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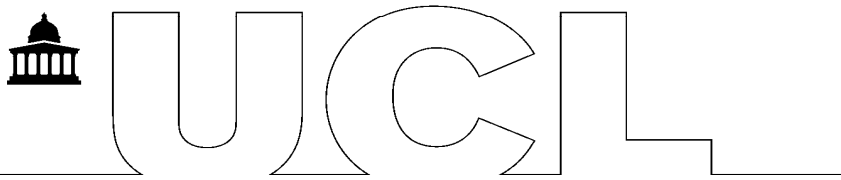

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START-UP FINANCING:

A COMPARATIVE PERSPECTIVE

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Start-up Financing: A Comparative Perspective[1]

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Abstract

We investigate the determinants of start-up financing in 41 countries, using the Global Entrepreneurship Monitor surveys for 1998-2003[2]. High quality of property rights increases both the total volume of finance and the use of external finance for the individual start-up. The size of the formal financial sector affects the start-up finance via enhancing the volume of self-finance. In addition, the use of external finance by start-ups correlates with the extent of financial restrictions in a country in a non-linear way. Supply of informal finance may to some extent substitute for the use of formal finance.

Keywords: start-up finance, entrepreneurial traits, informal finance, financial restrictions, property rights, Global Entrepreneurship Monitor.

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[2] Global Entrepreneurship Monitor is an international project co-ordinated jointly by Babson College, USA and London Business School, UK, and extended to involve over forty other national teams.

1. Introduction

The importance of entrepreneurship for economic development has become widely acknowledged (Schumpeter 2008 [1934]; Baumol 1990; Wennekers and Thurik 1999; Van Stel *et al.* 2005; Minniti *et al.* 2005; Minniti and Lévesque 2008)[3]. Entrepreneurs are shown to generate and disseminate innovations and create jobs (Cohen and Klepper 1992; Audretsch and Thurik 2004; Westhead and Cowling 1995; Acs and Armington 2004). They fill in market niches, increase competition and consequently promote economic efficiency (Minniti *et al.* 2005). However, entrepreneurs face challenges at the start-up. One of the common problems for new ventures is raising sufficient funding enabling them to launch and operate businesses successfully. Accordingly, finance availability and cost have been cited as one of the major constraints for entrepreneurship (Stanworth and Gray 1991; Storey 1994; Beck *et al.* 2005; 2006; 2008b; OECD 2006). The lack of credit history and of credible reputation distinguishes start-ups from established firms, creating a disadvantage for the former when it comes to the issue of funding (Huyghebaert and Gucht 2007). Given small scale of entrepreneurial projects and a higher asymmetry in information and higher risk, financial institutions find it costly to monitor small businesses, even if advances in technology (including the risk scoring techniques) imply that the banking sector is capable to handle the entrepreneurial finance better than in the past (De la Torre *et al.* 2008).

The relative difficulty of start-ups in accessing finance is likely to be aggravated by a weak business environment, in particular by inadequate legal frameworks and underdeveloped financial systems. Given very limited access of entrepreneurs to international financial markets, they are particularly sensitive to institutional constraints in domestic countries.

In this paper, we investigate the determinants of volume and structure of start-up finance using the Global Entrepreneurship Monitor (GEM) 1998-2003 surveys. More specifically we examine how the financial environment and property rights system affect the volume and sources of entrepreneurial financing at the time of entrepreneurial entry, controlling for various individual characteristics of entrepreneurs such as their wealth, education, experience and social capital. In particular, our investigation focuses on the following issues:

[3] See Carree and Thurik (2006) for further references.

- While it is well established that the larger financial sectors are beneficial for start-up financing, it is less understood if this effect works through the direct provision of external financing or through enhancing self-finance via savings opportunities.
- Supply of finance to entrepreneurs may be affected not just by the size of the formal financial sector but also by the quality of legal system and the extent of regulatory control of the financial sector.
- And finally, informal finance may be either the substitute for formal finance or its complement.

More generally, a comparative advantage of our research can be summarised as follows.

First, in their majority, existing empirical studies focus on firm/entrepreneur-specific characteristics including ownership structure and owners' characteristics (Harris and Raviv 1991; Coleman 2000; Cassar 2003; Huyghebaert and Gucht 2007). In addition to the aforementioned factors in this research we use institutional country-level indicators. This enables us to examine the impact of the business environment on start-up finance, a theme not yet explored in the start-up financing literature. Accordingly, along with individual GEM data, we use various country-level measures of institutional development, comprising a start-up contextual environment. We can safely use this aggregate data as our explanatory factors without being concerned with simultaneity bias, as the individual decision of a potential entrepreneur does not affect country-level institutions or economic development.

Second, focusing on financial environment allows us to extend the analysis onto the supply side of finance. We account for the fact that the entrepreneurial finance is determined through the interaction between the firm's (or entrepreneur's) preferences for certain types of financing and the ability and willingness of external financiers to provide the required funding, taking also into account that some firm- (and entrepreneur-) specific characteristics provide guidance for external financiers when making their financial decisions (De la Torre *et al.* 2008), so it is difficult to distinguish empirically if "banks select businesses, or businesses self-select for finance" (Cressy 1996:1254). Yet, while exploring the capital structure of new firms, none of the existing empirical studies explicitly focuses on the supply side of finance. We investigate the effect of the financial environment using a range of indicators, including the size of both the formal and informal financial system, and the institutional and regulatory factors in the financial intermediation.

Third, unlike earlier research we closely look at the impact of the supply of informal finance from investors such as family members, friends, work colleagues and informal

business angels on the financial size of start-up projects and on the sources of finance used. The existing research on informal investment largely looks at the determinants of informal investment (Bygrave *et al.* 2001; Mason 2005) or focuses on the link with the opportunity-pulled entrepreneurship (Bygrave *et al.* 2003). To our best knowledge, no empirical studies exist on effects of informal funding on the start-up financial volume and sources and we aim to fill this gap. In addition, we intend to investigate if informal finance substitutes or complements the formal financing.

Fourth, a novel aspect of our research is that we look explicitly at the effect of the extent regulations imposed on financial institutions and find that they have a non-monotonic effect on the use of external finance by start-ups. More specifically, both under-regulation of the financial systems and excessive financial restrictions seem to affect the start-up finance negatively.

Fifth, we use the GEM data set that offers a unique opportunity to study nascent entrepreneurs (for the definition see Section Three) along with existing businesses. While firm finance literature abounds, it is largely centred around the established businesses. Limited empirical work has been done on start-up financing due to lack of data. As most studies use surveys of existing entrepreneurs, the potential for survivorship bias confounding these studies is high (on a similar note see Cassar 2003).

The paper proceeds as follows. The next section discusses some theoretical issues pertaining to the start-up finance. We declare some explicit hypotheses to be tested. Section Three describes the data and the methodology. Empirical results follow in Section Four. Finally, Section Five presents conclusions and policy implications.

2. Determinants of Start-up Finance

Previous empirical studies on start-up financing show that start-ups typically exhibit a moderately low level of formal external financing, largely relying on their own equity and informal finance, primarily family and friends' funds and investment of other individuals comprising business angels (Bates 1997; Ravid and Spiegel 1997; Huyghebaert 2001; Bygrave 2003).

