Gender Differences in Competitiveness, Risk Tolerance, and other Personality Traits: Do they contribute to the Gender Gap in Entrepreneurship?

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GENDER DIFFERENCES IN COMPETITIVENESS, RISK TOLERANCE, AND OTHER PERSONALITY TRAITS: DO THEY CONTRIBUTE TO THE GENDER GAP IN ENTREPRENEURSHIP?

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Abstract

In this study we empirically investigate the contribution of personality traits to the gender gap in entrepreneurship. Our empirical analyses, which are based on data obtained from a large scale survey of individuals in 36 countries, suggest that a group of personality traits which we call *Individual Entrepreneurial Aptitude (IEA)* has a positive effect on latent and nascent entrepreneurship among women and men. Moreover, women's considerably lower level of *IEA* contributes significantly to the gender gap in entrepreneurship. The lower level of *IEA* is mainly due to women's lower levels of competitiveness and risk tolerance. Furthermore, these results are confirmed by the results of a country-level analysis which show that the within-country variation of entrepreneurial activities of women and men is significantly related to within-country variation of *IEA*.

1. Introduction

Although equal rights of men and women are guaranteed by law in most developed economies, women's disadvantage in labor markets is still an issue. Women are less likely to climb the career ladder and their salaries are often lower than those of men even if they do the same job. Likewise, there is strong empirical evidence for a gender gap in entrepreneurship. A higher proportion of men engage in entrepreneurial activities as compared to women and this does not only apply to developing but also to developed economies (Klapper and Parker 2010; Estrin and Mickiewicz 2006).[1] Men are more likely to be engaged in the creation of new businesses (Delmar and Davidsson 2000; Langowitz and Minniti 2007) and women are outnumbered by men in established business ownership (Allen et al. 2007). In recent years female entrepreneurship has attracted a considerable amount of attention in academic research and many governments have taken measures to support it (Carter and Ó Cinnéide 2007, OECD 2004). However, the reasons for the gender gap in entrepreneurship are still not fully understood.

The literature on female entrepreneurship suggests that women may face more severe obstacles to business creation than men which may hinder their engagement in entrepreneurship. Based on a survey of the extant literature on the relationship between gender and entrepreneurship, Klapper and Parker (2010) conclude that the gender gap in entrepreneurship cannot be explained by explicit discrimination in laws and regulations but can in part be explained by business environment factors. In particular the limited access of women to external finance may inhibit business creation, since external financing is an important factor for the creation of new ventures. Hence, external factors seem to contribute to the gender gap in entrepreneurship.

This paper focuses on role of individual characteristics. In particular, we argue that men and women may differ with respect to personality traits and empirically investigate whether these differences contribute the gender gap in entrepreneurship. Since it can be expected that not a single personality trait but a configuration of personality traits predict entrepreneurial behavior of men and women (Mueller and Thomas 2001), we do not focus on the influence of single personality traits but analyze the joint effect of a group of personality traits which may predispose individuals to entrepreneurship. We call this group of traits *Individual Entrepreneurial Aptitude (IEA)* and argue that individuals who rank high on *IEA* are more likely to have a general preference for being self-employed (*latent entrepreneurship*) and are also

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[1] Although there is a considerable cross-country variation in female as well as male self-employment rates (Reynolds et al 2004, Bosma and Harding 2007; Crowling 2000) and the number of self-employed women has increased notably (Devine 1994 for the US), self-employed women are still outnumbered by self-employed men.

more likely to take steps to start a business (*nascent entrepreneurship*).[2] Using a simple occupational choice model we show that gender differences with respect to the *level* of *IEA* or the magnitude of the *effect* of *IEA* may contribute to the gender gap in entrepreneurship.

The relationship between personality traits and entrepreneurship is examined in a number of studies and recent meta-analyses confirm a significant correlation between personality traits and entrepreneurial behavior (e.g. Rauch and Frese 2007, Zhao and Seibert 2006, Zhao et al. 2009).[3] The contribution of personality traits to the gender gap in entrepreneurship, however, is examined by only a few empirical studies (e.g. Furdas and Kohn 2010, van der Zwan et al. 2011, Verheul et al. 2011). Moreover, previous research largely neglects the relevance of competitiveness for individual engagement in entrepreneurial activities.[4] This is startling since already Schumpeter (1934) identified competitiveness as one of the major motivations for entrepreneurship. We argue that competitiveness is a personality trait that can be matched to the tasks of entrepreneurs and is therefore an important facet of *Individual Entrepreneurial Aptitude (IEA)*.[5] The results of recent empirical studies – which do not focus on entrepreneurship – suggest that men are more competitively inclined than women and Niederle and Vesterlund (2007, p.1067) conclude that "women shy away from competition and men embrace it". Consequently gender differences in competitiveness may result in gender differences in *IEA* which in turn may provide an explanation for the gender gap in entrepreneurship. In order to investigate whether *IEA* does merely influence the general desire to be self-employed or whether it does also directly affect the decision to take steps to start a new business, we distinguish between *latent* and *nascent entrepreneurship*.[6] Finally, we do not only analyze the relationship between personality traits and entrepreneurship at the individual level as done in previous research but we also examine whether within-country variation in entrepreneurial activities (e.g. self-employment rates) of men and women is related to the within-country variation in our aggregate *IEA* measures of men and women.

Our empirical analysis at the individual level is based on the "Flash Eurobarometer Entrepreneurship 2009" which is a general population survey conducted at the request of the Directorate General (DG)

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[2] Individuals who prefer being self-employed are called *latent* entrepreneurs (Blanchflower et al. 2001, Gohmann 2010), while individuals who are actually taking steps to start a business are called *nascent* entrepreneurs (Davidsson, 2006).

[3] A renewed interest in the relevance of personality traits cannot only be observed in entrepreneurship research. Recently, economists have studied the effects of personality traits on various socioeconomic outcomes (see Borghans et al. 2008).

[4] Competitive aggressiveness is an important dimension of Entrepreneurial Orientation construct introduced by Covin and Slevin (1989, 1990). However, empirical studies on EO focus on the firm-level, whereas our study strictly focuses on the individual level.

[5] We follow Rauch and Frese (2007) who argue that especially personality traits that can be matched to tasks of entrepreneurs are relevant for entrepreneurship. The results of their meta-analysis suggest that especially task-matched traits are correlated with entrepreneurial behavior.

[6] In a similar way Verheul et al (2011) treat the entrepreneurial process as a two-step procedure and differentiate between the cognitive stage of 'wanting it' and the behavioral stage of 'doing it'.

"Enterprise and Industry" of the European Commission. People in 32 European countries plus China, Japan, South Korea, and the US were surveyed at the end of 2009. In order to empirically investigate the relationship between personality and entrepreneurship, we employ an *IEA* measure which comprises eight personality traits that can be matched to the tasks of entrepreneurs in the early stage of the entrepreneurial process: *autonomy, risk taking, innovativeness, proactiveness, competitiveness, general optimism, general self-efficacy,* and *internal locus of control.* DG "Enterprise and Industry" kindly allowed us to include items that measure *Individual Entrepreneurial Aptitude* (*IEA*). Furthermore, the dataset contains information about interviewees' preferences for being self-employed (latent entrepreneurship), start-up activities (nascent entrepreneurship), income satisfaction, and personal characteristics, e.g. age, education or employment status. Our empirical analyses are based on a sample of 5541 women and 4449 men from 36 countries. For our country-level analysis we also obtain data from other data sources (e.g. EUROSTAT labor force survey) to test the validity of our results.

Our results suggest that *IEA* is a robust predictor of *male as well as female* latent and nascent entrepreneurship. Men and women who score high on *IEA* are more likely to have a preference for being self-employed and have a higher probability of being nascent entrepreneurs. While our results do not point to gender differences with respect to the magnitude of the *effect* of *IEA,* the results of a decomposition analysis indicate that gender differences in the *level* of *IEA* contribute significantly to the gender gap in entrepreneurship. This result is confirmed by the results of a country-level analysis which shows that the within-country variation in entrepreneurial activities of men and women is significantly related to the within-country variation in our aggregate measure of *IEA* of men and women. The major reason for women's significantly lower level of *IEA* is their lower level of competitiveness. In 32 countries the average score of competitiveness is significantly lower for women as compared to men. This result is in line with the results of experimental studies suggesting that "men are more competitively inclined than women" (Gneezy 2009, p. 1637).

The remainder of our study proceeds as follows. Section 2 explains the theoretical framework of our study. Section 3 describes the empirical approach, the data source, and the measurement of variables. Descriptive statistics and empirical results are presented in Section 4. The results and limitations of our study are discussed in Section 5. Section 6 concludes.

2. Literature and Hypotheses Development

In this section we first discuss the relationship between *IEA* and entrepreneurship in general and explain the potential influence of *IEA* on latent and nascent entrepreneurship. Next, we show how *IEA* may explain the gender gap in entrepreneurship. In particular, we argue that differences in the level of

IEA may explain difference in latent and nascent entrepreneurship among men and women. Finally, we refer to the literature pointing to differences between female and males with respect to personality traits where we focus on two personality traits, namely risk tolerance and competitiveness.

2.1 *IEA* and the Gender Differences in Latent and Nascent Entrepreneurship

In order to explain how *IEA* may affect the individual decision to engage in business creation activities we make use of a simple occupational choice model. For the sake of simplicity, we assume that individuals can only choose between two occupations: self-employment and wage employment. Furthermore, we follow Gimeno et al. (1997) and Gohmann (2010) and assume that the decision to switch from one occupation to another is negatively related to the *costs inherent in switching*. Self-employed individuals who want to switch to wage employment take into account the efforts and expenses associated with job searches and retraining (Gimeno et al. 1997) and employees who want to switch to self-employment take into account the cost of starting a new business (Blanchflower et al. 2001).

Assume that an individual in wage employment (*w)* has an *expected* utility of U_{ww} if she or he remains in wage employment. Alternatively the individual can switch from wage work to self-employment (*e)* which yields the *expected* utility U_{we}. An individual decides to switch from wage work to self-employment if he following condition holds (Gohmann 2010):

$$U_{we} - U_{ww} > SC_{we} \tag{1}$$

Hence, employees tend to take steps to start a new business and become *nascent entrepreneurs* if the expected utility in self-employment (U_{we}) minus the expected utility of remaining in wage employment (U_{ww}) exceeds the cost inherent in switching (SC_{we}). Accordingly, individuals in self-employment tend to switch to wage employment if the difference between the expected utility in wage employment and the expected utility of remaining in self-employment exceeds switching cost ($U_{ew} - U_{ee} > SC_{ew}$).

However, this implies that individuals may also decide to remain in the lower utility yielding occupation (Gohmann 2010). In the presence of switching cost, an individual may remain in wage employment even if the expected utility in self-employment is higher than the expected utility in wage employment. This may explain why many employees in the industrialized countries state that they would rather prefer to be self-employed than being employee if they could choose but do never actually start a business (Blanchflower et al. 2001). For these *latent entrepreneurs* the difference between the expected utilities in self-employment and wage employment may be positive but it may *not* exceed switching cost. Switching cost may also explain why some self-employed individuals do not terminate their businesses although they would prefer being employee (Gimeno et al. 1997).

How does *Individual Entrepreneurial Aptitude* (*IEA*) influence latent and nascent entrepreneurship? We argue that *IEA* positively influences the expected utility in self-employment which implies that self-employment is more attractive for individuals with a high level of *IEA* than for individuals with a low level of *IEA*. However, a positive relationship may also exist between *IEA* and the expected utility in wage employment. Since latent and nascent entrepreneurship are determined by the difference between these two utilities, we have to make the additional assumption that an increase in the level of *IEA* leads ceteris paribus to a stronger increase in the expected utility in self-employment (U_{we}) as compared to the expected utility of remaining in wage employment (U_{ww}).This implies that the difference between the two utilities is increasing in the level of *IEA*:

$$\partial\left(U_{we} - U_{ww}\right) / \partial IEA > 0 \tag{2}$$

Hence, employees with a high level of *IEA* are more likely to be *latent entrepreneurs*, i.e. they prefer being self-employed, and are also more likely to become *nascent entrepreneurs*, i.e. they take steps to start a business.[7] Variation in the level of *IEA* may also explain why some latent entrepreneurs take steps to start a business while others do not. Especially latent entrepreneurs with a very high level of *IEA* tend to become nascent entrepreneurs because for these employees the expected utility from self-employment is very high and therefore it is more likely that the difference between the expected utility in self-employment and the expected utility of remaining in wage employment exceeds switching cost. In contrast, latent entrepreneurs with relatively lower levels of *IEA* may remain in the lower utility yielding occupation because the difference between utilities is still lower than switching cost.

Why may *IEA* lead to increase the expected utility in self-employment relative to expected utility in wage employment? The expected utilities in wage employment and in self-employment are determined by the *monetary* and *non-monetary* benefits of wage and self-employment. Results of empirical studies suggest that self-employment offers significant non-monetary benefits (Benz and Frey 2008a, b, Blanchflower 2000, Hundley 2000), whereas the monetary benefits themselves seem to be relatively low (Hamilton 2000). We argue that especially the *non*-monetary benefits of self-employment are higher for individuals who rank high on *IEA* than for individuals ranking low.

Empirical studies investigating the job satisfaction of self-employed individuals and employees suggest that the former are more satisfied with their work than people employed in firms or other organizations, because their work is more interesting and provides greater autonomy (Benz and Frey 2008a, Hundley 2000). Benz and Frey (2008b, p. 363) postulate that this may point towards the existence of 'procedural utility' which "refers to the value that individuals place not only on outcomes, as usually

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[7] Accordingly, self-employed individuals with a high level of *IEA* are less likely to prefer being employee and are also less likely to switch to wage employment.

assumed in economics, but also on the process and conditions leading to outcomes." In other words the self-employed are more satisfied with their work, because they do what they like. Many individuals might prefer self-employment to wage employment due to the *expected* gains from procedural utility. Of course, it is also possible that individuals may prefer to engage in entrepreneurial activities *within* existing organizations because of the expected gains associated with these activities. However, the procedural utility from entrepreneurial activities within existing organizations tends to be lower, because "employed persons are subject to the institution of hierarchy" whereas self-employed are their own bosses (Benz and Frey 2008a, p.453).

