliable; lack of skilled manpower; power shortages; and other.

Table 3
Determinants of the probability that the most important constraint in the area of current operations (production) is 'suppliers are not ready to deliver'

| | Russia | Bulgaria |
|---|---|---|
| CEO education | | |
| university | −0.033 | −0.076** |
| | (0.040) | (0.026) |
| Firm characteristics | | |
| age of firm | −0.256 | −1.424** |
| | (0.286) | (0.504) |
| (age of firm)$^2$ | 0.575 | 0.022** |
| | (0.428) | (0.008) |
| private ownership, % | 0.0005 | −0.0016** |
| | (0.0005) | (0.0006) |
| no. of employees/1000 | 1.55** | 0.919** |
| | (0.71) | (0.315) |
| (capital per employee)/1000 | 0.001 | −0.199** |
| | (0.001) | (0.068) |
| (sales per employee)/1000 | 0.0004 | 0.064** |
| | (0.0004) | (0.022) |
| Sector of operation | | |
| output in manufacturing, % | −0.002* | 0.012** |
| | (0.001) | (0.004) |
| output in trade, % | −0.0005 | 0.014** |
| | (0.0019) | (0.005) |
| Constant | 0.092 | −0.556** |
| | (0.145) | (0.180) |
| *P* value | 0.000 | 0.048 |

*Notes.* Multinomial logit estimates of probability derivatives; values in parentheses are asymptotic standard errors. *P* value for the Wald test that all parameters are jointly zero.
* Significantly different from zero at 10% test level.
** Significantly different from zero at 5% test level.

to the fact that relatively few Bulgarian SMEs emerged as a result of unbundling of large manufacturing state-owned enterprises; hence, most do not enjoy pre-existing linkages with suppliers. Alternatively, it may also reflect different government policies regarding different sectors of the economy in the two countries. Overall, our findings indicate that the nature of disruption of deliveries after the fall of central planning, discussed by Blanchard and Kremer (1997) and Roland and Verdier (1999), was considered as the most important constraint by a larger fraction of SMEs in Bulgaria than Russia, and that the relative importance of this problem on SMEs was more uniform in Russia than in Bulgaria.[21]

[21] The estimated coefficients and calculated derivatives for the seven other constraints listed in the area of production were uniformly insignificant and only the relatively frequently invoked "other constraint" model occasionally produced coefficients with significance approaching the traditional significance test levels. The fact that few other constraints were selected as the most important ones by a large number of CEOs suggests that the other constraints are not extremely important. The finding that the probability that they are selected is not strongly correlated with any explanatory variables suggests that their effect is uniform across different types of SMEs.

In the area of expanding production, the CEOs were asked to rate and identify the most important of eleven potential constraints to expanding production.[22] The managers identified financing problems as constituting the most important constraint, with 40% (62%) of Russian and 29% (38%) of Bulgarian managers ranking financing problems as most important (very important). Financing problems also figured prominently in the overall relative ranking in Table 2. In interpreting this choice, we note that the average Russian and Bulgarian SME in our sample operates at a mere 57% and 69% of production capacity, respectively,[23] and that insufficient demand for output is not cited as an important constraint. Hence, financing problems, rather than insufficient capacity or product demand, appear to be the most important constraint on expanding production of SMEs.

However, the multinomial logit estimations that we ran to assess if there are systematic determinants of the probability that financing problems is selected as the most important constraint yield no significant coefficients in any specification. Therefore, we conclude that the financing problems constraint is important both absolutely and in relative terms, and that its relative severity is uniform in that the probability of its selection as the most important constraint on expanding production is not systematically linked to observable characteristics of the entrepreneur, the firm, or the sector in which the firm operates.[24] Hence, we find strong support for the null hypothesis regarding expanding production.

The SMEs report receiving virtually no open or hidden subsidies from the state. The debt/equity ratio of the average SME was 48% in Bulgaria and 30% in Russia, but the standard deviations are large. As is the case for SMEs elsewhere in the world, own or family capital play a very important part in their start-up. However, bank capital is somewhat important in Bulgaria, and obtaining capital from a spin-off or partners is somewhat important in Russia. The different pattern in the two countries is consistent with the observed lack of financial discipline in the Bulgarian financial sector that culminated in the 1996 banking crisis, and with the privatization pattern in Russia that generated an SME sector that contained relatively more spin-offs. In both countries, CEOs attribute the willingness of others to lend at the start of their venture to their personal reputation which is cited as most important by 51% of the CEOs in Russia and 20% in Bulgaria,[25] the reputation of their product, which is cited by 20% and 13%, respectively, and the quality of their business plan, which is cited by 14% in both countries.

