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# Entrepreneurial Progress: Climbing The Entrepreneurial Ladder in Europe And The US

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# Entrepreneurial progress: climbing the entrepreneurial ladder in Europe and the US

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**Abstract:** We investigate which countries have the highest potential to achieve entrepreneurial progress. This progress is defined using an entrepreneurial ladder with five successive steps: “never thought about starting a business”, “thinking about starting a business”, “taking steps to start a business”, “running a business for less than three years”, and “running a business for more than three years”. We assess the influence of individual-level and country-level variables on progression through these stages. Data are used from the 2007 “Flash Eurobarometer Survey on Entrepreneurship”, covering 27 European countries and the United States. We find that countries display large variation in the ease with which businesses come into existence and survive. In the US many people think about setting up a business whereas Europeans are better at achieving higher levels of engagement. Particularly in Austria, France and Lithuania there appear to be low probabilities to advance in the process. Our analysis suggests that country differences can be explained by the level of economic development and risk tolerance while the administrative and financial climate play a role for some steps. The paper also provides results on the influence of individual-level demographic and obstacle perception variables.

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# 1. Introduction

The link between entrepreneurship and competitiveness, as well as the exact concepts of entrepreneurship and competitiveness themselves, have been the subject of animated debate in academic and policy circles. An assessment of this debate is beyond the scope of this paper. However, it can be safely stated that, businesses being the backbone of innovation and economic activity, an environment conducive to a dynamic business fabric where market opportunities can be created and acted upon will pay its dividends in terms of employment and economic growth (Carree and Thurik, 2003; Audretsch and Keilbach, 2004; European Commission, 2008, chapter three). The potential to create market opportunities and to act upon them can be interpreted as the entrepreneurial component of competitiveness. The present contribution is devoted to the introduction of entrepreneurial progress (through five steps on the entrepreneurial ladder), and how and why it differs across 27 European countries and the United States.

The existence of cross-country and cross-regional variations in preferences for entrepreneurship (Grilo and Irigoyen, 2006; Masuda, 2006), levels of nascent entrepreneurship (Wennekers et al., 2005; Reynolds et al., 2005) and established entrepreneurship (Van Stel, 2005; Blanchflower, 2000) has been widely acknowledged. This variation can be explained by a range of factors, including economic, cultural, institutional and demographic factors (Blau, 1987; Carree et al., 2002; Wennekers et al., 2005; Parker and Robson, 2004; Noorderhaven et al., 2004; Freytag and Thurik, 2007; Bowen and De Clercq, 2008). The present study compares 27 European countries and the United States with respect to the ease with which (potential) businesses come into existence and remain in the market.

We see the decision to start up and manage a business as a process that consists of several stages (Reynolds, 1997; Rotefoss and Kolvereid, 2005; Grilo and Thurik, 2008). These sequential stages of increasing entrepreneurial involvement are the following: “never thought about starting a business”, “thinking about starting a business”, “taking steps to start a business”, “running a business for less than three years”, and “running a business for more than three years” (Grilo and Thurik, 2008). The ordering of these engagement levels is referred to as the “entrepreneurial ladder” (Van der Zwan et al., 2009). A potential entrepreneur can ‘climb’ this proverbial ladder by stepping from one engagement level to the other, i.e., (s)he can advance or grow in the entrepreneurial process. Countries are expected to vary with respect to the availability of opportunities for such entrepreneurial progress. Indeed, regional factors often play a major role in shaping the conditions for entrepreneurship. Each region has its own regulations and laws imposed by the government, and the level of competition and munificence of resources differ across regions. More favorable regional conditions will result in more opportunities for individuals to climb the entrepreneurial ladder, which in turn will have positive consequences for a region’s competitiveness.

Although the concept of the ‘entrepreneurial ladder’ deviates from more ‘traditional’ growth measures (e.g., growth in terms of number of employees, profits and revenues), several scholars have shown that a higher stage of firm development corresponds with a larger size of the organization (Greiner, 1972; Churchill and Lewis, 1983; Scott and Bruce, 1987). These authors stress the importance of distinguishing between stages of development. They argue that there is a strong connection between each of the successive stages and that each stage is associated with its own challenges. Some transitions between stages can be more challenging than others and this is expected to differ across countries.

Our aim is to investigate opportunities for entrepreneurial progress for individuals in 27 European countries and the United States. Hence, we investigate in which countries individuals have the highest likelihood to make transitions to higher levels of entrepreneurial engagement. This likelihood is an essential element of competitiveness. We relate the progression through the five stages of entrepreneurial engagement across countries to the level of economic development, a country’s attitude towards risk and three country-level measures of impediments to start-up, including limited access to finance, administrative complexities and insufficient information. Furthermore, we are able

to examine the effects of individual characteristics (i.e., demographics and residential area) on advancement in the entrepreneurial process.

The contribution of this study lies in its investigation of country differences in entrepreneurship at different stages of the process. Our data set (“2007 Flash Eurobarometer Survey on Entrepreneurship”) enables to establish these differences and to explain them in terms of the conditions favoring or inhibiting entrepreneurship in each of the different stages. Existing studies usually take into account only one single stage of entrepreneurship (e.g., start-up or incumbent stage) or focus on the transition between a thinking and an action stage of entrepreneurship. The present study encompasses five different stages and four transitions between these stages in the entrepreneurial process.

The remainder of this study is structured as follows. After a detailed examination and discussion of the empirical literature in the next section, we introduce and discuss the data. Subsequently, we describe our model and illustrate how to interpret the results derived from this model. Finally, we present and discuss the results. We end with some concluding remarks.

## **2. Theoretical background**

When comparing countries on their conditions for entrepreneurship at different stages, it is important to realize that it is the individuals in these countries who ‘climb’ the entrepreneurial ladder. Therefore, in addition to country-level variables, we assess the influence of individual explanatory variables on the position on the entrepreneurial ladder. Below we first discuss the influence of a range of individual explanatory variables, including socio-demographic characteristics (gender, age, education), role models (self-employed parents), personality aspects (risk attitude, stigma of failure), area of residence (metropolitan, urban or rural) and perceived barriers to entrepreneurship (lack of financial support, administrative complexities, insufficient information on starting a business). Subsequently, we pay attention to country differences in the entrepreneurial environment that can affect the ease with which individuals advance in the entrepreneurial process.

### **2.1. Individual-level factors**

The empirical literature on individual-level determinants of entrepreneurship can be divided into studies focusing on different stages of entrepreneurial engagement. First, there are studies examining the preference for self-employment vis-à-vis wage-employment (Blanchflower et al., 2001; Grilo and Irigoyen, 2006) and the intention to start a business (Davidsson, 1995; Krueger et al., 2000). Second, there is research on nascent entrepreneurs (Delmar and Davidsson, 2000; Kim et al., 2003; Reynolds, 1997) and on the success of nascent activities, i.e., whether or not nascent activities lead to the start-up of a new venture (Davidsson and Honig, 2003; Parker and Belghitar, 2006; Van Gelderen et al., 2006). Furthermore, a large number of studies investigate the (traditional) binary decision of becoming an entrepreneur, of which an overview is given in Parker (2004). Finally, there is a whole literature on the success of start-ups, for example measured in terms of survival and firm growth (Brüderl et al., 1992; Cooper et al., 1994; Davidsson, 1991; Van Praag, 2003; Stam et al., 2008).

#### **Gender**

There are different perspectives on the existence of gender differences. According to the *liberal* feminist perspective women and men behave differently because they are confronted with unequal access to resources and opportunities. The *social* feminist perspective, on the other hand, assumes that women and men are inherently different because of differences in early and ongoing socialization (Fischer et al., 1993). In entrepreneurship research evidence of gender differences is mixed. Gender of the entrepreneur has been found to influence entrepreneurial behavior at different stages of the process. Women tend to have a lower preference for entrepreneurship (Blanchflower et al., 2001; Grilo and Irigoyen, 2006) and are more reluctant to start a business (Davidsson, 2006) than men. In terms of actual engagement in entrepreneurship it is found that women are less likely to run young or mature firms (Langowitz and Minniti, 2007; Reynolds et al., 2002). Several scholars have argued that,

when one controls for relevant factors, the ‘direct’ effect of gender on venture creation and performance is non-existent or limited (Parker and Belgithar, 2006; Collins-Dodd et al., 2004; Kalleberg and Leicht, 1991; Watson, 2002).

