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

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Abstract: This study investigates which countries have the highest potential to achieve entrepreneurial progress. This progress is an important determinant of a region's competitiveness and is defined as 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". The influences of individual-level and country-level variables on the progression through these stages are analyzed. Data are used from the 2007 Flash Eurobarometer Survey on Entrepreneurship, covering 27 European countries and the United States. Findings show 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. Furthermore, country differences can be explained mainly by levels of risk tolerance and economic development. A country's level of administrative complexity does not play a role in achieving entrepreneurial progress, but individual perceptions of this complexity are a hindering factor.

1. Introduction

The link between entrepreneurship and economic performance has been the subject of animated debates in academic and policy circles. Considering that new and small firms are the backbone of innovative activity, creating and maintaining an environment conducive to a dynamic business fabric with ample market opportunities will pay its dividends in terms of job creation and economic growth (Carree and Thurik, 2003; Audretsch and Keilbach, 2004; European Commission, 2008, ch.3). The potential to create, perceive, act upon, and commercialise these market opportunities can be seen as an important contribution of entrepreneurship to a region's level of competitiveness[1]. The role of entrepreneurship in enhancing the competitiveness of regions is emphasised by Kitson et al. (2004, p. 997) who argue that "(…) *competitive regions and cities are places where both companies and people want to locate and invest in*". Hence, competitive regions tend to be characterised by a well-developed infrastructure that supports business activity. According to the European Commission (2009, p.17): "*At the roots of competitiveness we find the institutional and microeconomic policy arrangements that create conditions under which businesses can merge and thrive and individual creativity and effort are rewarded*". Each region has its own regulations and laws imposed by the government, as well as a certain level of competition and munificence of resources, that will determine the available opportunities for entrepreneurs. More favourable regional conditions will enhance the ease with which (potential) firms come into existence, persist, and grow in the market, which in turn may positively affect a region's competitiveness. Alternatively, unfavourable economic circumstances, such as high unemployment rates, may push people to start up their own businesses (Evans and Leighton, 1990), although empirical research is inconclusive about the direction of causality in the relationship between unemployment and the business ownership rate (Santarelli et al., 2009; Reynolds et al., 1994).

Not only is the creation of new ventures important for regional performance, but so is their growth and survival. Entrepreneurship (i.e., starting up and managing a business) is often considered a process that consists of several stages (Reynolds, 1997; Rotefoss and Kolvereid, 2005; Grilo and Thurik, 2008). Entrepreneurial progress is defined as an entrepreneurial ladder, where higher steps on this ladder refer to a higher level of entrepreneurial engagement (Van der Zwan et al., 2010). Individuals can move through five sequential stages: "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). Through climbing this proverbial ladder and stepping from one level to the next, individuals achieve entrepreneurial progress and contribute to the competitiveness of regions and nations.

This study empirically examines how and why entrepreneurial progress differs across 27 European countries and the United States. Specifically, it is investigated which countries' individuals have the highest likelihood of transitioning to higher levels of entrepreneurial engagement. The progress through the five stages of entrepreneurial engagement is related to several factors, including the level of economic development, a country's attitude towards risk and three country-level measures of business start-up impediments, including limited access to finance, administrative complexity and insufficient information. In addition, this study examines what the effects of individual-level factors (i.e., gender, age, education level, parental role models, risk attitude, perceived barriers to setting up a business, and residential area as a regional factor) are on the likelihood of advancement in the entrepreneurial process.

The contribution of this study to the existing knowledge base is threefold. First, the data set (the 2007 Flash Eurobarometer Survey on Entrepreneurship) allows for comparison of the conditions for entrepreneurial progress across 28 countries. For example, to what extent do individuals in the United States decide to become entrepreneurs and develop companies, compared to individuals in Europe? Which stages are more difficult or easier to reach in the US, compared to other countries, and how can this be explained? Second, whereas most studies on the determinants of entrepreneurship focus on one level of analysis only (e.g., the individual or country level), the present multi-level analysis uses both

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[1] Note that the concept of competitiveness is surrounded by complexity and elusiveness (Kitson et al., 2004; Krugman, 1991), where some see productivity (growth) as an indicator of competitiveness (Porter, 1990) and others refer to measures such as (un)employment rates.

individual- and country-level factors to explain entrepreneurial progress. In this way, the effects of individual perceptions and the objective state of environmental barriers are systematically disentangled. In fact, it has been argued that perceptions and the objective state of the entrepreneurial environment do not necessarily coincide (Arenius and Minniti, 2005; Van Stel and Stunnenberg, 2006). Distinguishing between perceived and objective obstacles is also important from a policy perspective. Obviously, policy will have a different focus when obstacles are perceived than when they are real. Perception barriers can be dealt with by creating or improving awareness through providing (potential) entrepreneurs with more or better information, whereas the existence of a real obstacle requires efforts to reduce this barrier by directly intervening in the process. The third contribution is that, instead of explaining only one single stage of the entrepreneurial process (e.g., start-up) or the transition between two stages (e.g., from start-up to incumbent entrepreneurship), as is done in most studies, the focus here is on five different stages of the entrepreneurial process. The analysis takes into account the determinants of consideration for setting up a business (i.e., the likelihood of moving from "never considered" to "thinking"), the determinants of nascent entrepreneurship ("thinking" to "taking steps") and the success of these nascent activities leading to a start-up ("taking steps" to "young business"), and the determinants of new firm development and survival ("young business" to "mature business"). The varying importance of the individual- and country-level factors across these transitions is assessed, which again may be vital for policy makers and important to take into account in follow-up studies.

The remainder of this study is structured as follows. After a detailed examination and discussion of the empirical literature, the data are introduced and discussed. Subsequently, the model is presented, followed by a discussion of the results. The paper ends with some concluding remarks, in which policy implications are addressed.

2. Determinants of Entrepreneurial Progress

First, the importance of a range of important individual-level factors is discussed, including socio-demographic characteristics (gender, age, education), role models (self-employed parents), personality aspects (risk tolerance and stigma of failure), and perceived barriers to entrepreneurship (lack of financial support, administrative complexity, insufficient information on starting a business). Subsequently, attention is paid to an individual's residential area, arguing that metropolitan and urban areas accommodate agglomeration effects that affect entrepreneurial activity. Finally, the focus is on differences in country characteristics 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 classified according to the different stages of entrepreneurial engagement. First, there are studies examining factors influencing 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 the research on the determinants of nascent entrepreneurship (Delmar and Davidsson, 2000; Kim et al., 2003; Reynolds, 1997) and their success, i.e., whether nascent activities lead to the start-up of a new venture (Davidsson and Honig, 2003; Parker and Belghitar, 2006; Van Gelderen et al., 2006). Subsequently, there are a large number of studies investigating the decision to become an entrepreneur, of which an overview is given in Parker (2004, ch.3). Finally, there is an entire literature on the drivers of start-up or entrepreneurial success, measured, for example, in terms of survival or firm growth (Brüderl et al., 1992; Cooper et al., 1994; Davidsson, 1991; Van Praag, 2003; Stam et al., 2010). For each individual factor that is taken into account in this study, the rationale behind, and empirical evidence of, the importance at the various levels of entrepreneurial engagement is elaborated on.