Psychological research emphasizes the role of person-environment interaction, where a fit can be observed between the individual's characteristics and the characteristics of the work environment (Kristof-Brown et al. 2005). It can be expected that individuals prefer work environments that match their personality (Zhao et al. 2009).

Against this background, we argue that individuals scoring high on *IEA* (*autonomy, risk taking, innovativeness, proactiveness, competitiveness, general optimism, general self-efficacy*, and internal *locus of control*) prefer self-employment because work environment of self-employed matches their personality and consequently these individuals tend to value (procedural) utility in self-employment more than individuals scoring low on *IEA*. For instance, in the early stage of the entrepreneurial process the entrepreneur usually has to bear risks, has to make autonomous decisions or may face fierce competition when introducing new products to markets. If an individual dislikes the situations in which she or he has to compete with others, does not like to take risks or feels uncomfortable when making autonomous decisions, the expected procedural utility from being self-employed tends to be lower than the expected procedural utility in wage employment. Based in this theoretical consideration we hypothesize a positive relationship between *IEA* and entrepreneurship and in particular that the higher an individual's level of *IEA* the higher her probability to be latent or nascent entrepreneur.

So far, we have discussed the general relationship between *IEA* and entrepreneurship without taking into account gender differences. However, empirical studies show that men are more likely to engage in business creation activities than women. According to our simple occupational choice model men (*m*) will be more likely to switch from wage employment to self-employment than women (*f*) if the following condition holds:

$$U_{we}^{m} - U_{ww}^{m} - S_{we}^{m} > U_{we}^{f} - U_{ww}^{f} - S_{we}^{f} \iff U_{we}^{m} - U_{ww}^{m} - (U_{we}^{f} - U_{ww}^{f}) > S_{we}^{m} - S_{we}^{f} \qquad (3)$$

On the one hand, a gender gap in business creation activities may exist because women may face higher switching cost than men. For instance, switching cost may be relatively high for women because of

institutional barriers, like access to finance and social norms, which may hinder their engagement in entrepreneurial activities (KIapper and Parker 2010). On the other hand, even if identical switching cost are assumed, men are more likely to start businesses than women if the difference between expected utility in self-employment and expected utility of remaining in wage employment is larger for men as compared to women.

Since we argue that the difference between expected utility in self-employment and the expected utility in wage employment is increasing with the level of *IEA*, it is straightforward to argue that differences between men and women with respect to latent and nascent entrepreneurship may be explained by gender-specific *effects* and gender specific *levels* of *IEA*. We *first* focus on gender specific *effects* and consider the case that the effect of *IEA* on women may be lower as the effect of *IEA* on men or even may not exist at all:

$$\partial(U_{we}^{m} - U_{ww}^{m})/\partial IEA^{m} \quad > \quad \partial(U_{we}^{f} - U_{ww}^{f})/\partial IEA^{f} \quad \geq 0 \tag{4}$$

This implies that the personality traits measured by *IEA* may be an important determinant of latent and nascent entrepreneurship among men but may not be very relevant for latent and n5ascent entrepreneurship among women. Personality traits can affect behavior only if situations do not constrain individuals but allow the expression of individual differences (Rauch and Frese 2007, p. 372). Women's occupational choice may be constrained, for instance, by gender stereotypes and gender-specific segregation in the labor market. While some jobs are viewed as "men's work", other jobs are viewed as "women's work" (Heilman 1997). The results of an empirical analysis conducted by Gupta et al. (2009) suggest that self-employment is indeed perceived as a masculine field and as "manly" work. The (perceived) social value of the employment status as well as self-perceptions are supposed to be a crucial factor for the decision to enter into entrepreneurship and may bias women in valuation of their capabilities to start a business (Bruin et al 2007). Therefore, *IEA* may be less relevant for women's decision to start a business if women generally associate 'female occupations' with a higher utility than 'male occupations', irrespective of their level of *IEA*. In contrast, personality may be very relevant for the men's engagement in entrepreneurial activities since their decision to start a business is not constrained by gender stereotypes. Hence, a gender gap may exist, even if the *level* of *IEA* does not systematically differ between men and women. Accordingly, we hypothesize the strength of the relationship between *IEA* and entrepreneurship to differ between men and women.

Second, it can be argued that women tend to have a lower *level* of *IEA (IEA^m>IEA^f)*. This implies that personality is less favorable for entrepreneurship among women. In this case, a gender gap may exist even if the magnitude of *effect* of *IEA* is identical for men and women. Gender differences with respect to

personality have been analyzed in several studies and we will discuss this literature in more detail in the next section. Hence, we postulate that the gender gap in entrepreneurship can be explained by the variation of *IEA* between men and women.

2.2 Gender Differences in Personality Traits

Our simple occupational choice model suggests that gender differences in the level of *IEA* may explain the gender gap in entrepreneurship. Furthermore, we argue that *IEA* comprises several personality traits that can be matched to the tasks of entrepreneurs. This implies that men and women differ systematically in all traits of the *IEA* construct or they may only differ in some of these personality traits. For instance, Wilson et al. (2007) find that women lack behind men in their level of self-efficacy. Concerning the gender difference in locus of control findings are ambiguous, as men are predominantly suggested to be more internally controlled as compared to women which holds across different domains, but there is also a considerable number of empirical studies which do not find a significant gender difference in locus of control (Sherman et al. 1997, Feingold 1994). However, the results of empirical studies on personality traits suggest that especially two personality traits differ significantly between women and men: women tend to be more risk averse and less competitive as compared to men (Croson and Gneezy 2009 for a literature review).

Risk tolerance is the crucial determinant for entrepreneurial activities as individuals with a higher tolerance for risk are more likely to become entrepreneurs. They are willing to bear risks associated with the entry into self-employment (Kihlstrom and Laffont 1979, Knight 1921). In our study we consider risk tolerance as an individual's general willingness to take risks, a given trait-like attitude which is independent from situational contexts (Mullins and Forlani 2005). This definition is supposed to be 'super-ordinate to more domain-specific risk attitudes' (Ronay and Kim 2006, p.399). Dohmen et al. (2011) examine the measurement of risk attitudes using questions asking people about their *general* willingness to take risks and questions about risk attitudes in specific contexts, such as car driving, financial matters or sports. They present empirical evidence suggesting that the general measure of risk tolerance is the best all-round predictor of risky behavior.

Although most studies find that women are more risk averse than men, some studies report other findings. For example, Kogan and Dorros (1978) find men to exceed the risk taking propensity of women significantly only in courses of competitive play and therefore suggest a link between a competitive spirit and risk taking propensity. However, inconsistent results can often be explained by artificial settings, which tend to underestimate the gender differences in risk tolerance as compared in real life situations (Ronay and Kim 2006). Based on a meta-analysis of 150 studies, comprising different data collection

methods (self-reports, hypothetical choices and observed behavior), Byrnes et al. (1999) conclude that men have a higher risk tolerance as compared to women. Hence, we expect that men have a higher level of risk tolerance than women – and therefore ceteris paribus a higher level of *IEA* – which implies that they are more likely to engage in entrepreneurship.

In contrast to risk tolerance, *competitiveness* is typically not emphasized in studies dealing with the entrepreneurial personality. This surprising, as the construct is well established in psychological research literature and already Schumpeter stressed competitiveness as major motivation for individual engagement in entrepreneurship. Schumpeter (1934, p. 93) states that "there is the will to conquer; the impulse to fight, to prove oneself superior to others, to succeed for the sake, not for the fruit of success, but of success itself". Competitiveness can be considered as a kind of *competitive spirit*, the affinity to situations which are characterized by competition. Helmreich and Spence (1978) analyzed competitiveness as a dimension of the need for achievement construct.[8] It is extensively discussed in the field of sports (e.g. Gill 1986; Maxwell and Moore 2007), and investigated under different facets of the constructs, like e.g. goal or interpersonal competitiveness (Griffin-Pierson 1990), or so called hypercompetetiveness (Ryckman et al. 1990).

Recent empirical studies dealing with gender differences in competitiveness make use of experiments to analyze the self-selection of women and men into competition versus into a non-competitive alternative. Niederle and Vesterlund (2007) for instance, find that 73% of the male participants in their experiment select themselves into a competitive situation where the female rate was no more than 35%. The authors pronounce that this difference cannot be explained by performance, but by differences in the *preference* for competition.[9] Analyzing the behavior of men and women in TV game shows Hogarth et al (2011) find that women quit voluntarily competitive games more often as compared to men and that voluntary withdrawals by women rise if the proportion of female to male competitors decreases. The results of an experimental study by Shurchkov (2011) suggest that women are significantly less likely to compete when task stereotypes and time constraints are present and choose competition more often if both sources of pressure a removed.

Other studies focus on samples consisting of children to reduce the influence of parental role models, education and culture, (Sutter and Rützler 2010, Gneezy and Rustichini 2004) and confirm a gender difference in competitiveness prevailing already at young age. Sutter and Rützler (2010) designed an experiment of a running competition, based on a sample of children between three and eight years old

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[8] They identified competiveness as a dimension after factor analyzing the 23-item achievement motivation scale of their 32-item Work and Family Orientation Questionnaire (WOFO).

[9] Other studies show that men also improve their performance under competitive situations as compared to the non-competitive alternative (e.g. Gneezy et al. 2003), especially in intergroup competition, while such an effect cannot be observed for women (Van Vugt et al. 2006).

from Austrian Kindergartens and elementary schools. The children had to decide if they run on their own or if they prefer running against another coequal child of their age-group. Across all age-groups, they found girls to be about 15% less willing to join competition as compared to boys. Moreover, this gender difference in competitiveness is reported for three to four years old children. The authors conclude that the gender difference in competitiveness occurs very early in life.

Recent studies on competitiveness argue along evolutionary or sociobiological theories (Van Vugt et al. 2006, Gneezy and Rustichini 2004) as well as cultural conditions are supposed to determine one's competitive behavior (e.g. Gneezy et al. (2009) based on their sample of the patriarchal Maasai in Tanzania and the matrilineal Khasi in India). Booth and Nolan (2011) and Booth and Nolan (2009) also point to "nuture", investigating students younger than 15 years from publicly founded single-sex schools and coeducational schools. They find the girls' level of competitiveness as well as their level of risk taking to depend on the presence of boys, showing that girls from single sex schools are as competitive as boys.

Taken together, it seems that women are more likely to avoid competition. Hence, we argue that the expected utility in self-employment tends to be lower for women as compared to men, because self-employment is associated with competition and we expect that men have a higher level of *competitiveness* than women – and therefore ceteris paribus a higher level of *IEA* – which implies that they are more likely to engage in entrepreneurship.

3. Method

In order to analyze the determinants of the gender gap in entrepreneurship we proceed in two steps. In a first step, we examine the influence of *IEA* on latent and nascent entrepreneurship. To do so, we make use of individual-level data and control for several factors that may affect the preference for self-employment and the decision to take first steps to start a business, which are e.g demographic background of the individual or environmental effects. In a second step, we conduct analysis based on country-level data in order to check the validity our findings. Here, we make use of different measures of entrepreneurial activity obtained from different data sources and relate them to our *IEA* measure to analyze whether within-country variation in men's and women's engagement in entrepreneurial activities is related to the within-country variation of men's and women's distributions of *IEA* scores.

3.1 Data

Individual data are obtained from the *Flash Eurobarometer (Flash EB) "Entrepreneurship"* 2009. This general population survey was conducted by *EOS Gallup Europe* in 36 countries at the end of 2009

as a telephone interview. For each country a random sample of 500 or 1000 individuals was generated, representative on the national level for the population aged fifteen years and above. Approximately 26.000 people were surveyed. In regression analyses, we focus on the population aged 15 to 64 years, excluding students and retirees. Plausibility checks and the exclusion of observations due to missing values for relevant variables lead to a final sample of 9990 individuals, 5541 women and 4449 men.

For country-level analyses, we make use of the Flash EB 2007, the Labor Force Survey 2009 provided by EUROSTAT, and the Global Entrepreneurship Monitor 2006. Since these measures are not available for all 36 countries where *IEA* data are provided for by the *Flash EB 2009*, country-level analyses are based on maximum 33 countries.

3.2 Variables

3.2.1 Individual Entrepreneurial Aptitude

The measure of *Individual Entrepreneurial Aptitude* is defined as a group of eight personality traits that can be matched to the tasks of entrepreneurs. Each of the eight personality traits is measured by one single item because of restrictions concerning the length and the cost of the survey.[10] We refer to different validated scales, predominantly provided by psychological research and include – when possible – items already tested in an entrepreneurial context. As the Flash EB was addressed to the general population, the statements had to be plain for everyone, independent of social and educational background or work experience. Moreover, simplicity of items was advantageous for the translation of statements into the various languages, administrated by the EOS Gallup Group. The item-scale was adjusted to the methodology of the Flash EB, which means that each item is measured a 4-point scale where interviewees had to state if they *strongly agree, agree, disagree* or *strongly disagree* with the respective statement.

Since we are interested in the *joint effect* of personality traits, we measure *Individual Entrepreneurial Aptitude* by creating a *summed index* from the latent construct's indicators. Since theoretical considerations do not allow us to draw conclusions on the relative importance of certain personality traits, the index is computed as the *un*weighted sum of scores of all indicators. Accordingly, we define *IEA* as a formative construct where causality runs from the measurements to construct. Since each indicator represents an essential part of the underlying construct, indicators are not interchangeable. We do not assess the internal consistency of our indicators but assess the *external validity* by examining how well our *IEA*-Index relates to our measures of latent and nascent entrepreneurship (Diamantopoulos and

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[10] *DG "Enterprise and Industry"* kindly allowed us to include statements measuring personality traits that form *IEA*. However, in order to increase the expected response rate and to keep the costs of the survey down, we agreed to keep the list of questions (statements) as short as possible and included only *eight* statements each of them measuring a different personality trait within our *IEA* construct.