In their majority existing empirical studies focus on firm-specific characteristics including ownership structure, growth aspirations, and owners' characteristics as key factors determining start-up financial choices. The important role of entrepreneurial personal traits, attitude to risk, motivation and cognition have been increasingly advocated to explain entrepreneurial entry, decision-making and survival (Parker 2004; Arenius and Minniti 2005; Aidis *et al.* 2007; Aidis *et al.* 2008a; Ardagna and Lusardi 2008). More specifically, such socio-demographic features of entrepreneurs as age,

gender and work status are shown to be significant determinants of entrepreneurial entry (Reynolds *et al.* 1999; Minniti *et al.* 2005). Among psychological features, attitude to risk, motivation, growth aspirations and self-efficacy are commonly found to play an important role for venture growth (Baum and Locke 2004; Aidis and Mickiewicz 2006). We also expect these features to shape start-up financing. A number of empirical studies show the importance of entrepreneurs' social capital for accessing external finance (Aldrich *et al* 1987; Coleman 2000; Johanisson 2000).

On the theoretical ground, empirical studies on start-up financing have been mostly motivated by the arguments pertaining to the informational asymmetries theories. The central theme in this strand of literature is that in the situation of market imperfections, 'credit rationing' is likely (Stiglitz and Weiss 1981; Greenwald *et al.* 1984)[4]. However, it is frequently overlooked that the transaction costs associated with the informational asymmetry and consequently the potential for credit rationing are strongly affected by the cross-country heterogeneity in the financial and legal institutions. With the development of the latter, the transactions costs of the financial contract should be expected to diminish. Existing comparative research suggests that the institutional environment, comprised of formal and informal rules, plays an important role in the entrepreneurship development, affecting individuals' decision to enter entrepreneurship, allocation of their effort among its various uses (productive or unproductive), and entrepreneurial strategies, including financing and growth (Baumol 1990; Johnson *et al.* 2002; Van Stel *et al.* 2007; Ho and Wong, 2007; Aidis *et al* 2007, 2008a; Ardagna and Lusardi 2008).

Based on the institutional theory (North 1990, 1994; Baumol 1990) we distinguish the two key institutional dimensions which are more likely to influence financial structure of startups: (1) protection of property rights; and (2) financial development, including both supply of formal and informal finance, and financial regulatory environment. We discuss these dimensions below.

[4] See Evans and Jovanovic (1989); Holtz-Eakin *et al*. (1994); Blanchflower and Oswald (1998); Hughebaert and Gucht (2007). It is important to note that the credit rationing hypothesis has also encountered a great deal of criticism regarding its validity (see Parker 2004 for overview). The underlying argument is that the phenomenon of credit rationing is marginal and therefore economically insignificant (Berger and Udell 1992; Cressy 1996). Current developments in bank technology (risk scoring in particular) seem to alleviate the constraints and current research questions the rationale behind government programs that intend to increase lending by subsidisation of it (De la Torre *et al.* 2008).

2.1 *Protection of Property Rights*

Aidis *et al.* (2007) demonstrate that the property rights system plays a pivotal role, being located at the nexus of various other institutional indicators. Their results are consistent with Acemoglu and Johnson (2005), who see protection of property rights from expropriation as the key institutional dimension which they interpret in a narrow sense, as distinguished from the 'contracting institutions'. Typically, the economic agents can overcome obstacles and deficiencies in 'contacting institutions' by changing the preferred form of contractual arrangements and developing private contracting systems. In contrast, instability of core property rights has a more fundamental negative effect on economic activity. In an environment with weak protection of property rights, financial contracts are less likely to be concluded, leading to the underdevelopment of finance (Acemoglu and Johnson 2005; see also: Johnson *et al.* 2002). Relational lending tends to dominate in finance, and that has a negative effect on provision of credit to small enterprises and start-ups (De la Torre *et al.* 2008). Based on what we have said, our first hypothesis is formulated as follows.

H1: Weak property rights are likely to discourage financiers both formal and informal, limiting an entrepreneur's access to external finance and as a result also the total volume of finance available for an individual start-up project.

2.2 Financial Development and Financial Regulation

Along with a well-functioning property rights system, developed financial institutions have been argued to play an important role in enhancing the level of entrepreneurial activity (Aidis *et al.* 2008a) and in firm's growth (Beck 2005 *et al.*). Financial intermediaries facilitate the risk amelioration in the presence of problems created by information and transaction frictions, by developing expertise in risk assessment and in monitoring (Levine 1997; Barth *et al.* 2006; De la Torre *et al.* 2008). Parallel to this, the financial sector affects firm financing through the wider allocation of savings towards potential investment projects (Levine *et al.* 1999). Developed financial institutions are found to be particularly beneficial for small firms compared to large ones (Barth *et al.* 2006; Beck *et al.* 2005; 2006; 2008b). The same should apply even more to start-ups. Accordingly, the size of the formal financial system is expected to be positively related to the use of external financing, as a better functioning financial system should ease up borrowing constraints.

Moreover, the startup context-specific constraints in accessing external finance can be mitigated through the process of capital accumulation (Parker 2000; Webb and de Meza 2001). More specifically, Parker (2000)[5] suggests that when start-ups experience liquidity constraints, a stronger incentive to finance a venture increases the savings rate of potential entrepreneurs. In this way, a developed financial system may alleviate liquidity constraints through facilitating accumulation of entrepreneurs' savings (Webb and de Meza 2001). Additionally, financial development may contribute further to capital accumulation through offering a more competitive deposit rate as well as reducing the lending interest rate and consequently an overall debt burden on individuals, allowing for a further increase in savings accumulation. This leads us to formulate our next hypothesis.

H2: A more developed formal financial sector implies more opportunities to accumulate savings and therefore more own funds for entrepreneurial projects.

Financial regulation remains at the centre of policy-oriented economic debate. While it appears that regulatory focus on supporting transparency, on access to information and on enhancing market-based monitoring has been clearly beneficial, the scope of financial restrictions and the scope and discretion of the direct supervisory oversight is a far more controversial issue, with emerging empirical evidence of some negative effects, including both lower financial efficiency and higher likelihood of financial crises. These negative effects may be seen as either unintended (public interest view) or as a by-product of regulatory capture by special interests within the financial sector (venal corruption) and/or by political interests imposed from above (systemic corruption) (Barth *et al.* 2006; 2008).

Consistent with this, Jappeli and Pagano (1994) argue that heterogeneity in liquidity constraints across countries is largely attributed to the regulation of the financial sector. Excessive financial restrictions are likely to lead to financial disintermediation (McKinnon 1993; Fry 1997; Korosteleva and Lawson forthcoming 2010). This may have further adverse consequences for new firms. Burdensome financial regulation is seen to be inefficient, empowering governmental officials, fuelling corruption and benefiting incumbent firms, including in the financial sector, the most (Barth *et al.* 2008). Typically, in developing countries in particular, excessive financial restrictions are associated with growing share of direct state majority ownership of banks. State banks are likely to

[5] However, Parker (2000) recognises that not all individuals will be able to accumulate savings; some of them may be too poor to save enough.

prioritise state owned firms and discriminate against the entrepreneurs in their lending policies (De la Torre *et al.* 2008).

However, in turn, under-regulated financial sectors are also unlikely to benefit startups. Free banking may encourage risk-taking by banks, prompting them to move away from lending to the real sector in search of higher returns, creating a moral hazard problem for the government. This risky-type behaviour may generate financial fragility and increase the probability of financial crises with further recessionary consequences for businesses (Ranciere *et al.* 2006).