### Age

Theoretically, a positive effect of age on self-employment may be expected for a variety of reasons. Older people may have accumulated more knowledge and financial capital, they may switch to self-employment to avoid compulsory retirement provisions, and have had more time to build up their network than youngsters (Parker, 2004). On the other hand, older people may be more risk averse (Miller, 1984). In terms of empirical evidence, we observe the following. At the preference level, there is evidence for a U-shaped relationship (Grilo and Thurik, 2005; Blanchflower et al., 2001). For nascent entrepreneurship evidence is mixed. According to some authors nascent entrepreneurship decreases with age (Reynolds, 1997; Delmar and Davidsson, 2000; Davidsson and Honig, 2003), whereas others find evidence for a positive or inverse U-shaped relationship (Crosa et al., 2002; Kim et al., 2003).

Age does not seem to matter for the start-up success of nascent entrepreneurs (Davidsson and Honig, 2003; Parker and Belgithar, 2006; Van Gelderen et al., 2006). For actual involvement in self-employment and business survival the majority of studies shows a positive relationship with age (e.g., Cowling, 2000; Grilo and Irigoyen, 2006; Bates, 1990; Van Praag, 1996, 2003; Taylor, 1999; Gimeno et al., 1997).<sup>1</sup>

### Education

Education may stimulate opportunity recognition and improve the ability to successfully start and run a business. Alternatively, higher educated people may have other (more lucrative) employment options. Empirical findings confirm the expected indeterminate effect of education on advancing in the entrepreneurial process. To some extent this ambiguity in findings may be attributed to the omission of occupational status in some model specifications (Le, 1999). Education level does not appear to have an influence on the preference for self-employment (Blanchflower et al., 2001; Grilo and Thurik, 2005; Rotefoss and Kolvereid, 2005). Studies that report a positive effect of education on nascent entrepreneurship outnumber studies that do not find a significant effect.<sup>2</sup> For the start-up decision and firm success evidence is mixed. There is evidence of positive (Bates, 1995), negative (Burke et al., 2002), nonlinear (Rees and Shah, 1986) and insignificant (Van der Sluis et al., 2005) relations of education with the start-up decision, while for success evidence also points at positive (Cooper et al., 1994; Gimeno et al., 1997; Bosma et al., 2004; Van der Sluis et al., 2007), negative (Lussier, 1995; Brüderl and Preisendörfer, 1998) and insignificant (Schutjens and Wever, 2000) effects.

In addition to the *level* of education, the *type* of education may influence entrepreneurial activity. More specifically, education can stimulate individuals in furthering their entrepreneurial skills and attitudes (Kuratko, 2005).<sup>3</sup> Empirical evidence on the effects of entrepreneurship education on entrepreneurial involvement is scarce (Gorman et al., 1997). Several empirical studies find that participation in an entrepreneurship education program increases intentions to start a business (Clark et al., 1984; Peterman and Kennedy, 2003; Kolvereid and Moen, 1997)<sup>4</sup>, although Oosterbeek et al.

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<sup>1</sup> An inverse U-shaped relationship with self-employment is found by Rees and Shah (1986), Borjas and Bronars (1989), Beugelsdijk and Noorderhaven (2005), Georgellis et al. (2005), and Blanchflower and Shadforth (2007).

<sup>2</sup> Studies that find a positive effect include those of Delmar and Davidsson (2000), Davidsson and Honig (2003), Rotefoss and Kolvereid (2005), and Arenius and Minniti (2005). Reynolds does not find a significant effect.

<sup>3</sup> There is an ongoing debate about whether entrepreneurship can be taught. Some authors suggest that entrepreneurial skills (e.g., business and management) can be taught, while creative and innovative aspects of entrepreneurs are not “teachable” (Jack and Anderson, 1998; Miller, 1987). Others (Kourilsky and Walstad, 1998; Van der Kuip and Verheul, 2004) stress that “entrepreneurial qualities” (e.g., need for autonomy, creativity, risk taking) can be developed through education at an early age.

<sup>4</sup> Note that there is the risk of a selection effect in that students who choose to follow an entrepreneurship major are already interested in entrepreneurship or have decided to start up a business, prior to following this major (Westhead et al., 2001). Also, many studies only investigate the effects of a program in one school and are not able to generalize the results to a larger number of educational institutions.

(2007) report a negative effect. Unfortunately, existing studies do not provide insight into the quality of the firms started and run by individuals with entrepreneurship education. In the present study we investigate whether an entrepreneurial attitude, fostered by school education, eventually enhances progress in the entrepreneurial process.

### **Role models**

Role models, and in particular self-employed family members, appear important for predicting individual involvement in entrepreneurial activity. The opinion of significant others often plays an important role in individual decision making (Ajzen, 1991). Parents may not only shape the occupational preferences (Boyd and Vozikis, 1994) and the intentions of their children (Davidsson, 1995), they may also provide financial support and advice in the period after start-up. Empirical evidence shows that parental role models are indeed important for entry into self-employment (De Wit and Van Winden, 1989; Taylor, 1996; Matthews and Moser, 1996; Dunn and Holtz-Eakin, 2000; Hout and Rosen, 2000; Georgellis et al., 2005; Caliendo et al., 2009) and success (Cooper et al., 1994; Gimeno et al., 1997), although there is also evidence of less straightforward relationships, mainly at later stages of entrepreneurial engagement.<sup>5</sup>

### **Urban versus rural areas**

Regional characteristics play an important role in explaining firm start-up (Armington and Acs, 2002; Guesnier, 1994; Johnson and Parker, 1996) and survival rates (Fritsch et al., 2006; Falck, 2007). Metropolitan and urban areas tend to be characterized by economies of specialization, a relatively high number of market opportunities and access to a large pool of resources, which in turn stimulate new venture creation. Furthermore, the large concentration of entrepreneurs in these areas lowers the ambiguity attached to entrepreneurship (Minniti, 2005) and will again attract other new businesses, thereby reinforcing the entrepreneurial climate. The availability of resources and social networks that provide access to these resources (Sørensen and Sorenson, 2003; Stuart and Sorenson, 2003) makes it less likely that entrepreneurial intentions and efforts are constrained in metropolitan and urban areas. Nevertheless, competition is more fierce in these areas (Fritsch and Mueller, 2008; Van Stel and Suddle, 2008). Indeed, Stam et al. (2008) find that, relative to more rural areas, individuals in metropolitan and urban areas are less likely to give up their intentions and efforts to start their own business, but at the same time are more likely to fail.

### **Risk tolerance and stigma of failure**

Entrepreneurs are often portrayed as individuals who are relatively risk tolerant (Kihlstrom and Laffont, 1979). High failure rates of new ventures and high income volatilities of entrepreneurs contribute to this risk bearing image of entrepreneurship. Empirical evidence suggests that risk tolerant people are more likely to have a preference for self-employment vis-à-vis other occupations (Grilo and Thurik, 2005; Grilo and Irigoyen, 2006). Positive effects of risk tolerance are also found for self-employment intentions (Lüthje and Franke, 2003; Segal et al., 2005) and the probability of self-employment (Cramer et al., 2002; Caliendo et al., 2009). Nevertheless, studies by Rosen and Willen (2002) and Norton and Moore (2006) conclude that risk attitude is not an important consideration in the decision to start an own business. Finally, Van Gelderen et al. (2006) conclude that a higher perceived market risk implies a higher chance of failure of nascent activities. In addition to risk tolerance (i.e., whether possible business failure deters entrance) we include a proxy for the extent to which an individual stigmatizes failure. A tendency to accept failure may signal that an individual is willing to search for new possibilities and learn through experimentation, whereas an anti-failure attitude can obstruct entrepreneurial endeavors as it makes individuals reluctant to experiment and does not allow them to learn from mistakes (Shepherd, 2003; Politis, 2005).

