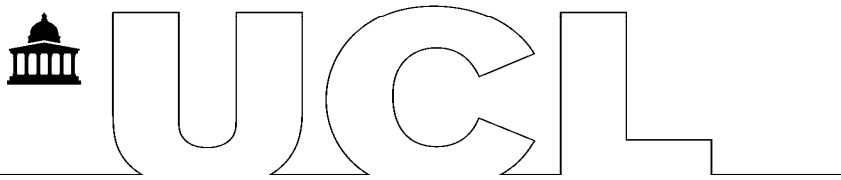

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Institutional Environment, Innovative Entrepreneurial Entry and Venture Capital Financing

Gian Fazio[a] and Tomasz Mickiewicz[b]

[a] University College London, UK
[b] University College London, UK, email: t.mickiewicz@ucl.ac.uk

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Centre for Comparative Economics
UCL School of Slavonic and East European Studies
Gower Street, London, WC1E 6BT
Tel: +44 (0)20 7679 8519
Fax: +44 (0)20 7679 8777
Email: cce@ssees.ucl.ac.uk

Institutional Environment, Innovative Entrepreneurial Entry and Venture Capital Financing

Gian Fazio* and Tomasz Mickiewicz*,**

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We analyse the determinants of high growth expectations entrepreneurial entry (HGE) using individual data drawn on working age population, based on the Global Entrepreneurship Monitor (GEM) surveys for the 1998-2004 period. Individual level explanatory variables are combined with country-level factors. Our results suggest that availability of venture capital and intellectual proper rights protection are strong predictors of HGE. In addition, we also find that innovative start-ups are associated with highest growth expectations in countries with extensive supply of venture capital and strongest intellectual property rights. Once we introduce venture capital, we detect no significant effects of other elements of financial systems on high-powered entry.

Keywords: start-ups, innovation, venture capital, intellectual property, GEM

* University College London, UK
** Corresponding author: t.mickiewicz@ucl.ac.uk

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1. Entrepreneurial entry and innovation

The figure of entrepreneur is difficult to stereotype and various strands of economic literature have, over the years, emphasised its different aspects (Ricketts, 2006). Wennekers and Thurik (1999) highlight three main definitional schools: the (neo-) classical that describes the entrepreneur as an agent driving markets towards their equilibria; the Austrian school that sees him/her as someone able to combine resources to address inefficiencies and to target gaps in the markets; and, the Schumpeterian/German school, which sees the entrepreneur as a de-stabilising force – a destructive creator.

This paper is particularly concerned with the innovation aspect of the entrepreneurial entry and this motivates our choice of theoretical framework of reference. Our key research question is to investigate to which extent the transformation of innovative entry into high growth aspirations is conditioned by two key factors in the institutional environment: availability of venture capital and protection of intellectual property rights.

However unlike the Schumpeterian tradition, we focus on incremental, low level, small scale process of innovating (Ricketts, 2006) based on widely dispersed knowledge as represented by a mass of individual entrepreneurs. Accordingly, we draw on the Austrian school. Among its founders, Hayek (1948) emphasised the knowledge utilisation role played by the entrepreneur. Mises (1966) differentiated entrepreneurs from other individuals is their ability to develop, and to act on predictions about the future. Generally, alertness is what characterises the entrepreneurial endeavour and it cannot be bought: it is a tacit resource, which may be seen as costless - since this type of alertness effectively means following 'hunches' which don't have clearly defined opportunity costs (Harper, 2003). Within this approach the element of novelty is acknowledged since entrepreneurial alertness goes beyond the agents' usual optimisation process, often encountered in neoclassical economic modelling, and it implies the identification of the new and also adoption of new objectives – as opposed to referring to the allocation of given means to achieve given ends (Harper, 2003). Yet for Kizner (1992, 1997) innovation represents only one type of entrepreneurial alertness, the others being arbitrage and speculation.

While his emphasis on discontinuity has been questioned on empirical grounds it is still Schumpeter who accentuates the strong linkages between entrepreneurship and innovation and sees the two to be indivisible as the former always requires some degree of the latter (Schumpeter, 1934; Ricketts, 2006). Similarly, Drucker (1994) highlights innovation as the activity specific to entrepreneurship. However, this approach may be interpreted in two ways. When seen in a broad sense it attributes innovativeness to any entrepreneurial venture. When a narrow sense applies, we see as entrepreneurial only those new ventures, where specifically defined element of innovativeness can be recognised. The latter definition is more restrictive than the one discussed above as it specifically requires for the entrepreneur to be also an innovator in some identifiable sense.

Accordingly, a focal point of this paper is to highlight distinction between the innovative entrepreneurial entry and a non-innovative entry, and to demonstrate that it is the former that links with more dynamic outcomes.

In addition, these two types of entrepreneurship link with finance in a different way, as innovative entry is likely to come with a risk premium (since the expected outcome of innovating may be more difficult to assess that that of imitating). In this sense while, unlike Shumpeter, our interpretation of entrepreneurial endeavour embraces the risk element, it is also focused on the Schumpeterian (innovative) role played by entrepreneurs. Accordingly, where we depart from the Schumpeterian approach, is in that the latter does not emphasize the uncertainty aspect of being an entrepreneur and underplays the role of the entrepreneur as a 'risk-handler'. The intrinsic connection between entrepreneurship and bearing risks was

recognised as early as Cantillon and it has been considerably developed by the neo-classical school (Parker, 2004). In particular, Knight (1921) differentiates between risk and uncertainty. Parallel to this, the risk element attached to the decision of becoming an entrepreneur can be broken-down into two separate elements: an objective and a subjective one. The amount of risk faced, both objective and subjective, plays a role in determining entrepreneurial decisions (Arenius and Minniti, 2005; Parker 2003). However, where, as in innovative projects, the proportion of uncertainty (subjective element) to (objective, measurable) risk is high it may be difficult to attract external finance and secure resources to transform the new projects into high-growth ventures. It is here that some specific forms of finance, venture capital in particular, may play critical role; these types of finance may be seen either as translating uncertainty into objective risk or more accurately as sharing some entrepreneurial roles with the founder of new business based on more tacit elements of knowledge corresponding to uncertainty Moreover, venture capital type of finance implies a more elaborate form of financial transaction, which protects not only the financier but also the entrepreneur against expropriation of his/her tacit knowledge. Under conditions where the relation with the financier is no longer arm-length, the latter becomes to some extent a co-entrepreneur with higher level of involvement in the new venture. The design of venture capital relationship solves two problems. The financial contract guarantees better access of financier to the tacit knowledge pool of entrepreneur but also protects the interests of the latter. The more complex, closer and longer term nature of the relationship requires both formal contract and trust based on specific reputation of VC firm to safeguard the entrepreneur's knowledge-related assets.

