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GENDER ASYMMETRIES IN EARLY-STAGE ENTREPRENEURIAL BEHAVIOR

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Abstract

Several studies have shown the existence of significant differences in the rate of new firms' creation between men and women. Specifically, it has been shown that women are much less likely to be involved in entrepreneurship than men worldwide. It is not yet understood, however, if such differences are the result of personal characteristics of the individual and of her economic environment or are, instead, the result of evolutionary phenomena. Our empirical analysis is conducted using representative samples of population for 37 countries and a special form of bootstrapping that allows us to equalize individuals' conditions and, as a result, analyze the choices of men and women put in identical economic environments and socio-economic circumstances. Our results suggest that, although men and women react to the same factors, perceptual variables account for much of the difference in gender decisions with respect to starting a business and that such differences are universal and do not result from socio-economic and contextual circumstances.

Keywords: *Bootstrap, Gender, Entrepreneurship, Female Entrepreneurship, Nascent Entrepreneurship, Perceptions, Stochastic Process Simulation*

JEL Code: *J10, M13, O10*

1. Introduction

Although the absolute number of women in self-employment has increased in recent years (CWBR 2004), empirical studies show that significant differences still exist in the levels of new firm creation across genders, and that the number of women involved in starting a new business is significantly and systematically lower than that of men (Minniti et al. 2005).

Traditionally, gender differences in entrepreneurial activity have been attributed to differences in human and social capital (Greene 2000), differences in risk tolerance (Jianakoplos and Bernasek 1998) and management styles (Brush 1990, 1992), and to the fact that women tend to be more sensitive than men to a variety of non-monetary incentives (Boden 1999, Burke et al 2002, Lombard 2001). On the other hand, Lefkowitz (1994) has shown that men and women tend react to the same set of incentives and much of the difference across genders disappears after correcting for some socio-economic conditions. Along similar lines, Langowitz and Minniti (2005) suggest that self-employed men and women tend to react to the same set of entrepreneurial drivers, and that gender differences stem from the intensity with which perceptual variables are used in the formation of decisions across genders. In their work, however, socio-economic and perceptual factors are not clearly separated from the economic context of the individuals. In other words, it is not possible to determine to what extent perceptions are influenced by cultural and institutional factors, as opposed to being the result of universal and, possibly, evolutionary asymmetries across genders.

We complement this literature by confirming that differences in involvement rates arise from the fact that, although the factors influencing decisions with respect to entrepreneurship are the same, the intensity with which individuals react are different across genders and, in particular, that subjective (and potentially biased) perceptions play a crucial role in the decision to start a business. Furthermore, we show that the importance of perceptual variables for entrepreneurial decisions is a universal factor and does not depend on the country in which such decisions are taken.

We use individual level survey data collected in 2002 for the Global Entrepreneurship Monitor (GEM) Project. Data consists of a stratified representative sample of at least 2000 individuals per country in 37 countries. Our dependent variable describes whether individuals are involved in entrepreneurial activity. Our independent

variables include socio-economic characteristics, perceptual characteristics, and the economic environment. We conduct two types of analyses. First, we present descriptive statistics by calculating contingency tables between two or more factors with the associated confidence intervals. This allows us to detect statistically significant differences across gender with respect to the variables included in the model. Second, using a bootstrap procedure, we test whether men and women adopt similar decision models and whether different perceptions explain gender differences with regard to entrepreneurial activity.

Although not yet widely used in social studies, bootstrapping is a powerful non-parametric method capable of avoiding several of the limitations inherent in standard regression models. Specifically, our version of bootstrap equalizes all respondents characteristics except gender in order to detect statistically significant differences related to entrepreneurship (for example, being or not a nascent entrepreneur). The rationale behind the equalization procedure is that man and women may possess different distributions of the related to entrepreneurship. The equalization procedure is aimed at weighting the distribution of characteristics equally for both men and women populations. In order to achieve this, from our total number of observations, we consider in turn all possible combination of characteristics, filtering two sub-samples of individuals who all have identical characteristics but are of different genders. For each group we then test for the propensity to start new businesses. In this way, for each gender, it is possible to derive an aggregate propensity to start new businesses by combining all groups by means of a set of weights, the same for both genders. Any statistical difference between such equalized propensities for each gender is detected by determining confidence intervals using the percentile method applied to the bootstrap distribution.

Our results suggest that differences between genders do not arise from socio-economic conditions but from perceptual variables. Although some very minor effect favoring men's involvement in entrepreneurial activity remain, there are almost no differences between genders when perceptual variables are equalized using our bootstrap procedure. Finally, perceptual differences appear to be independent from contextual factors.

