



What Makes Small Firms Grow?

A Study of Success Factors

for Small and Micro Enterprise Development in Romania

**Bucharest
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Contents

Foreword	iv
Executive Summary	v – vi
Report on Main Findings	
1. Introduction	1 – 5
2. Measuring Small Firm Growth	5 – 10
3. Managers’ Opinions	11 – 14
4. Finance	14 – 19
5. Human Capital	20 – 21
6. Technical Assistance	22 – 23
7. Business Environment	24 – 27
8. Summary of Policy Implications	27 – 28
9. References	29 – 30
Appendices	
Introduction	31
I. Sample	
A. Sample Size and Response Rates	31 – 32
B. Sample Composition	33 – 34
II. Survey Methodology	
A. Overview	34 – 35
B. Questionnaire Design	35 – 37
<i>Questionnaire Revision and Pilot Surveys</i>	
C. Data Collection	38 – 40
<i>Interviewers’ selection</i>	
<i>Interviewers’ training</i>	
<i>Field operations</i>	
<i>Initial Data Checking</i>	
<i>Coding</i>	

D. Data Entry	41
<i>Double entry – Matching facility</i>	
E. Data Cleaning	42
III. Statistical Results	
A. Dictionary of Variables	43 – 48
B. Cross-Section Regression Results	49 – 56
C. Panel Regression Results	57 – 66
IV. Questionnaires	
1. Romanian	67 – 103
2. English	104 – 140

FOREWORD

The contributions of new start-up firms to innovation and economic growth are well-recognized, as is the crucial role played by this *de novo* sector in the economic transition of formerly socialist economies. Yet there has been remarkably little research into the determinants of these firms' success and failure. A number of studies have provided information on managers' opinions concerning the constraints their firms face, but there has been little analysis of the relationship between objective measures of such constraints and the actual growth and performance of small firms.

Such an analysis is provided in this project, carried out by the Central European University Labor Project with the support of the United States Agency for International Development in Romania. Four broad sets of factors are the focus of attention: financial constraints, human capital, technical assistance, and the business environment. Previous studies have looked at some of these factors separately, but they have seldom considered all factors simultaneously and they have mostly relied on managers' subjective reporting of the relative importance of each factor. The present study exploits both managerial reports and objective measures of employment and sales growth and estimates the effects of measures of the factors, using statistical techniques that take particular account of the timing of the relationships. Although the data are drawn from Romania, the issues are general and the project's findings have lessons for other countries as well.

The study has two main parts: the present Report on Main Findings and a Technical Report. While the former attempts a succinct summary of the project's results, including drawing policy conclusions where possible, the latter provides a detailed description of the project design, statistical methodology, and tables in which the estimation results are presented. In addition, the study includes the Romanian questionnaire used to collect data and an English language back-translation.

The CEU Labor Project team was a diverse group that brought together both Romanian and non-Romanian expertise. Team members included David Brown, John Earle, Dana Lup, Raluca Miron, Mircea Trandafir, Irina Vantu, and Ruxandra Visan. Most of the team members worked on most aspects of the project, but a few tasks can be singled out. Dana Lup managed the fieldwork, which was carried out by interviewers from the Center for Urban and Regional Sociology in Bucharest, and she had primary responsibility for data cleaning and statistical analysis. Irina Vantu was responsible for questionnaire formatting, workshop organization, and management of data entry and checking. Together with David Brown, John Earle, and Raluca Miron, they participated in designing the questionnaire. Raluca Miron, Mircea Trandafir, and Ruxandra Visan assisted in many aspects of the project, from data entry and cleaning to statistical processing. This Report on Main Findings was written by David Brown, John Earle and Dana Lup, Technical Appendices I and II were written by John Earle and Irina Vantu, and Appendix III by Dana Lup. The project was coordinated by John Earle. All the participants are grateful to USAID for support and particularly to Tom Mehen for his openmindedness and his vision of the constructive role that empirical research may play in the formulation of better economic policies.

EXECUTIVE SUMMARY

This project seeks to identify the factors that encourage new start-up firms in Romania to increase their employment and sales, creating more jobs for workers and producing more goods for consumers. Using a sample survey of 297 small firms receiving loans from three USAID-sponsored programs, the analysis focuses on the effects of the following four sets of factors (in addition to some basic characteristics such as industry, origins, and age of the firm, as well as the region and population of the locality):

- *Finance*: all sources of start-up and growth capital – entrepreneurs' own funds, retained earnings, conventional bank lending, informal credit markets, "fiscal facilities" offered by the state, and USAID programs – as well as a number of dimensions of the availability of financial capital.
- *Human Capital*: education, experience and other characteristics of both entrepreneurs and their workforces, including training programs and constraints on hiring.
- *Technical Assistance*: membership in a business association and training and consultancy programs from a variety of sources.
- *Business Environment*: red tape, contract enforcement, property rights, and corruption.

While each of the four factors has been the subject of considerable discussion, as has the general topic of firm performance in transition economies, no previous study has attempted to produce objective measures of all the factors and to relate the measures to the performance of micro and small enterprises. In this study, the effects of the factors are estimated in a statistical framework where all relevant factors can be included simultaneously and the timing of effects can be accounted for. For instance, if firms operating in certain regions or industries tend to grow faster and to receive bigger loans, then one cannot necessarily conclude that the loans help to increase growth if the region and industry are not controlled. Timing is taken into account through the use of panel data techniques, preventing erroneous conclusions drawn from analyzing the correlation of the factors and firm performance over a single period.

The findings support the proposition that financial constraints are highly significant for the sample firms, as an increase in financial resources raises employment growth and, less robustly sales growth. Although very useful, firms' own resources (reinvested profits) are insufficient, and loans stimulate growth even in firms reinvesting most or all of their profits. This finding, which is robust to alternative specifications and methods of estimation, runs counter to the claims of two recent studies (both published in the EBRD journal *Economics of Transition*, 2000) that finance is not an important constraint for small firm growth in Eastern Europe. Those studies were based on much weaker evidence than that provided here, thus the finding is important given the attention paid by USAID and other international donors to microfinance.

While growth of both employment and sales are enhanced by the amount of credit it receives, there is some evidence that dividing the amount among a greater number of loans is less effective than receiving a smaller number of larger loans. These results imply that the primary function of credit in promoting growth is through relaxing the firm's capital constraint rather than through monitoring and advising activities by the

lender. “Fiscal facilities” provided by the state consistently and substantially raise growth, suggesting that the statutory tax rates represent a significant financial constraint on small firm expansion. Comparing loans organized along microfinance principles with informal credit from friends and relatives and with ordinary bank and government loans, the results suggest that microfinance loans from international organizations have had the strongest effects on growth. One million dollars of additional microfinance loan resources is estimated to raise employment by 14 workers, while the same amount of money in other types of loans increases employment by only 4.7.

Concerning human capital, the findings suggest that general secondary education of entrepreneurs is associated with higher growth; university education has a much weaker effect. There is some evidence that entrepreneurs whose prior work experience is outside the firm’s industry are more successful at raising growth. Most entrepreneurs are 30-40 years old, and firm growth declines strongly with entrepreneurial age. Worker training programs appear to enhance growth, but there is no effect of managerial training. These findings support policies to expand both general education and job training opportunities for workers.

Aside from training, growth performance is largely unassociated with most other forms of technical assistance in these data, regardless of the type of technical assistance, the funder (whether USAID or non-USAID), and the provider. Only in cases where the firm finances the program itself or when the assistance is provided by a foreign partner is there some evidence of increased growth. Taken together with the results concerning finance, these findings suggest that international donors' resources may be better employed for easing the financing constraint than for providing targeted assistance to small enterprises, with the possible exception of worker training programs.

Finally, while much discussion of contract enforcement, property rights, and other aspects of the business environment has been stimulated by the example of transition economies, and surveys of the subject have become quite fashionable, the analysis in this project reveals that the relationship between measures of the business environment and firm performance is weaker than it is for the other factors. Among many variables investigated – including measures of corruption, permits, inspections, and problems with contract enforcement and property rights – little or no evidence was found that they constrain growth. To some extent the comparative lack of strong results in this area may simply reflect the difficulty of finding reliable measures of the relevant concepts, but the results at least cast some doubt on policies and programs that would reallocate resources towards business environment issues at the expense of providing finance.

What Makes Small Firms Grow?

Report on Main Findings

1. INTRODUCTION

This Report on Main Findings summarizes the result of a year-long research effort to measure the factors accounting for the divergent growth experiences of recently created micro and small enterprises in Romania. It is hard to overestimate the importance of this *de novo* private sector in Romania and other transition economies, where the existing enterprises inherited from the socialist period face difficult if not insurmountable problems in restructuring and adjusting to the demands of a market economy.¹ Indeed, many observers have taken development of the sector as a principal measure of "progress in transition" (see, for instance, the discussions in the annual *Transition Reports* of the European Bank for Reconstruction and Development or the recent World Bank (2002) report on "the first ten years").

The widespread interest in entrepreneurial start-ups, however, has not been matched by anything close to a corresponding research effort. Research on East European economies has paid some attention to factors affecting self-employment decisions, some of which may be classified as entrepreneurial entry, although no such study has yet been published on Romania.² But what determines whether the embryonic enterprises, once they have been founded, develop into larger firms, creating jobs for workers and producing goods for consumers, or languish as tiny "mom-and-pop" operations with relatively few externalities for economic development?

On this question, there is only scant evidence available. Official statistics paint an extremely limited picture, although they do show that small and medium size enterprises (SMEs, defined as up to 249 employees) play a large and growing role in economic activity in Romania, accounting for about 60 percent of all firms and more than 40 percent of the regular work force in Romania at the end of 1999. Such figures as a 27.5 percent reduction in the number of SMEs with positive gross profit 27.5 percent from 1997 to 1999 have given rise to serious concern, but they provide little information on the factors explaining the growth and health of the sector.³

Following the official statistics, research in the transition economies has tended to study the entire small and medium enterprise (SME) sector, pa little attention to the smallest category of micro enterprises.⁴ The research has also generally been limited to reporting the subjective opinions of managers concerning obstacles to growth.⁵ Available data sets on firms have been small, few of them containing panel data with objective measures of growth and potential factors affecting growth over the life of the firm, and there has been little use of statistical techniques to

¹ Kornai (1990) and Murrell (1992) were perhaps the earliest to emphasize the difficulties of restructuring old enterprises and the importance of new firm growth to economic transition. Johnson and Loveman (1995) provided evidence from case studies in Poland.

² Earle and Sakova (2000, 2001) analyze Bulgaria, Czech Republic, Hungary, Poland, Russia, and Slovakia.

³ Figures are taken from National Agency for Regional Development Romania (2000).

⁴ In addition to National Agency for Regional Development (2000) on Romania, see, for instance, Earle, Estrin, and Leshchenko (1996) and Richter and Schaffer (1996) on Russia.

⁵ See, for instance, Romanian Center for Small and Medium Size Enterprises (1998) and National Agency for Regional Development (2000) on Romania; Pissarides, Singer, and Svejnar (2000) on Bulgaria and Russia; and EBRD (1999) on many countries of the region. Lindholm and Mead (1999) reviewed quantitative studies of firm growth in the Dominican Republic and several African nations, but they were not concerned with the same set of factors considered here.

isolate the effects of individual factors, taking into account other characteristics of the firm and other factors that may be present, and to specify the timing of a factor (for instance, the availability of finance) and subsequent growth of the firm. Finally, two of the most influential studies (both published in *Economics of Transition*, 2000) conclude that financial constraints are not significant in affecting the ability of small firms to grow.⁶ If they are to be believed, these studies have important implications for USAID and other agencies' support for small firm loan programs.

Given this background, the current study is intended to contribute to our understanding of growth factors, particularly in micro enterprises, a set of firms that have successfully started up, but whose further growth is far from assured. The study began with conceptual analysis to identify hypotheses concerning the effect of relevant factors on firm performance. Based on these hypotheses, a questionnaire was designed to measure the relevant variables (firm growth and constraining or encouraging factors), and it was discussed in a workshop with policymakers and academics in March 2000. The questionnaire was then implemented, using careful data collection and processing techniques, on a sample of 297 Romanian firms receiving loans from three USAID-affiliated programs: the Romanian-American Enterprise Fund (RAEF – Small Loan Program), Cooperative Housing Fund (CHF – Micro Loan Program), and World Vision (CAPA). All firms in these programs that responded to the interview request are included in this study.⁷

The composition of the sample by region, industry, and employment size is shown in Tables 1.1, 1.2, and 1.3, respectively. The distribution by country (*judet*) follows the geographic spread of the loan programs, with particular concentration in Banat and the West. Concerning the industry distribution, nearly half the sampled firms operate in wholesale or retail trade, but there is also significant representation of several manufacturing sectors, transportation, and a variety of services. The size distribution reveals that 48 percent fall into the "micro" category, with fewer than 10 employees, and an additional 24 percent have between 11 and 29. Only 7.5 percent of the firms are "medium," according to the standard definition of 50-249 employees. Thus, the sample in this study is heavily tilted towards the smallest size categories of firms, unlike most other studies of the SME sector.

Table 1. 1: Sample Distribution by Region

Region and Corresponding County	Number of Firms
Banat	94
Timisoara (45), Mehedinti (3), Caras Severin (46)	
West	64
Cluj (50), Arad (14)	
Center	54
Sibiu (12), Mures (7), Alba (4), Hunedoara (31)	
Moldova	17
Buzau (4), Galati (2), Iasi (11)	
South	58
Arges (8), Constanta (9), Dolj (41)	
Bucharest	10

⁶ Bratkowski, Grosfeld, and Rostowski (2000) and Johnson, McMillan, and Woodruff (2000). These studies are further discussed in the section on finance below.

⁷ Of 386 firms on the original lists provided by the loan programs, 89 could not be interviewed: 4 had been bought out, 20 had closed, 5 did not have the owner-manager present, 19 could not be found, 9 had had their loan foreclosed and therefore did not cooperate, and 32 refused for other reasons. The refusal rate was thus only about 10 percent.

Table 1.2: Sample Distribution by Industry

Industry and Corresponding Activities	Number of Firms
Light Industry out of which:	61
Food and Beverages	23
Textile and Confection	12
Shoes and Leather	5
Wood, Furniture, and Paper	15
Publishing Houses, Editing	4
Construction Services	2
Heavy Industry out of which:	27
Chemical, Rubber, and Plastic	5
Other Products Manufactured from Minerals	3
Metallurgy	1
Manufacturing of Metal Parts	9
Electric Equipment, and Instruments	5
Recycling Metallic Materials	3
Industrial Oxygen Production	1
Trade out of which:	142
Wholesale	43
Retail Trade, Food Products	75
Retail Trade, non-Food Products	24
Transportation	22
Other Services out of which:	45
Services in Construction	1
Repairing Cars, and Motorcycles	2
Hotels, Inns, and Catering	18
Communication Services	3
Real Estate Services	1
Software Services	1
Other Unclassified Services for Firms	11
Other Unclassified Services for Individuals	7
Education	1

Sample Size: 297

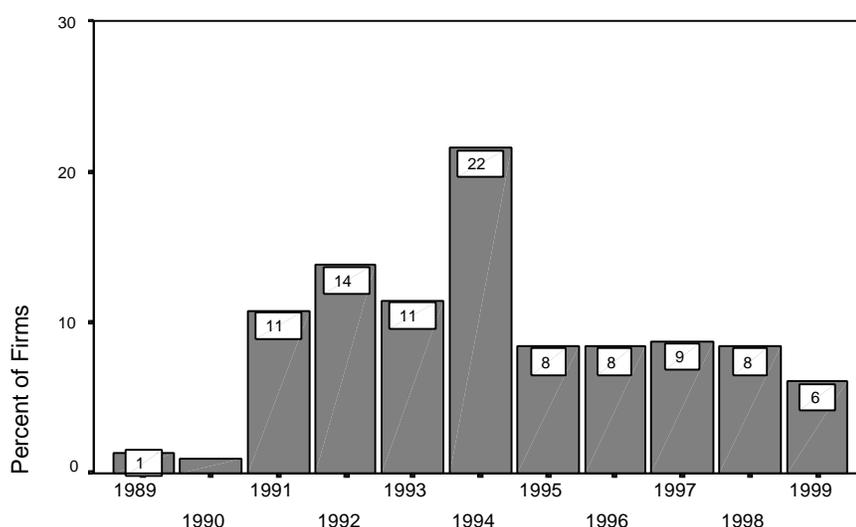
Table 1.3: Sample Distribution by Number of Employees in 2001

Number of Employees	Number of Firms	Percent of Firms
0 or 1	9	3.2
2 – 4	52	18.9
5 – 9	86	31.3
10 – 19	64	23.3
20 – 29	20	7.3
30 – 39	8	2.9
40 – 49	11	4.0
50 – 59	7	2.6
60 – 69	5	1.8
70 +	13	4.7

Sample Size: 275

Data from these firms were collected for most variables on an annual basis, from the firm's start date through mid-2001, so that the entire past of each firm could be studied. For the purposes of this analysis, "start date" was defined as either the date of starting operations after founding or of the last major reorganization (split-up, merger, or spin-off of the sample firm), and of course this varied across firms, as shown in Figure 1.1. Naturally, the "age" of the firm (time since start date) is an important variable to control for in the analysis.

Figure 1.1: Date of Starting Operation or Last Major Reorganization



Face-to-face interviews of the firms and follow-up visits and telephone calls were supplemented with quantitative data from other sources to have a more complete picture of firm behavior. A thorough statistical analysis of the relationship between measures of firm performance and measures of the factors was then carried out, followed by careful evaluation of the evidence and drawing of policy conclusions.