Yet the issue of protection of gains from new knowledge extends beyond the availability of a specific type of financial contract. Once innovative elements of the new venture are implemented, protection of new knowledge becomes critical for the entrepreneur. This makes the security of intellectual property rights essential: if it is weak, incentives to expand new innovative businesses are also weaker.

Our analysis refers to innovative ventures which are new whether they are also creating new markets or entering existing ones (Davidsson, 2003). In contrast, some authors (see, for instance, Gartner 1988) believe that the creation of new organisations is synonymous with entrepreneurship, in which case within the set of new firms, the line distinguishing innovative and imitative ventures is blurred.

Existing businesses face a very different obstacle from new entrants when trying to innovate: since while the former will have to break down, at least to some extent, an existing structure, the latter may design and implement a structure within which innovation can be delivered more easily (Drucker, 1994). More generally, Acs (2006) provides an overview of empirical findings and concludes that new firm creation is a key link between knowledge creation and its commercialisation, in particular when this knowledge is not yet well shaped. This motivates our focus on entrepreneurial entry.

Yet innovative element in entrepreneurial entry presents additional difficulties. For Amason et al. (2006) one of the main differences between “imitators” and “innovators” start-ups is that the latter will have to be both new and different simultaneously. Again, this clearly makes their businesses more risky as management cannot simply emulate competitors but have to learn from its own mistakes.

Seen in the dynamic context of entry, various definitions of entrepreneurship discussed are not mutually exclusive and traits of each are likely to coexist within all entrepreneurs. In particular, Noooteboom (1993) suggests that the inception stage of an enterprise is Schumpeterian in nature, while its execution is more Austrian. This two-phased approach is also supported by Shane and Venkataraman (2000) who see entrepreneurship as

made up of two processes: discovery and exploitation. Following this approach, the dataset used in this paper refers to start-ups, which are in between the two processes and could be described as being in a post-discovery but pre-exploitation phase of development.

It is also in this early stage of development, that one is first able to distinguish between the high growth oriented and non-high growth oriented entrepreneurship. It has been shown that it is a relatively small number of enterprises which are responsible for the majority of job creation. Hence we differentiate between "normal" and High Growth Aspiration Entrepreneurship (HGE).

An additional novel aspect of our work is that the existing research on innovation is based on surveys that exclude micro-firms (e.g.: community innovation surveys); in contrast, we are able to capture the whole size spectrum of the entrepreneurial entry.

To summarize, this paper combines focus on innovative entry with the cross-country heterogeneity in the financial and institutional environment to ask how those interact to shape growth aspirations of entrepreneurs. This is where we aim to fill a gap in the literature. In particular, it has been highlighted that demonstrating empirically a casual link between innovation and venture capital and employment growth is a challenging task (Gompers and Lerner, 2001; Jeng and Wells, 1998).

The remainder of the paper is structured as follows: In Section 2 we review the relevant literature and design our hypotheses; Section 3 introduces the dataset and empirical model; Section 4 reports the results of our analysis, and Section 5 concludes.

2. Innovation, Venture Capital and Growth

In recent times, there has been considerable interest from policy makers regarding the role of small, innovative, young firms. This corresponds to the main questions addressed by this paper: is there a link between being innovative and having high growth aspirations entry (HGE)? And how this relationship is moderated by the nature of financial and institutional environment faced by new ventures?

We start with hypothesizing a positive relationship between HGE and innovation. We believe that there are two main mechanisms through which this may take place.

Firstly, the proposed link between innovation and growth aspirations is a reflection of the general maxim that higher rewards imply riskier ventures. The launch of a new product invariably involves an additional element of risk, which is difficult to spread. While imitating is simply a numbers' game (offering an existing good at a lower price), introducing something new comes with an increased risk element. This is why established firms only tend to dedicate a certain amount of resources to the development of new products. Innovation risks are offset by the profits which the firm can internalise from the introduction of those products/processes which prove to be profitable. For the investment in R&D to be a successful strategy, these profits have to be higher than the returns offered by existing products as they will also have to cover for failed attempts. In other words, a fundamental difference between the process of innovation in newly created and established enterprises is that: in large firms R&D departments are able to experiment and to afford a certain failure rate while in innovative start-ups investors may be putting all their eggs in one basket.

In our dataset, respondents involved in start-up activities are asked about their expectations but, at this stage, we do not know how many will fail: expectations of entrepreneurs who believe they will experience high growth are based on their subjective assessment of risks associated with their ideas. This ex-ante approach is very different from the ex-post analysis usually conducted regarding firms' growth. Nevertheless, if high growth

gazelles are critical for the wider benefits of entrepreneurship to materialise, the first step to achieve that is to create conditions where the numbers of high aspiration entrepreneurs are higher. That in turn justifies focus on high growth aspiration entrepreneurship.

Secondly, the link between growth and innovativeness results from the fact that innovators may be creating new markets and could enjoy periods of substantial market power given lack of competitors (especially if intellectual property protection is strong and entry involves new patents being registered). More mature markets, on the other hand, are characterised by the presence of established suppliers and may exhibit more modest growth rates. One explanation of this may be that start-ups concentrate on innovating in less crowded technological fields (Ameida and Kogut, 1997).

Thirdly, under more developed financial systems, innovative entrepreneurs are likely to attract amount of financing necessary for further expansion, in particular in the form of venture capital. It is important to emphasise that while supply of venture capital is unlikely to affect entrepreneurs directly as early as at the time of their start-up, it creates powerful incentives based on subjective expectations. In particular, being aware of venture capital availability, the entrepreneurs may choose "just do it strategy" instead of a more gradual "wait and see strategy". That is, they will use their own resources to achieve some "intermediate milestone" that would enable them to contact outside investors successfully. In contrast, where supply of venture capital is weak, "wait and see" strategy of gradual build-up is more likely (Schwienbacher, 2007).

We consider those three issues in more detail below.

2.1. Innovation and growth aspirations

Given our focus on growth aspirations, the ongoing debate on what the determinants of a firm's growth rate are has also implications for our research. In particular, while Gibrat's Law states that a firm's size and its growth are independent, several studies have advocated the opposite, and a strong consensus has not still emerged (Mata, 1994). If one assumes that there is a strong correlation between age and size, then this debate becomes relevant for our research since, given that all entrepreneurs interviewed are "nascent", one may (or may not) expect then to have similar (or different) growth expectations depending on one's position with respect to Gibrat's Law. Therefore, large dispersion in growth expectations at a starting point may itself is taken as evidence against a strong link between the size of the venture and its growth. Where our research converges with a criticism of Gibrat's law is to stress the role of innovation as something which, in itself, shifts firms' size distribution (Ameida and Kogut, 1997). This is echoed by Cefis and Marsili (2004) who find, for a sample of Dutch firms that, even after accounting for age and size, firms seems to benefit from an innovation premium which increases their life expectancy.