In unregulated financial environment banks are more likely to exercise their market power and behave as monopolists, setting higher margins (Barth *et al.* 2008). In many developing countries the banking industry is dominated by a small number of banks and collusive behaviour is not uncommon. Demetriades and Luintel (2001) argue that there is an inverse relationship between the degree of state control over the banking system and the ability of the banking system to operate as a profit-maximizing cartel. They find that mild repression of loan rates, with a lending rate ceiling above the competitive market rate, but below the monopolistic profit-maximizing rate, may increase the volume of loans and deposits in developing countries, as exemplified by South Korea. At the same time they find that if severe financial repression takes place (the lending rate ceiling is lower than the competitive market rate), it will have a negative impact on financial development (as exemplified by India; see Demetriades and Luintel 1997).

This implies a possible non-monotonic relationship between financial restrictions and availability of finance for start-ups. Accordingly, we postulate that some degree of financial restrictions may imply lower interest margins and respectively lower cost of finance for entrepreneurs and more opportunities for start-up finance. However, at the same time we posit that overrestricted banking sectors may offer less start-up finance. Consequently, our next hypotheses are formulated as follows:

H3: (H3a) Some degree of financial restrictions may imply increase in the use of external finance and more start-up finance. (H3b) However, with more extensive financial restrictions, its effect may become negative, reflecting financial repression and resulting in less start-up finance being available.

Informal finance comprised of family and friends' funds and investment of private business angels is also very important for start-ups. The total amount of money provided by informal investors accounted for one and a half per cent of the combined GDP of the 41 GEM nations. This is comparable with the amount of personal funding provided by GEM entrepreneurs (2.4 per cent of GDP). In contrast, formal venture capitalists

invested only six per cent of the total informal investment in 2006 (Bygrave and Quill 2007:5). Thus our next hypothesis should read as follows.

H4: The size of the informal financial sector is of significant importance to entrepreneurs in providing external funding in the early-stage of entrepreneurial activity.

2.3 Controls: Entrepreneurial Traits and Start-up Characteristics

In our analysis we distinguish between socio-economic characteristics of entrepreneurs (age, gender, working experience, availability of financial resources) and personal cognitive features (self-efficacy, growth aspirations, motivation, and risk attitude).

A number of studies show positive relationship between availability of financial resources and entrepreneurial entry (Reynolds *et al.* 1999, Minniti *et al.* 2005). While investigating the link between aggregate wealth and the average self-employment rate, Evans and Jovanovic (1989)[6] find the significant effects of wealth, implying that liquidity constraints are binding. While this is one obvious reason why we expect wealthier entrepreneurs to go for larger scale projects, another important factor here is that personal wealth affects risk-tolerance positively (Hall and Woodward 2008). In addition, for wealthy individuals, the external funding may come on better terms (availability of a collateral, etc.), making it more attractive for those who are relatively better off in terms of income and wealth.

The modern entrepreneurship theory emphasizes the importance of self-efficacy of individuals for entering entrepreneurship and for success of their businesses. Self-efficacy may be enhanced through social learning (Harper 2003). Being embedded in various business networks is one example of how this may occur (Minniti *et al.* 2005). Minniti *et al.* (2005) looks at role models from the perspective of entrepreneurs' mindset, arguing that role models are likely to shape individual perceptions about the entrepreneurial environment and generate more positive attitudes. Business networks gain particular importance for entrepreneurship when formal structures fail to function adequately. Network capital is regarded as an entrepreneur's intangible asset that can be used to overcome difficulties arising from failure of formal institutions. Previous studies show that social networks facilitate entrepreneurs' access to finance (Aldrich *et al* 1987; Johanisson 2003).

[6] However, Parker (2004) points to some limitations of Evans and Jovanovic's (1989) study and, drawing on other research, offers possible alternative explanations for their findings.

Start-ups with higher growth aspirations, appear as more attractive to external financiers, not just because of the higher expected returns, but also because the modern banking sector derives its start-ups related profits not just (and not primarily) from direct lending, but also from offering a wider range of financial services, including servicing personal accounts of prospective employees of a new business (De la Torre *et al.* 2008). Thus, profit opportunities for the providers of finance are closely related to the size of a new project.

Finally, we also expect start-up ownership structure to affect both the entrepreneurs' access to external finance and the overall size of entrepreneurial project. We include the variable that identifies start-ups with more than one owner. Start-up ownership tends to be highly concentrated and there is rarely separation between ownership and control. A positive effect of having business partners at the time of the start-up (resource-based view) may be similar to the network effect discussed above: additional business partners enhance network capital of the new venture.

While these are our main control variables, in our study we also introduce other individual characteristics and mention their likely effects in Section Three. The next section describes our data and methodology.

3. Data and Methodology

3.1 Sample

To explore the determinants of the financial structure of business start-ups, we use the data collected through the GEM adult population surveys in 1998-2003, covering 41 countries worldwide[7]. The data consists of representative samples of at least 2,000 individuals in each country, drawn from the working age population. GEM surveys were completed through phone calls and through face-to-face interviews in countries, where low density of the telephone network could create a bias. National datasets are harmonised across these countries[8].

GEM data distinguishes between (i) people with the intention to start a business, (ii) nascent entrepreneurs (who are already in a process of establishing a new firm, also labelled start-ups) and (iii) currently operating young firms (under three and a half years)[9]. While the dataset provides information on a whole range of businesses, for the purpose of this study we will focus on start-ups only. This is a category, where initial

[7] For countries included into the 1998-2003 datasets and year coverage see Reynolds *et al.* (2005).
[8] For more details of the sampling procedure see Reynolds et al. (2005, 2008).
[9] Along with these two last categories, reflecting total entrepreneurial activity, GEM also identifies established businesses (more than three and a half years old) (Reynolds *et al.* 2005).

entrepreneurial financing decisions may be captured best, without being affected by a subsequent development of individual businesses. Start-ups or nascent entrepreneurs are, according to GEM criteria, defined as individuals between 18-64 years old, showing some action towards setting up a new business whether fully or partly owned. They also must not yet have paid any wages or salaries for more than three months. This definition is summarised in Figure One.

The following sub-section discusses variable definitions and measurements in more detail.

3.2 Variables: Definitions and Measurement

There is no universally accepted set of measures of institutional quality. In their majority researchers have used what is commonly referred to as institutional outcome variables (Glaeser *et al.* 2004). The commonly used measures include survey indicators provided by the International Country Risk Guide (e.g. a measure of risk of expropriation), those provided by the World Bank Governance project (measures of governance effectiveness); the World Bank's Doing Business survey; and the Heritage Foundation – Wall Street Journal "Economic Freedom" database.

The question of the adequacy of these various measures of institutional quality has been material for continuous academic debates. In reality, there is a continuum between the long-term stable institutional arrangements and short-term government policies, and delimiting the two in an exact way is conceptually difficult (Glaeser *et al.* 2004). The expectations of the economic actors about durability of given policies, laws on books and administrative practice play a critical role, and identifying *a priori* the empirical characteristics of institutional and policy setup which is conducive to economic development and affects entrepreneurs' decision-making is not easy.

