DISCUSSION PAPERS
Institute of Economics
University of Copenhagen

SME Growth and Survival in Vietnam: Did Direct Government Support Matter?

Henrik Hansen, John Rand and Finn Tarp

SME Growth and Survival in Vietnam:
Did Direct Government Support Matter?

By

Henrik Hansen, John Rand and Finn Tarp[*]

Abstract

In this paper we provide evidence on the survival and growth of small and medium-sized enterprises (SMEs) in Vietnam relying on three partly overlapping enterprise surveys sampled during the period 1990-2002. Our empirical results indicate that classical determinants of performance including firm age, firm size, location, ownership, degree of capital intensive production and the type of activity are also important in Vietnam. In addition to the traditional indicators we analyze the effect of government support. Government credit assistance during start-up contributed significantly to the growth of Vietnamese SMEs in the late 1990s, but the importance of this kind of support may be diminishing as new firms do not seem to benefit from this form of support. In contrast, the importance of legal advice appears to be increasing.

1.   Introduction

Small and medium-sized enterprises (SMEs) have emerged as a dynamic force in the development of the Vietnamese economy since the launching of the *doi moi* reform process in 1986. The potential and significance of the SME-sector stand, however, in marked contrast to the lack of detailed understanding of the factors behind firm growth and survival in this rapidly growing East-Asian economy. According to the General Statistics Office (GSO, 2004), formally registered enterprises contributed around 45% of GDP in 1995, and by 2001 this share had increased to 53%. Of this contribution, state enterprises, the non-state sector and foreign invested companies accounted for respectively 30.6%, 8.8% and 13.8%. Although the enterprise community has grown rapidly during the past decade, the number of officially registered enterprises remains relatively low. By 2002 approximately 63,000 enterprises had been registered under the new Enterprise Law of which 8.5% were state owned, 87.8% non-state owned, and 3.7% foreign invested enterprises. A large part (about 95%) of the registered enterprises can be characterized as SMEs, and according to Sakai and Takada (2000) some 60% of the job creation takes place in the SME sector. However, only a small fraction of household businesses is registered. This means that around 30 million employees or some 87% of the total labor force (GSO, 2004) are not well captured in the official statistics. They nevertheless form a critically important part of the SME sector, both in terms of job and income creation.

The promotion of SMEs has received strong support from the Vietnamese government. Action plans to improve the business sector environment have been actively pursued and the priority of private sector and enterprise development is clearly reflected in the 2001-2005 Social Economic Development Strategy and in the Comprehensive Poverty Reduction and Growth Strategy (CPRGS). SME promotion, particularly in rural areas, is also regularly referred to as a priority area of the Vietnamese government to underpin the economic growth process.

International institutions such as the World Bank and UNDP have targeted considerable assistance to SME-development, based on the argument that SMEs are beneficial for productivity, innovations and economic efficiency. Direct government support may therefore in this line of thinking help exploit the benefits from greater competition and entrepreneurship, and given that SMEs are arguably more labor intensive, subsidizing SMEs seem to represent an effective approach to further poverty alleviation. However, benefits of subsidizing SMEs are subject to debate. Exploiting economies of scale and conducting research and development (R&D) is often more feasible for large enterprises. Given that these features may induce positive productivity effects, it is not clear *a priori* that SMEs have the optimal firm size. Moreover, it is not self evident why SMEs should do better in terms of job creation and be more labor intensive. Large firms may be less vulnerable to external shocks and therefore may provide more job security than smaller firms.

In this paper, we enquire how well observed owner- and firm-characteristics predict the survival and growth performance of SMEs, relying on a three partly overlapping survey data sets from 1991, 1997 and 2002, covering 2,576 Vietnamese SMEs in seven provinces. We find that smaller firms grow more rapidly, which is in line with most of the existing theoretical and empirical literature. However, in other dimensions such as the importance of firm age for growth and firm size for survival, Vietnam does not follow the standard pattern. We also ask whether government support to the SME sector in Vietnam has improved enterprise performance in terms of firm survival and growth, and we analyze whether government assistance during establishment is more efficient for firm survival than assistance given to operating firms. It emerges that government credit support during start-up has had a positive impact on the revenue growth rate. It also appears that the importance of this kind of support is diminishing for new firms, whereas legal advice seems to be gaining influence on firm dynamics.

The remainder of the paper is organized as follows. Section 2 reviews the existing theoretical and empirical literature on firm survival and growth. Section 3 describes our survey and sampling methodology and provides various descriptive statistics on firm dynamics in Vietnam. Section 4 presents results, and Section 5 concludes.

2.   Literature Review

Sutton (1997), Caves (1998), and Audretsch and Klepper (2000) have recently summarized the existing theoretical and empirical insights about firm dynamics. They note that a small firm has a lower likelihood of survival and at the same time firm size is found to be negatively related to growth. This evidence (mostly concerned with developed countries) amounts in the words of Geroski (1995) to a stylized fact, which contradicts the often cited Gibrat's Law.

The empirically observed positive relationship between firm size and the likelihood of survival can be interpreted theoretically within the framework of noisy selection introduced by Jovanovic (1982). This contribution can be characterized as a passive learning model in which information is gathered at no cost. Entrants do not know their own cost structure and assuming that firms differ with regard to efficiency, they incur different costs when producing the same levels of output. Since entrants do not know their exact abilities their performance is unknown, so each participant has to go through a learning process, accumulating information from actual market experience. Entrepreneurs gradually discover whether their abilities are good enough to meet prior expectations, and if not they will typically exit the industry. Consequently, in the model of Jovanovic (1982) efficient firms survive and experience growth, whereas over-optimistic firms eventually close down. The longer a firm has been in the market the more knowledge it has about its own abilities, so in this model the probability of survival is positively related to firm age. In sum, Jovanovic predicts that firm survival increases with size and age.

A critique of the Jovanovic approach is that he assumes no technological progress. Ericson and Pakes (1995) therefore propose to extend the analytical framework to a model of active learning where technological advances are allowed for. Firms are aware of the distribution of their profits, but they are uncertain about the profitability of a given innovation. This is due to the random outcomes of innovations and actions of other actors in the market. Firms explore the market actively and invest in order to enhance productivity. The firm survives and grows if successful firms grow and otherwise they will eventually exit the industry. Pakes and Ericson (1998) have subsequently shown that the passive learning model fits the description of the retail sector, while the active learning model turns out to be more appropriate for the manufacturing sector. However, as Caves (1998) argues, the passive and active learning models need not be mutually exclusive.

Besides firm age and size, it has also been suggested that firm level innovations should be considered a driving force behind firm dynamics. In Jovanovic and MacDonald (1994) experienced firms are more capable of pursuing innovations, and during the process of technological change technological laggards exit because successful innovators force down prices. Moreover, Klepper (1996) argues that firm size and the ability to appropriate returns from innovations may be related. He highlights the importance of firm size in appropriating returns from innovations and, in his analytical framework, price declines eventually limit further entry so older firms with the best innovative capabilities get larger shares of the industry output.

Jovanovic (1993) focuses specifically on the issue of diversification and discusses how this can improve the probability of survival. Gaining market power, avoiding risk, having access to funds, making products compatible and reaping efficiency gains are in his view some of the potential benefits from diversification. He develops a general equilibrium model of the degree of diversification by firms, and it turns out that it is more efficient to make two products rather than one at a larger scale.