Early in the study, the potential factors affecting the growth and performance of small firms were identified. To start with, some basic characteristics need to be considered: industry, region, population of locality, origins (re-organization of pre-existing firm versus pure de novo start-up), age, and current re-organization activity. These characteristics reflect demand conditions that may vary across industries and regions, measurement considerations, and the firm's life cycle. They should be taken into account in the analysis, but they are not very closely tied to policy issues. Thus, the study focuses on four sets of policy-relevant factors:

- *Finance*: all sources of start-up and growth capital – entrepreneurs' own resources, retained earnings, conventional bank lending, informal credit markets, "fiscal facilities" offered by the state, and USAID programs – as well as a number of dimensions of the availability of financial capital.
- *Human capital*: education, experience and other characteristics of both entrepreneurs and their workforces, including training and constraints on hiring.
- *Technical assistance*: membership in a business association and training and consultancy programs from a variety of sources.
- *Business environment*: red tape, contract enforcement, property rights and corruption.

Each of these factors has been the subject of considerable discussion, but no prior study has considered all of them simultaneously and attempted to evaluate their relative importance on firm growth performance.

The study has measured firm growth in a variety of ways, with most attention paid to growth in employment (including working entrepreneurs and all regularly paid helpers and employees) and sales (operating revenue); results from these analyses are discussed in this Report on Main Findings.

An important problem in any attempt to draw inferences about the effects of potential determinants of firm performance concerns causality: for instance, how can we know that relaxing the financial constraint actually causes firm growth to increase? Even if finance and growth are highly correlated in a large sample of firms, there may be third factors that cause both variables to rise, such as location in a successful region. Or there may be reverse causality, for instance as firms with better performance obtain more access to outside finance. Data limitations have made it difficult for previous studies to deal with these problems, as they have generally only been able to analyze cross-sectional information, thus the contemporaneous relationships among variables, and they have had few control variables at their disposal.

This study handles the problem of inference in several ways. First, detailed survey data permit the analysis to control for relevant third factors. Second, the focus is on growth rather than level of performance, as firm idiosyncrasies are likely to be important determinants of the level. Third, the study exploits panel data (which contain multiple observation-years per firm). This allows for a precise specification of timing, so that the effect of a factor is measured after the factor changed. For example, receiving a loan is permitted to increase growth only after the loan is received, rather than in some prior period. Finally, the study has devoted much effort to examining the robustness of the results to changes in the specifications.

The rest of the Report on Main Findings is organized as follows. Section 2 describes the measures of firm growth emphasized in this Report, including variation in growth by the firm's industry, region, origins, and age. This is followed by Section 3, which reports from the part of the survey concerning managers' opinions on constraints on growth. Sections 4-7 take up the questions concerning the effects on growth of four set of variables: finance, human capital, technical assistance, and the business environment. Section 8 concludes with a summary of policy implications. More detailed information on the design and implementation of the study can be found in the accompanying Technical Report.

2. MEASURING SMALL FIRM GROWTH

The standard measure of growth used in past studies of small firms is the change in the number of workers since startup, a variable that is relatively easy for respondents to remember and that is uncontaminated by price changes (see, e.g., Lindholm and Mead, 1995). Moreover, job creation may be an important social goal, and policies to support small businesses are frequently justified on their supposed employment effects (Birch, 1987). This study also emphasizes employment growth, but using a modified measure that is arguably more appropriate, and it also studies sales growth as an alternative measure. In analyses not discussed in this Report on Main Findings, a number of alternative measures – including wages, owner's income, labor productivity, and profits – have also been investigated, and results from these investigations are reported in the Technical Report.⁸ This section describes the employment and sales growth definitions and analyses how the measures vary with such characteristics as firm age, sector, region, year, and reorganizations in the sample.

The definition of employment growth in the present study differs in a number of important ways from a simple calculation of the change in the number of workers from the firm's start-up to the date of interview. To start with, the definition here includes working owners (entrepreneurs),

⁸ See the Technical Report also for a discussion of the merits of the alternative measures.

since job creation for owners may be equally valuable, from a social point of view, as jobs created for others. Workers on external (rather than labor) contracts are also included in the definition, as the purpose here is not to distinguish different types of contractual relations.⁹

A still more important feature of the definition of employment growth analyzed here is that annual rates are studied for the most part, rather than total change since startup. The use of annual rates permits a much more precise assessment of the timing of employment growth effects, rather than cumulating over a long period of time. The study uses panel data to link, for each firm, the timing of employment growth to the changes in financing, human capital, etc., that may be hypothesized to affect this growth. On the other hand, it should be noted that the available measure of employment refers to the average over a calendar year; thus, growth pertains to the change in the average over adjacent years. The growth measure is therefore capturing changes in employment over a two-year period, and this low frequency makes it difficult to detect fine differences in the timing of effects.

Partly for this reason, the study also examines cross-sectional differences in employment growth, but in this case the measure is scaled by the number of years since the year after start-up. Scaling is accomplished geometrically, in other words assuming a constant exponential growth rate, with the purpose of creating some comparability between firms of various ages.¹⁰ The start-up year is excluded in both the panel and cross-sectional analyses because it is typically a highly volatile year in which firms may not fully operate and because this creates more comparability with the sales growth results, which are plagued by problems of part-year operation during start-up.¹¹

So defined, the employment variable was constructed from accountants' reports, from managers' responses to survey questions, and from external measures of employment in balance sheets and registry data analyzed by the CEU Labor Project. 2001 employment is defined on the basis of the managers' responses to a question on the current level of employment at the time of the survey in June 2001, as the average level for the year 2001 was not available (nor is it still in early 2002).

Similar principles are applied in this study's analysis of sales growth: both annual rates of change in real (deflated) sales in panel data and the cross-sectional growth of real sales are investigated. Sales are reported cumulatively by year, thus during the start-up year they are an unreliable measure of average performance due to the ambiguity of the precise date of start-up. Sales growth is therefore studied only from the first full year of operation. Unfortunately, information on sales in 2001 is not available, and all analyses of sales therefore concern data only through the year 2000.

Figures 2.1 and 2.2 contain graphs of the distributions of annual average growth since the first full year of operation after start-up for employment and sales, respectively. Overall, growth performance was very strong, with average employment growth about 8 percent and average sales growth about 9 percent. Growth performance varied quite considerably across these firms, however. While most firms grew on average, a significant subset experienced no growth or declined. At the top end, 10 percent of firms experienced employment growth averaging over 30

⁹ On the other hand, unpaid family helpers are excluded, both because their relationship is more frequently part-time and casual (as well as unpaid) and because they cannot be reliably measured in all years. An incidental benefit of including working owners in the definition is that operating firms then always have strictly positive employment, which avoids the problem of zeroes in computing ratios and growth rates. Note that many of the sample firms have multiple working owners (the average is nearly two per firm).

¹⁰ The conventional approach analyzes employment growth from start-up without scaling by firm age, although age is sometimes controlled for in a multivariate analysis (see, e.g., the studies discussed by Liedholm and Mead, 1999). The method used here, by contrast, measures job creation per unit of time.

¹¹ Indeed, the tendency for firms with a smaller employment in the start-up year to grow faster subsequently, a finding reported in Lindholm and Mead's (1999) summary of research on Africa, might be attributable to the fact that the smaller firms had not really started up in that first year but they then caught up in the year following.

percent a year, and 10 percent had sales growth over 50 percent. Thus, the sample contains enough variation for the study to be able to relate growth to potential determinants.

Figure 2.1: Average Annual Employment Growth

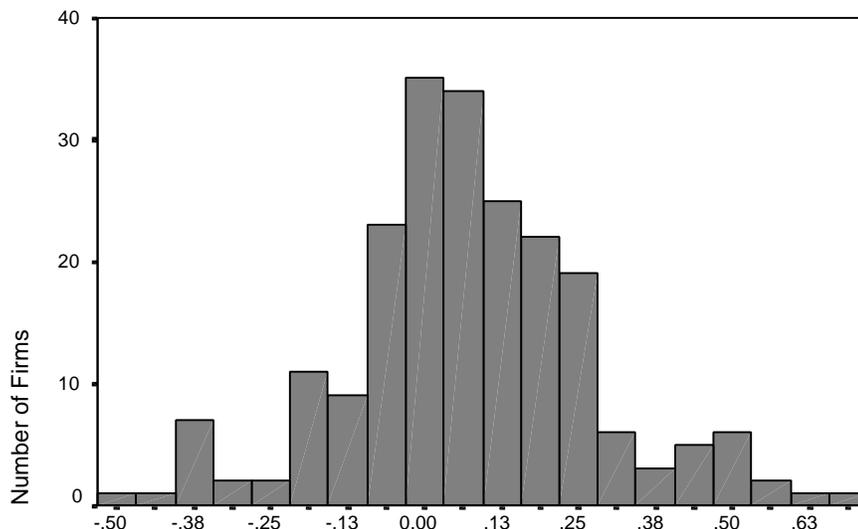
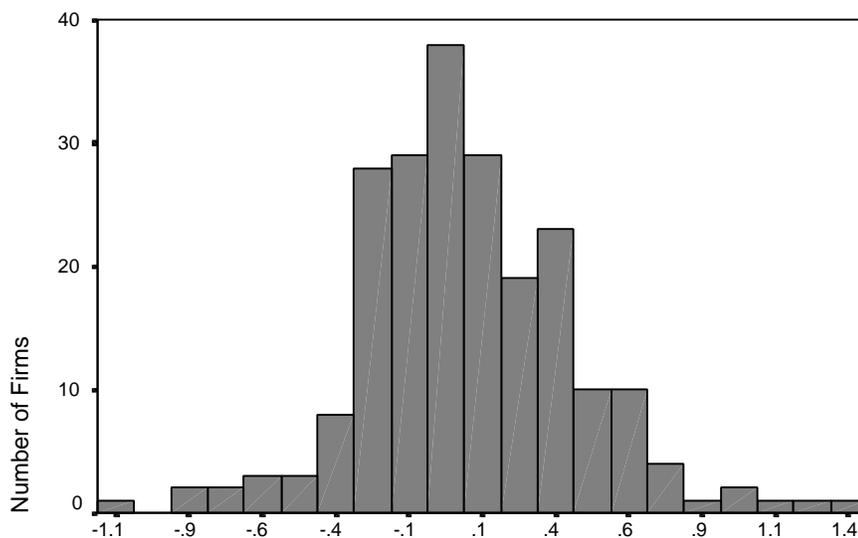


Figure 2.2: Average Annual Sales Growth



Average growth by year is shown in Figure 2.3 for employment and in Figure 2.4 for sales. Both series are fairly volatile, with average employment growth close to zero in 1994, 2000, and 2001, and average sales growth around zero in 1997 and 2000, but both variables are large in the other years.

Figure 2.3: Average Employment Growth, by Year

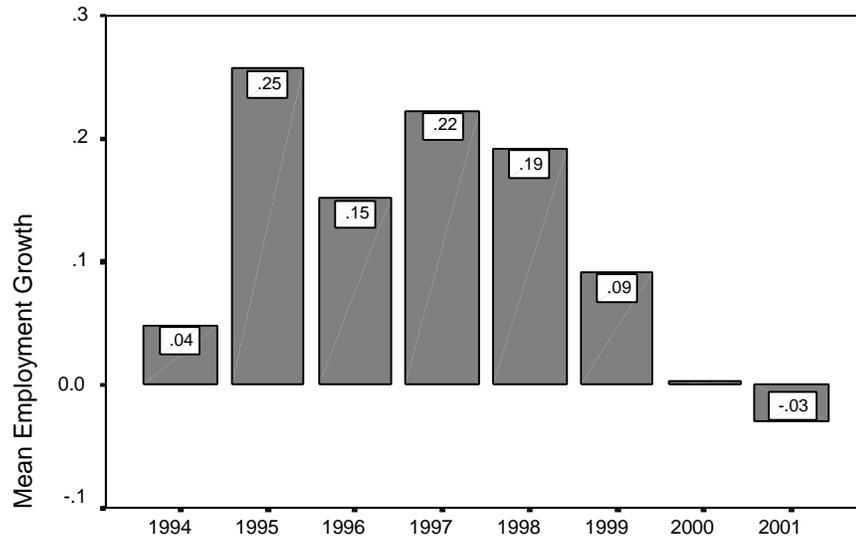
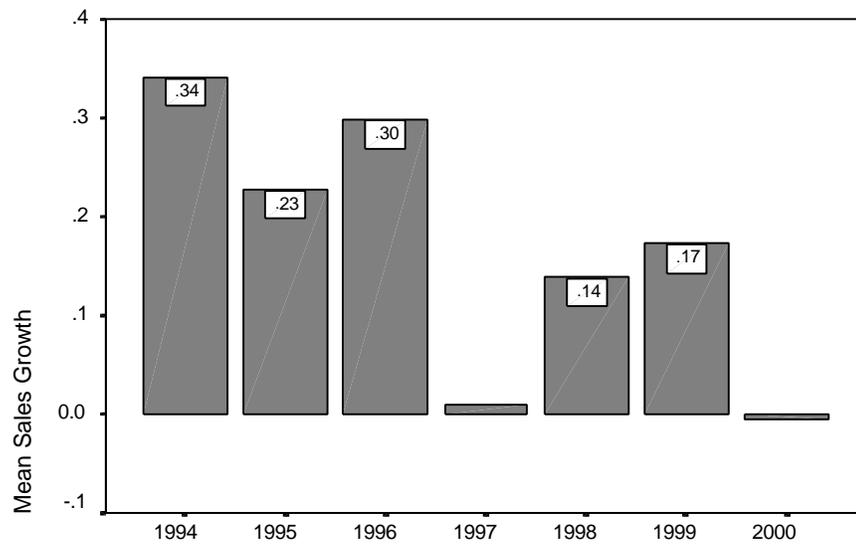


Figure 2.4: Average Sales Growth, by Year



The analyses in Sections 4-7 below, which report the findings from the effects of policy factors (measures of finance, human capital, technical assistance and business environment, respectively) on small firm growth, also control for a number of basic characteristics of firms and their environments: industry, region, population of locality, origins (re-organization of pre-existing firm versus pure de novo start-up), age, and current re-organization activity. These characteristics reflect demand conditions that may vary across industries and regions, measurement considerations, and the firm's life cycle. Figures 2.5-2.8 show the average annual employment and sales growth by industry and region.

Figure 2.5: Average Annual Employment Growth, by Industry

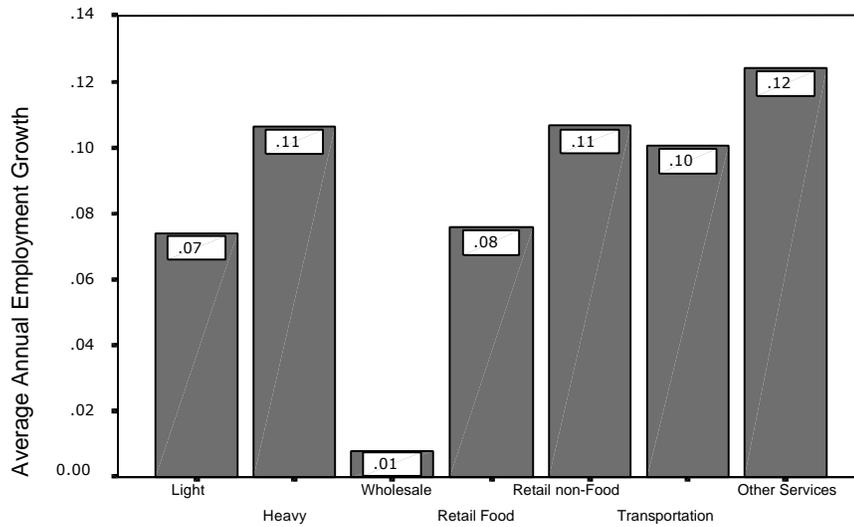
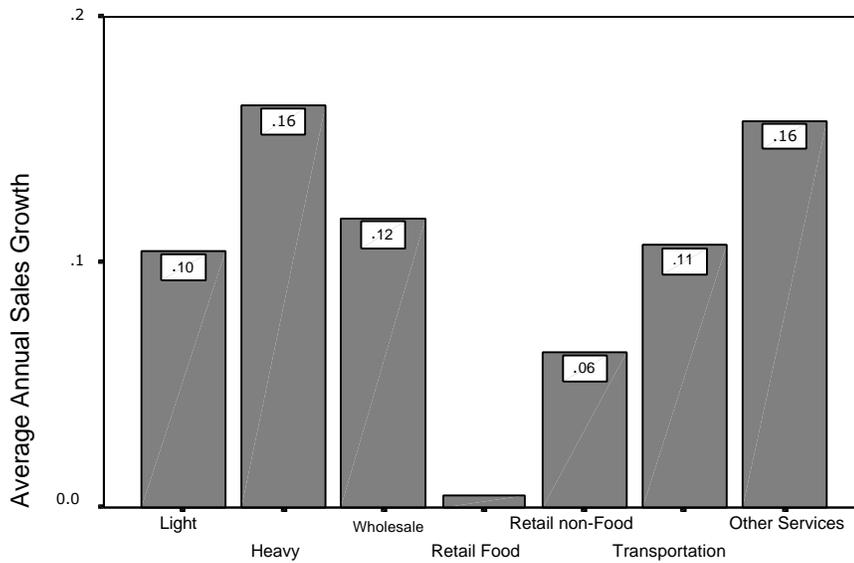


Figure 2.6: Average Annual Sales Growth, by Industry



While "other services" (which includes many types of consumer and business services, but excludes all types of trade and transportation) shows the fastest average growth for employment, the fastest average sales growth is found in "heavy industry." The weakest growth is found in retail food stores (for sales) and in wholesale trade (for employment), but average growth is positive in all sectors.

Average growth is also positive in all regions, shown in Figures 2.7 and 2.8. Moldovan firms show the fastest employment growth on average, while the West (Transylvania) shows the fastest sales growth. The weakest average growth rates are found in the South (for employment), Center (for sales), and Banat (for both).

