The Location of Markets, Perceived Entrepreneurial Risk, and Start-up Capital of Micro Rural Firms

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ABSTRACT. It is argued that when founders of SMEs perceive the probability of a successful and lucrative venture to be greater, they are more likely to provide a greater proportion of the start-up capital. This paper provides an empirical examination of two concurrent hypotheses. Firstly, that the size of the debt or equity is affected by factors influencing perceived entrepreneurial risk. Secondly, that the location of the market for the firm's output is a major factor reducing perceived entrepreneurial risk and increasing equity of the start-up capital. A statistical analysis based on the simultaneous tobit model is used. Results show that significant factors influencing risk perception include the size of the new business and the sector of economic activity, as well as entrepreneurial experience and the location of the markets for the firm's output. The results highlight implications for the design and implementation of rural development policies and especially for the instruments supporting rural business creation.

1. Introduction

The main objective of a contemporary rural development policy for European Union (EU) is to ensure an economically efficient and environmentally sustainable agriculture and to stimulate the integrated development of the Union's rural areas (Commission, 1997). Small businesses operating in the EU's most remote and lagging areas constitute an integral part of the rural milieu and the major alternative to agricultural employment. Creating and supporting rural businesses is considered as a primary strategy for the survival

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and integrated development of these areas. The answer to the problems induced by the agricultural adjustment in rural areas of the "periphery", in general, and of the remotest areas of Southern Europe, in particular, is the creation of Small and Medium Enterprises (SMEs) in the secondary and the tertiary sector.

One of the most important difficulties faced by entrepreneurs, and certainly those in rural areas, is the collection of appropriate funds for establishing a new business, the so-called start-up capital. In the eyes of Europeans and U.S. citizens, to successfully start a small business is a rather difficult task. A Flash Eurobarometer survey conducted in autumn 2000 questioned over 8,000 people in the U.S. and the EU on their attitudes to entrepreneurship and revealed some extremely important trends (Flash Eurobarometer, 2000). Citizens in both continents, rank the lack of financial support and the difficulty to assemble start-up capital as the most critical of the "practical difficulties" in starting a business. However, and this is an extremely important fact, almost 45% of respondents in the EU, but only 27% in the U.S., thought one should not start a business if there is a risk it might fail. It is evident that, perceived entrepreneurial risk is the "flagship" among business start-up obstacles and a major determinant of the propensity to establish new businesses between Europeans and Americans. Similar findings to those reported by the Eurobarometer have been reported by the International Social Survey Programme and the Global Entrepreneurship Monitor (Reynolds et al., 2001).

Evans and Jovanovic (1989), in their seminal paper, argue that under certain assumptions an equivalence relation exists between the probability of switching from wage into self-employment and

the assets of the entrepreneur. In other words, only if there are liquidity constraints, the probability of starting up your own business is a function of the individual's assets. Following this argument, they show explicitly that if switching is a function of assets, then credit rationing exists and the structure of start-up capital is severely affected. In addition, it is suggested that perceived entrepreneurial risk, i.e., the entrepreneurs' personal judgment about the likelihood of the success of their enterprise, is revealed by their personal equity investment in the firm (Carter and Van Auken, 1990).

Lagging areas of the EU are characterized by low wealth conditions and, by definition, per capita incomes in these areas are lower than 75% of the corresponding EU average. Furthermore, financial development is expected to be lower in lagging and rural areas of the EU. Evidence from Italy suggests that the level of an area's financial development directly impacts the probability an individual starts his own business, favors entry, increase competition and promotes growth of firms (Guiso et al., 2002). One would imagine that, due to the generally low wealth conditions in remote and lagging rural areas of the EU, liquidity constraints would exist and thus, creation of businesses would be highly dependent on externally raised funds from a financial environment that is less developed than in other areas of the EU. Furthermore, the intensity of using external funds when starting-up a business should depend on perceived entrepreneurial risk. We argue that, among the many factors assumed to reduce perceived entrepreneurial risk, the degree in which new firms sell their output to the local market is an important issue that, in turn, is highly determined by entrepreneurial human capital. Thus the location of a new firm's markets is assumed to act as an indicator of entrepreneurs and enterprises that are highly linked to the local economic environment and thus reduces perceived entrepreneurial risk. This paper will attempt to provide an empirical examination of two concurrent hypotheses: first, that the size of the debt, when liquidity constraints exist, is influenced by factors influencing perceived entrepreneurial risk and thus increases when perceived entrepreneurial risk is high and decreases when perceived entrepreneurial risk is low. Second, that the location of sales of the new firm, as this is influenced by entrepreneurial human capital, is a major factor reducing perceived entrepreneurial risk and increasing equity of the start-up capital when sales are directed to the local market.