Finally, the relationship between innovation and growth is ultimately reflected in cross-country studies where an economy's rate of growth can be explained by innovation; the latter becomes more important for countries which are closer to the technological frontier (Acemoglu et al., 2006), and those are the countries we focus on in our study (high middle income and high income economies) . Accordingly, the link between innovation observed at a venture level and growth aspirations that we will focus on represents one of the microeconomic foundations for the link between innovation and economic growth.

H1: Owners-managers (entrepreneurs) of innovative start-up have higher growth expectations than other entrepreneurs.

2.2. Supply of venture capital and growth aspirations

A crucial aspect of innovative entry concerns the way the new ventures are financed. When an external agent finances any nascent enterprise, a fundamental issues of information asymmetry emerges. Yet this is even more pronounced in cases of innovative entry. As put by Junkunc (2007): "In the context of breakthrough innovation the asymmetric information problem becomes more akin to asymmetric knowledge, since even with full information typical individuals will be unable to evaluate the ramifications of the disruptive breakthrough." So our second research question is: how the set of financial opportunities available to the innovative entrepreneur affects his/her growth strategy? A basic distinction can be drawn between self-finance and externally funded enterprises. The second group is usually broken down further into: family, friends, venture capitalists (VCs) and business angels. Even this distinction may be too restrictive as it is debatable whether Kirzner's entrepreneurial alertness can be marketed since "to hire 'an entrepreneur' is to be an entrepreneur" (Harper, 2003): to some extent, venture capitalists become themselves part of the entrepreneurial effort.

Zider (1998) argues that VCs essentially fulfils a funding gap which is created out of a particular situation. The typical entrepreneur that may be attractive to a VC is someone who has a good idea and skills but a lack of hard assets to offer as collaterals and whose performance is difficult to assess (Gompers and Lerner, 2001). The levels of risk associated with this type of potential debtor are so high that normal approaches to risk calculations would mean charging interest rates above the limits set by usury laws. VCs, equipped with specialised expertise, are happy to step in and fill this gap by typically expecting ten folds returns over just five years (or a 58% annual interest rate with no early repayment options) for successful projects (Cumming, 2006).

Thus, being innovative and new simultaneously is likely to have financial implications for the enterprise. We hypothesise innovative endeavours to be generally more expensive for two reasons, since: firstly, they are likely to involve additional sunk costs (for instance because of the additional research required) and, secondly, as mentioned, the uncertainty associated with the project will attract a higher risk premium making innovative investments more expensive than imitative ones. These higher costs are likely to require external founding. Hellman and Puri (2000) show that start-ups which are innovating are more likely to receive capital from VCs. The authors differentiate between imitators and innovators and find that the latter are more likely to receive VC financing.

The mechanism through which VC involvement can benefit emerging companies goes beyond the purely financial contribution made. As widely recognised, VCs also provide insight and experience of the specific industry in question to the CEO of the new firm which, it has been shown, can in itself add value and promote growth. In particular, VC involvement affects firms' performance through the various stages of development of the project. Firstly, because of the pre-investment screening process and, subsequently, through monitoring and value adding (Berger and Udell, 1998 and Gompers and Lerner, 1999). For instance, Manigart et al. (1996) show that while the level of experience of VCs does not seem to have a clear relationship with value added, they show that VCs' experience of the start up's industry is positively associated with value added.

Moreover, the employment growth and firms' financing issues are closely related. Belke et al. (2003) use OECD country data for the 1986-1999 period and find that even controlling for institutional variables and labour and capital market characteristics, the presence of venture capital has a positive impact on employment growth. Yet on the other hand, for Belgium, Manigart and Hyfte (1999) finds that although VC results in higher cash

flows and total assets it does not seem to be associated with increases in employment growth compared to firms operating in the same sector and of similar size. Similarly, using questionnaire data from 500 British and German firms, Buergel et al. (2000) find that VC financing does not result in higher levels of turnover or employment growth. These inconsistencies in empirical results may, at least in part, be a result of the adoption of inappropriate estimation techniques. Firm level studies on VC and firms' performance often compare VC backed enterprises against non-VC ones. However, as highlighted by Engel (2002) this often results in biased results as a few important firms characteristics may determine which firms VCs select. He therefore adapts selection approach to a bivariate probit setting and finds that German firms with external non-VC investors achieve 50 per cent higher employment growth and that VC involvement results in a striking 170 per cent increase in the same growth rate.

While our approach is akin to this literature, we introduce a novel angle. We focus on the link between aggregate VC supply at a macro level and growth aspirations of an individual entrepreneur, with adequate controls. The key intuition behind our approach is that while in a start-up phase it is unlikely that an innovative entrepreneur may already secure VC-type funding, availability of such funding in the economy will encourage the entrepreneurs to form high growth aspirations, as they may expect to realise higher profit by not being constrained financially in the latter stage of their projects, when it will be appropriate to seek VC finance. This is consistent with the formal model presented by Schwienbacher (2007): in an environment where VC is available, the new entrepreneurs will aim to reach "intermediate milestone" enabling them to contact financiers; accordingly, initially they will rely on their own resources to engage in a more rapid expansion, following the "just do it" strategy.

H2a: Higher availability of VC will result in HGE.
H2b: This effect will be stronger for innovative ventures.

2.3 The institutional landscape and high-aspiration entry

New institutional economics (Williamson, 1985; 2000) suggests that institutions shape the behaviour of agents. North (1990), similarly, places great importance on the macro-level environmental characteristics:

> *"Discovering markets, evaluating markets and techniques, and managing employees do not occur in a vacuum […] The kinds of information and knowledge required by the entrepreneur are in good part a consequence of a particular institutional context."*

The actions of individuals are to be inscribed within the environment. This is why, innovation and entrepreneurship have been described as forming part of a country's, culture. For instance, some researchers advocate that entrepreneurship and innovation may be determined, at least to some extent, by the level of individualism in a society (Morris, et al. 1993). This dovetails with the various definition of entrepreneurship described above; for instance, Kirzner's concept of entrepreneurial alertness describes a process taking place mainly at the person level, since it is the individual who recognises and exploits specific opportunities. Shane (1993) found that individuals-oriented societies innovate more than group-oriented concluding that "autonomy, independence and freedom" determine a country's level of innovation. In turn, the realm of culture affects country's formal institutional landscape, which may or may not be conducive to innovation (e.g. tax regimes,

public support for private research initiatives). Hessels et al. (2007), for instance, show that the level of social security has a negative effect on the supply of HGE (which they refer to as ambitious entrepreneurship).