Figure 2.7: Average Annual Employment Growth, By Region

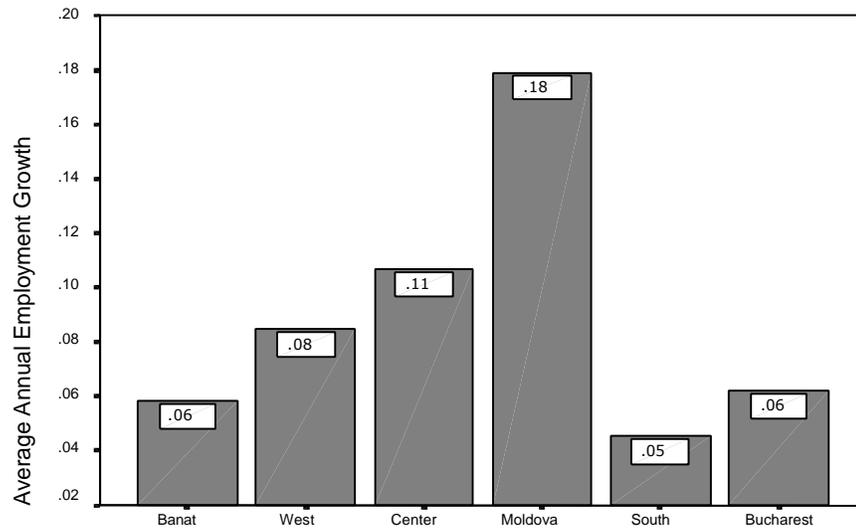
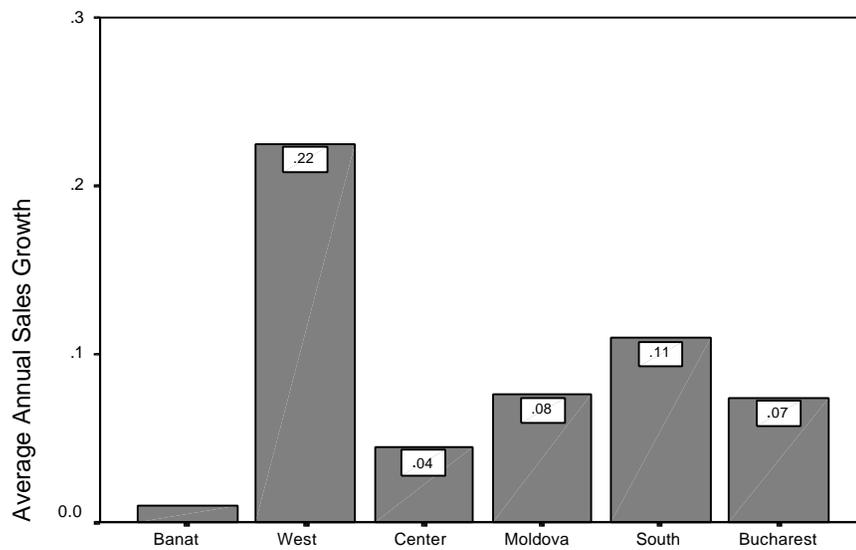


Figure 2.8: Average Annual Sales Growth, By Region



Although these differences in growth rates are quite substantial, their policy relevance is limited. These findings should certainly not be taken as implying that policies should be targeted to the high growth regions or industries. Policies affecting small firm growth may be just as effective in regions or industries of low average growth, for instance. How scarce public resources should be allocated across regions and industries is in any case not the focus of the present study, although these are important questions for regional and industrial policies. The results do suggest, however, that these variables are important to control for when the analysis examines policy variables of interest.

3. MANAGERS' OPINIONS ON GROWTH CONSTRAINTS

Most studies of factors explaining small firm growth rely on managers' survey responses concerning their perceptions of constraints. The problem with such an approach is that the responses to survey questions are clearly subjective and sometime self-serving; therefore they cannot be taken as conclusive evidence. Nevertheless, such questions do permit the issues to be phrased directly, which is a particular advantage when it is difficult to design objective measures of factors. As a supplement to the analysis of objective factors and growth measures, opinions of entrepreneur-managers were also collected in this project, and they are reported in this section.

The phrasing of the questions involved listing a total of 14 constraints and asking the respondents to rate the degree to which he/she believed that the factor constrained their own firm's growth. The degree is measured on a scale from 1 to 5, where 1 indicates not binding at all and 5 indicates extremely binding. In addition, respondents ranked the top five "most constraining factors. Four sets of factors are analyzed:

- Finance: capital constraints, lack of collateral, and level of taxation
- Non-financial inputs: difficulties in hiring appropriate employees, in finding adequate premises and supplies
- Malfunctioning of the business environment: poor contract enforcement, administrative burden of taxation, bureaucratic interference, police protection and private protection payments, and unfair competition
- Macroeconomic climate: inflation and low demand for goods and services provided by the firm

For many purposes, little information is lost by grouping scores 1-3 together as non-constraining or neutral factors and scores 4-5 as "very constraining" or "extremely binding" obstacles, and the results for the percentage of firms reporting scores 4-5 are presented in Table 3.1. Results are provided for firms by category of growth rate (below and above the median) and by category of employment size ("micro" = 0-9, "small" = 10-49, and "medium" = 50-249, following the Romanian legislation). The five factors rated as "most constraining" are shown in Figure 3.1.

Financial Constraints

A common finding in studies of managerial opinions in small businesses is that managers feel the firm is capital-constrained.¹² The responses of managers in the present study were quite consistent, showing that financial factors rank highly in managers' opinions on constraints in Romania. As shown in Table 3.1, about 78 percent of firms considered lack of capital as a very constraining factor, and the percentage was higher in slow-growing firms and those in the smaller size categories. Lack of collateral was taken as a serious barrier to accessing credit by 42 percent,¹³ although in this case faster growing firms were more likely to cite it as a constraint, while there is no clear relationship with size. The high level of taxation, which may reduce the possibility of internal finance as an alternative to costly external sources, was considered an important constraint by nearly all firms (91.1 percent), with comparatively little variation by growth rate or size.¹⁴ As shown in Figure 3.1, more than half of the firms reported either lack of capital or the level of taxation as the "most constraining" factor of all.

¹² See, for instance, Pissarides, Singer and Svejnar (2000) on Bulgaria and Russia and Barlett and Bukvic (2000) on Slovenia. EBRD (1999) used a four-point scale, with four implying a high level of constraint, and reported an average score of 3.11 for financing for start-ups in 1997-99 across 22 transition economies.

¹³ The same percent was obtained in a study carried out by the Romanian Center for Small and Medium Enterprises (1998) in 1996, suggesting there has been little change in collateral demands of the main credit providers.

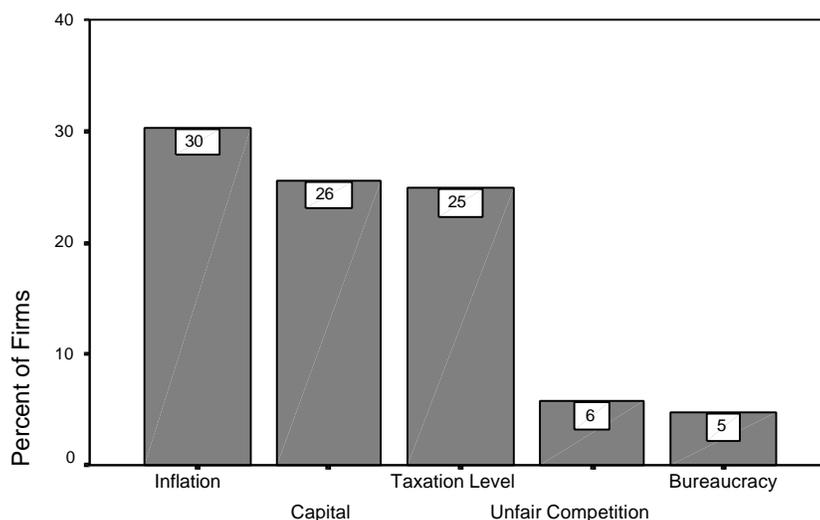
¹⁴ The survey used for the EBRD (1999) report finds an average score on "taxes and regulation" of 3.26 for all countries and 3.55 for Romania, but unfortunately does not distinguish tax level, administrative burden of taxation, and other regulatory burdens.

Table 3.1: Factors Affecting Firm Growth, By Growth Rate and Size of Firm

Type of Factor	All Firms	Growth Rate		Firm Size		
		Slow	Fast	Micro	Small	Medium
Finance						
Lack of capital	77.7	82.6	70.4	80.8	77.1	64.0
Lack of collateral	41.5	35.8	45.4	37.6	43.8	36.0
Level of taxation	91.1	92.7	88.9	92.8	86.7	96.0
Inputs						
Hiring difficulties	32.6	39.8	27.8	33.1	35.2	24.0
Difficulties finding premises	18.4	22.9	17.6	23.2	18.1	8.0
Unreliable supplies	11.0	15.6	5.6	13.6	11.4	8.0
Business Environment						
Poor contract enforcement	17.7	18.9	17.0	8.3	28.2	4.0
Administrative burden of taxation	90.8	91.7	88.0	89.6	89.5	96.0
Bureaucratic interference	33.3	35.2	29.6	35.5	32.4	28.0
Unfair competition	46.8	49.1	37.4	41.9	51.0	41.7
Police protection payments	2.5	4.6	0.9	5.6	0.0	0.0
Private protection payments	1.8	2.8	0.9	3.2	1.0	0.0
Macroeconomic Factors						
Inflation	84.8	90.8	79.6	92.0	81.9	68.0
Low product demand	37.2	47.2	29.9	45.2	32.7	16.0
Sample Size	282	217		255		

Note: "all firms" includes the entire sample; "slow" and "fast" growth refer to below- and above-median employment growth, respectively; and "micro," "small," and "medium" are defined as employment 0-9, 10-49, and 50-249, respectively.

Figure 3.1: Factors Creating the Largest Growth Constraints



Labor and Material Inputs

It is sometimes claimed that well-functioning markets for labor and other production inputs have been slow to develop in the transition economies. Educational systems designed to serve the pursuit of rapid industrialization may be poorly adapted to producing skills appropriate to a market economy, and soft budget constraints may keep resources bottled up in unproductive sectors of the economy. These problems could be particularly acute for small firms, new entrants that would like to expand. In the current study, about one-third of entrepreneur-managers mentioned hiring as a severe constraint, the problem reportedly greater for slow-growing firms and for micro and small firms. Non-labor inputs, such as buildings and land, appear to be even less of a serious burden, as 18 percent of firms reported difficulties in finding and renting adequate premises (buildings), and about 11 percent were concerned about the reliability of supplies.¹⁵ These factors were seldom mentioned on the list of worst constraints.

Business Environment

In order to assess the business environment, respondents were asked to report the degree of constraint associated with a variety of factors concerning: contract enforcement, administrative burden of taxation, bureaucratic interference, police protection and private protection payments, and unfair competition. Some recent studies have argued that these factors are particularly important barriers to small firm development.¹⁶

The survey results, however, indicate that only 17.7 percent of entrepreneurs consider that at least one type of contract enforcement (with either customers or suppliers) is a very binding or serious constraint. Moreover, protection payments to the police and private parties (mafias), which threaten property rights, are evaluated as serious problems by only trivial numbers of firms. Constraints associated with bureaucratic interference are somewhat higher, with about one-third of firms reporting serious problems, a fraction that is higher in slower growing and smaller enterprises; about 5 percent of firms reported this problem as the most constraining they faced. Nevertheless, by these conventional measures, the business environment appears to be less constraining than recent claims suggest.

More important in these managerial opinions is the allegation that some competitors receive unfair advantages on the market, with about 47 percent of firms considering unfair competition a binding factor.¹⁷ Whether competition is evaluated as "unfair" could certainly involve some subjectivity, but in the Romanian context it may reflect the presence of subsidies or regulations favoring larger, state-owned firms (particularly *regii autonome*) or jealousy over special preferences granted to foreign investors, which have been quite controversial in the country. Also, Romanian mass media often report cases of unfair benefits received by firms with strong political connections. About six percent of firms report this factor as the most constraining.

Still more substantial is the view that the administrative burden of taxation is an important constraint, with 90 percent of managers so reporting. This variable is unusual in studies of small

¹⁵ The problem appears to be greater for SMEs elsewhere in the region. Pissarides et al. (2000), for example, report that 52 percent of the Russian and 55 percent of the Bulgarian managers in their sample considered that "getting land, office space and buildings" was a very important constraint; the data pertain to 1995, still very early in transition, however, compared to the present study's information on Romania in 2001. EBRD (1999) returns fairly low values for "infrastructure:" an average of 2.07 for all countries, and 2.51 for Romania.

¹⁶ See EBRD (1999) and Johnson, McMillan, and Woodruff (2000).

¹⁷ The Romanian Center for Small and Medium Enterprises (1998) report a similar response in their study using 1996 data. Unfair competition was reported to be the second most serious constraint on sales.

firm growth, as the level and administrative burden of taxation are rarely distinguished.¹⁸ But it does represent an aspect of the environment for business that may be influenced by government. In any case, despite the fact that most managers take a dim view of the complexities of the tax code, few cite it as one of the most constraining factors, implying that it is relatively less important than some of the others.

Macroeconomic Climate

Inflation was viewed by most firms as a very important constraint, and about 30 percent cited it as the single most constraining factor. Low demand for the firm's products was cited as a constraint by 37 percent, but it was one of the most important factors for very few firms. These results suggest that, to small firms, macroeconomic stability is viewed as more important than demand growth; apparently most of these firms believe they have a market, but they require a stable environment to be able to make pricing and other business decisions.

4. FINANCE

This section is the first of four reporting analyses of the impact of objective measures of potential factors on firm growth. The results reported in these sections describe the measures used and the effects they are estimated to have on employment and sales growth in multivariate frameworks where other variables are controlled: industry, region, local population size, origins (re-organization of pre-existing firm versus pure de novo start-up), age, current re-organization activity, and other factors of interest. In this section the focus is on variables that are related to financial constraints on firm growth, but the results take into account the human capital, technical assistance, and business environment factors discussed in Sections 5, 6, and 7.

Financial constraints on the start-up and growth of new ventures have received much attention in the transition economies. While some studies have shown a clear role for financial constraints in entrepreneurial start-up, the importance of finance for the subsequent growth and performance of small firms has been more controversial.¹⁹ Some recent studies have argued that financial constraints are either unimportant, or much less important than other factors.²⁰

The measures of financial constraints studied here include the size, number, and source of loans, the rate and amount of reinvested profit, the extent of access to "fiscal facilities" lowering taxes, and resources of the entrepreneur. Starting with loans, the Romanian survey sample includes only firms that have received a loan from a USAID-supported program, thus all these firms have received at least one loan. Not every firm received a loan every year, however; indeed in most years of their operations, the sample firms had no loans whatsoever. Moreover, some firms received larger loans than others. The amount of loans therefore varies considerably both across firms, and over time for each firm.

Figure 4.1 shows the distribution of the number of loans (the total ever received by a firm). The most common number is two loans. The percentage of firms receiving loans each year is shown in Table 4.1. Only from 1999 did the percentage rise over 50, and it peaked at 75 percent in 2000, falling to 68 percent in 2001

¹⁸ It is also not the typical measure of the business environment employed by studies such as EBRD (1999) and Johnson, McMillan, and Woodruff (2000). As noted above, EBRD (1999) combines "taxes and regulations" into a single category.

¹⁹ Earle and Sakova (2000, 2001) analyze the impact of finance on entry into entrepreneurship.

²⁰ EBRD (1999); Bratkowski, Grosfeld, and Rostowski (2000); Johnson, McMillan, and Woodruff (2000). Pissarides, Singer, and Svejnar (2000), however, find that the managers in their samples report the lack of external finance to be a serious constraint.

Figure 4.1: Number of Loans

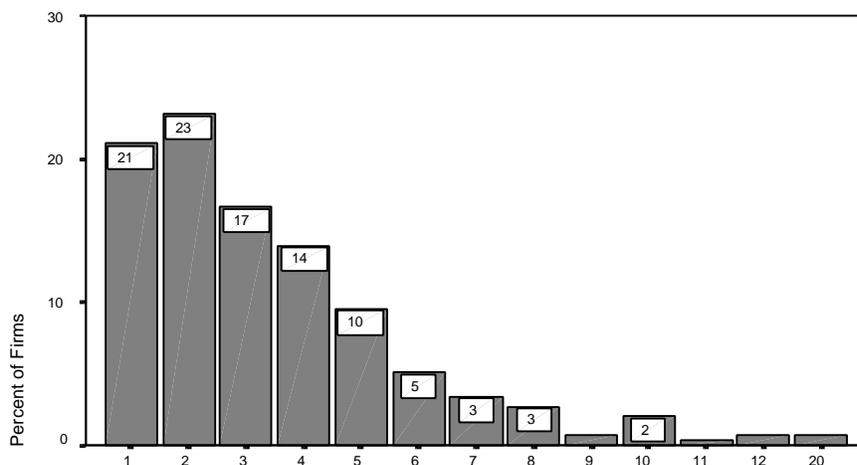


Table 4.1 also shows the mean size of loans for recipient firms and for all firms in dollars per employee, while Table 4.2 shows the same scaled by sales in Romanian lei.²¹ The mean loan per employee is generally about \$3000, and when the lei value of sales is converted at current exchange rates, the mean loan amount is about 70 percent of sales; for Romanian firms, these are substantial loans.

