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Abstract: This paper investigates differences between opportunity and necessity entrepreneurs in terms of socio-demographics, attitudes and perception of 'obstacles'. We use the 2004 Flash Eurobarometer Survey data. Explanatory variables include gender, age, education level and self-employed parents, risk tolerance, locus of control, perceptions of four 'obstacles' and country effects. The 'obstacle' variables include the perception of availibity of financial support; administrative complexity; of access to information on new venture creation and an unfavorable economic climate. Using probit equations we investigate differences in the preference for self-employment of opportunity and necessity entrepreneurs. A probit equation is estimated relating the explanatory variables to opportunity versus necessity entrepreneurship. Moreover, differences in the entrepreneurial engagement of opportunity and necessity entrepreneurs are investigated on the basis of a (ordered) multinomial logit model. Findings indicate that opportunity entrepreneurs have a higher preference for self-employment because of family encouragement. Also, opportunity entrepreneurs are found to perceive of administrative complexity and an unfavorable economic climate, negatively influencing their entrepreneurial involvement, while this is not the case for necessity entrepreneurs.

1. Introduction

Consistent evidence indicates that entrepreneurial activity leads to economic growth (Audretsch and Thurik, 2001; Carree and Thurik, 2003; Van Stel, Carree and Thurik, 2005; Acs et al., 2005). With entrepreneurial activity stimulating economic growth it is important to know the mechanisms driving entrepreneurship. Various studies have investigated the determinants of entrepreneurship (e.g., Grilo and Irigoyen, 2006; Grilo and Thurik, 2005c; Verheul et al., 2002). Entrepreneurial activity arises from different circumstances and motives that drive the decision to start a business. The decision to become self-employed may stem from the push effect of (the threat of) unemployment, but also from pull effects induced by a thriving economy producing entrepreneurial opportunities. Reynolds et al. (2002, p.16) explicitly distinguish between "opportunity-based" and "necessity-based" entrepreneurship in their annual effort (Global Entrepreneurship Monitor) to measure the rate of entrepreneurial activity across countries[1]. Opportunity-based entrepreneurship involves those who choose to start their own business by taking advantage of an entrepreneurial opportunity. Necessity-based entrepreneurship involves people who start a business because other employment options are either absent or unsatisfactory.

The 2004 Global Entrepreneurship Monitor (GEM) report shows that there is great variability in the relative distribution of opportunity and necessity entrepreneurship across the 34 countries in the GEM sample. The opportunity entrepreneurs are more prevalent in high-income countries (such as France, the United Kingdom and the United States), while necessity entrepreneurs are more common in the low-income countries (such as Hungary and Poland). Accordingly, it may be argued that in developed countries opportunity entrepreneurship is linked to economic growth, while in most developing countries necessity entrepreneurship exists because of low growth. It may be that because richer countries are characterized by a more developed labor market or access to stronger safety nets (social welfare), there is a lower need for starting up a business and that therefore these countries exhibit lower necessity-based entrepreneurial activity rates (Reynolds et al., 2002).

From a policy perspective it is important to understand what drives and characterizes opportunity and necessity entrepreneurship. Do opportunity entrepreneurs indeed have a higher preference for entrepreneurship than necessity entrepreneurs (i.e., are they more motivated to become self-employed)? Reynolds et al. (2002) suggest that necessity entrepreneurs may not necessarily be affected by the same factors as opportunity entrepreneurs. This would imply that current programs designed to encourage entrepreneurship may be appropriate for opportunity-motivated entrepreneurs, but not for necessity-motivated entrepreneurs. Opportunity and necessity entrepreneurship may also differ with respect to performance. It has been argued that opportunity entrepreneurship is more likely to have a higher contribution to the economy in terms of innovation and job creation (Reynolds et al., 2002)[2]. Hence, policy makers may need to develop different sets of policies to support opportunity and necessity entrepreneurship. The main goal of this study is to investigate whether opportunity and necessity entrepreneurs differ with respect to socio-demographic factors and attitudes towards entrepreneurial activity. Moreover, do opportunity entrepreneurs perceive and experience different obstacles to starting up and running a business than necessity entrepreneurs?

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[1] According to Reynolds et al. (2002), it is possible to label more than 97 percent of those who are entrepreneurially active as either opportunity or necessity entrepreneurs.

[2] Reynolds et al. (2002) find that about 20 percent op the entrepreneurial activity that is reported, expect to provide no jobs, and about 53 percent of these individuals were necessity entrepreneurs. On the other hand, more than 25 percent of the entrepreneurially active adults expected to provide more than 20 jobs in five years, and about 70 percent of these persons were motivated by opportunity. Also, 9 percent of all opportunity entrepreneurs expect to create a new market, compared to 5 percent of necessity entrepreneurs.

The present study will be conducted on two different "levels". First, all active respondents in the entrepreneurial world are incorporated in the sample to determine differences between opportunity-based and necessity-based entrepreneurship. Second, all active respondents are divided in different groups based on their involvement in entrepreneurship. A distinction is made between four stages in the entrepreneurial process. Grilo and Thurik (2005b; 2005c) refer to these stages as *entrepreneurial engagement levels*. These engagement levels include "taking steps for starting" (nascent stage[3]), "having a young business", "having an older business" (business stage) and "no longer being an entrepreneur" (exit stage). It is an interesting question whether – given their entrepreneurial engagement level – there is a difference between opportunity and necessity entrepreneurs. Moreover, are opportunity entrepreneurs more likely to reach the higher engagement levels than necessity entrepreneurs?

To investigate the difference between necessity and opportunity entrepreneurs this study makes use of the 2004 Flash Eurobarometer survey, including data for the 25 European member states[4] and the United States. This study builds on previous studies by Grilo and Irigoyen (2006), Grilo and Thurik (2005a), Grilo and Thurik (2005b) and Grilo and Thurik (2005c). Next to socio-demographic variables such as gender, age and education level, the set of explanatory variables includes variables related to the perception of the entrepreneurial environment (i.e., perception of available financial support, perception of administrative complexities, perception of sufficient information on business start-ups, and perception of an unfavorable economic climate). Moreover, we include a measure of risk tolerance, locus of control and the respondents' preference to be self-employed. Country dummies are used to control for country effects.

In this study various discrete choice models are used to investigate differences between opportunity and necessity entrepreneurs. Following Grilo and Irigoyen (2006), Grilo and Thurik (2005a) and Verheul, Thurik and Grilo (2006) this study estimates probit equations relating the probability of revealing a preference for self-employment to various explanatory variables[5]. A probit equation is also estimated relating the probability of being an opportunity versus a necessity entrepreneur to a similar set of explanatory variables. In addition, following Grilo and Thurik (2005b; 2005c), differences between opportunity and necessity entrepreneurship within various engagement levels (i.e., entrepreneurial involvement) are investigated by estimating a multinomial logit model, predicting the probability that an individual chooses one of the engagement levels[6]. This will determine the impact of the various explanatory variables on the odds of belonging to a given engagement level rather than to another level. Grilo and Thurik (2005b; 2005c)[7] discriminate between seven entrepreneurial engagement levels. Not only do they use the four engagement levels already mentioned, they add the following engagement levels: "thinking about it" (nascent stage), "gave up" (exit stage) and "never thought about it" (outsider stage)[8]. Finally, an ordered multinomial logit model is used to compare the entrepreneurial process of opportunity and necessity entrepreneurship.

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[3] See Reynolds et al. (2005) for the narrower definition of nascent entrepreneurship used in the Global Entrepreneurship Monitor.

[4] Including 15 old EU members: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and the United Kingdom, and 10 new EU members: Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia.

[5] Grilo and Irigoyen (2006), Grilo and Thurik (2005a) and Verheul, Thurik and Grilo (2006), compare entrepreneurial drive (i.e., latent entrepreneurship or preference for self-employment) with entrepreneurial activity (i.e., actual entrepreneurship). This study will only focus on explaining the preference for self-employment.

[6] 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.

[7] Grilo and Thurik (2005b) use the Flash Eurobarometer Survey 2002 and 2003 from the 15 old EU member states, Norway, Iceland, Liechtenstein and the US. Grilo and Thurik (2006) use the Flash Eurobarometer Survey 2004 from the 15 old EU member states, the 10 new EU member states and the US.

[8] The entrepreneurial engagement levels "thinking about it", "gave up" and "never thought about it" were not used in this study, since opportunity and necessity entrepreneurs are currently starting or already started a business. Moreover, opportunity and necessity entrepreneurs used in the present study are already beyond these entrepreneurial stages.

The set-up of this paper is as follows: Section 2 gives a brief overview of the determinants of entrepreneurship relating them to the push- and pull side of self-employment. Section 3 describes the variables and the models used in this study. In Section 4 descriptive statistics give a first insight in the differences between opportunity and necessity entrepreneurs. Section 5 investigates latent entrepreneurship (i.e., do opportunity entrepreneurs differ from necessity entrepreneurs in their preference for self-employment?). Section 6 aims at explaining opportunity versus necessity entrepreneurship (i.e., as a dependent variable). Sections 7 and 8 investigate the engagement levels in more detail by estimating an unordered and ordered multinomial logit model, respectively. In other words: is there a difference between opportunity and necessity entrepreneurs with respect to the various engagement levels? Section 9 concludes and gives recommendations for further research.

2. Push and pull factors of entrepreneurship

In the literature on the determinants of entrepreneurship a distinction is often made between *push* and *pull* factors (Storey, 1994). An individual can either be pushed into self-employment because there was no other alternative or one can be pulled into self-employment to pursue a business opportunity. According to Uhlaner and Thurik (2007) pull factors refer to the expectation of being better off as an entrepreneur (i.e., attracted to self-employment with the expectation that it will provide greater (im)material benefits), and that push factors refer to the conflict between one's current and one's desired occupational status (i.e., associated with some level of dissatisfaction). Push and pull effects are comparable to necessity-based entrepreneurship and opportunity-based entrepreneurship, respectively. Opportunity entrepreneurs are influenced by pull factors to start a business, while necessity entrepreneurs are affected by push factors.

Many variables have been found to influence the choice for self-employment of an individual in the (empirical) literature. Anticipating upon using the 2004 Flash Eurobarometer Survey, this study will focus on the following determinants of self-employment: socio-demographic factors (including gender, age, education and self-employed parents), perception of environmental "obstacles", risk tolerance and locus of control. An overview of the available literature on these determinants can be found in Grilo and Irigoyen (2005) and Verheul, Thurik and Grilo (2006). Although there is little quantitative investigation testing differences between opportunity and necessity entrepreneurs with respect to their socio-demographic factors and attitudes towards entrepreneurial activity, this section will provide a short overview of the above-mentioned determinants of self-employment linked to opportunity-based and necessity-based entrepreneurship.

2.1 Socio-demographic factors

Gender

Traditionally, women are assumed to have lower levels of human capital because they are more likely to work part-time or drop out of the labor force after having children (Becker, 1993). Hence, women may have fewer opportunities to develop the experience needed to engage in entrepreneurship (Fischer, Reuber and Dyke, 1993; Kalleberg and Leicht, 1991). At present the share of female entrepreneurs (whether measured in terms of newly founded firms or established businesses) amounts to significantly less than 50 percent. In fact, for all countries participating in the Global Entrepreneurship Monitor (total) entrepreneurial activity rates are lower for women

than for men (Minniti, Arenius and Langowitz, 2005; Reynolds et al., 2002)[9]. The 2004 GEM report on women and entrepreneurship report that among people involved in starting a new business, 77.9 percent of men choose entrepreneurship in order to exploit an opportunity, while 71.4 percent of women choose entrepreneurship for this reason. Moreover, 19.4 percent of men choose entrepreneurship out of necessity versus 24.8 percent of women. This shows that in case of necessity entrepreneurship there is less gender distinction than in opportunity entrepreneurship (Minniti, Arenius and Langowitz, 2005). Although the majority of women starts a business to pursue an opportunity (as is the case for men), more women engage in necessity entrepreneurship than men do (Minniti, Arenius and Langowitz, 2005; Wagner, 2005).

Age

The relationship between age and self-employment may be related to experience. Aldrich (1999) shows that age is strongly and positively correlated with work experience, fostering the development of entrepreneurial skills and attitudes. According to Reynolds et al. (2002) people between the age of 25 and 44 are most likely to be involved in entrepreneurial activity. Older people are expected to have more experience in the labor market enabling them to engage in entrepreneurship more easily. Hence, older people may be more likely to perceive an opportunity and act upon this opportunity by starting a business, i.e. engaging more in opportunity-based entrepreneurship (versus necessity-based entrepreneurship).

Education level

To exploit a business opportunity an individual should have the ability to discover or recognize such an opportunity. It can be argued that the ability of an entrepreneur to identify and exploit an opportunity is related to their human capital[10]. Davidsson and Honig (2003) show that individuals with higher levels of human capital may be better at perceiving entrepreneurial opportunities[11] and therefore are more likely to engage in entrepreneurial activity (Ucbasaran, Westhead and Wright, 2004). Evans and Leighton (1989) and Wit and Van Winden (1989) show that individuals with a high level of education are more likely to engage in entrepreneurship. In general one would expect an individual with more work experience, a higher level of education, more knowledge of the market and business practice more likely to be able to identify an opportunity for starting a new business.