2. Theoretical Background

All over the world, and throughout history, people have created businesses. Thus, entrepreneurship is a cross-country phenomenon with country-specific aspects, and understanding it requires two different, though related, components. First, there are factors that influence entrepreneurship across countries. These factors are universal determinants of entrepreneurial behavior. Second, there are aspects of entrepreneurship that are culture specific. The purpose of this paper is to understand to what extent universal drivers are independent from the environment in which decisions are made and are, instead, the outcome of evolutionary forces.

A significant amount of research in various fields has investigated what variables are universally correlated to the decision to start a new business. Although much more work is needed in this area, most scholars now agree that the decision to start a new business is a complex one and is influenced by a wide variety of socio-economic and perceptual characteristics of the individual. Among socio-economic characteristics, employment status, income, age, education and gender have all been shown to be crucial determinants of an individuals' decision to become an entrepreneur and to have a systematic effect on entrepreneurial decisions regardless of environmental circumstances.[1]

Perceptual variables represent another group of factors which exercises universal influence on the decision to start a new business. An increasing number of scholars agree that opportunity recognition, self-confidence, fear of failure, and knowing other entrepreneurs are, in fact, among the most important drivers of entrepreneurial behavior (Arenius and Minniti 2005, Koellinger et al. 2004). Table 1 provides a summary of key facts related to socio-economic and perceptual characteristics and the corresponding relevant bibliography.

Table 1 about here

The second crucial component of entrepreneurial decisions includes aspects of entrepreneurial behavior that are country specific. Unfortunately, there is no simple way to approximate a country's economic environment. Nonetheless, it has been shown that the quality and quantity of entrepreneurship varies when countries with different levels of

[1] For a comprehensive survey of this literature see Blanchflower (2004) and Minniti (2003).

per capita income, growth potential, and a free economic environment are considered (Acs et al. 2005, Baumol 1990).

At low levels of national per capita income, the entrepreneurial sector provides job opportunities and potential for the creation of markets. As per capita income increases, the emergence of new technologies and economies of scale allows larger and more established firms to satisfy the increasing demand of growing markets and to increase their relative role in the economy. Thus, the numbers of business start-ups decrease as a growing number of people are able to find stable employment. Finally, as further increases in per capita income are considered, the role played by the entrepreneurial sector increases again, as more individuals have the resources to go into business for themselves in an economic environment that allows the exploitation of opportunities. Clearly, these trends may be disturbed by the absence of economic freedom which would reduce individuals' ability and incentives to start new businesses and, regardless of the initial level of GDP, by the absence of growth potential, which also reduces entrepreneurial opportunities and incentives. Table 1 provides a brief summary of key facts related to the macroeconomic environment and the corresponding relevant bibliography.

Noticeably, variations in entrepreneurial activity due to macroeconomic conditions are more pronounced when women's entrepreneurship is considered, because women's employment choices are more sensitive to the local environment than those of men. In fact, recent studies have shown that the choice to start a new business is far more complex for women then men, and that women tend to be more sensitive than men to a variety of non-monetary incentives (Burke et al. 2002). For example, for women more than for men, the choice to start a new business is often linked to necessity or to time and location flexibility; that is, to the type of independence that can accommodate family needs and child rearing. Our bootstrapping method is particularly appropriate exactly because, through equalization, it allows local influences be eliminated when trying to determine if, in addition to socio-economic and local effects, gender differences with respect to entrepreneurship depends also on evolutionary factors.

3. Data

Data used in the paper are from the Global Entrepreneurship Monitor (GEM) project.[2] Using surveys of a representative sample of individuals in each participating country, the GEM project estimates the prevalence rates of early stage entrepreneurial activity. Data used in this paper were collected in 2002. For our purposes, complete data were available for 37 countries, namely: Argentina, Australia, Belgium, Brazil, Canada, Chile, China, Chinese Taipei, Croatia, Denmark, Finland, France, Germany, Hong Kong, Hungary, Iceland, India, Ireland, Israel, Italy, Japan, Korea, Mexico, Netherlands, New Zealand, Norway, Poland, Russia, Singapore, Slovenia, Spain, South Africa, Sweden, Switzerland, Thailand, United Kingdom, and United States.

In each country, a standardized survey was administered to a representative sample of at least 2,000 adults, except for Mexico and Thailand whose samples included 1002 and 1048 individuals respectively, yielding a cross-country total of 116,776 individuals.[3] Since we study the role of perceptions in the decision to start a new business, the use of survey data seems particularly appropriate. In addition, GEM data are exceptionally well suited for our purpose since they record the answers of individuals who are in the process of starting a new business at a particular point in time and are not the results of ex post evaluations of past decisions.

