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Europe and the US**

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Determinants of entrepreneurial engagement levels in Europe and the US

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Abstract: The process of the entrepreneurial decision is decomposed in seven engagement levels ranging from “never thought about starting a business” to “gave up”, “thinking about it”, “taking steps for starting up”, “having a young business”, “having an older business” and “no longer being an entrepreneur”. By using a multinomial logit model we allow the effect of covariates to differ across the various entrepreneurial engagement levels. Data from two *Entrepreneurship Flash Eurobarometer* surveys (2002 and 2003) containing over 20,000 observations of the 15 old EU member states, Norway, Iceland, Liechtenstein and the US are used. Other than demographic variables, the set of explanatory variables used includes the perception by respondents of administrative complexities, of availability of financial support and of risk tolerance, the respondents’ preference for self-employment and country specific effects. Among our results we find that the perception of lack of financial support has no discriminative effect across the various levels of entrepreneurial engagement while perception of administrative complexities plays a negative role only for high levels of engagement.

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1. Introduction

Moderate economic growth, together with persistently high levels of unemployment, stimulate expectations of entrepreneurship's potential as a source of economic and growth job creation (Acs, 1992; Carree and Thurik, 2003 and 2006; Beck, Demirguc-Kunt and Levine, 2005). Hence, entrepreneurship emerged as a key agenda item of economic policy makers across Europe, both for individual nations as well as for the European Union as a whole (OECD, 1998; European Commission, 1999 and 2004). Obviously, the determinants of entrepreneurship and the role policy measures can play are receiving generous attention in academic and policy circles (Audretsch, Thurik, Verheul and Wennekers, 2002). Too often, however, the determinants of entrepreneurship are investigated in the context of a binary choice model. This neglects the fact that the road to become an entrepreneur as well as the road being an entrepreneur is long, and that the choices to pursue on this career depend upon the level of entrepreneurial engagement. In other words: setting up a business is a process rather than the result of a single binary choice and the determinants of entrepreneurship are not necessarily equal across different engagement levels of this process.

That setting up a business is a process has been recognized by some authors (Low and MacMillan, 1988; Bull and Willard, 1993). A distinction has been drawn between stages such as conception, gestation, infancy, adolescence, maturity and decline (Reynolds and White, 1997; Reynolds, 1997). Often, conception, gestation and infancy stages are referred to as the *dynamics* of entrepreneurship while the adolescence, maturity and decline stages are identified as the *level* of entrepreneurship (Sternberg and Wennekers, 2005). The term nascent entrepreneurship applies to the combination of gestation and infancy (Reynolds et al., 2005)¹. Elsewhere a distinction is made between opportunity recognition and opportunity exploitation stages (Sarasvathy, Dew, Velamuri and Venkataraman, 2003). Obviously, even once a business is established stages can be distinguished (Gartner and Carter, 2003).

Determinants are not necessarily the same across the stages of the entrepreneurial process (Davidsson, 2006). In the present study we distinguish between seven stages of entrepreneurship referred to as engagement levels. The stages include two nascent ones ("thinking about it" and "taking steps for starting up"), two business ones ("having a young business" and "having an older business"), two exit ones ("gave up" and "no longer being an entrepreneur") and an outsider one ("never thought about it").

We address the issue of the determinants of the various engagement levels using a multinomial logit model which estimates the influence of a set of explanatory variables on these entrepreneurial engagement levels using survey data (*Entrepreneurship Flash Eurobarometer* surveys for 2002 and 2003) of nearly 20,000 respondents in 19 countries (15 old EU member states, Norway, Iceland, Liechtenstein and the US)². Other than demographic variables such as gender, age and education level, the set of explanatory variables includes the perception³ by respondents of admin-

¹ Since the work of the *Global Entrepreneurship Monitor* (GEM) the term nascent entrepreneurship has become widely accepted (Reynolds, Hay and Camp, 1999). GEM uses nascent entrepreneurship in a relatively narrow sense (Reynolds et al., 2005).

² The *Entrepreneurship Flash Eurobarometer* surveys are conducted on behalf of the European Commission, and the key findings are presented in the *Eurobarometer* surveys of European Commission (*Flash Eurobarometer 123* and *146* for 2002 and 2003 respectively). See

http://europa.eu.int/comm/enterprise/enterprise_policy/survey/eurobarometer_intro.htm

³ The important role of perception variables is shown in Arenius and Minniti (2005).

istrative complexities, of availability of financial support, a rough measure of risk tolerance and the respondents' preference to be self-employed.⁴

Country heterogeneity is controlled for using country dummy variables. Despite the lack of consensus with respect to different aspects of entrepreneurship, scholars appear to agree that the *level* of entrepreneurial activity varies systematically across countries (Rees and Shah, 1986; de Wit and van Winden, 1989; Blanchflower and Meyer, 1994; Blanchflower, 2000 and 2004).⁵ Also the *dynamics* of entrepreneurship, expressed as the rate of nascent entrepreneurship or the prevalence of young enterprises, show a wide-ranging diversity across nations.⁶ In the present study country dummies are used as controls to establish the influence of individual determinants and they are discussed in a concise fashion.⁷

The contribution of the present paper is twofold. *First*, to our knowledge it is the first to discriminate between more than two engagement levels of entrepreneurship. Standard binary choice models discriminate between nascent entrepreneurship and no engagement or entrepreneurship and no engagement (Blanchflower, Oswald and Stutzer, 2001; Blanchflower and Oswald, 1998; Grilo and Irigoyen, 2006; Grilo and Thurik, 2005a and 2006) or success and failure (i.e. survival) in the nascent phase (Vivarelli, 2004; van Gelderen, Thurik and Bosma, 2005). The present study discriminates between seven entrepreneurial engagement levels. The multinomial choice model predicts the probability that an individual chooses one of the engagement levels. Similar setups can be found in Earle and Sakova (2000) where two types of self-employment and wage employment are predicted and Cooper, Gimeno-Gascon and Woo (1994) where entrepreneurial failure, survival and growth are predicted. *Second*, we incorporate a multi-level effect using country dummies as covariates. In this fashion we can control for country effects when using individual socio-demographic and perception influences.⁸

The paper is organized as follows: section two deals with the literature on the determinants of entrepreneurship and is organized in four parts (introduction, economic theory, empirical evidence and our setup). Section three describes the data while our empirical analysis of the determinants of engagement levels is covered in section four. Section five concludes.