Empirical evidence on the link between institutions and HGE is provided by Estrin et al. (2009). However, the authors do not consider the link between the high growth aspirations and innovativeness of the new ventures. The latter is the novel element of our research. Consistent with this we intend to focus on the aspect of the institutional environment that may be most conducive to a successful expansion of an innovative entry, namely protection of the intellectual property rights. The macroeconomic link between growth and intellectual property protection has been established by Gould and Gruben (1996), who also noticed that innovation is likely to be an intermediating channel. However, our contribution is to explore micro-foundations of this relationship. Accordingly, we expect that:

H3a: Intellectual property protection is important for HGE.
H3b: Its effect on HGE is stronger for innovative entrants.

2.4 Control variables at the individual level

In the previous section we have considered both how country-level variables may impact HGE and how they may also moderate the impact of (interact with) innovativeness observed at individual level of respondent[1]. As we focus on the start-up phase we exclude the intermediate level of firm from the analysis in this paper, as we do not consider the phase when firms are actually already operating for some time.

We now turn to consider control variables that operate at the level of the individual[2]. Interestingly, most economics models on entrepreneurship leave the source of individual differences largely unexplained (Harper, 2003). In section 2.1 we already discussed how the 'individual' aspect of the innovative process may affect high growth aspirations. In this section we motivate additional control variables that enter our specifications.

We focus on whether an entrepreneurial entry is associated with high growth expectations. The assessment by a decision-maker will fundamentally depend on perceptions. Theoretical models on occupational decisions will tend to assume the individual as a rational utility maximising agent. However, this understanding of the risks and rewards associated with becoming an entrepreneur are, in reality, highly subjective. Arenius and Minniti (2005) find that perceptual variables are all significant in explaining the likelihood on entrepreneurial entry occurring; even when economic factors have been included in the estimation. These results are echoed by Ardagna and Lusardi (2008).

Individuals differ in their understanding of how actions influence events (locus of control) and in a more personal belief how one may, or may not, be able to carry-out the necessary actions (Harper, 2003). In particular, those two traits result in alternative attitudes towards risk taking. Given the relationship between risk and entrepreneurial endeavours, which we discussed in section 1, we expect that more risk-averse individuals will be more likely to choose HGE entry. Therefore, we expect our risk proxy, *fear of failure,* to possess some predictive power. We expect entrepreneurs who enter with high growth aspirations to

[1] Some individuals are more prone to invent than others. A single person, Kornelis A. S. Immink, a Dutch scientist and entrepreneur, personally advanced the era of digital recording having been involved with the development of: the Compact Disc, the Digital Versatile Disk and the Blu-Ray Disc.

[2] Another alternative, advocated by Davidsson (2003) is that ideally the unit of observation should be the start-up process itself – and the idea behind it– which may transcend from the concept of the firm or the entrepreneur.

be more confident and generally less fearful. While another interpretation could be that high aspirations entrepreneurship attracts individuals who overestimate the likely pay-offs from their ideas (Hall and Woodward, 2008), it is also the case that this type of overconfidence has self-fulfilling properties (Aidis et al, 2008).

We expect education and experience to be additional factors explaining HGE. Growth potential may be a result of someone having identified a gap within a particular market and this is likely to involve being aware, or knowing personally, other entrepreneurs in that industry. That in turn is correlated with prior entrepreneurial practice. In particular, owners of established business may have advantage with respect to high growth aspirations entrepreneurial entry.

In addition, differences in entrepreneurship rates have been found to vary according to age (Levesque and Minniti [in press]; Reynolds et al. 2003; Blanchflower, 2004; Ardagna and Lusardi, 2008; Gray, 2002) and to gender (Brush, 1990; Langowitz and Minniti, 2005; Estrin and Mickiewicz, 2009). We expect these factors to also play a role in determining high growth aspirations entrepreneurial activity. In addition, in our specifications we introduce an interactive effect between gender and age.

We also control for employment status, as a decision on the mode of entry is conditional on the labour market states. For high aspirations entry, being in employment may be associated with important network and experience effects, in addition to the factors discussed above, therefore the expected sign should be positive.

2.5 Control variables at the aggregate level

For reasons presented about our primary institutional variable of interest is protection of intellectual property. Given that, GDP per capita is a good catch-all control variable that proxies both for the level of economic development and for the level of institutional development – those two are closely correlated. However, while having more developed economy and better functioning institutions may be conducive to the efficient allocation of resources between agents, it is also possible that relatively poorer countries may provide more opportunities for HGE thanks to catching-up potential as reflected on micro level. The latter effect may generate negative correlation between GDP pc and HGE entry.

With respect to availability of finance, our primary focus is on the effects of venture capital availability on individual decisions to enter. However, we need to introduce additional financial controls, as supply of venture capital may be correlated with the overall availability of finance. Obviously, availability of funding in addition to VC may determine entrepreneurs' growth aspirations as well. Obtaining credit from a bank plays a critical role. Aghion (2007) introduces financial constraints in a model of entry and predicts that in societies with high agency costs, and therefore underdeveloped financial sectors, growth rate will be lower. In addition, in relation to start-ups, informal finance forthcoming from family and friends may play a critical role substituting or complementing institutionalised sources of finance (Korosteleva and Mickiewicz, 2008). We proxy for the latter by using country level prevalence rates of informal finance extracted as peer effects from our data (see Table 1 below for details). One standard variable used for proxy of formal finance is credit to private sector over GDP (Beck et al., 2008). However, due to multicollinearity, the variable does not fit with our other indicators well. For that reason we rely on the related Wall Street Journal / Heritage Foundation index of financial freedom, which proxies for the extent of financial options. Also, it is more directly related to entrepreneurial finance, as typically more liberal

banking regimes has stronger effect on supply of finance to more risky recipients, and start-up, especially high aspirations start-ups fall in this category.

Koellinger and Thurik (2009) find, using a panel generated with GEM data, that there is no evidence indicating that entrepreneurship follows the business cycle. Moreover their study suggests that the opposite may be true: "entrepreneurial activity is a leading indicator of the business cycle in a Granger-casualty sense". We join the current discussion on whether entrepreneurship may be pro-cyclical, a-cyclical, or a leading indicator of a cycle, by including the growth rate of the economy in our models. However, to be consistent with Koellinger and Thurik (2009), and to take into account that entrepreneurship and overall economic activity may affect each other with lags, we use the growth rate of the previous year as one of our independent variables. We expect HGE to be weakly pro-cyclical.

3 The dataset and variables

This paper uses a purposely constructed dataset which combines country-level variables with individual level variables from the available version of the integrated Global Entrepreneurship Monitor database (GEM) over 1998-2004.