Consistently with the theoretical underpinning of our argument, variables incorporated in the study include socio-economic characteristics of the individual such as age, gender, education, work status, and income, as well as perceptual characteristics such as confidence in one's own skills and abilities, opportunity perception, and fear of failure. Table 2 provides a list and descriptions of all variables in the study, including their codes and sources. Noticeably, all variables are either dichotomic or categorical in nature, except age which was aggregated into 6 classes. This allows the use of the proposed bootstrap method described in Section 5.

Table 2 about here

The purpose of our study is to establish the existence of gender effects on the decision to start a new business independently from macroeconomic circumstances. Thus, we wish to eliminate country effects as much as possible. In other words, we need to

[2] More details about the Global Entrepreneurship Monitor project may be found at www.gemconsortium.org

[3] Details about the procedures used to collect and harmonize GEM data can be found in Reynolds et al. (2005).

average away differences in macroeconomic circumstances and place individuals in identical situations. To this end, we classify each of the countries in our sample in one of five general groups each characterized by a different type of economic environment. The classification is executed on the basis of three parameters: real per capita GDP (*GDPPC02*), real per capita GDP growth (*GDPCCH02*), and an index of economic freedom (*IEF02*).[4] The distinction into 5 groups and the boundaries for each group were determined by looking at the distribution of the countries represented as points in the 3D scatter plot for the 3 parameters under consideration. For simplicity, we subdivided the cloud of points in this space slicing it in two parts for each axis and choosing threshold values so as to preserve clusters of countries emerged on the basis of the selected parameters. Figure 1 is a composite diagram including all possible 2D scatter plots resulting from the 6 ordered pairs of the three parameters considered. The outlier point with *GDPCCH02* < -18% corresponds to Venezuela.

Figure 1 about here

Within this framework, a country is classified as poor (P) or rich (R) if its real per capita GDP is below or above US$20,000. A country is classified as stagnant (S) or growing (G) if its real per capita GDP growth is below or above 1%. Finally, a country is classified as economically free (F) or not economically free (N) if its index of economic freedom is below or above 2.5. As a result, our 37 countries could be divided into 5 groups: rich and stagnant countries (RS); rich and growing countries (RG); poor and stagnant countries (PS); poor, growing and economically free countries (PGF); poor, growing and not economically free countries (PGN).[5] Table 3 shows the distribution of observation across country groups.

Table 3 about here

In order to facilitate our subsequent analyses we remove all observations which included a "NA" or "NOT KNOW" answer for any of the variables considered. In fact, as we will describe in Section 5, our bootstrap method consists in considering the space of all combinations of variables. Clearly, records with void variables cannot be placed in

[4] *GDPPC02* and *GDPCCH02* are from the IMF - World Economic Outlook Database and are available at http://www.imf.org/external/pubs/ft/weo/2002/02/data/index.htm *IEF02* is from the 2003 Index of Economic Freedom.

[5] Although 8 combinations are possible for the 3 parameters, three of the groups are eliminated. In fact, the group RGN is empty, the group PSF includes Portugal alone, and the group RSN includes France only. As a result, Portugal is reassigned to the PS group and France is reassigned to the RS group.

this space. As a result, across all countries in our sample, the total number of observations with complete information about socio-economic characteristics only is 73813, the total number of observations with complete information about perceptual characteristics only is 92647, and the total number of observations with complete information about both socio-economic and perceptual characteristics is 59304.

4. Preliminary Data Analysis

A preliminary understanding of the relationship between entrepreneurship, gender and other independent variables is obtained from simple exploratory data analyses. Since the dependent variable (*SUBOANW*) is a binary (yes/no) variable, we are able to estimate 95% confidence intervals of the probability of an individual being a nascent entrepreneur by means of a binomial distribution.[6] Table 4 shows the number of respondents coded as nascent entrepreneurs divided by gender, as well as the confidence interval for the corresponding probabilities expressed as percentages. The table clearly shows that significant gender differences exist in the rate of new venture creation and that men are more frequently involved in start-up activities than women.

Table 4 about here

The existence of a systematic difference between the rate of involvement in entrepreneurship of men and women is also supported by an analysis of 3-way contingency tables. Table 5, for example, shows the dependency of nascent entrepreneurship on macroeconomic conditions (as described by our countries' classification) by gender. The rate of involvement of both, men and women, move in the same direction. Thus, countries with high rate of male entrepreneurial activity have also high rate of female entrepreneurial activity. Nonetheless, gender differences remain statistically significant in each and all groups.

Table 5 about here

Similarly, Table 6 shows the dependency of nascent entrepreneurship upon the perceptual characteristics of the respondents by gender. Regardless of gender, individuals who are self-confident, know other entrepreneurs, perceive unexploited opportunities and are not deterred from the possibility of failure are more likely to start a new business.