2. Determinants of entrepreneurship

2.1. Introduction

⁴ The preference for entrepreneurship over paid employment is sometimes referred to as latent entrepreneurship (Blanchflower, Oswald and Stutzer, 2001; Grilo and Irigoyen, 2006).

⁵ See van Stel (2005) for a description of the COMPENDIA data set covering business ownership rates across 23 OECD countries in the 1972-2002 period.

⁶ Research in the framework of the *Global Entrepreneurship Monitor* (GEM) shows that there are substantial differences in the *dynamics* of entrepreneurship across countries with the developed Asian and Central European countries ranking lowest, followed by Europe. Substantially higher levels are found in the former British Empire Anglo countries (including US) and still higher rank Latin America and developing Asian countries (Reynolds et al., 2002; Acs, Arenius, Hay and Minniti, 2005). See also Wennekers, van Stel, Thurik and Reynolds (2005). Differences in the role of entrepreneurship over time, i.e., over levels of economic development, are emphasized in Audretsch and Thurik (2000, 2001 and 2004).

⁷ This country heterogeneity is often related to diverging demographic, cultural and institutional characteristics (Blanchflower, 2000; Verheul, Wennekers, Audretsch and Thurik, 2002; Freytag and Thurik, 2007). In a recent series of studies some cultural drivers of entrepreneurship have been investigated: post-materialism in Uhlaner and Thurik (2007), dissatisfaction in Noorderhaven, Wennekers, Thurik and van Stel (2004) and uncertainty avoidance in Wennekers, Thurik, van Stel and Noorderhaven (2007).

⁸ This multi-level approach is also applied in Blanchflower, Oswald and Stutzer (2001) with some socio-demographic variables and in Grilo and Irigoyen (2006) where perception variables are used.

Entrepreneurship is a multidimensional phenomenon spanning different units of observation ranging from the individual to the firm, region or industry and even nation (Wennekers and Thurik, 1999; Davidsson, 2004). Due to this multidimensional nature the conceptual and theoretical approaches have built on a variety of disciplines such as economics, sociology and psychology (Uhlaner, Wennekers and Thurik, 2002). In the 20th century three scholars, Schumpeter, Kirzner and Knight, stand out in having shaped the subsequent literature on entrepreneurship through their vision of the phenomenon.⁹

The Schumpeterian tradition, breaking with the orthodox approach which tended to analyze market functioning and agents' decisions as an equilibrium phenomenon, stresses the inherent disequilibrium nature of market dynamics. In this school of thought entrepreneurship is almost impossible to disassociate from innovative performance. It is the driving force behind firm creation and market dynamics and is indeed seen as the consequence of entrepreneurial innovation. The entrepreneur is the 'persona causa' of pushing the economy out of equilibrium.

In the Kirznerian world entrepreneurs display manifest alertness to exploit previously unchartered (profit) opportunities. They are involved in a process of learning and discovery with the result that the economy is pushed back towards equilibrium. Kirznerian entrepreneurs operate in a different, i.e., later, phase of the product life cycle than do Schumpeterian ones who's prime role is to create disequilibrating newness.

Knight's views have also strongly contributed to the subsequent literature on entrepreneurship by stressing the importance of two functions of entrepreneurs: (a) providers of entrepreneurial inputs who receive a return for (b) bearing (non-calculable) risk.

2.2. Economic theory and the level of the individual

At the individual level and from an economic theory perspective, the tools of neo-classical microeconomics have provided a framework for studying self-employment decisions known as the theory of income choice. This field has proved useful in describing some of the factors influencing this occupational decision.

This approach views agents as (expected)-utility maximisers taking an occupational choice decision – to become employees or entrepreneurs (self-employed) – on the grounds of the utility associated with the returns accruing from the two types of activity. Though the specification and the working assumptions used in this strand of literature vary according to the factor being emphasized as playing the key role in explaining self-employment decisions, most of this constrained optimization approach can be traced back to the vision of the role of an entrepreneur found in the work of Knight (1921).

Knight views the entrepreneur as playing a twofold function: "(a) exercising responsible control and (b) securing the owners of productive services against uncertainty and fluctuations in their incomes" (Knight, 1921, p. 278), in other words, as provider of entrepreneurial inputs and as risk bearer. The first 'provider' function plays a role answering the question why different individuals make different occupational choices by emphasizing the role of entrepreneurial ability in the decision to become an entrepreneur. Several authors follow this route by postulating differences across potential entrepreneurs (or firms) in terms of some form of entrepreneurial efficiency or skills (Jovanovic, 1982 and 1994; Lucas, 1978; Murphy, Shleifer and Vishny, 1991; Holmes and Schmitz, 1990 and Lazear, 2004 and 2005).

⁹ Hébert and Link (1989) show that these three intellectual traditions can be traced to Cantillon's *Essai sur la Nature du Commerce en Général* (translated by H. Higgs, 1931, London: McMillan). Casson (1982) and Wennekers and Thurik (1999) attempt to make a synthesis again. See also van Praag (1999).

The second ‘risk bearer’ function gives a particular role to the presence of risk and underlines the importance of risk attitudes in the occupational choice. In Kihlstrom and Laffont (1979) and Parker (1996 and 1997) the degree of risk aversion and the differences in risk of the two occupational alternatives determine the occupational choice.

Another aspect that has been emphasized in explaining different occupational choices is the existence of liquidity constraints. Evans and Jovanovic (1989) building upon Lucas (1978) and Jovanovic (1982) show that under certain conditions, due to capital constraints, there is a positive relationship between the probability of becoming self-employed and the assets of the entrepreneur.¹⁰ This influential study led to many follow up investigations of both conceptual¹¹ and empirical nature¹².