Such a hypothesis implies that firms with a high level of local sales will provide increased equity due to reduced risk and thus will require little or no external finance. On the other hand of course, such firms have limited growth prospects and high displacement potential due to the limited capacity of local markets. Such firms are often the target of rural development policy largely due to a misinterpretation of the aims and objectives of endogenous rural development and the misconceived potential of micro firms in remote and lagging areas. Thus, the policy section at the end of this paper discusses the necessity of targeting certain types of firms and, by going well beyond the findings, the need of providing new and flexible instruments for supporting and developing entrepreneurship in such areas.

2. Start-up capital: theoretical underpinnings

Theoretical models concerning the financial behavior of firms have evolved around the theory of investment decisions. Early approaches related investment decisions to the expected profitability of contemplated business projects assuming that all projects are able to find and raise the necessary funds. Thus, optimal financial structure occurs alongside the optimal accumulation of capital. The work by Modigliani and Miller (1958) challenged this approach and showed that under perfect capital market conditions, financial decisions are made independently of investment decisions. This is due to the fact that, assuming perfect capital market conditions, the average cost of capital remains the same regardless of the financial structure. This of course implies that the market value of a firm is totally determined by its ability to generate profits and is independent of its financial structure.

If the basic Modigliani-Miller assumption concerning perfect capital market conditions is relaxed, then the financial behavior of a firm is important, as its financial structure is not independent of its market value. The most frequently cited imperfection of capital markets is the infor-

mation asymmetry between firm owners or prospective firm owners and lenders. Two research approaches have been developed starting from the concept of assymetric information. First, credit rationing occurs when lenders artificially raise interest rates in order to account for higher risk premiums on investments with either uncertain real value proposed by smaller firms (adverse selection) or with uncertainty regarding the prospect use of funds (moral hazard). Furthermore, geographical proximity between borrowing firm and lending bank may also result to credit rationing. However, Carling and Lundberg (2002) found no evidence that distant firms are rationed by banks as a result of credit risk management. Second, the pecking order theory assumes that assymetric information between external and internal to the firm agents leads the market to undervalue a firm. Owners of smaller firms operate without targeting optimal capital structures but show a preference to those financial sources that minimize external intrusion into their business (Hamilton and Fox, 1998). Moreover, Carter and van Auken (1990) related the risk of small business creation to insufficient capitalization and high debt loads arguing that the structure of initial capitalization is a contributing factor to the success or failure of small business. Taking into account asymmetric information, access to the various financial resources will be dictated by the degree of credit rationing and the operation of high risk premiums as well as the owner's personal characteristics and attitudes towards business control.

A theory proposed by Leland and Pyle (1977) and partially tested by Carter and Van Auken (1990) suggests that when founders perceive the probability of a successful and lucrative venture to be greater, they are more likely to provide a greater proportion of the initial investment (Chandler and Hanks, 1998). Thus, in the presence of liquidity constraints, equity will increase and debt will decrease when perceived entrepreneurial risk is low. There are many factors influencing perceived entrepreneurial risk. These factors may be entrepreneur or enterprise specific. Entrepreneur specific factors are those affecting an individual's ability to perceive the economic environment and thus the risk associated to economic opportunities, or in other words, their ability to look for and process business information, assess expected cost and benefits and calculate a personal risk premium. Enterprise factors are those associated more with the characteristics of the business to be created and more specifically the sector of economic activity and the firm's expected size. Finally, we postulate that a firm's location of sales and particularly as this is revealed by the proportion of total sales that are directed to the local market, is associated to the perceived entrepreneurial risk. The expected relation of each of these factors to perceived entrepreneurial risk is briefly discussed below.

Several factors influence perceived risk and are postulated to be associated with the firm's characteristics at start-up. The size of the investment is, irrespective of the sector in which the firm is active, a major determinant of the capital structure. One may "reasonably" argue that large capital start-up requirements will, in general, require extensive external finance and especially finance from institutions such as banks, venture capital associations and/or development authorities. However, empirical evidence does not confirm this. Peterson and Schulman (1987) showed that the debt to total assets ratio first rises and then falls with size of firm. Of course, the size of the start-up capital is closely related to the extent of asymmetric information. In cases when the entrepreneur considers that his/her request for finance will be treated by the imposition of a high interest rate or it will be turned down, he/she may downsize the project before submitting the plans to the financing institution. Furthermore, it is suggested that small firm owners do not always target an optimal debt to equity ratio (Holmes and Kent, 1991; Myers, 1984). They try to meet their finance needs from a pecking order of, first, their own money and then, in order of preference, short-term loans, longer term debt and finally equity investors (Cosh and Hughes, 1994). This is also closely linked to the higher performance of smaller firms. Glancey (1998) argues that small firm entrepreneurs rely on retained profits as their primary source of capital expansion so as to avoid external lenders having a "stake" in the firm (pecking order) and so are more profitable. Even when small firm entrepreneurs are more receptive to the idea of raising external finance will find it easier to do so if their firms are

more profitable than larger firms (assymetric information).