Winklhofer 2001, p. 272).[11] Building a summed index is accompanied with some problems as it implicitly adds more weight to highly correlated indicators (Covin and Wales 2011, p. 10, Wilcox et al. 2008, p. 1022) and leads to a loss of information if items are uncorrelated (Howell et al 2007). This should be less of a concern with our *IEA* measure since the correlation coefficients between all eight items range from 0.15 to 0.32 and are statistically significant. Hence, items are neither strongly correlated nor completely uncorrelated. This suggests that each item measures another personality trait. As all items are positively directed, we can interpret the *IEA*-Index in the way that the higher the summed score the higher the *Individual Entrepreneurial Aptitude*. The maximum score of each item is 4 if interviewees strongly agree with the respective statement and the minimum is 1 if they strongly disagree. Consequently, the *IEA*-Index ranges between the value 8 at minimum and 32 at maximum. In order to test a non-linear relationship between the level of *IEA* and entrepreneurship, we do not include the *IEA-Index* as continuous variable into regression analyses, but divide the measure into five categories: an *IEA* score of *8 to 20, 21 to 23, 24 to 26, 27 to 29* and *30 to 32*. The items measuring *IEA* are presented in Table 1.

Insert Table 1: The Multidimensional Construct of Individual Entrepreneurial Aptitude (IEA) here

3.2.2   Individual-Level Variables

Dependent Variables

General preference for self-employment: The Flash EB comprises of information about employment-status preference. The interviewees report whether they would prefer – if they could choose – "*being an employee*" or "*being self-employed*". The computed dummy variable was interpreted in prior research as an indicator for *latent entrepreneurship* or as *entrepreneurial spirit* (Blanchflower et al. 2001).

Nascent Entrepreneurs: Conducting individual-level analysis, we focus on the early stage of the entrepreneurial process and therefore proxy entrepreneurial activity by nascent entrepreneurship. The Flash EB "Entrepreneurship" contains a filter question which asks whether respondents have ever started a business or are taking steps to start one. Those who answer this question with 'yes' are asked to choose between five statements that best describes their situation. One statement refers to current start-up activities while the other statements refer to past start-up activities. We construct a dummy variable that takes the value one if the respondent is *currently taking steps to start a business* and zero otherwise. We call individuals reporting such early stage start-up activities nascent entrepreneurs. Measuring nascent

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[11]Other studies on the measurement of personality follow a different approach and assume reflective constructs, where the causality runs from the construct to the measures. Reflective indicators are interchangeable, high correlations between indicators are desirable, and assessment of their internal consistency is important (e.g. high Cronbach's alpha). Assessment of internal consistency is not appropriate, however, for formative indicators.

entrepreneurship by self-reported current start-up activities is common practice and used, for example, in the Global Entrepreneurship Monitor (GEM) or the Panel Study of Entrepreneurial Dynamics (PSED).

Control Variables

Income satisfaction (opportunity cost): Theoretical considerations point to the relevance of opportunity cost, i.e. utility in wage employment. We argue that opportunity costs of switching from wage employment to self-employment are high if an individual is very satisfied with current household income and are low if an individual is dissatisfied with the current income. The Flash EB does not provide any information about the absolute annual income, but about the interviewee's feelings about the household income, ranging from *"live comfortable on the present income"* to finding it *"very hard to manage on the present income"*. The answer provides information about the "value of money" which differs between individuals (van Praag 1985). A further advantage of this measure is that the respondent is not asked to assess his or her satisfaction with personal income but with *household* income, which means that incomes of other family members and family size are taken into account.

Social status of entrepreneurs measures the social status assigned to entrepreneurs by the respondent relative to the social status assigned to other proposed occupational groups. Thus, the higher the computed value, the higher the respondent values entrepreneurs compared to the other proposed occupational groups on average.

Obstacles to entrepreneurial activity: We further control for several burdens that might hinder entrepreneurial activity. These burdens are the lack of information about how to start a business, lack of financial support, and administrative burdens. The latter two obstacles are proposed to be determinants of entrepreneurship by Grilo and Thurik (2005, 2008). Each obstacle is integrated as a binary variable into our regression and was set to 1 if the respondent strongly agrees with the statement that it is difficult to start a business because of a particular obstacle, and otherwise set to zero.

Further Controls: We control for *age* by a set of dummy variables and for *education* by age when finished fulltime education as well as for *parental self-employment*, supposed to influence self-employment preference and entrepreneurial activity (Parker 2004). Age and education are stated by the respondant. Parental self-employment is proxied by a dummy-variable that is set to one, if at least one parent is self-employed, otherwise the value is set to zero. In addition, a set of dummies for *occupation are* included, because entrepreneurial activities are more likely to be observed for some occupations in comparison to others (Evans & Leighton 1989). Therefore data is broken down to professions within occupational subgroups. Further, dummy variables for the *area* (metropolitan, urban or rural zone) and *country* where the respondent lives in are included in order to control for country-specific effects, such as culture, political system and economic conditions.

Definition of variables (Table A 1) and summery statistics of variables used in individual-level analysis (Table A 2) are presented in the Appendix.

3.2.3 Country-Level Variables

The dependent variables used in country-level analysis are latent entrepreneurship and three different measured for entrepreneurial activity. Data for latent entrepreneurship are obtained from the previous wave of the Flash Eurobarometer "Entrepreneurship" 2007. Entrepreneurial activity is measured by the share of self-employment, the share of employers, both obtained from the Labor Force Survey 2009 provided by EUROSTAT, and the TEA index obtained from the Global Entrepreneurship Monitor 2006. Aggregated data measuring *IEA* reflect the fraction of women (men) in a country who have an *IEA* score of the respective category (*IEA* score of *8 to 20, 21 to 23, 24 to 26, 27 to 29* and *30 to 32)*.We control for the perceived lack of financial support. Men and women may differ in their perception of difficulties associated with the access to finance. Alternatively, access to finance may be a higher challenge for women as compared to men because of gender discrimination in the allocation of financial support. Data are obtained from the Flash Eurobarometer "Entrepreneurship" 2009. We further control for the general level of participation in the labor market by including the employment rate in our analysis, where data are obtained from the Labor Force Survey 2009 provided by EUROSTAT. Definition of variables (Table A 1) and summary statistics of country-level analyses (Table A 3) are presented the Appendix.

3.3 Empirical Model

3.3.1 Individual-Level Analysis

In order to analyze the relationship between *IEA* and latent entrepreneurship and nascent entrepreneurship we make use of binary probit models. The binary dependent variable measuring latent entrepreneurship takes the value of one if an individual prefers being self-employed and is zero otherwise. The dependent variable measuring nascent entrepreneurship takes the value of one if an individual is currently taking steps to start a business and is zero otherwise. In the probit model for latent entrepreneurship the explanatory variables are the *IEA* measure, a set of age dummies, education, a dummy for parental self-employment, social status of entrepreneurs, dummies for income satisfaction, a set of occupation dummies, and a set of country dummies, which control for country-specific fixed effects. When examining the relationship between *IEA* and nascent entrepreneurship, we also control for obstacles to start-up activities which may increase the costs inherent in switching from wage employment to self-employment.

Moreover, we quantify the contribution of *IEA* to the gender gap in entrepreneurship. In doing so, we make use of the Blinder-Oaxaca decomposition technique which has been extended by Fairlie (2006) to

logit and probit models. This allows us to decompose the gender gap in the average value of the dependent variable *Y* into the effect of group differences in measurable characteristics *(characteristics effect)* and the *coefficients effect*, incorporating the unexplained part of group differences by the model:

$$Y_{lm} - Y_{lf} = \left[\hat{P}(\beta_{lp}, X_{lm}) - \hat{P}(\beta_{lp}, X_{lf}) \right] + \left[\hat{P}(\beta_{lm}, X_{lm}) - \hat{P}(\beta_{lp}, X_{lm}) \right] + \left[\hat{P}(\beta_{lp}, X_{lf}) - \hat{P}(\beta_{lf}, X_{lf}) \right] \quad (5)$$

$$Y_{nm} - Y_{nf} = \underbrace{\left[\hat{P}(\beta_{np}, X_{nm}) - \hat{P}(\beta_{np}, X_{nf}) \right]}_{characteristics-effect} + \underbrace{\left[\hat{P}(\beta_{nm}, X_{nm}) - \hat{P}(\beta_{np}, X_{nm}) \right] + \left[\hat{P}(\beta_{np}, X_{nf}) - \hat{P}(\beta_{nf}, X_{nf}) \right]}_{coefficients\ effect} \quad (6)$$

where $Y_{lm} - Y_{lf}$ and $Y_{nm} - Y_{nf}$ represent the gender gaps in latent (*l*) and nascent (*n*) entrepreneurship and $\hat{P}$ represents the average predicted probabilities of latent entrepreneurship (equation 5) and nascent entrepreneurship (equation 6) for both genders (*m,f*). The characteristics influencing latent entrepreneurship among men and woman are X_{lm} and X_{lf} and the characteristics influencing nascent entrepreneurship among men and women are X_{nm} and X_{nf}. The parameters of the pooled estimations of women and men are β_{lP} and β_{nP}. The parameters of separate estimations for men and women are: $\beta_{lm}, \beta_{lf}, \beta_{nm}$, and β_{nf}. The characteristics effect captures the differences the predicted probabilities due to gender differences in the distribution of characteristics, e.g. levels of *IEA*, when pooled parameter estimates are used. The coefficient effects captures the differences in predicted probabilities due to differences in the estimated coefficients when characteristics of men are held constant (see Leoni and Falk 2010).

3.3.2 Country-Level Analysis

In order to check the validity of our results we do not only focus on individual data of the Flash EB Entrepreneurship 2009 but obtain country-level data on entrepreneurship from other sources (e.g. EUROSTAT labor force survey). If a relationship between *IEA* and female and male entrepreneurship exists at the individual level it is straightforward to examine this relationship using aggregate data at the country-level. We argue that countries where women tend to score significantly lower on *IEA* as compared to men exhibit a larger gender gap in entrepreneurship than countries where the gender difference in *IEA* is less pronounced. Hence, we investigate whether within-country variation in entrepreneurship among women and men is related to within-country variation in *IEA* of women and men.

Suppose that a dependent variable *E* reflecting entrepreneurship and the explanatory variable *IEA* are observed separately women (*f*) and for men (*m*) for each country *j* for. The simple linear relationship is given by:

$$E_{jg} = \alpha + \gamma IEA_{jg} + \mu_j + v_{jg} \quad for \quad j = 1,...,36 \quad and \quad g \in \{f, m\} \tag{7}$$

where μ_j is a country-specific fixed effect capturing all unobservable effects influencing entrepreneurial activities of women and men in country j, e.g. institutions, policy, and the like. All other factors are captured by the error term v_{jg}. By employing the fixed effects estimator, we focus on the within-country variation (between men and women) and ignore the between-country variation.

In order to check the robustness of results, we make use of various dependent variables, i.e. self-employment rate, start-up activity, and latent entrepreneurship and we combine different datasets to examine the validity of our results. Self-employment rate is obtained from the Labor Force Survey 2009, the total early startup activity is obtained from Global Entrepreneurship Monitor 2006 and the share of latent entrepreneurs is taken from the Flash Eurobarometer 2007. We control for men's and women's access to finance since previous research suggests that limited access of women to external finance may contribute to the gender gap in entrepreneurship (Klapper and Parker 2010). Moreover, we control for the general employment rate among men and women to avoid an omitted variable bias. Entrepreneurship as well as *IEA* may be correlated with labor market conditions which tend to be different for women and men. It is very likely, for instance, that women's ability to participate in labor market and to engage in entrepreneurship is determined by country and gender-specific conditions, e.g. child care availability.

4. Results

4.1 Gender Difference in *IEA* – Descriptive Statistics

To set the scene, we report the gender difference in *IEA* and the gender differences in the single personality traits forming *IEA* for the total population (individuals aged 15 and above). The sample consists of 22554 individuals, 9627 men and 12927 women, which is the maximum number of individuals where full information about the *IEA* measure is available.

Figure 1 shows the distributions of our *IEA* measure, divided into 5 categories. The figure illustrates the share of women and men having a sum of scores of the personality traits within the respective *IEA* category. The majority of individuals has an *IEA* score from 21 to 26. Only a small fraction of individuals in our sample belongs to the group of top scores (*IEA* score of 30 to32) which may corroborate Schumpeter (1934) who states that entrepreneurial aptitude is present in only a small fraction of the population. The average *IEA* score of women is lower than the average *IEA* score of men. As compared to men, women are overrepresented in the lower *IEA* score categories and underrepresented in the higher *IEA* score categories.

Insert Figure 1: Distribution of IEA scores of Men and Women here

Figure 2 illustrates the shares of the female and male population who *strongly agree* with the statement measuring the respective personality trait, i.e. the share of individuals who are considered as very strong in personality traits forming *IEA*. The figure shows the variation between the personality traits as well as variation between men and women concerning top-scorers: First, we find that individuals, men as well as women, tend to score very high in some dimensions whereas the share of top scorers is relatively low for other dimensions. For example, the average share of strong agreement is more than 30% in case of internal locus of control and above 25% in case of autonomy and general optimism. In contrast, a strong risk tolerance and competitiveness are present only in a small fraction of the population. Second, we find women to score lower than men in each personality trait measuring *IEA*. The willingness to take risks and foremost competitiveness are those traits where we find the strongest differences between men and women.

Insert Figure 2: Share of Top-Scorers in the Single Personality Traits forming IEA here

Next we examine whether the differences between men and women are statistically significant at the country-level. To do so, we compute the average score of *IEA* for each country and each personality trait for female and male population. Table 2 reports the differences in means for each country of our sample and the difference in means for member states of the EU15 and EU27 and for the full set of 36 countries. As can be seen from the table, women and men differ significantly in their level of *IEA* in 26 of 36 countries (at least at the 5% level), whereby the average scores of the female population are persistently lower than the average scores of men. The main gender differences can be observed for *competitiveness* and *risk tolerance*. Women's average scores of competitiveness are statistically significantly lower than average scores of men in 32 countries of our sample. Risk tolerance of women is also lower than risk tolerance of men in the majority of countries. Concerning the other personality traits women still tend to score lower as compared to men, but differences are often small and in many cases they do not turn out to be statistically significant.