2.3. Empirical literature and the level of the individual

Some empirical literature has built on the insights from the occupational choice models and has sought to test the role of factors influencing self-employment decisions. These studies attempt to explain the probability of being or becoming self-employed (see Parker, 2004 for references). The earnings differential between self-employment and salaried employment plays a key role in these occupational choice models (Rees and Shah, 1986; de Wit and van Winden, 1989). Moreover, a variety of variables is used to describe the factors influencing returns to self-employment and to salaried employment, their relative risk, and the preferences and abilities of the individuals. Most studies in this area use longitudinal data for a given country and have as dependent variable the transition into self-employment and sometimes the business longevity and the exit from self-employment. Typical explanatory variables include age, gender, race, education, earnings, capital assets, previous professional experience, marital status, professional status of the parents, and scores from psychological tests¹³. The empirical results obtained from this approach are summarized below. In this summary we anticipate the use of the *Flash Eurobarometer Surveys 2002 and 2003* and their data limitations.

Being (or becoming) self-employed received ample attention as a variable to be explained. Major influencing factors are listed below.

¹⁰ Next to the ‘provider’ and ‘risk-bearing’ role of the entrepreneur Knight also refers to wealth as a condition for entrepreneurial action. The research started by Evans and Jovanovic (1989) can be seen as an exploration of this third condition.

¹¹ Xu (1998) discusses a possible downward bias in wealth data. Cressy (1999) and Harada and Kijima (2005) challenge the necessity of the liquidity constraint condition. Cressy (2000) introduces business uncertainty and decreasing risk aversion.

¹² The empirical establishment of whether wealthier individuals have a higher probability of becoming entrepreneur is widely investigated. See Evans and Leighton (1989), Holtz-Eakin, Joulfaian and Rosen (1994) and Taylor (2001). Hurst and Lusardi (2004) show that the relationship between household wealth and the propensity to start a business is highly non-linear: using American income data they show that a positive relation can be found only for households in the top 5% of the wealth distribution. An interesting extension of the literature can be found in Burke, FitzRoy and Nolan (2000) which uses a new model and a large single cohort British data set to provide estimates of both the self-employment decision as well as income and job creation. Their model distinguishes between the impact of liquidity constraints on the probability to start a firm and subsequent performance. Their setup leads to conclusions such as that university education leads to a lower propensity to start a firm but improves both performance measures. Blanchflower and Oswald (1998) investigate the windfall aspect (inheritances and gifts) of assets and conclude that those receiving assets of that nature are more likely to run their own business.

¹³ Examples of empirical work following this approach can be found in Bates (1990), Blanchflower (2004), Blanchflower and Meyer (1994), Blanchflower and Oswald (1998), Blau (1987), Douglas and Shepherd (2002), Evans and Leighton (1989, 1990), Grilo and Irigoyen (2006), Grilo and Thurik (2006), Lin, Picot and Compton (2000), Rees and Shah (1986), Reynolds (1997), Wagner (2003) and de Wit and van Winden (1989).

- Most studies find that men have a higher probability of engaging in entrepreneurship than women.¹⁴
- The likelihood of becoming self-employed varies with age. Many business owners are within the age category of 25 to 45 years old.¹⁵ Nascent entrepreneurship rates are highest in the age category of 25 to 34 years old, although some studies suggest that people increasingly start businesses at a younger age.¹⁶
- The level of education is a variable for which contrasting results have been obtained.¹⁷ The results vary regarding the existence of a significant impact and the nature of this impact. Among the studies finding that education has a significant impact, the nature of the impact varies from study to study – some find a positive relation others a negative one and still others a negative up to some level of education and positive thereafter.¹⁸
- Financial constraints, often evaluated through the role of capital assets on the probability of being self-employed¹⁹, are generally found to have a negative impact on the decision to become an entrepreneur.
- Risk tolerance – as could be expected - is found to increase the probability of being self-employed.²⁰
- Grilo and Irigoyen (2006) and Grilo and Thurik (2005a and 2006) have studied the role of perceptions of administrative complexities and financial constraints on (latent) entrepreneurship. The results indicate that perceived administrative complexities have a negative impact while perceived financial constraints do not seem to play a role.
- In cross country comparisons, and for the role of country specific effects, the few studies addressing this issue indicate that entrepreneurship is stronger in the US than in European countries.²¹

¹⁴ According to Reynolds, Bygrave, Autio, Cox and Hay (2002) men are about twice as likely involved in entrepreneurial activity than women. See also Minniti, Arenius and Langowitz (2005). Much work has been done explaining the gender effect with respect to occupational choice. See Minniti, Arenius and Langowitz (2005), Grilo and Irigoyen (2006) and Minniti and Nardone, (2007). See also Verheul, Thurik and Grilo (2007) for some evidence showing that gender differentials in actual entrepreneurship are due to other factors than the preference for entrepreneurship. In other words: given the declared preference for entrepreneurship and controlled for many other factors such as age, education, etc., women have the same likelihood of becoming self-employed as men.

¹⁵ See Storey (1994), Reynolds, Hay and Camp (1999) and Grilo and Thurik (2005a).

¹⁶ See Delmar and Davidsson (2000).

¹⁷ An impressive survey of empirical studies of the impact of schooling on the entrepreneurial decision is given in Slui, Praag and Vijverberg (2005). The main conclusion is that the impact of education is insignificant. It is also concluded that most studies suffer from a lack of technical sophistication.

¹⁸ Robinson and Sexton (1994) and Cooper and Dunkelberg (1987) show that the self-employment decision is influenced by educational attainment. However, a study at the macro level by Uhlaner and Thurik (2007) shows that a higher level of education in a country is accompanied by a lower rate of nascent and young entrepreneurship. See also de Wit and van Winden (1989). Blanchflower (2004) reports that education is positively correlated with self-employment in the US but negatively so in Europe. Using Eurobarometer data Grilo and Irigoyen (2006) report a U-shaped relationship for 2000 while Grilo and Thurik (2005a) show that this relation is negative up to the intermediate education level and non-existent for higher levels. The results of Delmar and Davidsson (2000) and Davidsson and Honig (2003) show a clear education effect for nascent entrepreneurs.

¹⁹ The argument behind the use and interpretation of capital assets to proxy financial constraints is the so-called equivalence theorem in Evans and Jovanovic (1989). See Cressy (1999) for a discussion of the limitations of this theorem.