One of the indicators, commonly used by scholars (Acemoglu and Johnson 2005; Aidis *et al.* 2007) is the Heritage Foundation index of property rights. The Heritage Foundation 'property rights' indicator shows the degree of protection of individuals' private property rights by law on books and through its enforcement, and the extent to which private property is protected from expropriation (Beach and Kane 2008). The score ranges from zero meaning poor law protection and enforcement to 100 per cent, when property rights are fully guaranteed by the government and the contract enforcement is strong. We transform this index of property rights into odds[10] to get a

[10] To calculate odds (logistic transformation) we use the following formula: [Index / (100 – Index)]. Note that the highest value of the Heritage Foundation index in our sample is 90, which implies the maximum observed value of the transformed variable at nine.

measure of the 'property rights' constraints, which has better distributional characteristics[11].

To measure the availability of formal finance we use the ratio of domestic credit to private sector to GDP, obtained from the World Bank World Development Indicators. This measure has been used in previous studies on entrepreneurship (Klapper *et al.* 2006; Aidis *et al.* 2007), has wide coverage and correlates well with other measures of financial development (Beck *et al.* 2008a).

To measure the extent of financial restrictions we use a transformed indicator of financial freedom from the Heritage Foundation database. The financial freedom index measures the extent of restrictions imposed on financial activities and on entry, i.e. the state intervention in the national financial system, which goes beyond the prudential supervision and informational, transparency and audit requirements. In addition, the low values of the financial freedom index indicate direct state influence on the allocation of finance, including state ownership of financial institutions (Beach and Kane 2008). Again, we transform the original index of financial freedom into odds to get a better proxy for constraints and reverse the ordering.[12] We label the transformed variable 'financial restrictions index'. Furthermore, we also introduce a square term, checking for nonlinearity in its impact on entrepreneurial finance in line with the argument presented in the previous section.

We introduce the prevalence rate of informal investors, which proxies for the supply of informal funds that can be used for start-up capital. It is derived from our GEM data by taking the average percentage of respondents who invested in someone else's start-up in the past three years in each country-year sub-sample.

Finally, we use the GEM-defined variables to represent wealthier individuals, network capital, growth aspirations[13] and business ownership. More specifically, we use a dummy variable with 'one' denoting those individuals whose income is high according to their perceptions. We aim to capture social network effects by introducing a dummy variable which shows if the nascent entrepreneur knows some other entrepreneurs. In addition, we introduce a dummy representing an owner of any other existing businesses.

[11] In fact, we experimented with both using the original index and a dummy variable denoting strong property rights. The results are unaffected.

[12] Similar to property rights indicator, we transform the original indicator using the following formula: [(100-Index) / Index]. Note the reversal of order so that the transformed index measures the extent of financial restrictions.

[13] The traditional set of explanatory variables used for small enterprises also includes firm size, proxied either by a firm's total assets or employment size. While our data set contains information on start-up employment, this is strongly correlated with actual stage of the entrepreneurial entry (as hiring new employees is a gradual process) and a large number of missing values reduces our sample size drastically. More information is available on the planned size of employment, which in our context is a better proxy for the start-up size.

This captures both network effects and individual entrepreneurial experience (Wennekers's *et. al.* 2005). To measure the effects of start-up growth aspirations we introduce a dummy variable to identify entrepreneurs who expect to create more than one job in five years time. To examine the effects of the ownership structure variable we use a dummy that identifies start-ups with more than one owner (see Table One).

We have a number of dependent variables to reflect various financial outcomes. First, we introduce a dummy variable coded as 'one' to identify entrepreneurs who rely on external finance, and zero otherwise. Second, we also introduce a share of external finance as a proportion of total funds of a start-up. Third, we look at the volume of individual start-up finance, both total finance and the amount of own finance and external finance. The volume of own finance is calculated as the difference between total and external finance reported. We take the GEM data for both expressed in local currencies and scale them by dividing by the nominal per capita GDP also expressed in local currencies to get cross-country compatible data.

Finally, we use additional measures identifying a use of a particular type of external financing including: (i) use of external funding other than family (friends and colleagues plus institutional providers of finance); (ii) use of external funding from individuals (friends, colleagues and family); (iii) use of external institutional funding (financial institutions, banks in particular). For further details regarding definitions and descriptive statistics of dependent variables, as well as the correlation matrix for institutional and macroeconomic variables see respectively Tables Two and Three.

3.3 Control variables

In addition, the set of explanatory variables includes the following.

Our macroeconomic development indicators are represented by per capita GDP (at purchasing power parity), as a number of scholars acknowledge that it links with entrepreneurial (Carree *et al.* 2002, Wennekers *et al.* 2005). For our sample, we found that a nonlinear albeit monotonic transformation of GDP per capita (purchasing power parity) into natural logarithm fits data best. Alternatively, we also introduced per capita GDP squared test for non-monotonicity, but failed to provide any supporting evidence for this. As far as start-up financing is concerned, or prior expectations has been to find a positive relationship between per capita GDP and the use of external finance as well as with the project scale.

We also introduce the GDP annual growth rate to reflect a cyclical economic performance. We expect that at the period of recessions when the financial sector contracts entrepreneurs rely more on their own funds or informal investments from their

family and friends. Furthermore, a project is more likely to be small in scale and therefore capital requirements are likely to be lower.

Our research is also intended to provide some insights into the effects of various personal characteristics on start-up financial choices. Apart from personal financial resources, other entrepreneurs' personal characteristics, such as age, gender and education and work status emerge as significant determinants in entrepreneurs' decision-making. Previous GEM studies suggest that middle-aged, working males with higher educational attainment are more likely to start a business (Minnitti *et al.* 2005). Previous research indicates that some aspects of entrepreneurs' financial decision-making, in particular capital purchases, is a quadratic function of the entrepreneur's age (Holtz-Eakin *et al.* 1994). Non-linearity of age has also been shown in relation to entrepreneurship entry (Levesque and Minniti 2006, Aidis *et al.* 2007). We introduce age squared to test this non-linearity assumption.

We also introduce an indicator of entrepreneurs' risk attitude. Risk aversion is shown to be a significant predictor of entrepreneurial entry and types of entrepreneurial activity (Arenius and Minniti 2005; Ardagna and Lusardi 2008). Similarly to Arenius and Minniti (2005) we utilise GEM-defined indicator of perceived fear of failure as a subjective measure of attitude to risk. In our study we also control directly for a declared motive for entrepreneurial entry distinguishing between the opportunity and necessity-driven entrepreneurs. Finally, we introduce a dummy variable denoting some individual experience of being a business angel in the past that is expected to be positively associated with the use of external funding and the overall financial scale of the new project.

3.4 Methodology

For the robustness of our results we use a number of estimators, including probit, tobit and robust regression estimators. Initially, we applied the Heckman selection model, also known as the tobit II model, which allows dealing with a sample selection, while using the full survey information, to verify if we can run the finance model independently from the equation determining the decision to entry. The model determines simultaneously the likelihood of entrepreneurship entry and start-up financial outcomes captured by an indicator of use of external financing, using a maximum likelihood method. Accordingly, it consists of two parts: the outcome equation, identifying the binary financing outcome (use of external finance or lack of it), and the selection equation, describing the binary choice of entrepreneurship entry. The specific parameter of a Heckman specification is the correlation coefficient between the two error

terms. We did not find it statistically different from zero, which implies we may estimate our financial choice equation by using a probit model. Accordingly, we focus on a probit regression and report the marginal effects for the use of start-up financing (Table Four)[14].