Since we measure *IEA* by creating a *summed index* from the scores of its eight dimensions, gender differences in *IEA* differences can be explained by the contributions of the gender differences in the single personality traits forming *IEA*. Here, the descriptive statistics point to the special relevance of competitiveness and risk tolerance for gender differences in *IEA*. Concerning the values reported for the total sample as well as for the member states of the EU27 and the EU15, about 40% of the gender differences in *IEA* are due to gender differences in competitiveness. If one adds gender differences in risk tolerance, about 60% of the differences are due to differences in competitiveness and risk tolerance.

Nevertheless, the other traits measuring *IEA* are also important, as they jointly capture about 40% of the difference in *IEA* between women and men.

Insert Table 2: Differences between Men and Women in Average Scores of IEA and Single Personality Traits here.

4.2 Individual-Level Analyses

4.2.1 IEA and the Gender Gap on Latent Entrepreneurship

Investigating the relationship between *IEA* and latent entrepreneurship we run probit estimation as dependent variables are binary variables and report marginal effects. We estimate separate probit models for three subsamples to check for the robustness of our results (Table 3). The first sample comprises of individuals between 15 and 64 years who are either employees or seeking a job or are looking after the home (*employable population*), retirees and individuals in fulltime education are excluded. The sample comprises of 6559 individuals, 4064 women having 36% latent entrepreneurs among them, and 2495 men where the share of latent entrepreneurs is about 41% (regressions (1)). One might argue that especially people who are looking after the home may be very different from employees. People looking after the home may not be interested in self-employment at all and may also have a low preference for being employee. Therefore, the second subsample does only comprise *employees* (regressions (2)), where about one third of female employees (928 women) and about 41% of male employees (882 men) are latent entrepreneurs. In order to avoid endogeneity problems we exclude all individuals with start-up experience from these two samples. It could be argued that start-up experience may influence an individual's *IEA* and latent entrepreneurship and including start-up experience as an explanatory variable may also lead to biased results due to reverse causality.

The third subsample is restricted to individuals who report that they are self-employed (regressions (3)).[12] This sample allows us to investigate preference for self-employment among men and women who have already selected themselves into self-employment. These estimations are based on a sample of 1438 self-employed, 555 women and 883 men. The share of self-employed individuals who prefer being employee is 22.62% among women and about 15% among men.

To investigate the gender effect on latent entrepreneurship we include a dummy variable for gender in the pooled sample of women and men (regressions (a)). In regression (b) we include our *IEA* measure in order to investigate its contribution to the gender gap in latent entrepreneurship. To analyze whether *IEA* is an important determinant of *female and male* latent entrepreneurship, we run separate regressions for the subsample of women (regressions (c)) and men (regressions (d)).

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[12] All individuals in this sample have entrepreneurial experience. If this affects *IEA* it can be expected that the effect is similar for all self-employed.

First, estimation results show that women are less likely to prefer self-employment as compared to men and the estimated marginal effect of the gender dummy remains statistically significant if we control for *IEA*. For women, the estimated probability is about 8 percentage points lower as compared to men to be latent entrepreneur holding the other variables constant at their mean (regressions (1a) and (2a)). Inclusion of our *IEA* measure leads to a decrease of the negative effect of being female (regressions (1b) and (2b)). However, this decrease is rather small as estimation results display a decrease of 0.57 percentage points concerning the employable population and of 0.65 percentage points concerning employees.

Second, estimation results confirm the hypothesized positive relationship between *IEA* and latent entrepreneurship. Results point to a strong positive relationship between *IEA* and male as well as female latent entrepreneurship. The coefficients of the dummy variables measuring different levels of *IEA* turn out positive and statistically significant predominantly at the 1% level for an *IEA* score of 24 and above. For a very high score of *IEA* (30 to 32) the effect is statistically significant at the 1% level throughout all regressions (regressions (1) and (2)). For instance, an "average" female (male) employee's estimated probability to be latent entrepreneur increases by 24.5 percentage points (19.9 percentage points) if *IEA* is very high (*IEA* score of 30 to 32) as compared to a very low score of *IEA* (*IEA* score of 8 to 20) (regressions (2c) and (2d)). Hence, the magnitude of this marginal effect of *IEA* is remarkable.

Concerning the effect sizes of each *IEA* category with respect to gender, the impact of *IEA* on male latent entrepreneurship tends to be predominately stronger than on female latent entrepreneurship. However, we do not find the *effect* of *IEA* on latent entrepreneurship to differ significantly between men and women as hypothesized in Section 2, as confidence intervals (95%) of the marginal effects presented in Table 3 do overlap to a large extent. Although not reported here, the inclusion of interaction terms does also not suggest the effect of *IEA* to differ statistically significant between men and women. Estimation results of probit regressions including interaction terms of the gender dummy and dummy variables measuring *IEA* categories show that coefficients of interaction terms are not statistically different from zero (results not shown). Using linear probability estimation to investigate partial interaction effects, results do not point to a statistically significant lower effect of *IEA* on the probability of female latent entrepreneurship as compared to male latent entrepreneurship.[13]

Next, we investigate the desire to remain in self-employment and do therefore consider the sample of self-employed individuals, agriculture excluded (regressions (3)). First, we find that self-employed women are significantly less likely to prefer self-employment as compared to their mail counterpart. The estimated probability of a preference for self-employment is 7.42 percentage points lower for self-employed women

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[13] Variance inflation factors computed after OLS estimations of linear probability models do not suggest multicollinearity of explanatory variables.

as compared to self-employed men (regression (3a)) falling to about 6% controlling for personality traits. According to our simple occupation choice model, this would imply that women are more likely to switch from self-employment to wage employment as compared to men if costs inherent in switching from self- to wage employment decrease. Second, the effect of *IEA* on self-employment preference turns out statistically significant on the 1% level for each level of *IEA* in each regression (regressions (3)). This implies that self-employed are more likely to have a preference for being employee if their level of *IEA* is very low. For instance, defining the an *IEA* score of 24-26 as reference category, estimation results show that individuals with an *IEA* score below 24 are more (less) likely to prefer being employee (self-employed) and individuals with a very high *IEA* are less (more) likely to prefer being employee (self-employed) as compared to the reference category (level of significance at least 5%, results not shown).

Estimation results further point to unobserved environmental effects on latent entrepreneurship, like culture or economic and political system, since country-effects fixed effects are statistically significant at the 1% level throughout all regressions.

Insert Table 3: Probit Estimation – IEA and the Gender Gap in Latent Entrepreneurship here

4.2.2   IEA and the Gender Gap on Nascent Entrepreneurship

In order to analyze the factors influencing nascent entrepreneurship we conduct probit estimation as the dependent variable is a binary variable and report marginal effects (Table 4). We focus on the employable population and therefore restrict the sample to the population of age 15 to 64 and exclude self-employed, retirees and individuals in fulltime education. The sample consists of 8352 individuals, 4918 women, having about 5% nascent entrepreneurs among them, and 3434 men, where about 8% are identified as nascent entrepreneurs. We estimate three different specifications of the probit model. First, we estimate the model without taking into account latent entrepreneurship, i.e. the preference for being self-employed (regressions (1)). Second, we control for latent entrepreneurship by including it as an explanatory variable for nascent entrepreneurship (regressions (2)). Third we restrict the sample to those individuals who state a self-employment preference (latent entrepreneurs). This allows us to investigate whether *IEA* has a direct effect on nascent entrepreneurship or whether it is fully mediated by latent entrepreneurship. If a direct effect exists for men and women, *IEA* can explain why some men and women who prefer being self-employed take steps to start a business while others do not (regressions (3)).

To analyze the gender effect on nascent entrepreneurship we consider the pooled sample of women and men in regressions (a). The impact of personality traits is investigated by including our *IEA* measure into regressions (b). We run regression analysis for the female and male population separately to

investigate whether the impact of *IEA* on nascent entrepreneurship varies between women and men (regressions (c) and (d)).

Estimation results show that being female negatively affects the probability to be nascent entrepreneur. Concerning the total sample of the employable population, women's estimated probability is 1.89 percentage points lower to be nascent entrepreneur as compared to men, statistically significant at the 1% level (regression (1a)). This is in line with findings of previous empirical studies. In contrast, after controlling for self-employment preference and *IEA*, the negative marginal effect of the gender dummy variable is only weakly significant (regression (2b)). Moreover, restricting the sample to individuals who have a preference for self-employment the gender effect decreases and turns out statistically insignificant (regression (3b)). Accordingly, the effect of *IEA* is not fully mediated by self-employment preference and estimation results suggest *IEA* to contribute significantly to the explanation of the gender gap in nascent entrepreneurship among the group of individuals with a preference for self-employment.

Our analysis confirms the hypothesized positive relationship between *IEA* and nascent entrepreneurship as estimation results point to a strong impact of *IEA* on nascent entrepreneurship. The predicted probability of being nascent entrepreneur of an average person available for labor market is increased by 14.1 percentage points if the individuals has a very high level in *IEA* (*IEA* score of 30 to 32) as compared to a very low level of *IEA* (*IEA* score of 8 to 20) (regression (1b)). Among the employable population having a preference for self-employment, the probability to be nascent entrepreneur increases by 11.2 percentage point among women and by 26.6 percentage points among men.[14]

Estimation results are ambiguous concerning whether the magnitude of the effect of *IEA* on nascent entrepreneurship differs between women and men. Although not reported here, there is a strong overlap of the 95% confidence intervals of the marginal effects reported in Table 4. Concerning partial interaction effects, linear probability estimations show that the effect of a very high level of *IEA* on nascent entrepreneurship is significantly lower (1% level) for women as compared to men. In contrast, interaction effects within the group of individuals with a self-employment preference do not turn out statistically significant different from zero (results not shown). Also the estimated coefficients of a probit estimation where interaction terms of the gender dummy and the *IEA* categories are included do not suggest the effect of *IEA* on nascent entrepreneurship to differ between men and women (results not shown). Accordingly, estimation results do not provide evidence for the hypothesis that the gender gap in nascent entrepreneurship is due to gender difference in magnitude of the effect of *IEA* as hypothesized in Section 2.

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[14] In order to check for potential multicollinearity problems we again compute variance inflation factors after OLS estimations of linear probability models. Results do not suggest multicollinearity to be a problem.

Estimation results further suggest unobserved industry and environmental effects to be relevant for nascent entrepreneurship which are beyond the scope of our study, as the dummy variables controlling for educational subgroups and countries included turn out statistically significant at the 1% level.

Insert Table 4: Probit Estimation – IEA and the Gender Gap in Nascent Entrepreneurship here

Decomposition Analyses

In order to investigate the relevance of *IEA* in explaining the gender gap in latent and nascent entrepreneurship, we conduct non-linear decomposition analyses (Table 5) based on the same samples considered in our probit estimations (Table 3 and Table 4). Table 5 reports the share of female (male) latent (column 1 to 3) and nascent entrepreneurs (column 4 to 6) and the difference in shares between men and women. Because we consider three different samples, three different values are reported for the gender gap in latent entrepreneurship, 7.7 percentage points for the employable population, 7.4 percentage point for the sample of employees and 7.28 percentage points for the sample of self-employed (column 1 to 3). At the bottom of the table we find the contribution from the gender difference in *IEA* to the gender gap in latent entrepreneurship. For example, if the *IEA*-distribution of women would equal the *IEA*-distribution of men, the gender gap in latent entrepreneurship would be reduced by about 8%. If female self-employed would not have a lower *IEA* than men, the gender gap would be reduced by 16.5%. However, we find the part of the gender gap explained by the whole model to be rather small (7%–16%). Moreover, we find the contribution of *IEA* to nearly equal the contribution from all characteristics considered in our model. In case of the sample of employees, the effect of *IEA* even exceeds the total characteristics effect which is a result of the simple sum of positive and negative differences. Although the factors taken into account explain only a rather small part of the gender difference, results point, however, to the hypothesized importance of *IEA* in explaining the gender difference in *latent* entrepreneurship

In contrast, gender differences in *IEA* seem to be more important for the gender gap in *nascent entrepreneurship*. The difference in female and male nascent entrepreneurship concerning the employable population is about 3 percentage points and within the sample of latent entrepreneurs 3.67 percentage points (column 6). Without controlling for self-employment preference, differences in the distribution of observed characteristics explain 50% of the gender gap in nascent entrepreneurship (column 4). Nearly 19% of the observed difference is merely explained by the difference in *IEA* between men and women. Controlling for preference for self-employment significantly increases the characteristics effect. If women would have the same characteristics as men, the gender gap in nascent entrepreneurship would be reduced

from 2.94 to 0.77 percentage points, i.e. a reduction of more than 70%. About 15% are still explained by *IEA* (column 5). *IEA* also remains significant explaining the gender gap in nascent entrepreneurship among the sample of latent entrepreneurs. If women who have a preference for self-employment would have had the same *IEA*-distribution as men, the gender gap in nascent entrepreneurship would be reduced by 21.5% (column 6). Taken together, the results of decomposition analyses suggest that the variation in *IEA* between men and women contributes significantly to gender gap in nascent entrepreneurship.[15]

Insert Table 5: Non-linear Decomposition of the Gender Gap in Latent and Nascent Entrepreneurship here.

4.3 Country-Level Analyses

We conduct country-level analyses in order to check the validity of our findings based on individual-level data. Table 6 shows the dependent variables, i.e. our measures for latent entrepreneurship (year 2007) and the three different measures for entrepreneurial activity, obtained from the LFS 2009 provided by EUROSTAT and from the Global Entrepreneurship Monitor 2006. We report the shares of latent and actual entrepreneurship and the level of *IEA* for the EU27 and EU15 Member States, European countries outside the EU27, Japan and the US. We find in each country or group of countries the share of female latent entrepreneurs to be lower than the share of male latent entrepreneurs. Moreover, women are considerably outnumbered by men, irrespective of the measure used to proxy entrepreneurial activity: Female self-employed and female employers are underrepresented as compared to their mail counterpart. The share of male nascent entrepreneurs plus owner of young businesses also exceeds the female TEA-index. This is in line with prior studies pointing to the gender gap in entrepreneurship.