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. Nevertheless, gender has been found to influence entrepreneurial behaviour at different stages of the process. For example, women tend to have a lower preference for entrepreneurship (Blanchflower et al., 2001; Grilo and Irigoyen, 2006) and are more reluctant to start up a business (Davidsson, 2006) than men. In terms of engagement in entrepreneurship there is evidence 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 controlled for relevant factors, the "direct" effect of gender on new 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

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 have had more time than young people to build up a network, and they may decide to switch to self-employment to avoid compulsory retirement provisions (Parker, 2004). On the other hand, older people may be more risk averse (Miller, 1984), may attach less value to future earnings out of the firm, and are subject to increasing opportunity costs of self-employment because income from wage-employment increases with age (e.g., seniority) (Lévesque and Minniti, 2006). In line with these different theoretical arguments, empirical evidence of the relationship between age and entrepreneurship is mixed. The significance and direction of the relationship also depends upon the stage in the entrepreneurial process. For example, for entrepreneurial preferences a U-shaped relationship has been found (Grilo and Thurik, 2005; Blanchflower et al., 2001). Regarding nascent entrepreneurship, some scholars argue that there is a negative relationship with age (Reynolds, 1997; Delmar and Davidsson, 2000; Davidsson and Honig, 2003), whereas others find a positive or inverse U-shaped relationship (Crosa et al., 2002; Kim et al., 2003). For start-up success, several studies show that there is no significant relationship with age (Davidsson and Honig, 2003; Parker and Belghitar, 2006; Van Gelderen et al., 2006). For actual involvement in self-employment there is evidence of a positive (Grilo and Irigoyen, 2006; Cowling, 2000) or an inverse U-shaped relationship with age (Rees and Shah, 1986; Borjas and Bronars, 1989; Beugelsdijk and Noorderhaven, 2005; Georgellis et al., 2005; Blanchflower and Shadforth, 2007). Finally, several studies find a positive relationship between age and firm survival (Bates, 1990; Van Praag, 1996, 2003; Taylor, 1999; Gimeno et al., 1997).

Education

Education may stimulate opportunity recognition and improve the ability to successfully start and manage a new firm and grow an established business. Alternatively, higher educated people may have other (more lucrative) employment options that compel them to pursue a career in wage-employment. Empirical findings confirm this indeterminate effect of education level on advancement in the entrepreneurial process.[2] Education level does not appear to have an effect on the preference for self-employment (Blanchflower et al., 2001; Grilo and Thurik, 2005; Rotefoss and Kolvereid, 2005). For nascent entrepreneurship several studies report a positive relationship with education (Delmar and Davidsson, 2000; Davidsson and Honig, 2003; Rotefoss and Kolvereid, 2005; Arenius and Minniti, 2005), although Reynolds (1997) does not find a significant relationship. Results are mixed for the self-employment decision and firm success. For self-employment, 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) relationships. Similarly, for success, findings point 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. Specifically, education can stimulate individuals to develop their entrepreneurial skills and

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[2] The ambiguity in findings may be attributed to the omission of occupational status in some model specifications (Le, 1999).

attitudes (Kuratko, 2005).[3] Empirical evidence of the effects of entrepreneurship education on entrepreneurial involvement is scarce (Gorman et al., 1997). Several empirical studies find that participation in entrepreneurship education increases intention to start a business (Clark et al., 1984; Peterman and Kennedy, 2003; Kolvereid and Moen, 1997)[4], although Oosterbeek et al. (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. The present study investigates whether an entrepreneurial attitude, fostered by education, enhances entrepreneurial progress.

Role models

Role models, and in particular self-employed family members, appear important for predicting involvement in entrepreneurial activity. The opinion of significant others often plays a decisive role in individual decision making (Ajzen, 1991). Parents may not only shape the entrepreneurial preferences (Boyd and Vozikis, 1994) and intentions of their children (Davidsson, 1995), but they may also provide financial support and advice in the period after start-up. Empirical evidence shows that parental role models are important for explaining 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. Several studies find insignificant relationships between the availability of parental role models and firm success or survival (Bates, 1990; Brüderl et al., 1992; Cooper et al., 1994; Gimeno et al., 1997; Taylor, 1999).

Risk tolerance and stigma of failure

Entrepreneurs are often portrayed as risk-tolerant individuals (Kihlstrom and Laffont, 1979). High failure rates of new ventures and high-income volatilities contribute to this "risky" image of entrepreneurship. Empirical evidence suggests that risk-tolerant people are more likely to have a preference for self-employment, vis-à-vis wage-employment, than risk-averse individuals (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 being self-employed (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 a 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 the possibility of business failure deters entrance) a proxy is included for the extent to which an individual stigmatises 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 endeavours, as it makes individuals reluctant to experiment and does not allow them to learn from mistakes (Shepherd, 2003; Politis, 2005).

Perceived barriers to entrepreneurship

Perception variables are important factors in the explanation of potential entrepreneurship (Krueger and Brazeal, 1994), nascent entrepreneurship (Arenius and Minniti, 2005), and young and established business ownership (Koellinger et al., 2007). Although specific regions may be more or less favourable for new venture creation and development, ultimately individuals make the decision to engage in entrepreneurial activity based on their perceptions of the environment. Hence, subjective perceptions of the (objective) environmental conditions are essential in explaining individual

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[3] There is an ongoing debate about the question of whether or not entrepreneurship can be taught. Some authors suggest that business and management skills can be taught, while creativity and innovation are not "teachable" (Jack and Anderson, 1998; Miller, 1987). Others stress that "entrepreneurial qualities" (e.g., need for autonomy, creativity, risk taking) can be developed in primary and early secondary education (Kourilsky and Walstad, 1998; Van der Kuip and Verheul, 2004).

[4] There is the risk of a selection effect because students who choose to follow an entrepreneurship major may already be interested in entrepreneurship, or have decided to start a business prior to following an entrepreneurship program (Westhead et al., 2001). In addition, many studies only investigate one school and are not able to generalise the results to other educational institutions.

differences in start-up inclinations and higher levels of entrepreneurial engagement. This means that the objective and subjective measures of the entrepreneurial environment do not necessarily coincide (Van Stel and Stunnenberg, 2006).