Liedholm and Mead (1999) point out that the above theoretical models are somewhat limited in their choice of explanatory variables. There are other important variables, which may affect firm dynamics, and the key determinants of managerial ability are also left out. Consequently, in generating more comprehensive hypotheses about the determinants of firm dynamics the analyst must ultimately move beyond variables identified in the theoretical literature, seeking inspiration from empirical sources.

The empirical evidence from developed countries about firm dynamics is substantial. However until the papers by Hall (1987), Evans (1987a, 1987b) and Dunne *et al.* (1988, 1989) econometric problems regarding heteroscedasticity, specification and sample censoring were not properly addressed. Controlling for these problems, it emerges that larger firms have lower

growth, but a larger probability of survival, consistent with the predictions of the Jovanovic (1982) model. Doms, Dunne and Roberts (1995) also support this result by showing that older and larger firms in the US manufacturing sector have higher survival rates and lower growth rates. Controlling for capital intensity, productivity, and technology usage does not change the results. Studies covering other countries (Mata *et al.*, 1994 and Baldwin, 1995) confirm that the length of survival is a function of entrant and industry characteristics.

Regarding innovative firms Gort and Klepper (1982) show that technological and knowledge conditions determine the relative ease with which new firms are able to innovate and therefore survive. Complementing this study, Audretsch (1991, 1995) suggests that technological opportunities are very important in the long run for new firm competitiveness. More specifically, considering the US manufacturing sector he finds that in industries where small firms have a relatively higher innovation rate as compared to larger firms the survival rate of small firms is higher. Agarwal and Audretsch (2001) also suggest that the relationship between the likelihood of survival and firm size is dependent on technology and on the stage of the industry life cycle. Moreover, as documented by Audretsch and Mahmood (1995) exit hazard is greater in more innovative industries and evidence suggests that the probability of exiting is higher when industry unemployment is high. Yet, this is more so for new establishments than among diversifying entrants.

Although evidence from developed countries is substantial it is not clear whether the above conclusions concerning firm dynamics carry over to developing countries. First of all, Tybout (2000) documents, in an excellent survey of the empirical literature concerning manufacturing firms in developing countries, that there is no serious scale inefficiency problem in developing countries. Survey based evidence suggests that the potential efficiency gains from increasing plant size are probably much smaller than one might think. Moreover, Söderbom and Teal (2004) show for firms in Ghana's manufacturing sector that human capital does not appear to be quantitatively important in determining productivity. Liedholm and Mead (1998, 1999) have made great efforts to uncover the characteristics of the African region. Using data from eight countries they confirm that firm age and firm size are important variables in analyzing the enterprise life cycle. Location, composition of activities, labor force characteristics and gender of the entrepreneur also turn out as important determinants of firm survival and growth. McPherson (1996) looks at five African countries, and his findings confirm that the level of human capital, location, sector, and gender are important determinants of growth. Consistent with the results obtained from analyzing developed countries he also finds an inverse relationship between enterprise growth and firm age and size, respectively. In a related paper, McPherson (1995) finds that the Jovanovic (1982) theory of firm evolution does not hold in his sample of four African countries. Size and the probability of exiting the industry are not negatively related. Moreover, Daniels and Mead (1998) show somewhat surprisingly that location and access to credit do not seem to influence the levels of profit significantly in Kenya.

4

In addition, they document that higher education and being a male entrepreneur are associated with higher profit levels. Hence, in the African regional context standard theories of firm dynamics may be inadequate.

Liedholm (2002) investigates the determinants of survival and growth of SMEs in Africa and Latin America. Firms located in urban and commercial areas are more likely to survive and human capital also plays a crucial role. Again size and growth are central features in describing firm dynamics. Sector, location and gender also play a significant role in determining enterprise growth. In particular, it is shown, that enterprises run by male entrepreneurs grow more rapidly than those run by females.

Turning to the Asian region, Behrman and Deolalikar (1989) found in a survey of Indonesian medium and large scale manufacturing enterprises that older and larger firms survive. Furthermore, surviving firms were in more concentrated industries and in industries with a larger participation of foreign firms. In a recent special issue of *Small Business Economics*[1] a collection of papers examined the evolution of SMEs in Japan, Korea, Taiwan, China, Indonesia and Thailand. The general message from these studies is that the determinants of firm dynamics are basically the same as the ones considered in both developed and other developing countries. However, it is suggested that government policy interventions have played a significant role in the explanation of SME successes in the Asian region.

Finally, to our knowledge there is only one study on firm dynamics in Vietnam. Using the 1992/93 and 1997/98 Vietnamese Household Living Standard Measurement Survey (VLSS), Vijverberg and Haughton (2002) show that non-farm household enterprises have a higher probability of survival the larger and the older the enterprise is. Moreover, the likelihood of survival decreases the further south the enterprise is located.

The general picture emerging from the above review is one of widespread support for the evolutionary theory of Jovanovic (1982). The probability of survival increases with size and age, but larger and older firms tend to experience lower growth rates. Furthermore, it also appears that characteristics regarding the owner (education and gender), firm (location, ownership form and sector) and production (innovation, diversification in terms of demand and supply, and capital intensity) play an important role in explaining firm dynamics. In what follows, we rely on the above framework to study SME firm dynamics in Vietnam and discuss how this country fits into the general pattern.

---

[1] *Small Business Economics* issue no. 18. See Iqbal and Urata (2002) for an overview.

3.   Data

The data used in this paper were generated by enterprise surveys conducted in 1991, 1997 and 2002 covering the 1990/91, 1995/96 and the 2000/01 years, respectively.[2] The surveys were carried out in collaboration between the Institute of Labor Science and Social Affairs (ILSSA) in the Ministry of Labor, Invalids and Social Affairs (MOLISA) in Vietnam, on the one hand, and the Stockholm School of Economics and the University of Copenhagen, on the other. The 1991 survey included some 450 non-state enterprises in three major cities, Ho Chi Minh City (HCMC), Hanoi and Haiphong. In 1997, a repeat survey of the same enterprises, and a parallel survey of another 500 enterprises not previously studied were carried out, covering five provinces (Long An and Ha Tay in addition to the previous areas analyzed). The period from 1991 to 1997 was characterized by a move from market fragmentation towards market integration and gradually increasing competition. In this way, the two surveys brought to light a highly dynamic and often dramatic process of change, not captured by more aggregate analyses (Ronnås and Ramamurthy, 2001). The approval of the new Enterprise Law in 2000 provided further impetus to the development of the non-state enterprise sector, and a firmer legal basis for SME operations was created. The 2002 survey covering over 1,600 enterprises in seven provinces (Quang Nam and Phu Tho in addition to the previous areas analyzed) was therefore conducted in order to analyze the effects of the changes in the economic environment surrounding the SME sector.[3]

In all the areas and years covered by the surveys, the samples were stratified by ownership forms to ensure the inclusion of all non-state types of enterprises, including household, private, partnership and co-operative firms. According to the national enterprise survey conducted by the General Statistical Office (GSO, 2004), in which there are no household enterprises, establishments are mostly concentrated in HCMC (23%), Hanoi (15%) and Haiphong (9%). GSO also reports that state enterprises comprise 9% compared to the non-state sector share of 88%.[4] On the other hand, a recent SME survey for Vietnam (Sakai and Takada, 2000) documents that the main part of their companies is characterized as household enterprises. In establishing the stratification, we combined these two sources, which suggest, first, that household enterprises account for about 70% of the enterprises (Sakai and Takada, 2000), and second, that the 30% non-household (and non-state) enterprises can be divided as follows (GSO,

---

[2] The World Bank SME Department currently operates with three groups of small and medium-sized enterprises: micro-, small-, and medium-scale firms. Micro-enterprises have up to 10 employees, small-scale enterprises up to 50 employees, and medium-sized enterprises up to 300 employees. These definitions are broadly accepted by the Vietnamese Government (see Government decree no. 90/2001/CP-ND on "Supporting for Development of Small and Medium Enterprises"). In the following we apply these definitions.