Insert Table 6: Latent Entrepreneurship and Entrepreneurial Activity by Gender at the Country-Level here

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To test whether there is a significant positive correlation between within-country variation in *IEA* of women and men and within-country variation of female and male entrepreneurship we conduct fixed-effects regressions. By taking into account country-specific fixed effects we completely focus on variation within countries. As in our individual-level analysis, we include *IEA* categories as explanatory variables to allow for a non-linear relationship. Each *IEA* category included in regression reflects the fraction of the female (male) population having an *IEA* score within the respective category. The fraction of individuals who scores lowest in *IEA*, i.e. 8 to 20, is defined as reference group. We make use of two

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[15]Coefficient estimates obtained from the pooled sample regression are used as weights for the decomposition. Alternatively, coefficient estimates obtained from male (female) sample regressions can be used to calculate the decomposition (Fairlie 2006). Although not reported here, we also calculated decomposition using alternative weights but our results suggest that the decomposition is hardly affected by the choice of weights.

different samples. First, the maximum number of countries where relevant data are available for are considered (Table 7, regressions 1 and 2). Second, to obtain a more homogenous sample, we conduct regression analysis for the maximum number of countries within the EU27 Member States where relevant data are available for (regression 3 to 6). In regressions (b), we include the male and female employment rates to control for gender-specific labor market conditions.

Estimation results point to a positive correlation between an *IEA* score of 30 to 32 and the dependent variables throughout all regressions and the coefficients turn out predominantly statistically significant at the 1% level. Concerning employers and the TEA-Index, the coefficients tend to rise with the level of *IEA* pointing to the suggested non-linear relationship, but the coefficients turn out predominantly statistically insignificant. Results point to a negative relation between a perceived lack of financial support and entrepreneurial activity, but the coefficients turn out statistically insignificant.[16]

Insert Table 7: Fixed Effects Regressions – Relationship between IEA and Entrepreneurship at the Country-Level here

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Since the results of our individual-level analyses suggest that especially competitiveness and risk tolerance are important for latent and nascent entrepreneurship, we additionally test the relationship of competitiveness and risk tolerance and entrepreneurial activity on country-level conducting separate fixed effects regressions. We find a statistically significant relationship between competitiveness and entrepreneurial activity and between risk tolerance and entrepreneurial activity for some of the dependent variables, but results are not very robust. This implies that focusing on the joint effect of relevant personality traits by using the *IEA* measure is more promising to investigate the relationship between personality and entrepreneurship than limiting the investigation to single personality traits

5. Discussion

While the existence of the gender gap in entrepreneurship is widely documented in entrepreneurship literature, our knowledge about the determinants of this gender gap is still limited. Previous research has mainly focused on external factors, like business environment, to explain the gender gap in entrepreneurship. In contrast, this study highlights the role of *Individual Entrepreneurial Aptitude (IEA)* which is a group of personality traits that can be matched to tasks of entrepreneurs. The results of our empirical analyses, which are based on data obtained from a large scale survey of individuals in 36

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[16] The high R^2 is due to a consistent gender difference in the dependent as well as in the independent variables in each country. For instance, in all countries employment rates as well as entrepreneurship measures are lower for women as compared to men. Without controlling for personality traits, the model already explains 70%-80% of the variation between female and male entrepreneurship. As reported in descriptive statistics, the *IEA* scores are also always lower for women as compared to men. Nevertheless, inclusion of the *IEA* measure into the regression analysis leads to a remarkable increase in R^2 by 8 to 11 percentage points.

countries and on country-level data, provide several relevant findings which enhance our understanding of the gender gap in entrepreneurship.

Our results suggest that *IEA* is a major determinant of male as well as of female entrepreneurship. Our measure of *IEA* is a strong and robust predictor for the preference of men and women to be self-employed (latent entrepreneurship) and for the decision to start a business (nascent entrepreneurship). Men and women with higher levels of *IEA* are more likely to have a preference for being self-employed and are also more likely to take steps to start a business. Our results suggest that the marginal effect of *IEA* on nascent entrepreneurship remains statistically significant even if we control for latent entrepreneurship or restrict the analysis to the sample of latent entrepreneurs. This suggests that the effect of *IEA* on nascent entrepreneurship is not completely mediated by the preference for self-employment but that *IEA* directly affects nascent entrepreneurship. We do not find the marginal effect of *IEA* on the probability of being a latent or nascent entrepreneur to differ significantly between women and men. Hence, our results do *not* suggest that gender differences with respect to the magnitude of the *effect* of *IEA* contribute to the gender gap in entrepreneurship.

In contrast, we find that gender differences in the *level* of *IEA* do indeed contribute to the gender gap in entrepreneurship. The results of decomposition analyses based on individual data indicate that about 8%–16% of the gender gap in latent entrepreneurship is due to gender differences in *IEA*. The contribution of *IEA* is even stronger for nascent entrepreneurship, where the differences in level of *IEA* explain up to 21% of the gender gap. Moreover, this result is confirmed by the results of our empirical analysis based on aggregate data, which suggest that the within-country variation of entrepreneurial activities of men and women (e.g. country-specific male and female self-employment rates) is related to the within-country variation of *IEA* of men and women.

Our data report that women's average *IEA* score is lower as compared to men's average *IEA* score for all 36 countries included in our analyses where this difference is statistically significant for 29 countries. Gender differences in *IEA* are mainly driven by gender differences in competitiveness and risk tolerance. The average score of competitiveness of women is always lower than the average score of competitiveness of men and the difference is statistically significant for 32 countries. This result is in line with the results of experimental studies suggesting that women are less competitively inclined than men (Gneezy et al. 2003; Gneezy and Rustichinni 2003; Niederle and Vesterlund 2005). Likewise, the risk tolerance of men exceeds the risk tolerance of women, although it is statistically significant only for 26 countries. For the total sample roughly 60% of differences in *IEA* are due to differences in competitiveness and risk tolerance. For the other six personality traits of *IEA* the evidence is mixed, since average scores of women are not lower for all countries and the differences are statistically insignificant

for many countries. This is especially true for the personality traits *internal locus of control* and *proactiveness*.

Furthermore, our results indicate that the effects of unobserved gender differences which are measured by the marginal effect of the gender dummy have an impact on latent entrepreneurship but seem to be less relevant for nascent entrepreneurship. This is especially true if the sample is restricted to latent entrepreneurs. In the case of *latent* entrepreneurship the marginal effect of the gender dummy decreases after controlling for levels of *IEA* but it is still statistically significant. In contrast, in the case of *nascent* entrepreneurship the decrease of this marginal effect is much stronger once levels of *IEA* are included and it becomes statistically insignificant if the sample is restricted to latent entrepreneurs. This suggests that *IEA* is especially important for women's decision to take steps to start a new business.

Moreover, our data show that about 23% of female and about 15% of male self-employed would prefer being employee if they could choose. According to our estimation results self-employed men and women with a high level of *IEA* prefer to stay self-employed whereas self-employed with a low level of *IEA* are more likely to have a preference for wage employment. Self-employed with a low level of *IEA* may not terminate their business and may decide to remain in their lower utility yielding occupation because of the cost inherent in switching from self-employment to wage employment. This may imply that female entrepreneurship programs implemented by policy makers to support female entrepreneurship *per se* may be ill-founded, because women are more likely to have a low level of *IEA* and self-employed women with a low level of *IEA* tend to be dissatisfied with self-employment.

Gneezy et al. (2009, p. 1658) state that insights from recent research on the link between gender and competition "have the potential to explain important puzzles in economics and social sciences more generally." The gender gap in entrepreneurship is one of these puzzles and our results provide empirical evidence for the relevance of gender differences in personality traits that can be matched to tasks of entrepreneurs and in particular for the relevance of gender differences in competitiveness. According to our results women are less likely to engage in entrepreneurial activities because they are less competitively inclined than man.

While in all countries included in our study the average female scores lower on competitiveness than average male, the results reported by Gneezy et al. (2009) show that this is not universally true in all societies. They present at least one example (Khasi women and men) where men more often avoid competition than women. Gender differences in competitiveness and more general in *IEA* may be explained by nature, nurture or both. Although an analysis of the determinants of gender differences in *IEA* is beyond the scope of this paper, it has important implications for entrepreneurship policy aiming at encouraging women to start new ventures. If gender differences in *IEA* are primarily driven by *nature*,

e.g. genes and hormones (Nicolaou and Shane 2009; Guiso and Rustichini 2011; Buser 2011), then one has to change the environment to support the career advancement of women. For example, governments could take measures to reduce the competitiveness of labor markets (Gneezy et al. 2009). For instance, affirmative action programs, like introducing quotas for female, may be useful in the context of wage employment (Niederle et al. 2010; Balafoutas and Sutter 2010). In the context of business creation it is not clear, however, how governments can reduce competitiveness and from the point of view of competition policy it is quite questionable whether this would improve social welfare.

If gender differences in *IEA* are based primarily on *nurture*, governments may support female entrepreneurship by introducing entrepreneurship training programs. However, women might benefit less from such training programs than men. Our results suggest that in most countries of our sample men have a higher risk tolerance than women and based on experimental data Fairlie and Holleran (2011) present empirical evidence suggesting that individuals who are more risk tolerant benefit more from such training programs. Moreover, recent empirical results indicate that gender differences in competition already exist in early ages (Sutter and Rützler 2010, Gneezy and Rustichini 2004). Hence, government measures aiming at creating the competitive spirit of women have to target, for instance, socialization of girls before and in the Kindergarten. It is another question, however, whether a higher level of competitiveness of women (and men) is desirable from the point of view of a society.

Albeit our dataset comprises unique information about personality traits of individuals in 36 countries, there are still limitations that should be mentioned. First, the Flash EB "Entrepreneurship" 2009 consists of cross-sectional data and therefore potential endogeneity may arise. One problem is reverse causality. It may exist because business success affects personality traits. Although empirical results suggest that personality traits are largely unaffected by start-up activities (Caliendo et al. 2011) and that personality traits, such as competitiveness, emerge early in life (Sutter and Rützler 2010), we avoid reverse causality problems by excluding all individuals with start-up experience from the analysis of latent entrepreneurship among non-self-employed and by focusing on the very early stage of the entrepreneurial process, i.e. nascent entrepreneurship. Second, a potential concern is the use of indicators for dependent and explanatory variables that are obtained from the same survey. Therefore, we check the robustness of our results by conducting country-level analyses where we obtain dependent variables from other data sources. Third, in order to avoid omitted variable bias, we use a substantial number of control variables that may correlate with our measure of *IEA* and which may also influence latent and nascent entrepreneurship but we are not able to control for all potentially relevant variables. For instance, we cannot control for family size and marital status, which may affect latent and nascent entrepreneurship among men and women. The results of recent empirical studies suggest, however, that personality traits

still have significant effects on female entrepreneurship even if marital status and number of children are controlled for (Furdas and Kohn 2010, Caliendo et al. 2011) and Delmar and Davidsson (2000) find that family size does not per se influence nascent entrepreneurship.

6. Concluding Remarks

The gender gap in entrepreneurship is one of the important puzzles in entrepreneurship research. Although female entrepreneurship has attracted great attention in academic research in recent years, our knowledge about the determinants of the gender gap in entrepreneurship is still limited. External factors, like business environment, access to finance or work-family conflicts, surely contribute to the gender gap. However, for a better understanding of the gender gap and for the design of appropriate entrepreneurship policy measures it is important to examine the contribution of individual factors as well.

Our results suggest that gender differences in a group of personality traits, which we call *Individual Entrepreneurial Aptitude* (*IEA*), contribute to the gender gap in entrepreneurship. Especially the level of *competitiveness* and *risk tolerance* differ significantly between men and women. Although Schumpeter emphasized the relevance of competitiveness as major motivation for individual engagement in entrepreneurship, this personality trait has been largely neglected in previous empirical research on entrepreneurial traits. In line with the results of experimental studies we find that women tend to shy away from the challenge of competition and our results suggest that this may have negative effects on female entrepreneurship.

Our results provide relevant policy implications. If gender differences in personality traits are not completely driven by nature but mainly by nurture (socialization), existing entrepreneurship training programs which primarily focus on adults could be complemented with programs focusing on young girls. Since empirical evidence suggest that gender differences in competitiveness emerge early in life, measures which increase individual entrepreneurial aptitude of girls from early on in life might be very effective to close the gender gap entrepreneurship.