The present study examines three perceived impediments to entrepreneurship: the perception of administrative complexity, lack of start-up information, and lack of financial support. Coping with administrative regulations is often cited as an important constraint to entrepreneurship. Initially, entrepreneurs have to cope with registration procedures, and in later stages, they are confronted with hiring and firing legislation. Several studies find that perceived administrative complexity has a negative impact on entrepreneurial preferences, intentions and behaviour (Grilo and Irigoyen, 2006; Grilo and Thurik, 2005, 2008; Lüthje and Franke, 2003; Van Stel and Stunnenberg, 2006).

Although access to financing has been reported as an important barrier for self-employment (Evans and Jovanovic, 1989; Evans and Leighton, 1989; Blanchflower and Oswald, 1998) and 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 of the effect of an individual's *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) find that the belief that banks are reluctant to give credit to start-up companies negatively affects entrepreneurial intentions.

2.2.   Regional Factor: 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 (Fritsch et al., 2006; Falck, 2007). Urban areas are often characterised by economies of specialization, many market opportunities, and access to a large pool of resources. In addition, the large concentration of entrepreneurs in these areas lowers the ambiguity attached to entrepreneurship (Minniti, 2005). The availability of resources and social networks that provide access to these resources (Sørenson and Sorenson, 2003; Stuart and Sorenson, 2003) makes it less likely that entrepreneurial intentions and efforts are constrained in urban areas. Based on Marshall (1920), Armington and Acs (2002) give three reasons for the existence of agglomeration effects in urban areas. First, firm birth rates in these areas are higher because of a pooled labour market. Second, the lower cost and greater variety of non-pecuniary transactions in such regions boosts start-up rates. Third, densely populated areas with a high level of business activity are characterised by positive effects of knowledge spill-over.[5]

The positive effect of knowledge spill-over on firm birth rates (Armington and Acs, 2002; Acs and Armington, 2004), firm growth (Audretsch and Dohse, 2007; Raspe and Van Oort, 2008), and firm survival (Acs et al., 2007; Raspe and Van Oort, 2008) has been widely investigated and supported. Audretsch and Dohse (2007) suggest that the agglomeration effect can be attributed to knowledge intensity rather than to population and industry intensity. Acs and Armington (2004) find that population growth, not size, has a positive relationship with birth rates. There is also evidence of negative agglomeration effects on firm survival (Sorenson and Audia, 2000). This might be due to the more fierce competition in urban areas (Fritsch and Mueller, 2008; Van Stel and Suddle, 2008). Stam et al. (2010) find that, relative to rural areas, individuals in urban areas are less likely to give up their intentions and efforts to start their own businesses, but at the same time are more likely to fail than their rural counterparts.

In the Flash Eurobarometer Survey respondents report whether they live in a metropolitan, urban or rural area. As these are self-reports, interpretation differences may be present. For example, a region with a certain size or density may be assigned to different categories by individuals across countries. To lower the risk of bias, metropolitan and urban areas are combined into one variable. It is to be expected that the metropolitan/urban versus rural variable would show high correlation with

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[5] See Rosenthal and Strange (2004) for a summary of empirical evidence of the existence of all three of these factors, and for a description of several additional sources of agglomeration effects.

other measures of agglomeration patterns (such as population density or city size) across countries.[6]

2.3.   Country-Level Factors

In addition to individual and location factors, country-level factors play a role in explaining entrepreneurial engagement. There is evidence 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). Empirical studies have explained this variation in terms of a wide range of factors, including economic, cultural, institutional and demographic factors (e.g., 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).

This study investigates country-level effects on the likelihood of belonging to, and switching between, different stages in the entrepreneurial process. The focus is on the role of a country's regulatory environment (in terms of administrative burden, information provision, and financial support), a country's attitude towards risk, the level of economic development, and competitiveness[7]. These are all important factors in the explanation of cross-country variations in entrepreneurship (Verheul et al., 2002).

Countries differ in the way they regulate and stimulate entry and firm development. Empirical evidence shows that the regulatory environment can have an important effect on entrepreneurial activity at the macro level. For example, Klapper et al. (2006) show that entry regulations are an important determinant of new firm entry and the growth of incumbent firms, in particular in sectors traditionally characterised by high entry. In addition, they find that firm entry is dependent on access to capital. More specifically, entry is higher in financially dependent industries when there is availability of both private (bank) credit and trade credit. Comparing the highly regulated economy of Spain with the less regulated British economy, Capelleras et al. (2008) find that firms in Spain start larger, but that they grow slower.[8] According to Baumol (1990), the degree of regulation does not influence the number of firms, but it does influence the distribution of registered and unregistered firms. 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 minimum capital required to register a new business has an effect, while the time, cost and number of procedures required to legally operate a firm appear insignificant in explaining rates of nascent and young business ownership.

An entrepreneurial culture is crucial for achieving entrepreneurial progress. There are several indicators of an entrepreneurial culture, including media attention for successful entrepreneurs who can serve as role models and respect for people who start up and run new businesses (Reynolds et al., 1999). Furthermore, country levels of individualism and uncertainty avoidance may affect start-up rates and levels of entrepreneurship. Countries with high levels of individualism often provide individuals with room to pursue the career of their choice, and value individual achievements of successful entrepreneurs. Countries characterised by high levels of uncertainty avoidance (or a risk-averse attitude) often have strict, formal rules and procedures, and residents are inclined to seek the security of wage-employment (Hofstede, 1985). However, the relationship between culture and entrepreneurship at the country level does not always follow intuition. Baum et al. (1993) find a negative impact of individualism on entrepreneurship, and Wennekers et al. (2007) show a positive relationship between Hofstede's Uncertainty Avoidance Index and business ownership. These counterintuitive findings may be explained in terms of dissatisfaction. For example, in countries with higher uncertainty avoidance, individuals may leave large organizations because they cannot satisfy

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[6] Because country differences are controlled for (by including country dummies), it is believed that the self-perceived location variable is a proper measurement of location density.

[7] Competitiveness is measured as labour productivity growth per person employed. We devote more attention to this variable in Section 5.4.

[8] However, these differences vanish when unregistered firms are included in the analysis (Capelleras et al., 2008). Djankov et al. (2002) find that countries with stricter entry regulation are characterised by more corruption and larger unofficial economies.

their "entrepreneurial needs" (Noorderhaven et al., 2004).