[3] While a few state SMEs were surveyed, they have been excluded in the present analysis, which focuses on non-state SMEs.

[4] Note that GSO (2004) only captures enterprises registered under the Enterprise Law or State-owned Enterprise Law; cooperatives registered under the Cooperative Laws; and household businesses if they meet the requirements under Decree No.91/2001/CP-ND.

2004): Private enterprises (39%), co-operatives (7%), limited companies (37%), joint-stock companies (4%) and foreign invested (4%). Finally, one of the challenges in terms of stratification was to capture the transformation of the private sector that took place during the 1990s. New categories of private enterprises (especially limited liability companies) appeared and the nature of co-operatives changed fundamentally. These changes therefore had to be taken into account in the design of the 1997 and 2002 surveys, so the shares of the various enterprise categories were adjusted.

For reasons of implementation the surveys were confined to specific areas in each province/city. Subsequently, the samples were drawn randomly from a complete list of enterprises, where the stratified sampling procedure was used to ensure the inclusion of an adequate number of enterprises with different ownership forms. Finally, while stratification was adjusted over time, other aspects, including the questionnaires, were maintained virtually identical among the three surveys.[5] Consequently, the data obtained allow, in principle, an analysis of the dynamics of Vietnamese manufacturing SMEs between 1990 and 2002. In what follows, we mainly concentrate on the period 1995/96-2000/01 as the number and coverage of surviving firms from 1990/91 is limited as discussed further below.

A small sample selection bias may be present as samples were not selected exactly proportional to the (unknown) number of enterprises in the country. Furthermore due to the partial sampling nature of the panel data set, and because the sampling was based on a pre-existing sample from 1991 and 1997, it is likely there is a slight bias against young, newly established enterprises. Additional details on the surveys and sampling procedures can be found in Ronnås and Ramamurthy (2001) and in Rand *et al.* (forthcoming).

Table 1 summarizes the growth and survival experiences of the enterprises covered by the 1991, 1997 and 2002 surveys. Of the 447 enterprises initially surveyed in 1991 only 36% survived to 1997 while 21% survived all the way to 2002. Of the 750 enterprises initially surveyed in 1997, 64% survived to the 2002 survey, whereas only 58% ((93/159)*100) of the enterprises initially surveyed in 1991 survived from 1997 to 2002. The overall picture indicates that the business environment in terms of survival has changed during the last decade, which corresponds well with the economic reform process in Vietnam in general and the introduction of the 2000 Enterprise Law, in particular.[6] Looking at the short run growth rates in real gross revenue and in employment it appears that incumbent firms have lower short run growth rates than new entrants.[7] For example, in 2002 the mean short run growth rate of surviving firms was substantially lower than growth for firms not previously surveyed (younger firms in general).

---

[5] The 2002 questionnaire was expanded, but included the same questions as in 1991 and 1997.
[6] See Central Institute of Economic Management (2004) for details.
[7] The short run growth rates refer to the annual growth rates from 1990 to 1991; 1995 to 1996 and from 2000 to 2001 whereas long run growth rates represent the average annual growth rates from one survey period to another.

Notice also that both short and long run growth rates in terms of real gross revenue have been substantial, whereas growth rates measured in terms of number of employees show a stagnating tendency.

[Table 1 about here]

In what follows we concentrate on firm dynamics based on the 1997 and 2002 surveys. Vietnam underwent dramatic transitional changes from 1986 to 1992, which may have had a "non-standard" influence on the business environment during this period. Hence, the 1991 survey will in all likelihood not be representative of the SME sector in Vietnam today. A second, more technical, reason for the data limitation is that only 93 enterprises survived from 1991 to 2002 (Table 1). Even though these are interesting enterprises, the small sample size limits the usefulness of the data in econometric analyses.

Transition matrices are often used as a powerful tool to evaluate the economic mobility of firms, and they give an indication of the high degree of turbulence in the Vietnamese SME sector. Tables 2 and 3 illustrate firm dynamics both in terms of number of employees and real gross revenue. The Tables show that more than 60% of the enterprises in the lowest quintile in the 1997 survey remained in the lowest quintile group in the 2002 survey. Similarly, the top quintile group of enterprises in 1997 demonstrates a relatively strong tendency to stay among the larger companies (between 57% and 68%).

[Table 2 about here]

[Table 3 about here]

There is considerable movement among quintiles 2, 3 and 4, i.e. middle sized enterprises. This may not be particularly surprising given that companies in these categories can move in both directions, but it is nevertheless clear that the Vietnamese non-state SME business environment is in general highly dynamic.

4. Econometric Analysis of Firm Growth and Survival

In this section we turn to an econometric analysis of survival and growth based on the 1997 and 2002 surveys. The questions in focus in what follows are: 1) What are the determinants of Vietnamese SME growth and survival? and 2) Does government assistance play an important role for firm dynamics?

4.1 Determinants of Firm Growth and Survival

The literature survey identified a number of potential determinants for survival and growth of SMEs. From the 1997 and 2002 questionnaires information on these determinants can be obtained. Descriptive statistics of the determinants used in the econometric analyses are listed in Table 4. To ease the discussion in the following the determinants are gathered in five groups.

In line with the literature review, the first group is the key determinants; firm age (in years) and firm size (respectively number of employees and real gross revenue). The (geometric) average firm age fell from 13.5 years in 1995/96 to 9 years in 2000/01, with some increase in the standard deviation, as could be expected since a fraction of the firms in 2000/01 includes survivors from 1995/96 (and even from 1990/91). As regards the size of the enterprises, Table 4 shows that the geometric average real revenue dropped from VND 200 million to around VDN 160 million (both in 1994-prices) whereas the geometric average number of employees fell from 9 to 7. Hence, the average revenue per average employee is fairly constant in the two surveys.

[Table 4 about here]

The second group of determinants includes characteristics of the owner. Enterprises are primarily owned by men, whose share change from 76% in 1995/96 to 78% in 2000/01. Regarding measures of the level of human capital, we combined information on average educational level of the enterprise owner and data on whether the owner had any longer-term formal or informal experience prior to establishing the firm. On this basis, we categorized skills as high, medium or low,[8] and from Table 4 it appears that that the average number of highly skilled owners decreased slightly from the 1997 to the 2002 survey. This suggests that entry requirements in terms of skill level of the owner have gone down, reflecting the much larger number of household enterprises in the sample. However, the data also confirm that on average more than 70% of the owners are medium or highly skilled. This is relatively high in a

---

[8] The owner was classified as being highly skilled if he had either more than 12 years of schooling or prior long-term formal experience in the line of business in question. Medium skilled owners have formal education between 8 and 12 years or prior long-term informal experience in the particular line of business. Finally, low skilled owners have either no prior experience or less than 8 years of schooling. This is in line with the approach taken in other studies of SME dynamics in developing countries such as Liedholm and Mead (1999).

developing country perspective, but in line with the generally high educational level of the Vietnamese labor force.