Another major factor, closely related to the previous one, refers to the industrial sector in which the firms under consideration are active. Differences concerning capital structure among industrial classes may be due to various reasons. First, there are industrial classes with high financial capital requirements, which sometimes exceed the founder's sources. In this case one expects that a smaller proportion of initial financing will come from internal sources. Especially in manufacturing industrial classes, capital requirements are expected to be high and a higher proportion of financial sources will be external to the firm (Chandler and Hanks, 1998). Second, institutional theory suggests that certain industrial classes develop different financing practices such as borrowing from suppliers and customers (Mizruchi and Stearns, 1994; Thorne, 1989).

In this work we assume that entrepreneurial human capital characteristics influence the initial capital structure of a firm because they affect the way an individual perceives entrepreneurial risk. Human capital largely concerns with the skills and knowledge acquired by an entrepreneur. Human capital determines the ability of an entrepreneur to perceive and realize an economic opportunity and establish an enterprise. Skill formation in a modern economy is a dynamic process with strong synergistic components while skill begets skill (Heckman, 2000). The importance of both formal and informal skill acquisitions in producing economic and social success is well known. An important formal process of human capital accumulation is the level of formal education and/or of consequent training in business related issues while an important informal process of human capital accumulation is the experience gained through work or training in similar businesses before starting the present business.

Theories of managerial efficiency and learning-by-doing imply that years of formal education have a positive impact on entrepreneurship and firm growth (Variyam and Kraybill, 1994; Barkham, 1994). Well-educated entrepreneurs are more skillful, a factor that reduces risk, and thus assumed to reduce external fund raising but, at the same time, educated entrepreneurs are also assumed to be more capable in raising external

funds for their start-up capital. Explicit knowledge derived by education is frequently complemented by tacit knowledge referring to all the non-codified components of entrepreneurial activity. On job experience is a major process of informal education assigning the nascent entrepreneur with both explicit and tacit knowledge (Davidsson et al., 2003). In lagging areas, where opportunities for formal education and training are less frequent (Dimara and Skuras, 1999; Skuras et al., 2000), on job experience may fill the gap created by the lack of formal education. Informal cognitive processes of human capital accumulation have been highly neglected by economic and business literature. Work experience may take the form of a hierarchy of actions were the best results are achieved by entrepreneurs that have run their own business and thus have acquired managerial skills. At a lower level we should put entrepreneurs that have experience acquired through work in a similar business, i.e. a business active in the same sector, and entrepreneurs that have worked in another, non-similar business. Very recently, the importance of prior knowledge in explaining risky versus informed behaviour in entrepreneurial activity has been demonstrated (Norton and Moore, 2002). Furthermore, if the entrepreneur comes from a family background with one at least of his/her parents being entrepreneurs and running their own business this will assign him/her with non-cognitive experience and, by reducing the start-up risk it will consequently reduce external fund raising. Of course, it may be argued also that such entrepreneurs have a better access to bank loans, especially if one of the parents is, or has been a successful entrepreneur.

Finally in this work we introduce, for the first time in an analysis of the structure of start-up capital, the factor related to the location of sales. The location of a firm's markets may also be thought of as one of the facets of economic embeddedness, the others being the location and relations with suppliers, financial organizations and rural development institutions. In this work we model output oriented economic embeddedness by the degree of the firm's dependence on the local market. In other words we measure the percentage of the firm's sales directed to the local market. The higher the percentage of sales directed to the local market the more output embedded the firm is,

while the lower the percentage of sales to the local market the more output dissembedded the firm is. In this work we assume that proximity with customers and suppliers may result in better information for the entrepreneur and thus a better understanding of the risk undertaken when a business is created. Of course, one should recognize that high proportions of local sales expose firms to local market risk which may be reduced if sales locations are diversified. We also assume that the degree of a firm's location of sales (output embeddedness) to the local economy is highly influenced by the entrepreneur's ability to access and utilize local business networks and is thus highly related to the firm's networking ability and influences its behaviour (Chell and Baines, 2000). If local embeddedness results to reduced risk then, the in funds entrepreneur is more likely to invest and to hold himself a larger share of the start-up capital as smaller risk projects are usually associated to smaller returns and thus, the well-known leverage effect is not activated because the cost of external funds is, probably, greater than the return of the project. Of course, readers of this paper should be aware that the reduction of such a complex concept as economic embeddedness to a measurement of the degree of sales directed to the local market is only partial and represents only a quantifiable fraction of the whole issue of embeddedness.