In addition to the regulatory and cultural environment, a country's economic environment is important in determining entrepreneurial engagement and progress. At the macro level, an important link is found between (nascent) entrepreneurship and the level of economic development. There is evidence of a U-shaped or L-shaped relationship between entrepreneurship and economic growth (Carree et al., 2002; Carree et al., 2007). 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 development and the size of the service sector increase, while the employment share of manufacturing decreases. From this perspective it is important to distinguish between low- and high-income countries. In the present data set low-income countries are mainly transition economies that until recently were characterised by a centrally planned economy instead of a market economy. Business environments in transition economies are less favourable than in non-transition economies (Smallbone and Welter, 2001; Mugler, 2000). Still, there is some evidence that in transition economies there are more growth opportunities for newly created firms (Bowen and De Clercq, 2008).

3. Data and Descriptive Statistics

To investigate the ease with which entrepreneurs climb the entrepreneurial ladder, and to identify the factors that may facilitate or slow down their progress, the 2007 Flash Eurobarometer Survey on Entrepreneurship, No.192, of the European Commission is used. The survey consists of 20,674 observations for the 25 Member States of the European Union as well as Norway, Iceland, and the United States. In January 2007, in each country randomised telephone interviews were conducted with respondents aged 15 years and over.[9] 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");

(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 additional answer categories:[10]

(2a) No, I thought of it or had already taken steps to start a business but gave up ("gave up");

(5a) Yes, I once started a business, but currently am no longer an entrepreneur since the business has failed ("failure");

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[9] 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, see: http://ec.europa.eu/public_opinion/flash/fl_192_en.pdf.

[10] In the original survey, respondents first had to answer "yes" or "no" to the question "*Have you ever started a business or are you taking steps to start one?*" Subsequently, they had to select either one of the five "yes statements" or one of the three "no statements". As a consequence, entrepreneurs who have "completed" a cycle by terminating a given business and are presently thinking about a new one will be classified under the "ex-entrepreneur" category, rather than under "thinking". For the same reason, those involved in more than one business that may be at different stages of development will only be counted for one of the stages (the respondent choice). In other words, this survey may create a bias in the case of serial or simultaneous entrepreneurs. Despite this possibility the authors believe that such cases are rare based on information from a similar survey, wherein multiple entrepreneurship is recorded, see Hessels et al. (2009). Therefore, this shortcoming of the survey is unlikely to significantly distort the results.

(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 emphasise the pre-start-up phase of a company. This pre-birth phase consists of three sub-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.[11] 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 variables include five variables for which the initial individual values have been subtracted from the calculated country averages for these variables. These variables are risk tolerance, stigma of failure, and the three perception variables (perceived administrative complexity, perceived lack of relevant information, perceived lack of finance). Individual deviations from the country averages (i.e., how much the perception of the individual respondents deviates from the country average) can be seen as "cleaned" perceptions. The country averages of the three perception variables represent objective approximations of three dimensions of the regulatory environment. Specifically, the country averages reflect the strictness of the administrative regulatory environment, the difficulty of obtaining information on how to start and run a business, and the difficulty of obtaining credit. In addition, a proxy for the general attitude towards risk in a country is included by averaging values of the risk tolerance variable across all respondents in a country. Deviations from this average risk tolerance are included as an individual-level determinant.[12]

INSERT TABLE 1 HERE

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 or region. 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. A direct reading implies that agreement with this statement means that the respondent does not attach a stigma to those who fail. A more audacious reading could be 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 one that addresses the respondent's own failure. If, however, this attitude is related to consideration for "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 or her 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 the first five columns of Table 2. There is substantial cross-country variation. The United States is generally characterised by low values for the factors that hinder the start-up process. More specifically, US citizens are on average more risk tolerant than Europeans, and it appears that there are fewer problems with administrative complexity,

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[11] 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 in 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, not theoretical, issues, whereas they also notice that the first 4-5 years of a firm are essential for its survival.

[12] Note that for stigma of failure, deviations from the country averages are included as an individual-level factor in our model, but country averages are not included.

insufficient information and financial support. Apart from the US, other risk-tolerant nations include Norway, Denmark, Ireland, and Iceland. Risk aversion is strongest in Slovenia, Portugal, Estonia, Lithuania, and Malta. Inhabitants in France, Greece, Italy, and Portugal are confronted with a relatively unfavourable entrepreneurial climate, as they have the highest scores on administrative complexity, insufficient information and lack of financial support.

INSERT TABLE 2 HERE

In terms of the level of economic development, several transition (post-communist) countries (i.e., Poland, Lithuania, Latvia, Hungary, Slovakia, and Estonia) have the lowest per capita income in 2006.[13] These countries are also characterised by above-average values for administrative complexity, suggesting relatively high levels of red tape. Except for Estonia and the Czech Republic, transition countries perform poorly in terms of access to financial resources. This difficulty of obtaining credit also applies to countries in Southern Europe. Aside from a lack of financial support, the latter group of countries also experience a lack of information regarding firm start-up. Scandinavian countries score relatively low on the administrative complexity variable.

Correlations are presented in Table 3. Although the perception variables show some correlation, problems for further analyses are not expected, 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.

INSERT TABLE 3 HERE

For all countries, the percentage of individuals within each of the entrepreneurial engagement levels is given in Table 4. Interesting differences emerge when comparing Europe to the United States. For example, in the United States 30 percent of the respondents indicated that they had never considered setting up a business, while the European average amounts to 51 percent. In addition, the percentages of individuals in the "thinking" and "taking steps" stages in Europe are considerably lower than those in the United States (11 and 4 percent versus 21 and 9 percent, respectively).

INSERT TABLE 4 HERE

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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. (2010) use a cumulative logit model. This model 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 individuals who achieved at least this engagement level. The present study instead used the continuation ratio logit model (Agresti, 1984, Tutz, 1991), in which the categories can only be reached successively because it makes use of conditional probabilities (Fahrmeir and Tutz, 1994). The continuation ratio logit model assesses the influence of the explanatory variables on the odds of being beyond a particular engagement level

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[13] Note that the Czech Republic and Slovenia are not performing well either: they occupy positions 9 and 10 with respect to the level of GDP per capita.

relative to being at this engagement level, with both probabilities conditional upon being at or beyond this engagement level. All individuals at a particular engagement level are compared with all individuals who advanced to a higher engagement level. 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.

Assume an ordered, observed variable, Y_i, for each individual, i.e. the engagement level of individual i with outcomes $j = 1,\ldots,J$. Note that $j = 1$ and $j = J$ denote "never considered" and "mature business", respectively. The continuation ratio logit model assumes a conditional modelling of transitions: $\Pr(Y_i = j \mid Y_i \geq j) = F(\alpha_j - X_i'\beta)$ for each j with $\Pr(Y_i = 0 \mid Y_i \geq 0) = 0$ and $\Pr(Y_i = J \mid Y_i \geq J) = 1$. $F(.)$ 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 $\alpha_1,\ldots,\alpha_{J-1}$ in the formula above; see Tutz, 1991). This conditional view of the entrepreneurial ladder implies that individuals in "never considered" will only be incorporated in the transition from "never considered" to "thinking", whereas in Van der Zwan et al. (2010) this group of individuals is included in each comparison.