Education level can also be linked to unemployment. It may be expected that people with a low level of education have more difficulties finding a paid job, and therefore see no other possibility then to engage in entrepreneurship. In this respect (the threat of) unemployment acts as a push factor for self-employment (Evans and Leighton, 1990; Audretsch and Vivarelli, 1995 and 1996; Audretsch and Thurik, 2000). When there is little chance of finding paid employment, unemployed people resort to entrepreneurship. For unemployed people the opportunity costs of self-employment are relatively low, enhancing the choice for self-employment (Storey, 1991)[12]. Wagner (2005) finds that unemployment in Germany is higher among nascent necessity entrepreneurs than among nascent opportunity entrepreneurs. The opportunity cost for unemployed persons for starting their own company can also be related to the level of employment protection (e.g., social security and labor market regulation). Acs et al. (2005) show that countries with lower levels of social security have higher rates of entrepreneurship. If both

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[9] Note that the TEA (total entrepreneurial activity) rate is made up of nascent entrepreneurs (i.e., individuals who are actively involved in starting a new business) and entrepreneurs of young firms (i.e., businesses that are operated for less than 42 months). See Reynolds et al. (2002, p. 5).

[10] A distinction is made between general human capital (age, gender and education) and specific human capital (i.e., managerial capabilities, opportunity identification capabilities, technical capabilities, business ownership experience and attitudes), see Becker (1993).

[11] Davidsson and Honig (2003) did not find an effect of education on the exploitation of the business opportunity.

[12] Then again, a high rate of unemployment can also have a negative influence on the level of entrepreneurship. That is, an increase of unemployment leads to a decrease in the number of opportunities to make profits, which discourages entry in entrepreneurship (Audretsch and Thurik, 2000; Evans and Leighton, 1990; Verheul et al., 2002).

employment protection and unemployment benefits are generous, the opportunity costs to become an entrepreneur are high or the urgency to engage in entrepreneurship is low.

Statistics Netherlands (CBS) shows that in 2005 36.5 percent of those who do not prefer to have a wage-job in the Netherlands motivate their choice on the basis of their level of education[13]. The 2003 GEM report shows that those who are participating in start-ups with little education, about 50 percent can be categorized as necessity entrepreneurs, while for those with post-secondary education (or higher) less than 25 percent started a business out of necessity (Reynolds et al., 2003). Moreover, (high) educated people are more likely to pursue opportunity-based ventures, while less educated entrepreneurs are more involved in necessity entrepreneurship.

Self-employed parents

An important source of (recognizing) entrepreneurial opportunities may be the social network of entrepreneurs, i.e., the people an individual knows including family members, friends and business associates (Hill, Lumpkin and Singh; 1997). The people within such a network can contribute to the expansion of the (entrepreneurial) knowledge of an individual, which can lead to the identification of opportunities and the development of new ideas. Koller (1988) reports that about 50 percent of the entrepreneurs identified the ideas for their businesses through people in their social network (Hill, Lumpkin and Singh; 1997). In fact, family background is found to be an important predictor of self-employment (Cooper, 1986; Dunn and Holtz-Eakin, 2000; Hout and Rosen, 2000; Krueger, 1993; Matthews and Moser, 1996; Scherer et al., 1989; Shapero and Sokol, 1982; Timmons, 1986). Djankov et al. (2004)[14] find that family networks have a positive influence on both opportunity-based and necessity-based entrepreneurship, although for opportunity entrepreneurs the effect is somewhat larger than for necessity entrepreneurs. Wagner (2005) argues that nascent opportunity entrepreneurs are more likely to have a family role model than nascent necessity entrepreneurs[15]. Consequently, it is expected that having self-employed parents will play a larger role for opportunity entrepreneurs than for necessity entrepreneurs.

2.2 Perception of the environment of entrepreneurship

Sobel, Clark and Lee (2005) suggest that barriers to entry result in lower levels of entrepreneurial activity. Van Stel, Storey and Thurik (2007) also find evidence that more burdensome entry regulations may negatively impact rates of entrepreneurship. Instead of objective measures, the present study will focus on the *perception* of the entrepreneurial environment. Perceptions individuals have of their own entrepreneurial abilities seem to be important, since the decision to become self-employed is made at the individual level (Arenius and Minniti, 2005; Van Stel and Stunnenberg, 2006). This study incorporates the following (perceptional) barriers: perception of (1) the access to finance; (2) complex administrative procedures; (3) the access to information; and (4) the general economic climate. Grilo and Irigoyen (2006) find that both the perception of financial and administrative obstacles have a negative effect on self-employment status[16]. Uchasaran, Westhead and Wright (2004) show that people's preference to gather information is related to their perception of their own ability to do so. In fact, when one believes to have the ability to get sufficient information on starting a

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[13] In the Netherlands a total of 10.585.000 people is counted between the ages of 15 and 64 years. Of those people 2.620.000 does not want a salaried job. A total of 955.00 does not want a salaries job because of their level of education, 660.000 people are not able to work, 571.000 people chose to take care of their family, 393.000 are retired and 42.000 give other reasons.

[14] It should be mentioned that these results are only from Russia, and is not a general result from European countries or the United States.

[15] Note that these results are based on research done only in Germany.

[16] Grilo and Irigoyen (2005) report that administrative complexities both hinder preference for self-employment and actual self-employment.

business, this person may be more likely to start a business to take advantage of a business opportunity. Relating the perception of environmental "obstacles" to opportunity and necessity entrepreneurship, it may be that opportunity entrepreneurs have more confidence in their ability to start a business and therefore are more likely to feel the "obstacles" less deeply than necessity entrepreneurs[17].

2.3 Risk attitude

Potential profit is an important reason to start a business. Evans and Leighton (1990) and Foti and Vivarelli (1994) find empirical support of high profits acting as a pull factor for self-employment. Individuals are more likely to engage in entrepreneurship when the expected profit for starting a business is higher as compared to the wages earned in wage-employment (Knight, 1921). In addition to the rewards, individuals also compare risks of the two alternative occupations, i.e., financial liabilities and failure of business (Minniti and Bygrave, 1999). Fear of failure has been found as a reason for not starting a business. Wagner (2005) presented that in Germany the fear of failure is nearly twice as high among nascent necessity entrepreneurs than among nascent opportunity entrepreneurs[18]. Given that one is currently starting or already started a business, necessity entrepreneurs are expected to be less risk tolerant than opportunity entrepreneurs. Because necessity entrepreneurs have no other possibility to make a living, they are probably less likely to take chances and risk failure of their company. Opportunity entrepreneurs tend to have alternative employment and are therefore more risk tolerant.

2.4 Locus of control

The concept of locus of control was first proposed by Rotter (1966). Internal locus of control implies that an individual believes that (s)he can influence events through own ability, effort or skills. External locus of control – on the other hand – means that an individual believes that external forces determine outcomes. In general, entrepreneurs have been found to be characterized by an internal rather than an external locus of control (Brockhaus and Horwitz, 1986; Beugelsdijk and Noorderhaven, 2005; Perry et al., 1986; Rauch and Frese, 2000). The perception of an individual's own ability can be related to this individual's locus of control. The 2003 GEM report shows that perception on one's own skills to implement and manage new business activity is related to becoming self-employed (Reynolds, Bygrave and Autio, 2003). Reynolds et al. (2003) show that compared to those who do not think they have the appropriate skills, those who are confident about their skills are four to six times more likely to be engaged in entrepreneurship. For this reason, confidence is likely to be related to an internal locus of control rather than an external locus of control[19]. Given that opportunity entrepreneurs are willing to take more risk and feel they are able to determine their own success, they are more confident in their own abilities. Hence, it may be expected that opportunity entrepreneurs have a more internal locus of control than necessity entrepreneurs.

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[17] On the other hand, necessity entrepreneurs have no other possibility than to start a business and therefore have no other choice to overcome these "obstacles" to entry. Because necessity entrepreneurs have to deal with these barriers, it could be that they perceive these "obstacles" less deeply than opportunity entrepreneurs.

[18] Note that Wagner (2005) has done research explicitly on *nascent* opportunity and necessity entrepreneurs, while the present study refers to opportunity and necessity entrepreneurs who are currently taking steps to start a business, but also those who already have started a business.

[19] The concept of locus of control was proposed first by Rotter (1966). The concept of locus of control refers to the perceived control over events.

3. Methodology

3.1 Data and variable description

This paper uses data from the Flash Eurobarometer Survey on Entrepreneurship conducted during April 2004 on a random sample from the 25 Member States and the United States[20]. The total number of observations in this study amounts to 7694[21]. The number of observations for the different countries included in the data set varies from 141 and 147 for Malta and Slovenia, respectively, and to 474 and 490 for Germany and the United States, respectively. Of the respondents 6039 are wage-employed and 1655 are self-employed. Self-employed individuals can be divided into two groups: 1118 respondents are pursuing a business opportunity and 537 respondents are engaged in entrepreneurship because they had no other option of earning a living[22]. For the different countries the minimum number of observations for opportunity entrepreneurs is 11 (for Latvia and Slovenia) and the maximum is 102 (for the Netherlands). The minimum number of observations for necessity entrepreneurs is 6 (for Denmark and Luxembourg) and the maximum is 69 (for Greece). Because of the large number of countries included in the data set (i.e., 25 European countries and the United States), countries are categorized to account for country specific effects. This categorization will be presented and discussed later in this section.

The survey also provides information on socio-demographics such as gender, age, education level and whether parents are self-employed. In addition, the survey includes perceptions of environmental "obstacles" (i.e., perception of financial support, administrative complexities, obtaining sufficient information, and unfavorable economic climate), a measure of risk tolerance and locus of control. Although there may be other factors that determine differences between opportunity and necessity entrepreneurs, this study anticipates upon using the 2004 Flash Eurobarometer Survey, and focuses on the determinants mentioned earlier.

The following dependent variables are used in this study. An indicator of entrepreneurship capturing the entrepreneurial drive (i.e., preference for self-employment) is measured by the following question: *"Suppose you could choose between different kinds of jobs, which one would you prefer: being an employee or being self-employed?"*[23] This variable has value "1" if one prefers to be self-employed, and "0" if one prefers wage-employment.

To capture actual entrepreneurial activity respondents were asked the question: *"Have you started a business recently or are you currently taking steps to start one?"*. Possible answer categories include the following:

– *"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 are still active."*

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[20] This survey was conducted on behalf of the European Commission's Enterprise Directorate-General, and the key findings are presented in *Flash Eurobarometer 160* "Entrepreneurship", European Commission 2004, available at "http://europa.eu.int/comm/ public_opinion/flash/fl160_en.pdf".

[21] Note that the total number of observations in the 2004 Flash Eurobarometer Survey on Entrepreneurship amounts to more than 20,000. However, observations with no answer to one of the questions used in the analysis have been removed.

[22] The relation of approximately two opportunity entrepreneurs to one necessity entrepreneur is in line with the relation reported in the Global Entrepreneurship Monitor (Acs et al., 2005; Reynolds et al., 2002).

[23] The answer to this type of question can be misleading (Blanchflower, Oswald and Stutzer; 2001; Grilo and Irigoyen, 2005). In fact, a value judgment about attractive attributes associated with self-employment – independence, higher income, opportunity of tax evasion – may provoke a bias toward a preference for entrepreneurship. But it has the advantage of consistency across the 26 countries used in this study.

- *"Yes, you have started or taken over a business more than 3 years ago and are still active."*
- *"No, you once started a business, but currently you are no longer an entrepreneur."*

Note that the first three categories show an (absence of) interest in entrepreneurial activity, while the last four categories refer to an active involvement in entrepreneurship. Hence, only the engagement levels: "taking steps", "business younger than three years", "business more than three years", and "no longer" are included in the analysis.

The respondents with an active involvement in entrepreneurship in the sample are categorized into opportunity-based entrepreneurship or necessity-based entrepreneurship on the basis of the following question: *"All in all, would you say you started, or are starting, your business because you saw an opportunity or you started it out of necessity?"*. The possible answers include:

- *you started it because you came across an opportunity*
- *you started it because it was a necessity*
- *you started it because of <u>both</u>*

The respondents who answered "both" were dropped from the sample. Since these respondents were deleted from the sample, this study will test for sample selection bias.[24]

The dependent variables used in the present study can be categorized into socio-demographic factors, perception variables, risk tolerance, locus of control and country dummies.

Social-demographic factors include male, age, low education, high education and self-employed parents. Male is a dummy variable and age is measured in years. Low education has the value "1" if one has never engaged in a full time education, if one has finished full time education before the age of 15 years or if one is still engaged in full time education and has not passed the age of 15. High education takes the value "1" if one has finished full time education past the age of 21 or if one is still engaged in full time education and is older than 21. The base category, "average" education level takes on the value "1" if one has finished full time education between the age of 15 and 21 or if one is still engaged in full time education and within this age category[25]. The variable self-employed parents takes on the value "1" if one or both of the parents are self-employed and "0" otherwise.

Perception variables include the perception of lack of available financial support; of complex administrative procedures; of lack of sufficient information; and of an unfavorable economic climate. These are measured by the question(s): *"Do you strongly agree, agree, disagree or strongly disagree with the following statements?"*

- *"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."*
- *"It is difficult to obtain sufficient information on how to start a business."*
- *"The current economic climate is not favorable to start one's own business."*

A dummy variable is constructed which has value "1" in the case of "strongly agree" or "agree" and value "0" in case of "disagree" or "strongly disagree"[26].

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[24] This test will indicate whether the estimation results are influences by deleting the group of respondents who answered they started a business due to an opportunity *and* out necessity.

[25] 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".

[26] These dummy variables capture, at best, the perception individuals have of the existence of barriers and not their actual existence. Perceptions of these barriers are probably more influential in determining an individual's willingness to become self-employed than the actual existence of such barriers. Most likely, in the process of becoming self-employed, one's perceptions of barriers are confronted with reality and revised accordingly if relevant.

Risk tolerance and locus of control: A measure for risk tolerance is constructed using the following question: *"Do you strongly agree, agree, disagree or strongly disagree with the following statements: one should not start a business if there is a risk it might fail"*. A dummy variable is created which has value "1" in case of "disagree" or "strongly disagree" and value "0" in case of "strongly agree" or "agree"[27].