[22] The potential obstacles listed in the question are: competition is high; not enough qualified labor; insufficient demand for output; cannot ship production, bad transportation; not interested in expansion; administrative problems; input procurement problems; financing problems; taxes; bad access to foreign markets; other (specify).

[23] The different capacity utilizations may be a consequence of the higher representation of spin-offs in the Russian sample than in the Bulgarian one. Spin-offs inherit *inter alia* excess capacity either in terms of excess or inadequate capital equipment and often in terms of labor hoarding. In a study of newly privatized Russian enterprises, Webster et al. (1994) note that privatized enterprises had either already experienced significant lay-offs or that they were expecting substantial lay-offs. These results are also consistent with the findings of Richter and Schaffer (1996) in terms of capacity utilization.

[24] The estimated coefficients for the ten other constraints in the area of expanding production were also statistically insignificant.

[25] In Bulgaria, 46% of managers did not rank the most important reason. Thus, 20% of the firms corresponds to almost 40% of the responding firms.

The SMEs in our sample use the banking system in that virtually all, 96% in Bulgaria and 99% in Russia, have a bank account. However, unlike Johnson et al. (2000, 2002), we find that the firms' integration into the formal credit system remains limited in both countries. In particular, while most firms in the Johnson, McMillan and Woodruff sample report receiving a loan, only 37% of the Bulgarian and 29% of the Russian firms in our sample report obtaining a loan from a financial institution in the past three years.[26] Moreover, only 56 (25%) of our Bulgarian and 16 (7%) of our Russian firms know about special financing programs for SMEs and only 8 Bulgarian and 7 Russian firms benefited from them.

In the area of obtaining financing, we asked the CEOs to rate and identify the most important of eight potential constraints.[27] The level of interest rates was identified by the largest number of managers as both a very important and the most important constraint. Indeed, 83% of the Russian and 78% of the Bulgarian managers rated this constraint as being very important, and 67% in each country selected it as the most important problem. The level of interest rate is also one of the most highly ranked constraints in the overall ranking of all the highly rated constraints in the questionnaire.

When we ran multinomial logits to assess if there were systematic determinants of the probability that the high level of interest rates was selected by the CEO as the most important constraint, we had to drop several regressors in the Russian equation to avoid singularity of the likelihood function and to achieve identification. As Table 4 indicates, the results for Russia parallel those from the logit estimations for carrying out and expanding production, namely the probability that a CEO selects the interest rate constraint as the most important one is unrelated to the variation in CEO, firm and environmental characteristics across firms.

In fact, capital intensity is the only variable that has a statistically significant coefficient in the Russian regression. Hence, we find support for the hypothesis that more capital-intensive operations suffer more from high interest rates, relative to other constraints on obtaining financing than do less capital-intensive ones.

In Bulgaria, the probability of selecting interest rates as the most important constraint is related significantly to all the explanatory variables except for capital intensity, which has a coefficient that is positive, as expected, but statistically insignificant. In line with our hypotheses, the probability is negatively related to the university education of the CEO and the age of the firm. It is positively related to firm size and the extent to which the firm is privately owned and operates in the manufacturing sector.[28] This suggests

[26] The difference between the results in Johnson et al. (2002) and ours may be explained partially by sample coverage: their sample contains some of the most developed and wealthy areas of the countries that they investigated, e.g., Katowice in Poland. Another explanation may be in the high average initial employment of start-ups in their sample, e.g., 34.4 employees in Poland and 31.9 in Ukraine. Finally, the upper employment limit for private small and medium size enterprises in their paper is larger at 270 employees vs. 200 employees in our paper. Johnson et al. (2002) used surveys that were taken two to three years after our surveys so that they reflect a more advanced stage of transition.