### **Perceived barriers to entrepreneurship**

Subjective perceptions of the environment may be more important for engagement in entrepreneurial activities than the objective state of this environment. Perception variables play an important role in the explanation of nascent entrepreneurship (Arenius and Minniti, 2005) as well as in

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<sup>5</sup> Indeed, several studies fail to find evidence for a significant relationship for firm success and survival (Bates, 1990; Brüderl et al., 1992; Cooper et al., 1994; Gimeno et al., 1997; Taylor, 1999).

that of young and established business ownership (Koellinger et al., 2007). This study distinguishes between three perceived barriers to entrepreneurship: perceived administrative complexities, perceived lack of information and perceived lack of financial support.

Coping with administrative regulations has been cited as an important constraint by European entrepreneurs (KPMG/ENSR, 2002). At the start there may be administrative barriers associated with registration of the firm, whereas in later stages hiring and firing employees may entail great administrative costs. There is evidence that perceived administrative complexities have a negative impact on entrepreneurial preferences and behavior (Grilo and Irigoyen, 2006; Grilo and Thurik, 2005; Grilo and Thurik, 2008; Van Stel and Stunnenberg, 2006). Similarly, Lüthje and Franke (2003) find that perceived administrative barriers are negatively related with entrepreneurial intentions.

Although access to finance has been reported as an important barrier for choosing to become self-employed (Evans and Jovanovic, 1989; Evans and Leighton, 1989; Blanchflower and Oswald, 1998) as well as for the performance of nascent entrepreneurs and start-ups (Brüderl et al., 1992; Cooper et al., 1994; Carter et al., 1996; Parker and Belghitar, 2006), evidence on the effect of the individual *perceived* lack of finance is scarce. Grilo and Irigoyen (2006) find no significant effect of a perceived lack of financial support on the preference for, and involvement in, self-employment. Lüthje and Franke (2003) measure perceived financial barriers as the way in which people think banks do not readily give credit to start up companies and arrive at a significant negative effect of this variable on entrepreneurial intentions.

## 2.2. Country-level factors

Next to individual-level factors, country-level factors may play an important role in explaining entrepreneurial engagement. Existing studies investigating country differences have attempted to explain the level of business ownership or the number of nascent entrepreneurs undertaking activities to start up a business. In the present study we investigate the effects of country-level factors on different stages of the entrepreneurial process. We include measures for the regulatory environment (i.e., administrative complexity, information provided to entrepreneurs about new venture creation and financial support), a country's attitude towards risk (as a specific measure of a country's culture) and the level of economic development. These selected macro-level factors are important in the explanation of entrepreneurship (Verheul et al., 2002).

Although the *subjective perception* of environmental barriers is important for understanding an individual's level of engagement in entrepreneurship, so is the *objective* measure of such barriers. In the present study we include objective country-specific measures for constraints and complexities to disentangle the effects of subjective perceptions and objective states. Van Stel and Stunnenberg (2006) exemplify this need by finding relatively low correlations between objective and subjective measures of administrative complexities. Countries differ significantly in the way they regulate entry and development of new businesses. For example, the UK and the US are considered to have fertile environments for entrepreneurship, in particular when compared to welfare states such as Belgium, France, Germany, Italy, Luxembourg, the Netherlands and the Scandinavian countries (Denmark, Finland, Iceland, Norway and Sweden). Less stringent regulation in the UK and the US causes entrepreneurship to be perceived as a viable career option, in turn enhancing the willingness of individuals to start a business and stimulating them to take steps to become an entrepreneur.

Empirical evidence shows that the regulatory environment indeed impacts entrepreneurial activity at the macro level. Comparing the highly regulated economy of Spain with the less regulated economy of Britain, Capalleras et al. (2008) find that firms in heavily regulated economies initially start larger, but that they grow slower. The differences vanish, however, when unregistered firms are included in the analysis. Djankov et al. (2002) find that heavy regulation lowers the quantity of entrepreneurship, but that a stricter regulatory environment is also characterized by more corruption and larger unofficial economies. Baumol (1990) argues that the degree of regulation does not influence the total number of firms, but only influences the distribution of registered and unregistered firms. Examining specific types of regulations, Van Stel et al. (2007) find that labour market regulations lead to lower rates of entrepreneurship but that the impact of entry regulations is limited.



That is, only the minimal capital requirement to be deposited before registration of a new business is of influence, while variables measuring the time, cost and number of procedures required to obtain a legal status to operate a firm are not of significant importance in explaining rates of nascent and young business ownership.

An entrepreneurial culture is crucial entrepreneurial progress. There are several indicators of an entrepreneurial culture, including media attention for successful role model and respect for people who start up and run new businesses (Reynolds et al., 1999). Furthermore, a country's level of individualism and uncertainty avoidance (Hofstede, 1985) can have an effect on start-up rates and the level of entrepreneurship. Indeed, it has been argued that entrepreneurs are highly autonomous creatures who do not shy away from risk. Countries characterized by high uncertainty avoidance (or a risk averse attitude) often have strict (written) rules and procedures and residents are more inclined to seek the security of a steady job in a (large) company. Nevertheless, at the country level the relationship between culture and entrepreneurship does not always follow intuition. Baum et al. (1993) find a negative impact of individualism on entrepreneurship. Wennekers et al. (2007) show a counterintuitive positive relationship between Hofstede's uncertainty avoidance index and business ownership. This counterintuitive finding may be explained in terms of dissatisfaction, i.e., in countries with higher uncertainty avoidance, individuals may leave existing organizations where they can not satisfy their 'entrepreneurial' needs (Noorderhaven et al., 2004).

At the macro level there is an important link between (nascent) entrepreneurship and level of economic development. Evidence has been found for a U-shaped or L-shaped relationship between entrepreneurship and economic growth (Carree et al., 2002; Carree et al., 2007).<sup>6</sup> The rationale behind the U-shape is that a higher level of economic development is accompanied by rising real wages, thereby increasing the opportunity costs of entrepreneurship. After a certain level of economic development, technological developments and size of service sector increase, while the employment share of manufacturing decreases. Hence, it is important to distinguish between low and high-income countries. Low-income countries are mainly transition economies that until recently were characterized by a centrally planned economy instead of a market-oriented economy. Business environments in transition economies are less favourable than in non-transition economies in many ways (Smallbone and Welter, 2001; Mugler, 2000). However, there is also some evidence that in transition economies there are potentially higher growth opportunities for newly created firms (Bowen and De Clercq, 2008).

### 3. Data and descriptives

To investigate the ease with which entrepreneurs climb the entrepreneurial ladder and identify the factors that may hinder their progress, we make use of the 2007 "Flash Eurobarometer Survey on Entrepreneurship, No.192" of the European Commission that consists of 20,674 observations for the 25 Member States of the European Union as well as Norway, Iceland, and the United States. January 2007, randomized telephone interviews were conducted with respondents aged 15 years and over in each of these countries.<sup>7</sup> Respondents were asked the following question: "*Have you ever started a business or are you taking steps to start one?*" Answer categories include: (1) No, it never came to my mind ("never considered"); (2) No, but I am thinking about it ("thinking"); (3) Yes, I am currently taking steps to start a new business ("taking steps"); (4) Yes, I have started or taken over a business in the last three years and it is still active ("young business"); and (5) Yes, I started or took over a business more than three years ago and it is still active ("mature business"). The question contains three other answer categories: (2a) No, I thought of it or had already taken steps to start a business but

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<sup>6</sup> The authors hypothesize an 'equilibrium' relationship between the rate of business ownership and per capita income.