Appendix

Table A 1: Variable Definition

Variable Name	Definition
	Individual-Level Analysis
	(all data are obtained from the Flash Eurobarometer „Entrepreneurship" 2009)
Latent Entrepreneurship	Dummy variable = 1 if the respondent prefers to be self-employed if he could choose between being self-employed and being employee and zero otherwise.
Nascent Entrepreneurship	Dummy variable = 1 if the respondent is currently taking steps to start a business and zero otherwise
IEA – Individual Entrepreneurial Aptitude	Measure by a set of dummy variables: score of 8 to 20 (reference group) score of 21 to 23, score of 24 to26, score of 27 to 29, score of 30 to 32. For single item measurement of the personality traits forming *IEA* see Table 1.
Social Status of Entrepreneurs	How the respondent values the status of entrepreneurs relative to civil servants, top-managers in large production companies, managers in a bank or similar institutions, politicians, liberal professions (architect, lawyers, artists etc.). We compute the value assigned to entrepreneurs over the averaged scoring assigned to the other proposed occupational groups.
Age	Age reported by the respondent. Measure by a set of dummy variables: age 15 to 25, age 26 to 35, age 36 to 45 (reference group), age of 54 to 64
Education (ln)	ln of age finished fulltime education reported by the respondent
Female	Dummy variable = 1 if the individual is female and zero otherwise
Parental Self-Employment	Dummy variable = 1 if the individual has at least one parent to be self-employed and zero otherwise
Income Satisfaction	Measured by a set of dummy variables: high: Dummy variable = 1 if the individual lives comfortable on the present household income. Moderate (reference group): Dummy variable = 1 if the individual gets along with the present household income. Dissatisfaction: Dummy variable = 1 if the individual finds it difficult or very hard to manage on the present household income and zero otherwise.
Obstacles to entrepreneurial activity	
Lack of financial Support	Binary variable = 1 if the respondent strongly agrees with the statement that it is difficult to start one's own business due to the lack of available financial support and zero otherwise.
Insufficient Information	Binary variable = 1 if the respondent strongly agrees with the statement that it is difficult to start one's own business due to the complex administrative procedures and zero otherwise.
Administrative Burdens	Binary variable = 1 if the respondent strongly agrees with the statement that it is difficult to obtain sufficient information on how to start a business and zero otherwise.
	Country-Level Analysis
	(combined data)
Latent Entrepreneurship	Share of women (men) who would prefer to be self-employed rather than being employee if they could choose between these two options (Flash EB Entrepreneurship 2007).
Share of Self-Employment	Number of self-employed women (men) divided by the total number of female (male) employees (self-employment plus employees) in a country. (LFS 2009 provided by EUROSTAT plus World bank database 2009).
Share of Employers	The number of female (male) employers divided by the total number of female (male) employment (self-employed plus employees) (LFS 2009 provided by EUROSTAT).
TEA Index	Defined as the rate of those individuals who are actively involved in starting a business, plus the new business ownership rate, i.e. who are currently own a business that is less that 42 month old (GEM 2006).
IEA – Individual Entrepreneurial Aptitude	Measured by the share of the female (male) population that scores within the respective *IEA* category (score of 8 to 20 (reference group), score of 21 to 23, score of 24 to26, score of 27 to 29, score of 30 to 32) (Flash EB Entrepreneurship 2009).
Employment Rate	Represent employed/active women (men) as a percentage of same age total female (male) population. (LFS 2009 provided by EUROSTAT).
Lack of Financial Support	The individual has to state if *strongly disagrees (1), disagrees (2), agrees (3) or strongly agrees (4)* with the statement that it is difficult to start one's own business due to lack of available financial support. Aggregated data displays the score of a country's average female (male) population (Flash EB Entrepreneurship 2009)

Table A 2: Summary Statistics Individual-Level Analysis

Variable	Female Employees (55.47%; n=5541)				Male Employees (44.53%: n=4449)			
	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Latent Entrepreneurs	44.83%	0.497	0	1	57.29%	0.495	0	1
Nascent Entrepreneurs	5.40%	0.226	0	1	8.32%	0.276	0	1
Self-Employed	11.24%	0.316	0	1	22.81%	0.420	0	1
Self-Employed (excl. agriculture)	10.02%	0.300	0	1	19.85%	0.399	0	1
Start-Up Experience	23.79%	0.426	0	1	39.78%	0.490	0	1
Individual Entrepreneurial Aptitude								
IEA score of 8 to 20	15.86%	0.365	0	1	9.40%	0.292	0	1
IEA score of 21 to 23	36.00%	0.480	0	1	31.20%	0.463	0	1
IEA score of 24 to 26	28.51%	0.452	0	1	33.09%	0.471	0	1
IEA score of 27 to 29	14.09%	0.348	0	1	17.60%	0.381	0	1
IEA score of 30 to 32	5.52%	0.228	0	1	8.72%	0.282	0	1
at least one Parent Self-Employed	28.19%	0.450	0	1	29.06%	0.454	0	1
Social Status of Entrepreneurs	1.21	0.382	0.333	3	1.27	0.414	0.333	3
Income satisfaction high	22.13%	0.415	0	1	24.88%	0.432	0	1
Income satisfaction moderate	46.58%	0.499	0	1	47.63%	0.499	0	1
Income Dissatisfaction	31.29%	0.464	0	1	27.49%	0.447	0	1
Age group 15 to 25	7.06%	0.256	0	1	9.53%	0.294	0	1
Age group 26 to 35	20.43%	0.403	0	1	21.02%	0.407	0	1
Age group 36 to 45	30.14%	0.459	0	1	27.85%	0.448	0	1
Age group 46 to 55	27.90%	0.449	0	1	27.08%	0.444	0	1
Age group 56 to 64	14.47%	0.352	0	1	14.52%	0.352	0	1
Age finished fulltime education	20.04	4.490	9	45	20.42	4.491	9	45
Obstacles to entrepreneurial activity								
Lack of Financial Support	37.18%	0.483	0	1	33.83%	0.473	0	1
Administrative Burdens	28.77%	0.453	0	1	26.48%	0.441	0	1
Lack of Information	18.72%	0.390	0	1	17.17%	0.377	0	1
Employment Status, Professions								
Self-Employed								
Farmer, Forester, Fisherman	1.23%	0.110	0	1	2.97%	0.170	0	1
Owner of a Shop, Craftsman	3.05%	0.172	0	1	6.23%	0.242	0	1
Professional (Lawyer, Architect…)	2.85%	0.166	0	1	4.41%	0.205	0	1
Owner-Manager of a Company	1.91%	0.137	0	1	5.78%	0.233	0	1
Self-employed, Other	2.20%	0.147	0	1	3.44%	0.182	0	1
White-Collar Employment								
Professional	7.78%	0.268	0	1	8.72%	0.282	0	1
General Management	1.06%	0.103	0	1	2.29%	0.150	0	1
Management	1.62%	0.126	0	1	2.52%	0.157	0	1
Middle Management	4.62%	0.210	0	1	6.97%	0.255	0	1
Civil Servant	11.08%	0.314	0	1	8.88%	0.284	0	1
Office Clerk	13.46%	0.341	0	1	8.43%	0.278	0	1
White-Collar, Other	8.63%	0.281	0	1	7.66%	0.266	0	1
Blue-Collar Employment								
Supervisor/Foreman	0.97%	0.098	0	1	2.23%	0.148	0	1
Skilled Manual Worker	5.05%	0.219	0	1	11.82%	0.323	0	1
Unskilled Manual Worker	3.68%	0.188	0	1	3.91%	0.194	0	1
Blue-Collar, Other	1.23%	0.110	0	1	1.55%	0.124	0	1
Without Professional Activity								
Looking after the Home	19.60%	0.397	0	1	0.90%	0.094	0	1
Seeking a Job	6.79%	0.252	0	1	8.86%	0.284	0	1
Without Prof. Activity, Other	3.18%	0.175	0	1	2.45%	0.155	0	1
Area								
Metropolitan Zone	21.82%	0.413	0	1	25.67%	0.437	0	1
Town/Urban Center	43.49%	0.496	0	1	40.12%	0.490	0	1
Rural Zone	34.69%	0.476	0	1	34.21%	0.474	0	1

Country

36 Dummy Variables for county are included in to regression. (32 European Countries plus Japan, South Korea, China and the US)

Notes. Descriptive statistics are based on the maximum number of individuals included in individual-level analysis (9990 individuals, 5541 women and 4449 men).

Table A 3: Summary Statistics for Country-Level Analyses

Variable	Obs	Female				Male			
		Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Dependent Variables									
Latent Entrepreneurship 2007	28	40.58%	.10855	5.59%	60.80%	52.44%	.1171	34.04%	71.38%
Measures of Entrepreneurial Activity									
Share of Self-Employment 09	33	9.00%	0.037	4.44%	20.79%	17.01%	0.060	8.38%	34.78%
Share of Employers 09 (within EU27)	25	2.19%	0.008	0.82%	4.17%	5.93%	0.019	2.03%	11.04%
TEA 06 (within EU27)	16	3.25%	0.012	0.96%	5.21%	6.84%	0.022	3.48%	10.75%
Individual Entrepreneurial Aptitude									
Share with an IEA score of 8 to 20	33	15.17%	9.67%	2.61%	55.18%	10.06%	7.63%	1.09%	41.29%
Share with an IEA score of 21 to 23	33	36.15%	8.50%	12.68%	57.63%	32.98%	8.58%	10.19%	54.71%
Share with an IEA score of 24 to 26	33	28.92%	5.95%	9.01%	40.00%	33.28%	6.79%	15.82%	48.77%
Share with an IEA score of 27 to 29	33	14.00%	6.56%	3.95%	33.33%	15.39%	6.56%	3.82%	33.89%
Share with an IEA score of 30 to 32	33	5.75%	3.84%	0.56%	20.65%	8.29%	5.57%	0.80%	31.28%
Lack of financial Support	33	3.21	0.19	2.72	3.545	3.13	0.21	2.64	3.49
Employment Rate	33	64.44%	.1080	27.80%	81.30%	77.85%	.049	68.20%	87.80%

Notes. Summary Statistics are presented for the maximum number of countries where relevant data for regression analyses are available for. Data measuring preference for self-employment are obtained from the Flash EB Entrepreneurship 2007 and are displayed for the EU25 plus Norway, Iceland and the US. Self-employment data are obtained from the Labor Force Survey 2009 provided by EUROSTAT. The share is computed for the 31 European countries also included in the Flash EB 2009. Data for Japan and the US are obtained from the world bank dataset. The share of employers are obtained from the Labor Force Survey 2009 provided by EUROSTAT and are displayed for the EU 25. TEA data are obtained from the Global Entrepreneurship Monitor 2006 and are summarized for 16 countries within the EU27. TEA data from 2009 are not publicly available. Correlation analysis show that the TEA index does not vary significantly between 2001 and 2006, e.g. for German data in 2009 no significant difference to data in 2006 can be found (GEM National Report 2009). Summary statistics of *IEA* shares and data about the lack of financial support are based on a sample of 9,713 woman and 7,490 men from 31 European Countries plus Japan and the US obtained from the Flash EB Entrepreneurship 2009.

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Table 1: The Multidimensional Construct of Individual Entrepreneurial Aptitude (*IEA*)

In general, I am willing to take risks.	*(Risk taking)*
(adapted from the SOEP (e.g. Caliendo et al. (2009))	
Generally, when facing difficult tasks, I am certain that I will accomplish them.	*(General Self-Efficacy)*
(adapted from Chen et al. 2001)	
My life is determined by my own actions, not by others or by chance.	*(internal vs. external Locus of Control)*
(adapted from Levenson 1974)	
If I see something I do not like, I change it.	*(Proactiveness)*
(adapted fromBateman and Crant 1993)	
The possibility of being rejected by others for standing up for my decisions would not stop me.	*(Autonomy)*
(adapted from Clark and Beck 1991, Clark et al. 1995)	
I am an inventive person who has ideas.	*(Innovativeness)*
(adapted from Hurt et al. 1977)	
I am optimistic about my future.	*(General Optimism)*
(adapted from Scheier et al. 1994)	
I like situations in which I compete with others.	*(Competitiveness)*
(adapted from Helmreich and Spence 1978)	

Notes: Items are slightly modified in wording when necessary. To identify the appropriate items we conducted a pilot study, conducted in 2008 and 2009 comprising together approx. 250 economics students, testing different items for each dimension. Criteria for the selection of items implemented in the Flash EB are high inter-item correlation and high correlation with single items implemented into our test measuring self-employment preference, entrepreneurial attitude, intention or activity.

Table 2: Differences between Men and Women in Average Scores of *IEA* and Single Personality Traits

Country	IEA	Competitiveness	Risk Tolerance	Innovativeness	Self-Efficacy	Autonomy	General Optimism	Proactiveness	Internal Locus of control	Share of Women	n
United Kindom	-1.260***	-0.451***	-0.199***	-0.182***	-0.191***	-0.129**	-0.107*	0.008	-0.009	56%	875
Portugal	-0.988***	-0.283***	-0.226***	-0.134***	-0.061	-0.029	-0.145***	-0.021	-0.0886**	59%	826
France	-0.953***	-0.388***	-0.142**	-0.031	-0.021	-0.089	-0.174***	-0.011	-0.0976*	62%	921
Greece	-0.818***	-0.398***	-0.084	-0.0866**	-0.0906**	-0.003	0.113*	-0.143***	-0.126**	59%	906
Germany	-0.774***	-0.326***	-0.263***	-0.005	-0.0862**	-0.0988**	0.022	-0.035	0.018	53%	928
Ireland	-0.751**	-0.279***	-0.102	-0.071	-0.024	-0.177**	-0.053	-0.072	0.027	58%	456
Spain	-0.738***	-0.277***	-0.0806*	-0.0803**	-0.100***	-0.123***	-0.056	0.018	-0.040	56%	934
Luxembourg	-0.645**	-0.220***	-0.065	-0.089	-0.051	-0.032	-0.109*	-0.003	-0.077	63%	474
Italy	-0.614***	-0.296***	-0.147***	-0.171***	-0.020	0.052	0.020	-0.067	0.015	56%	808
Austria	-0.595**	-0.402***	-0.229***	0.021	-0.096	-0.012	-0.023	0.058	0.089	55%	447
Finland	-0.534*	-0.372***	-0.213***	0.097	-0.070	0.040	0.0991*	-0.035	-0.081	52%	452
Netherlands	-0.336**	-0.179***	-0.121***	-0.010	-0.026	-0.0779**	0.000	0.0696**	0.008	54%	868
Sweden	-0.297	-0.282***	0.001	-0.060	-0.027	-0.001	0.042	-0.002	0.030	52%	423
Denmark	-0.214	-0.189***	-0.061	-0.027	0.023	-0.047	0.028	0.045	0.014	53%	448
Belgium	-0.045	-0.103	-0.098	-0.050	0.0871*	0.053	0.018	0.025	0.022	63%	814
EU15	**-0.684***	**-0.294***	**-0.139***	**-0.0664***	**-0.0616***	**-0.0491***	**-0.0385***	**-0.00918**	**-0.0258***	**57%**	**10,580**
Slovenia	-1.224***	-0.409***	-0.324***	-0.070	-0.114*	-0.026	-0.160**	-0.189***	0.067	62%	450
Latvia	-1.217***	-0.279***	-0.353***	-0.082	-0.157**	-0.250***	-0.028	-0.008	-0.061	69%	393
Hungary	-0.820***	-0.315***	-0.246***	-0.137***	-0.104*	0.014	-0.021	-0.039	0.029	66%	832
Cypris	-0.769***	-0.146**	-0.224***	-0.102*	-0.046	-0.038	-0.110*	-0.051	-0.052	55%	438
Czech Republic	-0.744***	-0.277***	-0.158***	-0.131**	-0.016	-0.0193	-0.153***	0.028	-0.018	60%	851
Romania	-0.714**	-0.143*	-0.008	-0.016	-0.052	-0.035	-0.263***	-0.176***	-0.020	59%	414
Lithuania	-0.679*	-0.180**	-0.185**	-0.100	-0.061	0.000	-0.046	-0.070	-0.037	65%	406
Malta	-0.600*	-0.102	-0.134*	-0.063	-0.152**	-0.027	-0.025	-0.047	-0.050	56%	405
Slovakia	-0.585*	-0.083	-0.153**	-0.034	-0.055	-0.030	-0.077	-0.135**	-0.020	66%	445
Bulgaria	-0.580	-0.215**	-0.159*	-0.095	-0.003	0.001	-0.069	-0.015	-0.025	64%	415
Poland	-0.521**	-0.310***	-0.0988*	-0.039	-0.018	0.007	-0.007	-0.033	-0.022	62%	791
Estonia	-0.391	-0.080	-0.173*	-0.102	-0.079	-0.069	0.042	-0.012	0.082	67%	366
EU27	**-0.754***	**-0.279***	**-0.164***	**-0.0789***	**-0.0682***	**-0.0499***	**-0.0574***	**-0.0358***	**-0.0208***	**59%**	**16,786**
China	-1.019***	-0.269***	-0.308***	-0.122**	-0.123***	0.028	-0.062	-0.144***	-0.020	45%	983
USA	-0.987***	-0.557***	-0.230***	-0.0952*	-0.018	-0.063	0.022	-0.116***	0.069	54%	972
Turkey	-0.929***	-0.251***	-0.254***	-0.069	-0.050	-0.149***	0.013	-0.015	-0.154***	52%	469
Japan	-0.894***	-0.261***	-0.191***	-0.194***	-0.079	-0.115**	0.019	-0.004	-0.068	54%	876
Croatia	-0.853**	-0.241**	-0.307***	0.129	-0.154*	-0.069	-0.029	-0.077	-0.105	59%	396
Norway	-0.586**	-0.320***	-0.022	-0.050	-0.062	-0.035	0.011	-0.051	-0.056	51%	429
South Korea	-0.506**	-0.209***	-0.066	-0.110**	-0.054	-0.138***	0.135***	-0.0847*	0.020	53%	842
Island	-0.376	-0.402***	-0.157*	0.038	-0.028	0.050	0.005	-0.023	0.140**	48%	363
Switzerland	-0.239	-0.332***	-0.039	0.034	0.011	0.059	0.052	-0.043	0.019	61%	438
TOTAL	**-0.761***	**-0.297***	**-0.168***	**-0.0751***	**-0.0735***	**-0.0458***	**-0.0427***	**-0.0369***	**-0.0223***	**57%**	**22,554**