[6] Appendix A provides details of the R binomial function used.

However, men are more self-confident than women, perceive more opportunities, are more likely to know other entrepreneurs and have more tolerance for failure. Once again, gender differences remain statistically significant in each and all groups.

Table 6 about here

Finally, Table 7 shows the dependency of nascent entrepreneurship upon the socio-economic characteristics of the respondents by gender. For example, the effect of age shows up as a typical inverted U-shape in the propensity to start a new business, irrespective of gender. The upper 33% income is related to the highest propensity to start a new business, again irrespective of gender. Nascent entrepreneurship is also favored by higher education levels, and negatively related to retired or disabled status. It is found that gender differences remain statistically significant in each and all groups, with the partial exception of the homemaker group, for which an overlap in 95% confidence intervals exist between entrepreneurship propensity for different gender.

Table 7 about here

Overall, and consistently with existing literature, our exploratory data analysis suggests that, although men and women tend to react to the same set of variables and in the same qualitative ways, the intensities of their reactions are statistically significantly different (Langowitz and Minniti 2005). We argue that this intensity differential may explain, at least in part, the observed discrepancy between the rates of new firms' creation across gender. Of course, because of possible hidden relationships between other variables included in the data, contingency tables cannot determine unequivocally the relationship between the dependent and the independent variables. In other words, when building contingency tables, not all conditions are kept equal. This equalization is achieved by the simulation method that we propose and develop in the next section.

5. Bootstrap methodology

Given the results of our preliminary data analysis, we ask the question: When placed in an "identical situation", do men and women have the same probability of starting a new business? An "identical situation" is defined as one in which men and women possess identical values for a given set of characteristics except, of course, gender. In the case of our study, we test for various specifications of "identical situations" by considering first only external economic conditions, then only perceptual variables,

and finally, all independent variables included in Table 2. This method allows us to assess separately the influence of individual characteristics and of groups of homogenous characteristics on an individual's decision to start a new business. For example, we are interested in learning whether men and women make different decisions with respect to starting a new business even when they are put in the same situation. Thus, we would want to compare men and women with identical age, work status, education, income, etc.

Clearly, most characteristics present a variety of possible realizations (e.g., the way in which different ages, work status, education levels, etc. may combine creates quite a variety of "individuals") and we need to take into account all possible combinations of categorical values for all the characteristics considered. Thus, the relationship between men and women probabilities to start a new business has to be assessed not only for a specific situation, but averaged over all possible situations. In fact, each particular situation is defined by a specific combination of categorical values, and its relative importance is measured by a weight which takes into account the number of individuals (men or women or both) who find themselves in that very situation. Some or most combinations may be scarcely populated, or with no records at all. In each combination, our bootstrap simulation needs at least one record for each population considered (in our case the female and male populations). All other combinations are dropped from the analysis.

Let's consider a group in which each individual may be characterized by a certain number of attributes such as age, income, level of education, etc. Depending on the number of attributes, there exists a finite set of possible combinations of those attributes that determines how many types of individuals exist. For example, let's say we only look at two attributes, namely the individuals' education (whether they have a college degree) and income (whether they make above or below $50,000). Given this information, we can identify at most 4 types of individuals, namely individuals with a college degree who make less than $50,000, individuals with a college degree who make more than $50,000, individuals without a college degree who make less than $50,000, individuals without a college degree who make more than $50,000.

Formally, our population of n individuals covers a finite space $\{1,2,...,L\}$ where L is the space molteplicity, i.e. the total number of different combinations of attributes. In other words, each individual can be placed in one of L cells. For example, Table 8 shows

that L=16 when only the 4 perceptual factors are considered, whereas L=2700 when all socio-economic variables are considered.

Table 8 about here

The probability distribution function (PDF), for male or female, can be denoted as $\boldsymbol{f} = (f_1,f_2,...,f_L)$, where $f_k = Prob(X=k)$, and X is a random variable identifying an individual. For each k in the sample space $\{1,2,...,L\}$, the probability of being a nascent entrepreneur is denoted by p_k^{male} and p_k^{female}. Thus, the aggregate probability of being a nascent entrepreneur is given by the weighted sum

$$p^{male} = p^{male}(\boldsymbol{f}) = \Sigma_{k=1,L}\, p_k^{male}\, f_k^{male}$$

Similarly, $p^{female} = p^{female}(\boldsymbol{f}) = \Sigma_{k=1,L}\, p_k^{female}\, f_k^{female}$

We now ask: Does the difference in probability to start a new business between gender remain or disappear when men and women are placed, on average, in "identical situations" for a set of characteristics? In the event that the difference stays the same, those characteristics say nothing about the phenomenon under study. In contrast, if the difference disappears, this is a sign that the characteristics considered "explain" the phenomenon.