The third group of determinants in Table 4 identifies a core set of firm specific characteristics, related to ownership structure, location and sector/activity. Location is modeled using indicator variables representing each area. The 1997 survey covered HCMC, Hanoi, Haiphong, Ha Tay and Long An, and in 2002 the provinces of Phu Tho and Quang Nam were included to reflect the rural business environment. In the two surveys the number of enterprises interviewed was (more or less) equally divided among provinces. Most noticeable in this category of determinants is that the number of household enterprises increased significantly from 45% in the 1997 survey to 71% in 2002. One obvious reason for this is that legal definitions of enterprise types changed during the survey periods, so some enterprises listed as private in 1997 were classified as household enterprises in 2002. Finally, a set of sector indicators is included at the two-digit Standard Industrial Trade Classification (SITC) level. The number of enterprises at SITC level zero, representing "Food and Live Animals", increased from 18% in 1995/96 to around 24% in 2000/01. Other specifics regarding sector definitions are reported in Appendix A.

The fourth group of determinants consists of other indicators identified in the literature survey as important for firm dynamics in other developing and more industrialized countries. These determinants include the extent to which the enterprise is innovative and diversify (both in terms of supply and demand), as well as the level of technology used in production (hand tools, manual machinery and power machinery). A firm is said to be innovative if it has made significant improvements of existing products or has started production of a new product during the past two years. From Table 4 it appears that the average innovation rate has dropped a little, consistent with the larger share of smaller household enterprises. Diversification in supply and demand, respectively, is based on whether the enterprise produces more than one product (a diversification indicator) and the number of customers.[9] Diversification is generally expected to make firms less vulnerable to shocks thereby increasing the probability of survival. The average degree of diversification in supply increased from 24% in 1995/96 to 44% in 2000/01, in comparison the customer base remained largely constant (72% had more than 10 customers in 1995/96 compared to 77% in 2000/01). Finally, it would appear that SMEs are increasingly relying on more capital intensive technology in production. For example, the share of enterprises using power driven machinery, increased from 18% to 22%.[10]

The final group of determinants in Table 4 includes indicator variables capturing government assistance during respectively start-up (5A) and operation (5B). Assistance during start-up,

---

[9] Customer1: Only one customer, Customer2: Between 2 and 10 customers, and Customer3: More than 10 customers.
[10] An increase in the capital intensity variable, defined as log real assets over employment, confirms this.

which increased its coverage significantly from 50% of the enterprises in 1995/1996 to 85% in 2000/01, includes government advice or recommendations on the line of business to adopt (Recommendation), assistance in completing applications and registration procedures (Registration), assistance in obtaining credit (Credit start-up), and tax exemptions or tax reduction offers (Tax). Assistance during operation covered 19% in 1995/96 as compared to 34% in 2000/01. This includes for example solving managerial difficulties (Management), assistance in obtaining credit (Credit Operation) and providing legal advice (Legal advice).

Using the determinants described in this section as the gross list we analyze, econometrically, which of the determinants had a significant impact on survival and revenue growth from 1995/96 to 2000/01 in the next section.

4.2   Regression Results for Survival and Growth 1995/96 to 2000/01

The joint analysis of firm survival and growth from 1995/96 to 2000/01 is performed using a sample selection model. Hence, we record if enterprises survived from 1995/95 to 2000/01 and conditional on survival we measure the growth rates of employment and real gross revenue, respectively. To be specific, the model is

$$s_i = 1[x_i\delta + u_i > 0]$$
$$g_i = x_i\beta + v_i$$

(1)

where s_i is the survival indicator and g_i the average annual growth rate in either employment or in real gross revenue. The growth and survival determinants, x_i, are those discussed in the previous section. In the regressions we only include observations from the 1997 survey to ensure exogeneity of the determinants. In the employment growth regressions, the size variable is the (log of) employment; in the revenue growth regressions it is the (log of) real revenue (as stated, both variables are from the 1997 survey; hence it is the initial size). The error term in the survival equation, u_i, is assumed to be standard normal, and we assume linearity of the relationship between u_i and v_i, $E(v_i | u_i) = \gamma u_i$.

Table 5 presents regression results for both employment and revenue growth. In the employment regressions there are 689 enterprises with complete data in the 1997 survey; 446 of these enterprises were still operating and recorded in the 2002 survey (survivors). In the revenue regressions there are two observations less, because of missing data for revenue, and as seen the two enterprises are among the survivors. Below we briefly present and discuss the regression results, organizing the discussion according to the five groups of determinants defined in the previous section.

11

First of all, there is a statistically significant indication of firm size being negatively related to firm growth both in the revenue and employment equations.[11] This corresponds well with the results obtained in most of the theoretical and empirical literature on firm dynamics. However, the probability of survival does not appear to be positively related to size. This puts Vietnam at odds with results from studies of other countries. For firm age we record the reverse result as the probability of survival is significantly related to age while revenue growth is not; the precision of the age impact on survival is not overwhelming, though. One possible explanation for the weak results for firm age may be that most of the firms in the sample are relatively young and, moreover, that Vietnamese firms operate in a rapidly evolving and unstable environment.

[Table 5 about here]

Turning to the second group of determinants (owner characteristics) it appears that human capital is an important determinant of firm growth. Firms with owners who have high skills are likely to experience larger growth rates than firms with low skilled owners. This confirms the results in McPherson (1996) that experience gained in other business is useful for growth of SMEs, and reflects that owners in Vietnam act as managers, designers etc. and they also ensure quality control. The data also suggest that there is no significant influence from being medium skilled (as compared to having low skills) on firm growth, and skill level is not a significant determinant of survival rates. Finally, the data confirm that gender of the owner is not significant for firm success (growth or survival), which is in line with the observation that there appears to be no, or at least relatively limited, gender discrimination between men and women in Vietnam once they own a firm.

Looking at firm characteristics it is clear that location is of significant importance in determining firm survival. The probability of survival in rural areas (Ha Tay and Long An) is higher than in urban areas (recall that the base is HCMC). This suggests that competition in urban areas is far more pronounced, and from the survey it is clear that enterprises see fierce competition as the largest constraint to enterprise growth.[12] This result is furthermore in line with the fact that there are substantial and widely recognized administrative and structural barriers to entry in Ha Tay and Long An where local governments are distinctly protective of existing firms. Firms in Ha Tay and Long An are also more oriented towards serving local markets and therefore tend to escape some of the survival risks inherent in larger, possibly more outward oriented markets. In terms of growth, there is an indication that enterprises in Hanoi

---

[11] In the literature diminishing returns to age and size modelled by including size squared, are often found significant. However, these second order terms were uninformative in our analysis. They are therefore excluded in what follows.