[27] The constraints listed are: collateral requirements; requirements to produce financial documents; level of interest rates; deposit/loan track record requirement; not having connections in banks or in financial institutions; access to non-bank investors/partners; permits and licenses from institutions other than banks; other (specify).

[28] Note, however, that the effect of private ownership is quantitatively small.

Table 4
Determinants of the probability that the most important constraint in the area of obtaining financing is the level of interest rates

| | Russia | Bulgaria |
|---|---|---|
| CEO education | | |
| university | −0.028 | −0.027** |
| | (0.067) | (0.002) |
| Firm characteristics | | |
| age of firm | −0.079 | −0.747** |
| | (0.203) | (0.059) |
| (age of firm)$^2$ | | 0.010** |
| | | (0.001) |
| private ownership, % | | 0.001** |
| | | (0.0001) |
| no. of employees | | 0.003** |
| | | (0.0003) |
| (capital per employee)/1000 | 0.006** | 0.134 |
| | (0.003) | (0.010) |
| (sales per employee)/1000 | 0.0002 | −0.020** |
| | (0.0031) | (0.002) |
| Sector of operation | | |
| output in manufacturing/1000, % | | 0.131** |
| | | (0.013) |
| Constant | 0.333** | 0.472** |
| | (0.092) | (0.037) |
| *P* value | 0.000 | 0.000 |

*Notes.* Multinomial logit estimates of probability derivatives; values in parentheses are asymptotic standard errors.
*P* value for the Wald test that all parameters are jointly zero.
** Significantly different from zero at 5% test level.

that manufacturing, private and larger firms tend to suffer more from high interest rates, compared to other constraints, than do non-manufacturing, publicly owned and smaller firms. Finally, firms that achieve higher sales per employee are less likely to cite the level of interest rates, indicating that these firms are more able to reduce the relative severity of this constraint.

### *4.4. Infrastructure and other issues*

In the area of infrastructure, the CEOs were asked to rate 11 potential constraints and, as usual, to identify the most important one among them.[29] The answers indicate that getting land, office space and buildings is the main problem. 52% of the Russian and 55% of the Bulgarian managers rated this problem as very important, while 51% and 59%, respectively, ranked it as the most important problem in this area. The problem is also identified as one of the most important constraints in the overall ranking across areas of all

[29] The potential obstacles listed are: getting land, office space, buildings; power breakdowns; voltage fluctuations; telecommunications problems; water supply; waste water disposal; garbage disposal; quality of roads; quality of railway transport; quality of ports; other (specify).

the highly rated constraints.[30] The ranking is consistent with the fact that leasing land and office space is the dominant mode of operation, with the ratio of SMEs that lease their land and office space to those that own these being 1.7 in Russia and 2.3 in Bulgaria. The finding is intuitively plausible given the problems linked to restitution and lack of development of land registries in both countries. The average SME also expressed a strong desire to expand its existing buildings and machinery, by 90% in Russia and 73% in Bulgaria, and over two-thirds of the respondents in each country expect to face serious problems in this area.

Table 5 contains the multinomial logit derivatives of the effects of explanatory variables on the probability that getting land, office space and buildings is selected by the CEO as the most important constraint.

Table 5
Determinants of the probability that the most important problem in the area of securing infrastructure is getting land, office space, and buildings

| | Russia | Bulgaria |
|---|---|---|
| CEO education | | |
| apprenticeship | | 0.081** |
| | | (0.014) |
| university | −0.097** | 0.254** |
| | (0.029) | (0.031) |
| Firm characteristics | | |
| age of firm | −0.754** | −0.375** |
| | (0.270) | (0.096) |
| (age of firm)$^2$ | 0.431 | 0.011** |
| | (0.354) | (0.002) |
| private ownership, % | −0.0006 | 0.003** |
| | (0.0005) | (0.0004) |
| no. of employees | −0.0027** | −0.0015** |
| | (0.0005) | (0.0002) |
| (capital per employee)/1000 | 0.0008 | −0.091** |
| | (0.0008) | (0.015) |
| (sales per employee)/1000 | 0.0012** | 0.018** |
| | (0.0005) | (0.006) |
| Sector of operation | | |
| output in manufacturing/1000, % | 1.865** | −0.318** |
| | (0.846) | (0.157) |
| output in trade, % | 0.0034** | |
| | (0.0015) | |
| Constant | 0.395** | 0.038 |
| | (0.116) | (0.025) |
| *P* value | 0.000 | 0.000 |

*Notes.* Multinomial logit estimates of probability derivatives; values in parentheses are asymptotic standard errors. *P* value for the Wald test that all parameters are jointly zero.
** Significantly different from zero at 5% test level.