Table 4.1: Incidence and Mean Size of Loans, per Employee

Year	Percentage Firms Receiving Loans	Mean Loan for Recipient Firms	Mean Loan for All Firms	Sample Size
1994	25.0	1843.2	460.8	16
1995	21.2	2218.6	470.6	33
1996	27.9	3573.5	999.1	93
1997	27.1	8481.4	2298.2	155
1998	37.1	3847.5	1426.6	178
1999	51.5	2659.4	1368.4	206
2000	75.0	2793.9	2095.4	236
2001	67.9	2222.6	1510.3	259

Note: unit measure is USD per Employee

²¹ The size of the loan is measured as the sum of the amounts in the second half of the previous year and the first half of the current year. The amounts are determined by the extent to which the loan expands financial possibilities in that year, defined as the full amount of the loan in the first half year of disbursement and declining linearly over the term of the loan thereafter. These calculations assume that the loan is repaid in equal installments continually over the term, which seems to be the most common practice.

Table 4.2: Incidence and Mean Size of Loans, per 1 Million ROL Sales

Year	Percentage Firms Receiving Loans	Mean Loan for Recipient Firms	Mean Loan for All Firms	Sample Size
1994	19.1	8.5	1.6	21
1995	22.5	13.4	3.0	40
1996	26.8	16.8	4.5	97
1997	25.8	44.2	11.4	163
1998	35.3	25.9	9.2	187
1999	51.5	27.4	14.1	206
2000	74.4	41.4	30.8	238
2001	66.0	20.1	13.3	256

Note: Sales are calculated in ROL, in 2000 prices. In 2000, the average exchange rate was 21,700 ROL for a USD.

The sources of loans are shown in Table 4.3. Informal loans from family, friends, and loan sharks account for a rather small percentage of the total (about 3.5 percent), while formal loans from banks and international organizations account for 95 percent. The distribution by international organization is given in Table 4.4. The three USAID-supported programs make up 97 percent of the loans in this category. Thus, the nature of this sample does not permit the USAID programs to be compared with other international organizations. The basic categories are international organizations versus other types, and the average size of the two types is shown in Figure 4.2.

Table 4.3: Sources of Loan

Loan Source	Number of Loans	Percent of All Loans
Family	12	1.2
Friend	11	1.1
Loan Shark	11	1.1
State Bank	252	25.0
Private Bank	122	12.1
Pawn Shop	1	0.1
Other Romanian Company	3	0.3
Local Government	2	0.2
Central Government	6	0.6
Foreign Individual	8	0.8
Foreign Company	1	0.1
International Organizations	576	57.3

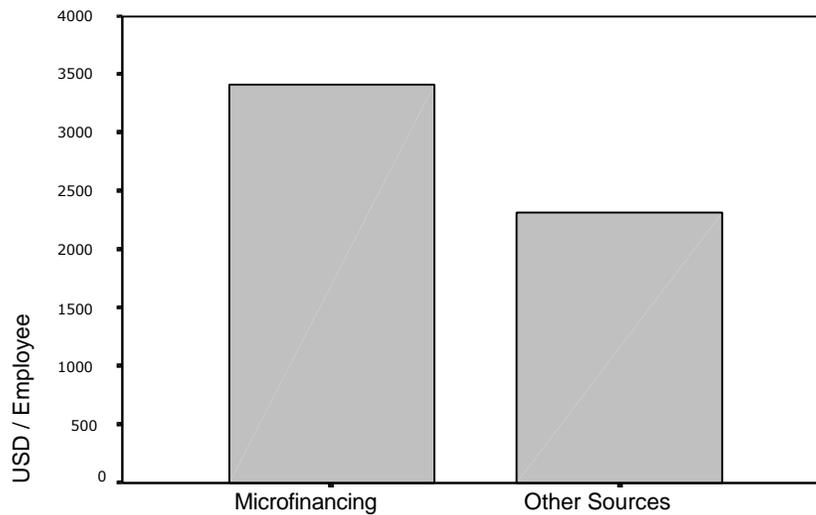
Total Loans: 1005

Table 4.4: Loans from International Organizations, by Type

International Organization	Number of Loans	Percent of International Loans
CHF	164	28.4
CAPA	278	48.2
RAEF	117	20.3
EU/ PHARE	10	1.7
SOROS	1	0.2
RALFI	2	0.4
SAXONIA	2	0.4
BANATIA	2	0.4

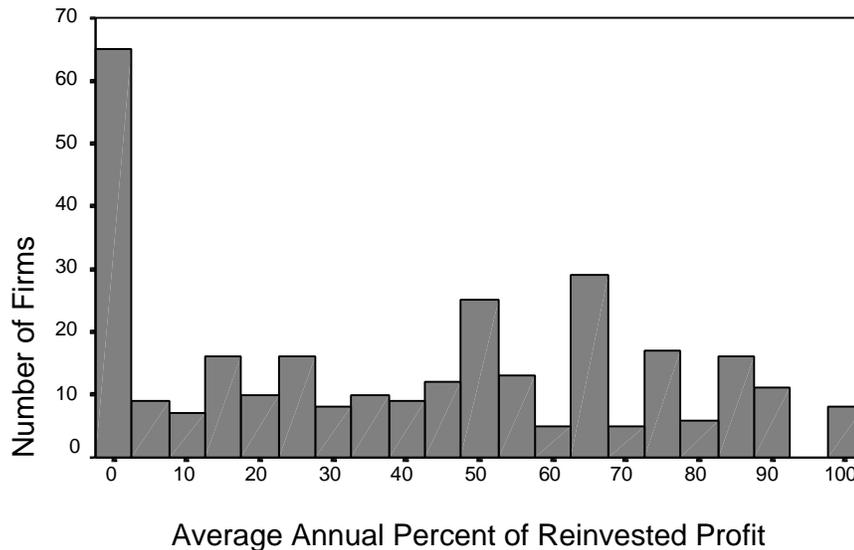
Total International Loans: 576

Figure 4.2: Average Size of Loans from International Organizations and Other Sources



An alternative to external finance is reinvesting profits. Figure 4.3 shows the distribution of the percentage of profit that firms reported reinvesting, taken as the average over their lifetimes. About 25 percent of the firms reinvest nothing, while the rest of the distribution is spread relatively evenly.

Figure 4.3: Reinvested Profits



How these rates vary over time is shown in Table 4.5. The fraction of firms reinvesting some profit is higher earlier in the period, but the average rate among those reinvesting is fairly constant at about 80 percent.

Table 4.5: Reinvestment Rates

Year	Reinvestment Rate	Reinvestment Rate>0	Percent Firms Reinvestment>0	Sample Size
1992	55.0	73.3	75.0	4
1993	55.0	77.0	71.4	7
1994	71.4	84.3	84.6	39
1995	62.1	82.8	75.0	80
1996	55.7	83.5	66.7	114
1997	56.3	81.5	69.1	178
1998	49.5	83.0	59.6	203
1999	42.0	83.3	50.4	228
2000	43.2	82.5	52.4	254

The relevant notion of profits for reinvestment purposes is net or after-tax profits, thus the extent to which firms have profits to reinvest is influenced by their tax rates. A particularly interesting policy in this respect has been the granting of so-called "fiscal facilities," which may be given for a variety of reasons and under a variety of programs. Most of these involved tax reductions (60 percent reduce the profit tax and another 15 percent reduce import or export taxes), and seven percent involve credits. Unfortunately, the value of these benefits is difficult to quantify, but Table 4.6 shows the percentage of firms reporting receiving them and their number by year. About 90 percent of the sample did not receive any facility in any given year, but those who did had extra financial resources that they could use to grow.

Table 4.6: Fiscal Facilities

Year	Average Number of Facilities	Maximum Number	Percent Firms Receiving Facilities	Sample Size
1994	1.8	3	10.3	39
1995	1.5	3	10.0	80
1996	1.4	3	7.9	114
1997	2.3	3	9.6	178
1998	2	3	8.9	203
1999	1.8	4	10.9	228
2000	1.4	4	11.0	254
2001	1.4	2	7.9	279

A final set of variables involves the entrepreneur's own resources. Table 4.7 shows the extent to which the owners of the sample firms had land or housing, either that they already owned in 1989 or that was returned to them as part of the Romanian Government's restitution policies. These variables were included in the analysis because such assets were accumulated without the intention to use them either directly in the business or as collateral to obtain a business loan, and the bottom panel of the table shows that they were relatively little used, except for housing, which was used as loan collateral in 58 firms.

Table 4.7: Entrepreneur's Resources

	<u>Land or House</u>		<u>Land</u>		<u>House</u>	
	Number of Owners	Percent of All Owners	Number of Owners	Percent of All Owners	Number of Owners	Percent of All Owners
Owned in 1989	107	21.2	18	3.6	169	33.4
Restituted	21	4.2	68	13.4	0	0.0
Both Owned and Restituted	72	14.2	23	4.5	3	0.6
No Resources	306	60.5	397	78.5	334	66.0

Sample Size: 506 owners

Missing Cases: 48

The results of detailed statistical analysis of the relationship of employment and sales growth with these variables, while controlling for other factors, suggest that relaxing a firm's financial constraints through bigger loans tends to increase its growth. While growth of both employment and sales are enhanced by the amount of credit it receives, there is some evidence that dividing the amount among a greater number of loans is less effective than receiving a smaller number of larger loans. These results imply that the primary function of credit in promoting growth is through relaxing the firm's capital constraint rather than through monitoring and advising activities by the lender. "Fiscal facilities" provided by the state consistently and substantially raise growth, suggesting that the statutory tax rates represent a significant financial constraint on small firm expansion. On the other hand, there is little evidence that entrepreneurs' own assets contribute significantly to reducing financial constraints.

Comparing loans organized along microfinance principles with informal credit from friends and relatives and with ordinary bank and government loans, the results suggest that microfinance loans from international organizations have had the strongest effects on growth. One million dollars of additional microfinance loan resources over two years is estimated to raise employment by 14 workers, while the same amount of money in other types of loans increases

employment by only 4.7.²² Put differently, one job is created for each \$71,000 of microfinance lending, or for each \$212,000 of conventional lending. The cost to an international donor is only the opportunity cost of funds (the interest rate) times this amount. Assuming an annual interest rate of 10 percent, the cost would be \$14,910. By international standards, this is inexpensive job creation.

5. HUMAN CAPITAL

Although it is frequently claimed that the transition economies of Eastern Europe started the process with relatively strong human resources due to well-developed educational systems, it is less clear that the skills of the population were well-g geared toward entrepreneurial endeavors or toward working to the demands of the market rather than central planners and factory bosses. This section investigates characteristics of both entrepreneurs and their workers and examines the association of firm growth with these characteristics.²³

Table 5.1 shows some characteristics of entrepreneurs. These are computed by taking the share-weighted average across owners for each year and for each firm, averaging these across years for each firm, and then averaging across firms. The figures thus give the average percentage ownership by each characteristic.²⁴

Table 5.1: Characteristics of Entrepreneurs

Entrepreneur's Characteristics	Average Percent Ownership
Female	29.9
Foreigner	0.7
Experience in Other Industry	59.1
High School Education	30.3
University Education	49.0

Sample Size: 293

Note: Entrepreneurs' characteristics are weighted by the share ownership of each individual owner. Organizations are excluded.

The Table shows that women own an average of about 30 percent, while only 0.7 percent is accounted for by foreigners. Most entrepreneurs are new to the industry in which their firms operate, as 59 percent worked outside the industry prior to starting up the firm. Entrepreneurs tend to be well educated, with 49 percent having completed some form of university education, and an additional 32 percent had completed academic secondary schools. The age distribution is given in Figure 5.1. Most entrepreneurs are in their 30s and early 40s, and an unusually low fraction is over 50 years old.²⁵

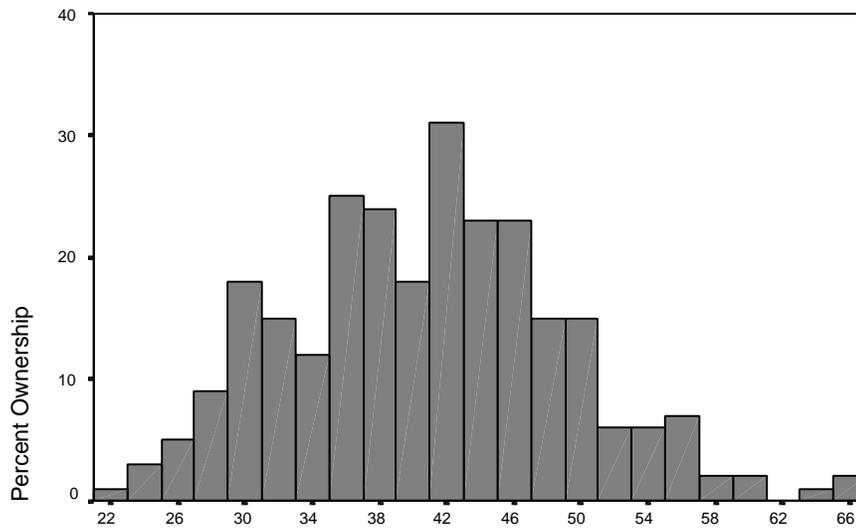
²² These calculations assume that the million dollars is disbursed as six-month loans at the beginning of the year, then redispursed for each of the next three half-years, each time with six-month terms.

²³ Although some of the studies in the region have included human capital characteristics in their analysis of SME growth, no Romanian figures are available to enable a comparison with other studies. Most of the Romanian studies focus solely on material inputs.

²⁴ If each firm had a single, unchanging entrepreneur, this would correspond to the percentage of entrepreneurs, but with multiple entrepreneurs holding differential ownership stakes, it is important to take into account these weights in estimating the relative importance of each characteristic.

²⁵ The study also investigated a variety of other characteristics of entrepreneurs, including their family backgrounds and their experience prior to 1990 (including political background), but these variables were unassociated with measured firm performance in this data set.

Figure 5.1: Age Distribution of Entrepreneurs



Turning to workers' characteristics, Table 5.2 shows the distribution by level of completed education. By contrast with their employers, few employees had university education: 12.6 percent, about the national average.

Table 5.2: Workers' Education

	Average Percent
Less than High School	33.2
High School and Post-High School	54.2
University Education	12.6

Sample Size: 292

Finally, Table 5.3 shows the respondents' estimates of the costs of hiring an additional worker, including all the time spent advertising, interviewing, selecting, and training a new employee. This variable is taken as a measure of the difficulty in finding appropriate workers.

Table 5.3: Hiring Costs

	Number of Hours for Hiring
Mean	45.9
Median	24.0
Minimum	.0
Maximum	480.0

Sample Size: 277

The results from statistical analysis of the effects of these variables on employment and sales growth are weaker than those for the measures of financial constraints. It appears that general secondary education of both entrepreneurs and the workforce is associated with higher growth, but university education has a much weaker effect in magnitude and statistical significance. There is some evidence that entrepreneurs whose prior work experience is outside the firm's industry are more successful at raising growth. Firm growth declines fairly strongly

with entrepreneurial age. These findings support policies to expand both general education and job training opportunities for workers.

6. TECHNICAL ASSISTANCE

Much effort and many financial resources have been expended on the design of technical assistance programs for small firms in transition economies, but rather little evidence is available on how well these programs have functioned. This analysis considers the amount and types of services that have been received by the firms in the survey sample, and estimates the effect of technical assistance on firm growth.

Table 6.1 shows that rather few firms report actually receiving technical assistance: about 30 percent overall, 10 percent receiving only training, 9 percent receiving only consulting, and 10 percent receiving both.

Table 6.1: Receipt of Training or Consulting Services

	Number of Firms	Percent of Firms
Both Training and Consulting	31	10.5
Only Training	29	9.8
Only Consulting	25	8.5
None	210	71.2

Sample Size: 295

Although relatively few firms have received technical assistance, those that do tend to receive multiple services. The types of services received are shown in Table 6.2. Most common are consulting in marketing and training of entrepreneurs and workers.

Table 6.2: Types of Technical Assistance

	Number of Services	Percent of All Services
Accounting	20	8.6
Legal	18	7.8
Business Plan Writing	26	11.2
Marketing	36	15.5
Use of New Technology	27	11.6
Information and Technology	3	1.3
Management	23	9.9
Training of Entrepreneurs	35	15.1
Training of Workers	37	15.9
Other	7	3.0

Sample Size: 232

Table 6.3 contains the distribution of financing sources for the assistance. About half the services were paid for by the firm itself, while USAID accounts for only 13.5 percent. The service providers are shown in Table 6.4. Both domestic and foreign/international providers are represented.

Table 6.3: Financing Source

	Number of Services	Percent of All Services
Romanian Government	5	2.2
Romanian Foundation	4	1.7
Business Association	30	13.0
Paid by Firm	116	50.4
Foreign or International Organization	30	13.0
USAID	31	13.5
Other Source	14	6.1

Sample Size: 230

Table 6.4: Service Provider

	Number of Services	Percent of All Services
Local Governmental Agency	10	4.4
Central Governmental Agency	14	6.1
Romanian NGO	46	20.1
Romanian Firm or Freelancer	68	29.7
International Organization	62	27.1
Foreign Organization or Individual	24	10.5
Other	5	2.2

Sample Size: 229

The respondents' ratings of the usefulness of the service are shown in Table 6.5. Despite the low incidence of technical assistance, the recipients rate what they have received very highly. These subjective ratings, while informative, cannot be equated with evidence of a positive effect of receipt of technical assistance services on the firm's growth rate. Such evidence requires multivariate analysis of factors explaining growth, including technical assistance.

Table 6.5: Evaluation of the Usefulness of Technical Assistance

	Number of Services	Percent of All Services
Not useful at all	8	3.5
Somewhat useful	50	21.5
Very useful	174	75.0

Sample Size: 232

Donors have actively promoted business associations as an important way to promote SME development. Only 28.5 percent of the firms in the sample are members, however. Members report wanting to be a part of business associations for several purposes, the most common being consulting services, locating customers and suppliers, and training. Many of the other firms report not being members because the services are not useful or membership is not worth the cost.