The method used to place male and female populations, on average, in the same situation is called equalization. Specifically, the procedure for equalizing conditions between men and women amounts to selecting a suitable reference distribution $\boldsymbol{f}^{ref}$ (for example, the average $\boldsymbol{f}$ of all pooled survey respondents) and calculating a re-weighted sum where the new weights consist of the men's (or women's) probabilities of being nascent entrepreneurs. That is,

$$p_{eq}^{male} = p^{male}(\boldsymbol{f}^{ref}) = \Sigma_{k=1,L}\, p_k^{male}\, f_k^{ref}$$

or, analogously,

$$p_{eq}^{female} = p^{female}(\boldsymbol{f}^{ref}) = \Sigma_{k=1,L}\, p_k^{female}\, f_k^{ref}$$

An alternative way to equalize conditions is asking what the overall probability of being a nascent entrepreneur is for women, given a distribution of conditions that follow the men's population distribution. This can be done by setting $\boldsymbol{f}^{ref} = \boldsymbol{f}^{male}$. In this case we can compare $p^{female}(\boldsymbol{f}^{male})$ with $p^{male}(\boldsymbol{f}^{male})$. Of course, male and female roles can be reversed.

It must be noted that all ways to equalize conditions of the two subpopulations require that, for each category k, $f_k > 0$.

We now use the data to obtain two different estimates. Namely, an estimate for $\{f_k\}$ and an estimate for $\{p_k\}$. In both cases the MLE is given exactly by the observed $\{f_k\}$ and $\{p_k\}$. In the first case, the observed $\{f_k^{obs}\}$ is distributed as a rescaled multinomial with L categories, n draws and true probability vector $\{f_k\}$. In the second case, the observed $\{p_k^{obs}\}$ are distributed as binomials with $n\{f_k^{obs}\}$ draws and true probability $\{p_k\}$.

The assessment of statistical significance of the comparison of such equalized probabilities, typically by means of an estimation of the confidence interval, can be achieved using a bootstrap procedure. Initially introduced by Efron (1979, 1982), the bootstrap is the simplest technique based on "re-sampling plans" with the goal of producing non parametric estimates of bias, variance and other measures of error. A re-sampling plan is any method that evaluates a statistics using samples drawn from the empirical probability distribution of the original data.[7] Given a statistic $\hat{\theta}(X_1, X_2, ..., X_n)$ defined symmetrically in $X_1, X_2, ..., X_n$ random variables independent and identically distributed (i.i.d.) according to the probability distribution function (PDF) f, we can consider a quantity describing the error of the statistic $\hat{\theta}$ compared to the real value θ, for example the standard deviation σ or the confidence interval. This error quantity, for concreteness σ, is a function of the probability distribution function **f**, therefore $\sigma = \sigma(f)$. Re-sampling plans in general make use of the empirical probability distribution (EDF) $\hat{f}$, defined as $1/n$ at the observed values $x_1, x_2, ..., x_n$. The bootstrap estimate of σ is simply $\hat{\sigma} = \sigma(\hat{f})$. Since usually the function $\sigma(f)$ cannot be written down explicitly, it is necessary to use a Monte Carlo algorithm as follows:

1. Determine and maybe smooth the empirical probability distribution $\hat{f}$.
2. Draw a "bootstrap sample" with replacement from $\hat{f}$, i.e. $X_1^*, X_2^*, ..., X_n^*$ *i.i.d.* ~ $\hat{f}$, and calculate $\hat{\theta}^* = \hat{\theta}(X_1^*, X_2^*, ..., X_n^*)$.

[7] Our brief description of the bootstrap technique follows Efron (1982, ch.5) and uses notation from Davison and Hinkley (1997).

3. Repeat step 2 a large number B of times, obtaining "bootstrap replications" $\hat{\theta}_1^*,...,\hat{\theta}_B^*$ and over their distribution calculate the error quantity of interest, $\hat{\sigma}$ or others.

In our case, the statistics θ are either the aggregate equalized probabilities to be a nascent entrepreneur for male and female, or simply the odds ratio between the two. The statistical quantity which we want to obtain with bootstrap as a measure of error is the confidence interval (typically at the 95% level). In comparison with simpler error quantities such as the standard deviation, to obtain confidence intervals, bootstrap methods require more bootstrap replicates B (of the order of 1000), however this is not a problem for today's computational capabilities. We use the percentile method to extract confidence interval from bootstrap replications distribution (Efron 1982, Ch. 10; Davison and Hinkley 1997, Ch. 5).