Internal versus external locus of control is captured by the question: *"When one runs a business, what do you think most determine its success (two answers max)?"*

- *The director's personality.*
- *The general management of the business.*
- *The overall economy.*
- *The political context.*
- *Outside entities.*

The variable internal locus of control can take on three different values. The variable is equal to "1" if only internal success factors are chosen (a, b), equals the value "-1" if only external success factors are chosen (c, d, e), and equals "0" in all other cases. If the variable equals "0" the respondent is indifferent with respect to the influence of internal and external factors[28].

Country dummies: To account for country differences, country-specific effects are evaluated using country categorizations. Due to the limited number of observations in view of the large number of countries in the data set (i.e., 25 European countries and the United States), countries are categorized using the institutional systems categorization as proposed by Esping-Andersen (1999)[29]:

- *Southern Europe:*   *Cyprus, Greece, Malta, Portugal and Spain*
- *Post-communist:*   *Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia*
- *Social democratic:*   *Denmark and Sweden*
- *Corporatist:*   *Austria, Belgium, Finland, France, Germany, Italy, Luxembourg and Netherlands*
- *Liberal:*   *Ireland, United Kingdom and United States*

Since the main purpose of this study is to investigate the difference between opportunity and necessity entrepreneurs with respect to socio-demographic factors and attitudes towards entrepreneurship (perceptions, risk attitude and locus of control), we will only briefly pay attention to this country categorization. In the *Southern European* countries social assistance is important and the family has remained as a central institution of socialization[30]. *Post-communist* countries are formerly centrally planned economies where entrepreneurial activity was limited

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[27] Grilo and Thurik (2005) state that this is a crude indicator of risk attitudes and calling this dummy "risk tolerance" may be abusive. Nevertheless, in the absence of a better measure it provides some information on how taking risks is perceived by the respondent.

[28] The variable internal versus external locus of control could also be constructed by using a variable that takes on five different values. In this case, the variable equals "-2" if the respondent chooses two external success factors (c, d or e); it equals "-1" if the respondent chooses one external success factor (c, d or e); equals "0" if the respondent is indifferent with respect to the internal and external success factors (i.e., the respondent chooses one internal success factor and one external success factor); equals "1" if the respondent chooses one internal success factor (a or b) and equals "2" if the respondent chooses two internal success factors (a and b). This variable is not used here because the variable with 3 values is easier to discuss as compared to the one with five values. Note that the results do not deviate much from the estimated model including the variable internal versus external locus of control variable with three values. This study chose the internal versus external locus of control with three different levels, because this explanatory variable is easier to explain compared to the one with five different values.

[29] The categorization of institutional systems by Esping-Andersen (1999) is also used in Stam, Thurik and Grilo (2006).

[30] In recent decades, Mediterranean countries have increased their public social expenditure at higher levels than those of Central and Northern European welfare regimes. Very significantly, in some of the latter countries public policies have been re-addressed so that families and households could replace state intervention in order to contain welfare expenditure.

(or absent) as the emphasis was on economies of scale and the business culture did not support innovation and entrepreneurship (Roman, 1990; Mugler, 2000). A *social democratic* regime is characterized by public pursuit of income redistribution and social equality, providing safety nets. *Corporatist* countries are concerned with maintaining order and status. To accomplish this goal social funds are set up which reward work performance and status. *Liberal* countries are characterized by freedom and free market activity. The role of the government in the economy is limited.

In this study liberal countries are taken as base category, since the United States – characterized by a high level of entrepreneurship – is part of this category. Therefore the coefficients associated with these variables are interpreted as the impact of living in the corresponding country category as compared to living in a liberal country.

3.2 Models

For the empirical analysis investigating differences between opportunity and necessity entrepreneurs two probit equations are used relating the probability of revealing a preference for self-employment (Grilo and Irigoyen, 2005; Grilo and Thurik, 2005a; Grilo and Thurik, 2006) and the probability of being an opportunity versus necessity entrepreneur to various explanatory variables:

$$P(y_1 = 1 \mid X_1, x_2) = F(X_1 b_1),$$

where $y_1 = 1$ if the individual prefers to be self-employed and $y_1 = 0$ if the individual prefers to be wage-employed, with $F()$ = the standard normal distribution; X_1 = (intercept, male, age, $(age/100)^2$, low education, high education, self-employed parents, perception of lack of financial support, perception of administrative complexities, perception of insufficient start-up information, perception of an unfavorable economic climate, risk tolerance, internal versus external locus of control and country categories);

$$P(y_2 = 1 \mid X_1, y_1) = F(X_1 b_1 + y_1 a),$$

where $y_2 = 1$ if one started or is starting a business because (s)he came across an opportunity and $y_2 = 0$ if (s)he is starting or started a business out of necessity, with $F()$ = the standard normal distribution, X_1 = similar to the variables mentioned above and y_1 measures whether one prefers to be self-employed.

When investigating the various engagement levels one can estimate a probit equation for each engagement level, but one can also use a multinomial logit model (Grilo and Thurik, 2005b; 2005c). This model is appropriate to investigate the impact of the various explanatory variables on the odds of being in one entrepreneurial engagement level versus other engagement levels. Estimating a multinomial logit model requires a dependent variable presenting the various engagement levels, and making use of discrete values without a rank order (Franses and Paap, 2001; Greene, 2003; Heij et al., 2004):

$$P(y_3 = j \mid X_1, y_2) = F(X_1 b_{1j} + y_1 a_{1j} + y_2 a_{2j}) \quad for \quad j = 1,...,4,$$

where $y_3 = 1$ if one is currently taking steps to start up a business, $y_3 = 2$ if one has a young business (younger than three years), $y_3 = 3$ if one has an older business (older than three years), and $y_3 = 4$ if one started a business before but is no longer an entrepreneur. $F()$ is a logistic function; X_1 is similar to the explanatory variables mentioned above; y_1 presents the preference for self-employment; and y_2 presents opportunity-based versus necessity-based entrepreneurship. Due to the ordering in engagement levels, it is also possible to use an ordered multinomial logit model. Because no information is available on the length of time the respondents in the

engagement level "no longer" managed a business; or why the respondents are no longer an entrepreneur, this engagement level is removed when estimating an ordered multinomial logit model (Franses and Paap, 2001; Greene, 2003; Heij et al., 2004):

$$P(y_3 = j \mid X) = F(\mu_j - Xb) - F(\mu_{j-1} - Xb) \quad and \quad \mu_1 < \mu_2 \quad for \quad j = 1,...,3.$$

where $F()$ is a logistic function, μ_j and μ_{j-1} are the estimated thresholds (i.e., the boundary values of the latent variable) indicating which engagement level the respondent belongs to; and X includes the independent variables: X_1 (the explanatory variables already mentioned), y_1 (preference for self-employment) and y_2 (opportunity-based versus necessity-based entrepreneurship).

To summarize, this study uses three different models to investigate differences between opportunity and necessity-based entrepreneurship. The probit equations are used to answer the following research questions: (1) "Do opportunity entrepreneurs have different socio-demographic characteristics and attitudes toward entrepreneurial activity than necessity entrepreneurs?" and (2) "Do opportunity and necessity entrepreneurs differ in their preference for self-employment?". The (ordered) multinomial logit model is used for answering the following questions: (3) "Is there a difference between opportunity and necessity entrepreneurs given their entrepreneurial involvement (i.e., the various stages of entrepreneurship) with respect to socio-demographic factors and attitudes towards entrepreneurship?".

4. Differences between opportunity and necessity entrepreneurs

As a first insight into the differences between opportunity-based and necessity-based entrepreneurship, Table 1 reports mean differences between opportunity and necessity entrepreneurs in the sample with respect to the explanatory variables included in the analysis. All determinants seem to point at a significant (mean) difference, except for self-employed parents.

Insert Table 1 about here

Of the opportunity and necessity entrepreneurs in the sample, 70 and 65 percent are men, respectively[31]. On average, individuals who started a business because of an opportunity are slightly younger than individuals who started out of necessity (42 versus 44 years). The percentage of individuals that left school before the age of 15 ("low education") is higher among necessity than opportunity entrepreneurs (20 versus 10 percent). The percentage of individuals with a high level of education ("high education") is higher among opportunity than necessity entrepreneurs (43 versus 31 percent).

Clearly, the perception of the environmental obstacles is different for the two groups. Necessity entrepreneurs appear to perceive the obstacles more deeply than opportunity entrepreneurs: 77 versus 72 percent perceive a lack of financial support; 70 versus 63 percent perceive complex administrative procedures; 53 versus 42 percent perceive difficulty in obtaining sufficient information; and 75 versus 64 percent perceive an unfavorable economic climate. With respect to risk attitude, opportunity entrepreneurs reveal a more positive attitude (59 percent) than necessity entrepreneurs (45 percent). In terms of internal versus external

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[31] Among people who are involved in entrepreneurship, not only do men pursue a business opportunity more often to start a business in comparison with starting a business out of necessity, this is also the case for women. Hence, among the respondents in the sample, 55.75% of women choose entrepreneurship in order to pursue an opportunity versus 44.28% of women who starts a business out of necessity. Compared to men, 61.44% are involved in entrepreneurship because they saw an opportunity versus 38.56% who started a new firm out of necessity.

success factors we also see a difference. Opportunity entrepreneurs are more likely to believe that internal factors are important (as compared to external factors) than necessity entrepreneurs (19 versus 9 percent). Furthermore, the declared preference for self-employment seems to be higher for opportunity entrepreneurs (74 percent) than for necessity entrepreneurs (66 percent). The preference for self-employment will be investigated in more detail in the next section.

5. Preference for self-employment

Several studies have analyzed the preference for self-employment, which may be seen as a measure of latent or potential entrepreneurship (Blanchflower, Oswald and Stutzer, 2001; Grilo and Irigoyen, 2006; Grilo and Thurik, 2005a; 2006; Verheul, Thurik and Grilo, 2006)[32]. Not all people who start up a business automatically have a preference for self-employment. It could be that someone has started a business due to lack of other employment options or that an individual is pushed into entrepreneurship taking over the family business. It is expected that necessity entrepreneurs are less likely to have a preference for self-employment than opportunity entrepreneurs, since necessity entrepreneurs are pushed into self-employment, while opportunity entrepreneurs become self-employed out of their own free will. The present section investigates the preference for self-employment of wage-employed people and self-employed people.

The total number of observations used in this analysis amounts to 7694. Before investigating whether opportunity and necessity entrepreneur differ in their preference for self-employment, Section 5.1 investigates whether (in general) wage-employed and self-employed individuals differ in their preference for self-employment. Section 5.2 focuses on the preference for self-employment of opportunity and necessity entrepreneurs. To summarize, this chapter will present estimation results of several probit equations relating the probability of revealing a preference for self-employment to various explanatory variables using four different samples: employees; employers (entrepreneurs); opportunity entrepreneurs; and necessity entrepreneurs (the number of observations amounts to 6039, 1655, 1118 and 537, respectively).

5.1 Self-employed and wage-employed

Using a probit regression we investigate the impact of a range of factors (including the socio-demographic factors and attitudes as mentioned earlier) on the probability to prefer self-employment. We focus on the difference in preference for self-employment between individuals who are starting or have started a business and those who are wage-employed. Descriptive statistics show that the percentage of individuals with a preference for self-employment is higher for self-employed than for wage-employed individuals (71.4 versus 42.1 percent). Separate regressions for wage-employed and self-employed individuals are presented in Table 2. For the wage-employed sample a Likelihood Ratio test rejects the assumption of homoskedasticity[33] and

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[32] The concept of latent entrepreneurship differs from that of nascent entrepreneurship, where individuals are more advanced in the sense that actual steps are undertaken with respect to starting a business rather that preferring it.

[33] The standard errors of the estimates can be subjected to heteroskedasticity. The assumption of homoskedasticity implies that conditional on the explanatory variables X_i, the variance of the unobserved error term ε_i is constant. In a probit model the error terms are normally distributed with mean zero and variance $\sigma^2=1$. If this is not true, that is, if the variance of ε_i is non-constant for different values of X_i, the error terms are normally distributed with means zero and with variance σ_i^2, with $\sigma_i = \exp(z_i\gamma)$ where z_i is a vector of observed variables. This means that the error term ε_i is heteroskedastic. Testing for homoskedasticity therefore corresponds with the parameter restriction $H_0: \gamma = 0$. This study uses a Likelihood Ratio test to test for heteroskedasticity. A Lagrange Multiplier test and a Wald test can also be used when testing for heteroskedasticity. The advantage of the Lagrange Multiplier test and the Wald test is that only one model needs to be estimated. In most cases the restricted model is relatively easy to estimate (as compared to the unrestricted model) and the Lagrange Multiplier test is used. Otherwise the Wald test is preferred. Although these tests are straightforward, this study has used the Likelihood Ratio test since it gives optimal power (Heij et al., 2004).

therefore the heteroskedastic probit[34] model is presented (see left column in Table 2)[35]. A heteroskedasticity test by means of a Likelihood Ratio test can not be performed for the estimated probit model including only the self-employed because the log-likelihood value of the estimated heteroskedastic probit model does not reach convergence[36].

Table 2 includes only opportunity and necessity entrepreneurs. Respondents who answered that they started both because of necessity and an opportunity are excluded from the analysis. If the excluded respondents are systematically different from those included, sample selection bias may occur. Heckman's method provides a useful framework for handling linear regression models when the data are subject to a selection mechanism (Heckman, 1979). Heckman's selection model can also be adapted to models with dichotomous dependent variables. For binary choice models subject to selectivity, the specification is similar to the linear regression model, except that the observable dependent variable is replaced by the latent variable formulation (Dubin and Rivers, 1989). Testing for selection bias, again a Likelihood Ratio test is used since it gives optimal power[37]. The LR test shows that the results for the self-employed in Table 2 are not subject to sample selection bias[38].