[30] Power breakdowns was identified as the most important problem by 18% of managers in Russia, while telecommunications problems and road quality were each selected by 9% of the managers in Bulgaria.

Most of the coefficients are significant for Russia and all are significant for Bulgaria.[31] In both countries, the probability is negatively related to the firm's age, as expected, and also to the size of the firm. These two results suggest that firms that have been longer in existence and those that are larger have been relatively more able to inherit or otherwise secure premises than younger and smaller firms. In Russia, the probability is also negatively related to the university education of the CEO, as expected, but in Bulgaria the effect of education is positive at both the apprenticeship and university level, with basic education as the residual category. The latter result suggests that the allocation of real estate in Bulgaria penalizes relatively more those CEOs that are educated, a finding that may mean that educated CEOs are better able to alleviate the other constraints in this area. The effect of sales per employee is positive in both countries, which suggests that these firms are more likely to reach a binding constraint regarding premises, relative to other constraints, than firms that have been less successful in generating high sales per employee. The effect of private ownership is insignificant in Russia and positive in Bulgaria, which accords with the different nature of privatization in the two countries. For Russian firms, which were mostly privatized through unbundling of state-owned enterprises, getting land, office space and buildings is not a significant issue because these were either inherited from the mother company or acquired from other state-owned enterprises through connections. In Bulgaria, however, the SME sector is dominated by *de novo* firms and these private SMEs are more likely than state-owned companies to identify the acquisition of premises as their most important constraint in the area of infrastructure.

Since specific constraints in the areas of carrying out and expanding production are identified as being among the most important ones, we also carry out a complementary analysis of the constraints in the area of sales. The average Russian SME in our sample sells 96% of its products on the domestic market and reports having done so in the preceding year as well as in the first year of its operations. The average Bulgarian firm is somewhat more export-oriented, selling 88% of its products domestically.[32] To determine the principal obstacles to increasing local sales, we asked the CEOs to rate a list of nine potential constraints and identify the most important one among them.[33] Lack of credit finance is cited first as the most important obstacle by 33% of the Russian and 26% of the Bulgarian firms. The high cost of raw materials is second and it is selected as the most important constraint by 17% of the Russian and 25% of the Bulgarian firms. The principal other constraints, i.e., lack of demand, competition from domestic companies, and technological problems, are selected as most important by fewer than 15% of companies in either country.

[31] As in other estimations, some variables had to be omitted from the system to avoid singularity of the likelihood function and ensure identification of parameters.

[32] 34% of the Bulgarian and 16% of the Russian firms changed the markets for which they produced during the last five years. The most highly rated and ranked factor behind this switch was a decline in demand from state institutions, followed by increased opportunities to export to other countries, for Bulgaria, and decreased demand elsewhere in Russia, for the Russian SMEs.

[33] The list of potential constraints included: lack of credit finance; lack of demand for my products; competition from local companies; competition from foreign companies; technical or technological problems; difficulties with supplies; high cost of raw materials; lack of skilled labor; other (specify).

In identifying obstacles to launching or increasing exports, we asked the CEOs to rate a list of nine constraints and identify the most important one.[34] Lack of finance was again cited as the most important constraint with 41% of the Russian and 18% of Bulgarian firms identifying this as the most important constraint. The Bulgarian percentage constitutes over 30% of responses because 40% of the Bulgarian SMEs did not identify the most important constraint in this area. The two areas that SME managers did not identify as imposing severe constraints are government regulation and business services. Firms do not report being constrained by the difficulty of obtaining licenses or facing security issues.[35] Since licensing affects disproportionately nascent businesses, our finding probably underestimates the seriousness of the issue. In particular, our sample excludes those entrepreneurs who did not succeed in starting business due to the complexity and burden of government regulation. This may be a serious issue although retrospective surveys, including ours, are unable to capture it.