To summarize, we devised a method to disentangle the interdependencies between categorical variables based on a full enumeration of all possible combinations. In essence, we exploit the modern availability of inexpensive computational resources to avoid the use of any kind of regression (loglinear, logistic, logit, probit, and so on). In fact, although widely studied and used, all regression procedures require some form of linearity and model interdependencies which, often, cannot be easily justified.

6. Bootstrapping results

We apply our bootstrap method to GEM 2002 data, including only observations for which values for all categorical variables are available. That is, to a sub-sample of 59304 individuals.

Table 8 shows results for the first equalization in which only socio-economic variables are considered obtaining 2700 combinations. In the second subset only perceptual variables have been equalized, obtaining 16 combinations. Finally, all variables have been equalized, obtaining 43200 combinations. As discussed in the previous section, the procedure of equalization requires that, for each combination, at least one record per gender must be present and, as a result, a number of potential combinations were eliminated. This also implied the elimination of the records corresponding to men (or women) being in one of the eliminated cells (combinations). As shown in Table 9, while this pruning procedure may eliminate a large portion of combinations, most of the records are kept, suggesting that we are still able to capture the

most important features of the data. More importantly, it must be noted that we are interested in comparing rates of nascent entrepreneurship between gender with or without putting individuals on equal conditions. Conditions exceptionally peculiar of one gender only are not of interest for the sake of comparison, as a result, the potential loss of such individuals is of no consequence to our analysis.

Table 9 about here

Table 10 shows the results of the equalization procedure applied to the socio-economic variables and macroeconomic conditions. There is a difference in propensity to start a new business between men and women which is statistically the same compared to the original data without equalization. In fact, the 95% confidence intervals corresponding to the odds ratios of male vs female propensity with and without equalization overlap. We can conclude that the socio-economic conditions, as described by the categorical variables considered, do not explain the gender difference in nascent entrepreneurship.

Table 10 about here

Table 11 shows the results of the equalization procedure applied to the perceptual variables. Results are completely different from the previous situation. In fact, the difference in propensity to start a new business between male and female individuals almost disappears, since the odds ratio of male vs female propensity with equalization is included in the bracket (1.135,1.240) at the 95% confidence level, while the corresponding confidence interval without equalization is (1.791,1.963). This result suggests that perceptual variables are very important in explaining gender differences with respect to entrepreneurial behavior.

Table 11 about here

Table 12 shows the results of the equalization procedure applied to three of the four perceptual variables, namely *SUSKILL*, *OPPORT*, and *FEARFAIL*. In this case also, the difference in propensity to start a new business between men and women almost disappears, since the odds ratio of male vs female propensity with equalization is included in the bracket (1.194,1.305) at the 95% confidence level. The fact that the confidence interval found in this case overlaps with the one found for all the perceptual variables suggests that *KNOWENT* is less important in explaining gender differences in comparison with the others.

Table 12 about here

Table 13 shows the results of the equalization procedure applied only to *SUSKILL* and *FEARFAIL*. In this case the odds ratio of male vs female propensity to start a new business with equalization applied is included in the bracket (1.262,1.378) at the 95% confidence level. Although there is still a significant large drop in gender differences, the odds ratio of male vs female propensity is slightly higher than in the case of equalization of all perceptual variables. This suggests that *OPPORT* is an important factor in explaining gender differences, though *SUSKILL* and *FEARFAIL* seem to have the dominant effects.

Table 13 about here

Table 14 shows the results of the equalization procedure applied to all the variables considered in the study. In this case the odds ratio of male vs female propensity to start a new business with equalization applied is included in the bracket (1.140,1.240) at the 95% confidence level. This confidence interval is statistically compatible with the corresponding odds ratio confidence bracket obtained by equalization of the perceptual variables only, confirming that the gender differences in propensity to start a new business are almost completely explained by such variables.

Table 14 about here

Finally, Table 15 shows the results of the equalization procedure applied to all the variables considered in the study, with the exception of SUSKILL. In this case the odds ratio of male vs female propensity to start a new business with equalization applied is included in the bracket (1.388,1.518) at the 95% confidence level. This confidence interval is intermediate between the one corresponding to odds ratio obtained by equalization of all variables only, and the one corresponding to odds ratio obtained with no equalization at all, confirming that the perception of having or not the skills suitable for entrepreneurship is a major factor behind gender differences in propensity to start a new business.[8]

Table 15 about here

[8] A systematic and quantitative study of the comparison between full equalization of all available categorical variables and full equalization except one variable, and the relationship between such quantitative comparison and the standard logit regression coefficients, is outside the scope of this paper.