The results in Table 2 show that for the entrepreneurial preferences of the wage-employed self-employed parents and perception of lack of financial support and insufficient information play a role in particular, whereas this does not seem to be the case for self-employed individuals. As compared to wage-employed individuals for self-employed individuals perception of an unfavorable economic climate has a negative effect on the preference for self-employment. For both occupational groups gender, age, risk tolerance and locus of control appear to play a role in explaining the preference for self-employment. Location only seems to play a role for wage-employed individuals, where vis-à-vis the liberal countries, in post communist; social democratic and corporatist countries the preference for self-employment among wage-employed individuals is lower.

Insert Table 2 about here

Differences in self-employment preference between the two groups can also be tested using a probit regression for the whole sample (i.e., wage-employed and self-employed) including interaction effects of a self-employment dummy with the other explanatory variables. A dummy variable is constructed with value "1" for self-employed and value "0" for wage-employed individuals. We constructed twelve multiplicative dummies to investigate whether the influence

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[34] In the probit model, the probability that y_i takes on the value 1 is modelled as a nonlinear function of a linear combination of k independent variables x_i: $P(y_i=1)=\Phi(x_i \cdot b)$, where $\Phi()$ is the cumulative distribution function (CDF) of a standard normal distribution with mean 0 and variance equal to 1. In a heteroskedastic probit model the variance of the normal CDF is not fixed at the value 1, but is equal to $\sigma_i^2 = (\exp(z_i\gamma))^2$ where z_i is a vector of observed variables. Relaxing the homoskedastic assumption of the probit model, the heteroskedastic probit model becomes: $P(y_i=1)=\Phi(x_i b/\exp(z_i\gamma))$.

[35] Sample wage-employed: the restricted log-likelihood value amounts to 3888.994 and the unrestricted log-likelihood value amounts to -3879.063. Resulting into a Likelihood Ratio statistic equal to 19.862 with a critical value of 19.675 (11 degrees of freedom and a 5% significance level). Hence, the null hypothesis of homoskedastic standard errors is rejected.

[36] This may be a result of an identification problem.

[37] When testing for sample selection bias in a probit model, consider the following model: $P(y_1=1|X)=F(X_1b_1)$ and $P(y_2=1|X_1,x_2)=F(X_1b_2+x_2b_3)$. The first probit equation is the "usual" estimated model (which will be tested for selection bias), and in the second probit equation, y_2 indicates whether y_1 is observed or not. The second model is also called the selection model. Testing for selection bias comes down to testing whether the error terms of the two probit equations are correlated.

[38] The log-likelihood value of the probit model is equal to -945.550 and the log-likelihood value of the selection model is equal to -567.347. The sum of these two numbers results into a restricted log-likelihood value equal to -1512.897. The unrestricted log-likelihood value is equal to -1511.764. Resulting into a Likelihood Ratio statistic equal to 2.27 with a critical value of 3.84 (1 degree of freedom and a 5% significance level). The assumption that the correlation between the error terms of the probit model and the selection model is equal to zero can not be rejected. Hence, the results are not subjected to sample selection bias.

of the explanatory variables depends on wage- or self-employment. The results are not presented here but the Likelihood Ratio test shows that there is a significant difference between self-employed and wage-employed individuals with respect to the preference for self-employment.

When testing for a difference in entrepreneurial preferences between these two types of entrepreneurs a distinction can be made between restricted and unrestricted models, where the outcomes of the restricted model are presented in Table 2 and the unrestricted model including the multiplicative dummy variables is discussed above[39].

5.2 Opportunity and necessity entrepreneurs

This section investigates differences in self-employment preference between opportunity and necessity entrepreneurs. To establish differences in self-employment preference for these types of entrepreneurs a dummy variable is constructed which has value "1" for an opportunity entrepreneur and "0" for a necessity entrepreneur. Performing a probit regression including this dummy variable, we find a positive influence of opportunity entrepreneurship on the preference for self-employment (albeit at a 10 percent level of significance). Accordingly, it is expected that opportunity entrepreneurs are more likely to have a preference for self-employment than necessity entrepreneurs.

Performing separate regressions for the respondents engaged in opportunity and necessity entrepreneurship (the number of observations amounts to 1118 and 537, respectively) can give some further insights. The results of this restricted model are presented in Table 3.[40]

Insert Table 3 about here

The results show that for necessity entrepreneurs only gender influences the preference for self-employment (i.e., male necessity entrepreneurs are more likely to have a preference for self-employment than female necessity entrepreneurs). Male gender also positively influences the preference for self-employment of opportunity entrepreneurs. For necessity entrepreneurs, being a man increases the probability of having a preference for self-employment with 0.072 percentage points, while for opportunity entrepreneurs this is 0.139 percentage points. Hence, men have a higher preference for self-employment, even before they are pushed into it.

The preference for self-employment of opportunity entrepreneurs is also influenced by the factors gender; risk tolerance and locus of control (positive effect) and perception of an unfavorable economic climate (negative effect). Age appears to have a U-shaped relation with preference for self-employment of opportunity entrepreneurs. More specifically, there is a negative relationship between age and preference for self-employment up to the age of 42 and a positive relationship over the age of 42[41]. Opportunity entrepreneurs who are risk tolerant and have an internal locus of control have a higher preference for self-employment. Still the perception of an unfavorable economic climate negatively affects their preferences.

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[39] The assumption of the coefficients of the active population (containing employees and manual workers) and those who are self-employed being equal is rejected. The restricted log-likelihood value amounts to -5044.530, and the unrestricted log-likelihood value amounts to -4842.028. Resulting into a Likelihood Ratio statistic equal to 405.004 with a critical value of 21.026 (12 degrees of freedom and a 5% significance level).

[40] A Likelihood Ratio test could not be performed for both models, since the log-likelihood value of the heteroskedastic model did not reach convergence. This may be due to an identification problem.

[41] Solving the equation $\{\alpha*age+\beta*(age/100)^2=0\}$, age amounts to 41.92, where α and β refer to the estimated coefficients belonging to the explanatory variables age and $(age/100)^2$, respectively (see Table 4).

Using the dummy variable for opportunity versus necessity entrepreneurship (i.e., "0" is necessity and "1" is opportunity) and include multiplicative dummies for each of the explanatory variables with this opportunity dummy, is again another way of testing for a differential effect on the preference for self-employment of opportunity and necessity entrepreneurs. The results of this unrestricted model are not presented here. However, a Likelihood Ratio test shows that opportunity and necessity entrepreneurs do not differ in their self-employment preference due to the different explanatory factors under investigation[42]. Because this Likelihood Ratio test is based upon *all* explanatory variables in the regression analysis, a similar test is also performed for *each* of the explanatory variables. We find that only the variable 'self-employed parents' has a differential impact on the preference for self-employment of opportunity and necessity entrepreneurs (at 5% significance level), even though the coefficients for self-employed parents are not significant for opportunity and necessity entrepreneurs[43]. While self-employed parents appear to have a positive influence on the preference for self-employment of opportunity entrepreneurs, they negatively affect the preference of necessity entrepreneurs. Maybe self-employed parents stimulate their sons or daughters to actively pursue self-employment and help them in finding an opportunity. Also, this may be an indicator of a business transfer within the family, whether the family business provides an opportunity to engage in self-employment.

6. Opportunity versus necessity entrepreneurship

This section investigates the influence of socio-demographic factors, perceptions and attitudes towards entrepreneurship, and the preference of self-employment (previously an explanatory variable) on the probability of being an opportunity versus a necessity entrepreneur by means of a probit equation. The results of this regression are presented in Table 4[44].

Insert Table 4 about here

The results show that men are more likely to start a business because of an opportunity (versus necessity) than women. While low education negatively affects the probability of opportunity entrepreneurship, high education has a positive effect, i.e., individuals with a low level of education (relative to the intermediate level of education) are less likely to start a business because of an opportunity, whereas a high level of education appears to enable the perception of an opportunity and acting upon it by starting a business. Furthermore, there is a negative relationship between perception of obtaining insufficient information and opportunity entrepreneurship. This is an indication that (the perception of) a lack of sufficient information with respect to starting up a business is an obstacle for people who want to start a business, taking advantage of a perceived opportunity. On the other hand, we find that opportunity entrepreneurs are more risk tolerant than necessity entrepreneurs, willing and daring to take on an opportunity.

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[42] The restricted log-likelihood value amounts to -945.551, and the unrestricted log-likelihood value amounts to -940.459. Resulting into a Likelihood Ratio statistic equal to 10.184 with a critical value of 21.026 (12 degrees of freedom and a 5% significance level). None of the interaction effects appeared to be significant.

[43] The restricted log-likelihood value amounts to -945.551. The unrestricted log-likelihood values amount to -945.399, -944.112, -945.550, -944.887, -942.844, -943.969, -944.888, -944.106, -944.659, -943.868 and -945.510 for gender; age; low education; high education; self-employed parents; perception lack of financial support; perception of administrative complexities; perception of obtaining insufficient information; perception of an unfavorable economic climate; risk tolerance and internal locus of control, respectively. The following Likelihood Ratios are determined: 0.302, 2.876, 0.002, 1.328, 5.414, 3.163, 1.325, 2.890, 1.783, 3.365 and 0.081. Applying a 5% significance level with 1 degree of freedom the critical value is 3.841.

[44] Because the sample consists of individuals who are active in entrepreneurship, the estimates are based on the fact that someone is starting or has started a business. A Likelihood Ratio test could not be performed to test for heteroskedasticity since the log-likelihood of the heteroskedastic probit model did not reach convergence. This may be due to an identification problem.

Although the present study does not focus on country differences, we will briefly discuss them below. The results show that the probability of being an opportunity entrepreneur (versus a necessity entrepreneur) is lower in countries in Southern Europe and post-communist countries than in the liberal countries. This may be an indication of the strong social assistance in Southern Europe and no support for innovation and entrepreneurship in post-communist countries, discouraging people to seek for and pursue opportunities for starting up a business. Being an inhabitant of a social democratic country increases the probability of opportunity entrepreneurship.

7. Entrepreneurial engagement levels

For the respondents in the sample who have an active role in entrepreneurial activity, the motive for starting up a business (opportunity versus necessity) is known as well as the entrepreneurial involvement (entrepreneurial engagement levels). With respect to the latter a distinction is made between "taking steps to start up a business", "having a young business I(< three years)", "having an older business (> three years)" and "no longer an entrepreneur". This section will investigate whether opportunity and necessity entrepreneurs differ from each other with respect to engagement level.

7.1 Probit model

To compare the different engagement levels of opportunity and necessity entrepreneurs, probit estimations are conducted for each level, explaining the probability of being an opportunity versus being a necessity entrepreneur[45]. The results are depicted in Table 5[46].

Insert Table 5 about here

A Likelihood Ration test is performed showing that opportunity (and necessity) entrepreneurs with a young business do not differ from opportunity (and necessity) entrepreneurs with an older business with respect to the explanatory variables in the analysis[47]. Comparing individuals who have stepped out of the entrepreneurial world with those currently running a business, there also is no difference when explaining opportunity versus necessity entrepreneurship[48]. Because the Likelihood Ratio test investigates differences based on *all* the explanatory variables included in the analysis, below the four separate estimated probit equation will be discussed.

A Likelihood Ratio test shows that the assumption of all estimated coefficient being equal to zero can not be rejected for the respondents who are *currently taking steps*. This means that for these individuals there is no distinction between opportunity and necessity entrepreneurs with respect to the determinants in this analysis. For individuals who are *running a young business* (less than three years) a high level of education and an internal locus of control have a positive

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[45] As the estimated coefficients of the probit equations should be interpreted on the basis of belonging to one of the engagement levels "taking steps", "business<3 years", "business>3 years" or "no longer", sample selection bias tests are not performed.

[46] Tests on heteroskedasticity by means of a Likelihood Ratio test could not be performed because the log-likelihood value of the heteroskedastic probit models did not reach convergence, possibly due to an identification problem.

[47] A Likelihood Ratio test can not reject the assumption that the coefficients of "business < 3 years" and "business > 3 years" are equal. The restricted log-likelihood value amounts to -641.002, and the unrestricted log-likelihood value amounts to -630.325. A Likelihood Ratio statistic is equal to 21.354 with a critical value of 22.36 (13 degrees of freedom and a 5% significance level).

[48] When comparing the engagement levels "no longer" with "business < 3 years" and "no longer" with "business > 3 years", the restricted log-likelihood values amounts to -414.674 and -632.083, respectively. The log-likelihood values of the unrestricted models amounts to -406.961 and -625.851, respectively. Hence, the Likelihood Ratio statistics are equal to 15.426 and 12.464, respectively, with a critical value of 22.362 (13 degrees of freedom and a 5% significance level).

impact on the probability of being an opportunity entrepreneur (versus being a necessity entrepreneur), i.e., given that someone has a business for less than three years, individuals with a higher level of education and an internal locus of control are more likely to start a business due to an opportunity than out of necessity. For respondents *running an older business* (older than three years) the probability of being an opportunity entrepreneur is influenced by age, education level and risk tolerance. Given that someone is involved in running a business for over three years, the probability of being an opportunity entrepreneur decreases for people with a low level of education. Hence, it may be that – if someone with a low level of education (as compared to an intermediate level of education) is further in the entrepreneurial process – there is a relatively high probability that this individual started a business out of necessity (as opposed to a perceived opportunity). Also, individuals with an older business who are risk tolerant are more likely to start a business due to an opportunity. Age has a negative and not a U-shaped relationship with the probability of being an opportunity entrepreneur[49]. Individuals who start a business due to a perceived opportunity appear to be (slightly) younger than those starting a business out of necessity. The probability of 'being' an opportunity entrepreneur for individuals who are *no longer an entrepreneur* is dependent upon gender and education level. Male respondents who have left the entrepreneurial world are more likely to have started a business due to an opportunity. The same is true for respondents with a (relatively) high level of education.