A thorough description of GEM can be found in Reynolds et al. (2005, 2008). Based on adult-surveys conducted in the 1998-2004, GEM covers 41 countries. In all, at least 2000 interviews were carried-out in each country which goes a long way in tackling the selectivity bias typical of other datasets. The database's defining feature is that allows researches to study nascent entrepreneurs (individuals who are in the process of launching a venture) across-countries.

We are further able to differentiate between entrepreneurs offering a product which is new to some customers and one which is new to all customers since entrepreneurs are also asked how new the technology they are planning to use is. This is aimed at capturing varying degrees of technological development across the sample of countries. Interestingly, although the answers given are very similar across country groups, the individual statements might have been based on very different technologies. For instance, something which is considered as "very latest technology" in country A may be considered as obsolete in country B. This effect is acknowledged in Bosma et al. (2007) who conclude that differences between the levels of innovative early-stage entrepreneurial activity may be a reflection of varying degrees of competition and availability of new products across countries.

Similarly, there are also likely to be vast differences in the innovation rates across industrial sectors. In some cases, for instance the production of raw material, it is virtually impossible to introduce new products (although process-innovation is still possible). At the opposite end of the spectrum, the pharmaceutical industry hinges on continuously investing in the developments of new drugs (which can take many years) and producers are able to re-coup their investments from patenting successful drugs. Still another model is found in high-tech industry where firms leap-frog by introducing a new technology which is used for a number of years until it is surpassed by a technology introduced by a rival. In this sense, an entrepreneur wanting to start a new enterprise will have to come to terms with the characteristics of the industry he/she is choosing to operate in. Inevitably, some sectors will be more innovation prone than others and the new entrepreneur may be constrained by his/her previous expertise and by financial resources (as some sectors are more capital intensive than others). However, due to heavy cost of missingness we have refrained from attempting to construct industry-specific controls and agree with Davidsson (2007) describing the task of measuring 'innovative intensity' in a way that is comparable across countries and industries as being almost insurmountable.

Another limitation in using GEM to draw conclusions regarding innovative entry is that, in its current incarnation, GEM only captures product innovation but not process innovation. As early as Schumpeter (1924) a distinction was made between process and product innovation (although the two can take place simultaneously) and other surveys in this field, notably the Community Innovation Survey, typically differentiate between the two types of innovation. On the other hand, however, it is likely that the omission of an explicit process-related question would be more of an issue for established firms.

As mentioned, our dataset also includes a series of country level variables imported from various sources. These include GDP per capita, GDP growth, a proxy to capture the strength of intellectual property rights and an indicator on financial freedom, which proxies for the range of options in the supply of formal finance, available to entrepreneurs.

Finally, we also constructed a cross-country dataset of venture capital (VC). Data on VC is still not readily available from government statistical offices and a variety of sources were consulted. Generally, each country will have a national venture capital association which holds annual data on VC. These values were then converted in US dollars for comparability. In studying cross-country VC patterns, one clearly notices a difference in the quality (and quantity) of data across different nations. In hunting for VC data, scholars attempting a similar exercise will encounter three possible scenarios: (i) the USA and most EU countries, for which good data is generally available and it is possible to differentiate between different typologies of VC (like early-stage and technologically-intensive), (ii) other high income countries like Australia and New Zealand, with some aggregate data being available and finally, (iii) the vast majority of countries, and virtually all developing ones, for which no data is available. In all, we have VC data for 21 middle and high income countries[3].

Table 1 lists variables used including a brief description, the sources of data and descriptive statistics.

3.1 The model

The dataset described in the previous section, allows us to study individuals' decisions to enter with high employment growth aspirations. We present the occupational dilemma faced by individuals as two alternative models. The first can be expressed as the following decisional choice model:

$$\Pr(Gazelle) = 1 \text{ if involved in a start-up with expected employment creation} \geq 30 \\ = 0 \text{ otherwise} \qquad (1)$$

We estimate this empirically with the following probit model (Model 1):

$$\Pr(Gazelle = 1 \mid x) = \Phi(xb)$$

Where, again, *Gazelle*=1 if entrepreneurial entry occurs with the expectation of having at least 30 employees within five years, and x is a vector of the regressors described in

[3] USA, Greece, Netherlands, Belgium, France, Spain, Hungary, Italy, Switzerland, UK, Denmark, Sweden, Norway, Poland, Germany, New Zealand, Japan, Canada, Portugal, Finland, and Israel.

Table 1c below. Different specifications are reported to investigate the effect of the age and gender variable: Model 1 includes a squared term for the age variable (*age_sq*); Model 2 replaces this with an interactive term of age and gender (*male_x_age*) and Model 3 includes both.

Corresponding to the hypotheses discussed above, we also try specifications (Model 1(a); Model 2(a) and Model 3(a)) where our innovation variable (Innovation) is interacted with our intellectual property protection proxy (*IPP*) and with venture capital supply (*VC*). *Innovation* can take the following values *Innovation=1* if there is entry, *Innovation*=2 if the entry contains some innovation, *Innovation*=3 if the new enterprise is entirely innovative.

To check the sensitivity of our results to the construction of dependent variable and in order to analyse how our variables affect HGE further, we construct an alternative dependent variable, *HGE*, which expands entrepreneurs' expectations into 10 values ranging from 0 (if the respondent does not envisage to employ any additional members of staff within the next five year) to 9 (if she thinks 30 or more people will be employed). Table 1b shows summary values for the various bins for *HGE*.

We denote the 10 values of *HGE* as *J*, $\mathrm{H}GE_i = m$ if $\Gamma_{m-1} \le \mathrm{H}GE_i^* < \Gamma_m$ for $m = 1$ to *J*, where Γ indicates the cut-off points. This can be estimated using the following ordered probit model:

$$\Pr(HGE = m \mid x) = F(\Gamma_m - x\beta) - F(\Gamma_{m-1} - x\beta) \tag{2}$$

We then apply the same specifications describe above for the probit model, in Model 4 to Model 6 (without interactions) and model 4a to model 6a (interacting the innovation variable with IPP *and VC).*

Throughout, when estimating the above models, we generate clustered (robust) standard errors around country-year clusters to account for possible survey biases. Given the sample size, without this correction, the significance levels of country level variables would be hugely inflated.

Discussion of results follows.

4. Results

Results from Model 1, Model 2 and Model 3 reported in Table 4 below, suggest that pursuing innovative projects (*Innovation_2* and *Innovation_3*) has an effect on whether the enterprise is a gazelle or not confirming H1 at 1%. The role of VC seems more ambiguous, since although the sign is as expected, it does not have a statistically significant effect. However, when the innovation variable is interacted with IPP and VC in Models 1(a) to Model 3(a) (reported in Table 5), the interaction of VC and innovation – *ipp_innov* - becomes significantly associated with the Gazelle effect (significant at 5%). So H2 holds in the interacted form: availability of venture capital has strong effect on innovative entrepreneurs resulting in adoption of higher growth aspirations. This is the "do it now" effect predicted by Schwienbacher (2007): with VC supply being available, innovative entrepreneurs entering the market have the incentive to use own resources to achieve some intermediate stage of expansion faster so that attracting attention of outside investors becomes possible.