[12] In 1997 73% of the enterprises in HCMC responded that too much competition was the major constraint to the enterprise, whereas only 41% in Ha Tay and 50% in Long An listed competition as a problem (see Rand *et al.*, forthcoming, for further details).

experience higher growth rates in employment as compared to HCMC. Technology choices in Hanoi have until now been more labor intensive than in HCMC. Hence given a similar real revenue growth experience in both regions, the employment growth will be higher in Hanoi. Finally, the observation that there are no significant differences among the provinces in our survey when it comes to growth in revenue is in all likelihood explained by the fact that Vietnam has experienced significant and broad-based growth in the last 10-15 years. While markets and opportunities do admittedly seem to expand more in urban areas, there also tends to be more competition as discussed above.

The ownership legal structure of the firm also seems to be an important determinant for firm growth in Vietnam. Non-household (private, cooperative and limited/share-holding) companies experience significantly higher revenue growth rates than the smaller household enterprises. This is not altogether surprising. For example, household enterprises will only register formally if they have either a clear sense of direction and an intention to expand or some positive growth experience in recent years that makes registration worthwhile.

For the production sectors it appears that firms producing machinery for a particular industry (SITC72), electrical machinery, apparatus and appliances (SITC77) and prefabricated buildings and fixtures (SITC81) have significantly lower employment growth compared to enterprises engaging in food and live animals (SITC0). For growth in revenue, however, it matters little in which sector the SMEs operate. The only sector that stands out is plastic manufactures (SITC5), which is no surprise. This sector produces much of the packing and other material, which is in very high demand at the present stage of the Vietnam's development.

Turning to innovations and diversification little of significance emerges. This is surprising in relation to other studies, but appears to reflect basic characteristics of the SME sector in Vietnam. While Vietnamese SMEs are not yet subjected to severe competitive pressures from the outside world, a domestic innovator will very quickly be copied by other domestic SMEs, such that the premium on innovating is limited. The same goes for the degree of diversification. Another observation for this group of determinants is that the manual machinery category on average experienced lower growth rates in employment. Ignoring SMEs relying on hand tools (mainly including small household enterprises), this result is consistent with the observation that firms, which are more capital intensive often grow faster (not reported). Similar results have been obtained for the US (Audretsch, 1995), and for Vietnam, a common observation is that the government tends to be relatively more protective, the higher the degree of capital intensity.

Finally determinants describing assistance from the government either during start-up or during the daily operation of the firm give some interesting results. First of all none of the government variables are significant when it comes to survival. However, in terms of growth, there are two statistically significant determinants. During start-up government credit plays a positive role in

promoting revenue growth. This may be related with the widely shared perception that credit is a constraint on SME growth. If so, it demonstrates that the Vietnamese government has been successful in limiting this constraint through its credit programs during start-up where enterprises have fewer contacts and experience. In contrast, tax exemptions during start-up appear to have had a significantly negative impact on growth in employment. This negative impact may be due to self-selection problems in the tax exemption. If enterprises experiencing problems have been more active in applying for tax exemptions than other enterprises one would expect the negative sign.

4.3   Government Support and Gross Revenue

The two surveys in 1997 and 2002 have information about real revenue growth in the enterprises in the years they were surveyed. This means that we are able to analyze if government support programs affected revenues both in surviving 1997-enterprises and in non-surviving enterprises and, in addition, we can analyze the new group of enterprises included in the 2002 survey. The latter group is, for a large part, new enterprises.

The model for the short run growth rate in real gross revenue does not have a sample selection problem as the growth rates are observed for all enterprises. Even so, we report least squares regression results both for all firms in each survey and for three sub-groups; the 1995/96-non-survivors, the 1995/96-survivors, and the new firms in the 2000/01 survey. This sample split may provide a more complete picture of the impact of government support.

Regressions (1) to (3) in Table 6 report the results for the 1997 survey. The regressions give an indication of (mild) self-selection in credit during operation as the growth impact of this credit support is almost twice as high in the non-survivor group compared to the survivor group. However, for both groups as well as for the full sample (i.e., the joint sample) there is a significantly positive impact of credit during operation on short-term revenue growth. A comparison with the impact on the average growth rate of revenues in Table 5 shows that the short run impact is somewhat larger than the long run impact. Another interesting result from the 1997 survey is that legal advice is only significant for the non-survivors, and it has a negative impact for this group. This may indicate that legal advice was mainly demanded by enterprises experiencing legal problems, which may ultimately have led to close-down.

[Table 6 about here]

The results for the 2002 survey (using the 2002 determinants) are given in Regressions (4)-(6). Using this survey, the positive impact of credit support during operation is no longer significant when all firms are analyzed jointly, but the sample split shows that the result is mainly driven by the highly insignificant impact of credit support for the new firms. In contrast, the survivors

14

still report a positive impact of the support in 2000/01. One possible interpretation of this result is that the credit market has developed significantly from 1995/96 to 2000/01. Hence, new enterprises may seek credit from state owned commercial banks or trading partners instead of government credit. In fact, as seen from Regression (5), none of the government support variables are statistically significant for revenue growth in new enterprises. This is not due to the sample size as there are about 500 new enterprises in the 2002 survey. Legal advice is now significant for the survivor group, and it has a positive impact. This is a marked change compared to the results for the 1997 survey. It may be driven either by a need from survivors to understand the changes in the enterprise, tax and land laws or possibly by (successful) demand for advice regarding entrance into new markets. The latter explanation has some indirect support in the data as Table 4 shows that the share of firms producing more than one good (diversification) has increased from 24% in the 1997 survey to 44% in the 2002 survey.

Regressions (7) and (8) are used to test if the changes in the results for the surviving firms are driven by the changes in the samples.[13] The regressions show that the point estimate of the impact of credit support during operation is unchanged in the two surveys although the estimate is not well determined in the 1997 sample. Even so we conjecture that the impact has been constant, and the correspondence to the impact on long run growth is noteworthy. In sum, credit during operation was a significant growth determinant for SMEs in the past and continues important for survivors. But, based on the results for the new firms in the 2002 survey the importance of this support appears to be decreasing.

5.   Conclusion

In this paper, we have studied the association between the characteristics of Vietnamese small and medium sized enterprises and their growth potential and probability of survival, relying on partly overlapping survey data sets with detailed information about firm characteristics. Using both employment growth rates and real gross revenue growth rates from 1995/96 to 2000/01, we found support for the life cycle theories of Jovanovic (1982) in the sense that smaller firms tend to grow more rapidly than bigger firms, and older firms are more likely to survive. While Vietnam is typical in this respect, we did not find support for a negative relationship between firm age and growth. Moreover, the negative effect of small size on survival is also absent. Thus, small firms grow fast while they seem to survive on par with bigger firms, given the age structure.

In addition to the impact of size and age, we confirmed the findings of previous empirical studies. Skill, location, ownership forms and the type of activity in which the firm engages are

---

[13] Not all surviving firms have complete data information in both 1997 and 2002. Therefore, there is considerable sample variation even in the survivor group. As seen from Table 6, there are actually only 284 firms with complete data in both surveys.

significant determinants of firm dynamics, also in the case of Vietnam. One result, which is specific to Vietnam compared to other developing countries, is an absence of gender discrimination. As regards location, we found a higher probability of survival in the rural regions in the sample while there was no significant difference in the growth rates of employment and gross revenue across regions. For ownership forms it appeared clearly from the data that modern non-household enterprises, on average, experienced higher growth rates than household enterprises.