## 5. Conclusions

Our study of stratified random samples of 216 Russian and 221 Bulgarian SMEs shows remarkable similarity of views of the top managers with respect to their objectives and the constraints that they face. SMEs in the two economies are recently created and privately owned firms that are characterized by concentrated ownership. The two most important objectives of the CEOs of these start-ups are achieving the highest possible profit and output growth. For new and small firms, these two objectives may represent the same goal; however, the emphasis on output growth may also signal the presence of obstacles to growth. Most CEOs in both countries perceive themselves to be hampered by a relatively small number of specific constraints. The five constraints that they cite most frequently as being most important in both countries are: suppliers are often not ready to deliver; the firm is facing financing problems that hinder expanding production; in obtaining financing, the firm is facing high level of interest rates; the firm is facing constraints on getting land, office space and buildings; and other production constraints. This finding suggests that the nature of issues confronting SMEs and the policies that may be formulated to assist them are similar across the transition economies.

This study provides evidence that constraints on obtaining external financing and the high cost of this financing are two of the top five constraints cited by most CEOs. The lack of credit finance is also cited as being the most important obstacle to increasing local sales, and it is identified as the most important constraint with respect to launching or increasing

[34] The list of potential constraints includes: lack of finance; lack of knowledge of new markets; lack of new technology; competition in new markets; administrative costs (tariffs, licenses) necessary for export; lack of skilled labor; other (specify).

[35] The average firm in our sample needed 2 licenses in Russia and 3 in Bulgaria to start operations. It spent 208 hours in Russia and 164 hours in Bulgaria and waited 6.7 and 5 weeks, respectively, to obtain these licenses. 10% of the Russian and 25% of the Bulgarian firms hired external agents to help obtain start-up licenses. Two-thirds of the Bulgarian, but only 44% of the Russian, firms employ a security company or individuals for protecting their premises. Thus Russia's SMEs rely more on in-house protection than do Bulgaria's.

exports. Moreover, since only about a third of the surveyed firms report receiving a loan from a financial institution over the previous three years, the evidence indicates that SMEs both perceive financial constraints as important and obtain only a limited amount of credit from external sources. We also find that firms reinvest profits, which suggests that they have projects with high expected rates of return. Hence, our results indicate that SMEs use internal finance to fund investment projects, but that constraints on external financing limit in important ways their ability to expand production.

We do not find insecurity of property rights to be a major constraint or cost on the operations of SMEs in Bulgaria and Russia. The sampled firms do not identify insecure property rights as a problem in the sense that their functional operations are not particularly constrained or made costly by their payments for licenses or government services. Moreover, two-thirds of the Bulgarian but only 44 percent of the Russian firms report paying for protection of their premises and the cost or constraint associated with this activity is not reported to be important. These results differ from those found in studies based on the presence or absence, rather than intensity, of these phenomena in entrepreneurs' answers, an issue that should be taken up in future research.

Our empirical evidence is consistent with a hypothesis that systemic disorganization had a more uniform effect on SMEs in the former Soviet Union than in the satellite countries of Central and Eastern Europe. In Russia, but to a lesser extent in Bulgaria, we find that the most important constraints affect all or most SMEs in that the probability that a given constraint is cited as the most important one is unrelated or only weakly related to observable characteristics of the CEO, firm and sector of operation. This implies that policies alleviating these problems would benefit SMEs across the board. In Bulgaria, but to a lesser extent in Russia, we find support for several alternative hypotheses. In particular, when we consider areas such as carrying out production, obtaining financing and securing infrastructure, the probability that a given constraint is selected as most important is usually negatively related to the age of the firm and the CEO's education, suggesting that firms that have been in existence longer and have more educated CEOs are more able to reduce the relative severity of the principal constraints in these areas. We also find less uniform support for several other hypotheses, most notably that firms that generate higher sales per employee are more likely to cite input constraints as being most important. Overall, the differences that we find between Russia and Bulgaria suggest that the constraints brought about by the disintegration of central planning and slow emergence of both functioning markets and an effective financial system have affected SMEs more uniformly in Russia than in Bulgaria.