<sup>7</sup> These interviews were conducted by the Gallup Organization Hungary/Europe January 9-16, 2007. In many countries (including the US) the target sample size amounted to 1,000 respondents. In Austria, Cyprus, Denmark, Estonia, Finland, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Norway, Slovakia, Slovenia and Sweden the target size was 500. For background information on this data set, we refer to the following document that can be downloaded from the website of the European Commission: [http://ec.europa.eu/public\\_opinion/flash/fl\\_192\\_en.pdf](http://ec.europa.eu/public_opinion/flash/fl_192_en.pdf).

gave up (“gave up”); (5a) Yes, I once started a business, but currently am no longer an entrepreneur since the business has failed (“failure”); and (5b) Yes, I once started a business, but currently I am no longer an entrepreneur since the business was sold, transferred or closed (“sell-off”).

The Flash Eurobarometer data emphasize the pre-start-up process of a company, a focus that is less prevalent in the existing literature on stages of entrepreneurial development. In fact, the pre-birth period is divided into three distinctive stages (“never considered”, “thinking”, “taking steps”). The “taking steps” stage refers to nascent entrepreneurship. The firm birth itself takes place between the third (“taking steps”) and the fourth stage (“young business”). The distinction between a young and a mature business is based on a period of 36 months.<sup>8</sup> This period does not take into account the fact that firms in fast growing industries probably climb the entrepreneurial ladder more rapidly than firms in less dynamic industries where it may take longer to transform a young business into a mature one.

A description of the explanatory variables is given in Table 1. The individual-level explanatory variables include five variables of which the initial values have been subtracted from country averages. These variables are: risk tolerance, stigma of failure, and the three perception variables. From our three perception variables (perception of administrative complexities, perceived lack of information, perceived lack of finance) we derive three measures of burdens that may be at play during the creation and development of new firms in a country. We let country averages of these subjective perceptions represent objective approximations of three dimensions of the regulatory environment. More specifically, the country averages reflect the strictness of the administrative regulatory environment in a country, the difficulty of obtaining information on issues surrounding new venture creation in a country, and the difficulty of obtaining credit in a country. Individual deviations from these averages (i.e., how much the perception of individuals deviates from the country average) can be considered as ‘cleaned’ perceptions. These ‘cleaned’ perceptions will be included in our model as individual explanatory variables. In addition, we include a proxy for the general risk attitude in a country (a measure of a country’s culture) by averaging values of the risk tolerance variable across all respondents in a country. We also take into account deviations from this average risk tolerance as individual-level determinants. We do the same for the stigma of failure variable.

The perception questions can be interpreted in (at least) two different ways by the respondents: they may think of their own situation or they may think of the general environment for, or attitude towards, entrepreneurship in their country, region or city. With respect to the stigma of failure variable, a respondent’s agreement with the question “*Do people who have started a business and failed deserve a second chance?*” can be interpreted in two slightly different ways: direct reading implies that an agreement with the statement means that the respondent does not attach a stigma to those who fail. A more audacious reading could suggest that those who agree might themselves be more likely to take a second chance in the event of a failure of their own venture. Clearly, the first, and more obvious, interpretation of this question makes this variable a cultural variable representing a respondent’s attitude towards failure in general, rather than addressing own failure. If, however, this attitude is related to considering “trying again” following an adverse business outcome, then this variable could also be seen as a primitive measure of the propensity to take risk. Moreover, under the first reading (linked to the attitude towards failure), even though the question clearly refers to the attitude of the respondent it could be argued that it may also partially reflect the way the respondent perceives these attitudes in his environment. Clearly, the expected influence of this variable on the probability of climbing the ladder depends on its interpretation.

Values for the country-specific variables are presented in Table 2. Note that we approximate the level of economic development with per capita income in 2006. We see that there exists cross-country variation. United States is generally characterized by low values for the hindering factors during the start-up process. More specifically, US citizens are on average less risk averse than Europeans<sup>9</sup>, and

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<sup>8</sup> This three year period corresponds with the GEM (Global Entrepreneurship Monitor) research program that defines the level of involvement in early-stage entrepreneurial activity as anyone who is either actively engaged in the process of starting a new business or owning/managing a business that is less than 42 months old. Reynolds et al. (2004) explain that this choice of 3.5 years is mainly based on operational, and not on theoretical, issues, although they also notice that the first 4-5 years of a firm are essential for its survival.

<sup>9</sup> The United States have the highest value for risk tolerance among all countries in the sample.

they appear to have fewer problems with administrative complexities, insufficient information and financial difficulties for starting up a business. Other interesting facts include the following. Apart from the US, risk tolerant societies can be found in Norway, Ireland, Denmark, and Iceland, while risk aversion is strongest in Slovenia, Portugal, Estonia, Malta, and Lithuania. Inhabitants of France, Greece, Italy and Portugal appear to be confronted with a relatively unfavorable entrepreneurial climate as they suffer most from administrative complexities, insufficient information and lack of financial support.

We see that several transition (post-communist) countries (Poland, Lithuania, Latvia, Hungary, Slovakia, and Estonia) have the lowest levels of economic development. Czech Republic and Slovenia are not performing well either from an economic perspective, i.e., they occupy positions 9 and 10 in the list of least economically developed countries, respectively. The transition economies are also characterized by a relatively high level of administrative complexities (they all have above-average values), suggesting a high level of bureaucracy in these countries. Except for Estonia and the Czech Republic, transition countries also perform poorly in terms of access to financial resources. This difficulty of obtaining credit also applies to countries in Southern Europe, which are in addition characterized by lack of information on issues related to new venture creation. Scandinavian countries score relatively low on the administrative complexity variable.

Correlations are presented in Table 3. Although the perception variables show some correlation amongst themselves, we do not expect any problems for our further analyses, given that these values are not excessively high. Note that the risk attitude and stigma of failure variables are not correlated with each other, indicating that they represent two independent constructs.

For all countries, the percentages across all entrepreneurial engagement levels are given in Table 4. Noteworthy differences between the European countries and the US emerge. For example, in the US 30 percent of the people never considered setting up a business while the unweighted European average amounts to 52 percent.<sup>10</sup> Also, the percentage of people in the “thinking” and “taking steps” stages in Europe are considerably lower than in the US (11% and 4% versus 21% and 9%, respectively).

## 4. Model

To capture the entrepreneurial decision as a process consisting of five engagement levels (i.e., “never considered”, “thinking”, “taking steps”, “young business” and “mature business”), Van der Zwan et al. (2009) use a cumulative logit model. This model essentially assesses the influence of the explanatory variables on the odds (ratio of two probabilities) of being beyond a particular engagement level relative to being exactly at, or below, this engagement level. Hence, all individuals who failed to make it to a certain engagement level are compared with all people who achieved a higher engagement level. In the present study we make use of an alternative ordinal model: i.e., the continuation ratio model or sequential model (Agresti, 1984, Tutz, 1991) in which the categories can only be reached successively since it makes use of conditional probabilities (e.g., Fahrmeir and Tutz, 1994). In case of a logistic distribution one arrives at the continuation ratio logit model. The continuation ratio logit model assesses the influence of the explanatory variables on the odds of being beyond a particular engagement level relative to being at this engagement level, with both probabilities conditional on being at or beyond this engagement level. All persons in a particular engagement level are compared with all people who advanced to a higher engagement level. Being in engagement level  $j$  implies that  $j-1$  transitions to a higher engagement level have been successful and that the  $j$ th transition failed. Accordingly, climbing the entrepreneurial ladder can be considered a sequence of binary transitions: given that one belongs to a certain engagement level, an individual moves either on to the next engagement level, or (un)voluntarily stops at the present level.