Comparing the four engagement levels, there does not seem to be an explanatory variable with a significant influence across all four probit equations. Overall, the probit analyses do not provide evidence for significant differences between engagement levels with respect to opportunity versus necessity entrepreneurship. A similar regression as that of which the outcomes are presented in Table 5 is performed including dummies for the different engagement levels: "young business", "older business" and "no longer"[50]. These dummy variables do not appear to have a significance influence, indicating no difference between engagement levels. In subsequent paragraphs differences between the various engagement levels will be investigated in more detail by estimating a multinomial logit model.

7.2 Multinomial logit model

This section presents the estimation results of a multinomial logit model explaining the different levels of involvement in the entrepreneurial process (measured as a categorical variable). Before distinguishing between opportunity and necessity entrepreneurs, the multinomial logit model is estimated for all respondents who are self-employed.

Tests have been performed to investigate whether a subset of engagement levels can be treated as a single engagement level, or whether its members show significant differences. Cramer and Ridder (1991) propose a test for the "pooling" of states, to test for equality of the logit regressor coefficients between two or more engagement levels. Since this test is a restriction of the initial broader model including all levels the Likelihood Ratio test can be used. The Likelihood Ratio test rejects the assumption that the coefficients of the three engagement levels ("younger business", "older business" and "no longer") are similar[51]. In addition, a similar test rejects the assumption that the coefficients of the respondent groups "older business" and

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[49] Solving the equation $\{\alpha*age+\beta*(age/100)^2\}=0$; age amounts to 57.33, where α and β refer to the estimated coefficients belonging to the explanatory variables age and $(age/100)^2$, respectively, in the probit regression. The minimum of the quadratic function lies around the age of 58.

[50] These dummies take on the value "1" if respondents have a young business; have an older business or are no longer an entrepreneur and take on the value "0" otherwise.

[51] The restricted log-likelihood amounts to -2057.671 and the unrestricted log-likelihood amounts to -1905.387. The chi-square value equals 304.568. With a critical value of 13.277 (at a 1% significance level and four degrees of freedom) the assumption of the engagement levels being equal is rejected.

"younger business" are equal[52]. This means that the estimated multinomial logit model with four engagement levels is valid.

A stringent assumption of the multinomial logit model is that comparing the probability of belonging to engagement level "*a*" relative to that of belonging to engagement level "*b*", the other engagement levels should not be of relevance. This property is also referred to as the *independence of irrelevant alternatives* (IIA) assumption. Testing for the IIA assumption the Hausman-type statistic can be used[53]. Examining the test results, there is no evidence that the IIA assumption has been violated.[54] Hence, the multinomial logit model is valid.

Table 6 presents the effects of the different explanatory variables on the odds of the selected category relative to the base category ("taking steps")[55]. A coefficient above unity implies that the corresponding variable increases the odds of belonging to the selected category relative to the group "taking steps". Conversely, a coefficient below unity implies that the variable decreases these odds. The outcomes of the multinomial logit model are comprehensive and we will only select and discuss the most interesting results. Below we will discuss the effects of the dummy variable opportunity versus necessity entrepreneurship; gender; family influence; and perception of environmental 'obstacles' on the various engagement levels. The results can be compared to those of Grilo and Thurik (2005c)[56]. Although Grilo and Thurik (2005c) do not use "taking steps" as base category, one can still easily obtain the values of these impact (though not its statistical significance) from results presented in the paper[57].

Insert Table 6 about here

Opportunity versus necessity entrepreneurship

The engagement levels "having a business for over three years" and "no longer an entrepreneur" (relative to "taking steps") is not determined by opportunity versus necessity entrepreneurship. However, the odds of "having a young business" are negatively affected, i.e., individuals in the early stages of the entrepreneurial process, who started because of an opportunity, are less likely to progress further in the entrepreneurial process. Conversely, in a more mature phase of entrepreneurship the reason for starting up a business (opportunity or necessity) does not influence the entrepreneurial position. This implies that push and pull factors only exert influence in the early life stages of the business, and do not influence the choice to run a business for a longer period of time or the development of the business through the different stages.

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[52] The restricted log-likelihood amounts to -1962.586 and the unrestricted log-likelihood amounts to -1905.387. The Likelihood Ratio statistic equals 114.398. With a critical value of 11.345 (at a 1% significance level and three degrees of freedom) the test rejects the assumption that the two engagement levels can be treated as equal.

[53] The IIA assumption is valid when adding or removing one of the engagement levels does not affect the estimates of the remaining engagement levels. The test investigates whether the difference between the parameter estimates including all engagement levels and the estimates when one or more engagement levels are neglected is significant. The Hausman-type statistic is χ^2 distributed with degrees of freedom equal to the number of parameters in the restricted model. For an extensive discussion, see Hausman and McFadden (1984).

[54] Neglecting the engagement level "young business" reveals a Hausman type statistic of 3.494. Neglecting "older business" and "no longer" results in a Hausman statistic of -10.346 and -1.241, respectively. With 34 degrees of freedom and a 5% level of significance, the critical value is equal to 48.602. This means that the IIA assumption is not rejected. Note that a negative value of the test statistic may be interpreted as strong evidence that the null hypotheses can not be rejected (StataCorp, 2005).

[55] "Taking steps" is chosen as base category as respondents in this engagement level are currently starting a business, while respondents in the other three engagement levels already started one or have started one in the past.

[56] Grilo and Thurik (2005) discriminate between seven engagement levels. In addition to the four levels used in this study, they include the levels "thinking about it" (nascent stage), "gave up" (exit stage) and "never thought about it" (outsider stage).

[57] The size of the impact of a variable on the odds of category X relative to category Y can be obtained by dividing its impact on the odds of category X relative to the base category by its impact on the odds of category Y relative to the base.

Gender

Gender does not exert influence on the odds of any of the three entrepreneurial engagement levels, i.e., gender does not seem to play a role determining the later stages of the entrepreneurial process (i.e., one has or had a business). Considering the odds of having an active business (relative to thinking about starting one) Grilo and Thurik (2005c) show that the odds of running a young business are twice as high for men than for women. For businesses older than three years men are 2 ½ times more likely to be in this category than women[58]. Hence, gender does seem to be of influence on the probability of entering an active phase in the entrepreneurial process, whereas when individuals are already actively involved in entrepreneurship, there is no gender distinction.

Self-employed parents

Having self-employed parents increases the odds of running a business for more than three years (relative to "taking steps"). The engagement levels "young business" and "no longer" are not affected by self-employed parents. This indicates that individuals with self-employed parents are more likely to run a business for a longer period of time and that they are less likely to drop out, possibly because of the family support they receive.

Perception of administrative complexity

The odds of an active entrepreneurial engagement level (relative to "taking steps") are negatively affected by the perception of administrative complexity, i.e., the perception of this particular obstacle does seem to hinder entrepreneurship in the later stages of the entrepreneurial process. This result is in line with Grilo and Thurik (2005b) and Grilo and Thurik (2005c) who base their results upon analyses using seven entrepreneurial engagement levels. Also, Van Stel and Stunnenberg (2006) find a long-run effect of perceived administrative complexity on the number of business owners across 18 OECD countries.

Perception of lack of financial support

The perception of a lack of financial support does not have an influence on the different engagement levels. The fact that there may be limited financial support does not seem to discourage (past) active involvement in entrepreneurial activity. This is in line with Grilo and Thurik (2005c). Interestingly, this result contrasts that of the perception of administrative complexity which negatively affects engagement in entrepreneurship. It has to be noted though that financial support is more likely to be important in the early phases of the entrepreneurial process than in later phases. Also, the absence of an effect of the perception of lack of financial support may be due to the fact that individuals do perceive that *in general* it is difficult to acquire sufficient financial resources to start up a business, but that this has not influenced their *individual situation* or that this has not led them to refrain from running a business (Verheul, Thurik and Grilo, 2006).

Perception of insufficient information

The perception that there is insufficient information on new venture creation also does not have an impact across the engagement levels. Hence, relative to "taking steps" this variable does not determine an individuals (active) involvement in entrepreneurial activity. Grilo and Thurik (2005c) find that – relative to "taking steps" – the perception of insufficient information has a negative influence on the engagement levels "gave up" and "thinking about it", whereas it does not affect active involvement in entrepreneurship (i.e., running a business). Indeed, it can be argued that when someone is involved in running a business, this individual probably has

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[58] These results are in line with other studies reporting that men have higher probability of engaging in entrepreneurship than women. See Minniti, Arenius and Langowitz (2005) and Verheul, van Stel and Thurik (2006).

overcome possible obstacles in the information search phase (which is more important in the earlier start-up phase).

Perception of an unfavorable economic climate

The odds of having an older business and no longer being an entrepreneur (vis-à-vis "taking steps") are positively influenced by the perception of an unfavorable economic climate[59]. Also, the effect is larger for more progressed entrepreneurial activity. Intuitively we would expect a negative effect of an unfavorable economic climate (as an obstacle to running a business), but instead we find a positive effect. This may suggest that a perceived unfavorable economic climate discourages early stage entrepreneurial activity rather than later stage activity. Moreover, there may be a reversed causality effect, where individuals who have more experience in running a business are expected to have personally experienced the economic climate, while not giving up on their business activities.

A more detailed investigation of the differences between opportunity and necessity entrepreneurship is conducted by estimating two multinomial logit models for the opportunity entrepreneurs and the necessity entrepreneurs separately. The observations amount to 1118 and 537 for opportunity and necessity entrepreneurs, respectively. Again, the engagement level "taking steps" is chosen as base category, i.e. calculating the odds of belonging to a given class relative to the engagement level "taking steps". The Likelihood Ratio test is used to investigate whether the engagement levels can be treated a single engagement level (Cramer and Ridder, 1991). This test shows that for both models there are differences between the engagement levels[60]. In addition, in both models the independence of irrelevant alternatives (IIA assumption) is not violated[61]. Table 7 presents the results of multinomial logit model including four engagement levels.

Insert Table 7 about here

A Likelihood Ratio test is performed to test whether the two estimated models for opportunity and necessity entrepreneurs are different from each other. The test indicates that opportunity and necessity entrepreneurs are not significantly different with respect to the influence of the explanatory variables on the entrepreneurial process[62]. Because the Likelihood Ratio test investigates differences between the two groups of entrepreneurs based on *all* explanatory variables, below the two estimated models will be discussed. Only a selection of the most interesting results will be discussed.

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[59] Economic climate (sometimes measured in terms of unemployment) has been found important when explaining self-employment. Audretsch, Carree, Thurik and van Stel (2005) investigate the net effect of the recession push and the prosperity pull effect. Also see Wennekers, Uhlaner and Thurik (2002) and Parker (2004) for a discussion of the literature.

[60] For *opportunity* entrepreneurs: testing the assumption that the coefficients of "young business", "older business" and "no longer" are equal, the restricted log likelihood value amounts to -1406.619. Testing this for only "young business" and "older business" the restricted equals -1335.836. The unrestricted log-likelihood value amounts to -1293.276. This results into a LR statistic equal to 224.686 and 85.119, respectively. With a critical value of 13.277 (with four degrees of freedom) and 11.345 (with three degrees of freedom) the assumption is rejected using a 5% level of significance. For *necessity* entrepreneurs: the Likelihood Rate tests rejects the assumption that the engagement levels of "young business", "older business" and "no longer" can be treated equally. The restricted log-likelihood value amounts to -643.952. In addition, the assumption that "young business" and "older business" are equal is rejected. The restricted log-likelihood equals -613.143. The unrestricted log-likelihood amounts to -587.055. This gives LR statistics of 113.793 and 52.19 (with four and three degrees of freedom), respectively, using a 5% level of significance.

[61] For opportunity entrepreneurs, neglecting the engagement levels "young business", "older business" and "no longer" results in Hausman type statistics of -4.915, 14.239 and -7.430, respectively. For necessity entrepreneurs the statistics for the three groups equal 2.763, -5.605 and 6.254, respectively. With 32 degrees of freedom and a 5% level of significance, the critical value amounts to 46.194. Hence, the IIA assumption is not violated. Note that a negative value of the test statistic might be interpreted as strong evidence that the null hypotheses can not be rejected (StataCorp, 2005).

[62] The test can not reject the assumption that the coefficients of the two models are equal. The restricted and the unrestricted log-likelihood values amount to -1905.387 and -1880.810, respectively. The LR statistic equals 49.154, while the critical value amounts to 65.171 (using a 5% significance level with 48 degrees freedom).

Gender

With "taking steps" as a base category the odds of the other engagement levels are not influenced by gender for both opportunity and necessity entrepreneurs. When individuals already have an active role in the entrepreneurship there is no distinction between men and women, regardless the motive for starting a business.

Self-employed parents

Having self-employed parents does not appear to influence the engagement levels for necessity entrepreneurs. Hence, relative to taking steps, self-employed parents do not determine an individual's involvement in entrepreneurship, given that someone started a business out of necessity. For opportunity entrepreneurs self-employed parents appears to have a positive effect on the odds of having a young or older business. Opportunity entrepreneurs may be encouraged by their parents to be involved in entrepreneurial activity, and possibly the parents provide financial or experiential support to them. Hence, when someone has self-employed parents it is more likely that (s)he runs a business because of an opportunity than out of necessity.