²⁰ See Grilo and Irigoyen (2006) and Grilo and Thurik (2005a) using 2000 and 2004 data respectively.

²¹ Acs, Arenius, Hay and Minniti (2005) and Grilo and Thurik (2005a). In Grilo and Thurik (2006) it is shown that the eight new former communist EU member states do not significantly differ in their entrepreneurship behavior when compared to the seventeen remaining ones.

There are many other determinants of being or becoming self-employed which are dealt with in the literature but not in the present study such as employment status (wage, part-time, unemployment, characteristics of the workplace), financial situation (including more than the constraints mentioned above, such as, household income, assets, home ownership, wealth, windfall effects, number of persons in the household), experience (current work, professional background, former entrepreneurship experience), minority behavior, immigrant behavior, family firm effects, attitudinal effects (past failures, relatives with experience, confidence, knowing other entrepreneurs, opportunity perception), etc. See Blanchflower (2004), Parker (2004), Wagner (2006) and Arenius and Minniti (2005) for surveys.

2.4. Beyond economics: our setup

These economic approaches though having the advantages inherent to any rigorous modeling of a situation – that is, establishing a clear link between the assumptions and the results – will also, almost by definition, fail to encompass all the possibly relevant aspects that determine an individual's decision. In this respect, contributions from fields such as sociology and psychology have stressed the importance of factors such as the society's attitudes towards entrepreneurs and whether failure is strongly stigmatized in a society; the strength of interpersonal links in some communities; specific psychological characteristics of individuals that make them more prone to take risks and seek success (the so-called internal locus of control) and so forth.

Verheul, Wennekers, Audretsch and Thurik (2002) present an *Eclectic Framework* of the determinants of entrepreneurship bringing together elements from different fields and levels of analysis, some of which have already been discussed above.²² Their framework distinguishes between two levels: a macro perspective and the individual occupational choice module. The macro perspective classifies the explanatory factors into three categories – supply and demand side and the confrontation between actual and 'natural' rates of entrepreneurship.²³ On the demand side the framework focuses on factors that influence the industrial structure and the diversity of consumers' tastes, such as technological development, globalization and standard of living developments. The supply side looks into the structure of the population and the way this affects the likelihood of becoming entrepreneur. Population growth, urbanization rate, age structure, participation of women in the labor market, income levels and unemployment are example of such factors. Next to the macro perspective the framework also integrates the decision-making process explaining how and why individuals make the choice to become self-employed as opposed to other job opportunities in terms of risks and rewards of different occupational alternatives.²⁴

In this framework, other than personal characteristics, the overall environment in which business is conducted plays a crucial role in fostering or weakening entrepreneurial activities both in terms of firm creation, of firm expansion and of implementation of process, product and management innovation within a firm. Our current setup controls for this macro perspective using country dummies while concentrating on personal socio-demographic, perception and preference variables.

²² Updates of the Eclectic Framework are in Wennekers, Uhlaner and Thurik (2002) and Audretsch, Grilo and Thurik (2007). Alternative frameworks are provided by Busenitz, Gomez and Spencer (2000), Stevenson and Lundström (2001) and by the Global Entrepreneurship Monitor (Reynolds, Hay and Camp, 1999; Reynolds, Bygrave, Autio, Cox, and Hay, 2002 and Acs, Arenius, Hay and Minniti 2005).

²³ See Carree, van Stel, Thurik and Wennekers (2002) and Audretsch, Carree, van Stel and Thurik (2002).

²⁴ The risk reward profile of entrepreneurs is driven by opportunities on the one hand and their willingness (Praag and Ophem, 1995) on the other. Resources, abilities/traits and preferences are the components of the willingness to start a business or to remain in business.

3. Observations and variables

Data are from two *Entrepreneurship Flash Eurobarometer* surveys conducted in the fall of 2002 and 2003 and covering the 15 EU member states, Norway, Iceland, Liechtenstein and the US. Together, these surveys contain over 20,000 observations of which 17631 can be used for our estimation.²⁵

The following question was used for the dependent variable: “*Have you started a business recently or are you taking steps to start one?*” The following options for answering were given:

- “*It never came to your mind*”
- “*No, you thought of it or had already taken steps to start a business but gave up*”
- “*No, but you are thinking about it*”
- “*Yes, you are currently taking steps to start a new business*”
- “*Yes, you have started or taken over a business in the last 3 years and still active*”
- “*Yes, you started or took over a business more than 3 years ago and still active*”
- “*No, you once started a business, but currently you are no longer an entrepreneur*”

Each one of these possible answers reflects a different, and increasing, level of involvement in entrepreneurship. Note that the last four options translate an active role in the entrepreneurial world, while the first three have a softer component of varying degrees of interest in the entrepreneurial activities. Respondents belonging to the last group may either have been successful entrepreneurs who retired or transferred their business or entrepreneurs which met with less success and failed. The country averages per engagement level are given in Table 1. Clear differences between European countries and the US can be observed. In the US only 3% gave up whereas the European unweighted average is 10% and in every European country this proportion is well above 3%. The “thinking”, “taking steps” and “young business” categories in Europe are considerably lower than in the US, with no single European country ranking as high as the US, while the level “older business” is on average more present in Europe than in the US; with the exception of Belgium that presents the same 5% in this class as the US all other European countries display higher proportions. Those who once had a business but are no longer active are also more represented in Europe than in the US; with the exception of Ireland and Austria who pair with US, all other European countries display higher proportions than the US.

Table 1: Percentages per engagement level per country

Insert Table 1 about here

The explanatory variables used here can be divided into three types.

Socio-demographic variables: gender, age and level of education. “Age when finished full education” is used to construct three education levels: The first encompasses all those with no education or having left school before the age of 15; the second those who left school between the age of 15 and 21; and the third those having left school past the age of 21.²⁶ A dummy variable is used for the lower level and another for the higher level so that the intermediary level works as the base.

²⁵ See http://europa.eu.int/comm/enterprise/enterprise_policy/survey/eurobarometer_intro.htm for about data and collection method.

²⁶ We chose not to treat this information as a continuous variable due to the discontinuity associated with the group “never having attended full time school”.