The results of multivariate analysis show that the only type of technical assistance that systematically enhances growth is worker training, and there is no effect of managerial training, consulting services, or business association membership. The lack of significant effect holds regardless of the type of technical assistance, the funding agency (whether USAID or non-USAID), and the provider. Only in cases where the firm finances the program itself or when the assistance is provided by a foreign partner is there some evidence of increased growth. Taken together with the results concerning finance, these findings suggest that international donors'

resources may be better employed for easing the financing constraint than for providing targeted assistance to small enterprises, with the possible exception of worker training programs.

7. BUSINESS ENVIRONMENT

The final set of factors concerns the environment within which firms operate: product market competition, costs of registration and problems with bureaucracy, use of the courts and other means to handle disputes, predatory behavior from police and private parties, and the extent of under-reporting of financial indicators. An important problem in this field is ensuring accurate indicators for these problems, and the survey attempted a wide variety of alternative measures, only some of which are discussed here.

Table 7.1 shows the number of competitors reported by the firms. Very few of the firms claim to be monopolists or duopolists, and 78 percent report having five or more competitors, a frequently used threshold for a competitive market.

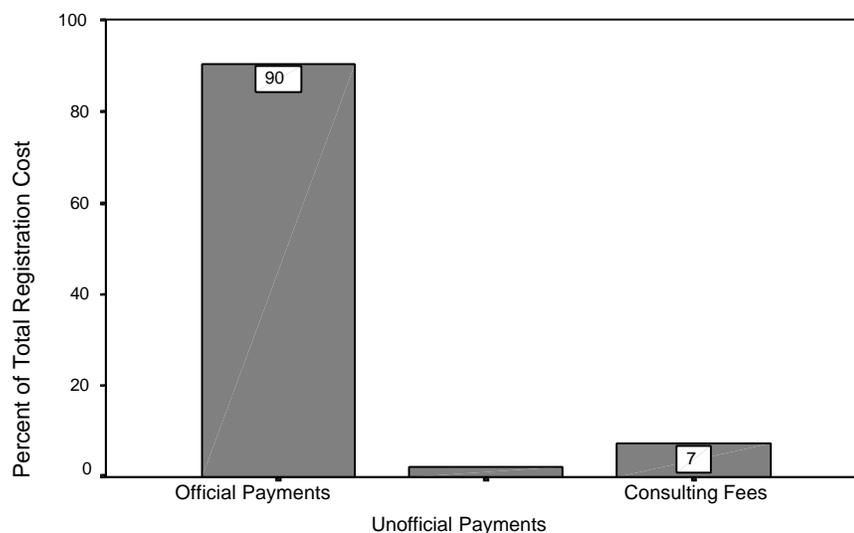
Table 7.1: Number of Competitors

	Frequency	Percent
0-1 Competitors	15	5.4
2-4 Competitors	34	16.6
5-9 Competitors	60	21.6
>10 Competitors	157	56.5

Sample Size: 278

The costs of registration, divided into official payments, unofficial payments (bribes), and consulting fees, are shown in Figure 7.1. Official payments account for 90 percent, and bribes are only about three percent, according to firm reports.

Figure 7.1: Cost of Registration



The number of permits required for the firm to operate in the first year after founding and the number of government inspections that took place that year are shown in Table 7.2. While most firms needed relatively few permits and received a moderate number of inspections (in both cases defined as less than ten), some firms experienced more bureaucratic hassles.²⁶

Table 7.2.b: Number of Permits and Inspections, in the First Year of Operation

	Permits	Inspections
0 to 9	57.1	78.6
10 to 19	30.5	15.1
20 to 29	7.4	3.9
30 to 39	2.5	1.8
40 to 49	1.1	.4
50 +	1.4	.4

Sample Size: 282 and 285, respectively

Most firms have disputes with customers or suppliers at some time or other in their history, but an interesting question is how the disputes are handled. Survey respondents were asked to specify the dispute-resolution methods they had used in the past and the single method they would most likely use in the future. The results in Table 7.3 show that going to court is common (58.6 percent of firms report having done so, and 37.7 percent say this would also be the most likely future method), but still more common is resolving never to deal with the party again.

Table 7.3: Methods of Handling Disputes

Method	Percent of Firms which Used This Method in the Past	Percent of Firms for which This Method is Most Likely in the Future
Go to Court	58.6	37.7
Use an Arbitrator	8.0	5.7
Resort to Private Enforcement	3.4	2.4
Never Deal with This Party Again	69.0	48.5
Other	5.7	4.4

Sample Size: 293

Note: Past methods may be multiple; future method is the "most likely."

To elicit truthful responses on protection payments, firms were asked to specify the incidence in their sector; the results are shown in Table 7.4. Only about seven percent of firms say "rather yes" to the statement that it is sometimes necessary for firms in the sector to make such payments to either private parties or the police.

²⁶ IRIS (2001) claims that it was not only the number of required permits that bothered firms, but also the cost of preparing the necessary documentation to get permits; the median amount of time preparing documentation for the Trade Registry was seven days, for example. In the current survey, the median respondent reported a total of 30 days of work for filling out forms and dealing with the Trade Registry, the fiscal authorities, and the Labor Chamber in order to be able to operate, but this variable was unassociated with subsequent firm growth.

Table 7.4: Incidence of Protection Payments, in the Firm's Branch

	Private Protection Payments in Firm's Branch		Police Protection Payments in Firm's Branch	
	Frequency	Percent	Frequency	Percent
Rather No	272	92.5	274	93.2
Rather Yes	22	7.5	20	6.8

Sample Size: 294

Respondents were also asked whether they were willing to pay something for a clean business environment. As shown in Table 7.5, 77 percent claimed they were willing to pay, and the amounts they reported to be willing to pay were not inconsequential (5-10 percent of sales).

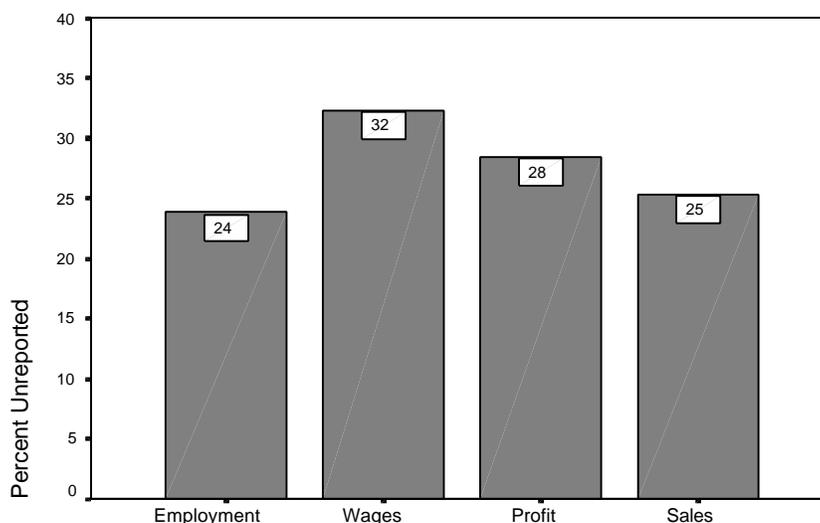
Table 7.5: Willingness to Pay for a Clean Business Environment

	Frequency	Percent
Not Willing to Pay	64	22.7
Willing to Pay	218	77.3

Sample Size: 282

A final indicator is truthful reporting. If a firm has little to fear from predatory government bureaucrats or private mafias, it is more likely to truthfully report financial indicators. Firms were asked to estimate the extent of under-reporting by "other firms in the same industry and region." The results, displayed in Figure 7.2, show that an average of 24 percent of employment, 32 percent of wages, 28 percent of profits, and 25 percent of sales are said to go unreported. According to these measures, the hidden economy is quite substantial in Romania.

Figure 7.2: Unreported Indicators



The project undertook detailed statistical analysis of the relationships between these indicators of the business environment and measures of economic growth. The analysis reveals that the relationship between measures of the business environment and firm performance is weaker than it is for the other factors. Among many variables investigated – including measures of corruption, permits, inspections, and problems with contract enforcement and property rights – little or no evidence was found that they constrain growth.²⁷ To some extent the comparative lack of strong results in this area may simply reflect the difficulty of finding reliable measures of the relevant concepts, but the results at least cast some doubt on policies and programs that would reallocate resources towards business environment issues at the expense of providing finance in Romania.

8. SUMMARY OF POLICY IMPLICATIONS AND CAVEATS

The findings reported above have a number of policy implications. To start with, they support the proposition that financial constraints are highly significant for the sample firms, as an increase in financial resources raises both employment and sales growth. Although very useful, firms' own resources (reinvested profits) are insufficient, and loans stimulate growth even in firms reinvesting most or all of their profits. This finding, which is robust to alternative specifications and methods of estimation, runs counter to the claims of two recent studies (both published in the EBRD journal *Economics of Transition*, 2000) that finance is not an important constraint for small firm growth in Eastern Europe. Those studies were based on much weaker evidence than that provided here, thus the finding is important given the attention paid by USAID and other international donors to microfinance.

While growth of both employment and sales are enhanced by the amount of credit it receives, there is some evidence that dividing the amount among a greater number of loans is less effective than receiving a smaller number of larger loans. These results imply that the primary function of credit in promoting growth is through relaxing the firm's capital constraint rather than through monitoring and advising activities by the lender. "Fiscal facilities" provided by the state consistently and substantially raise growth, suggesting that the statutory tax rates represent a significant financial constraint on small firm expansion.

Comparing loans organized along microfinance principles with ordinary bank and government loans, the results suggest that microfinance credit has the strongest effects on growth, while government loans frequently have no impact whatsoever. Most likely due to the use of microfinance practices, USAID loans are found to raise growth substantially more than do loans from non-USAID sources (which includes few other international lenders in the study sample). The estimated effect of one million dollars of loans received over two years is an increase of 14 jobs under the microfinance methods of international donors, while 4.7 jobs result from other types of lenders. The 14 jobs per million dollars of credit imply a rather inexpensive cost of job creation, given that the cost of a credit is only the interest rate times the amount of the loan, plus administrative costs.

Concerning human capital, the findings suggest that general secondary education of entrepreneurs is associated with higher growth; university education has a much weaker and sometimes a zero effect. There is some evidence that entrepreneurs whose prior work experience is outside the firm's industry are more successful at raising growth. Most entrepreneurs are in

²⁷ Johnson et al. (2000) similarly find little evidence of a relationship between property rights enforcement and growth in Poland, Romania, and Slovakia, which they report to have significantly better property rights enforcement than Russia or Ukraine. The evidence appears to suggest that below a certain level of property rights protection, the policy emphasis should be on improving protection, but once protection has reached a certain level, improving access to finance will have a bigger payoff for growth.

their 30s, and firm growth declines strongly with entrepreneurial age. Growth is enhanced by training programs for workers, but not for managers. These findings support policies to expand both general education and job training opportunities for workers.

Aside from training, growth performance is largely unassociated with most other forms of technical assistance in these data, regardless of the type of technical assistance, the funding agency (whether USAID or non-USAID), and the provider. Only in cases where the firm finances the program itself or when the assistance is provided by a foreign partner is there some evidence of increased growth. Taken together with the results concerning finance, these findings suggest that international donors' resources may be better employed for easing the financing constraint than for providing targeted assistance to small enterprises, with the possible exception of worker training programs.

A final set of policy-relevant variables concerns contract enforcement, property rights, and other aspects of the business environment. Although transition economies have stimulated fascinating discussions of these issues, the analysis in this project reveals that the relationship between measures of the business environment and firm performance is weaker than it is for the other factors. Among many variables investigated – including measures of corruption, permits, inspections, and problems with contract enforcement and property rights – little or no evidence was found that they constrain growth.

These policy conclusions are of course subject to a number of caveats. First of all, the conclusions are limited to the sample of firms analyzed in this study. All of these firms are unusual, at least in the sense that they received a USAID-sponsored loan, and thus their average quality may be reasonably supposed to be better than average, relative to the entire population of small Romanian enterprises. Extrapolating the study's findings to a broader category of firms requires an assumption that the factors that influence growth are similar in both cases.

The size of the sample in this study is larger than in most other studies of firm performance in transition economies, but it is still small enough to suggest caution in interpreting the results. The use of time series information on each firm and the focus on micro enterprises – which are advantages of this study relative to other research in this area – mitigate the problem to some extent, but not entirely. For instance, the estimates of the number of jobs created by loans fluctuate depending on the precise measures and statistical methods employed in the analysis. The positive association of higher employment growth and receipt of loans is strongly supported by the data, but the precise point estimates of the magnitude of job creation should be treated with caution.

The study is also limited by measurement difficulties. With respect to the business environment, for example, the extent to which contracts are enforced and the degree to which property rights are respected are variables that are difficult to measure. Although the study collected information on a wide variety of alternative measures and explored many different ways of estimating their effects, the finding of little relationship between these variables and firm growth may simply reflect the difficulty of measurement. Even the basic variable studied in this project, firm growth, is subject to measurement error. The generally weaker findings for sales growth compared to employment growth, for instance, may be explicable based on imperfect price deflators used to calculate real growth rates.

Inferences concerning the association of firm growth with the potential factors may also be limited by lack of variation in the sample. To take the business environment variables again as an example, it is possible that their variation within Romania is insufficient to be related to differences in growth rates. Perhaps all firms are equally constrained by these factors. In fact, however, the survey data do show fairly substantial variation in both the business environment measures and in growth rates.

The final caveat concerns the limits of statistical methods to yield causal conclusions. While the study has made every effort to isolate the effects of individual factors and to estimate

their magnitudes, the possibility of reverse causality cannot be entirely excluded. For instance, it is possible that firms with superior growth prospects tend to receive bigger loans than do others; in this case, the loan effect would result from careful selection by loan officers, rather than through relaxation of the financing constraint (and monitoring of the firm's behavior). The identification of growth spurts in the period immediately following the receipt of a loan is strong evidence that the loan is the driving force, but there is little doubt that selection mechanisms also play important roles.

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What Makes Small Firms Grow?

Appendices

Sampling, Survey Organization, Statistical Results Tables, and Questionnaires

Introduction

These Appendices complement the Report on Main Findings from this project. They are intended to provide full background on all the details of sampling and survey organization as well as examples of the detailed statistical results on which the main findings are based. Appendix I describes the sample in detail, including the issue of non-response, and the differences between the interviewed sample, the original sample lists, and the population of Romanian firms. Differences in both basic characteristics (industry, region, size) and in growth rates are analysed. Appendix II documents the organization of the survey project, with a particular focus on the questionnaire development and data collection processes. Appendix III includes tables reporting the results from cross-section regression analysis relating alternative measures of firm growth (employment and sales growth) to a large number of potential determinants, including many found to be statistically insignificant and from panel regressions where the precise timing of the factors and performance effects (using employment and sales growth – as dependent variables) is taken into account. The regressions also control for the industry, region, age of the firm, and whether it was founded on the basis of an existing organization (e.g., as a spin-off, or as a result of privatization). Appendix IV contains the English and Romanian questionnaires.

I. The Sample

The sample of firms studied in this project was drawn from lists of firms provided by three USAID-supported lending agencies: World Vision – CAPA (Creditari Asistenti si Pregatire pentru Afaceri), the Cooperative Housing Fund (CHF Micro Loan Program), and the Romanian-American Enterprise Fund (RAEF Small Loan Program). The intention of the project was to interview the complete population of all firms which had received a loan (i.e., disbursement) from any of the three programs by March 31, 2000. Firms receiving loans more recently than March 2000 were excluded on the grounds that there would not be sufficient time after the loan disbursement to permit a judgement as to its effects.

A. Sample Size and Response Rate

Of course, a common problem in all survey research is non-response, and this project is no exception even if the problem was much more attenuated than it is usually. Particularly in firm-level surveys, one of the biggest obstacles is simply obtaining the cooperation of the subjects: firm managers. The problem is exacerbated when the analysis requires not merely the opinions of a

manager but also detailed quantitative information on the history and performance of the firm, data which may be regarded as confidential and are difficult to provide. In the case of the present study, such quantitative information was necessary to measure firm growth in a variety of ways and to control for characteristics of the firm when examining the effects of other determinants.

To reduce non-response, the project exploited both the experience of the project team and the special nature of the sample. An introductory letter sent by the Program Director of the appropriate lending agency was addressed to the principal owner of each company. Its aim was to explain the purpose of the survey and the criteria for including the firm in the survey sample. It stated that the information furnished by the company would be kept confidential, as results would be reported only in aggregated form, and neither the loan agencies, USAID, nor other Romanian or foreign governmental or non-governmental organization would receive identifying information on the firm. It also stressed the importance of cooperating with the project, emphasizing the usefulness of the survey results to USAID and other agencies interested in developing more effective programs of assistance for private SMEs.

The initial sample list received from the three USAID agencies, after excluding duplications (due to multiple loans extended to some firms), single professional self-employed, and non-profit organizations, consisted of 386 firms. With the efforts outlined above, 297 were eventually interviewed. Attrition from the sample was due to several causes.

First, some firms disappeared due to closure or being bought out (in which case consistent time series could not be constructed); 20 firms were in the former category and 4 in the latter. An additional 19 firms could simply not be found, despite intensive efforts to locate them. Field interviewers were trained to make further inquiries in the case they were not able to find a firm on the basis of initial contact information; they contacted local registry authorities, chambers of commerce, and not last, they used personal relationships. There nonetheless remained some firms which the interviewers were not able to learn anything about, the main reason being the lack of updated information in the official files; firms were still registered at old addresses, but when locations were checked by interviewers, no firms were found there. Another problem beyond the interviewers' control was the impossibility to find the owner/managers, who were temporarily unavailable (traveled abroad) and did not return by the end of the fieldwork; there were 5 such cases. One firm was involved in legal conflict with a supplier; this firm was forbidden to release any information until the end of the conflict.