Suppose we have an ordered observed variable,  $Y_i$ , for each individual, i.e. the engagement

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<sup>10</sup> Note that this percentage is not shown in Table 4.

level of individual  $i$  with outcomes  $j = 1, \dots, J$ . Note that  $j = 1$  and  $j = J$  denote the lowest (“never considered”) and highest level (“mature business”) of engagement, respectively. The continuation ratio logit model assumes a conditional modeling of transitions:  $\Pr(Y_i = j | Y_i \geq j) = F(\alpha_j - X_i' \beta)$  for each  $j$  with  $\Pr(Y_i = 0 | Y_i \geq 0) = 0$  and  $\Pr(Y_i = J | Y_i \geq J) = 1$ .  $F(\cdot)$  is a cumulative logistic distribution function with a mean of zero and a variance of  $\pi^2/3$ . A transition takes place if the underlying latent variable that determines the transition exceeds a transition-specific threshold value (these are denoted by  $\alpha_1, \dots, \alpha_{J-1}$  in the formula above; see Tutz, 1991). With the conditional probabilities one can define the entire (unconditional) probability function of  $Y_i$ . This conditional view on the entrepreneurial ladder implies that persons in “never considered” will only be incorporated in the transition from “never considered” to “thinking” whereas in Van der Zwan et al. (2009) this group of individuals is included in each comparison.

Note that the coefficient vector  $\beta$  is the same across all observations  $i$  and engagement levels  $j$ . This may be an unrealistic assumption in practice. The coefficients can be made category-specific, which essentially comes down to performing binary logit regressions and to zoom in on four specific positions on the entrepreneurial ladder. For example, the first engagement level (“never considered”) can be compared with the four remaining engagement levels, i.e. a logit regression of  $\Pr(Y_i > 1)$  versus  $\Pr(Y_i = 1)$ . Similarly, three other logit regressions can be conducted:  $\Pr(Y_i > 2)$  versus  $\Pr(Y_i = 2)$ ,  $\Pr(Y_i > 3)$  versus  $\Pr(Y_i = 3)$  and  $\Pr(Y_i > 4)$  versus  $\Pr(Y_i = 4)$ .

The results obtained by the continuation ratio logit regression can be interpreted by using log-odds ratios that are linear functions of the explanatory variables. These ratios can be expressed as follows:  $\log(\Pr(Y_i > j | Y_i \geq j) / \Pr(Y_i = j | Y_i \geq j)) = X_i' \beta + \alpha_j$ . Given a positive coefficient and holding constant all other variables, an increase in a particular variable raises the likelihood of belonging to a higher engagement level, relative to the likelihood of belonging to the present engagement level, conditional on being at or beyond the present engagement level. In the same fashion, one can interpret the results from the four binary logit regressions.

Our model formulation is – strictly speaking – incomplete as individuals in “thinking”, “taking steps” and “young business” are still climbing the entrepreneurial ladder at the moment of the survey. This implies that their final engagement level is not observed (censored observations), although it is implicitly assumed in the continuation ratio logit model that current engagement equals final engagement. The engagement levels “never considered”, “mature business”, “gave up”, “failure”, and “sell-off” correspond to final engagement on the entrepreneurial ladder.<sup>11</sup> Unfortunately, we do not have information on whether individuals in the “gave up” stage ultimately reached “thinking” or “taking steps” stages. The same holds true for the “failure” and “sell-off” stages, as the survival time of these businesses is not known. The results presented in the remainder of this study are generated without individuals in the “failure” and “sell-off” stages being assigned to either “young business” or “mature business” stage. Individuals in the “gave up” stage have been classified into the “thinking” stage, although one could argue that a correct classification would be the “taking steps” stage. This is an issue for further debate. In general, it turns out that other classifications do not lead to different conclusions. Results for the other classifications are available from the authors upon request.

## 5. Analysis and Results

Table 5 displays the results of the continuation ratio logit regression (i.e., the parsimonious ‘overall’ model) in the first column and the four binary logit regressions in the last four columns. Here we include the individual-level explanatory variables and country dummies. Hence, we investigate country effects by including 25 country dummies (representing the European Union member states, Norway and Iceland), with the United States as the benchmark country. Below we will discuss the

<sup>11</sup> Note that Van der Zwan et al. (2009) do not take into account “gave up”, “failure”, and “sell-off”, but the underlying observations contain important information.

outcomes for the individual-level factors characteristics and the country differences, respectively.

## 5.1. Individual-level effects

### Gender

Gender appears a determining factor in achieving entrepreneurial progress: being a man increases the odds of being beyond rather than being at a specific engagement level (conditional on being at or beyond this level and all other variables equal) with  $\exp(0.58)$ . This makes gender the individual characteristic with the highest coefficient in absolute sense. However, the pattern is not consistent across the four binary models. The significance of gender in the ‘overall’ model can be entirely attributed to an advantage for men (relative to women) in the transition from “never considered” to “thinking” and from “thinking” to “taking steps”. Hence, given that an individual undertakes activities to start up a business, the likelihood of making transitions to a higher entrepreneurial engagement level is independent of gender. Equal odds for men and women to be in the “mature business” stage relative to the “young business” stage (given that the “young business” stage has been reached), even suggests equal survival chances across gender. Furthermore, it may be possible that the higher propensity in the first two transitions runs also through other determinants on male and female entrepreneurial activity or that the gender effect in the last two transitions can entirely be attributed to these moderation effects.<sup>12</sup>

### Age

From Table 5 we see that the turning point of age at which the likelihood of advancing beyond a given engagement level decreases, amounts to 42 years. After this age individuals are less likely to belong to a higher level of entrepreneurial engagement. This effect of age on the transition probability is again primarily influenced by the first transition as the turning point – at which the transition to the “thinking” stage becomes less likely – amounts to 37 years. Our results are relatively similar to those in Van der Zwan et al. (2009) who conclude that beyond the age of 36 years the probability of at least thinking about embracing an entrepreneurial career decreases.

### Education

Table 5 reveals that the positive effect of the education variable dominates, implying that entrepreneurial progress is enhanced by a higher level of education. Again, we can observe differences across the four binary logit regressions. The impact of education is significantly positive for the first transition (“never considered” to “thinking”), insignificant for the next transition (“thinking” to “taking steps”) and significantly negative when zooming in on the final two switches on the entrepreneurial ladder (i.e., “taking steps” to “young business” and “young business” to “mature business”). Entrepreneurship education appears indeed important for having start-up intentions, but does not have an effect on future transitions.

### Role models

The ‘overall’ model in the first column of Table 5 reveals that having self-employed parents generally contributes to advancement in the entrepreneurial process. Investigating the possible differential impacts of this variable across the engagement levels, it turns out that self-employed parents are of help during the early phase of setting up business. More precisely, they are crucial in the

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<sup>12</sup> Investigating moderation effects by means of interaction terms between all individual explanatory variables and gender reveals that there are three coefficients with significant differential impacts on female and male entrepreneurial activity: self-employed parents, risk tolerance, and perception of lack of financial support. Results can be obtained from the authors upon request. The significant positive interaction effect of self-employed parents with gender implies that self-employed parents appear more important for men than for women. The significant negative interaction effect of gender with risk tolerance on advancing in the entrepreneurial process indicates that risk attitude plays a more important role for the entrepreneurial engagement of women. Hence, it seems that women need to feel more confident about themselves and/or the activity before deciding to embrace an entrepreneurial career. For men the effect of a perceived lack of financial support is significant, while for women this perception does not play a role, suggesting that women are less likely than men to let the perception of a lack of financial support get in the way of their entrepreneurial advances. A further look reveals that these results are mainly influenced by the results from the binary logit regression that compares individuals in “never considered” with those in levels of higher entrepreneurial engagement.

entrepreneurial intention phase, but do not appear to be important for actually setting up a business or in terms of business survival.

### **Urban versus rural area**

In general, living in an urban or a rural area does not improve the chance of climbing the entrepreneurial ladder. Again, we also have a look at the separate splits to check whether there are some impacts that were not apparent from the parsimonious formulation of the continuation ratio logit model. Quite unexpectedly, living in an urban rather than in a rural area does not improve entrepreneurial progress in each of the separate stages.

### **Risk tolerance and stigma of failure**

The significant impact of risk tolerance in the continuation ratio logit model can be attributed to the highly significant effect of risk tolerance on thinking about starting a business. After this transition, this variable loses its significance. Stigma of failure does not appear to have an impact on advancing in the entrepreneurial process in general, although it has some influence on holding back intentions to start a business.