Perception and preference variables: these include perception of lack of financial support, perception of administrative complexities, preference for self-employment and risk tolerance.

The perception of lack of available financial support, the perception of complexity of administrative procedures and risk tolerance are captured, respectively, by the following questions: “*Do you strongly agree, agree, disagree or strongly disagree with the following statements?*” Categories then are

- “*It is difficult to start one’s own business due to a lack of available financial support*”.
- “*It is difficult to start one’s own business due to the complex administrative procedures*”
- “*One should not start a business if there is a risk it might fail*”

For each statement a dummy variable was constructed. The dummy variables take the value “1” in the case of “strongly agree” or “agree” for the first two statements. These first two variables capture, at best, the perception individuals have of the existence of financial or administrative barriers not their actual existence. Most likely these perceptions are the closer to reality the higher the involvement of the respondent in active entrepreneurial activities.

For the third statement the risk tolerance dummy takes value “1” if “disagree” or “strongly disagree”. Clearly, this is a very rough indicator of risk attitudes and calling this dummy “risk tolerance” may be abusive; nevertheless, in the absence of a better measure we believe it gives some useful information on how taking risks is perceived by the respondent. Note that the question behind this variable refers to a general situation (*One should not ...*) rather than to the specific situation the respondent may be in. In this sense it is closer to a proxy of attitude towards risk than to a reflex of the individual’s own appraisal of his risks in running an eventual business.

Preference for self-employment is constructed on the basis of a direct question asking respondents whether they would prefer to be employed or self-employed. The precise question being *Suppose you could choose between different kinds of jobs, which one would you prefer: being an employee or being self-employed?* Given this phrasing, the question places the respondent in a hypothetical situation away from his own constraints and opportunities and therefore translates his inner preferences rather than his actual likelihood of choosing one or another.

Country dummies: country-specific effects are evaluated using country dummy variables with the US as the base. Therefore the coefficients associated with these variables are to be interpreted as the impact of being in the corresponding country rather than being in the US.

4. Estimation Results

This section estimates a multinomial logit model where the dependent variable is a categorical variable describing different “levels” of engagement in the entrepreneurial process. The factors presented in Table 2 describe the effect of the corresponding variable on the odds (ratio of two probabilities) of the level in question relative to the base level (in our case the base is “It never came to your mind”). A factor above unity implies that the corresponding explanatory variable increases the odds of belonging to the level in question relative to the group “It never came to your mind”. Conversely, a factor below unity implies that the variable decrease the odds.

Table 2: Odds relative to “never having considered starting a business”: effect of one unit change in independent variables

Insert Table 2 about here

Before summarizing the results of Table 2 some measures of explanatory power and diagnostics will be provided.

Statistics of explanatory power and some diagnostics

The usual explanatory statistics are reported in Table 3. The middle column reports the statistics belonging to the analysis of Table 2. In the right hand column the same statistics are reported for the same analysis but with the preference for self-employment variable omitted. Obviously, the explanatory power drops but the size and the significance of the coefficients (not reported in the present paper) are roughly the same.²⁷

Insert Table 3 about here

For each pair of engagement levels we conducted a Wald test (asymptotically χ^2 distributed with 26 degrees of freedom, 5 per cent critical value: 38.885) to test for equal coefficients for the particular pair of levels. The results of these tests are given in Table 4. All null hypotheses can be rejected at one per cent; the least convincing rejection is in the case of engagement levels "Taking steps" and level "Business<3 yrs". We also conducted this test for country effects only. The results are also in Table 4 (between brackets, 5 per cent critical value with 18 degrees of freedom: 28.869). Again, all null hypotheses can be rejected at one per cent, except for the combination "Taking steps" and "Business<3 yrs" (with p-value 0.03).

Insert Table 4 about here

We also investigated the redundancy of country dummies (null hypothesis: all coefficients of country dummies are equal to zero). For the various levels we computed a Wald statistic (χ^2 distributed with 18 degrees of freedom, 5 per cent critical value with 18 degrees of freedom: 28.869; base level: "Never thought about it"). They are shown in the bottom row of Table 4.²⁸

²⁷ Recall that the preference variable reports the answer to a hypothetical question where the respondent is freed from any real life constraints when asked about her preference between self-employment and paid employment. For this reason we believe that this variable does not duplicate the information contained in the dependent variable but rather translates an inner preference for an entrepreneurial carrier which may or may not have materialized depending on the constraints and opportunities faced by each individual. Moreover the preference question refers to self-employment, which does not necessarily require owing a business, while the dependent variable deals with starting a business. Inspection of the data shows that 38% of those announcing a preference for self-employment claim never having thought about starting a business while 33% of those in the thinking phase or beyond (including the "Gave up" and "No longer" levels) declared a preference for paid employment.

²⁸ It is not straightforward to compute a measure of explanatory power for each engagement level in the multinomial logit model. One solution is to compare the observed and predicted frequencies of the levels. In the actual sample the frequencies of the seven levels are 0.55, 0.10, 0.13, 0.03, 0.04, 0.08 and 0.08 (for "Never thought", "Gave up", "Thinking", "Taking steps", "Business<3yrs", "Business>3yrs" and "No longer", respectively). When making forecasts for each level (for each individual) and assigning the level to each individual with the highest probability, then the frequencies of predicted levels amount to 0.87, 0.00, 0.09, 0.00, 0.00, 0.03 and 0.01. Another solution is to identify the fit of the different engagement levels is to compute the average predicted probability for each engagement level. For all observations belonging to the "Never thought about it" level we predict the probability of classification in this level. Averaging this number across individuals and repeating this exercise for all other categories gives the following outcome for the respective levels: "Never thought" (9697; 0.62); "Gave up" (1715; 0.12); "Thinking" (2376; 0.23); "Taking steps" (482; 0.07); "Business<3yrs" (635; 0.07); "Business>3yrs"(1333; 0.15); "No longer" (1383; 0.13) where the number of observations and the average prediction is between brackets. Note that these predictions are only considered for the observations representing the specific level. Predictions can also be based on all observations. In this case the outcomes are as follows (17621 observations for all predictions): "Never thought" (0.55); "Gave up" (0.10);