Finally, in addition to the traditional indicators explaining the enterprise life cycle, we analyzed the effect of government support on the survival and growth of the SMEs. Our results indicate that government credit support to firms has been an important determinant of firm growth. A closer look at this result revealed a significant difference between older firms (i.e., firms surviving from 1997 to 2002) and new firms included in the 2002 survey. Government credit was positively related to growth in the 1997 survey, while there was no significant impact of this kind of government support for the growth rates of new enterprises interviewed in the 2002 survey. Legal advice was another kind of government support on which we had information. While this kind of support was negatively related to growth among the non-surviving firms in the 1997 survey, probably due to self-selection, there was a strong positive impact of legal advice among the surviving firms in 2002. Hence, the allocation and impact of various forms of government support to SMEs in Vietnam appears as an interesting area for future research.

References

Agarwal, R. and Audretsch, D.B. (2001). "Does Entry Size Matter? The Impact of the Life Cycle and Technology on Firm Survival", *Journal of Industrial Economics*, 49, 21-43

Audretsch, D.B. (1991). "New Firm Survival and the Technological Regime", *Review of Economics and Statistics*, 68, 520-526.

Audretsch, D.B. (1995). *"Innovation and Industry Evolution"*. MIT Press, Cambridge, Massachusetts.

Audretsch, D.B. and Klepper, S. (2000). *"Innovation, Evolution of Industry and Economic Growth"*, Elgar Reference Collection. International Library of Critical Writings in Economics, Cheltenham, U.K. and Northampton, Mass.

Audretsch, D.B. and Mahmood, T. (1995). "New Firm Survival: New Results Using a Hazard Function", *Review of Economics and Statistics*, 77, 97-103.

Baldwin, J.R: (1995). *"The Dynamics of Industrial Competition"*. Cambridge University Press, Cambridge.

Behrman, J.R. and Deolalikar, A.B. (1989). "… of the Fittest? Duration of Survival of Manufacturing Establishments in a Developing Country", *Journal of Industrial Economics*, 38, 215-226.

Caves, R.E. (1998). "Industrial Organization and New Findings on the Turnover and Mobility of Firms". *Journal of Economic Literature* 36(4), 1947-1982.

Central Institute of Economic Management (2004). *Vietnam's Economy in 2003*. CIEM, Hanoi, Vietnam.

Daniels, L. and Mead, D.C. (1998). "The contribution of Small Enterprises to Household and National Income in Kenya", *Economic Development and Cultural Change*, 47, 45-71.

Doms, M., Dunne, D. and Roberts, M.J. (1995). "The Role of Technology Use in the Survival and Growth of Manufacturing Plants", *International Journal of Industrial Organization*, 13, 523-545.

Dunne, D., Roberts, M.J. and Samuelson, L. (1988). "Patterns of Firm Entry and Exit in U.S. Manufacturing Industries, *RAND Journal of Economics*, 19, 495-515.

Dunne, D., Roberts, M.J. and Samuelson, L. (1989). "The Growth and Failure of U.S. Manufacturing Plants", *Quarterly Journal of Economics*, 104, 671-698.

Ericson, R. and Pakes, A. (1995). "Markov-Perfect Industry Dynamics: A Framework for Empirical Work". *Review of Economic Studies* 62(1), 53-82.

Evans, D.S. (1987a). "The Relationship between Firm Growth, Size, and Age: Estimates for 100 Manufacturing Industries", *Journal of Industrial Economics*, 35, 567-581.

Evans, D.S. (1987b). "Tests of Alternative Theories of Firm Growth", *Journal of Political Economy*, 95, 657-674.

Geroski, P.A. (1995). "What Do We Know About Entry". *International Journal of Industrial Organization* 13(4), 421-440.

Gort, M. and Klepper, S. (1982). "Time Paths in the Diffusion of Product Innovations", *Economic Journal*, 92, 630-653.

Hall, B.H. (1987). "The Relationship between Firm Size and Firm Growth in the US Manufacturing Sector", *Journal of Industrial Economics*, 35, 583-600.

Iqbal, F. and Urata, S. (2002). "Small Firm Dynamics in East Asia: An Introductory Overvew", *Small Business Economics*, 18, 1-12.

Jovanovic, B. (1982). "Selection and the Evolution of Industry". *Econometrica* 50(3), 649-670.

Jovanovic, B. (1993). "The Diversification of Production", *Brookings Papers on Economic Activity, Microeconomics*, 1, 197-247.

Jovanovic, B. and MacDonald, G.W. (1994). "The Life Cycle of a Competitive Industry", *Journal of Political Economy*, 102, 322-347.

Klepper, S. (1996). "Entry, Exit, Growth, and Innovation over the Product Life Cycle", *American Economic Review*, 86, 562-583.

Liedholm, C. and Mead, D.C. (1999). "*Small Enterprise and Economic Development. The Role of Micro and Small Enterprises*" Routledge Studies in Development Economics. Routledge, London and New York.

Liedholm, C. (2002). "Small Firm Dynamics: Evidence from Africa and Latin America", *Small Business Economics*, 18: 227-242.

Mata, J. and Portugal, P. (1994). "Life Duration of New Firms", *Journal of Industrial Economics*, 42, 227-245.

McPherson, M.A. (1995). "The Hazards of Small Firms in Southern Africa", *Journal of Development Studies*, 32, 31-54.

McPherson, M.A. (1996). "Growth of Micro and Small Enterprises in Southern Africa", *Journal of Development Economics*, 48, 253-277

Mead, D.C. and Liedholm, C. (1998). "The Dynamics of Micro and Small Enterprises in Developing Countries", *World Development*, 26, 61-74.

Pakes, A. and Ericson, R. (1998). "Empirical Implications of Alternative Models of Firm Dynamics". *Journal of Economic Theory* 79, 1-45.

Rand, J., Tarp, F., Dzung, N.H. and Vinh, D.Q. (forthcoming). "Survey of Small and Medium Scale Enterprises in Vietnam: Documentation", mimeo.

Ronnås, P. and Ramamurthy, B. (2001). "Entrepreneurship in Vietnam: Transformation and Dynamics", NIAS Publishing, Copenhagen.

Sakai, H and Takada, N. (2000). "Developing Small and Medium Scale Enterprises in Vietnam", NRI Papers No. 13, Nomura Research Institute.

Söderbom, M. and Teal, F. (2004). "Size and Efficiency in African Manufacturing Firms: Evidence from Firm-level Panel Data", *Journal of Development Economics*, 73, 369-394.

Sutton, J. (1997). "Gibrat's Legacy". *Journal of Economic Literature*, 35(1), 40-59.

Tybout, J.R. (2000). "Manufacturing Firms in Developing Countries: How Well Do They Do, and Why?", *Journal of Economic Literature*, 38(1), 11-44.

Vijverberg, W.P.M. (1998). "*Nonfarm Household Enterprises in Vietnam*", in "*Household Welfare and Vietnam's Transition*" (ed. Dollar, D., Glewwe, P. and Litvack, J.). World Bank Regional and Sectoral Studies. World Bank, Washington D.C.

Vijverberg, W.P.M. and Haughton, J. (2002). "Household Enterprises in Vietnam: Survival, Growth , and Living Standards", World Bank Working Paper 2773.