Note that the coefficient vector β is the same across all observations and engagement levels. This may be an unrealistic assumption in practice. The coefficients can be made category-specific essentially by performing binary logit regressions and zooming 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 binary 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($Y_i=5$) 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: $\log(\Pr(Y_i > j \mid Y_i \geq j)/\Pr(Y_i = j \mid Y_i \geq j)) = X_i'\beta + \alpha_j$. Given a positive coefficient and holding all other variables constant, an increase in this 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. One can interpret the results from the four binary logit regressions in the same way.

Strictly speaking, this model formulation is incomplete as individuals in "thinking", "taking steps" and "young business" are still climbing the entrepreneurial ladder at the moment of the survey. This means 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. Unfortunately, there is no 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 times of businesses are not known. The results presented in this study are generated without individuals in the "failure" and "sell-off" stages being assigned to either "young business" or "mature business". Individuals in the "gave up" stage have been classified in the "thinking" stage, although one could argue that a correct classification would be the "taking steps" stage. 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 (the parsimonious "overall" model) in the first column and the four binary logit regressions in the last four columns. The model

includes the individual-level variables, urban region, and country dummies. Hence, country effects are investigated by including 25 country dummies (representing the European Union Member States, Norway and Iceland), with the United States as the benchmark country. The outcomes are discussed below.

INSERT TABLE 5 HERE

5.1. Individual-level Factors

Gender

Focusing on the continuation ratio logit model, it is found that gender is an important factor for 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) by $\exp(0.575)=1.777$. Apart from the coefficient of the squared age term, this makes gender the individual-level variable with the highest coefficient in absolute terms. However, the pattern is not consistent across the four binary models. The significance of gender in the "overall" model can be attributed entirely to an advantage for men (relative to women) in the transition from "never considered" to "thinking" and from "thinking" to "taking steps". 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 suggest similar survival chances across gender. It could be that the higher propensity of men to make the first two transitions is driven by other factors (that are not controlled for, but) that may be related to gender (such as opportunity recognition or entrepreneurial self-efficacy). In a similar fashion, the absence of a gender effect for the last two transitions does not mean that gender does not play a role. Gender may still moderate the relationship between other factors and entrepreneurial engagement or progress.[14]

Age

Age shows an inverse U-shaped relationship with entrepreneurial progress. The turning point of age is at 42 years. Above this age, the likelihood of advancing beyond a given engagement level decreases, i.e., individuals are less likely to belong to a higher level of entrepreneurial engagement. This effect of age on the transition probability is primarily influenced by the first transition: the turning point – at which the transition to the "thinking" stage becomes less likely – is at the age of 37 years.

Education

The results in the first column of Table 5 reveal that there is an overall positive effect of education level on entrepreneurial progress, indicating that stepping up the entrepreneurial ladder is enhanced by a higher level of education. Again, there are differences across the four binary logit regressions. The impact of education level is significantly positive for the first transition ("never considered" to "thinking"), insignificant for the next transition ("thinking" to "taking steps") and significantly negative for the final two switches on the entrepreneurial ladder ("taking steps" to "young business" and "young business" to "mature business"). This means that a higher level of education is important mainly in becoming aware of entrepreneurship as a possible career option, but appears detrimental for advancing to later stages of entrepreneurial engagement, where relevant experience and skills may become more important. Similarly, entrepreneurship education is important

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[14] Non-reported investigation of moderation effects by means of interaction terms between all individual-level variables and gender reveals that there are three coefficients with significant differential impacts on female and male entrepreneurial progress in the "overall" model: self-employed parents, risk tolerance, and perception of lack of financial support. Results can be obtained from the authors upon request. See also Verheul et al. (2009) for a discussion of gender and moderation effects.

for forming entrepreneurial intentions, but does not have an effect on subsequent transitions.

Role models

Table 5 shows that, overall, self-employed parents positively contribute to advancement in the entrepreneurial process. Investigating the 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 a business. More precisely, they are important in the entrepreneurial intention and taking steps stages, but are no longer of influence for the start-up and development of the business. This is in line with Davidsson and Honig (2003), who find that while strong ties are particularly important for shaping children's preferences, in later stages weak ties are more influential.

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 the switch from "never considered" to "thinking". After this transition, this variable loses its significance. Stigma of failure does not appear to have an impact on advancement in the entrepreneurial process, although to some extent it holds back individual's intentions to start up a business (at the 10 percent significance level).

Perceived barriers to entrepreneurship

In the "overall" model, the perception of administrative complexities negatively influences the probability of being beyond a given engagement level, whereas there are no discriminating effects for the perception of lack of financial support and the perception of insufficient information. Focusing on the four binary regressions, it appears that the perceived administrative burden is a real barrier for developing entrepreneurial intentions and taking steps to start a business. The perception of a lack of financial support hinders individuals in taking steps to start a business, but is insignificant in all other comparisons. This could be an experience effect, where people only learn about the existence of a barrier after having experienced it themselves. To conclude, none of the perceived barriers play a hindering role in transforming nascent activities into established businesses and in the continuation and development of businesses (i.e., switching from "young business" to "mature business").

5.2.   Regional Factor: Urban versus Rural Areas

Living in a metropolitan or urban area decreases the "overall" probability of making entrepreneurial progress. However, looking at the results for the switches between the separate stages, the coefficients are all negative, but insignificant. Apparently, by averaging the negative, but insignificant, effects for the different stages, the overall negative effect becomes significant. Hence, living in a metropolitan or urban region does not significantly improve or slow down entrepreneurial progress in each of the stages, but does put a brake on overall progress. This may point to the strength of negative competition effects cancelling out positive agglomeration effects.

5.3.   Country Dummies

The first column of Table 5 shows that each country has lower odds of climbing the entrepreneurial ladder than, or is on par with, the United States. 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. On the other hand, individuals from Austria, Belgium, France, Luxembourg, Malta, Slovenia, and Spain have a relatively low likelihood of moving beyond a given engagement level (the log odds of these countries are below –0.50). It seems that low-income countries perform relatively well in shaping conditions for entrepreneurial progress, as seven out of the nine aforementioned 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 growth opportunities in transition economies. Welfare states such as Austria, Belgium, France, and Luxembourg, characterised by stringent regulatory environments, discourage individuals from advancing in the entrepreneurial process, thereby missing out on opportunities to enhance the competitiveness of these regions. In welfare states economic incentives for opportunity-based and necessity-based entrepreneurship are

often reduced (Henrekson, 2005) and entry regulation tends to be relatively strict.