Lastly, the Independence of Irrelevant Alternatives (IIA) assumption underlying the multinomial logit model is checked. With different base engagement levels, we subsequently deleted all remaining levels and investigated whether the parameter estimates without this omission are different from those when a specific level is deleted. Clearly, the IIA assumption is not violated if we delete any level other than “Never thought”. But if we delete this level, however, odds ratios do change and therefore the odds ratios of the levels other than “Never thought” are dependent on the presence of this level. This seems to suggest that there is a clear difference between “Never thought” and the set of all six alternatives. However, the proximity between the various levels of entrepreneurial interest (starting from “Thinking”) is sufficient to allow the odds of any two not to depend on whether other alternatives in this entrepreneurial set are present.²⁹

Concluding that our model is sufficiently robust we summarize the main results of Table 2. We concentrate on the effect of six variables: gender, age, education, financial obstacles, administrative complexity and risk tolerance. We will also discuss country effects.

Gender

Relative to not thinking about setting up a business, the odds of any other option are higher for men than for women. This is particularly the case when considering the odds of having an active business where, relative to not considering starting one, the odds for men are almost twice those of women for businesses with less than three years and two and a half as high for businesses with more than three years. Remark that these results are obtained from a regression where preferences for self-employment have been accounted for. It therefore suggests that this gender differential goes beyond the often observed lower entrepreneurship preferences of women. This suggests two fronts for action if women are to become equally represented in the entrepreneurial world. Firstly, to act at the level of preferences by investigating and addressing the factors responsible for this possible lack of entrepreneurial drive (Minniti and Nardone, 2007). And secondly, to address more directly the obstacles faced by women that may be hindering the materialization of entrepreneurial spirit into actual entrepreneurship.

Age

Age has a negative impact on the odds of "Thinking" "Taking steps" or "Having a young business" relative to “Never having thought of starting a business”. However, its impact becomes positive on the odds of “Having an old business” and on “No longer having a business”, again relative to “Not thinking of starting one”. This last effect is most likely the result of the natural fact that to have an old business or to have stopped having one takes time in life. Though not reported here, the effect of age on the odds of having an older business relative to having a younger one is also positive illustrating precisely the very natural demographic fact that owners grow older along with their businesses. More interestingly, and again not reported, the odds of no longer being an entrepreneur relative to any other category increases with age, suggesting a life cycle interpretation for this category of exit from entrepreneurial life.

Education

"Thinking" (0.13); "Taking steps" (0.03); "Business<3yrs" (0.04); "Business>3yrs"(0.08); "No longer" (0.08) where again the average prediction is between brackets. The latter two results suggest that "Never thought about it" is identified best. The adequate performance of this level might be caused by the large number of respondents identifying themselves with this engagement level.

²⁹ An alternative modelling setup in the face of these findings would be a two layer nested model where the distinction between “Never thought” and all six alternatives is allowed for in a first layer and the further distinction between the remaining 6 levels of entrepreneurial interest are then modelled in the second. This setup is outside the scope of the present paper and reserved for further research.

Relative to “Never “thought about it”, the odds of any other category, with the exception of “No longer being in business”, displays a positive relationship with educational level. This suggests that education matters in triggering at least the thought of starting a business even if this thought is later abandoned. Given this effect of education on contemplating or having contemplated starting a business, it becomes important to investigate its effect on other pairs of categories. The impact of education is particularly interesting on the odds of older versus younger businesses since it unveils some information on the role of education on the survival of businesses. Results not reported indicate that education of the owner has apparently no impact on whether he owns a young or an older business suggesting that owners' education does not affect survival rates.

Administrative complexities

Relative to never having considered setting up a business, the odds of having thought and given up are not significantly affected by the perception of administrative complexities. However, the odds of other more active entrepreneurial positions such as actually having started one (whether active for less or longer than three years) or having once been an entrepreneur are significantly negatively affected by a perception of administrative complexity. The results suggest that for those who gave up on the idea of starting a new business the recognition of such obstacle is not binding enough to “make” them statistically different from those never having considered an independent status. What is however revealing in these results is the fact that when it comes to a more “engaged” entrepreneurial position these obstacles do play a role and one that hinders entrepreneurship. Recent initiatives in several European countries and at European Union level have been taken to regulate better and in particular to decrease by 25 per cent the administrative burdens faced by firms. These efforts and political commitments testify to the awareness in policy circles of the hindering effect of administrative hurdles to entrepreneurial activity and economic growth.³⁰

Lack of financial support

Regarding the influence of lack of financial support the important result is the lack of significance of this variable across the board. In plain words this result means that the fact of acknowledging a lack of financial support plays no role in one's entrepreneurial position. Unlike with administrative obstacles, lack of financial support does not seem to discourage an active involvement in entrepreneurial activity; even for those categories reflecting an effective business activity their odds relative to not considering an entrepreneurial activity are not significantly affected by a perception of financial obstacles. The result concerning financial obstacles is in stark contrast with the result for administrative complexities where the expected negative effect is evident for engaged entrepreneurship. Clearly, this somehow surprising result begs further investigation. In interpreting these results we have to bear in mind that the odds under consideration here are those of each level relative to a lack of interest for entrepreneurship. The obvious question is then whether a lack of financial support may play a role in the odds of other pairs of categories. Could it be the case that this obstacle is important in determining the odds of actually having a business relative to thinking about starting one or relative to having given up? Or, could it play a role in the odds of having an older business relative to having a younger one? Tests along these lines show that this variable has no significant effect on the odds of any pair of categories.

Risk tolerance

Not too surprisingly, being risk tolerant increases the odds of belonging to any category where having a business has been contemplated relative to never having considered such an op-

³⁰ See http://ec.europa.eu/growthandjobs/areas/fiche03_en.htm#docs for information on European Union and member States' efforts in the area of “better regulation”.

tion.³¹ When looking at the odds of having an older business relative to having a younger one, results not reported show that risk tolerance decreases these odds (but not significantly so). So the idea that being risk tolerant is decreases survival rates is not supported here.