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## Appendix A

### *A.1. Basic statistics*

The two samples are of similar size, comprising 216 companies in Russia and 221 in Bulgaria.[36] They contain primarily private companies. In both Bulgaria and Russia, most private SMEs are individual or family owned, with local private ownership as the next most prevalent category. Given the tendency of foreign direct investment to be concentrated in larger firms, very few of the sampled SMEs have foreign owners. Moreover, in virtually all firms, the principal owner has a majority ownership stake, with the average stake being in excess of 90% with low standard deviations in most ownership categories.

An overwhelming majority of the sampled companies, 73% in Russia and 82% in Bulgaria, started as a new company. The concentration of start-ups is even higher if the sample is restricted to the private sector only, with 79% of Russian SMEs and 92% of the Bulgarian SMEs newly started.[37] The fact that relatively more Bulgarian companies are new start-ups may reflect the different privatization patterns in the two countries, with Russia characterized by a relatively larger presence of spin-offs and Bulgaria by a private sector almost completely composed of *de novo* firms. This is most likely reflected in the sample, with 18% of the Russian companies but only 4% of the Bulgarian SMEs report to have existed previously as part of a state-owned enterprise.[38]

Since most of the surveyed SMEs started as a new company, it is not surprising to find that the companies are fairly young. The average Bulgarian SME started its operations in 1989 and obtained its current legal status in 1991. The average Russian SME started operating in 1986 and its current legal status dates to 1992. An examination of the data indicates that the number of years since obtaining the current legal form is more indicative of the experience of the firm and its current management than the founding date because some firms report the founding dates of companies from which they were spun off. Virtually all the SMEs, 96% in Russia and 98% in Bulgaria, are independent companies rather than subsidiaries.

In terms of corporate structure, Table A1 indicates that most Russian SMEs are registered as limited liability companies or partnerships. In Bulgaria, over one-third of the SMEs are registered as unlimited liability companies and another 18% as general partnerships indicating less concern about limiting liability exposure. The difference may stem from the fact that in Russia, a bankruptcy law became effective in March 1993 and, despite its limited implementation, the law had started to influence enterprise behavior (EBRD, 1995). In Bulgaria, the 1994 bankruptcy law was implemented only in the second

[36] The response rate was high and most of our findings are based on responses from all or virtually all of the firms.

[37] These percentages actually underestimate the numbers of *de novo* private companies because some companies report always having been private. When these old private companies are added to the newly formed ones, the percentage of *de novo* private firms is 95% in Bulgaria and 81% in Russia.

[38] This difference is not due to relatively more Russian non-private firms reporting that they were previously part of an SOE. Rather, 14% of the Russian private firms but only 3% of the Bulgarian private firms report to having been part of an SOE. An alternative explanation is that there was a lower rate of entry of SMEs in Russia than in Bulgaria.

Table A1
Corporate structure of SMEs

| | Russia | | Bulgaria | |
|---|---|---|---|---|
| | *N* | % | *N* | % |
| Limited liability | 34 | 15.7 | 86 | 38.9 |
| Unlimited liability | – | – | 81 | 36.7 |
| Limited partnership | 113 | 52.3 | 1 | 0.5 |
| General partnership | – | – | 40 | 18.1 |
| Joint stock | 27 | 12.5 | 8 | 3.6 |
| State enterprise | 3 | 1.4 | 4 | 1.8 |
| Producer cooperative | 4 | 1.9 | – | – |
| Municipal enterprise | 3 | 1.4 | – | – |
| Other | 32 | 14.8 | 1 | 0.5 |
| Total | 216 | 100 | 221 | 100 |

Table A2
Mean values of statistics relating to enterprise structure and performance

| | Russia (1995) | | Bulgaria (1994) | |
|---|---|---|---|---|
| | Private ($N = 187$) | SOEs ($N = 7$) | Private ($N = 180$) | SOEs ($N = 20$) |
| Sales | 760.7 | 628.6 | 14,872 | 14,872 |
| Total cost | 565.2 | 239.0 | 10,312 | 22,929 |
| Labor cost | 92.2 | 62.7 | 2961 | 4074 |
| Pretax profit | 114.3 | 35.4 | 1204 | 2343 |
| Fixed assets | 300.1 | 599.6 | 4292 | 23,675 |
| Total employment | 33.0 | 52.6 | 27.3 | 74.5 |
| Full-time employment | 29.7 | 51.7 | 23.7 | 72.7 |
| Part-time employment | 1.4 | 0.9 | 0.74 | 0.1 |
| Casual employment | 1.8 | 0 | 2.8 | 1.7 |

half of 1996 (EBRD, 1996), which is after the administration of this survey. An alternative explanation is that firms face a higher cost of incorporation in Russia.