Table 1: Summary Statistics of Firm Dynamics

		1990/1991		1995/1996		2000/2001	
		Employment	Revenue	Employment	Revenue	Employment	Revenue
1990/1991	Survival	447		159 (36%)		93 (21%)	
	Short run Growth (%)	-4.6	23.5	-3.3	5.1	-0.9	4.8
	Long run Growth (%)	na	na	0.2	16.2	-1.3	1.0
1995/1996	Survival			591		377 (64%)	
	Short run Growth (%)			3.0	10.4	0.1	5.8
	Long run Growth (%)			na	na	1.3	4.3
2000/2001	Survival					909	
	Short run Growth (%)					3.5	13.1
	Long run Growth (%)					na	na
Total	Surveyed	447		750		1379	
	Short run Growth (%)	-4.6	23.5	1.7	9.3	2.3	10.5
	Long run Growth (%)	na	na	0.2	16.2	0.9	3.7

Year initially surveyed (left vertical label spanning the first three blocks)

Note: In 1997 around 1,000 enterprises were surveyed, and in 2002 the sample size was around 1,600 enterprises. Employment is log to the number of employees, revenue is log real gross revenue, and long and short run growth is respectively annual and period to period growth rates.

Table 2: Employment Transition Matrix

		Quintile 2000/01					
		1	2	3	4	5	Total
Quintile 1995/96	1	**61**	30	6	3	0	100
		(54)	(27)	(5)	(3)	(0)	(89)
	2	25	**35**	33	6	1	100
		(21)	**(29)**	(27)	(5)	(1)	(83)
	3	9	15	**45**	21	10	100
		(9)	(14)	**(43)**	(20)	(10)	(96)
	4	1	5	27	**48**	19	100
		(1)	(5)	(26)	**(47)**	(18)	(97)
	5	1	4	5	22	**68**	100
		(1)	(4)	(5)	(20)	**(63)**	(93)
	Total	(86)	(79)	(106)	(95)	(92)	(458)

The heading "Employment Transition Matrix 1995/96 - 2000/01" spans the top of the table.

Note: All figures are in percentages. Number of observations in parenthesis.

Table 3: Revenue Transition Matrix

		Revenue Transition Matrix 1995/96 - 2000/01
		Quintile 2000/01
		1	2	3	4	5	Total
Quintile 1995/96	1	**63**	21	12	4	0	100
		(57)	(19)	(11)	(4)	(0)	(91)
	2	31	**41**	16	11	1	100
		(28)	**(37)**	(15)	(10)	(1)	(91)
	3	8	16	**36**	27	12	100
		(7)	(15)	**(33)**	(25)	(11)	(91)
	4	0	14	23	**33**	30	100
		(0)	(13)	(21)	**(30)**	(27)	(91)
	5	0	5	12	25	**57**	100
		(0)	(5)	(11)	(23)	**(52)**	(91)
	Total	(92)	(89)	(91)	(92)	(91)	(456)

Note: All figures are in percentages. Number of observations in parenthesis.

Table 4: Summary Statistics for Survival and Growth Determinants

Group	Variable	1995/1996 Mean	1995/1996 Std. Dev.	2000/2001 Mean	2000/2001 Std. Dev.
1	Size (Employment)	2.244	1.034	1.998	0.975
	Size (Revenue)	12.209	1.678	11.981	1.636
	Firm Age	2.594	0.457	2.175	0.738
2	High Skilled	0.330	0.471	0.300	0.458
	Medium Skilled	0.380	0.486	0.378	0.485
	Low Skilled	0.290	0.455	0.322	0.467
	Gender	0.761	0.427	0.782	0.413
3	HCMC	0.232	0.422	0.158	0.365
	Ha Noi	0.224	0.417	0.170	0.375
	Hai Phong	0.195	0.396	0.151	0.358
	Ha Tay	0.172	0.378	0.178	0.383
	Long An	0.177	0.382	0.163	0.370
	Phu Tho	na	na	0.089	0.285
	Quang Nam	na	na	0.091	0.287
	House	0.447	0.497	0.717	0.451
	Private	0.201	0.401	0.101	0.301
	Co-operative	0.221	0.415	0.077	0.267
	Limited/Share	0.131	0.337	0.105	0.307
	SITC0	0.182	0.386	0.236	0.425
	SITC5	0.039	0.194	0.027	0.162
	SITC58	0.026	0.158	0.028	0.166
	SITC6	0.034	0.181	0.040	0.196
	SITC64	0.065	0.246	0.034	0.182
	SITC66	0.031	0.173	0.039	0.193
	SITC67	0.047	0.212	0.062	0.241
	SITC7	0.092	0.289	0.092	0.289
	SITC72	0.049	0.215	0.032	0.176
	SITC77	0.038	0.191	0.050	0.219
	SITC8	0.086	0.281	0.026	0.158
	SITC81	0.024	0.154	0.056	0.230
	SITC82	0.163	0.370	0.159	0.366
	SITC84	0.088	0.283	0.075	0.263
	SITC9	0.038	0.191	0.043	0.203
4	Innovation	0.489	0.500	0.450	0.498
	Diversification	0.244	0.430	0.439	0.496
	Customer1	0.025	0.155	0.023	0.149
	Customer2	0.259	0.438	0.207	0.405
	Customer3	0.716	0.451	0.771	0.421
	Hand Tool	0.104	0.305	0.110	0.312
	Manual Machinery	0.074	0.261	0.049	0.127
	Power Machinery	0.176	0.381	0.222	0.416
	Combined Technology	0.647	0.478	0.619	0.486
5A	Recommend	0.057	0.232	0.094	0.292
	Registration	0.198	0.399	0.348	0.477
	Credit Start-up	0.052	0.221	0.171	0.377
	Tax	0.197	0.398	0.242	0.428
	No Start Up Assistance	0.497	0.500	0.146	0.353
5B	Management	0.050	0.218	0.034	0.182
	Credit Operation	0.100	0.301	0.214	0.410
	Legal Advice	0.038	0.191	0.089	0.285
	No Operational Assistance	0.812	0.391	0.663	0.473