Although the lender-connection was in many cases useful for making contact with and persuading the manager to participate in the survey, there were some cases where this connection worked negatively. Just before starting the fieldwork, some loan agencies announced that they were foreclosing on some firms. The initial number was 7 firms, but as the fieldwork went on, some 5 more firms were foreclosed. That problem further reduced the number of firms in the initial sample, as the foreclosed firms were either reluctant to talk to the interviewers, or closed already. As a result of this situation, 11 dropped out from the sample.

Finally, there were some firms that simply refused to co-operate, despite the effort put in by the Project staff, interviewers and loan agencies. The reasons invoked by the owners/managers of these firms ranged from lack of time or lack of interest to general skepticism about any release of "confidential" information. There were 31 such cases.

Overall, the response rate was exceedingly high for an enterprise survey. As a percentage of the initial number of firms, the rate is 77. However, if firms which do not exist anymore are not considered (closed and bought out firms), the response rate is 82 percent.

This high response rate is certainly due to the unusual organization of this survey. On the one hand, firms which received loans and had a good relationship with the loan agencies were more likely to respond positively to the request for an interview. On the other hand, some agencies turned to be extremely supportive, calling reluctant firms and explaining the importance of the project. Last but not least, the continuous monitoring of the fieldwork by Project staff allowed reluctant attitudes to be dealt with as soon as they appeared.

B. Sample Composition

An important issue with respect to the sample of firms studied in this project, as in any survey research, is potential sampling bias. The fact that the sample firms had received loans suggests immediately that they are unlikely to constitute a representative sample of all Romanian firms. For one thing, the lending programs placed restrictions on the sorts of firms that were eligible to receive loans, based on a maximum size (which varied across programs), non-state ownership, and a few prohibited activities (arms, tobacco, alcohol). There is also some reason to suspect that firms receiving loans might be more successful than non-recipients, inasmuch as the loan applications were evaluated according to the financial performance and estimated prospects of the firms.

There could also be sampling bias arising from systematic patterns of nonresponse. In general, it is difficult to judge whether the nonresponding firms are likely to be biased, relative either to the population or the interviewed sample. In our case, however, the primary reasons for nonresponse – shutdown, disappearance, and refusal due to disputes with the lending agency (usually because of failure to repay) – seem likely to be associated with negative performance.

How can the differences between the sample of interviewed firms from the original population lists of loan recipients (which includes nonrespondents) and from the broader population of Romanian firms (including nonrecipients of loans) be evaluated? The survey itself, of course, provides information on neither nonrecipients nor nonrespondents; nor is sufficient information for nonresponding recipients available from the population lists provided by the lending agencies. For the purpose of making these comparisons, the project drew upon other databases on all Romanian firms in which both the interviewed and the nonresponding sample firms could be identified.

The larger database also permits some comparison of the relative performance of the sample firms and the population. The following table shows such a comparison for the growth rate of employment, by industry, for the period 1997-2000.

Industry	Sample		Population	
	Percent of Firms	Median Employment Growth	Percent of Firms	Median Employment Growth
Food Industry	7.7	28.8	5.7	0.0
Light Industry	5.7	40.0	4.7	0.0
Wood Processing	7.1	22.0	11.8	-7.7
Heavy Industry	9.1	47.6	4.1	-11.1
Wholesale Trade	14.5	7.1	16.1	0.0
Retail Sale Food Products	25.3	22.2	26.3	-12.5
Retail Sale non-Food Products	8.1	17.6	15.4	0.0
Hotels and Catering	5.4	5.1	4.4	-12.5
Transportation	7.4	38.2	3.7	-20.0
Other Services	9.8	-17.9	7.8	-14.3
Sample Size		177		37,127

It should be mentioned, that in the table employment growth was measured using a more conventional formula, namely the absolute change in employment divided by the mean of employment in year 1997 and 2000, divided by number of years. In the complete analysis, a refined definition was used (see Appendix: Dictionary of Variables of Interest). As the population figures are available only for firms with at least 3 employees (in both years), the USAID sample is similarly restricted. The median employment growth for firms receiving USAID loans was 20.0 percent, much higher than that for Romanian firms as a whole (-4.8 percent). The higher growth of USAID firms holds in every industry, except for other services, where both the USAID and population figures show substantial decline. The higher growth of USAID firms is particularly pronounced in the light industry, heavy industry, retail food stores and transportation sectors. Another feature of the sample is the high percent of very small ("micro," or fewer than 10 employees in the Romanian legal category), mostly concentrated in the trade and services sectors. Fewer firms are "medium-sized" (more than 50 employees), and a few approach "large" (250 or more employees) status. Moreover, as the results from analysis of the survey data demonstrate, and as might be expected given the small size and sectoral concentration of the firms, most of the sample firms are new start-ups, with no antecedents prior to 1990.

Nevertheless, some firms did have such antecedents, having existed as state-owned enterprises under the socialist regime, and have since been privatized. As a consequence, the sample includes firms of a variety of complex legal/organizational forms (partnerships and joint stock companies), ownership types (multiple large owners and dispersed ownership resulting from privatization) and reorganization histories (splitting up, spinning off, merging, and the like), even if the typical firm is the comparatively much simpler case of a single entrepreneur starting a firm from scratch, hiring a few employees, and never selling, dividing ownership, or re-organizing the firm in any significant way. The presence of a few firms that were different from this simple case in terms of their size, ownership structure, legal form and re-organization history greatly complicated the questionnaire design, as discussed further in the next section.

II. Survey Organization

A. Overview

Reliable firm-level data are notoriously difficult to obtain in any country. Managers resist providing information (particularly financial data) to any outsider, accounting practices are irregular and imperfect, data from earlier years are frequently archived and inaccessible, and the usual survey research problem of ensuring careful and thorough field work is magnified by the difficulty in obtaining managers' cooperation. In order to alleviate these problems, this project undertook a number of procedures, including careful attention to questionnaire development and pilot testing, and complete involvement of the project team in all aspects of sampling, questionnaire design, fieldwork, data entry, checking and cleaning, and data processing.

The organization of this project can be contrasted with a often-practiced alternative: subcontracting the entire process between the English language questionnaire and the summarized data, including translation, sampling, selecting interviewers, monitoring field work, data entry, and frequently even data analysis. In this alternative approach, the principal researchers supply only an English language questionnaire at the outset and they add comments to summaries of the analyzed data at the conclusion, while most of the actual work is left to a set of individuals who may be experienced in surveys (although most such subcontractors have little experience with the type of quantitative firm survey necessary for this project), but who frequently have little motivation or knowledge of the specific research questions to be investigated.

By comparison, the intensive involvement of the project team in all stages of the research on this project resulted in the following contributions to a reliable database and analysis:

- ensuring accurate translation of the questionnaire
- controlling the inclusion of firms in the sample
- bringing all problems to the project team's attention, rather than them being hidden by poorly motivated subcontractors and interviewers
- screening and selecting interviewers carefully
- constant monitoring of interviewer performance, including dismissal of those working poorly (two interviewers were in fact dismissed in the course of the field work, despite careful screening at the outset)
- controlling the number of firms per interviewer
- random checking of interviewer visits by follow-up contacts
- ensuring precise data entry, with double entry of each questionnaire by two different individuals and a comparison carried out to eliminate mistakes
- checking all data for internal consistency and external plausibility, and returning for re-interview questionnaires of firms providing inconsistent or implausible information
- cleaning data according to a set of logical rules
- taking responsibility for all stages of data processing and analysis
- making use of the project team's knowledge of particular problems to interpret the meaning of certain variables or statistical findings
- motivating project team members to do the best possible job on each stage and task of the project, avoiding any "alienation from the product"
- integrating Western expertise on the broader issues of entrepreneurship and firm performance with local knowledge of the specific Romanian environment, and through close teamwork of foreign and local researchers also accomplishing a training function.

The remainder of this Section provides a more detailed explanation of the most important steps followed in order to obtain a reliable database on small enterprises in Romania.

B. Questionnaire Design

The quality of a questionnaire is central to the success of both fieldwork and data processing. The questionnaire is the means by which all the objectives of the survey are realized. Keeping the data needs of the survey in mind, the design of the questionnaire took into account the following factors: precision of measurement, ease for responding companies to furnish data, ease of data processing, and comparability of data to those obtained from similar studies (in the case of variables which previous research has attempted to measure).

As discussed in the previous section, the sample of firms in this study is quite heterogeneous. Even though the typical firm is a new start-up operated continuously by a single entrepreneur with a few hired employees under a simple, unchanging legal form and with no significant re-organizations (e.g., spin-offs or acquisitions), the sample also contains a number of exceptions to each of these characteristics. As a consequence, the questionnaire was designed to take account of this heterogeneity.

First, it permitted much more complex ownership structures, including not only multiple entrepreneurs acting in partnership, but also dispersed ownership by workers, managers, and outsiders, and significant changes in the ownership structure over time. Second, larger firms have inherently more possibilities for obtaining loans, fiscal facilities and technical assistance, and the questionnaire therefore had to permit a sizable number of each of these. Third, the questionnaire

elicited detailed information on reorganizations of the firm, as the interpretation of performance measures is greatly affected by these events. These are some examples of ways in which the heterogeneity of the sample along a number of dimensions necessitated a longer questionnaire.

In order to increase the efficiency of data collection, the questions were grouped in two separate questionnaires:

The *main questionnaire* contained 142 questions (925 possible variables) addressed to the principal owner/manager of the firm. The content was organized in twelve chapters:

- Basic characteristics of the firm
- Origins and founding of the enterprise
- Ownership of privatized companies
- Employment and labor costs
- Sources and use of finance
- Technology and products
- Participation in business associations and technical assistance
- Customers, suppliers and competitors
- Fiscal facilities
- Constraints from business environment
- Opinions on constraints
- Opinions on business environment

The *accountant's questionnaire* contained only 8 questions (180 variables) addressed to the accountant and/or bookkeeper of the firm. Besides a few identification questions, its subject matter was financial information, and most questions were asked for a series of years (generally 1990-2000).

Much attention was paid to the organization of questions to ensure a logical sequence, enable the respondents to answer more easily without making errors, and facilitate the process of checking the internal consistency of the data.

Another measure taken to improve the accuracy of responses and reduce the need for later follow-ups with the respondents was the inclusion of self-editing questions, whereby the interviewer was asked to make a number of reasonable checks of the figures during or immediately after completing the interview. This provided the interviewer with an opportunity to deal with inconsistencies on the spot.

To make data collection and data entry easier, most of the variables have been coded. The questionnaire design incorporated a majority of self-coded and pre-coded items that were to be filled in almost exclusively with numeric data. These types of responses are the most desirable, since they reduce enumeration time, save space on the questionnaire and provide uniform answer categories.

When necessary, definitions, rules and instructions for filling in data and control were entered in the questionnaire design to facilitate the respondents and interviewers' understanding. Similarly, the questionnaire contained frequent reminders/annotations about the reference period(s) to which questions referred. Whenever required, skip signs marked the jump over a sequence of questions.

For 10 of the most complex questions, interviewers handed cards to the respondents. These contained the codes and definitions of the items from which the interviewees were asked to make a choice.

Verbatim questions (literal statements that the interviewer could read) were preferred to specifications of items required. Although verbatim questions require more space than do item specifications, they help the interview to proceed smoothly and achieve greater reliability.

Questions were phrased carefully so that answers would measure exactly what was intended. Both questions and instructions were written in simple language, which could be easily understood by

the respondents, minimizing the possibility that they could be misinterpreted. Special care was given to avoiding complex questions (containing more than one thought), and leading questions (those inducing a certain answer). The questions were framed so as to require, in almost all cases, statements of fact rather than judgments on the part of the respondents or field operators.

Particular attention was paid to making data definitions and terminology consistent with those used in regular inquiries conducted by the national statistical body or provided by the existing accounting law. The advantages of building upon actual structures lies not only in cost-effectiveness but also in the possibility of greater consistency among the various concepts, definitions and classifications used.

Extra care was devoted to questions that might be considered sensitive. In order not to raise suspicions regarding the motives of the inquiry or arouse antagonism, they were carefully phrased, usually indirectly, and sometimes as possible answers to multiple choice questions. For the same reason, most of them were grouped in the final chapters of the main questionnaire.

For the sake of efficient coordination, the questionnaire design phase had to be directly coordinated with the data editing phases. The basic editing and correction rules had to be established earlier than the processes themselves so that the edit programs could be developed and tested (see flowchart).

Questionnaire Revision and Pilot Surveys

The content and organization of the questionnaire and the formulation of questions were changed several times over a period of about 3 months, from the initial draft until the final version of the questionnaire. Even the initial draft, however, was informed by prior experience of the project team in conducting enterprise surveys in Romania and other countries, by other surveys carried out of small and medium enterprises, and by the economic literature on entrepreneurship and the role of small firms in industrial organization. The revisions were mainly based on two pilot surveys and a workshop held after the first pilot. At the workshop, which was held for an entire day on March 23, 2001, the questionnaire draft was discussed and reviewed by over thirty of the leading policymakers and thinkers on entrepreneurship in Romania. Based on these discussions, the questionnaire was revised and then pilot-tested on 2 percent of the sample during a second round.

This pre-testing simulated all the phases of the survey operation, from fieldwork through the various data processing stages, and ensured that the questionnaires and procedures were feasible. The pilot interviews were carried out by project team members and by candidate interviewers for the larger fieldwork. The interviews were scheduled well in advance of the starting date of the survey so the experience could be adequately analyzed, changes could be made to the questionnaires, and additional tests could be conducted if needed.

The set of issues examined in the pre-tests included the following:

- whether questions were easy to ask and moved smoothly from one to another;
- whether questions were misunderstood, were answered incorrectly because of ambiguities, or were not answered at all because of lack of information or confidentiality;
- whether the time reference was clear;
- how the respondent reacted to the questions, e.g., reluctance to respond, uncertainty about questions or sensitivity concerning personal issues;
- whether the training procedures, survey instructions and training materials were sufficiently adequate and clear.

The lessons learnt from the pilot surveys were used to improve the questionnaire by adjusting the deficiencies identified.

Before the actual fieldwork began, the questionnaires were further revised until a final version was decided. An important step included in this revision was a careful back-translation of the Romanian language questionnaire into English, undertaken by economics students with no prior knowledge of the project. While the original English questionnaire was usually reproduced verbatim, a few discrepancies were found and subsequently corrected. The final English language and Romanian language questionnaires are attached.

C. Data Collection

To carry out the fieldwork, a combination of data collection techniques was used. It was preferred to start the data gathering through a face-to-face interview, as such interviews usually achieve higher cooperation and response rates as well as more complete and consistent data. Only the smaller questionnaire containing financial information was, according to circumstances, left for the accountant/book-keeper (who was sometimes absent from the workplace) to fill in. By contrast, most of the re-interviews (to collect additional information or to clarify apparent inconsistencies in the answers) were conducted by phone.

The quality of field operations is one of the most critical factors in determining the reliability of the data collected. In this project, the fieldwork was not contracted out to an organization that would return a completed data set (or analysis), but rather was organized by the project team using auxiliary interviewers. The rest of this section discusses the selection, training, and monitoring of interviewers, and the procedures for processing and checking completed questionnaires.

Interviewers' selection

In survey research that is sub-contracted, the researchers have control over neither the selection of interviewers nor their number. For the present study, the project team selected professional interviewers and monitored all their activities. The interviewers were drawn from a private research agency, CURS (Center for Urban and Regional Sociology), whose selection was based on a reputation for reliable work and the evaluation that this organization offered both the highest quality interviewers and the most flexible organization for an operation directed by the project team. Interviewers were selected by the project team from more than 560 associates of CURS nationwide based on an evaluation of their qualifications.

Concerning the number of interviewers, a common problem in sub-contracted survey research is that the sub-contractor employs a large number of interviewers each carrying out rather few interviews. For this project, due to the complexity of the questionnaire and the expected tendency for interviewer performance to increase with experience, and despite both the relatively short data collection interval and the large geographical coverage of the firms (which raised costs), the number selected was designed to be as low as feasible. Assuming an original sample of about 370 firms and under the expectation of some interviewer attrition, 37 interviewers were taken into the project, implying an average of 10 firms per interviewer. In the course of the project, 2 interviewers were fired for incompetence (and their already-interviewed firms were re-interviewed by other interviewers), while the sample fell to 297, resulting in a per-interviewer average of about 8.5 firms.

Interviewers' training

Two tools were used for training interviewers, both conceived by the project team: a one-day training session and an interviewer's guide. The training session aimed at:

- introducing the project team and survey (purpose, sample design, timetable, procedures, and payment);

- presenting the interviewer's kit (a set of documents given to each interviewer including questionnaires, detailed instructions, contact information, and the interviewing manual);
- discussing techniques for approaching the firms, including how to reassure respondents of the confidentiality of the information they would supply;
- presenting the two questionnaires (the main or entrepreneur's questionnaire and the accountant's questionnaire), with instruction on how to conduct the interview and fill in the answers on the paper form, with a special emphasis on the necessity of following the written instructions and definitions and refraining from any personal arbitrary interpretation;
- practicing, by a series of mocking interviews designed to capture the most difficult and/or sensitive sections of the questionnaires. Techniques to assist respondents in recalling events, reporting accurate information, responding when having difficulties with questions, as well as to elicit answers when respondents are reluctant to supply information were demonstrated;
- checking the interviewers' understanding of some basic concepts and definitions attached to the survey by means of a set of specially designed quizzes.

Training sessions were organized in Bucuresti (for 27 interviewers) and in Timisoara (for the remainder). In addition, informal supplemental training was provided in several regions by members of the project team traveling from Bucharest for that purpose. The interviewer's manual provided interviewers with rules, procedures, operational definitions, formulas and examples for the data to be gathered.

After having been trained and having passed the practice session and the quiz satisfactorily, each interviewer was given a list of companies to be surveyed (containing the name of the contact persons, the addresses and phone numbers of the companies). For each interviewer, the enterprises to be contacted were grouped based mainly on their geographical proximity to minimize travel-related costs.