We also use a bivariate probit, tobit and robust regression estimations while investigating the determinants of different types of external financing (of share of external finance in Table Five, of volume of total financing and of own financing in Table Six, a joint estimation of individual and institutional sources of financing in Table Seven, and of non-family and family financing and of institutional and noninstitutional financing in Table Eight). Our motivation to apply the tobit models is to account for a situation where our dependent financing variables are continuous, but their range is constrained with a substantial number of observations equal to zero, denoting those who do not use external finance; other observations are positive and may produce many different outcomes (Verbeek 2000). And, for the robustness of our results, for the continuous variables with no limits (amount of total funding and amount of personal funding) we also account for the fact that the results may be sensitive to the presence of outliers by employing the robust regression estimation technique as programmed in the STATA software[15] (see Table Six).

In the next section we discuss our empirical results.

4. Empirical Results

The results of the probit specification (Table Four) indicate clearly that strong protection of property rights is conducive to the use of external finance.

The impact of this variable dominates any other institutional or macro variable we use. Furthermore, our analysis of the marginal effects suggests that varying the strength of property rights from its sample minimum of 0.42 to its sample maximum nine (respectively 30 and 90 per cent in terms of the Index of Property Rights), increases the predicted probability of the use of external financing by start-ups by 25 per cent (from .36 to .61). In our sample only China and Russia score as low as 30 per cent, implying that property ownership is weakly protected[16]. US, Germany and the UK emerge at the other

[14] The results of the Heckman specification model can be obtained from the authors upon the request.

[15] The model is first estimated by OLS regression to calculate the Cook's distance which is used to eliminate outliers if the Cook's distance exceeds 1. Afterwards, iterations are performed based on Huber weights and followed by iterations based on a biweght function (Jappelli and Pagano 1994).

[16] See however some discussion by Rodrik (2000:13) who argues that some characteristics of property rights in China make them stronger.

end of the continuum, whereas other major developed economies such as Japan, France and Italy score lower.

Results reported in Tables Five-Six reveal that weak property rights tend not only to discourage financiers, but also diminish the share of external finance as well as decrease an overall scale of project.

Consistently across all estimations, one can clearly see a strong positive association of the size of the financial sector with the entrepreneurial choice of self-finance as compared with external finance. This evidently supports our hypothesis two. The wider financial sector provides more opportunities for (potential) entrepreneurs to accumulate savings to be subsequently used for business formation.

In addition, the results of the robust regression (see Table Six) also suggest a strong positive association between the size of the financial sector and the financial scale of the start-up project.

Interestingly, we find a bell-shaped relationship between the extent of financial restrictions and the choice of external funding, suggesting a positive relationship between the two up to the threshold of 1.18 and its reversal beyond the turning point[17]. In our sample Argentina, China, India and Russia appear to score below this threshold, implying that the financial restrictions affect start-up access to external finance in a negative way there. Moreover, we find that the increase in financial restrictions beyond the turning point has more pronounced effects on predicted probability as compared when the restrictions are increased up to the threshold. More specifically, strengthening of the regulatory regime of the financial sector from 0.11 to 1.18[18] raises the likelihood of the use of external finance by six per cent whereas it drops by 15 per cent when the regulation is strengthened from 1.18 to four[19]. We also test for the strength of this relationship with and without controlling for the size of the financial sector, and we find that both a non-monotonicity assumption and the strength of the relationship are robust under any of the two specifications. Respectively, these findings support both of our hypotheses: (H3a) and (H3b), albeit the (negative) impact of high level of restrictions appears stronger, as the square of financial regulation enters the regression more significantly, suggesting that rigid financial regulation has more pronounced effects on

[17] The calculations of the turning point are based on the results of probit regression presented in Table Five. This turning point corresponds to the score of 46 per cent in terms of the Heritage Foundation Index of Financial Freedom.

[18] These are respectively equivalent to the scores of 90 and 46 per cent in terms of the Heritage Foundation Index of Financial Freedom. The change in predicted probability for a change of δ in FinReg (holding all other variables fixed) is equal to Pr(Y=1|X, FinReg + δ) – Pr(Y=1|X, FinReg).

[19] These are respectively equivalent to the scores of 46 and 20 per cent in terms of the Heritage Foundation Index of Financial Freedom.

entrepreneurial financial decision-making and consequently on start-ups' liquidity constraints.

We test the robustness of these findings using alternative specifications such as tobit and robust regression models (see Tables Five-Six). The results are robust for alternative measures of entrepreneurs' financing sources, including our dichotomous variable identifying access to external funding (see Table Five) and the share of external funds in total funds (see Table Six). Expecting some possible multicollinearity between financial development and per capita GDP, we also test these results with and without controlling for per capita GDP. The direction and magnitude of these relationships change marginally when we do not control for per capita GDP.

Our other findings, based on the estimation of probit and tobit regressions, suggest that the size of the informal financial sector is statistically significantly and positively associated with the entrepreneurial choice of external finance as compared with personal finance. We interpret this result as an indication of the pecking order in financing choices, redefined to distinguish between formal and informal finance. The latter is more attractive to the entrepreneur as it is characterised by a lower informational asymmetry and therefore more likely to be offered and at lower cost.

Figure 2 shows a significant cross-country variation in terms of the availability of formal *vis-a-vis* informal finance with most developing countries typically exhibiting both the low size of the formal financial sector and lower prevalence rates of informal finance. Uganda emerges as an outlier, demonstrating the highest rate of the prevalence of informal funding. Amongst other developing countries Mexico also exhibits relatively high level of informal finance that is comparable to the one in China and Thailand. Figure 2 suggest that both should be used as substitutes not the complements as there is no correlation between the supply of formal and informal finance.

We noted before that China and Russia are characterised by both weak formal property rights and financial oppression. Both factors should imply little use of external finance by entrepreneurs. However, China is one of the five countries in our sample with the widest availability of informal finance (about six per cent prevalence rate, see Figure 2; the value of informal capital in China has been estimated to vary between two-five per cent of GDP in early 2000s by Smallbone and Jianzhong 2008). This is likely to counterbalance the negative effects of the other two factors. It is interesting to note that while among informal investors the family was traditionally assigned a critical role in financing entrepreneurial ventures in China, the most recent study (Au and Kwan 2009) overrides this conventional belief, suggesting that the seeking of initial funding from the family only occurs when entrepreneurs expect lower transaction costs and lower levels

of family interference in the business. In the fear of family interference Chinese entrepreneurs tend to seek initial capital from friends rather from their family.

In contrast, availability of external informal finance in Russia is much lower (between one-two per cent prevalence rate). A number of other transition countries in our sample are characterised by similar lower level of supply of informal finance, including Croatia and Poland. Poland experienced a boom in entrepreneurship in early 1990s, but these, to a significant extent, were low-capital intensive ventures, taking advantage of market gaps inherited from the command economy sector. Later on, financial constraints were likely to be one of the factors that led to the lower rates of entrepreneurial entry.

Our results also suggest that personal wealth emerges as a significant predictor of the use of both internal and external finance and the overall financial scale of the project, implying that wealthier people are more likely to start larger ventures. Our findings conform to Evans and Jovanovic's (1989) argument that liquidity constraints are binding. Entrepreneurs' growth aspirations and ownership structure (more than one business partner) appear among other statistically significant predictors of the use and size of external financing. Entrepreneurs' socio-economic characteristics, such as age and gender emerge consistently as strong predictors of the characteristics of a start-up financing. Age exhibits a non-linear relationship with the use of external finance, suggesting that while young entrepreneurs are more likely to rely more on external funds to launch their business, the use of external funding declines with age as individuals tend to accumulate savings to be invested into the business. However, beyond a certain age point this pattern is reversed with more mature entrepreneurs becoming larger users of external financing. By that time they are likely to have some established reputation with their bank that may ease up their access to credit.