### **Perceived barriers to entrepreneurship**

Of the perception variables, the perception of administrative complexities negatively influences the probability of being beyond a given engagement level, whereas there is no discriminating effect for perception of lack of financial support, and perception of insufficient information in the 'overall' model. A closer look at the separate regressions reveals that the perception of administrative complexities only hinders individuals to switch from "never considered" to "thinking" and from "thinking" to "taking steps". The perception of individuals of financial complexities hinders them in taking steps to start a business, but is insignificant in all other comparisons. To conclude, we find that none of the perception barriers play a hindering role in transforming nascent activities into an established business and in the survival of existing businesses (switch from "young business" to "mature business").

## **5.2. Country dummy effects**

Concerning the 'overall' climbing strength on the entrepreneurial ladder (first column in Table 5), it appears that each country has lower odds than, or is at par with, the US. To be more precise, there are nine countries (Cyprus, Czech Republic, Estonia, Greece, Hungary, Iceland, Latvia, Poland, and Slovakia) where individuals are able to keep up with the entrepreneurial progress of US citizens. It is tempting to conclude that these countries have highest entrepreneurial progress opportunities. Furthermore, individuals from Austria, Belgium, France, Luxembourg, Malta, Slovenia and Spain have a relatively low likelihood to move beyond a given engagement level (the log odds of these countries are below -0.50). Hence, low-income countries perform rather well in shaping conditions to achieve entrepreneurial progress, as seven out of nine countries have a lower per capita income than the average value as displayed in Table 2 (exceptions are Greece and Iceland). This supports the claim of Bowen and De Clercq (2008) that there is potential for high growth opportunities in transition economies. Welfare states such as Austria, Belgium, France, and Luxembourg, characterized by a stringent regulatory environment, discourage individuals from advancing in the entrepreneurial process, thereby missing opportunities to enhance the competitiveness of these regions. In strong welfare states, economic incentives for opportunity-based and necessity-based entrepreneurship are reduced (Henrekson, 2005) and the regulatory environment concerning the entry of new businesses is considered to be relatively stringent. We will discuss the influence of country-specific variables later.

With respect to the country differences for each binary logit regression, we see that the overall effects as described above do not adequately capture the unique effects across all comparisons (i.e., specific engagement level transition). The US is an excellent example of this pattern. Although the US is an entrepreneurial society, its dominance concerning the ease with which individuals move from "never considered" to "thinking" arises from the fact that all countries have significantly lower odds. In particular Austria, Belgium, France, Lithuania, Malta, Norway, Portugal, Slovenia and Spain (log-odds below -0.90) do not perform well as compared to the US. There is much potential in these

countries to make individuals aware of entrepreneurship as a possible career option. The position of the US weakens when zooming in on the second transition. That is, individuals from Belgium, Finland, Hungary, and Iceland have a significantly higher likelihood compared to US individuals of belonging to “taking steps” relative to “thinking” (conditional on being in at least “thinking”). Log-odds of Austria, Denmark, France, Germany, Luxembourg, Malta, Slovakia, and Slovenia are all below -0.50 and this makes these countries weak performers with respect to this transition.

Regarding the switch from “taking steps” to “young business” it should be noted that all countries have higher odds than, or are at par with, the US. Individuals from Belgium, Cyprus, Finland, Greece, Iceland, Malta, Norway, Portugal, Slovenia and Spain in particular have a high conditional likelihood (log-odds above 0.90) to advance beyond the “taking steps” stage. There do not seem to be many impediments in these countries withholding individuals from converting their start-up efforts into a new business. Note that this set of countries mainly consists of Southern European countries which are ‘less developed’ welfare states. The prominent positions of Finland, Iceland and Norway are remarkable. Countries that are at par with US (and thus weak performers) are Austria, France, Lithuania and Slovakia.

Hardly any country difference appears at the final switch (from “young business” to “mature business”). Survival chances seem to be highest in Belgium, Hungary, Iceland, and Poland (which are the only countries with significant positive coefficients), whereas Portugal closes the ranking.

In sum, in the relatively weakly regulated US, individuals have a high likelihood of thinking about starting a business, but have difficulties achieving higher levels of engagement. For example, transforming nascent activity into an established business appears a relatively complicated exercise as all countries have higher odds than, or are at par with, the US. All in all there is substantial heterogeneity between countries and transition levels. In the next section an attempt is made to explain this heterogeneity. In general, however, Austria, France and Lithuania seem to be characterized by low transition probabilities (no significant positive coefficient in Table 5), while especially in Hungary and Iceland there are high entrepreneurial progress opportunities (at least two significant positive coefficients in Table 5). Finally, the performance of Belgium, Hungary, Iceland and Poland increases with the level of engagement.

### 5.3. Country-level effects

Table 6 shows the results of the continuation ratio logit regression and four binary logit regressions including individual explanatory variables and country-level variables.<sup>13</sup> More country-specific variables could have been included in our model (e.g., country averages of the individual stigma of failure variable) but, with only 28 countries, we prefer a parsimonious model to an over-fitted model with a surplus of variables.<sup>14</sup>

In the ‘overall’ model captured by the continuation ratio coefficients, we see that risk tolerance has a positive effect on a country’s entrepreneurial progress while per capita income has a U-shaped effect with the trough at some 29,000 US\$ of 2006.

Investigating the binary logit regressions, we see a U-shaped relationship between level of economic development and entrepreneurial progress for the first two transitions (from “never considered” to “thinking” and from “thinking” to “taking steps”). In addition, a country’s position on the entrepreneurial ladder regarding these first two switches will be enhanced by a more tolerant

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<sup>13</sup> In case of the binary dependent variables we use a random intercept logistic regression. This two-level model comes down to the regular binary logit model with an additional country-specific random intercept. That is, each country has an own intercept that depends on the country-specific variables in Table 1 and an error term which captures country-specific influences that are not included in the model. One thus controls for observed and unobserved heterogeneity across countries. In case of the continuation ratio logit regression we use the estimated coefficients of the country dummies in Table 5 and regress them on the country-specific variables in Table 1. Hence, we do not control for unobserved heterogeneity in this case.

<sup>14</sup> Additionally including the stigma of failure variable does not lead to different results while the variable itself has no significant impact across the board. However, replacing it with risk tolerance leads to significant negative impacts of this variable on the first and second transition (albeit marginally at 10 percent) but no significant impact in general. Per capita income loses its significance in the overall regression and in the first two regressions.

attitude towards risk in society. That is, the performance of countries in shaping the conditions for entrepreneurial progress in these early stages of entrepreneurial involvement is dependent upon the level of economic development and a society's risk attitude. We do not have an explanation of the positive effect of insufficient information for two out of four transitions.

Note that high administrative complexity hardly plays a role in fostering or lowering the entrepreneurial progress potential. This is in sharp contrast with the impact of the individual perception of administrative complexity in Table 5. Furthermore, access to finance explains country differences in the transitions from "thinking" to "taking steps" and from "taking steps" to "young business", although the latter coefficient is only significant at 10 percent. Hence, difficulty of obtaining finance for new venture creation weakens a country's position on the entrepreneurial ladder. This does not only hold true for the switch from "thinking" to "taking steps", but is also present in the switch from "taking steps" to "young business" (when capital is urgently needed).

## 6. Conclusion

Using data from the 2007 "Flash Eurobarometer survey on Entrepreneurship", we investigate steps in the entrepreneurial process (measured using five stages of entrepreneurial engagement) and find evidence for both individual differences and cross-country differences. We relate the progression through these stages across these countries (i.e., entrepreneurial progress) to several factors, including the level of economic development, the general risk attitude in a country (a measure of a country's culture), and three country-level measures of impediments that may be at play at start-up. Furthermore, the impact of individual explanatory variables is assessed.