Country dummies

The large amount of individual country dummies for every level prevents an exhaustive discussion. However, the most relevant results are that

- Strikingly, the odds of having considered and subsequently having given up starting a business relative to not having thought about it are much stronger for any European country in the sample than for the US. Giving up rather than even considering an entrepreneurial activity appears to be a characteristic more present in the European population.
- When it comes to thinking about setting up a business as opposed to not considering it at all, the result is almost the opposite of the preceding: with the exception of Denmark and Austria, no European country has higher odds than the US. Most countries have significantly lower odds and a few, such as Germany, Greece, Ireland, and the UK, are at par with the US.
- Looking at a more engaged stage in the entrepreneurial process, currently taking steps to start a new business, relative again to showing no interest, the results are the following: with the exception of Denmark, and Ireland for which the odds are not statistically different than in the US, all other European countries fare less well than the US.
- Relative to not considering an entrepreneurial activity, the odds of having a “young” business (less than three years) are never higher for European countries than for the US (for some countries they are statistically lower and for others they are at par).
- The situation changes dramatically when we look at the odds of having an older business (always relative to not wanting to start one). Here no country scores below the US and with the exception of Belgium, Spain, France and Portugal for which the situation is not statistically different from the US, all other European countries have significant higher odds than the US.
- Finally, it remains to see how nationality influences the odds of having once started a business but not being any longer an entrepreneur, relative to not being interested in such activities. Here no European country has lower odds than the US (some are at par while others are clearly above). This class of “have been entrepreneurs” is of course a heterogeneous group which makes it difficult to comment on these results. Its message would have to be tempered by the information on why the respondent is no longer an entrepreneur: has he succeeded in his venture and transferred it or has the business been a failure? Unfortunately we do not possess this type of information.

In the presentation of the results chosen here we looked systematically at the odds of belonging to a given level relative to the level “It never came to your mind”. Another way of looking at these results would be to look at odds of other pairs of levels. One might for instance want to know what the impact is of a certain explanatory variable on the odds of having an older business relative to having a younger one. The value of these impacts (though not its statistical significance) can be easily obtained from Table 2.³² Below three instances of these impacts are given.

³¹ The only exception is in "Taking steps" where risk tolerance does not change its odds relative to "Never thought about it".

³² The size of the impact of a variable on the odds of level X relative to level Y can be obtained by dividing the odds of level X relative to the base level by the odds of level Y relative to the base.

The odds of having a business (whether for more or less than 3 years) relative to having given up setting a business are negatively influenced by the perception of administrative complexities but not by lack of financial support. In the same spirit, the odds of having a business relative to thinking about it also decrease in the presence of perceived administrative complexities but are not affected by lack of financial support.³³ The odds of having a longer established business (more than 3 years) relative to having a younger business (less than 3 years) are very significantly increased by belonging to any of the European countries in the sample rather than being American. Being a man also increases these odds.³⁴

5. Concluding remarks

The determinants of entrepreneurship have typically been investigated in the context of a binary choice model. We believe that setting up a business is best described as a process rather than the result of a single binary choice and that the determinants of entrepreneurship are not necessarily equal across the different engagement levels of this process. This is precisely where the present paper attempts to contribute to the literature. The survey data covering the 15 old EU member states, Norway, Iceland, Liechtenstein and the US and the use of a multinomial logit model enable to establish the effect of socio-demographic and perception and preference variables on entrepreneurial engagement levels such as “thinking about it”, “taking steps for starting up”, “having a young business”, “having an older business”, while controlling for country differences. This new picture provides a remarkable abundance of results. The most important findings are that

- Relative to “not thinking about it”, the odds of any other option are higher for men than for women and this effect is stronger for “having an active business” than for any other level.
- Perception of administrative complexities has no effect on the odds of “gave up”, “thinking about it” and “taking steps” relative to “never thought about it”.
- Perception of administrative complexities plays a negative role for higher levels of “engagement” (“having an active business”).
- Perception of lack of financial support has no discriminative effect across the categories.
- European countries have lower odds than the US for levels of engagement up to “having a young business” relative to “never thought about it”.
- European countries have higher odds than the US for the level “having an older business” both relative to “never thought about it” and to “having a young business”.

There are many avenues for future research building on the present model and its results. We mention only two. First, future research should deal with the explanation of the country differences: to what extent are cultural aspects, sector composition of economic activity, market legislation, tax environment, bankruptcy law, job security, social security regimes, etc determining factors.³⁵ Secondly, the possible existence of feedback effects occurring through time between the entrepreneurial engagement levels and some of the entrepreneurship determinants considered in the present setup deserves further investigation. Variables such as preferences toward self-

³³ These results are not reported in the present text but have been checked to be statistically significant.

³⁴ Age also has a positive impact on these odds but this does not necessarily mean that older entrepreneurs have better business survival chances.

³⁵ See Wennekers, Uhlaner and Thurik (2002) for some general insights on the role of heterogeneity on the country level when explaining entrepreneurial activity. In Grilo and Thurik (2006) a probit approach is used to investigate the differences in actual and latent entrepreneurship in the post-communist Europe and the market economy members of the European Union. In Grilo and Thurik (2005b) the present model is used to establish differences between the post-communist members of the European Union and the market economy ones.

employment; risk tolerance; financial resources; and even the perception of administrative complexities are bound to change through time and, in particular, to be affected by entrepreneurial experiences. For instance, while greater risk tolerance and financial resources will likely increase the probability of becoming an entrepreneur, it is also likely that an experienced entrepreneur, owning a successful, older business will face less financial constraints (Parker, 2004) and will have a different perception of risk than an individual that is taking steps towards, or thinking about becoming self-employed.