The overall effects, as described above, do not adequately capture the unique effects across the transitions between specific engagement levels. For example, in the United States relatively many individuals switch from "never considered" to "thinking about" starting a business. In fact, all countries show lower odds of a transition between these stages. This is particularly the case for Austria, Belgium, France, Lithuania, Malta, Norway, Portugal, Slovenia, and Spain (with log-odds below –0.90). Hence, these countries should pay more attention to creating awareness of entrepreneurship as a possible career option. The position of the United States weakens for the transition between "thinking" and "taking steps". Specifically, people from Belgium, Finland, Hungary, and Iceland have a significantly higher likelihood of belonging to "taking steps", relative to "thinking" (conditional on being in at least "thinking"), than US citizens. Log-odds of Austria, Denmark, France, Germany, Luxembourg, Malta, Slovakia, and Slovenia are below –0.50, indicating that individuals in these countries have a hard time acting upon and materializing their entrepreneurial dreams.

Regarding the switch from "taking steps" to "young business", all countries have higher odds than, or are on par with, the United States. In particular, individuals from Belgium, Cyprus, Finland, Greece, Iceland, Malta, Norway, Portugal, Slovenia, and Spain have a high conditional likelihood (log-odds above 0.90) of advancement beyond the "taking steps" stage. It seems that there are few impediments that deter individuals from taking their start-up a step further and developing it into a young established firm in these countries. With the exception of Finland, Iceland, and Norway, the well-performing countries are Southern European countries with "less-developed" welfare states. Countries that are on par with the United States (and thus weak performers) are Austria, France, Lithuania, and Slovakia.

There are hardly any country effects for the final switch from "young business" to "mature business". Survival chances seem to be highest in Iceland, Poland, Hungary, and Belgium, whereas they are lowest in Portugal.

To conclude, in the relatively weakly regulated United States, individuals have a high likelihood of thinking about starting a business, but have difficulties moving to higher levels of entrepreneurial engagement. Particularly, transforming nascent and start-up activity into viable young firms appears relatively difficult in the United States. Austria, France, and Lithuania appear to have low transition probabilities (they do not show significantly positive coefficients in the last four columns in Table 5). Conversely, Belgium, Hungary, and Iceland show good opportunities for entrepreneurial progress (they have at least three significantly positive coefficients in the last four columns in Table 5). Overall, there is substantial heterogeneity between countries. The subsequent section aims to explain this heterogeneity.

5.4.   Country-level Factors

Table 6 shows the results of the continuation ratio logit regression and four binary logit regressions, including country-level variables instead of country dummies.[15] More country-specific variables could have been included in the model, but with only 28 countries, a parsimonious model is

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[15] For the binary dependent variables, a random intercept logistic regression is used. This two-level model is similar to the regular binary logit model with an additional country-specific random intercept. That is, each country has its own intercept that depends on the country-specific variables in Table 1, an intercept, and an error term that captures country-specific influences that are not included in the model. Thus, observed and unobserved heterogeneity across countries is controlled for. For estimation of the random-intercept logit model, numerical approximation of integrals is needed. The Stata command *xtlogit* is used with adaptive Gauss-Hermite quadrature and 50 quadrature points.

For the continuation ratio logit regression (first column in Table 6) a simpler, but similar, approach is used. The estimated coefficients of the country dummies in Table 5 are regressed on the country-specific variables in Table 1 to obtain the coefficients of the country-level variables. This explains why the displayed coefficients of the individual-level variables in Table 6 are identical to those in Table 5. Drawbacks of this simplified approach are that unobserved heterogeneity across countries is not controlled for and that the coefficients of the country dummies are treated as given, whereas actually they are included in a certain confidence interval.

preferred to an over-fitted model with a surplus of variables.[16]

INSERT TABLE 6 HERE

In the "overall" model the continuation ratio coefficients show that risk tolerance has a positive effect on a country's entrepreneurial progress, while per capita income has a negative effect (albeit at the 10 percent significance level). The three environmental variables do not have a significant impact on the overall process. Investigating the binary logit regressions, there is a negative effect of the level of economic development (measured by per capita income) on the likelihood of switching from "never considered" to "thinking", and a positive effect on the likelihood of making the transition from "taking steps" to "young business" (the trough of the inverse U-shape is only at $US 36,648). This means that individuals in more developed countries are less likely to consider entrepreneurship as a viable career option, but that once they are active there is a high likelihood of surviving the start-up phase and developing into an established young business. Furthermore, risk-tolerant countries have more individuals in the "thinking" stage as compared to the "never considered" stage. The same is true for the "taking steps" stage, indicating that a risk-tolerant society is important in the early, but not in the later, stages of entrepreneurship.

It is interesting to see whether making progress through the engagement levels (that may be seen as the entrepreneurial contribution to competitiveness) is related to a specific indicator of competitiveness, here: labour productivity growth per person employed in 2006, of which the values are displayed in the last column of Table 2. Labour productivity growth does not influence overall progress, but it has a positive significant coefficient for the transition from "taking steps" to "young business". In addition, there is some evidence (at the 10 percent significance level) that it is also related to the earlier transition from "thinking" to "taking steps". In other words, individuals in countries characterised by higher labour productivity growth are more likely to develop their start-up into a viable young business.[17]

Remarkable is that a country's level of administrative complexity does not play a role in achieving entrepreneurial progress, which is in sharp contrast to the impact of the individual *perception* of administrative complexity, as shown in Table 5. This suggests that it is not the actual level of administrative complexity that forms a barrier, but rather the subjective perception of this complexity. Furthermore, the access to finance appears to have a negative effect on the likelihood of making a transition to the "taking steps" and "young business" stages (albeit the latter is only significant at 10 percent). Indeed, these are the stages in which generally there is a high need for financial resources. Unexpectedly, a country's level of insufficient information positively affects the transition from "thinking" to "taking steps" and from "taking steps" to "young business". This may be an experience effect, as people will probably only find out about a lack of information when they are themselves actively involved in entrepreneurial activity.

6. Conclusion

Using data from the 2007 Flash Eurobarometer Survey on Entrepreneurship, this study investigates entrepreneurial progress through five stages of entrepreneurial engagement and finds evidence for both individual and cross-country differences. With respect to individual-level factors, women have a lower probability of achieving entrepreneurial progress than men, but 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 to take for

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[16] Additionally, including the stigma of failure variable does not lead to different results, as this variable does not have a significant impact across all regressions. Also, replacing risk tolerance with stigma of failure leads to insignificant results for this variable. In either case, the significances of the other country-level variables only marginally change.