Males are more likely to use external finance, as well as to go for larger projects and are more likely to invest their own money. This finding extends some previous studies of the role of gender in entrepreneurship (Minitti *et al.* 2005, Aidis *et al.* 2007).

Overall however, our results on personal characteristics contrast to some extent with Cassar's (2003) findings, suggesting that entrepreneurial individual characteristics, such as education, experience and gender, don't exert a significant effect upon start-up financing when firm characteristics are taken into consideration.

Last but not least, an opportunity motive and being a business angel in the past appear to be strongly and positively associated with the overall financial size of the project. The effect of risk attitude seems to be not robust, being picked up only in our probit estimation.

Unlike our expectations, we fail to find any significant effects of entrepreneurial embeddeness in social networks and of the role models on the startup financial characteristics.

Though variation in industrial structure is found to be significant in explaining entrepreneurship entry (Johnson 2004) and industrial controls are commonly utilised in examining entrepreneurs' financial preferences (Cassar 2003), we failed to find any significant effects of the sector of entry in our research (results available on request). We also fail to find any robust effects of our two macroeconomic control variables.

Finally, as an additional robustness check, Tables Seven-Eight report the results of probit regressions for various sources of external financing. We find that a wider formal financial sector is negatively correlated with the choice of external funding (both institutional and individual); that reiterates our earlier argument on significance of the formal financial sector for the personal capital accumulation. Strong property rights are more conducive to the use of institutional finance. Finally, growth aspirations, personal wealth and presence of co-owners emerge as significant predictors of the use of informal finance.

5. Conclusions

Our key results may be summarized as follows.

Consistent with the literature we see the protection of property rights as the core of any institutional environment. It is the main factor affecting the presence and volume of external finance for new ventures and as a result also the main driver of the overall volume of finance used for a start-up.

The only type of external finance that does not respond to the variation in property rights system is finance from family and relatives (Table Eight). That is to some extent, the formal legal structure and practice may be substituted with informal institutions and relational capital. China seems to be a good example here.

In sharp contrast, poor protection of property rights discourages both non-family individuals and institutional providers of finance (including banks) to provide funds to new entrepreneurial ventures.

Our second set of results relate to the characteristics of the financial sector. The financial sector development is only partly correlated with the basic protection of property rights, as it links more with the features of 'contracting institutions', using a terminology introduced by Acemoglu and Johnson (2005). Therefore, its impact may be considered on its own. Our findings suggest that the large financial sector plays an

important role mainly via providing opportunities for the accumulation of personal finance for the potential entrepreneurial projects.

Regarding financial regulation, we found that both regimes which are under-regulated, and, even more, those that are over-restrictive discourage finance for start-ups, which is by its nature risky and demanding. Underregulated regimes may be associated with monopolistic practices in the banking sector and insufficient competition. In turn, overregulated regimes may drive banks away from more risky projects, which include start-ups, or benefit incumbent firms in countries where the level of corruption is high.

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Figure 1: GEM Classification of Nascent Entrepreneurial Activity (Startups)

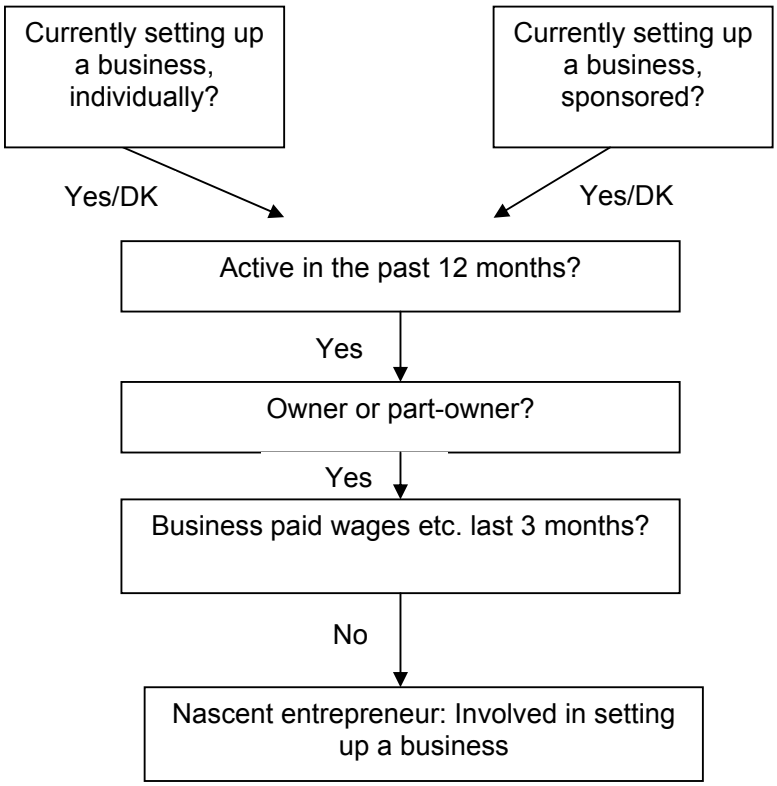
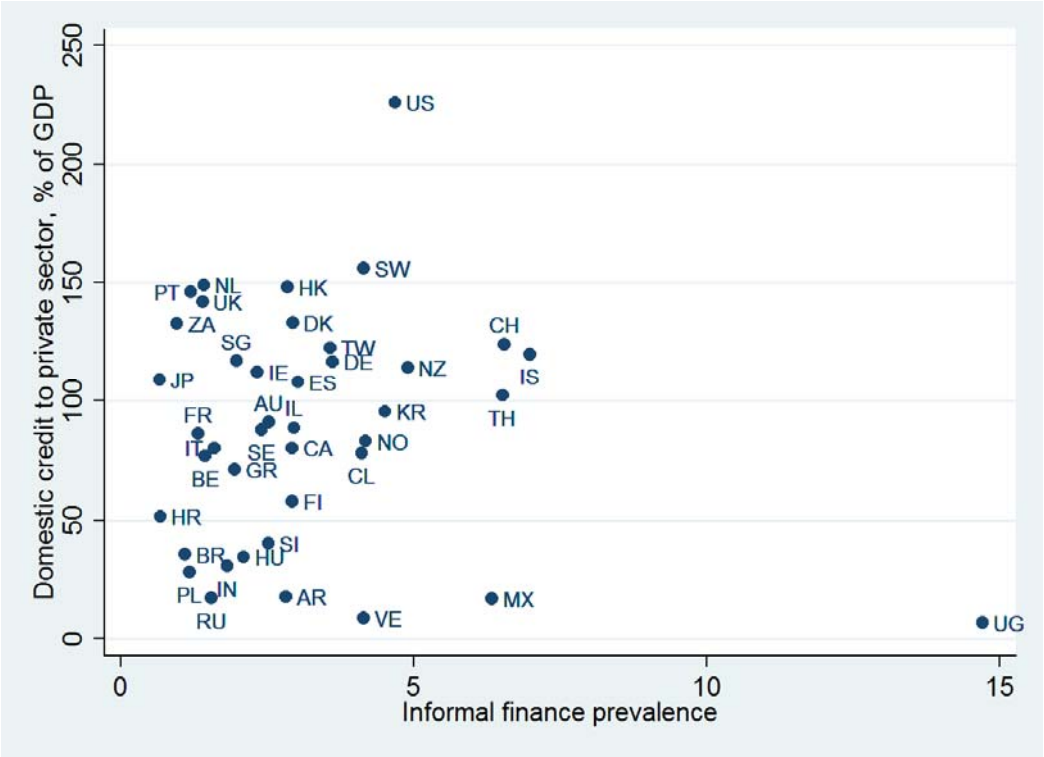


Figure 2: The Availability of the Formal *vis-a-vis* Informal Finance: a Cross-Country Comparison[20]



Source: GEM 1998-2003

Note: The rate of informal finance prevalence is derived as the average percentage of respondents who invested in someone else's start-up in the past three years in each country sub-sample.