7. Discussion and further extensions

The purpose of this study is to investigate what variables cause differences in entrepreneurial behavior across genders and whether those differences are independent from country effects. Much work has been done on the differences between men's and women's behavior in the work place. However, it is clearly possible for these differences to be the effect of other factors that co-vary systematically with gender and do not necessarily depend on work conditions. In fact, our analyses show that, although work status and education have some minor gender specific impact, the relationships between the likelihood of starting a new business and age, household income, work status, and education do not depend on gender. This is consistent with Lefkowitz (1994) who shows that men and women react similarly to the work environment when one controls for spurious effects caused by systematic differences in types of job and job payments. On the other hand, our results lend support to the hypothesis that the variables influencing entrepreneurial behavior are the same for men and women, and suggest that perceptual variables are the most important component of such differences and that the latter do not depend on local conditions but are rooted in more universal, perhaps evolutionary, differences across genders.

The emphasis on information and perceptions is not new in economic theories of entrepreneurship. Kirzner (1973, 1979) argues that entrepreneurship is "alertness." That is, the ability to perceive unexploited opportunities. Along similar lines, Hayek (1952) argues that attention is always directed to things that we are on the lookout for and that, as a result, we are able to perceive more clearly. This means that entrepreneurial discovery is not a pure bolt from the blue but it is based on an individual's ability to perceive an unexploited opportunity and act upon it. Attitudes toward entrepreneurship (or anything else for that matter) reflect, to a large extent, subjective perceptions rather than objective conditions. Regardless of macroeconomic conditions, a very strong dependency exists between self-confidence, fear of failure and, to a less extent, opportunity perceptions. In fact, the perception of having sufficient skills is a dominant variable that seems to have an effect independent of institutional settings, culture and overall level of entrepreneurial activity. This indicates that the subjective perception of having sufficient skills is a crucial factor in the decision to start a new venture. Clearly, individual perceptions may differ from actual abilities and risk levels and are likely to be

biased. There exists some evidence that distortions in perceptions are common among individuals in general, and among entrepreneurs in particular (Busenitz and Barney 1997, Cooper et al. 1988). On the other hand, an individual may perceive her own entrepreneurial adeptness as a signal of potential success, and, as a result, be more receptive to entrepreneurial opportunities.

Our study lends itself to several extensions. First, our findings that self-efficacy influences an individual's choice of becoming an entrepreneur calls for a formal test of expectancy theory. Expectancy theory suggests that an individual's belief that he or she can perform the task (start a new business) and his or her belief about the consequences or outcomes influence whether or not the individual undertakes the task to begin with. In fact, our results suggest that if women feel they have the skills and knowledge to engage in entrepreneurship, and believe that their abilities will lead to success, they will be more likely to start their own businesses (Baron et al. 2001).

Second, with respect to the old standing debate on whether or not women tend to be less risk tolerant than men, our results suggest that although risk tolerance may play some role in gender differences, what matters is not the respondents' fear of failure. Rather, it is the degree to which fear of failure affects the behavior of individuals. Noticeably, perceptions and risk tolerance are both subjective characteristics of the individual. They cannot be easily changed by exogenous interventions such as, for example, government intervention. Thus, our results have significant policy implications. While policy can alter an individual's incentives, the cultural factors that mold perceptions and risk profiles depend on the specific history of the place. They are path-dependent and, as a result, do not change or change very slowly. Although perceptions do change over time, to alter the way in which individuals think about themselves and their role in society takes a long time.

Overall, great opportunities exist for governments at all levels to tap into the under utilized potential of women. Across the world, women from a variety of backgrounds are showing increasing interest in expressing their entrepreneurial spirit. And yet, many women hesitate to transform their business ideas into action. Although many reasons exist for such hesitation, our results suggest that lack of confidence and fear of failing are among the most important causes of the relatively low involvement of women in entrepreneurship compared to men.

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Appendix A: R package and functions used

Our preliminary analysis is conducted using R language, an open source statistical system largely based on S language and available at the URL http://www.r-project.org/ under the GPL (GNU Public License).