High economic embeddedness in general, is a very good proxy indicating access to and utilization of horizontal networks, i.e., networks connecting businesses in the same location. Kneafsey et al. (2001) argue that strong horizontal networks are characterized, among others, by trust-based relationships between local producers, consumers and institutions and strong information and knowledge flows. Often, strong horizontal networks are informal in the sense that social networks stimulate entrepreneurship and support the establishment and growth of new firms (Aldrich et al., 1989; Donckels and Lambrecht, 1995; Dubini and Aldrich, 1991). Thus, the ability to sell to local markets should be influenced by entrepreneurial characteristics indicating a high propensity to access horizontal informal networks and form local business partnerships. These characteristics may include the marital status of the entrepreneur, whether he/she has been raised and lived in the

area, if he/she comes from an entrepreneurial parental environment, his/her age and others.

Literature indicates that the entrepreneur's spouse may provide access to local customers, besides emotional support and access to informal credit and active help in business (Brüderl and Preisendörfer, 1998). If the entrepreneur was raised and lived in the area has a better ability to form local business partnerships and thus is expected to create a more highly embedded business. The same holds true for entrepreneurs raised in an entrepreneurial environment with one of the parents running a business. Such entrepreneurs are more likely to be locally embedded as they make use of networks accessed by their parents and utilize the business fame built by their parents. Furthermore, entrepreneurs raised and lived in the area take advantage of two non-cognitive sources of entrepreneurial capital accumulation. First, entrepreneurs may perform a non-cognitive analysis of the strengths, weaknesses, opportunities and threats of the area as an economic environment for business creation. Second, by living in the area, the prospective entrepreneur develops relations and links with the social and economic environment, which may be very important and useful when the business is, created (start-up stage) or when the business is growing.

In the following section, the theoretical framework discussed here is presented in an empirical statistical model that tests the formulated hypotheses. The factors likely to influence the perceived entrepreneurial risk and the degree of local sales are surrogated by appropriately collected variables from a business survey in remote and lagging rural areas of Greece.

3. Data and statistical model

Survey and data

Data come from a business survey carried out in winter 1999, within the framework of an EU research project funded by the FAIR6 programme. The general objective of the survey on businesses and entrepreneurs was to collect information oncerning the factors influencing and inhibiting entrepreneurship in lagging rural areas of the EU. Two mountainous case study areas were selected

as representative of the economic development possibilities of rural lagging areas in Greece, namely the prefecture of Evrytania and the area of Kalavrita in the prefecture of Achaia. Evrytania is a mountainous area presenting all the symptoms and causes of extreme rurality and is a remote and less accessible area from the markets of major urban centers in Greece. Kalavrita, being a mountainous area is also characterized by extreme rurality but is a less remote and more accessible area as it is situated close to the urban centre of Patras and within a day's trip distance from Athens. In both case study areas creating a sampling frame was difficult due to the absence of an official business register while the most recent secondary data on local businesses was available for 1994. This significant problem was, in a sense, tackled by a list of businesses completed from scratch from members of the research team assisted by local entrepreneurs, the local chambers of manufacturing and commerce and the registry of employees. A business questionnaire was created and pilot tested to 10 local businesses at each case study area. The original target was to carry out a complete census of businesses established on and after 1990 and estimated to be around 120–150 in each area. The final survey collected 132 and 122 questionnaires from the areas of Evrytania and Kalavrita correspondingly. From the 254 collected questionnaires, only 203 questionnaires provided complete records on all economic and social data used in this work. The validity of critical economic data such as the size of the business at start-up in terms of employment, and of other relevant economic data were cross-examined with the official records kept in the local offices of employment and tax registry. Missing data are due to either respondents being unable to recall critical information or to the fact that we were unable to trace records of certain businesses and thus unable to cross-validate the responses.

It is important to note that 107, or almost 53%, of the sampled entrepreneurs provided the whole founding capital from personal funds and savings without turning to the assistance of either private loans from friends and family, public loans from banks or grant aided capital from rural development institutions. Only 53 or almost 26% of the entrepreneurs have used personal loans from friends and family members as part of their start-up capital while 17% have used commercial loans and 15% had been successful in getting a capital subsidy from rural development authorities and/or agencies. Furthermore, there were no entrepreneurs using venture capital, equity investors or other forms of finance. This implies that only 96 entrepreneurs used external funds.

Statistical model

In our theoretical model presented in the previous section of this work, the degree of external finance (debt) at start-up, was assumed to depend on various factors reflecting perceived entrepreneurial risk. Thus debt, measured by the percentage of start-up capital borrowed by various sources, i.e., not being equity capital, is a function of a set of variables assumed to reflect perceived entrepreneurial risk and also the degree of localization of the firm's sales, as:

$$D = f(\mathbf{x}, B) \tag{1}$$

The degree of localization of the firm's sales measured as the percentage of total sales directed to local enterprises or customers is influenced by a set of variables surrogating entrepreneurial human capital characteristics as:

$$B = g(\mathbf{z}) \tag{2}$$

Due to the fact that a very high percentage of the sampled entrepreneurs provide all the start-up capital from own sources, i.e., assumed without liquidity constraints, almost half of the observations are limited to zero. Thus, the estimation of equation (1) should not be carried out using conventional (linear) regression methods but a regression censored at zero (tobit). Furthermore, we should examine whether the variable reflecting localization of sales in equation (1) is exogenously determined. In the case where localization of sales is endogenously determined by equation (2) the two equations (1 and 2) should be determined simultaneously (Blundell and Smith, 1989, 1994). The statistical procedures used to estimate the system of equations (1) and (2) are presented in the appendix of this work.