Source: GEM 1998-2003

[20] Country abbreviations should be read as follows. AR –Argentina, AU –Australia, BE-Belgium, BR – Brazil, CA – Canada, CH – China, CL – Chile, DE – Germany, DK – Denmark, ES- Spain, FI – Finland, FR – France, GR – Greece, HK – Hong Kong, HR – Croatia, HU – Hungary, IE- Ireland, IL – Israel, IN – India, IS- Island, IT – Italy, JP – Japan, KR – South Korea, MX – Mexico, NL – Netherlands, NO – Norway, NZ – New Zealand, PL – Poland, PT – Portugal, RU – Russia, SE – Sweden, SG – Singapore, SI – Slovenia, SW – Switzerland, TH – Thailand, TW – Taiwan, UG – Uganda, UK - United Kingdom, US-United States, VE – Venezuela, ZA – South Africa.

Table 1: Descriptive statistics and definitions of explanatory variables

Variable	Definition	Mean	S.D.	No of obs	Available for years
Business environment variables:					
Property rights	Heritage Foundation 'Property Rights' index, transformed in odds [Index/(100-Index)]; higher value denotes stronger property rights	6.46	3.55	358,278	1998-2003
Formal finance as % of GDP	Ratio of credit to private sector to GDP (WB WDI)	108.6	49.05	358,278	1998-2003
Informal finance prevalence	Informal investors prevalence	2.67	1.68	358,278	1998-2003
Business constraints	Heritage Foundation 'Business Freedom' index, transformed into odds [(100- Index)/Index]; higher value denotes higher entry barriers	0.33	.20	358,278	1998-2003
Financial restrictions	Transformed Heritage Foundation 'Financial Freedom' index, transformed in odds [(100-FFI)/FFI]	.62	.55	358,278	1998-2003
Financial restrictions squared	Financial restrictions squared			358,278	1998-2003
Personal characteristics:					
Male	1=male, zero otherwise	.47	.50	358,275	1998-2003
Age	The exact age of the respondent at time of interview	43.87	17.00	326,487	1998; 2000-2003
Age squared	Age squared			326,487	
Employment	1=respondent is either in full or part time employment, 0 if not	.58	.49	317,649	1999-2003
Post-secondary & higher education	1=respondent has a post secondary or higher education attainment, 0 otherwise	.65	.48	347,746	1999-2003
Higher education	1=respondent has a higher education attainment	.29	.46	347,746	1999-2003
Current owner of business	1=current owner/manager of business, 0 otherwise	.05	.22	342839	2000-2003
Business angel	1=business angel in past three years, 0 otherwise	.03	.16	357,773	1998-2003
Fear of failure	1=respondent believes that the fear of failure	.31	.46	299,674	2000-

	would not prevent him/her from starting a business, 0 otherwise				2003
Knows other entrepreneurs	1=personally knows entrepreneurs in past two years, zero if not	.33	.47	299,682	2000-2003
Opportunity motivation	1=nascent entrepreneur is driven by an opportunity motive, zero otherwise	.75	.43	10,081	2002-2003
High personal income	1=respondent has high income, zero otherwise	.29	.45	232,960	1999-2003
More than one owner	1=start-up has more than one owner, zero otherwise	.44	.50	18,828	2000-2003
Growth Aspirations	1=start-up expects to create more than one job in 5 yrs	.54	.50	20,621	1999-2003
Measures of macroeconomic development					
GDP per capita	GDP per capita at purchasing power parity, constant at 2000 $USD (WB WDI 2008)	23,158.79	8,310.30	358,278	1998-2003
GDP growth	Annual GDP growth rate (WB WDI 2008)	2.52	2.54	358,278	1998-2003

Source: GEM 1998-2003 unless specified otherwise

Table 2: Descriptive statistics and definitions of dependent variables

Variable	Definition	Mean	S.D.	No of obs	Available for years
Nascent entrepreneurship	1=respondent is engaged in startup activity, zero if not	.034	.18	342,839	2000-2003
External finance	1=startup turns to external finance	.53	.50	6,600	2002-2003
Share of external funds	Share of external funds in total startup funds	.33	.35	6,600	2002-2003
Own funds	Volume of own funds scaled down by GDP pc	37.96	872.36	6,903	2002-2003
Total funds	Volume of total funds scaled down by GDP pc	51.43	804.67	7432	2002-2003
Individuals' funding	1=startup received external funding from individuals (friends, colleagues and family), 0 otherwise	.61	.49	5,588	2003
Institutional funding	1=startup received external institutional funding, inc. bank	.44	.50	5,588	2003

	finance, 0 otherwise				
External funding outside family	1= startup received money outside family (individuals who are not relatives & institutions), 0 otherwise	.71	.45	5,588	2003

Source: GEM 1998-2003 unless specified otherwise

Table 3: Correlation matrix for institutional and macroeconomic variables

	Property rights	Business constraints	Formal finance as % of GDP	Informal finance prevalence	Financial regulation	GDP per capita	GDP growth
Property rights	1.00						
Business constraints	-.59	1.00					
Formal finance as % of GDP	.52	-.49	1.00				
Informal finance prevalence	.12	.12	.12	1.00			
Financial restrictions	-.55	.71	-.49	.16	1.00		
GDP per capita	.76	-.61	.60	.04	-.62	1.00	
GDP growth	-.10	.05	-.00	.12	.23	-.15	1.00

Source: GEM 1998-2003

Table 4: Probit estimation results and marginal effects

dependent: **Use of External finance**	**probit results**		**probit marginal effects**	
	Coef.	Robust Std. Err.	Coef.	Robust Std. Err.
Age	**-0.027**[a]	0.008	-0.011[a]	0.003
Age squared	**0.000**[b]	0.000	0.000[a]	0.000
Male	**0.120**[b]	0.051	**0.048**[b]	0.020
Employment	0.060	0.069	0.024	0.027
Post-secondary & higher education	**-0.146**[d]	0.086	-0.058	0.034
Higher education	0.009	0.057	0.003	0.023
Current owner of business	0.110	0.106	0.043	0.041
Business angel	-0.011	0.081	-0.004	0.032
Fear of failure	**0.126**[d]	0.071	**0.049**[d]	0.028
Knows other entrepreneur	0.110	0.805	0.043	0.032
Opportunity motivation	-0.051	0.062	-0.020	0.024
High personal income	**0.116**[c]	0.052	**0.046**[c]	0.020
More than one owner	**0.951**[a]	0.084	**0.364**[a]	0.030
Growth Aspirations	**0.389**[a]	0.069	**0.154**[a]	0.027
Informal finance prevalence	**0.052**[b]	0.021	**0.021**[a]	0.008
Formal finance/GDP	**-0.001**[d]	0.001	**-0.001**[d]	0.000
Financial restrictions	**0.603**[c]	0.218	**0.239**[b]	0.087
Financial restrictions squared	**-0.255**[b]	0.081	**-0.101**[b]	0.002
Property rights	**0.073**[a]	0.016	**0.029**[a]	0.006
GDP per capita	-0.013	0.012	-0.005	0.005
GDP growth	1.63E-06	4.79E-06	6.46E-07	1.90E-06
Constant	-0.867	0.280		
Number of obs	3019		3019	
Wald chi2 (21)	596.93		596.93	
Pseudo R2	0.154		.154	

Note: [a] significant at 0.001; [b] significant at 0.01; [c] significant at 0.05;[d] significant at 0.1. For non-linear variables, including Age and Financial restrictions, marginal effects are different from the ones reported in the table. For further discussion of marginal effects for Financial restrictions see section 4.