With respect to the individual-level factors we find that women have a lower probability to advance on the entrepreneurial ladder than men, but that this slower progress is only visible in the early stages of entrepreneurial involvement. That is, the transitions from "never considered" to "thinking" and from "thinking" to "taking steps" are more difficult for women than for men, but gender differences disappear at higher stages of entrepreneurial involvement. Living in a metropolitan or rural area does not have an influence on entrepreneurial progress opportunities. Self-employed parents are only valuable for having entrepreneurial intentions and for undertaking serious activities to start a business. For actual start-up and survival parental role models do not seem to play a role. Risk attitude and stigma of failure are both important in the first stage of the entrepreneurial decision, i.e. thinking about an entrepreneurial career. Finally, individual perceptions of the environment do not influence the likelihood of switching from "taking steps" to "young business", although perceptions of administrative complexities and a lack of financial support are impeding factors in undertaking nascent activities. These findings should urge governments to communicate the actual procedures and regulations to individuals to prevent that biased perceptions hinder stepping up the entrepreneurial ladder in an early stage.

Next to individual differences we investigate country effects which are the main object of our analysis of entrepreneurial progress. Countries display a large variation with respect to entrepreneurial progress. In the US, for example, there is a high inclination to think about starting a business, but a different picture emerges when nascent activities are to be materialized into a start-up. This is illustrated by the fact that in all European countries in our dataset it is easier or just as easy to make this crucial switch in the entrepreneurial process compared to the US. In Austria, France and Lithuania there appears to be a general low probability to advance on the entrepreneurial ladder. Especially in Hungary and Iceland there are high entrepreneurial opportunities. Finally, the performance of Belgium, Hungary, Iceland and Poland increases with the level of engagement, whereas the Portuguese have particular difficulties converting their young businesses into established ones.

Investigating this large variation across countries we find that an unfavorable financial climate, insufficient information, risk tolerance and the level of economic development play a role at various levels of engagement. On average across levels of engagement (as captured by the continuation ratio) risk tolerance has a positive effect on a country's entrepreneurial progress while per capita income has a U-shaped effect.



This study investigates a range of important determining factors of entrepreneurial activity, both at the country and individual-level. Nevertheless, there may be other variables that play a role in determining entrepreneurial progress, such as composition of economic activity, labor regulation, social security and taxation systems. Clearly, more research is needed to create better insight into the influence of these country-specific factors on the backward or forward position of individuals and countries on progression on the entrepreneurial ladder and the obstacles for entrepreneurial progress. Nevertheless, some important results are obtained introducing and explaining entrepreneurial progress being a main determinant of the competitiveness of countries and regions.

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**Table 1: Descriptions of explanatory variables (individual-level and country-level)**

<b>Variable name</b>	<b>Variable description</b>
<i>Individual-level</i>	
Gender	Male (=1) or female (=0).
Age	Age of the respondent in years.
Education level <sup>(a)</sup>	Age when finished full time education
Entrepreneurship education	To what extent do you agree with the statement: “ <i>My school education helped me to develop my sense of initiative (entrepreneurial attitude)</i> ”? Dummy variable with ‘strongly agree’ or ‘agree’=1 and ‘disagree’ or ‘strongly disagree’=0.
Self-employed parents	Dummy variable with value 1 if the mother, father or both are self-employed and value 0 if neither of the parents is self-employed.
Metropolitan or urban area	Dummy variable with value 1 if an individual lives in a metropolitan or an urban area and value 0 if this individual lives in a rural area.
Risk tolerance	To what extent do you agree with the statement: “ <i>One should not start a business if there is a risk it might fail</i> ”? Value 1 if ‘strongly disagree’ or ‘disagree’ is answered and value 0 if ‘agree’ or ‘strongly agree’ is answered. Individual values are subtracted from the specific country average.
Stigma failure	To what extent do you agree with the statement: “ <i>People who started their own business and have failed should be given a second chance</i> ”? Value 1 if ‘strongly disagree’ or ‘disagree’ is answered and value 0 if ‘agree’ or ‘strongly agree’ is answered. Individual values are subtracted from the specific country average.
Perception administrative complexities	To what extent do you agree with the statement: “ <i>It is difficult to start one's own business due to the complex administrative procedures</i> ”? Value 1 if ‘strongly agree’ or ‘agree’ is answered and value 0 if ‘disagree’ or ‘strongly disagree’ is answered. Individual values are subtracted from the specific country average.
Perception insufficient information	To what extent do you agree with the statement: “ <i>It is difficult to obtain sufficient information on how to start a business</i> ”? Value 1 if ‘strongly agree’ or ‘agree’ is answered and value 0 if ‘disagree’ or ‘strongly disagree’ is answered. Individual values are subtracted from the specific country average.
Perception lack of financial support	To what extent do you agree with the statement: “ <i>It is difficult to start one's own business due to a lack of available financial support</i> ”? Value 1 if ‘strongly agree’ or ‘agree’ is answered and value 0 if ‘disagree’ or ‘strongly disagree’ is answered. Individual values are subtracted from the specific country average.
<i>Country-level</i>	
Risk tolerance	Country average of corresponding individual-level question (see above).
Administrative complexities	Country average of corresponding individual-level question (see above).
Insufficient information	Country average of corresponding individual-level question (see above).
Lack of financial support	Country average of corresponding individual-level question (see above).
Income per capita	Gross national income per capita 2006, in purchasing power parity per US\$ (Source: World Development Indicators 2008, World Bank).

<sup>(a)</sup> A small fraction of 319 individuals in the original sample responded that they never attended full time education. These observations have value 12 for the education level to reflect possible entry to the labour market. Also, all answers between 1 and 11 have been recoded into 12 (493 observations in the original sample).

**Table 2: Values of country-specific variables**

	Risk tolerance	Administrative complexities	Insufficient information	Lack of financial support	Income per capita
Austria	0.47	0.63	0.36	0.71	36,040
Belgium	0.41	0.78	0.56	0.78	33,860
Cyprus	0.48	0.68	0.64	0.86	25,060
Czech Republic	0.52	0.76	0.39	0.63	22,920
Denmark	0.67	0.77	0.34	0.66	36,190
Estonia	0.29	0.74	0.41	0.73	18,090
Finland	0.55	0.69	0.38	0.59	33,170
France	0.57	0.81	0.60	0.89	32,240
Germany	0.44	0.81	0.45	0.77	32,680
Greece	0.59	0.81	0.73	0.92	30,870
Hungary	0.35	0.76	0.57	0.90	16,970
Iceland	0.61	0.54	0.42	0.55	33,740
Ireland	0.67	0.67	0.39	0.69	34,730
Italy	0.43	0.85	0.65	0.89	28,970
Latvia	0.48	0.78	0.38	0.93	14,840
Lithuania	0.31	0.87	0.47	0.85	14,550
Luxembourg	0.49	0.75	0.61	0.80	60,870
Malta	0.31	0.68	0.49	0.80	20,990
Netherlands	0.57	0.73	0.25	0.61	37,940
Norway	0.67	0.75	0.39	0.64	50,070
Poland	0.40	0.78	0.54	0.86	14,250
Portugal	0.28	0.84	0.78	0.91	19,960
Slovakia	0.47	0.76	0.41	0.89	17,060
Slovenia	0.27	0.80	0.47	0.87	23,970
Spain	0.54	0.77	0.62	0.83	28,200
Sweden	0.53	0.73	0.41	0.77	34,310
United Kingdom	0.56	0.63	0.42	0.73	33,650
United States	0.79	0.60	0.36	0.71	44,070
Aggregate	0.49	0.74	0.48	0.78	29,652

**Table 3: Correlation matrix of individual explanatory variables**

	1	2	3	4	5	6	7	8	9
1. Gender	1								
2. Age	0.01	1							
3. Education level	0.05	-0.00	1						
4. Entrepreneurship education	0.01	-0.03	0.09	1					
5. Self-employed parents	0.02	0.03	0.02	0.03	1				
6. Risk tolerance	0.05	-0.15	0.09	-0.03	-0.03	1			
7. Stigma failure	0.04	0.04	-0.01	0.01	0.09	-0.04	1		
8. Perception administrative complexities	0.01	0.06	-0.04	0.01	-0.01	-0.14	0.01	1	
9. Perception insufficient information	-0.04	0.07	-0.04	-0.01	-0.00	-0.14	-0.02	0.30	1
10. Perception lack of financial support	-0.08	0.01	-0.04	0.03	-0.04	-0.13	-0.06	0.31	0.23

Spearman correlations are calculated between each pair of binary variables (ranging between -1 and 1). All other values are calculated using Pearson correlation coefficient (also between -1 and 1). The numbers are based on 13,956 observations.