We also confirm H3 (intellectual property rights) at 1%. However H3a is not confirmed: protection of intellectual property does not have any specific differential impact of the likelihood of innovative entrepreneurs to implement high growth strategies (but compare with the results discussed below for the whole range of variation in growth expectations).

In contrast with VC, the two other financial indicators we control for (prevalence rate of informal finance and financial freedom) have no significant impact on HGE entry. The lagged rate of economic growth (delta_gdp_lag1) has significant but negative effect. The level of GDP per capital has a negative effect, consistent with catching-up interpretation outlined above: more opportunities for high growth projects seem to exist in middle income countries compared with high income countries.

Individual level variables generally have the expected signs when statistically significant. As expected human capital play a role in explaining HGE in terms of education (*educ_secpost*) but this does not seem to hold for experience as represented by a dummy variable for entrepreneurs who have already established a business in the past. We find that whether the entrepreneur has completed at least secondary education is a strong predictor of HGE entry (significant and positive at 1%). The models produce expected results regarding the age and gender effect. We find that males are more likely to be involved in HGE than women, and interacting the gender variable with age does not change this result. Effect of age is non-linear: including a squared term for age produces a hump-shaped relationship between HGE entry and age.

Last but not least, the attitude towards risk counts: fear of failure is a significant factor working against HGE entry.

Results from Model 4 to Model 6, which use more variation in growth aspirations found in Table 6, are largely in line with the results described for Models 1-3, with an important exception: interactive term between innovative entry and intellectual property protection now becomes significant and this effect dominates over the interactive effect between the venture capital supply and innovativeness of entrepreneurs. This difference is not difficult to explain: the first set of equations (Models 1-3) focus just on gazelles, and this is where supply of venture capital is particularly beneficial. Thus, for innovative project, availability of VC does not have a significant effect raising expectations along all the variation of our HGE variable, yet it is associated with emergence of a specific group of highest growth aspirations projects (gazelles).

In addition results presented in Table 6 confirm that the other explanatory variables are strong predictors of whether a start-up has high growth expectations. However there are also some interesting differences. In particular, once we use more heterogeneity in growth aspirations, VC supply matters by itself (in additive form); and experience as represented by both business ownership and work experience becomes more important than educational attainment. In addition, now, the interactive term between gender and age is significant in contrast with the non-linear age specification: while there is a general negative effect of age on HGE entry, this negative impact is smaller for man and taking this into account explains the observed pattern in HGE better than non-linearity in age.

5. Conclusions

We find that both supply of venture capital and protection of intellectual property are important factors supporting high growth aspirations of new innovative entrepreneurs. While, overall, high growth potential projects benefit from the presence of venture capital, it is the innovative ventures that benefit most. Availability of venture capital does not affect growth aspirations of innovative entrepreneurs across the whole spectrum of planned growth, but makes highest growth innovative projects (gazelles) significantly more likely. In addition, intellectual property protection has also more beneficial effects lifting growth aspirations of innovative entrepreneurs across the whole spectrum.

In contrast, both informal finance and institutional framework related to formal finance (other than venture capital) matter less: sings of the coefficients are positive as expected, but the effects remain insignificant.

High growth aspirations are subjective perceptions of entrepreneurs yet they are important. They motivate start-up owners-managers to engage in high value added activities. Supply of such high aspiration entrepreneurship is crucial for economic development. Even if many of those ventures may fail, it is sufficient that some will succeed to generate strong microeconomic foundation for growth and development. This is why incidence of entrepreneurs with high aspirations matters. The key policy lesson from this paper is that if we care most about transforming new innovative projects into highest value "gazelle" entrepreneurial ventures, we should focus on the development of the form of finance that is most suitable to overcome serious informational asymmetries associated with those that is on venture capital.

On individual level, both the propensity to innovate and attitudes towards risk seem to be the key factors behind the supply of the high-potential projects. Public policy that shapes both the educational system and national culture to become more supportive and more rewarding towards innovative activities, risk-taking and entrepreneurial effort can make impact.

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Table 1a: Descriptive statistics and definitions of dependent variables

Variable	Definition	Source	Obs	Mean	Std. Dev.	Min	Max
Gazelle	1 if HGE=>9 (minimum of 30 employees)	GEM	16135	0.06	0.23	0.00	1.00
HGE		GEM	16135	2.58	3.05	0.00	9.00

Table 1b: Construction of HGE based on employement creation expectations in 5 years

	Obs	Mean	Std. Dev.	Min	Max
0	11996	0	0	0	0
1	1918	1	0	1	1
2	2520	2	0	2	2
3	1882	3	0	3	3
4	1412	4	0	4	4
5	1754	5	0	5	5
6	1445	6.83	0.96	6.00	9.00
7	2319	11.39	2.07	10.00	15.00
8	1000	20.95	2.27	16.00	29.00
9	1476	1996.16	23122.40	30.00	500000.00
	27722	109.32	5352.39	0.00	500000.00

Table 1c: Descriptive statistics and definitions of independent variables

Variable	Definition	Source	Obs	Mean	Std. Dev.	Min	Max
Innovation	1=entry, 2=low innovative entry, 3=high innovative entry	GEM	13966	1.40	0.66	1.00	3.00
gemage	The exact age of the respondent at time of interview	GEM	331542	44.27	17.04	1.00	104.00
male_x_age	interaction of *gemage* and *male*	GEM	331542	20.49	24.70	0.00	104.00
age_sq	*gemage* squared	GEM	331542	2250.46	1627.11	1.00	10816.00
educ_secpost	1=respondent has a post secondary or higher education attainment, 0 otherwise	GEM	326497	0.70	0.46	0.00	1.00
educ_postgra	1=respondent has a post secondary or higher education attainment, 0 otherwise	GEM	326497	0.33	0.47	0.00	1.00
educ_grad	1= has graduate experience, 0 otherwise	GEM	326497	0.08	0.28	0.00	1.00
male	1=male, zero otherwise	GEM	347964	0.47	0.50	0.00	1.00
gemwork_dum	1=respondent is either in full or part time employment, 0 if not	GEM	339169	0.51	0.50	0.00	1.00
own_estab_bus	1=current owner/manager of business, 0 otherwise	GEM	347964	0.05	0.21	0.00	1.00

fear	1=respondent has shut down business in past 12 month, 0 otherwise	GEM	276039	0.33	0.47	0.00	1.00
financial_freedom	financial freedom indicator	Heritage Foundation	347964	72.91	16.86	30.00	90.00
busang_prevalen	1=business angel in past three years, 0 otherwise	GEM	347964	0.02	0.01	0.00	0.07
VC	venture capital (in constant US $) divided by GDP *1000	European VC Association and national venture capital associations	347964	0.00	0.00	0.00	0.00
IPP	Intellectual property protection	World Economic Forum	347964	5.63	0.69	3.40	6.60
ipp_innov	interaction of *IPP* and *innovation*		27096	0.29	1.25	0.00	6.30
vc_innov	interaction of *VC* and *innovation*		27096	0.00	0.00	0.00	0.00
delta_gdp_lag1	GDP growth rate in previous year	World Bank - World Development Indicators	347964	2.28	1.46	-2.05	8.71
ln_gdp_pc_pp	natual logarith of gdp per capita at PPP	World Bank - World Development Indicators	347964	10.29	0.21	9.37	10.75