Perception of administrative complexity

The perception of administrative complexity is not significant across engagement levels for necessity entrepreneurs. For opportunity entrepreneurs the odds of an active involvement in entrepreneurial activity decrease when an individual perceives that there are administrative complexities. Hence, it may be argued that the perception of administrative complexity hinders active involvement in entrepreneurial activity for opportunity entrepreneurs, while necessity entrepreneurs are not restrained in the entrepreneurial process by (the perception of) administrative complexity. This is a counterintuitive finding as we would have expected that the burden van administrative complexity is higher for necessity than opportunity entrepreneurs. However, it may be that the perceptions of necessity entrepreneurs are somewhat biased since they had no occupational alternative to starting up a business.

Perception of lack of financial support / insufficient information

Both the perception of lack of financial support and that of difficulties in obtaining sufficient information do not play a role across the different engagement levels for both opportunity and necessity entrepreneurs. The perception of these obstacles does not seem to discourage active involvement in entrepreneurial activity. Indeed, financial support and information on new venture creation are expected to be more important in the earlier phases of the entrepreneurial process.

Perception of an unfavorable economic climate

The perception of an unfavorable economic climate does not affect the different engagement levels for necessity entrepreneurs, whereas it does affect the entrepreneurial process of opportunity entrepreneurs. The odds of a more active strand in entrepreneurial activity (i.e., running a business for three or more years) are positively affected by a perception of an unfavorable economic climate for opportunity entrepreneurs. This finding may point at different experiences of opportunity and necessity entrepreneurs at start-up. It may be that opportunity entrepreneurs who start up a firm experience more problems, and that therefore they "rate" the economic climate as more unfavorable than necessity entrepreneurs[63].

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[63] Note that this explanation assumes the existence of reversed causality.

7.3 Ordered multinomial logit model

When removing the respondents who once started a business, but are no longer an entrepreneur (i.e., the engagement level "no longer") there remains a natural ranking of engagement levels (presenting the entrepreneurial process). This group of (have-been) entrepreneurs is removed since there is no information available on the time period during which the respondent managed the business, nor is there information on the reason that the respondent is no longer in business. Hence, the "no longer" group is probably a relatively diverse group, including retired business owners, but also business owners who failed and those who managed a business just for one year and decided to quit.

Here we will estimate and discuss an *ordered* multinomial logit model explaining the probability of belonging to (one of) the different engagement levels (i.e., taking steps, having a young business and having an older business) using similar explanatory variables. The sign of the estimated coefficients indicate the direction of change in the probability of falling in the 'endpoint' ranking when the explanatory variable changes. Hence, the probability of belonging to a higher engagement level increases or decreases depending upon the sign of the estimated coefficient[64]. For example, a positive estimate leads to an increased probability that an individual is more progressed in the entrepreneurial process. Because of non-linear dependence the estimated coefficients should be interpreted with care. One can use average marginal probabilities calculated for each entrepreneurial engagement level. A positive estimate of the average marginal probability then implies that a unit change in an explanatory variable increases the probability of belonging to the selected engagement level[65].

The estimation results of the ordered multinomial logit model, including all respondents active in entrepreneurship, are presented in Table 8[66]. Table 9 reports the average marginal probability effects of the explanatory variables on the entrepreneurial process.

Insert Table 8 about here

Insert Table 9 about here

The results show that age, high education, self-employed parents and perception of an unfavorable economic climate have a significant effect on the entrepreneurial process. Note that the probability of being an opportunity entrepreneur (versus being a necessity entrepreneur) does not have an effect. The positive coefficient for age indicates that the probability of being part of a more mature stage in the entrepreneurial process increases with age. Table 9 shows that the average marginal probability effect of age has a negative sign for the lower engagement levels, switching into a positive sign for the final level. More specifically, when an individual is one year older, the probability of taking steps to start a business or have a young business decreases with 1.3 and 0.1 percentage points, respectively, while the probability of having an older business increases with 1.3 percentage point. Hence, older people are more likely to be involved longer in entrepreneurial activity.

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[64] Obviously, the probability of belonging to a lower level changes in the opposite direction.

[65] Conversely, a negative estimate implies that a change in the corresponding explanatory variable decreases the probability of belonging to a specific engagement level.

[66] The threshold parameters in the estimated model amount to 1.775 and 3.319. Because there are three components of the dependent variable, the values for the dependent variable are as follows: Y=1 if $Y^*_i \leq 1.775$; Y=2 if $1.755 \leq Y^*_i \leq 3.319$ and Y=3 if $Y^*_i \geq 3.319$. The values Y=1, Y=2 and Y=3 corresponds to the engagement levels "taking steps"; "business < 3 years"; and "business > 3 years", respectively.

From Table 8 we see that high education has a negative influence on entrepreneurial engagement, suggesting that someone who has attained a high level of education has a lower probability of reaching the later stages of the entrepreneurial process. This is interesting since we would expect that high educated people have general knowledge which can help them in running a business. The results in Table 9 show that a high level of education increases the probability of belonging to the engagement levels "taking steps" and "having a young business" with 7.8 and 0.2 percentage points, respectively. The probability of belonging to the engagement level "having an older business" decreases with 8.0 percentage point. These results suggest that people with a high level of education (as compared to those with an intermediate education level) are motivated to start a business but that they do not necessarily remain business owners. In fact, there is a lower likelihood that higher educated individuals reach the later stages of the entrepreneurial process.

Self-employed parents have a positive influence on entrepreneurial engagement, i.e., individuals with self-employed parents are more likely to be in the later stages of the entrepreneurial process. From Table 9 it can be seen that for individuals with self-employed parents the probability of belonging to engagement level "taking steps" and "having a young business" decreases with 7.9 and 0.7 percentage points, respectively, while the probability "having an older business" increases with 8.6 percentage point. This suggests that people with self-employed parents are more likely to remain in business for a longer period of time.

Also, individuals who perceive of an unfavorable economic climate are more likely to be in a later stage of the entrepreneurial process (the perception of an unfavorable economic climate has a positive effect on entrepreneurial engagement). The average marginal probability effects presented in Table 9 show that for people who perceive of the economic climate as unfavorable the probability of belonging to the engagement levels "taking steps" and "having a young business" decreases with 7.1 and 0.1 percentage points, respectively. These results suggest that the perception of an unfavorable economic climate is an obstacle for stepping into the entrepreneurial process. On the other hand, the probability of belonging to the engagement level "having an older business" increases with 7.3 percentage points if an individual feels that there is an unfavorable economic climate. This is an interesting finding, in particular since we would expect a negative relationship throughout the entrepreneurial process. It may be that the current economic climate is unfavorable but that this was not the case when the respondents in the engagement level: "having an older business" started their firm[67].

To compare the entrepreneurial process of opportunity and necessity entrepreneurs, two ordered multinomial logit model are estimated separately for these two groups of entrepreneurs. The estimation results are presented in Table 10[68]. Table 11 reports the average marginal probability effects of the explanatory variables on the entrepreneurial process for opportunity and necessity entrepreneurs. A Likelihood Ratio test is performed to test whether the two estimated models for opportunity and necessity entrepreneurs differ. The test indicates that opportunity and necessity entrepreneurs are not significantly different with respect to the entrepreneurial process

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[67] Earlier in this paper we also referred to the possibility of reversed causality.

[68] For opportunity entrepreneurs the threshold parameters in the estimated model amount to 1.974 and 3.408. Because there are three components of the dependent variable, the values for the dependent variable are as follows: Y=1 if $Y^*_i \leq 1.974$; Y=2 if $1.974 \leq Y^*_i \leq 3.408$ and Y=3 if $Y^*_i \geq 3.408$. The values Y=1, Y=2 and Y=3 correspond to the engagement levels "taking steps", "business<3 years" and "business>3 years". For necessity entrepreneurs the threshold parameters in the estimated model amount to 1.236 and 3.096. The values for dependent variable are as follows: Y=1 if $Y^*_i \leq 1.236$; Y=2 if $1.236 \leq Y^*_i \leq 3.096$ and Y=3 if $Y^*_i \geq 3.096$. The values Y=1, Y=2 and Y=3 correspond to the engagement levels "taking steps", "business<3 years" and "business > 3 years".

(looking at the explanatory variables included in the analysis)[69]. Below we discuss the results of the two separately estimated models.

<div align="center">

Insert Table 10 about here

Insert Table 11 about here

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Opportunity-based entrepreneurship

From Table 10 we see that for opportunity entrepreneurs entrepreneurial engagement is associated with age, high education, self-employed parents and perception of an unfavorable economic climate[70]. The probability of being involved in a later stage of the entrepreneurial process increases when opportunity entrepreneurs get older. Table 11 shows that a year older decreases the probability of "taking steps" with 1.4 percentage point, whereas the probability of "having a young business" and "having an older business" increases with 0.1 and 1.3 percentage points, respectively. Although this may refer simply to the fact that when the business ages, the entrepreneur also gets older, it can also be argued that people who start a business due to an opportunity are more likely to persist in entrepreneurial activity.

High education decreases the probability of belonging to a more active entrepreneurial engagement level for opportunity entrepreneurs. The average marginal probability effects in Table 11 show that a higher level of education increases the probability of "taking steps" with 8.6 percentage points, while the probability of "having a young business" and "having an older business" decreases with 0.7 and 7.8 percentage points, respectively. Hence, for opportunity entrepreneurs a high level of education (vis-à-vis an 'average' level of education) appears to encourage the start-up of a new business, while at the same time it does not guarantee persistence in entrepreneurial activity. It may be that in later stages of the entrepreneurial process more specific knowledge and skills are important rather than general knowledge.

Self-employed parents increase the probability that opportunity entrepreneurs reach a more mature stage of the entrepreneurial process. Table 11 shows that having self-employed parents decreases the probability of "taking steps" with 9.1 percentage points, whereas it leads to an increase of the probability of "having a young business" and "having an older business" with 0.4 and 8.7 percentage points, respectively. Hence, opportunity entrepreneurs are more likely to stay in business when they have self-employed parents. However, in earlier phases of the entrepreneurial process self-employed parents appear to have a negative effect rather than a positive one.

The perception of an unfavorable economic climate increases the probability of belonging to a more mature entrepreneurial stage for opportunity entrepreneurs. The average marginal probability effects show that the perception of an unfavorable economic climate leads to a decrease of the probability of "taking steps" of 8.1 percentage points, whereas the probability of "having a young business" and "having an older business" increases with 0.8 and 7.3 percentage points, respectively. Hence, it seems that the perception of an unfavorable economic climate

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[69] The test can not reject the assumption that the coefficients of the two models are equal. The restricted log-likelihood value amounts to -1190.593 and the unrestricted value is -1180.134. The LR statistic equals 20.810, while the critical value amounts to 26.269 (using a 5% significance level with 16 degrees freedom).

[70] Note that we use a 5% significance level.

discourages people to take steps to start up a business. The positive effect on later engagement levels may refer to an experience effect where entrepreneurs have personally experienced the climate while running a business, which does not necessarily mean that they give up[71]. Moreover, they may perceive of a *general* unfavorable economic climate, which does not affect the personal situation. Also, respondents are asked to 'judge' the current economic climate, whereas for individuals who are active in entrepreneurial activity for some years the current climate does not apply to their start-up situation.

Necessity-based entrepreneurship

Table 10 shows that for necessity entrepreneurs entrepreneurial engagement is dependent upon age, perception of a lack of financial support and risk tolerance[72]. For necessity entrepreneurs the probability of being involved in a later stage of the entrepreneurial process increases when they get older. An increase in age with one year leads to a decrease in the probability of "taking steps" and "having a young business" with 1.0 and 0.6 percentage points, respectively, whereas the probability of "having a older business" increases with 1.6 percentage point. Hence, older individuals motivated by necessity, are less likely to start a business and run a young business, but are more likely to persist in entrepreneurial activity. Obviously, the latter effect may simply refer to the combined process of ageing of the firm and the individual running the business.

Necessity entrepreneurs who are in later stages of the entrepreneurial process are less likely to perceive of a lack of financial support. Individuals who do not perceive of a lack of financial support are more likely to start a business than those who perceive of a lack of financial support. The average marginal probability effects in Table 11 show that a lack of financial support increases the probability of "taking steps" and "having a young business" with 7.1 and 6.0 percentage points, respectively, while it decreases the probability of "having an older business" with 13.1 percentage points. This particular financial obstacle does not appear to discourage early-stage entrepreneurial activity (maybe because necessity entrepreneurs do not have a viable alternative to business start-up), but does seem to play a negative role in later phases.

Risk tolerance decreases the probability that necessity entrepreneurs are in the later stages of the entrepreneurial process. The marginal probability effects show that risk tolerance increases the probability of "taking steps" and "having a young business" with 6.2 and 3.9 percentage points, respectively, while it leads to a decrease of 10.1 percentage points in the probability of "having a older business". These results suggest that necessity entrepreneurs who are willing to take risk are likely to start up and run a young business, whereas the later stages are negatively affected by risk tolerance, maybe because taking risk is associated with higher failure.

8. Conclusion

Individuals have different motives for engaging in entrepreneurship. A distinction can be made between opportunity and necessity entrepreneurship. Opportunity entrepreneurs start a business due to a perceived business opportunity, while necessity entrepreneurs are pushed into self-employment because of a lack of alternative employment options. Empirical evidence on differences between opportunity and necessity entrepreneurs is limited. Although the Global Entrepreneurship Monitor (GEM) reports (e.g., Acs et al., 2005) provide some descriptive information, there have been few studies that dealt with this issue more thoroughly, for example through applying more sophisticated statistical analysis investigating differences between opportunity and necessity entrepreneurs with respect to a range of variables. This study aims at creating insight into the differences between these two types of entrepreneurship using survey

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[71] Note that this effect implies the existence of reversed causality.
[72] Note that we use a 5% significance level.

data for 2004 from 25 EU member states and the United States, investigating effects of socio-demographics, attitudes and perceptions of the entrepreneurial climate on the *preference* for self-employment; the probability of *being* an entrepreneur, and various *engagement levels* (i.e., the stage in the entrepreneurial process).