The summary statistics, reported in Table A2, indicate that the average private SME is roughly of a similar size in the two countries, having 27 employees in Bulgaria and 33 in Russia. The average private Bulgarian SME has a higher labor cost to sales ratio and a correspondingly lower profit to sales ratio than its Russian counterpart. The average figures for the state firms, especially in Russia, are not particularly useful because of a significant skewness in the distribution of the various values. Nevertheless, in both countries the average SOE is much larger in terms of employment than the corresponding average private firm.

While one might expect the SMEs to engage in labor intensive operations, in both samples the average ratio of labor cost to total cost is just under 20%. With the average reported profit amounting to somewhat more than the labor cost in Russia and slightly less than the labor cost in Bulgaria, non-labor inputs are clearly a crucial component of costs for these firms.

### A.2. The survey

An extensive questionnaire was administered to key decision-makers, i.e., owners and/or top managers, for a random sample of SMEs in Bulgaria and in the Krasnodar region of Russia. The questionnaires were responded to by the top managers, in many cases owners, of 221 firms in Bulgaria and 216 firms in Russia. Each interview lasted about 3 to 4 hours. In designing the questionnaire, we drew on the experience gained in enterprise survey research carried out in other countries, notably Poland (World Bank, 1993b), Hungary (World Bank, 1994b), Brazil (World Bank, 1993d), Gambia (World Bank, 1993c), Zimbabwe (World Bank, 1993a), Africa (World Bank, 1993e) and Kenya (World Bank, 1994a). In Russia, the following sources of information were used to establish a framework for sampling manufacturing SMEs: Local Administration, i.e., Head and Regional Municipal offices, Department of SMEs, Privatization Center, Committee of Economic Security, Committee of Land Reform; Other Government or Related Agencies, i.e., Chamber of Commerce and Industry, Local Statistical Committee, Statistical Institute, Anti-Monopoly commission, Pensions fund; Private Institutions and Private Accountants; Published Information, i.e., a single Private register of companies; and a Company Register, i.e., Registration Chamber.

In order to obtain the best possible estimate of the population of SMEs in the Krasnodar region, we asked the Regional Administrators in the towns selected to prepare lists of manufacturing SMEs in their region. The Regional Administrators contacted were those of Novorossiysk, Armavir, Kropatkin, Tikhoretsk, Temryuk, Yeysk and Goryachiy Klyuch. The administration in Armavir refused to cooperate; therefore, we obtained a list of companies in Armavir from the Monopoly Commission. In Novorossiysk, we also enlisted the assistance of the local Chamber of Commerce and Industry. From the lists provided by the aforementioned authorities and organizations, we identified state-owned, private and privatized enterprises. During the process of compiling the lists, it became apparent that some small companies operate illegally in order to avoid taxes. These firms were not traceable and it is difficult to assess the bias that their absence imparts on our results.

In Bulgaria we used the following sources of information in order to establish the universe of SMEs from which to sample: Government Ministries, i.e., Ministry of Industry, Ministry of Agriculture and Food, Privatization Agency, Privatization Agency of the Ministry of Industry, Ministry of Justice, Ministry of Health; Other Government or Government-Related Agencies, i.e., Chamber of Commerce and Industry, National Statistical Institute, Chamber of Economics, Economic Institute of Bulgarian Academy of Sciences, Government Appointed Receivers and Liquidators; Private Institutions, i.e., The Union of Private Economic Enterprises, Labor Unions, Centre of the study of Democracy, EBRD Bulgaria, CARESBAC, American–Bulgarian Investment Fund, Trade Associations, Plovdiv International Fair, Agrobusiness Bank, Private Accountants; and published Information, i.e., Telephone, Fax and Yellow Pages Directories, World Business in Bulgaria, Statistical Year Books, Bulgarian Trade Directories, Who-is-Who in Bulgarian Business, State Gazette. Qualitatively similar problems as in Russia were encountered with respect to the illegal nature of some small firms.

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