Table 4: Probit Models (dependent variable *Gazelle*)

	Model 1		Model 2		Model 3	
VARIABLES		Marginal effects		Marginal effects		Marginal effects
Innovation_2	0.131***	0.0209***	0.133***	0.0213***	0.132***	0.0210***
	(0.0415)	(0.00706)	(0.0412)	(0.00703)	(0.0412)	(0.00702)
Innovation_3	0.356***	0.0650***	0.358***	0.0655***	0.356***	0.0650***
	(0.0431)	(0.00997)	(0.0428)	(0.00996)	(0.0429)	(0.00996)
gemage	-0.00921**	-0.00141**	-0.00277	-0.000425	-0.0104*	-0.00158*
	(0.00449)	(0.000650)	(0.00282)	(0.000429)	(0.00571)	(0.000843)
age_sq	9.60e-05*	1.47e-05*			9.5e-05*	1.46e-05*
	(5.39e-05)	(7.93e-06)			(5.4e-05)	(7.92e-06)
educ_secpost	0.138***	0.0199***	0.137***	0.0198***	0.137***	0.0198***
	(0.0530)	(0.00732)	(0.0527)	(0.00730)	(0.0527)	(0.00729)
educ_postgra	0.0763	0.0117	0.0741	0.0114	0.0755	0.0116
	(0.0517)	(0.00787)	(0.0520)	(0.00791)	(0.0518)	(0.00788)
educ_grad	0.0609	0.00961	0.0615	0.00971	0.0601	0.00948
	(0.0569)	(0.00907)	(0.0576)	(0.00918)	(0.0568)	(0.00905)
male	0.296***	0.0421***	0.229*	0.0331*	0.234*	0.0339*
	(0.0451)	(0.00582)	(0.132)	(0.0179)	(0.130)	(0.0176)
gemwork_dum	0.0701	0.0105	0.0604	0.00906	0.0702	0.0105
	(0.0572)	(0.00856)	(0.0564)	(0.00850)	(0.0573)	(0.00857)
own_estab_bus	0.0980	0.0158	0.0958	0.0155	0.0975	0.0157
	(0.0661)	(0.0112)	(0.0663)	(0.0112)	(0.0664)	(0.0112)
fear	-0.0891*	-0.0131*	-0.0894*	-0.0132*	-0.0894*	-0.0131*
	(0.0506)	(0.00717)	(0.0504)	(0.00714)	(0.0503)	(0.00714)
financial_freedom	-0.00101	-0.000155	-0.00106	-0.000162	-0.001	-0.000153
	(0.00187)	(0.000287)	(0.00188)	(0.000288)	(0.00188)	(0.000289)
busang_prevalen	0.741	0.113	0.819	0.125	0.774	0.118
	(2.993)	(0.455)	(3.010)	(0.458)	(2.986)	(0.454)
VC	8991	1375	9056	1386	9010	1378
	(7155)	(1068)	(7117)	(1062)	(7161)	(1069)
IPP	0.314***	0.0480***	0.313***	0.0479***	0.315***	0.0481***
	(0.110)	(0.0151)	(0.110)	(0.0151)	(0.110)	(0.0151)
delta_gdp_lag1	-0.0449*	-0.00687*	-0.0448*	-0.00686*	-0.0448*	-0.00685*
	(0.0258)	(0.00388)	(0.0258)	(0.00389)	(0.0258)	(0.00388)
ln_gdp_pc_pp	-0.518**	-0.0793**	-0.508**	-0.0778**	-0.519**	-0.0794**
	(0.243)	(0.0353)	(0.241)	(0.0351)	(0.243)	(0.0354)
male_x_age			0.00182	0.000278	0.00160	0.000245
			(0.00342)	(0.000524)	(0.00336)	(0.000515)
Constant	2.042		1.860		2.091	
	(2.084)		(2.054)		(2.086)	
Observations	8370	8370	8370	8370	8370	8370

*** p<0.01, ** p<0.05, * p<0.1

Robust standard errors (clustered on country-years) in parentheses

Table 5: Probit Models; interactions with innovation (dependent: *Gazelle*)