Field operations

The interviewers' first approach to the companies was usually made through a phone call, in which they briefly introduced the survey and asked for an appointment with the manager and/or owner of the company. In many cases, the person targeted as the respondent was not available the first time approached. The interviewer was advised to accommodate the respondent's schedule and set up a return appointment. Data on the first pages of the questionnaires (containing general information about the company) were usually pre-entered by the interviewer, based on these phone contacts made prior to the direct contact.

During the visit paid by the interviewer, the main questionnaire was usually filled in on the spot by interviewing the owner/manager. Frequently, the financial questionnaire was left with the firm and collected at a later date, after it had been filled out by the accountant. Thus, in most cases, the interviewer paid a second visit to the company. The reasons for possible non-responses and ambiguities were then made clear. Interviewers were encouraged to promptly and honestly report on unsuccessful encounters or unknowns in the field.

In cases of difficulty in locating a company, they were trained to make further inquiries in the field drawing upon local authorities, chambers of commerce, fiscal authorities and possibly related firms. In some cases it was necessary to inquire with the loan officer of the lending agency.

When a company could simply not be located (no company of that name or description was located at the address provided nor at any addresses to which the was missing, it was also important to find out whether it was definitely out of business, it ceased operation at one location and moved to another, or it was temporarily closed because of seasonal operations or other reasons.

In cases of non-response due to refusal, either partial or total, the interviewers were trained to make efforts to fully explain the purposes and importance of the survey in simple and persuading terms and to reassure the respondent about the confidentiality of information. Courtesy and patience on their part was the best and last resource.

Throughout the data collection period, a very intensive exchange of information was instituted via e-mail messages. Based on individual reports and queries formulated by the field operators, the survey coordinator centralized and shared with all interviewers the problems/issues of concern encountered in the field, accompanied by the methods recommended for solving them.

Initial Data Checking

To achieve a high level of quality, including higher response rates and a smaller number of rejections at the time of data cleaning, each interviewer was checked by the CEU LP survey coordinator after completing their first couple of questionnaires. In the initial stages of the data collection process, she made field trips to most of the survey centers to supervise data collection and clarify ambiguous issues.

The relative advantage of a rather small-scale survey is that it allows the survey coordinator to centralize the collection, capture, edit and follow-up process. The coordinator was in charge with checking the completeness and processability of the questionnaires brought by the interviewers. She thoroughly identified possible gaps and detected gross errors (inconsistencies, unreasonable and/or impossible entries) by:

- checking the responses to the self-editing questions;
- verifying the chronological data trends;
- looking for consistency among different inter-related responses;
- computing some control variables whose normal ranges were a good proof of reliable data collection (e.g. the likelihood of the evolution in time of the average wages or total employment);
- the coordinator had also to determine whether the explanations given in the questionnaire or the observation sheet regarding abnormal features were satisfactory and acceptable.

If scrutiny and editing revealed serious errors and omissions, the matter was referred back to the interviewer, for clarification and rectification. If necessary at this stage, the interviewers were asked to re-contact the respondent for follow-up and, at the same time, solving many queries. Most of the non-respondent re-contacts and follow-ups for error correction were done by phone.

As already mentioned, a systematic follow-up effort was made for all non-respondents to at least obtain the status of the unit (active, inactive or out of scope). In the final stages of the data collection process, a supplementary check on the accuracy of the data was made. CEU LP team members made phone calls to randomly selected firms (representing some 16% of the surveyed population). Their owner/managers were re-asked three of the questions in the main questionnaire in order to verify the identity of answers.

Interviewer payments were made on a piece-rate basis, as piece rates provide incentives for greater productivity. Moreover, bonuses were tied to the proportion of the questionnaires accurately filled in.

Coding

Once the data were found acceptable, they were entered electronically. In order to allow greater speed and accuracy of data entry and computer processing, the questionnaire was pre-coded. No key coding was allowed, and automated coding was neither affordable nor appropriate.

The only open-ended questions were response items appearing under the classification “other (please specify)”. In many cases, it was possible either to re-code some answers into existing codes or to create new ones.

D. Data Entry

It is essential to predict the possible sources of error, to develop methods of detecting mistakes at each stage of the operation and to promptly correct them. That is why a pre-coded or self-coded questionnaire was chosen, as previously mentioned. In addition, it saves time in processing, since no manual intervention is needed and the data entry operator can work directly from the questionnaire.

The SPSS Data Entry Builder 2.0 is a tool for fast and flexible survey design and data collection, which enables entry and validation of source data under the control of a user-created format program. SPSS DE 2.0 contains powerful facilities for interactive data entry, editing and cleaning. The data entry program that was created ensured fast and accurate keying. The design of the data entry system was such that the operators seldom had to look at the screen. Only sporadically, when errors occurred, or they wanted to find their place, did operators have to move their eyes from the paper questionnaires to the screen.

Thus, different checks in connection with content, format, ranges, and length of data fields could be performed at entry. Values entered for each variable were checked accordingly and if not valid, the program beeped and gave an error message. In most cases, the operator simply entered the proper code and continued.

Also, some consistency checks between data items were performed at this stage. Only those due to keying errors were corrected on the spot, the remaining ones being left for a further stage of data cleaning, as they would have slowed considerably the keying rate. Depending on previously entered values for certain variables and according to the routes graphically designed on the paper questionnaire, the data entry software also allowed for programming automatic skipping of items and filling them with certain values.

Double entry – Matching facility

Errors may have been introduced during the data collection or data entry process. In order to eliminate the keying errors, all questionnaires were fully re-entered (each questionnaire was entered twice by different operators: first by a CEU LP operator, second by a CURS operator). Subsequently, a matching program facility provided by the DE 2.0 software compared the two resulting data bases, questionnaire by questionnaire and variable by variable, finally producing a report of all discrepancies found. After checking with the primary document for the correct value, all the wrong entries were rectified in one of the data files, which became ready for the final stage in the process of data editing.

In this way, it was made absolutely sure not only that no questionnaires were missed or duplicated, but also that the electronic records perfectly reflected the content of the questionnaires.

E. Data Cleaning

The data entry process verified that illegal values were not entered and also performed some correlation checks. As already mentioned, some of the errors found were left unsolved at that time for efficiency purposes. However, before the data were tabulated, it was necessary to locate and correct invalid and inconsistent responses on the questionnaires. Such kind of validity checks were done by passing the data through one or more editing and correction cycles in which values of

different variables were made consistent with each other for a given company.

This phase detected errors of inconsistency according to a group of rules included in a validation program conceived in SPSS for Windows 10.0.7. The cleaning program made possible the detection of some internal inconsistencies that could have been overlooked during the process of checking the questionnaires. At this point, some companies needed to be re-contacted in order to correct the irregularities discovered. Usually, this was done by phone but, if necessary, the interviewers revisited the firm. Answers were written on questionnaires, and then the data were captured and edited a second time.

The operations of re-contacting the enterprises, obtaining and reediting the data were performed as many times as necessary until they were absolutely clean. In cases where there were some irresolvable inconsistencies (e.g. because the company books were themselves inaccurate), the relevant variables were coded as missing. The striving for getting high-quality data, which guided the survey team along all the phases of survey implementation, resulted in a sound database that could finally be made available for tabulations and further analysis.

DICTIONARY OF VARIABLES

GROWTH MEASURES

<u>Variable</u>	<u>Cross Section</u>	<u>Panel</u>	<u>Note</u>
Employment Growth	Log (current employment / employment in the first full year of operation) / years of full operation	Log (employment in current year/ employment in previous year)	Employment is defined as sum of regular workers, collaborators, and working entrepreneurs.
Sales Growth	Log (sales in 2000/ sales in the first year of full operation) / years of full operation	Log (sales in current year/ sales in previous year)	Sales level is calculated in 2000 prices, in ROL.

BASIC CHARACTERISTICS OF THE FIRM

<u>Variable</u>	<u>Cross Section</u>	<u>Panel</u>	<u>Note</u>
Age of Firm	Current age of the firm	Age of the firm in year T	
Reorganization	Dummy if firm was found as a result of reorganization of a pre-existing firm		
Spin-off	Dummy for a spin-off since start date	Dummy for a spin-off in year T or T-1	
Acquisition	Dummy for an acquisition since start date	Dummy for an acquisition in year T or T-1	
Heavy, Wholesale, Retail Trade of Food, Nonfood Retail Trade, Transportation, Light, Other Services	Dummies for 7 Industries		For a description of industries see Table1.1: Sample Distribution by Industry
South, Banat, West, Center Moldova, Bucharest	Dummies for 5 regions and Bucharest		See Table1.2: Sample Distribution by Region
Size of the City	Log (Population of the city where the firm is located)		
Y94 – Y01	-	Dummy for year	

FINANCE

<u>Variable</u>	<u>In cross section</u>	<u>In panel</u>	<u>Note</u>
Amount of Loans	Average amount of loans per year during period of full operation scaled by 1 year lagged employment (in employment growth regressions) or by 1 year lagged sales (in sales growth regressions)	Average amount of loans in year T and T-1 scaled by 2 year lagged employment (in employment growth regressions) or by 2 year lagged sales (in sales growth regressions)	Loan is defined as the full amount of loan in first half year of disbursement; for the subsequent half-years the amount declines linearly over the term of the loan.
Number of Loans	Average number of loans during period of full operation	Average number of loans in year T and T-1	
Average Size of Loans	Total amount of loans/ total number of loans/ years of full operation	Total amount of loan in T and T-1/number of loans	
6 Month Lagged Amount of Loan		Amount of loans in second half of year T-1 and first half of year T, scaled by 2 year lagged employment and 2 year lagged sales, respectively	The same formula is used for different categories of loans (USAID – non-USAID, source).
6 Month Lagged Number of Loans		Number of loans in second half of year T-1 and first half of year T	
6 Month Lagged Average Size of Loans		Amount of loans/ number of loans in second half of year T-1 and first half of year T	
USAID Loans	Average amount of USAID loans per year scaled by employment and sales, respectively	Average amount of USAID loans in year T and T-1 scaled by employment and sales, respectively	
Amount of non-USAID Loans	Average amount of loans from other sources than USAID scaled by employment and sales, respectively	Average amount of non-USAID loans in year T and T-1 scaled by employment and sales, respectively	

Finance (continued)

<u>Variable</u>	<u>In cross section</u>	<u>In panel</u>
Loans from Domestic Sources	Average amount of loans received from friends, family, Romanian organizations, individuals, and banks scaled by employment and sales, respectively	Average amount of loans received from friends, family, Romanian organizations, individuals, and banks in year T and T-1 scaled by employment and sales, respectively
Loans from Foreign Sources	Average amount of loans received from international organizations, foreign organizations and individuals scaled by employment and sales, respectively	Average amount of loans received from international organizations, foreign organizations and individuals in year T and T-1 scaled by employment and sales, respectively
Percentage of Reinvested Profit	Average percent of reinvested profit	Average percent of profit reinvested, in year T and T-1
Number of Fiscal Facilities	Total number of fiscal facilities / year in operation	Average number of fiscal facilities in year T and T-1

HUMAN CAPITAL

<u>Variable</u>	<u>In cross section</u>	<u>In panel</u>	<u>Note</u>
Entrepreneur's Characteristics			
Experience in Other Industry	Average shares of owners who previously worked in other industry	Average shares of owners who previously worked in other industry, year T and T-1	
Age	Age weighted by shares, average per year	Average age weighted by shares, for owners who are in the firm in year T and T-1	
High School Education	Average shares of owners with high school	Average shares of owners with high school, in year T and T-1	The 3 rd education category includes owners with vocational education, and less than secondary
University Education	Average shares of owners with higher education	Average shares of owners with university, in year T and T-1	
Foreign	Average shares of foreign owners	Average shares of foreign owners, in year T and T-1	
Female	Average shares of female owners	Average shares of female owners, in year T and T-1	
Housing Ownership	Average amount of housing in sq. meters per year, owned by individuals	Average amount of housing in sq. meters per year, owned by individuals in year T and T-1	Owners other firms or organizations are excluded.
Workers' Education			
Workers with High School	Percent of workers with high school and post-high school education		The 3 rd category includes workers with vocational and less than secondary education
Workers with University	Percent of workers with university education		

TECHNICAL ASSISTANCE

<u>Variable</u>	<u>In cross section</u>	<u>In panel</u>	<u>Note</u>
Technical Assistance Number	Total number of services/ years of full operation	Average number of services in year T and T-1	
Number of Training Services	Total number of training services/ years of full operation	Average number of training services in year T and T-1	
Training for Workers	Total number of training for workers/ years of full operation	Average number of training services for workers in year T and T-1	
Training for Managers	Total number of training for managers/ years of full operation	Average number of training services for managers in year T and T-1	
Number of TA Paid by Firm	Total number of services paid by firm/years of full operation	Average number of services paid by firm, in year T and T-1	
Number of TA from Government	Total TA from governmental agencies/ years of full operation	Average number of services provided by governmental agencies, in year T and T-1	
Number of TA from NGOs	Total TA from NGOs/ years of full operation	Average number of services provided by non-governmental agencies, in year T and T-1	The 5 th category includes Romanian firms and individuals
Number of TA from International Organizations	Total TA from International agencies/ years of full operation	Average number of services provided by international agencies, in year T and T-1	
Number of TA from Foreign Source	Total TA from foreign source/ years of full operation	Average number of services provided by foreign organizations, in year T and T-1	
Dummy for Technical Assistance	Dummy if firm ever benefited any type of service	Dummy if firm benefited any type of service in year T or T-1	

BUSINESS ENVIRONMENT

<u>Variable</u>	<u>In cross section</u>	<u>In panel</u>	<u>Note</u>
Number of Permits in First Year	Dummy if number of permits needed during the 1 st year of operation was greater than 9		
Number of Inspections in First Year	Dummy if number of inspections during the 1 st year of operation was greater than 9		
Percent of Permits not Obtained	Average percent of permits not obtained per year		Average percent not obtained in year T and T-1
Disputes per Year	Average number of contract disputes per year		
Dummy for Private Protection Payments	Dummy for firms in the same industry making protection payments to private parties		
Dummy for Police Protection Payments	Dummy for firms in the same industry making protection payments to police		
Dummy for Payments to Governmental Officials	Dummy for firms in the same industry making protection payments to government officials		
Unofficial Payments	Private Party + Police + Governmental Officials		
Payment for a Clean Environment	Percent of sales to be paid by firm to operate in a clean business environment		
Percentage of Sales Sold with Trade Credit	Yearly average percentage of sales sold with trade credit	Average percentage of sales sold with trade credit in year T and T-1	
Percentage of Materials Bought with Trade Credit	Yearly average percentage of materials bought with trade credit	Average percentage of materials bought with trade credit in year T and T-1	
Overdue Receivables as Percentage of Sales	Overdue receivables as percent of sales – yearly average	Average overdue receivables as percent of sales in year T and T-1	

Cross-Section Regression Results

Table 1: Determinants of Employment Growth – Base Specification

Variables of Interest	Estimated Coefficient	P-value (signif.)
Financial:		
Amount of Loans	0.004	0.038
Average Number of Fiscal Facilities	0.045	0.265
Entrepreneur's Characteristics:		
Experience in Other Industry	0.048	0.067
Age	-0.035	0.005
Age Squared	0.000	0.023
Entrepreneur's Education:		
High School Education	0.056	0.258
University Education	0.078	0.074
Foreign	-1.838	0.000
Female	-0.027	0.411
Housing Ownership	-0.000	0.260
Technical Assistance Number	0.042	0.011
Workers with High School	0.060	0.202
Workers with University	-0.063	0.391

$R^2=0.351$

Note: In addition to the variables of interest, the equation also includes industry effects (7 categories), region effects (6 categories), a dummy for whether the firm was founded as a re-organization of a pre-existing firm, dummies for an acquisition or spin-off in the same year, log of the locality's population size and age of the firm (since start-up or major re-organization). Amount of loan is scaled by 1 year lagged employment, and expressed in thousand USD per employee.

Table 2: Finance and Employment Growth

Equation Number	Variables of Interest	Estimated Coefficient	P-value (signif.)	R ²	N
1	Average Size of Loans	0.003	0.190	0.356	157
	Number of Loans	0.000	0.200		
2	USAID Loans	0.009	0.012	0.360	157
	Amount of non- USAID Loans	0.003	0.146		
3	Amount of Loans	0.004	0.085	0.362	157
	Percentage of Reinvested Profit	0.078	0.111		
4	Amount of Loans	0.005	0.010	0.390	151
	Percentage of Materials Bought with Trade Credit	-0.092	0.091		
5	Amount of Loans	0.005	0.024	0.403	151
	Percentage of Reinvested Profit	0.082	0.101		
	Percentage of Materials Bought with Trade Credit	-0.092	0.082		
6	Loans from Domestic Sources	0.003	0.016	0.367	157
	Loans from Foreign Sources	0.010	0.010		

Note: In addition to the variables of interest, the equation also includes industry effects (7 categories), region effects (6 categories), a dummy for whether the firm was founded as a re-organization of a pre-existing firm, dummies for an acquisition or spin-off in the same year, log of the locality's population size and age of the firm (since start-up or major re-organization), and other variables shown in 1.

Table 3: Technical Assistance and Employment Growth

Equation Number	Variables of Interest	Estimated Coefficient	P-value (signif.)	R ²	N
1	Dummy for Technical Assistance	0.034	0.324	0.341	157
2	Number of TA Paid by Firm	0.155	0.129	0.348	157
3	Number of Training Services	0.129	0.302	0.337	157
4	Training for Workers	0.277	0.163	0.341	157
	Training for Managers	-0.130	0.675		
5	Dummy for Membership in a Business Association	-0.027	0.391	0.354	157
6	Number of TA from Government	-0.081	0.799	0.344	157
	Number of TA from NGOs	0.048	0.774		
	Number of TA from Foreign Source	0.487	0.109		
	Number of TA from Int'l Organization	-0.032	0.857		

Note: In addition to the variables of interest, the equations also include the variables in the specification for Table 1 (except Number of TA).