Notes: Mean comparison test is based on a sample of 22554 observations, 9627 men and 12927 women as the maximum number of individuals who answered to all items of the *IEA* measure. Difference: mean(FEMALE)-mean(MALE);
Test of H0: difference in Means =0; Level of Significance: *** p<0.01, ** p<0.05, * p<0.1

Table 3: Probit Estimation – *IEA* and the Gender Gap in Latent Entrepreneurship

VARIABLES	Employable Population (1)				Employees (2)				Self-Employed (3)			
	pooled(a)	pooled(b)	female(c)	male(d)	pooled(a)	pooled(b)	female(c)	male(d)	pooled(a)	pooled(b)	female(c)	male(d)
Female	-0.0779***	-0.0727***			-0.0794***	-0.0734***			-0.0742***	-0.0604***		
	(0.0137)	(0.0137)			(0.0147)	(0.0147)			(0.0213)	(0.0206)		
IEA Score 21 to 23		0.0824***	0.0839***	0.0750**		0.0717***	0.0617**	0.0767*		0.131***	0.178***	0.118***
		(0.0200)	(0.0238)	(0.0369)		(0.0240)	(0.0292)	(0.0417)		(0.0247)	(0.0479)	(0.0262)
IEA Score 24 to 26		0.103***	0.0885***	0.121***		0.0984***	0.0644**	0.133***		0.178***	0.214***	0.166***
		(0.0212)	(0.0257)	(0.0382)		(0.0254)	(0.0316)	(0.0430)		(0.0272)	(0.0497)	(0.0312)
IEA Score 27 to 29		0.133***	0.101***	0.175***		0.140***	0.0882**	0.194***		0.173***	0.219***	0.147***
		(0.0257)	(0.0318)	(0.0441)		(0.0304)	(0.0383)	(0.0491)		(0.0199)	(0.0365)	(0.0231)
IEA Score 30 to 32		0.207***	0.229***	0.172***		0.229***	0.245***	0.199***		0.165***	0.201***	0.141***
		(0.0342)	(0.0444)	(0.0562)		(0.0407)	(0.0556)	(0.0625)		(0.0153)	(0.0263)	(0.0183)
At least one Parent self-employed	0.0385***	0.0363**	0.0296	0.0482*	0.0283	0.0264	0.00427	0.0607**	0.0236	0.0206	0.0507	-0.00110
	(0.0149)	(0.0149)	(0.0188)	(0.0250)	(0.0173)	(0.0173)	(0.0225)	(0.0271)	(0.0203)	(0.0203)	(0.0368)	(0.0238)
Social Status of Entrepreneurs	0.0629***	0.0624***	0.0520**	0.0839***	0.0493**	0.0477**	0.0317	0.0713**	0.0360	0.0380	0.138***	0.0106
	(0.0165)	(0.0166)	(0.0211)	(0.0269)	(0.0196)	(0.0197)	(0.0265)	(0.0298)	(0.0256)	(0.0253)	(0.0506)	(0.0283)
Income satisfaction High	-0.0404**	-0.0462***	-0.0321	-0.0674**	-0.0613***	-0.0685***	-0.0733***	-0.0663**	0.0546**	0.0336	0.0696*	0.0116
	(0.0167)	(0.0167)	(0.0213)	(0.0271)	(0.0182)	(0.0182)	(0.0235)	(0.0284)	(0.0226)	(0.0236)	(0.0411)	(0.0277)
Income Satisfaction Low	0.0349**	0.0404***	0.0368**	0.0494*	0.0473***	0.0536***	0.0353	0.0759**	-0.0754***	-0.0644**	-0.0943*	-0.0504
	(0.0151)	(0.0152)	(0.0186)	(0.0265)	(0.0180)	(0.0182)	(0.0230)	(0.0297)	(0.0271)	(0.0263)	(0.0483)	(0.0319)
Age 15 to 25	0.0632**	0.0559**	0.0418	0.0873**	0.0586*	0.0525*	0.0652	0.0417	0.0675*	0.0520	0.106*	0.0189
	(0.0251)	(0.0251)	(0.0337)	(0.0386)	(0.0300)	(0.0299)	(0.0416)	(0.0437)	(0.0393)	(0.0417)	(0.0566)	(0.0540)
Age 26 to 35	0.0124	0.0105	-0.0156	0.0471	0.0231	0.0210	0.00891	0.0300	0.0297	0.0188	0.0556	0.0148
	(0.0175)	(0.0175)	(0.0216)	(0.0295)	(0.0198)	(0.0199)	(0.0256)	(0.0310)	(0.0264)	(0.0268)	(0.0493)	(0.0309)
Age 36 to 55	0.0121	0.0157	0.00884	0.0342	0.0113	0.0151	0.00698	0.0320	-0.0103	-0.0141	0.0157	-0.0285
	(0.0166)	(0.0167)	(0.0207)	(0.0283)	(0.0186)	(0.0187)	(0.0239)	(0.0298)	(0.0252)	(0.0250)	(0.0445)	(0.0316)
Age 56 to 64	-0.0435**	-0.0395*	-0.0507**	-0.00498	-0.0459*	-0.0419*	-0.0444	-0.0303	0.0373	0.0362	0.00286	0.0556*
	(0.0202)	(0.0203)	(0.0247)	(0.0357)	(0.0240)	(0.0241)	(0.0311)	(0.0386)	(0.0275)	(0.0268)	(0.0566)	(0.0288)
Education (ln)	0.00446	0.00468	0.0863*	-0.111*	-0.0190	-0.0192	0.100*	-0.149**	0.103**	0.0829*	-0.0147	0.153***
	(0.0361)	(0.0362)	(0.0453)	(0.0608)	(0.0434)	(0.0435)	(0.0571)	(0.0685)	(0.0494)	(0.0491)	(0.0911)	(0.0578)
Occupation	Yes***	Yes***	Yes***	Yes***	Yes	Yes	Yes	Yes	Yes*	Yes	Yes	Yes
	39.35	43.06	49.45	11.58	11.97	11.26	9.72	9.67	6.71	4.93	0.81	5.75
Area	Yes***	Yes***	Yes**	Yes**	Yes***	Yes***	Yes	Yes**	Yes	Yes	Yes	Yes
	14.88	16.85	8.34	8.41	12.41	13.43	6.20**	7.81	3.81	2.36	0.78	4.72
Country	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***
	342.11	308.56	231.73	129.34	254.64	233.09	157.70	131.15	81.34	76.00	43.40	65.19
Observations	6559	6559	4064	2495	4893	4893	2757	2136	1424	1424	541	828
Pseudo R² (Mc Fadden)	0.0602	0.0657	0.0746	0.0718	0.0631	0.0695	0.0757	0.0822	0.1051	0.1408	0.1512	0.1724

Notes. Self-employed and individuals with start-up experience are excluded from regressions (1) and (2). Reference income satisfaction: moderate; reference occupation: blue collar manual worker; reference area: rural zone; reference country: USA. robust standard errors in parentheses; Level of significance: *** p<0.01, ** p<0.05, * p<0.1

Table 4: Probit Estimation – *IEA* and the Gender Gap in Nascent Entrepreneurship

| | Employable Population | | | | | | | | Employable Population with a Preference for Self-Employment | | | |
| | (1) | | | | (2) | | | | (3) | | | |
VARIABLES	pooled(a)	pooled(b)	female(c)	male(d)	pooled(a)	pooled(b)	female(c)	male(d)	pooled(a)	pooled(b)	female(c)	male(d)
Female	-0.0189***	-0.0144***			-0.00997**	-0.00750*			-0.0216**	-0.0158		
	(0.00513)	(0.00485)			(0.00428)	(0.00411)			(0.0108)	(0.0106)		
IEA Score 21 to 23		0.0382***	0.0234**	0.0667***		0.0261***	0.0146*	0.0494**		0.0512**	0.0347	0.0831*
		(0.0108)	(0.00967)	(0.0243)		(0.00888)	(0.00747)	(0.0207)		(0.0230)	(0.0228)	(0.0476)
IEA Score 24 to 26		0.0522***	0.0326***	0.0909***		0.0343***	0.0195**	0.0650***		0.0565**	0.0376	0.0958**
		(0.0126)	(0.0121)	(0.0264)		(0.0102)	(0.00916)	(0.0225)		(0.0239)	(0.0251)	(0.0465)
IEA Score 27 to 29		0.100***	0.0771***	0.155***		0.0654***	0.0497***	0.108***		0.127***	0.123***	0.175***
		(0.0202)	(0.0214)	(0.0412)		(0.0160)	(0.0162)	(0.0343)		(0.0332)	(0.0404)	(0.0613)
IEA Score 30 to 32		0.141***	0.0843***	0.238***		0.0876***	0.0433**	0.168***		0.166***	0.112**	0.266***
		(0.0298)	(0.0304)	(0.0590)		(0.0231)	(0.0207)	(0.0510)		(0.0443)	(0.0517)	(0.0814)
Preference for self-employment					0.0710***	0.0647***	0.0519***	0.0771***				
					(0.00526)	(0.00513)	(0.00627)	(0.00819)				
At least one Parent self-employed	0.0110**	0.00877*	0.0103*	0.00504	0.00512	0.00408	0.00660	-0.00136	0.0221*	0.0200*	0.0211	0.0148
	(0.00552)	(0.00517)	(0.00554)	(0.00918)	(0.00443)	(0.00422)	(0.00436)	(0.00754)	(0.0117)	(0.0114)	(0.0131)	(0.0187)
Social Status of Entrepreneurs	0.0231***	0.0208***	0.0212***	0.0190**	0.0137***	0.0127***	0.0138***	0.0104	0.0362***	0.0343***	0.0469***	0.0248
	(0.00565)	(0.00539)	(0.00565)	(0.00947)	(0.00475)	(0.00459)	(0.00466)	(0.00823)	(0.0124)	(0.0122)	(0.0148)	(0.0193)
Income satisfaction High	0.00514	0.000648	-0.00151	0.00767	0.00600	0.00270	8.47e-05	0.0103	0.00891	0.000745	-0.00311	0.0143
	(0.00633)	(0.00582)	(0.00594)	(0.0109)	(0.00546)	(0.00511)	(0.00486)	(0.0100)	(0.0141)	(0.0135)	(0.0154)	(0.0234)
Income Satisfaction Low	0.00132	0.00410	0.000126	0.00990	-0.000451	0.00155	-0.00117	0.00661	0.000469	0.00537	-0.00255	0.0156
	(0.00554)	(0.00540)	(0.00529)	(0.0104)	(0.00452)	(0.00446)	(0.00410)	(0.00886)	(0.0119)	(0.0118)	(0.0130)	(0.0203)
Age 15 to 25	0.0526***	0.0451***	0.0265**	0.0682***	0.0406***	0.0365***	0.0184*	0.0599***	0.0900***	0.0858***	0.0746**	0.103***
	(0.0129)	(0.0120)	(0.0125)	(0.0212)	(0.0110)	(0.0104)	(0.00978)	(0.0197)	(0.0250)	(0.0244)	(0.0315)	(0.0380)
Age 26 to 35	0.0363***	0.0314***	0.0204***	0.0499***	0.0286***	0.0256***	0.0162**	0.0432***	0.0718***	0.0666***	0.0528***	0.0897***
	(0.00820)	(0.00763)	(0.00771)	(0.0146)	(0.00698)	(0.00660)	(0.00639)	(0.0131)	(0.0172)	(0.0166)	(0.0193)	(0.0280)
Age 36 to 55	-0.00203	-0.00137	-0.00404	0.00789	-0.00345	-0.00276	-0.00491	0.00568	-0.00529	-0.00280	-0.0102	0.0159
	(0.00627)	(0.00604)	(0.00587)	(0.0116)	(0.00516)	(0.00504)	(0.00457)	(0.0102)	(0.0137)	(0.0137)	(0.0149)	(0.0246)
Age 56 to 64	-0.0131*	-0.0118*	-0.0190***	0.00473	-0.00971*	-0.00890	-0.0140***	0.00521	-0.0226	-0.0201	-0.0395***	0.0136
	(0.00703)	(0.00675)	(0.00543)	(0.0146)	(0.00590)	(0.00576)	(0.00435)	(0.0129)	(0.0163)	(0.0162)	(0.0145)	(0.0314)
Education (ln)	0.0567***	0.0541***	0.0484***	0.0451**	0.0463***	0.0446***	0.0350***	0.0429**	0.0841***	0.0831***	0.0758**	0.0699*
	(0.0121)	(0.0115)	(0.0120)	(0.0201)	(0.0101)	(0.00970)	(0.00965)	(0.0176)	(0.0262)	(0.0256)	(0.0295)	(0.0422)
Lack of Financial Support	-0.000201	-0.00367	-0.00675	-0.00189	0.000671	-0.00173	-0.00442	-0.000813	0.00579	-0.000407	-0.0152	0.00587
	(0.00512)	(0.00480)	(0.00500)	(0.00857)	(0.00423)	(0.00404)	(0.00396)	(0.00744)	(0.0111)	(0.0109)	(0.0124)	(0.0179)
Administrative Burdens	-0.00708	-0.00949*	-0.00405	-0.0151*	-0.00395	-0.00596	-0.00248	-0.00978	-0.0175	-0.0227**	-0.0147	-0.0282
	(0.00543)	(0.00505)	(0.00557)	(0.00857)	(0.00457)	(0.00430)	(0.00441)	(0.00760)	(0.0116)	(0.0112)	(0.0130)	(0.0184)
Lack of Information	0.0137*	0.0108*	-0.00104	0.0318**	0.00857	0.00714	-0.00155	0.0253**	0.0229	0.0195	0.00168	0.0523**
	(0.00701)	(0.00651)	(0.00617)	(0.0130)	(0.00565)	(0.00535)	(0.00473)	(0.0113)	(0.0142)	(0.0137)	(0.0148)	(0.0249)
Occupation	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes**
	72.02	70.45	59.15	36.93	60.39	59.22	50.66	36.57	39.31	37.55	37.92	24.74
Area	Yes***	Yes***	Yes**	Yes***	Yes**	Yes**	Yes**	Yes**	Yes**	Yes**	Yes	Yes*
	13.99	14.68	8.65	10.71	6.63	7.43	6.15	6.42	6.47	6.83	4.20	5.12
Country	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***
	206.44	209.74	125.38	106.73	169.04	174.45	113.78	88.85	127.86	130.30	76.01	84.97
Observations	8176	8176	4755	3354	8176	8176	4755	3354	3643	3643	1946	1623
Pseudo-R² (Mc Fadden)	0.1289	0.1467	0.1706	0.1490	0.1896	0.2003	0.2309	0.1984	0.1180	0.1313	0.1748	0.1316