As it was explained in the previous section of this work, the major explanatory variables to be used in equation (1) estimating the extent of external funds (percentage of debt at start-up)

include: the firm's size (SIZE) and sector of economic activity (SECTOR), the entrepreneur's level of formal education (EDUC) and experience gained through work and/or training in other similar businesses (EXPER) and the firm's location of sales (LOCAL). In turn, the firm's location of sales is assumed to be influenced by the entrepreneur's marital status (MARITAL), whether he/she was raised in a entrepreneurial parental environment (PARENTS), whether he/she was raised and lived in the area before starting-up the business (LIVED). Finally, the entrepreneur's age (AGE) is assumed to influence the degree of networking as entrepreneurs of a younger age are assumed to be more dynamic and form local partnerships and synergies. Location of sales (LOCAL) is measured by the percentage of the firm's total sales directed to local customers or consumers. A dummy variable representing the different location of the surveyed businesses in Evrytania and Kalavrita was also included in the analysis in both equations but did not show any

statistically significant results and thus was excluded from consequent analyses. Finally, the very low percentage of non-sole proprietorship businesses did not allow us to include it among the explanatory variables of the model.

The descriptive statistics and definitions of all variable used in the analysis are presented in Table I. Examining the descriptive statistics of Table I we see that rural entrepreneurs who raised capital from external sources during start-up score higher at almost all variables indicating increased perception of entrepreneurial risk.

4. Results

The results of simultaneously estimating equations (1) and (2) are shown in Table II. Taking into account the econometric procedures used in the estimation of the simultaneous equations as these are presented in the appendix of this work, it is evident that the location of sales is not endogenously determined implying that equation (1) can

TABLE I
Definition and descriptive statistics of the variables used in the analysis

Variable name	Variable definition	Descriptive Statistics			
		All entrepreneurs		Entrepreneurs that raised external capital at start-up	
		Mean	St. Dev.	Mean	St. Dev
FUNDS	Proportion of funds raised from external sources at start-up	0.258	0.308	0.546	0.208
SIZE	Number of full-time employees at start-up	3.054	2.690	3.521	3.488
SECTOR	Dummy variable with 0 if the firm is active in the manufacturing sector	0.892	0.312	0.833	0.375
EXPER	Dummy variable, with 0 if the entrepreneur has not experience in similar businesses	0.419	0.494	0.302	0.461
EDUC	Dummy variable with 0 if the entrepreneur has only basic formal education	0.768	0.423	0.729	0.447
LOCAL	Proportion of total sales directed to businesses or final consumers in the local area	0.791	0.342	0.593	0.411
MARITAL	Dummy variable with 0 if the entrepreneur is married	0.295	0.457	0.333	0.474
PARENTS	Dummy variable with 0 if none of the parents run an enterprise	0.744	0.437	0.677	0.470
AGE	The entrepreneur's age in years	43.271	10.887	43.510	10.630
LIVED	Dummy variable with 0 if the entrepreneur was not born and raised in the area	0.743	0.438	0.656	0.477
Sample size		203		96	

TABLE II
Estimates of the simultaneous equations tobit model

Variable name	Parameter estimate	Asymptotic *t*-value
Tobit equation – Dependent variable = FUNDS		
Constant	1.229	3.172**
SIZE	0.021	1.623*
SECTOR	–0.514	–4.453**
EXPER	–0.183	–2.298**
EDUC	0.082	0.841
LOCAL	–1.000	–1.997**
ρ	0.226	0.445
Log-Likelihood		–118.884
Linear Regression equation – Dependent variable = LOCAL		
Constant	0.587	3.863**
AGE	–0.001	–0.182
MARITAL	–0.037	–0.614
PARENTS	0.099	1.972**
LIVED	0.122	2.393**
EDUC	0.090	1.658*
σ_{12}/σ_{22}	0.245	0.466

Note: Two and one asterisks indicate statistical significance at the 5% and 10% levels respectively.

be individually estimated without introducing any bias. All variables are statistically significant and have the expected sign except from the variable indicating the level of education (EDUC). The sign of the variable recording the size of the business at start-up (SIZE) indicates that the higher the size of the business at start-up the higher the level of externally raised start-up capital. The sign of the variable recording the sector of economic activity (SECTOR) indicates that business active in the light manufacturing and handicrafts sectors raise more funds from external sources at start-up than businesses in the tourism and services sectors. The sign of the variable recording entrepreneurial experience in a similar business (EXPER) indicates that experienced entrepreneurs raise less external capital at start-up. This finding should be put in balance with the argument according to which the probability of having a loan application accepted increases with the amount of business experience of the applicant due to lower credit risk (Evans and Jovanivic 1989, citing Ando, 1985). Finally the sign of the variable recording localization of sales (LOCAL) shows that as the level of sales directed to local

businesses and customers increases, the level of externally raised start-up capital decreases.