Results show that men are more likely than women to start a new firm due to a business opportunity. Also, people who have attained a low level of education are more likely to become self-employed out of necessity, whereas people with a higher level of education are more likely to engage in entrepreneurship because of a perceived business opportunity. Necessity entrepreneurs are more likely to be influenced by the perception of obstacles including a lack of financial support, administrative complexities, difficulty obtaining sufficient information and an unfavorable economic climate. In addition, necessity entrepreneurs are less willing to take chances and risk failure, which may be linked to the reason for entering self-employment, i.e., that they do not have another employment option to earn a living.

As expected opportunity entrepreneurs have a higher preference for self-employment than necessity entrepreneurs. Indeed, necessity entrepreneurs do not have other options they can prefer over starting a business. Findings indicate that there is no gender difference with respect to active involvement in entrepreneurial activity for both opportunity and necessity entrepreneurs. Indeed, whereas in early-stage entrepreneurial activity gender still plays a role, in more progressed stages of the entrepreneurial process gender does not have an effect (Grilo and Thurik, 2005c). Self-employed parents encourage opportunity entrepreneurs to start a business, while this is not the case for necessity entrepreneurs. Also, the perception of administrative complexity appears to be a barrier to active involvement in entrepreneurial activity for opportunity entrepreneurs but not for necessity entrepreneurs. This does not imply that necessity entrepreneurs do not experience these (perceptional) obstacles, but apparently necessity entrepreneurs persist in starting up and running a business despite these administrative obstacles. The progress in the entrepreneurial process is further investigated using an *ordered* multinomial logit model[73]. There appears to be a positive relationship between self-employed parents and the probability of reaching a later stage in the entrepreneurial process, in particular for opportunity entrepreneurs. For necessity entrepreneurs there is a negative effect of the perception of a lack of financial support on the probability of active involvement in the entrepreneurial process.

From a policy perspective it is important to have insight into differences between opportunity and necessity entrepreneurs to develop specific programs to encourage entrepreneurship in these two groups. Indeed, policies designed to stimulate opportunity entrepreneurship may not be valid for encouraging necessity entrepreneurs. For opportunity entrepreneurs it is important to deal with the administrative burden of new venture creation, in particular since administrative complexities are perceived by opportunity rather than necessity entrepreneurs[74]. However, it has to be noted that the *perception* of the administrative barriers is not in line with the *actual* barriers (Van Stel and Stunnenberg, 2006). From this perspective it is also important for the government to make administrative procedures more transparent.

Government policy aimed at encouraging necessity entrepreneurs should deal with the perception of a lack of financial support. Note that this perception of necessity entrepreneurs may reflect real financial barriers or perceived barriers. From the first perspective it is important that the government reflects on current financial support programs for entrepreneurs. From the second perspective it may be more important to educate and inform (necessity) entrepreneurs about the

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[73] The engagement level "no longer" is removed before estimating the ordered multinomial logit model. This engagement level may not only include respondents who have retired from entrepreneurship, but it can also include those who have managed a business for one year and then decided to quit.

[74] Although necessity entrepreneurs do not appear to be influenced by this particular obstacle to entrepreneurial activity, removing barriers could also stimulate necessity entrepreneurs since the threshold to engage in entrepreneurship becomes also lower for them.

channels through which they can receive funding for starting up or growing their business. Also, to stimulate necessity entrepreneurship conditions unemployment benefits could be made more stringent, stimulating unemployed people to engage in entrepreneurship rather than living off these benefits. Necessity entrepreneurship could be further promoted by paying attention in the media (television, magazines, etc.) to successful efforts of formerly unemployed people who started a firm. In this way these entrepreneurs can function as role models for those who are currently unemployed.

The present study explores differences between opportunity and necessity entrepreneurs on the basis of selected variables (i.e., socio-demographics, attitudes and perceptions of 'obstacles'). Obviously, there may be other relevant factors explaining activity levels of opportunity and necessity entrepreneurs. First, work experience is not in the data set. It may be argued that work experience positively influences progress in entrepreneurial activity, but also helps entrepreneurs to-be to perceive lucrative business opportunities. Second, an individual's social capital is important to perceive of and pursue opportunities. In the present study only self-employed parents is included as a 'network' variable. However, we could also think of the support of a spouse, friends and other business people or entrepreneurs. Third, the data set did not allow us to take into account industry effects. It may be argued that some of the (perceived) 'obstacles' are industry-specific rather than linked to the motivation for starting up a business. Moreover, it may be that necessity entrepreneurs choose to become active in sectors which are more or less likely to be characterized by entry barriers.

The present study presents some interesting findings that beg for further research. We find that gender influences the preference for self-employment for both necessity and opportunity entrepreneurs, with the impact on the preference for necessity entrepreneurs being somewhat larger than for opportunity entrepreneurs. Also from a policy perspective it is interesting to find out what causes the discrepancy in self-employment preferences between women and men, i.e., why do women have a lower preference for self-employment than men? This is particularly interesting since in later stages of the entrepreneurial process gender does no longer play a role. Also, country effects can be studied more thoroughly. Although in the analyses in the present study country dummies were included, they were not extensively elaborated upon, since this was not the main goal of the study. However, findings do indicate that country typologies have an effect on entrepreneurial activity. To take into account institutional and cultural effects future studies can also include variables such as social security regimes, bankruptcy legislation and support for entrepreneurship. Finally, the Eurobarometer Survey is available for several years (i.e., 2000; 2003; 2004) enabling longitudinal research investigating (the persistence of) differences between opportunity and necessity entrepreneurs over the years.

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10. Appendices

Table 1: Mean difference between opportunity and necessity entrepreneurship

Explanatory variable	Opportunity average	Necessity average	Chi-square (P-value)
Male	0.704	0.652	4.591[*] (0.032)
Low education	0.097	0.196	31.661[*] (0.000)
High education	0.426	0.305	22.158[*] (0.000)
Self-employed parents	0.368	0.385	0.494 (0.482)
Perc. lack of financial support	0.722	0.771	4.525[*] (0.033)
Perc. administrative complexities	0.633	0.696	6.399[*] (0.011)
Perc. insufficient information	0.419	0.534	19.318[*] (0.000)
Perc. unfavourable econ. climate	0.638	0.745	18.905[*] (0.000)
Risk tolerance	0.588	0.453	26.706[*] (0.000)
Internal vs external success factors	0.192	0.086	14.047[*] (0.001)
Preference for self-employment	0.738	0.663	9.979[*] (0.002)
			T-statistic (P-value)
Age	42.220	44.439	-3.684[*] (0.000)

Note: the number of observations used amounts to 1655. Of these respondents 1118 is starting or already started a business due to an opportunity and 537 out of necessity. Source: Flash Eurobarometer Survey 160 (conducted in 2004).
* indicates a 5 percent significance level (two-tailed).

Table 2: Effects on the probability of the preference for self-employment

	Wage-employed			Self-employed		
	Preference for self-employment			Preference for self-employment		
	Coefficient	Std. Error	dF/dx	Coefficient	Std. Error	dF/dx
Constant	0,209	0.217	0,076	1,520*	0,434	0.492*
Male	0,422*	0.102	0,153*	0,306*	0,071	0.099*
Age	-0,029*	0.012	-0,011*	-0,045*	0,019	-0.015*
Age/100 (squared)	2,718*	1.226	0,987*	5,387*	2,183	1.745*
Low education	-0,005	0.086	-0,002	-0,110	0,110	-0.036
High education	-0,070	0.048	-0,026	0,070	0,075	0.023
Self-employed parents	0,245*	0.078	0,089*	0,008	0,072	0.003
Perc. lack of finan. support	0,152*	0.061	0,055*	0,046	0,083	0.015
Perc. administr. complexities	-0,053	0.050	-0,019	-0,131	0,076	-0.042
Perc. insufficient information	0,105*	0.051	0,038*	-0,132	0,072	-0.043
Perc. unfav. econ. climate	-0,054	0.049	-0,020	-0,204*	0,080	-0.066*
Risk tolerance	0,267*	0.078	0,097*	0,168*	0,070	0.054*
Internal vs external success factors	0,069*	0.030	0,025*	0,150*	0,046	0.049*
Southern Europe	0,041	0.065	0,015	-0,203	0,124	-0.066
Post Communist	-0,177*	0.149	-0,064*	-0,115	0,122	-0.037
Social democratic	-0,488*	0.121	-0,177*	-0,300	0,165	-0.097
Corporatist	-0,424*	0.217	-0,154*	-0,168	0,113	-0.054
Observations	6039			1655		
LR chi^2 / Degrees of freedom	237.692		16	91.262		16
Prob>chi^2	0.000			0.000		
Log-likelihood	-3879.063			-945.551		
Pseudo R^2	0.030			0.046		

Note: dF/dx represents the marginal effect for explanatory variables, where a unit change in the explanatory variable in question leads to a subsequent increase or decrease in the probability of preferring to be self-employed (in percentage points). Source: Flash Eurobarometer Survey 160 (conducted in 2004)
* indicates a 5 percent significance level (two-tailed).

Table 3: Effects on the probability of the preference for self-employment (opportunity versus necessity entrepreneurs)

	Opportunity			Necessity		
	Preference for self-employment			Preference for self-employment		
	Coefficient	Std. Error	dF/dx	Coefficient	Std. Error	dF/dx
Constant	1,494*	0,529	0,464	1,591*	0,780	0,549
Male	0,232*	0,089	0,072	0,402*	0,121	0,139
Age	-0,047*	0,024	-0,014	-0,046	0,034	-0,016
Age/100 (squared)	5,762*	2,749	1,788	5,324	3,704	1,837
Low education	-0,142	0,147	-0,044	-0,010	0,173	-0,004
High education	0,056	0,090	0,017	0,096	0,137	0,033
Self-employed parents	0,100	0,089	0,031	-0,169	0,126	-0,058
Perc. lack of finan. support	0,082	0,099	0,025	-0,040	0,155	-0,014
Perc. administr. complexities	-0,160	0,093	-0,050	-0,052	0,135	-0,018
Perc. insufficient information	-0,074	0,089	-0,023	-0,236	0,127	-0,081
Perc. unfav. econ. climate	-0,217*	0,094	-0,067	-0,134	0,153	-0,046
Risk tolerance	0,215*	0,087	0,067	0,076	0,121	0,026
Internal vs external success factors	0,153*	0,058	0,047	0,140	0,076	0,048
Southern Europe	-0,232	0,151	-0,072	-0,158	0,229	-0,055
Post Communist	-0,048	0,147	-0,015	-0,211	0,225	-0,073
Social democratic	-0,230	0,186	-0,071	-0,597	0,399	-0,206
Corporatist	-0,124	0,133	-0,039	-0,278	0,221	-0,096
Observations	1118			537		
LR chi^2 / Degrees of freedom	57.637		16	36.232		16
Prob>chi^2	0.000			0.003		
Log-likelihood	-614.273			-343.178		
Pseudo R^2	0.045			0.053		

Note: dF/dx represents the marginal effect for explanatory variables, where a unit change in the explanatory variable in question leads to a subsequent increase or decrease in the probability of preferring to be self-employed (in percentage points). Source: Flash Eurobarometer Survey 160 (conducted in 2004).

* indicates a 5 percent significance level (two-tailed).

Table 4: Effects on the probability of opportunity versus necessity entrepreneurship

	Opportunity versus necessity		
	Coefficient	Std. Error	dF/dx
Constant	1.020*	0.416	0.342*
Male	0.142*	0.071	0.048*
Age	-0.021	0.018	-0.007
Age/100 (squared)	1.328	1.990	0.445
Low education	-0.254*	0.107	-0.085*
High education	0.157*	0.074	0.053*
Self-employed parents	-0.072	0.071	-0.024
Perc. lack of financial support	0.061	0.083	0.020
Perc. administrative complexities	-0.009	0.074	-0.003
Perc. insufficient information	-0.152*	0.071	-0.051*
Perc. unfavourable econ. climate	-0.118	0.079	-0.040
Risk tolerance	0.215*	0.069	0.072*
Internal vs external success factors	0.058	0.045	0.019
Preference for self-employment	0.125	0.074	0.042
Southern Europe	-0.327*	0.118	-0.109*
Post Communist	-0.264*	0.116	-0.088*
Social democratic	0.530*	0.187	0.178*
Corporatist	0.072	0.109	0.024
Observations	1655		
LR chi^2 / Degrees of freedom	134.974		17
Prob>chi^2	0.000		
Log-likelihood	-975.484		
Pseudo R^2	0.065		

Note: the number of observations used amounts to 1655. Of these respondents 1118 started or is starting a business due to an opportunity and 537 out of necessity. dF/dx represents the marginal effect for explanatory variables, where a unit change in the explanatory variable in question leads to a subsequent increase or decrease in the probability of being an opportunity entrepreneur versus being a necessity entrepreneur (in percentage points). Source: Flash Eurobarometer Survey 160 (conducted in 2004).
* indicates a 5 percent significance level (two-tailed).