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Table 1: Percentages per engagement level per country

	Never considered	Gave up	Thinking	Taking steps	Business<3yrs	Business>3 yrs	No longer	Observations
Belgium	68	9	8	2	2	5	6	853
Denmark	44	13	18	3	3	9	10	819
Germany	50	13	16	3	4	7	7	1297
Greece	46	11	17	2	4	8	12	875
Spain	60	8	15	2	2	6	7	1129
France	61	14	11	1	1	4	7	1337
Ireland	52	7	21	5	4	7	5	856
Italy	62	7	9	3	2	7	10	1362
Luxembourg	60	16	8	2	2	6	6	814
Netherlands	56	11	10	1	3	9	9	847
Austria	54	8	20	2	4	7	5	808
Portugal	61	9	11	3	3	6	7	815
Finland	54	12	11	2	3	10	9	839
Sweden	66	5	9	3	4	7	6	712
UK	53	8	15	2	5	7	10	1149
Iceland	44	5	12	3	6	18	13	536
Norway	50	12	7	2	5	12	11	733
Liechtenstein	48	13	12	4	5	12	5	790
Unweighted European average	55	10	13	3	3	8	8	921
US	49	3	23	8	7	5	5	1050

Source: *Flash Eurobarometer Surveys* 134 and 146 (conducted in 2002 and 2003).

Table 2: Odds relative to “never having considered starting a business”: effect of one unit change in independent variables

	Gave up		Thinking		Taking steps		Business<3yrs		Business>3yrs		No longer	
	Odds	P-value	Odds	P-value	Odds	P-value	Odds	P-value	Odds	P-value	Odds	P-value
Men	1,506	0,000	1,538	0,000	2,124	0,000	1,934	0,000	2,515	0,000	1,693	0,000
Age	0,998	0,128	0,959	0,000	0,959	0,000	0,986	0,000	1,017	0,000	1,040	0,000
Low education	0,823	0,042	0,795	0,032	0,830	0,397	0,580	0,005	0,666	0,000	0,969	0,725
High education	1,332	0,000	1,484	0,000	2,265	0,000	1,605	0,000	1,422	0,000	1,001	0,992
Preferences	2,412	0,000	4,747	0,000	9,363	0,000	8,363	0,000	9,261	0,000	2,650	0,000
Lack finance	1,028	0,686	0,958	0,487	0,833	0,115	0,870	0,170	0,874	0,073	0,936	0,379
Complexities	1,002	0,971	0,891	0,048	0,841	0,110	0,700	0,000	0,736	0,000	0,786	0,001
Risk tolerance	1,195	0,001	1,319	0,000	1,137	0,220	1,437	0,000	1,278	0,000	1,174	0,010
Belgium	2,717	0,000	0,437	0,000	0,300	0,000	0,440	0,003	1,515	0,069	1,154	0,503
Denmark	6,029	0,000	1,436	0,007	0,709	0,182	0,981	0,939	4,176	0,000	3,124	0,000
Germany	5,418	0,000	1,053	0,672	0,617	0,025	0,897	0,592	2,771	0,000	1,904	0,001
Greece	4,546	0,000	1,096	0,517	0,433	0,003	1,108	0,646	3,193	0,000	3,251	0,000
Spain	2,158	0,000	0,530	0,000	0,210	0,000	0,302	0,000	1,331	0,169	1,405	0,086
France	4,275	0,000	0,492	0,000	0,230	0,000	0,275	0,000	1,144	0,527	1,466	0,043
Ireland	2,300	0,000	0,965	0,790	0,705	0,106	0,678	0,085	1,802	0,005	1,019	0,934
Italy	1,886	0,003	0,358	0,000	0,344	0,000	0,388	0,000	1,706	0,006	1,882	0,001
Luxembourg	5,260	0,000	0,429	0,000	0,296	0,000	0,330	0,000	1,621	0,032	1,320	0,196
Netherlands	4,323	0,000	0,601	0,001	0,279	0,000	0,757	0,236	3,328	0,000	2,528	0,000
Austria	3,271	0,000	1,574	0,001	0,553	0,041	1,344	0,182	3,173	0,000	1,314	0,238
Portugal	2,523	0,000	0,375	0,000	0,300	0,000	0,496	0,004	1,348	0,177	1,041	0,853
Finland	5,017	0,000	0,783	0,106	0,432	0,005	0,741	0,257	4,773	0,000	2,557	0,000
Sweden	1,567	0,071	0,499	0,000	0,529	0,016	0,711	0,169	1,796	0,009	1,083	0,726
UK	2,792	0,000	0,870	0,282	0,478	0,002	0,964	0,853	1,954	0,001	2,182	0,000
Iceland	1,758	0,043	0,581	0,002	0,356	0,001	0,990	0,967	4,873	0,000	3,404	0,000
Norway	4,797	0,000	0,490	0,000	0,469	0,008	1,295	0,256	4,911	0,000	3,514	0,000
Liechtenstein	4,837	0,000	0,610	0,001	0,508	0,005	0,877	0,547	3,680	0,000	1,613	0,033

Note: DK/NA observations have been dropped from the sample. Base level: “It never came to your mind”.

Source: *Flash Eurobarometer Surveys 134 and 146* (conducted in 2002 and 2003).

Table 3. Some diagnostic measures of the multinomial logit model

	With 'preference' variable (see Table2)	Without 'preference' variable
Log-likelihood	-22301.320	-23430.792
LR statistic	6104.714 (df: 156)	3845.769 (df: 150)
McFadden R^2	0.120	0.076
Nagelkerke R^2	0.310	0.208
Akaike inform. crit.	2.550	2.677
Bayesian inform. crit.	2.621	2.746

Table 4. Results of Wald-tests for equal coefficients across engagement levels and equal country coefficients per engagement level.

Across levels	Never thought	Thinking	Gave up	Taking steps	Business <3 yrs	Business >3 yrs	No longer
Never thought							
Thinking	1814.30 (306.35)						
Gave up	577.05 (246.75)	697.16 (254.44)					
Taking steps	671.72 (85.97)	108.47 (43.72)	421.23 (164.31)				
Business <3 yrs	721.00 (104.83)	188.81 (55.86)	357.01 (152.12)	77.78 (30.97, $p=0.03$)			
Business >3 yrs	1414.10 (237.56)	896.25 (211.32)	516.29 (128.42)	347.80 (128.53)	181.23 (75.77)		
No longer	908.05 (177.23)	1449.76 (196.89)	522.76 (130.19)	672.92 (125.22)	535.82 (88.87)	433.11 (54.87)	
Per level		246.75	306.35	85.97	104.83	237.56	177.23

Note: the Wald-test for equal country coefficients across levels is between brackets.