The coefficients of the location of sales equation (2) are also shown in Table II and indicate that the orientation of sales towards local markets increases when entrepreneurs come from an entrepreneurial parental environment and are born and raised in the area. Localized sales clearly show the propensity of entrepreneurs to form local partnerships and participate in horizontal networks and also show the support provided to local entrepreneurs by local businesses (customers) or local consumers. All these issues highly reduce perceived entrepreneurial risk and ensure that a great part of the production will be safely promoted to local enterprises under well known market conditions.

The size of the coefficient estimates for the tobit equation (1) is not interpreted as in conventional linear regression models. The effects of independent variables on the percentage of externally provided start-up capital are best demonstrated by the marginal effects shown in Table III. Following McDonald and Moffit (1980), total marginal effects may be decomposed into two parts. The first part shows the change in probability of the expected level of externally raised funds at start-up for those firms that face liquidity constraints and seek external sources of finance. In other words, this shows the effect of a variable on the size of the funds raised from external sources given that the firm is getting external funds in the first place. The second part shows the change in the probability of raising external funds at start-up at all. In other words, this shows the effect of each independent variable on the probability that the firm will seek external funds at all, i.e., that the firm faces liquidity constraints. The two decomposed effects add up to the total effect. The way the total and decomposed effects are estimated is shown in the appendix of this work. The sector of economic activity (SECTOR) shows statistically significant effects. If the business is active in the light manufacturing and handicrafts sectors, the probability that the entrepreneur faces liquidity constraints is 16.8% more than in the services and tourism sectors. If the entrepreneur faces liquidity constraints and look for external funds, the percent of external funds out of the total start-up capital will be on average,

TABLE III
Total and decomposed marginal effects of the tobit equation

Variable name	Total effect	Decomposed effects	
		Effect on the extent of external funds	Effect on seeking external funds
SIZE	0.011 (1.681)*	0.004 (1.684)*	0.007 (1.705)*
SECTOR	–0.271 (–4.505)**	–0.103 (–4.214)**	–0.168 (–4.544)**
EXPER	–0.097 (–2.318)**	–0.036 (–2.285)**	–0.061 (–2.317)**
EDUC	0.043 (0.842)	0.016 (0.840)	0.027 (0.842)
LOCAL	–0.527 (–2.004)**	–0.199 (–1.978)**	–0.328 (–2.006)**

Note: Two and one asterisks indicate statistical significance at the 5% and 10% levels respectively.

and holding all other variables constant at sample means, 10.3% more than in businesses active in the services and tourism sectors. This confirms previous empirical results linking credit rationing and industry showing that desired debt in the manufacturing and mining sectors are the highest among all sectors (Mallick and Chakraborty, 2002). If the entrepreneur has experience in similar businesses (EXPER), the probability that he/she will seek external funds at start-up is 6.1% less than if the entrepreneur does not have any experience. In the presence of liquidity constraints, the percentage share of externally raised start-up capital is 3.6% less for experienced than non-experienced entrepreneurs, all other variables held constant at sample means. The location of sales (LOCAL) has also important and statistically significant effects. The probability that the entrepreneur will look for external funds decreases by 32.8% if the output traded with local businesses and consumers increases by 10% above the sample mean. If the entrepreneur faces liquidity constraints and look for external funds then the percentage of external funds at start-up will be 19.9% less for every 10% increase in the percentage of output traded with local customers and consumers.

The above results provide the grounds for drawing up two important sets of conclusions. First, we confirm empirically that when perceived entrepreneurial risk is low, entrepreneurs reduce the share of external funds in their start-up capital. Second, the effect of certain variables on the probability of raising external funds and on the extent of the share of external capital out of the total start-up capital, highlights the importance of

certain local and rural development policy instruments.

5. Conclusions and policy implications

Liquidity constraints do not seem to be a major problem for a large proportion (53%) of micro rural businesses in our sample. Evidence confirms the major hypothesis of this work, i.e., that when perceived entrepreneurial risk is low, the proportion of external funds in the start-up capital decreases. Major factors influencing risk perception include the size and sector of economic activity, as well as entrepreneurial experience and the firm's location of sales.