Table 5: Effects on the probability of opportunity versus necessity entrepreneurship per engagement level

	Taking steps			Business < 3 years			Business > 3 years			No longer		
	Opportunity versus necessity			Opportunity versus necessity			Opportunity versus necessity			Opportunity versus necessity		
	Coefficient	Std. Error	dF/dx	Coefficient	Std. Error	dF/dx	Coefficient	Std. Error	dF/dx	Coefficient	Std. Error	dF/dx
Constant	0.482	1.005	0.137	1.004	1.030	0.324	2.268*	0.790	0.761*	-0.666	1.092	-0.215
Male	0.130	0.206	0.037	-0.060	0.157	-0.019	0.123	0.112	0.041	0.333*	0.157	0.107*
Age	-0.002	0.054	-0.001	-0.007	0.047	-0.002	-0.086*	0.031	-0.029*	0.058	0.048	0.019
Age/100 (squared)	0.530	6.746	0.150	-1.497	5.513	-0.483	7.631*	3.189	2.561*	-6.600	5.451	-2.127
Low education	0.348	0.434	0.099	0.053	0.251	0.017	-0.490*	0.158	-0.164*	-0.020	0.226	-0.006
High education	-0.180	0.210	-0.051	0.414*	0.159	0.134*	0.045	0.116	0.015	0.379*	0.175	0.122*
Self-employed parents	-0.425*	0.209	-0.120*	0.169	0.159	0.054	-0.147	0.109	-0.049	0.068	0.174	0.022
Perc. lack of finanancial support	0.100	0.222	0.028	-0.270	0.200	-0.087	0.156	0.123	0.053	0.247	0.200	0.080
Perc. administrative complexities	-0.192	0.220	-0.054	-0.092	0.159	-0.030	0.030	0.114	0.010	0.018	0.177	0.006
Perc. insufficient information	0.124	0.208	0.035	-0.124	0.155	-0.040	-0.151	0.111	-0.051	-0.285	0.161	-0.092
Perc. unfavourable econ. climate	-0.195	0.213	-0.055	-0.264	0.173	-0.085	-0.101	0.122	-0.034	-0.094	0.188	-0.030
Pref. for self-employment	0.476	0.262	0.135	0.139	0.170	0.045	0.160	0.127	0.054	0.075	0.158	0.024
Risk tolerance	0.097	0.213	0.028	0.208	0.153	0.067	0.374*	0.108	0.125*	0.096	0.154	0.031
Internal vs external success factors	0.133	0.126	0.038	0.252*	0.101	0.081*	-0.059	0.070	-0.020	0.207	0.109	0.067
Southern Europe	-0.025	0.296	-0.007	-0.335	0.262	-0.108	-0.079	0.199	-0.027	-0.855*	0.304	-0.276*
Post Communist	-0.309	0.287	-0.088	-0.088	0.265	-0.028	-0.138	0.206	-0.046	-0.527	0.273	-0.170
Social democratic	1.081	0.583	0.306	0.436	0.381	0.141	0.653*	0.313	0.219*	0.242	0.417	0.078
Corporatist	0.077	0.248	0.022	0.187	0.250	0.061	0.362	0.190	0.121	-0.423	0.276	-0.136
Observations	241			363			704			347		
LR chi^2 / Degrees of freedom	17.603		17	58.905		17	76.603		17	36.932		17
Prob>chi^2	0.414			0.000			0.000			0.003		
Log-likelihood	-121.849			-206.153			-415.997			-197.493		
Pseudo R^2	0.067			0.125			0.084			0.086		

Note: dF/dx represents the marginal effect for explanatory variables, where a unit change in the explanatory variable in question leads to a subsequent increase or decrease in the probability of being an opportunity entrepreneur versus being a necessity entrepreneur (in percentage points). Source: Flash Eurobarometer Survey 160 (conducted in 2004). * indicates a 5 percent significance level (two-tailed).

Table 6: Odds relative to "currently taking steps to start a business": effect of one unit change in the independent variables

	Business < 3 years		Business > 3 years		No longer	
	Odds	P-value	Odds	P-value	Odds	P-value
Male	0,885	0,512	1,101	0,590	1,118	0,578
Age	1,030	0,001	1,084	0,000	1,067	0,000
Low education	1,269	0,483	1,053	0,872	1,259	0,508
High education	0,730	0,092	0,574	0,002	0,531	0,002
Self-employed parents	1,257	0,218	1,648	0,004	1,066	0,750
Opportunity versus necessity	0,676	0,050	0,784	0,200	1,035	0,872
Perc. lack of financial support	1,300	0,203	0,999	0,998	1,305	0,232
Perc. administrative complexities	0,625	0,014	0,663	0,023	0,682	0,066
Perc. insufficient information	0,960	0,828	0,875	0,448	0,942	0,761
Perc. unfavourable econ. climate	1,398	0,080	1,618	0,008	1,713	0,010
Risk tolerance	1,176	0,382	0,968	0,850	0,981	0,921
Interval vs external success factors	1,060	0,623	1,067	0,562	1,040	0,757
Preference for self-employment	0,547	0,008	0,719	0,134	0,126	0,000
Southern Europe	2,393	0,002	4,551	0,000	1,836	0,056
Post communist	3,062	0,000	5,658	0,000	3,839	0,000
Social Democratic	1,750	0,146	2,201	0,035	1,858	0,132
Corporatist	1,695	0,029	3,991	0,000	1,846	0,024
Observations	1655					
LR chi^2 / Degrees of freedom	489.073			51		
Prob>chi^2	0.000					
Log-likelihood	-1905.387					
Pseudo R^2	0.113					

Note: The p-value corresponds to the test for the odds ratio equal to 1. And note that of these 1655 respondent, 1118 are opportunity entrepreneurs and 537 are necessity entrepreneurs. Source: Flash Eurobarometer Survey 160 (conducted in 2004).

Table 7: Odds relative to "currently taking steps to start a business": effect of one unit change in independent variables (opportunity-based versus to necessity-based entrepreneurship)

	Opportunity						Necessity					
	Business < 3 yrs		Business > 3 yrs		No longer		Business < 3 yrs		Business > 3 yrs		No longer	
	Odds	P-value	Odds	P-value	Odds	P-value	Odds	P-value	Odds	P-value	Odds	P-value
Male	0,794	0,299	1,088	0,689	1,169	0,516	1,025	0,947	0,996	0,991	0,959	0,915
Age	1,023	0,026	1,081	0,000	1,071	0,000	1,040	0,022	1,094	0,000	1,061	0,001
Low education	1,195	0,664	0,812	0,582	1,169	0,705	1,483	0,579	1,723	0,428	1,473	0,595
High education	0,962	0,860	0,638	0,027	0,635	0,055	0,346	0,006	0,397	0,011	0,286	0,003
Self-employed parents	1,573	0,038	1,871	0,002	1,439	0,127	0,596	0,163	1,022	0,951	0,459	0,051
Perc. lack of financial support	1,130	0,603	1,087	0,705	1,525	0,105	2,066	0,108	0,849	0,687	1,006	0,989
Perc. administrative complexities	0,625	0,035	0,654	0,043	0,656	0,083	0,758	0,485	0,807	0,569	0,830	0,662
Perc. insufficient information	0,908	0,660	0,894	0,583	0,884	0,595	1,110	0,780	0,868	0,689	1,195	0,657
Perc. unfavourable econ. climate	1,458	0,086	1,680	0,011	1,877	0,009	1,082	0,853	1,393	0,408	1,208	0,681
Risk tolerance	1,227	0,354	1,107	0,619	1,023	0,922	1,088	0,818	0,718	0,346	0,925	0,841
Interval vs external success factors	1,181	0,247	1,038	0,779	1,115	0,477	0,824	0,390	1,045	0,835	0,852	0,501
Preference for self-employment	0,486	0,010	0,624	0,080	0,102	0,000	0,695	0,370	0,984	0,968	0,181	0,000
Southern Europe	1,872	0,058	5,016	0,000	1,384	0,392	5,283	0,005	4,126	0,010	4,916	0,017
Post communist	3,066	0,001	6,680	0,000	4,133	0,000	3,743	0,018	3,955	0,009	4,519	0,016
Social Democratic	1,523	0,310	2,402	0,031	1,785	0,190	5,456	0,187	2,624	0,444	3,920	0,322
Corporatist	1,605	0,085	4,643	0,000	1,626	0,117	2,563	0,085	2,870	0,033	3,620	0,035
Observations	1118						537					
LR chi^2 / Degrees of freedom	354.440			48			171.829			48		
Prob>chi^2	0.000						0.000					
Log-likelihood	-1293.755						-587.055					
Pseudo R^2	0.120						0.127					

Note: The p-value corresponds to the test for the odds ratio equal to 1. Source: Flash Eurobarometer survey 160 (conducted in 2004)

Table 8: Effects on the probability of belonging to a higher (or lower) level of involvement in the entrepreneurial process

	Entrepreneurial engagement levels	
	Coefficient	P-value
Male	0,118	0,329
Age	0,061	0,000
Low education	-0,070	0,726
High education	-0,366	0,003
Self-employed parents	0,385	0,001
Perc. lack of financial support	-0,096	0,484
Perc. administrative complexities	-0,177	0,151
Perc. insufficient information	-0,101	0,401
Perc. unfavourable econ. climate	0,334	0,009
Risk tolerance	-0,092	0,441
Internal versus external success factors	0,069	0,373
Preference for self-employment	0,017	0,902
Opportunity versus necessity	-0,013	0,917
Southern Europe	1,013	0,000
Post Communist	1,112	0,000
Social democratic	0,567	0,036
Corporatist	1,048	0,000
Limit point 1	1.775	0.000
Limit point 2	3.319	0.000
Observations	1308	
LR chi^2 / Degrees of freedom	236.944	17
Prob>chi^2	0.000	
Log-likelihood	-1190.593	
Pseudo R^2	0.091	

Note: Of the 1308 respondents, 880 are opportunity entrepreneurs and 428 are necessity entrepreneurs.
Source: Flash Eurobarometer Survey 160 (conducted in 2004).

Table 9: Average marginal effects of the independent variables on the probability of belonging to the various entrepreneurial engagement levels

	Taking steps	Business < 3 years	Business > 3 years
Male	-0,025	-0,001	0,026
Age	-0,013*	-0,001*	0,013*
Low education	0,015	0,001	-0,015
High education	0,078*	0,002*	-0,080*
Self-employed parents	-0,079*	-0,007*	0,086*
Perc. lack of financial support	0,020	0,001	-0,021
Perc. administrative complexities	0,037	0,003	-0,040
Perc. insufficient information	0,021	0,001	-0,022
Perc. unfavourable econ. climate	-0,071*	-0,001*	0,073*
Risk tolerance	0,019	0,001	-0,021
Internal vs external success factors	-0,014	-0,001	0,015
Preference for self-employment	-0,004	0,000	0,004
Opportunity versus necessity	0,003	0,000	-0,003

Source: Flash Eurobarometer Survey 160 (conducted in 2004).

* indicates a 5 percent significance level (two-tailed).

Table 10: Effects on the probability of belonging to a higher (or lower) level of involvement in the entrepreneurial process (opportunity versus to necessity entrepreneurship)

	Opportunity		Necessity	
	Entrepreneurial engagement levels		Entrepreneurial engagement levels	
	Coefficient	P-value	Coefficient	P-value
Male	0,126	0,395	-0,034	0,878
Age	0,060	0,000	0,067	0,000
Low education	-0,214	0,422	0,243	0,449
High education	-0,374	0,010	-0,364	0,118
Self-employed parents	0,404	0,005	0,416	0,062
Perc. lack of financial support	0,052	0,744	-0,534	0,050
Perc. administrative complexities	-0,253	0,089	-0,008	0,973
Perc. insufficient information	-0,042	0,776	-0,221	0,322
Perc. unfavourable econ. climate	0,351	0,020	0,287	0,260
Risk tolerance	0,047	0,750	-0,419	0,049
Internal vs external success factors	0,024	0,799	0,147	0,264
Preference for self-employment	-0,142	0,424	0,278	0,239
Southern Europe	1,144	0,000	0,642	0,080
Post Communist	1,220	0,000	0,904	0,014
Social democratic	0,641	0,030	0,368	0,599
Corporatist	1,123	0,000	0,804	0,025
Limit point 1	1.974	0.000	1.236	0.055
Limit point 2	3.408	0.000	3.096	0.000
Observations	880		428	
LR chi^2 / Degrees of freedom	163.896	16	81.266	16
Prob>chi^2	0.000		0.000	
Log-likelihood	-815.251		-364.883	
Pseudo R^2	0.091		0.100	

Source: Flash Eurobarometer Survey 160 (conducted in 2004).

Table 11: Average marginal effects of the independent variables on the probability of belonging to the various entrepreneurial engagement levels (opportunity versus to necessity entrepreneurship)

	Male	Age	Low educ.	High educ.	Self-empl. parents	Lack finan. support	Admin. compl.	Insuff. info.	Econ. climate	Risk tolerance	Internal vs external	Pref. self-empl.
	Opportunity											
Taking Steps	-0,029	-0,014*	0,050	0,086*	-0,091*	-0,012	0,057	0,009	-0,081*	-0,011	-0,006	0,032
Business < 3 yrs	0,003	0,001*	-0,006	-0,007*	0,004*	0,001	-0,003	-0,001	0,008*	0,001	0,000	-0,001
Business > 3 yrs	0,026	0,013*	-0,044	-0,078*	0,087*	0,011	-0,054	-0,009	0,073*	0,010	0,005	-0,031
	Necessity											
Taking Steps	0,005	-0,010*	-0,034	0,056	-0,059	0,071*	0,001	0,032	-0,044	0,062*	-0,021	-0,042
Business < 3 yrs	0,003	-0,006*	-0,026	0,032	-0,042	0,060*	0,001	0,021	-0,025	0,039*	-0,015	-0,024
Business > 3 yrs	-0,008	0,016*	0,060	-0,087	0,101	-0,131*	-0,002	-0,054	0,069	-0,101*	0,036	0,067

Source: Flash Eurobarometer Survey 160 (conducted in 2004). * indicates a 5 percent significance level (two-tailed).

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