Table 5: Tobit estimation results

Explanatory variables	**Share of external funds**	
	Coef.	Robust Std. Err.
Age	**-0.010**[a]	0.003
Age squared	**0.000**[b]	0.000
Male	**0.074**[b]	0.024
Employment	0.025	0.033
Post-secondary & higher education	-0.055	0.039
Higher education	0.008	0.024
Current owner of business	0.053	0.048
Business angel	0.003	0.030
Fear of failure	0.040	0.029
Knows other entrepreneur	0.040	0.038
Opportunity motivation	-0.027	0.026
High personal income	**0.042**[d]	0.023
More than one owner	**0.418**[a]	0.039
Growth aspirations	**0.203**[a]	0.035
Informal finance prevalence	**0.025**[a]	0.007
Formal finance/GDP	**-0.001**[d]	0.000
Financial restrictions	**0.230**[c]	0.089
Financial restrictions squared	**-0.102**[b]	0.036
Property rights	**0.029**[a]	0.008
GDP per capita	-0.004	0.006
GDP growth	2.85e-06	2.14e-06
Constant	-0.398	0.105
Number of left-censored obs	1399	
Number of uncensored obs.	1620	
Sigma	0.521	.024
F (21, 2998)	35.79	
Pseudo R2	0.126	

Note: [a] significant at 0.001; [b] significant at 0.01; [c] significant at 0.05;[d] significant at 0.1

Table 6: Robust regression results

Explanatory variables	**Total funds**		**Own funds**	
	Coef.	Robust Std. Err.	Coef.	Robust Std. Err.
Age	**0.018**[a]	0.008	**0.013**[a]	0.004
Age squared	**-0.000**[d]	0.000	**-0.000**[c]	0.000
Male	**0.245**[a]	0.043	**0.120**[a]	0.023
Employment	0.067	0.052	0.039	0.028
Post-secondary & higher education	-0.048	0.057	0.038	0.024
Higher education	-0.049	0.046	**-0.063**[b]	0.024
Current owner of business	0.050	0.073	0.016	0.038
Business angel	**0.327**[a]	0.064	**0.127**[a]	0.034
Fear of failure	-0.046	0.062	-0.026	0.033
Knows other entrepreneur	0.055	0.044	**0.040**[d]	0.023
Opportunity motivation	**0.146**[b]	0.051	**0.096**[a]	0.027
High personal income	**0.184**[a]	0.042	**0.075**[a]	0.022
More than one owner	**0.184**[a]	0.040	0.035	0.021
Growth Aspirations	**0.422**[a]	0.061	**0.194**[a]	0.033
Informal finance prevalence	-0.007	0.009	**-0.012**[b]	0.005
Formal finance/GDP	**0.001**[d]	0.001	**0.001**[b]	0.000
Financial restrictions	**0.410**[b]	0.133	**0.129**[d]	0.071
Financial restrictions squared	-0.039	0.057	-0.005	0.030
Property rights	**0.033**[a]	0.009	0.007	0.005
GDP per capita	0.005	0.009	0.005	0.004
GDP growth	-0.000	4.17e-06	**-0.000**[a]	2.24e-06
Constant	-0.589	0.202	-0.235	0.106
Number of obs	3280		3130	
F st.	17.19		13.41	

Note: [a] significant at 0.001; [b] significant at 0.01; [c] significant at 0.05;[d] significant at 0.1

Table 7: Bivariate probit regression results

Explanatory variables	Individuals' funding		Institutional finance	
	Coef.	Robust Std. Err.	Coef.	Robust Std. Err.
Age	-0.021	0.014	-0.001	0.011
Age squared	0.000	0.000	0.000	0.000
Male	0.113	0.077	**0.193**[b]	0.066
Employment	0.041	0.086	-0.035	0.082
Post-secondary & higher education	-0.001	0.096	**0.212**[b]	0.073
Current owner of business	-0.111	0.102	-0.048	0.084
Business angel	-0.014	0.091	0.032	0.076
Knows other entrepreneur	0.058	0.076	0.035	0.064
Opportunity motivation	-0.019	0.053	0.013	0.081
High personal income	**0.116**[d]	0.060	-0.087	0.071
More than one owner	**0.270**[b]	0.092	-0.010	0.055
Growth aspirations	**0.253**[b]	0.084	0.095	0.093
Property rights	-0.259	0.191	**0.512**[b]	0.163
Formal finance/GDP	**0.003**[d]	0.001	**-0.003**[b]	0.001
Informal finance prevalence	0.011	0.014	-0.025	0.019
GDP growth	0.014	0.029	0.015	0.032
Constant	0.175	0.344	-0.429	0.328
Number of obs	2299			
Wald chi2 (32)	1280.7 P-value=0.000			

Note: [a] significant at 0.001; [b] significant at 0.01; [c] significant at 0.05;[d] significant at 0.1

Table 8: Probit marginal effects: types of external financing

Explanatory variables	**Institutional finance**		**External funding outside family**	
	Coef.	Robust Std. Err.	Coef.	Robust Std. Err.
Age	-0.000	0.004	0.002	0.005
Age squared	0.000	0.000	-0.000	0.000
Male	**0.077**[b]	0.026	**0.143**[a]	0.022
Employment	-0.014	0.033	-0.006	0.032
Post-secondary & higher education	**0.083**[b]	0.029	**0.078**[c]	0.033
Current owner of business	-0.018	0.033	-0.002	0.301
Business angel	0.013	0.030	0.000	0.022
Knows other entrepreneur	0.014	0.025	0.015	0.019
Opportunity motivation	0.006	0.032	0.004	0.033
High personal income	-0.034	0.028	0.026	0.019
More than one owner	-0.004	0.022	**0.087**[b]	0.002
Growth aspirations	0.037	0.037	**0.103**[b]	0.040
Property rights	**0.199**[b]	0.060	**0.138**[c]	0.062
Formal finance/GDP	**-0.001**[b]	0.000	0.000	0.000
Informal finance prevalence	-0.010	0.008	-0.001	0.007
GDP growth	0.006	0.013	**0.018**[d]	0.010
No. of obs	2299		2299	
Wald chi2	42.80		218.48	
Pseudo R2	0.030		0.094	

Note: [a] significant at 0.001; [b] significant at 0.01; [c] significant at 0.05;[d] significant at 0.1

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