Recent rural development efforts and especially those supporting entrepreneurship in the most remote and lagging areas of the European Union have concentrated their effort in providing direct or indirect start-up capital. Directly, start-up capital is offered in the form of direct capital subsidies and interest rate subsidization and indirectly through the provision of business premises in the form of organized industrial sites, business incubators, etc. or by supporting the operation of state or private venture capital. Such rural development instruments address the symptom of low equity capital in the short tem but will fail to cure the cause in the long term. The cause of rural entrepreneurial underdevelopment should be searched in the high risk perceived by rural entrepreneurs, which inhibits higher equity in the creation of new firms. Higher equity is a well acknowledgeable factor of profitability, growth and survival for new firms (Fu et al., 2002). At the same time those firms addressing the local market increase local

competition and displacement. Rural development instruments should diversify away from capital support to flexible instruments aiming to reduce perceived entrepreneurial risk in the long term.

The analysis showed that experienced entrepreneurs have a better understanding of risk and thus, either provide the funds for the new ventures or restrict the proportion of external funds when these are needed. This highlights the importance of informal cognitive processes of entrepreneurial human capital accumulation such as on job training and acquisition of skills through work experience. Thus, policy instruments designed to sustain rural businesses and enhance entrepreneurial human capital should be supported. Furthermore, instruments designed to facilitate the closure of businesses at risk without assigning the entrepreneur with the stigma of failure and allow him/her another chance should be provided. On the other hand, the fact that experienced entrepreneurs try to minimize the intrusion of external capital to their businesses indicates either that they follow a pecking order in assimilating their start-up capital or that they have an experience of credit rationing due to assymetric information. Both events highlight the need for policy instruments that will either provide capital assistance with the lowest possible intrusion to the business or policy instruments that will reduce assymetric information and confront possible credit rationing.

The high localization of sales negatively influences both the decisions to look for externally provided funds and the extent of using such funds. On the contrary, firms dissembedded from the local market seek externally provided funds and make extensive use of them. Localization of sales should be taken to imply a high level of networking with local enterprises (existence of horizontal supply networks) and a high penetration to the local market. Policy instruments currently support horizontal networks through initiatives and programmes such as the LEADER initiative which is one of four initiatives financed by the EU's structural funds and is designed to help rural actors to consider the long-term potential of their local region. The LEADER initiative, encourages the implementation of integrated, high-quality and original strategies for sustainable development and has a strong focus on partnership and networks of exchange (the interested reader may find more information on the official web site (http://www.europa.eu.int/comm/agriculture/rur/leaderplus/) of the LEADER initiative). Policy schemes should also provide assistance to the creation of vertical networks linking local businesses with business customers or consumers outside the local area. In other words, policy instruments should support disembeddedness of local businesses from the local market and thus reduce the perceived risk associated with the volatility of markets outside the local area. Future rural development policies should take into account the importance of rural businesses and the significance of the structure of start-up capital for the creation and establishment of such businesses in the most remote and lagging areas of the EU. Bottom-up policies and well designed policy instruments may reduce perceived entrepreneurial risk and enhance entrepreneurship. However, the capacity of local institutions to initiate, organize and support non-financial development schemes may be a critical factor inhibiting the provision of rural development policy instruments and thus should also be addresses by rural development policy.

Appendix

The simultaneous equations (1) and (2) in the main text above, may be statistically presented as a system of two equations:

$$
\begin{aligned}
D^*_{1,i} &= x'_{1,i}\beta_1 + B'_{2,i}\gamma_1 + u'_{1,i} \\
B'_{2,i} &= z'_{2,i}\pi_2 + v'_{2,i}
\end{aligned}
\tag{A-1}
$$

with

$$\begin{bmatrix} u_{1,i} \\ v_{2,i} \end{bmatrix} \sim NI\left[0, \begin{pmatrix} \sigma_1^2 & \sigma_{12} \\ \sigma_{21} & \sigma_{12}/\sigma_2^2 \end{pmatrix}\right] \text{ for } i = 1, \ldots, H$$

where the endogenous variable $D_{1,i}^*$ representing the percentage of funds externally raised at start-up, is censored and we observe

$$D_{1,i} = \begin{cases} D_{1,i}^* & \text{if } D_{1,i}^* > 0 \\ 0 & \text{otherwise} \end{cases} \quad (A-2)$$