Table 4: Business Environment and Employment Growth

Equation Number	Variables of Interest	Estimated Coefficient	P-value (signif.)	R ²	N
1	Percent of Permits not Obtained	-0.032	0.779	0.350	157
2	Number of Permits in First Year of Operation	-0.023	0.443	0.355	153
3	Number of Inspections in First Year of Operation	0.017	0.309	0.358	155
4	Disputes per Year	-0.008	0.442	0.353	157
5	Payment for a Clean Environment	-0.036	0.707	0.352	150
6	Unofficial Payment	-0.005	0.770	0.354	156
7	Dummy for Private Protection Payments	-0.025	0.597	0.357	156
	Dummy for Police Payments	0.026	0.418		
	Dummy for Payments to Governmental Officials	-0.010	0.792		
8	Percentage of Sales Sold with Trade Credit	-0.021	0.584	0.364	153
9	Percentage of Sales Sold with Trade Credit	0.004	0.929	0.399	146
	Overdue Receivables as Percentage of Sales	-0.044	0.511		
	Percentage of Materials Bought with Trade Credit	-0.092	0.108		

Note: In addition to the variables of interest, the equations also include the variables in the specification for Table 1.

Table 5: Determinants of Sales Growth – Base Specification

Variables of Interest	Estimated Coefficient	P-value (signif.)
Financial:		
Amount of Loans	0.136	0.360
Number of Fiscal Facilities	-0.013	0.834
Entrepreneur's Characteristics:		
Experience in Other Industry	0.087	0.151
Age	-0.112	0.041
Age Squared	0.001	0.057
Entrepreneur's Education:		
High School Education	0.057	0.497
University Education	0.028	0.724
Foreign	-1.886	0.000
Female	0.018	0.831
Housing Ownership	-0.000	0.028
Technical Assistance Number	0.041	0.325
Workers with High School	0.038	0.758
Workers with University	-0.247	0.311

$R^2=0.3334$

Note: In addition to the variables of interest, the equation also includes industry effects (7 categories), region effects (6 categories), a dummy for whether the firm was founded as a re-organization of a pre-existing firm, dummies for an acquisition or spin-off in the same year, log of the locality's population size and age of the firm (since start-up or major re-organization). Amount of loan is scaled by 1 year lagged sales, and expressed in thousand USD per million ROL sales, in 2000 prices.

Table 6: Finance and Sales Growth

Equation Number	Variables of Interest	Estimated Coefficient	P-value (signif.)	R ²	N
1	Average Size of Loans	-0.303	0.358	0.406	166
	Number of Loans	0.007	0.250		
2	USAID Loans	2.475	0.023	0.387	166
	Amount of non- USAID Loans	-0.802	0.025		
3	Amount of Loans	0.164	0.252	0.354	166
	Percentage of Reinvested Profit	0.259	0.058		
4	Amount of Loans	0.108	0.460	0.352	160
	Percentage of Materials Bought with Trade Credit	-0.084	0.417		
5	Amount of Loans	0.134	0.343	0.367	160
	Percentage of Reinvested Profit	0.225	0.119		
	Percentage of Materials Bought with Trade Credit	-0.087	0.382		
6	Loans from Domestic Sources	-0.786	0.019	0.389	166
	Loans from Foreign Sources	2.431	0.018		

Note: In addition to the variables of interest, the equation also includes industry effects (7 categories), region effects (6 categories), a dummy for whether the firm was founded as a re-organization of a pre-existing firm, dummies for an acquisition or spin-off in the same year, log of the locality's population size and age of the firm (since start-up or major re-organization), and other variables shown in 5.

Table 7: Technical Assistance and Sales Growth

Equation Number	Variables of Interest	Estimated Coefficient	P-value (signif.)	R ²	N
1	Dummy for Technical Assistance	0.026	0.693	0.331	166
2	Number of TA Paid by Firm	0.083	0.556	0.331	166
3	Number of Training Services	-0.165	0.666	0.331	166
4	Training for Workers	-0.420	0.323	0.333	166
	Training for Managers	0.065	0.922		
5	Dummy for Membership in a Business Association	-0.065	0.255	0.337	166
6	Number of TA from Government	0.842	0.002	0.345	166
	Number of TA from NGOs	-0.150	0.780		
	Number of TA from Foreign Source	0.801	0.332		
	Number of TA from Int'l Organization	-0.187	0.679		

Note: In addition to the variables of interest, the equations also include the variables in the specification for Table 5 (except Number of TA).

Table 8: Business Environment and Sales Growth

Equation Number	Variables of Interest	Estimated Coefficient	P-value (signif.)	R ²	N
1	Percent of Permits not Obtained	0.024	0.939	0.333	166
2	Number of Permits in First Year of Operation	0.005	0.938	0.342	162
3	Number of Inspections in First Year of Operation	0.013	0.762	0.339	164
4	Disputes per Year	0.009	0.703	0.334	166
5	Payment for a Clean Environment	-0.021	0.913	0.331	158
6	Unofficial Payment	-0.026	0.496	0.340	165
7	Dummy for Private Protection Payments	0.197	0.047	0.361	165
	Dummy for Police Payments	0.012	0.887		
	Dummy for Payments to Governmental Officials	-0.149	0.063		
8	Percentage of Sales Sold with Trade Credit	0.022	0.849	0.342	161
9	Percentage of Sales Sold with Trade Credit	0.123	0.356	0.362	154
	Overdue Receivables as Percentage of Sales	-0.239	0.218		
	Percentage of Materials Bought with Trade Credit	-0.071	0.555		

Note: In addition to the variables of interest, the equations also include the variables in the specification for Table 5.

Panel Regressions

Table 1: Determinants of Employment Growth – Base Specification

Variables of Interest	Estimated Coefficient	P-value (signif.)	Estimated Coefficient	P-value (signif.)
Finance:				
Amount of Loans	0.006	0.000		
6 Month Lagged Amount of Loans			0.005	0.000
Number of Fiscal Facilities	0.078	0.001	0.051	0.004
Entrepreneur's Characteristics:				
Experience in Other Industry	0.047	0.075	0.018	0.449
Age	-0.048	0.000	-0.033	0.000
Age Squared	0.000	0.000	0.000	0.001
Entrepreneur's Education:				
High School Education	0.082	0.042	0.063	0.052
University Education	0.062	0.098	0.064	0.040
Foreign	-0.061	0.913	0.011	0.974
Female	-0.005	0.868	-0.025	0.378
Housing Ownership	0.000	0.947	0.000	0.632
Technical Assistance Number	0.042	0.373	0.031	0.361
Workers with High School	0.014	0.724	0.048	0.185
Workers with University	-0.022	0.787	-0.031	0.648
R^2	0.099		0.082	

Note: In addition to the variables of interest, the equation also includes industry effects (7 categories), region effects (6 categories), a dummy for whether the firm was founded as a re-organization of a pre-existing firm, dummies for an acquisition or spin-off in the same year, log of the locality's population size and age of the firm (since start-up or major re-organization). Amount of loan is scaled by 2 year lagged employment, and expressed in thousand USD per employee.

Table 2: Finance and Employment Growth

Equation Number	Variables of Interest	Estimated Coefficient	P-value (signif.)	R ²	N
1	Average Size of Loans	0.033	0.000	0.101	816
	Number of Loans	-0.031	0.018		
2	USAID Loans	0.014	0.015	0.101	816
	Amount of non-USAID Loans	0.006	0.000		
3	Amount of Loans	0.006	0.000	0.104	816
	Percentage of Reinvested Profit	0.072	0.022		
4	Amount of Loans	0.006	0.000	0.101	816
	Percentage of Materials Bought with Trade Credit	0.051	0.236		
5	Amount of Loans	0.006	0.000	0.105	816
	Percentage of Reinvested Profit	0.070	0.026		
	Percentage of Materials Bought with Trade Credit	0.046	0.281		
6	Loans from Domestic Sources	-0.002	0.455	0.101	816
	Loans from Foreign Sources	0.007	0.014		

Note: In addition to the variables of interest, the equation also includes industry effects (7 categories), region effects (6 categories), a dummy for whether the firm was founded as a re-organization of a pre-existing firm, dummies for an acquisition or spin-off in the same year, log of the locality's population size and age of the firm (since start-up or major re-organization), and other variables shown in 1.

Table 3: Finance (Alternative Measures) and Employment Growth

Equation Number	Variables of Interest	Estimated Coefficient	P-value (signif.)	R ²	N
1	6 Month Lagged Average Size of Loans	0.015	0.001	0.088	1046
	6 Month Lagged Number of Loans	-0.023	0.014		
2	6 Month Lagged USAID Loans	0.012	0.019	0.088	1046
	6 Month Lagged Amount of non-USAID Loans	0.004	0.000		
3	6 Month Lagged Amount of Loans	0.004	0.000	0.106	825
	Percentage of Reinvested Profit	0.102	0.001		
4	6 Month Lagged Amount of Loans	0.005	0.000	0.087	1046
	Percentage of Materials Bought with Trade Credit	0.002	0.945		
5	6 Month Lagged Amount of Loans	0.004	0.001	0.107	825
	Percentage of Reinvested Profit	0.101	0.001		
	Percentage of Materials Bought with Trade Credit	0.044	0.300		
6	6 Month Lagged Loans from Domestic Sources	-0.002	0.419	0.088	1046
	6 Month Lagged Loans from Foreign Sources	0.005	0.023		

Note: In addition to the variables of interest, the equation also includes industry effects (7 categories), region effects (6 categories), a dummy for whether the firm was founded as a re-organization of a pre-existing firm, dummies for an acquisition or spin-off in the same year, log of the locality's population size and age of the firm (since start-up or major re-organization), and other variables shown in 1.

Table 4: Technical Assistance and Employment Growth

Equation Number	Variables of Interest	Estimated Coefficient	P-value (signif.)	R ²	N
1	Dummy for Technical Assistance	0.053	0.321	0.100	816
2	Number of TA Paid by Firm	0.073	0.282	0.100	816
3	Number of Training Services	0.074	0.508	0.099	816
4	Training for Workers	0.077	0.399	0.099	816
	Training for Managers	0.070	0.768		
5	Dummy for Membership in a Business Association	0.008	0.797	0.100	813
6	Number of TA from Government	0.063	0.714	0.105	816
	Number of TA from NGOs	-0.045	0.736		
	Number of TA from Foreign Source	0.518	0.071		
	Number of TA from Int'l Organization	0.014	0.894		

Note: In addition to the variables of interest, the equations include the variables in the specification for Table 1 (except Number of TA).

Table 5: Business Environment and Employment Growth

Equation Number	Variables of Interest	Estimated Coefficient	P-value (signif.)	R ²	N
1	Percent of Permits not Obtained	0.307	0.015	0.105	816
2	Number of Permits in First Year of Operation	0.004	0.867	0.108	783
3	Number of Inspections in First Year of Operation	-0.027	0.404	0.101	793
4	Disputes per Year	-0.004	0.663	0.100	816
5	Payment for a Clean Environment	0.084	0.179	0.096	762
6	Unofficial Payment	-0.003	0.894	0.101	808
7	Dummy for Private Protection Payments	0.072	0.174	0.103	808
	Dummy for Police Payments	-0.008	0.848		
	Dummy for Payments to Governmental Officials	-0.037	0.309		
8	Percentage of Sales Sold with Trade Credit	0.003	0.943	0.100	816
9	Percentage of Sales Sold with Trade Credit	-0.024	0.548	0.101	816
	Overdue Receivables as Percentage of Sales	0.023	0.683		
	Percentage of Materials Bought with Trade Credit	0.057	0.221		

Note: In addition to the variables of interest, the equations also include the variables in the specification for Table 1.

Table 6: Determinants of Sales Growth – Base Specification

Variables of Interest	Estimated Coefficient	P-value (signif.)	Estimated Coefficient	P-value (signif.)
Financial:				
Amount of Loans	0.100	0.388		
6 Month Lagged Amount of Loans			0.194	0.072
Number of Fiscal Facilities	0.017	0.624	-0.003	0.921
Entrepreneur's Characteristics:				
Experience in Other Industry	0.089	0.071	0.083	0.091
Age	-0.097	0.001	-0.097	0.001
Age Squared	0.001	0.001	0.001	0.001
Entrepreneur's Education:				
High School Education	0.063	0.331	0.060	0.356
University Education	0.037	0.550	0.046	0.456
Foreign	-0.260	0.593	0.186	0.687
Female	-0.043	0.440	-0.055	0.295
Housing Ownership	-0.000	0.021	-0.000	0.020
Technical Assistance Number	0.061	0.290	0.054	0.262
Workers with High School	-0.010	0.882	-0.021	0.773
Workers with University	0.015	0.914	-0.000	0.999
R^2		0.075		0.072

Note: In addition to the variables of interest, the equation also includes industry effects (7 categories), region effects (6 categories), a dummy for whether the firm was founded as a re-organization of a pre-existing firm, dummies for an acquisition or spin-off in the same year, log of the locality's population size and age of the firm (since start-up or major re-organization). Amount of loan is scaled by 2 year lagged sales, and expressed in thousand USD per million ROL sales, in 2000 prices.

Table 7: Finance and Sales Growth

Equation Number	Variables of Interest	Estimated Coefficient	P-value (signif.)	R ²	N
1	Average Size of Loans	0.210	0.802	0.075	841
	Number of Loans	-0.022	0.085		
2	USAID Loans	0.572	0.646	0.074	841
	Amount of non-USAID Loans	-0.053	0.892		
3	Amount of Loans	0.081	0.494	0.078	841
	Percentage of Reinvested Profit	0.174	0.002		
4	Amount of Loans	0.124	0.287	0.072	841
	Percentage of Materials Bought with Trade Credit	0.096	0.188		
5	Amount of Loans	0.089	0.454	0.079	841
	Percentage of Reinvested Profit	0.173	0.002		
	Percentage of Materials Bought with Trade Credit	0.090	0.193		
6	Loans from Domestic Sources	-0.348	0.730	0.074	841
	Loans from Foreign Sources	0.278	0.636		

Note: In addition to the variables of interest, the equation also includes industry effects (7 categories), region effects (6 categories), a dummy for whether the firm was founded as a re-organization of a pre-existing firm, dummies for an acquisition or spin-off in the same year, log of the locality's population size and age of the firm (since start-up or major re-organization), and other variables shown in 6.

Table 8: Finance (Alternative Measures) and Sales Growth

Equation Number	Variables of Interest	Estimated Coefficient	P-value (signif.)	R ²	N
1	6 Month Lagged Average Size of Loans	0.498	0.115	0.077	851
	6 Month Lagged Number of Loans	-0.024	0.194		
2	6 Month Lagged USAID Loans	-0.0871	0.894	0.077	851
	6 Month Lagged Amount of non-USAID Loans	0.307	0.192		
3	6 Month Lagged Amount of Loans	0.167	0.105	0.093	851
	Percentage of Reinvested Profit	0.234	0.000		
4	6 Month Lagged Amount of Loans	0.203	0.062	0.078	851
	Percentage of Materials Bought with Trade Credit	0.097	0.176		
5	6 Month Lagged Amount of Loans	0.175	0.093	0.094	851
	Percentage of Reinvested Profit	0.232	0.000		
	Percentage of Materials Bought with Trade Credit	0.088	0.091		
6	6 Month Lagged Loans from Domestic Sources	0.377	0.503	0.074	851
	6 Month Lagged Loans from Foreign Sources	-0.045	0.888		

Note: In addition to the variables of interest, the equation also includes industry effects (7 categories), region effects (6 categories), a dummy for whether the firm was founded as a re-organization of a pre-existing firm, dummies for an acquisition or spin-off in the same year, log of the locality's population size and age of the firm (since start-up or major re-organization), and other variables shown in 6.

Table 9: Technical Assistance and Sales Growth

Equation Number	Variables of Interest	Estimated Coefficient	P-value (signif.)	R ²	N
1	Dummy for Technical Assistance	0.062	0.382	0.074	841
2	Number of TA Paid by Firm	0.041	0.513	0.073	841
3	Number of Training Services	0.142	0.323	0.074	841
4	Training for Workers	0.244	0.279	0.074	841
	Training for Managers	0.045	0.849		
5	Dummy for Membership in a Business Association	-0.006	0.887	0.075	837
6	Number of TA from Government	0.102	0.486	0.074	841
	Number of TA from NGOs	-0.066	0.691		
	Number of TA from Foreign Source	0.324	0.264		
	Number of TA from Int'l Organization	0.095	0.603		

Note: In addition to the variables of interest, the equations include the variables in the specification for Table 6 (except Number of TA).

Table 10: Business Environment and Sales Growth

Equation Number	Variables of Interest	Estimated Coefficient	P-value (signif.)	R ²	N
1	Percent of Permits not Obtained	0.266	0.249	0.075	841
2	Number of Permits in First Year of Operation	-0.002	0.969	0.074	804
3	Number of Inspections in First Year of Operation	0.033	0.541	0.078	816
4	Disputes per Year	-0.004	0.653	0.074	841
5	Payment for a Clean Environment	0.072	0.550	0.078	786
6	Unofficial Payment	0.033	0.251	0.077	832
7	Dummy for Private Protection Payments	0.134	0.139	0.078	832
	Dummy for Police Payments	0.049	0.508		
	Dummy for Payments to Governmental Officials	-0.018	0.736		
8	Percentage of Sales Sold with Trade Credit	0.147	0.041	0.077	841
9	Percentage of Sales Sold with Trade Credit	0.106	0.180	0.078	841
	Overdue Receivables as Percentage of Sales	0.086	0.474		
	Percentage of Materials Bought with Trade Credit	0.045	0.530		

Note: In addition to the variables of interest, the equations also include the variables in the specification for Table 6.