[17] Note that, given the data set, it is not possible to test for the direction of causality in this relationship. It could be that labour productivity growth results from start-up and young business activity, rather than vice-versa.

women than for men, but there is no gender difference at higher stages of entrepreneurial involvement. Self-employed parents are valuable for creating entrepreneurial intentions and stimulating start-up activity, but no longer have an influence at later stages. Risk attitude and stigma of failure are both important for initial consideration for an entrepreneurial career, but their effects disappear for the active stages as well. Limited evidence is found of individual perceptions of barriers to entrepreneurship (in terms of administrative complexity, lack of relevant information and lack of financial support) on entrepreneurial progress, although an individual's perceived administrative complexity lowers the likelihood of switching to the "thinking" and "takings steps" stages. A perceived lack of financial support also lowers nascent entrepreneurial activity. Interestingly, living in an urban area does not appear to influence the transition between the separate stages, although it lowers the likelihood of entrepreneurial progress in general. This may point to competition effects that reduce the lifespan of new ventures or possibly discourage potential entrepreneurs.

These results prompt some tentative thoughts in terms of policy. First, the result for gender effects suggests that if policies aimed at encouraging women to pursue an entrepreneurial career are to be envisaged, these measures should concentrate on the possible bottlenecks holding back women at the very early stages. Although concrete policy recommendations would require further investigation and are beyond the scope of this study, current results hint at the possible positive impact for women of role models and initiatives aimed at bringing to their attention the possibility of an entrepreneurial career. In other words, "soft" measures with a strong informational and inspirational orientation, rather than harder measures with a "positive discrimination" content, seem in order. Second, the hindering role of perceptions of administrative complexity (here seen as deviation from the average) for undertaking nascent activities, which is in sharp contrast to the role of administrative complexity as a country-level variable, points to "perception" as a central concept. For this reason, if perceptions deviate from the actual environmental setting to a considerable extent, this may be a consideration for policy intervention in the form, again, of actions aimed at making information more transparent and readily available to potential entrepreneurs.

In addition, evidence is found for country effects on entrepreneurial progress. In the United States, for example, there is a high inclination to think about starting up a business, but a different picture emerges in the case of the materialization of these thoughts (actually starting up a business). This is illustrated by the fact that, relative to the United States, it is just as easy or easier in all European countries in our data set to make the crucial switch between thinking about starting up a company and actually doing so. In Austria, France, and Lithuania there appear to be generally low probabilities for advancement on the entrepreneurial ladder. Especially in Belgium, Hungary, and Iceland there are high opportunities for entrepreneurial progress, whereas the Portuguese have particular difficulties converting their young businesses into established ones.

Aside from including country dummies, the effect of country-level factors on entrepreneurial progress is also investigated. One of the main findings is that a country's attitude toward risk plays an important role in explaining entrepreneurial progress across countries. In risk-tolerant countries, it is generally easier to make entrepreneurial progress than in countries with a risk-averse attitude. Indeed, Lithuania, a country that scores low in terms of entrepreneurial progress, is also characterised by a relatively low level of risk tolerance. Furthermore, Portugal, a country where it is difficult to develop a company beyond the young business stage, is characterised by the lowest level of risk tolerance. This is in line with Hofstede (1985), who finds that Portugal has the highest score on the Uncertainty Avoidance Index. Risk tolerance may also play a role in explaining the position of the United States in this study. Although US citizens have an advantage over Europeans in the early stage of entrepreneurship, in which people start to think about entrepreneurship as an interesting career alternative, in later stages they are not more advanced. Indeed, although the American people have the highest level of risk tolerance, this risk tolerance only benefits them in the first stages of entrepreneurship (see Table 6). The negative impact of risk aversion is difficult to discuss from a policy perspective without further insights into the real source of risk aversion and its variation across countries. Given the way risk tolerance is proxied here[18], it most likely captures at least two

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[18] The country-level risk tolerance variable results from the country average of the agreement with the statement "*One should not start a business if there is a risk it might fail*".

dimensions: the intrinsic or cultural nature of such attitude, and another dimension more closely linked with the legal or social consequences of bankruptcy. While changing the first dimension is at best a long-term endeavour, bankruptcy law and procedures may play a role in the second dimension. Again, an investigation of this issue and of its policy implications is beyond the information and analysis in the present study.

Furthermore, a country's lack of financial support negatively affects the transition from thinking to acting. This could indicate that a high number of firms are not actually started up because there is inadequate financial support for aspiring entrepreneurs. This could in part explain the low levels of entrepreneurial progress in France and Portugal, countries having the highest scores for lack of financial support (see Table 2). On the other hand, the success of Iceland could (aside from an above-average level of risk tolerance) partly be attributed to the good financial support in that country. In fact, Iceland scores lowest for lack of financial support (see Table 2).

The present study investigated the influence of a range of important factors at different aggregation levels on entrepreneurial progress. Nevertheless, there may be other variables that play a role in explaining entrepreneurial progress that could be taken into account in future research on this topic, including individual-level factors (e.g., entrepreneurial self-efficacy, opportunity recognition, entrepreneurial and industry experience), firm-level factors (e.g., type of industry, innovation level, firm size and age), regional-level factors (e.g., regional laws, population density, industrial district), and country-level factors (e.g., industry composition, labour regulation, social security, level of individualism). For example, to explain transitions at later stages (e.g., from "young business" to "mature business") it can be expected that firm-specific factors play an important role, factors that were not taken into account in the present study. Finally, more research is needed to create better insight into the influence of country-specific factors on backward or forward steps on the entrepreneurial ladder, identifying the specific factors promoting and hindering the achievement of entrepreneurial progress, which is again important for the competitiveness of regions and nations.

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Table 1: Description of all variables (individual-, regional- and country-level)

Variable name	Variable description
Gender	Male (=1) or female (=0).
Age	Age of the respondent in years.
Education level[a]	Age when finished full time education
Entrepreneurship education	To what extent do you agree with the statement: "*My school education helped me to develop my sense of initiative (entrepreneurial attitude)*"? 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.
Individual risk tolerance	To what extent do you agree with the statement: "*One should not start a business if there is a risk it might fail*"? 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.
Individual stigma of failure	To what extent do you agree with the statement: "*People who started their own business and have failed should be given a second chance*"? 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.
Individual perception administrative complexity	To what extent do you agree with the statement: "*It is difficult to start one's own business due to the complex administrative procedures*"? 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.
Individual perception insufficient information	To what extent do you agree with the statement: "*It is difficult to obtain sufficient information on how to start a business*"? 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.
Individual perception lack of financial support	To what extent do you agree with the statement*: "It is difficult to start one's own business due to a lack of available financial support*"? 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.
Urban	Dummy variable with value 1 if an individual indicates to live in a metropolitan or an urban area and value 0 if this individual lives in a rural area.
Country's risk tolerance	Country average of 'Individual risk tolerance'
Country level administrative complexity	Country average of 'Individual perception administrative complexity'
Country level insufficient information	Country average of 'Individual perception insufficient information'
Country level lack of financial support	Country average of 'Individual perception lack of financial support'
Per capita income	Gross national income per capita 2006, in purchasing power parity per US$ (Source: World Development Indicators 2008, World Bank)
Labour productivity growth	Labour productivity growth per person employed in 2006 (source: European Commission; numbers not available for Norway and Iceland)