**Table 4: Proportion of engagement levels for each country**

	(1)	(2)	(3)	(4)	(5)	(2a)	(5a)	(5b)	
	Never considered	Thinking	Taking steps	Young business	Mature business	Failure	Gave up	Sell-off	Number of obs.
Austria	0.57	0.07	0.02	0.02	0.05	0.01	0.21	0.05	475
Belgium	0.63	0.06	0.03	0.02	0.07	0.02	0.09	0.07	897
Cyprus	0.40	0.15	0.03	0.05	0.11	0.04	0.12	0.11	493
Czech Republic	0.49	0.13	0.04	0.03	0.08	0.03	0.18	0.03	910
Denmark	0.47	0.20	0.03	0.02	0.05	0.03	0.12	0.08	495
Estonia	0.59	0.09	0.06	0.04	0.08	0.03	0.09	0.03	451
Finland	0.56	0.06	0.02	0.03	0.09	0.02	0.10	0.12	419
France	0.57	0.10	0.03	0.02	0.04	0.01	0.17	0.07	983
Germany	0.48	0.12	0.04	0.04	0.06	0.02	0.20	0.05	966
Greece	0.36	0.15	0.02	0.08	0.11	0.04	0.14	0.10	989
Hungary	0.53	0.14	0.03	0.02	0.10	0.04	0.06	0.07	983
Iceland	0.41	0.14	0.05	0.04	0.14	0.02	0.09	0.12	442
Ireland	0.49	0.13	0.04	0.04	0.07	0.04	0.12	0.06	477
Italy	0.56	0.07	0.04	0.03	0.05	0.02	0.15	0.08	941
Latvia	0.50	0.25	0.06	0.03	0.06	0.03	0.01	0.06	451
Lithuania	0.61	0.14	0.06	0.02	0.05	0.03	0.04	0.04	471
Luxembourg	0.55	0.08	0.03	0.03	0.04	0.02	0.20	0.06	462
Malta	0.63	0.08	0.01	0.01	0.02	0.00	0.24	0.01	434
Netherlands	0.52	0.08	0.04	0.04	0.05	0.02	0.18	0.08	937
Norway	0.58	0.11	0.02	0.03	0.09	0.01	0.08	0.08	461
Poland	0.45	0.14	0.06	0.02	0.08	0.04	0.15	0.06	963
Portugal	0.58	0.04	0.03	0.05	0.05	0.03	0.15	0.07	969
Slovakia	0.43	0.27	0.05	0.02	0.05	0.03	0.12	0.04	479
Slovenia	0.55	0.13	0.01	0.02	0.03	0.02	0.18	0.05	492
Spain	0.57	0.08	0.03	0.03	0.06	0.03	0.14	0.06	964
Sweden	0.45	0.15	0.06	0.03	0.05	0.02	0.12	0.11	478
United Kingdom	0.47	0.08	0.05	0.03	0.05	0.02	0.20	0.09	971
United States	0.30	0.21	0.09	0.04	0.08	0.04	0.09	0.14	947
Number of obs. (proportion)	9,812 (0.51)	2,298 (0.12)	770 (0.04)	629 (0.03)	1,299 (0.07)	505 (0.03)	2,687 (0.14)	1,400 (0.07)	19,400

**Table 5: Estimation results continuation ratio logit model and four binary logit models  
(benchmark country: US)**

	continuation ratio	(1) vs. above	(2) vs. above	(3) vs. above	(4) vs. (5)
Gender	0.575***	0.644***	0.527***	-0.065	0.099
Age	0.104***	0.057***	0.082***	0.017	0.160***
(Age/100) squared	-12.284***	-7.716***	-5.910***	6.295***	-11.729***
Education level	0.016***	0.025***	0.003	-0.018**	-0.025***
Entrepreneurship education	0.213***	0.311***	0.009	-0.059	-0.098
Self-employed parents	0.248***	0.230***	0.334***	-0.010	0.160
Metropolitan/urban	-0.079**	-0.054	-0.015	-0.152	-0.099
Risk tolerance	0.192***	0.230***	0.003	0.090	-0.041
Stigma of failure	-0.031	-0.093*	-0.094	0.188	0.332*
Perception admin. complexities	-0.168***	-0.158***	-0.182***	-0.011	0.084
Perception insufficient info	-0.029	-0.016	0.024	0.001	0.030
Perception finance	-0.038	0.075	-0.218***	-0.124	-0.012
Austria	-0.523***	-0.960***	-0.887***	0.553	0.570
Belgium	-0.641***	-1.112***	0.343**	1.134***	0.700*
Cyprus	-0.157	-0.555***	-0.122	1.280***	0.046
Czech Republic	-0.028	-0.336***	-0.243*	0.857***	0.517
Denmark	-0.396***	-0.680***	-0.533***	0.761**	0.253
Estonia	-0.086	-0.633***	0.317	0.605*	0.499
Finland	-0.424***	-0.774***	0.538***	1.302***	0.301
France	-0.709***	-1.136***	-0.696***	0.333	0.086
Germany	-0.301***	-0.649***	-0.577*	0.750***	0.088
Greece	-0.039	-0.399***	-0.167	1.932***	-0.139
Hungary	0.025	-0.505***	0.297*	0.742***	0.694*
Iceland	0.043	-0.389**	0.436**	1.037***	0.902**
Ireland	-0.372***	-0.854***	-0.168	0.883***	-0.014
Italy	-0.427***	-0.799***	0.036	0.723***	-0.057
Latvia	-0.104	-0.363**	0.190	0.520*	0.581
Lithuania	-0.486***	-1.002***	0.260	0.109	0.214
Luxembourg	-0.527***	-0.875***	-0.537***	0.829**	0.007
Malta	-0.829***	-0.949***	-0.930***	2.182***	1.455
Netherlands	-0.464***	-0.810***	-0.379***	0.615**	-0.251
Norway	-0.292**	-0.973***	0.096	1.305***	0.519
Poland	-0.117	-0.433***	-0.221*	0.498**	0.770**
Portugal	-0.442***	-0.949***	0.100	0.991***	-0.910***
Slovakia	-0.150	-0.342**	-0.661***	0.009	0.173
Slovenia	-0.626***	-0.904***	-1.112***	1.359***	-0.177
Spain	-0.559***	-1.106***	-0.232	1.027***	0.085
Sweden	-0.298**	-0.490***	-0.173	0.585*	-0.217
United Kingdom	-0.410***	-0.651***	-0.257*	0.471**	-0.273
Number of observations	11,793	13,956	7,996	4,318	1,523

Estimates of thresholds (in case of continuation ratio logit model) and intercepts (binary logit models) are not shown.

**Table 6: Impact of country-level variables**

	continuation ratio	(1) vs. above	(2) vs. above	(3) vs. above	(4) vs. (5)
Risk tolerance	1.412***	1.521***	1.292*	-0.636	0.316
Administrative complexities.	-0.549	-1.309*	0.404	0.159	-0.610
Insufficient information	0.476	-0.179	2.053***	2.537***	-0.348
Lack of financial support	-0.642	0.384	-3.193***	-2.143*	-1.178
Per capita income/1,000	-0.059***	-0.053**	-0.075**	0.040	-0.073*
(Per capita income/1,000) squared	0.001**	0.001*	0.001*	-0.001	0.001

Estimates of intercepts and coefficients of individual explanatory variables are not shown.