	Model 1(a)		Model 2(a)		Model 3(a)	
VARIABLES		Marginal effects		Marginal effects		Marginal effects
Innovation_2	0.130***	0.0208***	0.132***	0.0212***	0.131***	0.0209***
	(0.0413)	(0.00701)	(0.0410)	(0.00699)	(0.0410)	(0.00698)
Innovation_3	0.392	0.0727	0.395	0.0735	0.392	0.0727
	(0.597)	(0.133)	(0.594)	(0.132)	(0.596)	(0.132)
gemage	-0.0093**	-0.00143**	-0.00276	-0.000423	-0.0104*	-0.00160*
	(0.00448)	(0.000648)	(0.00282)	(0.000429)	(0.00571)	(0.000842)
age_sq	9.72e-05*	1.49e-05*			9.6e-05*	1.5e-05*
	(5.4e-05)	(7.91e-06)			(5.4e-05)	(7.90e-06)
educ_secpost	0.138***	0.0199***	0.137***	0.0198***	0.138***	0.0199***
	(0.0529)	(0.00731)	(0.0526)	(0.00728)	(0.0526)	(0.00728)
educ_postgra	0.0749	0.0115	0.0727	0.0111	0.0741	0.0113
	(0.0516)	(0.00784)	(0.0518)	(0.00789)	(0.0517)	(0.00785)
educ_grad	0.0622	0.00982	0.0629	0.00993	0.0615	0.00969
	(0.0566)	(0.00903)	(0.0573)	(0.00914)	(0.0565)	(0.00901)
Male	0.298***	0.0424***	0.232*	0.0336*	0.238*	0.0343*
	(0.0453)	(0.00586)	(0.132)	(0.0179)	(0.130)	(0.0176)
gemwork_dum	0.0709	0.0106	0.0611	0.00916	0.0710	0.0106
	(0.0571)	(0.00853)	(0.0563)	(0.00848)	(0.0572)	(0.00855)
own_estab_bus	0.0983	0.0159	0.0961	0.0155	0.0978	0.0158
	(0.0661)	(0.0112)	(0.0663)	(0.0112)	(0.0664)	(0.0112)
fear	-0.0865*	-0.0127*	-0.0868*	-0.0128*	-0.0868*	-0.0128*
	(0.0508)	(0.00722)	(0.0506)	(0.00719)	(0.0506)	(0.00718)
financial_freedom	-0.00100	-0.000153	-0.00105	-0.000160	-0.001	-0.000151
	(0.00186)	(0.000285)	(0.00187)	(0.000286)	(0.00188)	(0.000287)
busang_prevalen	0.883	0.135	0.958	0.146	0.914	0.140
	(2.946)	(0.447)	(2.964)	(0.450)	(2.940)	(0.446)
VC	6506	994.6	6601	1010	6528	997.8
	(5814)	(865.5)	(5799)	(863.2)	(5825)	(866.9)
IPP	0.319***	0.0488***	0.318***	0.0487***	0.320***	0.0489***
	(0.106)	(0.0146)	(0.107)	(0.0147)	(0.106)	(0.0146)
ipp_innov	-0.0154	-0.00236	-0.0155	-0.00238	-0.0154	-0.00235
	(0.0998)	(0.0153)	(0.0992)	(0.0152)	(0.0996)	(0.0153)
vc_innov	34866**	5330**	34590**	5291**	34826**	5323**
	(14173)	(2140)	(14108)	(2131)	(14160)	(2137)
delta_gdp_lag1	-0.0428*	-0.00655*	-0.0428*	-0.00655*	-0.0427*	-0.00653*
	(0.0255)	(0.00384)	(0.0255)	(0.00384)	(0.0255)	(0.00383)
ln_gdp_pc_pp	-0.527**	-0.0805**	-0.516**	-0.0790**	-0.528**	-0.0806**
	(0.241)	(0.0350)	(0.239)	(0.0348)	(0.241)	(0.0350)
male_x_age			0.00178	0.000272	0.00157	0.000239
			(0.00343)	(0.000525)	(0.00337)	(0.000515)
Constant	2.096		1.909		2.144	
	(2.078)		(2.047)		(2.080)	
Observations	8370	8370	8370	8370	8370	8370

Robust SE (clustered on country years) in parentheses; ***p<0.01, ** p<0.05, * p<0.1

Table 6: Ordered Probit Models (dependent variable: *HGE)*

VARIABLES	Model 4	Model 5	Model 6	Model 4a	Model 5a	Model 6a
				marginal effects		
Innovation_2	0.0771*	0.0800*	0.0784*	0.0774*	0.0803*	0.0787*
	(0.0442)	(0.0441)	(0.0442)	(0.0440)	(0.0439)	(0.0440)
Innovation_3	0.221***	0.223***	0.221***	-0.354	-0.352	-0.348
	(0.0352)	(0.0351)	(0.0351)	(0.233)	(0.233)	(0.233)
gemage	-0.0106*	0.00634***	-0.0136**	-0.0106*	0.00635***	-0.0136**
	(0.00601)	(0.00158)	(0.00663)	(0.00603)	(0.00158)	(0.00665)
age_sq	9.03e-05		9.00e-05	8.94e-05		8.91e-05
	(6.40e-05)		(6.66e-05)	(6.43e-05)		(6.68e-05)
educ_secpost	0.0599	0.0591	0.0593	0.0586	0.0579	0.0581
	(0.0401)	(0.0398)	(0.0400)	(0.0400)	(0.0398)	(0.0400)
educ_postgra	0.0300	0.0266	0.0280	0.0298	0.0264	0.0278
	(0.0362)	(0.0360)	(0.0358)	(0.0360)	(0.0358)	(0.0356)
educ_grad	0.0131	0.0122	0.0107	0.0136	0.0128	0.0112
	(0.0402)	(0.0400)	(0.0403)	(0.0401)	(0.0399)	(0.0402)
male	0.337***	0.172***	0.170**	0.337***	0.173***	0.172**
	(0.0246)	(0.0659)	(0.0691)	(0.0247)	(0.0659)	(0.0691)
gemwork_dum	0.144***	0.136***	0.144***	0.144***	0.136***	0.144***
	(0.0259)	(0.0248)	(0.0260)	(0.0260)	(0.0250)	(0.0262)
own_estab_bus	0.125***	0.123***	0.124***	0.126***	0.124***	0.125***
	(0.0462)	(0.0464)	(0.0462)	(0.0458)	(0.0460)	(0.0458)
fear	-0.0671**	-0.0671**	-0.0669**	-0.0654**	-0.0655**	-0.0652**
	(0.0310)	(0.0310)	(0.0308)	(0.0309)	(0.0308)	(0.0307)
financial_freedom	-0.00376*	-0.00374*	-0.00371*	-0.00383*	-0.00381*	-0.00378*
	(0.00203)	(0.00202)	(0.00202)	(0.00202)	(0.00202)	(0.00201)
busang_prevalen	1.112	1.248	1.194	1.168	1.302	1.248
	(1.719)	(1.738)	(1.722)	(1.706)	(1.726)	(1.709)
VC	7562**	7707**	7603**	6722**	6864**	6766**
	(3421)	(3426)	(3421)	(2752)	(2767)	(2751)
IPP	0.133***	0.133***	0.134***	0.122***	0.122***	0.123***
	(0.0461)	(0.0460)	(0.0459)	(0.0470)	(0.0469)	(0.0468)
delta_gdp_lag1	-0.0288	-0.0289	-0.0287	-0.0273	-0.0274	-0.0272
	(0.0189)	(0.0189)	(0.0189)	(0.0186)	(0.0187)	(0.0186)
ln_gdp_pc_pp	-0.399***	-0.394***	-0.401***	-0.395***	-0.390***	-0.397***
	(0.132)	(0.130)	(0.131)	(0.131)	(0.130)	(0.131)
male_x_age		0.00437**	0.00435**		0.00433**	0.00431**
		(0.00174)	(0.00183)		(0.00174)	(0.00183)
ipp_innov				0.0970**	0.0968**	0.0960**
				(0.0399)	(0.0398)	(0.0399)
vc_innov				19459	19564	19447
				(23424)	(23201)	(23364)
Constant						
Observations	8370	8370	8370	8370	8370	8370

Robust standard errors (clustered on country-years) in parentheses; ***p<0.01, ** p<0.05, * p<0.1