[a] 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-level variables

	Country's risk tolerance	Country level administrative complexity	Country level insufficient information	Country level lack of financial support	Per capita income	Labour productivity growth
Austria	0.47	0.63	0.36	0.71	36,040	1.9
Belgium	0.41	0.78	0.56	0.78	33,860	1.9
Cyprus	0.48	0.68	0.64	0.86	25,060	2.3
Czech Republic	0.52	0.76	0.39	0.63	22,920	4.7
Denmark	0.67	0.77	0.34	0.66	36,190	1.3
Estonia	0.29	0.74	0.41	0.73	18,090	5.5
Finland	0.55	0.69	0.38	0.59	33,170	5.8
France	0.57	0.81	0.60	0.89	32,240	1.1
Germany	0.44	0.81	0.45	0.77	32,680	2.3
Greece	0.59	0.81	0.73	0.92	30,870	2.7
Hungary	0.35	0.76	0.57	0.90	16,970	3.0
Iceland	0.61	0.54	0.42	0.55	33,740	.
Ireland	0.67	0.67	0.39	0.69	34,730	1.7
Italy	0.43	0.85	0.65	0.89	28,970	0.2
Latvia	0.48	0.78	0.38	0.93	14,840	7.0
Lithuania	0.31	0.87	0.47	0.85	14,550	5.7
Luxembourg	0.49	0.75	0.61	0.80	60,870	2.4
Malta	0.31	0.68	0.49	0.80	20,990	2.0
Netherlands	0.57	0.73	0.25	0.61	37,940	1.8
Norway	0.67	0.75	0.39	0.64	50,070	.
Poland	0.40	0.78	0.54	0.86	14,250	2.4
Portugal	0.28	0.84	0.78	0.91	19,960	0.5
Slovakia	0.47	0.76	0.41	0.89	17,060	4.0
Slovenia	0.27	0.80	0.47	0.87	23,970	4.7
Spain	0.54	0.77	0.62	0.83	28,200	0.8
Sweden	0.53	0.73	0.41	0.77	34,310	4.0
UK	0.56	0.63	0.42	0.73	33,650	2.6
US	0.79	0.60	0.36	0.71	44,070	1.4
Aggregate	0.49	0.74	0.48	0.78	29,652	2.8

Table 3: Correlation matrix of individual-level variables and regional variable ("urban")

	1	2	3	4	5	6	7	8	9	10	11
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. Indiv. risk tolerance	0.05	-0.15	0.09	-0.02	-0.03	1					
7. Indiv. stigma of failure	0.04	0.04	-0.01	0.01	0.09	-0.04	1				
8. Indiv. perception admin. complexity	0.01	0.06	-0.04	0.01	-0.01	-0.14	0.01	1			
9. Indiv. perception insufficient information	-0.03	0.07	-0.04	-0.01	-0.00	-0.14	-0.02	0.30	1		
10. Indiv. perception lack of financial support	-0.03	0.01	-0.04	0.03	-0.04	-0.13	-0.06	0.31	0.23	1	
11. Urban	0.02	-0.03	0.11	-0.02	-0.04	0.05	0.04	-0.02	-0.02	-0.04	1

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

Table 5: Estimation results continuation ratio logit model and four binary logit models (individual-level, regional-level, and country dummies; benchmark country: US)

	continuation ratio	Never considered vs. higher	Thinking vs. higher	Taking steps vs. higher	Young business vs. Mature bus.
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
Indiv. risk tolerance	0.192***	0.230***	0.003	0.090	-0.041
Indiv. stigma of failure	-0.031	-0.093*	-0.094	0.188	0.332*
Indiv. perception admin. complexity	-0.168***	-0.158***	-0.182***	-0.011	0.084
Indiv. perception insufficient info	-0.029	-0.016	0.024	0.001	0.030
Indiv. perception lack of fin. support	-0.038	0.075	-0.218***	-0.124	-0.012
Urban	-0.079**	-0.054	-0.015	-0.152	-0.099
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
UK	-0.410***	-0.651***	-0.257*	0.471**	-0.273
N	11,793	13,956	7,996	4,318	1,523
R^2 (McFadden)	0.05	0.07	0.08	0.15	0.10

Estimates of thresholds (in case of the continuation ratio logit model) and intercepts (binary logit models) are not shown.
Estimates significantly different from zero at the 1% (***), 5% (**), and 10% (*) level.

Table 6: Estimation results continuation ratio logit model and four binary logit models (individual-level, regional-level, and country-level)

	continuation ratio	Never considered vs. higher	Thinking vs. higher	Taking steps vs. higher	Young business vs. Mature bus.
Gender	0.575***	0.653***	0.516***	-0.050	0.094
Age	0.104***	0.056***	0.080***	0.023	0.156***
(Age/100) squared	-12.284***	-7.600***	-5.672***	5.536**	-11.834***
Education level	0.016***	0.027***	0.003	-0.022***	-0.019**
Entrepreneurship education	0.213***	0.312***	0.003	-0.071	-0.142
Self-employed parents	0.248***	0.234***	0.326***	0.053	0.162
Indiv. risk tolerance	0.192***	0.238***	0.004	0.077	-0.071
Indiv. stigma of failure	-0.031	-0.084	-0.092	0.187	0.286
Indiv. perception admin. complexity	-0.168***	-0.160***	-0.163***	-0.005	0.074
Indiv. perception insufficient info	-0.029	-0.010	0.018	0.009	0.036
Indiv. perception lack of fin. support	-0.038	0.068	-0.209***	-0.112	-0.044
Urban	-0.079**	-0.049	0.011	-0.179*	-0.086
Country's risk tolerance	1.412***	1.632***	1.295*	-0.567	0.231
Country level admin. complexity	-0.433	-1.071	0.219	-0.367	-0.113
Country level insufficient info	0.588	0.022	2.610***	3.576***	-0.831
Country level lack of fin. support	-0.342	0.375	-2.772**	-2.057*	0.026
Per capita income/1,000	-0.044*	-0.045**	-0.039	0.082**	-0.049
(Per capita income/1,000) squared	0.000	0.000	0.000	-0.001**	0.001
Labour productivity growth	0.039	0.039	0.101*	0.132***	0.037

Estimates of intercepts are not shown.
Estimates significantly different from zero at the 1% (***), 5% (**), and 10% (*) level.