Table 5: Regression Results for Survival and Growth from 1995/95 to 2000/01

		Employment				Real gross revenue			
Equation system		Survival		Growth		Survival		Growth	
Group	Variable	Coefficient	t - statistics	Coefficient	t - statistics	Coefficient	t - statistics	Coefficient	t - statistics
1	Size (Employment)	0.022	0.28	-0.046***	4.53				
	Size (Revenue)					-0.019	0.36	-0.068***	5.87
	Firm Age	0.248*	1.83	-0.023	1.58	0.243*	1.77	-0.006	0.25
2	High Skill	-0.054	0.38	0.019	1.20	-0.053	0.37	0.065**	2.24
	Medium Skill	-0.145	1.09	0.017	1.27	-0.143	1.07	0.022	0.86
	Gender	-0.006	0.04	0.002	0.14	0.004	0.03	-0.001	0.04
3	Ha Noi	0.219	1.36	0.045*	1.93	0.194	1.20	-0.040	1.03
	Hai Phong	0.095	0.55	0.006	0.22	0.072	0.41	-0.034	0.81
	Ha Tay	0.135***	5.73	0.007	0.24	0.133***	5.32	-0.003	0.15
	Long An	0.887***	4.16	-0.005	0.22	0.862***	4.06	-0.068	1.45
	Private	-0.139	0.79	0.010	0.49	-0.100	0.60	0.061*	1.78
	Co-operation	-0.189	1.08	0.037	1.62	-0.156	0.96	0.126***	3.40
	Limited/Share	-0.183	0.83	0.054*	1.73	-0.140	0.66	0.173***	3.44
	SITC5	-0.088	0.30	0.006	0.15	-0.093	0.31	0.122*	1.81
	SITC58	0.224	0.66	0.006	0.10	0.224	0.66	-0.032	0.44
	SITC6	0.456	1.42	-0.041	1.15	0.461	1.43	-0.025	0.46
	SITC64	0.094	0.37	-0.015	0.42	0.095	0.37	0.023	0.34
	SITC66	0.094	0.27	-0.043	0.94	0.091	0.26	-0.082	1.19
	SITC67	0.197	0.71	0.001	0.03	0.172	0.62	0.005	0.07
	SITC7	0.275	1.22	0.002	0.08	0.265	1.17	0.049	1.08
	SITC72	0.149	0.46	-0.035*	1.89	0.131	0.40	-0.057	1.19
	SITC77	-0.107	0.36	-0.089**	2.29	-0.120	0.40	-0.068	0.85
	SITC8	-0.109	0.50	-0.043*	1.74	-0.122	0.56	-0.039	0.89
	SITC81	-0.389	0.98	-0.065***	2.98	-0.412	1.03	0.003	0.06
	SITC82	0.005	0.03	-0.019	0.86	-0.033	0.16	-0.024	0.59
	SITC84	-0.359	1.55	-0.045	1.51	-0.367	1.60	-0.052	0.99
	SITC9	0.333	1.05	-0.038	1.17	0.308	0.96	0.022	0.27
4	Innovation	0.058	0.50	-0.002	0.16	0.066	0.56	-0.012	0.47
	Diversification	-0.169	1.24	-0.019	1.05	-0.150	1.11	0.021	0.71
	Customers 1	0.068	0.17	0.053	1.00	0.080	0.20	0.075	1.15
	Customers 2-10	0.004	0.03	-0.026	1.57	0.008	0.06	-0.017	0.65
	Hand Tool	-0.190	0.91	0.003	0.13	-0.206	0.97	-0.018	0.47
	Manual Machinery	-0.035	0.16	-0.060***	3.33	-0.056	0.26	-0.050	1.21
	Power Machinery	-0.027	0.19	-0.017	1.03	-0.014	0.10	-0.027	0.87
5	Recommend	0.206	0.82	0.002	0.07	0.216	0.86	0.060	0.96
	Registration	0.060	0.39	0.032	1.57	0.081	0.51	0.033	0.91
	Credit Start-up	-0.170	0.58	0.050	1.61	-0.135	0.46	0.099*	1.80
	Tax	-0.068	0.49	-0.028*	1.69	-0.061	0.44	-0.015	0.49
	Management	0.323	1.26	-0.003	0.09	0.336	1.32	-0.039	0.67
	Credit Operation	0.023	0.11	-0.007	0.33	0.039	0.18	0.019	0.50
	Legal Advice	-0.340	1.21	-0.017	0.42	-0.317	1.13	-0.062	0.67
Number of observations		689		446		687		444	
R-squared		0.11		0.14		0.11		0.16	
Wald test joint sign., chi2(40)				92.09				77.62	
Wald test independent eq.				0.00				0.20	

Robust t- statistics. *, **, *** indicates significance at a 10%, 5% and 1% level, respectively.

Base: Low skilled, HCMC, household enterprise, SITC 0, customer > 10, combined, no assistance.

Table 6: Regression Results for One-year Revenue Growth Rates

Group	Variable	1997 survey			2002 survey			Survivors	
		All firms	Non-survivors	Survivors	All firms	New firms	Survivors	Common sample	
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Size (Revenue)	-0.062***	0.004	-0.095***	-0.045***	-0.089***	0.009	-0.095***	0.008
		(3.31)	(0.20)	(3.52)	(3.15)	(4.23)	(0.55)	(2.95)	(0.42)
	Firm Age	-0.068*	-0.142***	-0.031	-0.117***	-0.109***	-0.025	-0.070	-0.015
		(1.69)	(2.66)	(0.57)	(4.30)	(3.41)	(0.72)	(1.21)	(0.38)
5A	Recommend	0.046	0.043	0.159*	0.013	-0.057	-0.001	0.140	0.011
		(0.59)	(0.31)	(1.73)	(0.20)	(0.56)	(0.01)	(1.14)	(0.11)
	Registration	-0.004	0.015	0.019	0.016	0.065	-0.109*	0.036	-0.117*
		(0.08)	(0.22)	(0.26)	(0.30)	(0.80)	(1.82)	(0.36)	(1.79)
	Credit Start-up	0.106	-0.026	0.188	-0.006	0.000	-0.086	0.045	-0.083
		(1.00)	(0.17)	(1.33)	(0.11)	(0.00)	(1.15)	(0.38)	(1.04)
	Tax	-0.051	-0.016	-0.034	0.032	-0.040	-0.037	-0.047	-0.039
		(1.34)	(0.23)	(0.75)	(0.75)	(0.62)	(0.79)	(0.87)	(0.78)
5B	Management	-0.020	-0.073	-0.057	0.034	0.061	-0.043	0.072	-0.066
		(0.29)	(0.58)	(0.62)	(0.33)	(0.43)	(0.27)	(0.55)	(0.36)
	Credit Operation	0.201***	0.254*	0.144*	0.037	0.023	0.112**	0.111	0.112**
		(2.73)	(1.74)	(1.75)	(1.22)	(0.57)	(2.31)	(1.13)	(2.23)
	Legal Advice	-0.075	-0.185**	-0.113	0.074*	0.041	0.142***	-0.173	0.151**
		(1.20)	(2.43)	(1.01)	(1.78)	(0.063)	(2.68)	(1.02)	(2.54)
Number of observations		653	231	422	819	503	316	284	284
R-squared		0.15	0.25	0.21	0.15	0.22	0.16	0.18	0.21

*, **, *** indicates significance at a 10%, 5% and 1% level, respectively

Base: Low skilled, HCMC, household enterprise, SITC0, customer > 10, combined, no assistance.

All regressions include group 2, 3 and 4 variables as well as a constant term. Robust *t* - statistics in parenthesis.

Appendix A: Sector/Activity Specifics

SITC 1 digit	SITC 2 digit	Description
0	..	**Food and live animals**
5	..	**Other chemicals and related products**
5	58	Plastic manufactures
6	..	**Other manufactured goods classified chiefly by material**
6	64	Paper, paperboard, articles thereof
6	66	Non-metallic min. manufactures n.e.s.
6	67	Iron and steel
7	..	**Other machinery and transport equipment**
7	72	Machinery for part. industries
7	77	Elec. machinery, app. and appliances
8	..	**Miscellaneous manufactured articles**
8	81	Prefab. buildings; fixtures
8	82	Furnit., mattr., cushions etc.
8	84	Apparel and clothing accessories
9	..	**Commodities and transactions not classified elsewhere in the SITC**