Notes. Reference income-satisfaction: moderate; reference occupation: blue collar manual worker; reference area: rural zone; reference country: USA. Robust standard errors in parentheses. *** p<0.01, ** p<0.05,
*** p<0.01, ** p<0.05, * p<0.1

Table 5: Non-linear Decomposition of the Gender Gap in Latent and Nascent Entrepreneurship

	Latent Entrepreneurship			Nascent Entrepreneurship among the Employable Population		
	Employable Population+*	Employees+	Self-Employed	all	including Preference	Preference =1
Rate of Latent resp. Nascent Entrepreneurship, Men	0.4145	0.4073	0.8494	0.0812	0.0812	0.1391
Rate of Latent resp. Nascent Entrepreneurship, Women	0.3374	0.3333	0.7766	0.0519	0.0519	0.1023
Difference	0.0771	0.0740	0.0728	0.0294	0.0294	0.0367
characteristics effect (Contribution from gender difference in all variables)	0.0073	0.0050	0.0121	0.0147	0.0214	0.0226
	9.46%	*6.82%*	*16.64%*	*50.08%*	*72.63%*	*61.60%*
Contribution from gender difference in *IEA*	0.00637***	0.00696***	0.0120***	0.00553***	0.00435***	0.00790***
	8.26%	9.41%	16.48%	18.81%	14.80%	21.52%

Notes. Pooled sample is used for coefficients. To calculate the mean value of estimates from separate decompositions 1000 random subsamples of women are used. +Individuals who have ever started a business or are currently taking steps to start one are excluded. *We exclude individuals looking after the home from decomposition analysis of latent entrepreneurship among the employable population, since results are strongly affected by a small number of observations. About 850 women but only 27 men state that they are currently looking after the home. The non-linear decomposition analyses are conducted by using the Stata program implemented by Jann (2006).

Table 6: Latent Entrepreneurship and Entrepreneurial Activity by Gender at the Country-Level

|	Self-Employment Preference Flash EB 2007		Share of Self-Employed EUROSTAT 2009		Share of Employers EUROSTAT 2009		TEA GEM 2006	
	female	male	female	male	female	male	female	male
Member States of the EU15	38.53% (n=15)	50.33% (n=15)	9.85% (n=15)	18.32% (n=15)	2.36% (n=15)	6.21% (n=15)	3.30% (n=12)	6.94% (n=12)
Member States of the EU27	39.82%[a] (n=25)	51.59% (n=25)	10.41% (n=27)	18.58% (n=27)	2.55% (n=25)	6.69% (n=25)	3.16% (n=16)	6.56% (n=16)
Croatia			14.23%	19.73%	2.67%	6.97%	4.58%	10.82%
Turkey			13.58%	29.63%	1.31%	7.30%	3.27%	7.60%
Norway	25.59%	39.55%	4.44%	10.13%	1.18%	3.10%	4.36%	9.11%
Switzerland			9.58%	14.36%	3.02%	7.84%		
Iceland	57.72%	68.82%	6.45%	16.03%	1.58%	6.46%	5.59%	14.71%
Japan*			11.98%	13.20%			2.40%	3.00%
USA *	57.23%	70%	5.66%	8.38%			5.35%	9.84%

Notes. Self-employment preference: data are obtained from the Flash EB 2007. Data are available for the EU25 plus Norway, Iceland, and the US. Share of Self-employed: data are taken from the LFS 2009 provided by EUROSTAT for 31 European Countries including the EU27. Data for Japan and the US are added from the world bank database. Share of Employers: data are obtained from the LFS 2009, available for the EU27 except of Malta and Estonia. TEA-index: data are taken from the GEM Adult Population Survey 2006; Number of countries in parenthesis.

Table 7: Fixed Effects Regressions – Relationship between *IEA* and Entrepreneurship at the Country-Level

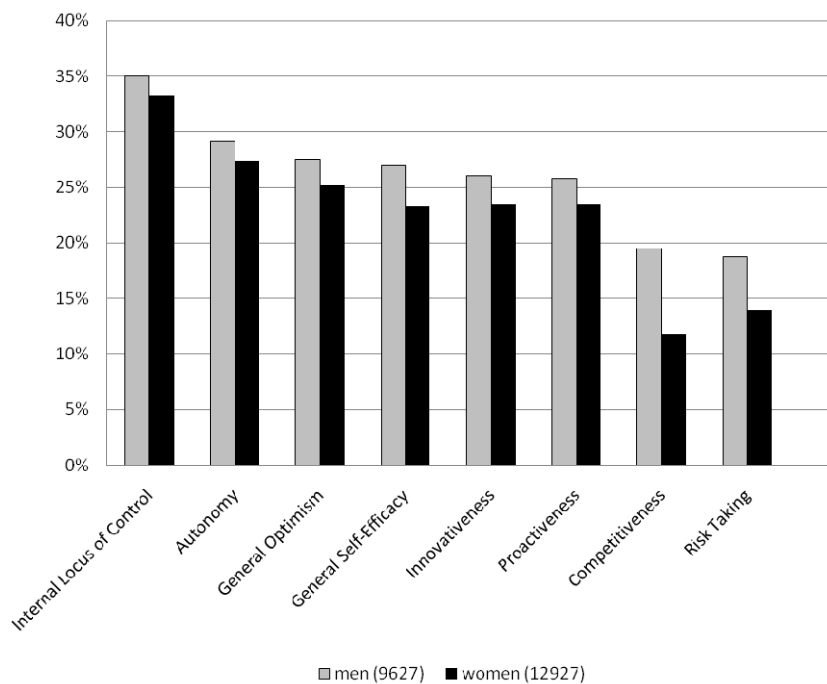| | Total sample | | | | EU27 | | | | | | | |
| | Preference for Self-Employment 2007 | | Share of Self-Employed 2009 | | Preference for Self-Employment 2007 | | Share of Self-Employed 2009 | | Share of Employers 2009 | | TEA 2006 | |
VARIABLES	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)	(4a)	(4b)	(5a)	(5b)	(6a)	(6b)
IEA score of 21 to 23	1.050**	0.959**	0.116	0.0104	1.273**	1.173***	0.413	0.301	0.219	0.227**	0.122	0.241*
	(0.464)	(0.408)	(0.241)	(0.201)	(0.448)	(0.392)	(0.289)	(0.212)	(0.134)	(0.0868)	(0.201)	(0.133)
IEA score of 24 to 26	1.310***	0.766**	0.750***	0.262	1.437***	0.906**	0.843***	0.372*	0.254**	0.0905	0.164	0.0645
	(0.327)	(0.346)	(0.169)	(0.192)	(0.317)	(0.338)	(0.201)	(0.180)	(0.101)	(0.0724)	(0.158)	(0.104)
IEA score of 27 to 29	2.004***	1.118*	0.843**	0.294	2.297***	1.443**	1.117***	0.318	0.474**	0.0946	0.302	-0.0740
	(0.545)	(0.572)	(0.326)	(0.307)	(0.527)	(0.556)	(0.361)	(0.317)	(0.169)	(0.130)	(0.199)	(0.158)
IEA score of 30 to 32	1.655***	1.095**	0.864***	0.416*	1.656***	1.141***	1.032***	0.524**	0.528***	0.273***	0.562***	0.362**
	(0.383)	(0.390)	(0.242)	(0.233)	(0.399)	(0.396)	(0.269)	(0.226)	(0.122)	(0.0927)	(0.175)	(0.123)
Employment Rate		0.436***		0.298***		0.402**		0.380***		0.221***		0.209***
(Population 15-64 Years)		(0.155)		(0.0799)		(0.148)		(0.0841)		(0.0414)		(0.0514)
Lack of Financial Support	-0.0897	-0.102	-0.0954	-0.106	-0.00425	-0.0319	-0.0674	-0.0835	-0.0801	-0.0563	-0.0800	-0.0433
	(0.156)	(0.137)	(0.0906)	(0.0750)	(0.152)	(0.132)	(0.101)	(0.0734)	(0.0507)	(0.0332)	(0.0773)	(0.0505)
Observations	56	56	66	66	50	50	54	54	50	50	32	32
R-squared	0.741	0.810	0.751	0.836	0.778	0.840	0.774	0.886	0.775	0.910	0.777	0.916
Number of countries	28	28	33	33	25	25	27	27	25	25	16	16

Notes. For each country the dependent and explanatory variables are observed for females and for males which means that the fixed effects regressions focus on the within-country variation between females and males. Self-employment preference: data are obtained from the Flash EB 2007. Data are available for the EU25 plus Norway, Iceland, and the US. Share of Self-employed: data are taken from the LFS 2009 provided by EUROSTAT for 31 European Countries including the EU27. Data for Japan and the US are added from the world bank database. Share of Employers: data are obtained from the LFS 2009, available for the EU27 except of Malta and Estonia. TEA-index: data are taken from the GEM Adult Population Survey 2006; available for 16 European Member stated of the EU27. Employment rates are obtained from the LFS 2009 provided by EUROSTAT computed as the number of employed individuals of age 15 to 64 over the number of the total population of this age group. Standard errors in parentheses; level of significance: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Figure 1: Distribution of *IEA* scores of Men and Women
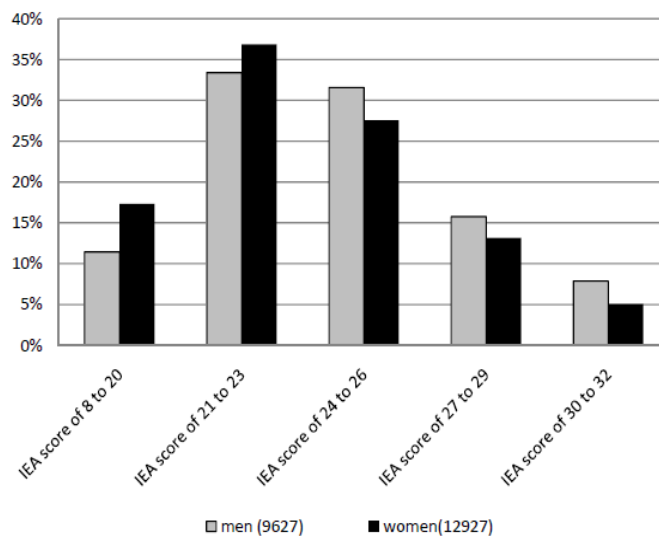
Notes: The Figure is based on a sample of 22554 observations, 9627 men and 12927 women as the maximum number of individuals who answered to all items of the *IEA* measure. Top-scores are defines as those individuals who completely agreed with the statement. Source: Flash EB Entrepreneurship 2009.

Figure 2: Share of Top-Scorers in the Single Personality Traits forming *IEA*

Notes: The Figure is based on a sample of 22554 observations, 9627 men and 12927 women as the maximum number of individuals who answered to all items of the *IEA* measure. Top-scores are defines as those individuals who completely agreed with the statement. Source: Flash EB Entrepreneurship 2009.