Equation (A-1) implies that the structural form for $B_{2,i}$ depends directly on $D_{1,i}^*$ but not on the observed variable $D_{1,i}$. Thus, writing $u_{1,i}$ conditional on $v_{2,i}$ as:

$$u_{1,i} = v_{2,i}\alpha + \varepsilon_{1,i} \quad (A-3)$$

and substituting equation (A-3) into equation (A-1), the following conditional model is generated (Smith and Blundell, 1986):

$$D_{1,i}^* = B_{2,i}'\gamma_1 + x_{1,i}'\beta_1 + v_{2,i}'\alpha + \varepsilon_{1,i}$$
$$= w_i'\delta + \varepsilon_{1,i} \quad (A-4)$$

where $\varepsilon_{1,i} \sim N(0, \sigma_{11.2})$, $\alpha = \sigma_{12}/\sigma_2^2$, the conditional variance $\sigma_{11.2}^2 = \sigma_1^2 - \sigma_{12}^2/\sigma_2^2$ and $\varepsilon_{1,i}$ is independent of $D_{2,i}$ and $v_{2,i}$ and $w_i' = (B_{2,i}', x_{1,i}', v_{2,i}')$ and $\delta' = (\gamma_1', \beta_2', \alpha')$ for observations $i = 1, \ldots, H$, while the conditional censoring rule becomes:

$$D_{1,i} = \begin{cases} D_{1,i}^* & \text{if } \varepsilon_{1,i} > -w_i'\delta \\ 0 & \text{otherwise} \end{cases}$$
$$(i = 1, \ldots, H) \quad (A-5)$$

Smith and Blundell (1986) substitute a consistent estimator for π_2 in $v_{2,i}' = B_{2,i}'\gamma_1 - z_{2,i}'\pi_2$ and derive an estimator for α in equation (A-4) by estimating:

$$D_{1,i} = B_{2,i}'\gamma_1 + x_{1,i}'\beta_1 + \hat{v}_{2,i}'\alpha + e_{1,i}$$
$$= \hat{w}_i'\delta + e_{1,i} \quad (A-6)$$

with the conditional censoring rule being:

$$D_{1,i} = \begin{cases} D_{1,i}^* & \text{if } e_{1,i} > -\hat{w}_i'\delta \\ 0 & \text{otherwise} \end{cases} \quad (A-7)$$

The tobit estimator for α in the estimated conditional model in equations (A-6) and (A-7) provide the required test of the weak exogeneity null hypothesis. Given the conditional censoring rule in equation (A-7), we propose that the marginal effects of a change in any variable included in $\hat{w}_i'$, may be extracted using standard procedures. The mean of all observed $D_{1,i}$ is:

$$E(D_{1,i}|\hat{w}_i', e_{1,i}) = \Phi\left(\frac{\delta\hat{w}_i'}{\sigma_{11.2}}\right)(\delta\hat{w}_i') + \sigma_{11.2}\,\varphi\left(\frac{\delta\hat{w}_i'}{\sigma_{11.2}}\right) \quad (A-8)$$

where $\Phi(.)$ and $\varphi(.)$ are the distribution function and density function of the standard normal evaluated at

$\delta\hat{w}_i'/\sigma_{11.2}$. The mean of the observed positive $D_{1,i}$, i.e., $e_{1,i} > \delta\hat{w}_i'$ is:

$$E(D_{1,i}|D_{1,i}^*) = \delta\hat{w}_i' + \sigma_{11.2}\left[\frac{\varphi(\delta\hat{w}_i'/\sigma_{11.2})}{\Phi(\delta\hat{w}_i'/\sigma_{11.2})}\right] \quad (A-9)$$

From equation (A-8) and (A-9) we may derive

$$E(D_{1,i}|\hat{w}_i', e_{1,i}) = \Phi\left(\frac{\delta\hat{w}_i'}{\sigma_{11.2}}\right)E(L_{1,i}|L_{1,i}^*) \quad (A-10)$$

Then, the marginal effects of a change in any variable included in $\hat{w}_i'$, given censoring at left, are:

$$\frac{\partial E(D_{1,i}|\hat{w}_i', e_{1,i})}{\partial w} = \Phi\left(\frac{\delta\hat{w}_i'}{\sigma_{11.2}}\right)\delta \quad (A-11)$$

where $\delta(\gamma_1, \beta_1, \alpha)$ contains all relevant coefficients in $\hat{w}_i'(B_{2,i}', x_{1,i}', v_{2,i}')$ of the tobit expression in equations (A-6) and (A-7). Following McDonald and Moffit (1980), equation (A-11) may be decomposed by considering the effects as:

$$\frac{\partial E(D_{1,i}|\hat{w}_i', e_{1,i})}{\partial w} = \Phi\left(\frac{\delta\hat{w}_i'}{\sigma_{11.2}}\right)\left[\frac{\partial E(D_{1,i}|D_{1,i}^*)}{\partial w}\right] +$$
$$E(D_{1,i}|D_{1,i}^*)\left[\partial\Phi\left(\frac{\delta\hat{w}_i'/\sigma_{11.2}}{\partial w}\right)\right] \quad (A-12)$$

Equation (A-12) decomposes the total effect in two parts. The change in probability of the expected level of externally raised funds for those firms that face liquidity constraints and seek the assistance of external funds at start-up and the change in the probability of borrowing capital at start-up, i.e., the probability of facing liquidity constraints at all.

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