The Bernoulli confidence intervals are calculated using the R function binomial test and implementing an exact binomial test of a simple null hypothesis of the probability of success in a Bernoulli experiment. In our case the input is a vector of length 2 giving the number of successes and failures, the output is a 95% confidence interval for the probability of success obtained by a procedure first given in Clopper and Pearson (1934). The corresponding R statement is:

```
res <- binom.test(c(n.yes,n.no))$conf.int
```

The contingency tables are constructed using the R function ftable as in the following statement for a 3-way contingency table between variables data.v1, etc.:

```
res <- ftable(table(data.v1,data.v2,data.v3))
```

The bootstrap procedure is implemented using the R function sample which yields a vector of indices with repetition taken from an original vector of indices ind. using probabilities proportional to the frequency of finding that index. The corresponding R statement is:

```
ind.boot <- sample(ind,nsample,replace=TRUE,prob=freq[ind])
```

Figure 1: 3D scatter plots of 3 economy indicators

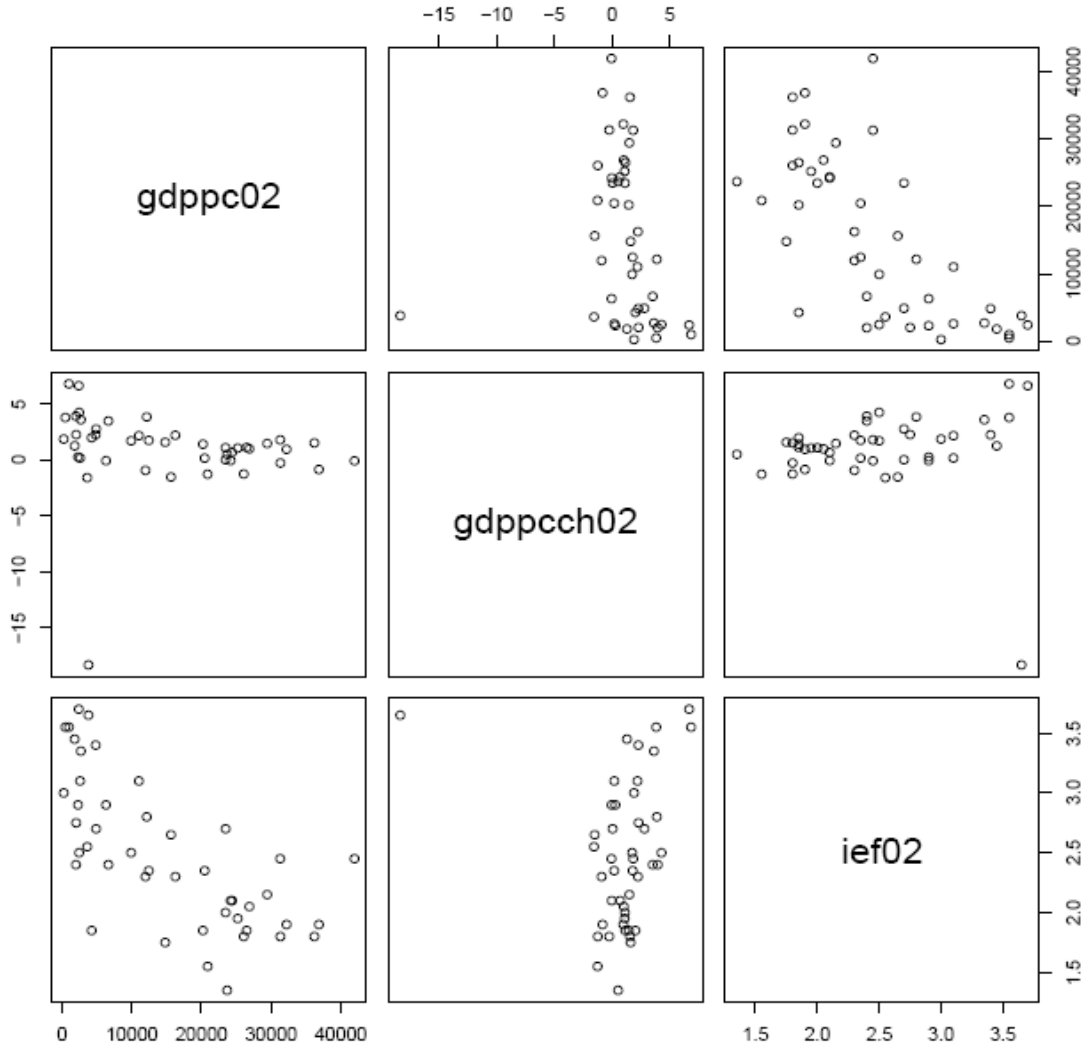

Table 1: Factors correlated to the decision to start a new business and corresponding variables of interest

What we know about the propensity to starting a new business	**Bibliography***	**Corresponding variable**
		Socio-economic characteristics
Men and women react to the same drivers of entrepreneurial activity. Women are systematically less involved than men in the creation of new businesses and differences between genders are relatively stable over time and across countries.	Brush (1990, 1992) Hisrich & Brush (1984) Langowitz & Minniti (2005)	Gender
Although the probability of being an entrepreneur is highest among older individuals, the likelihood of being a nascent entrepreneur is maximized among young individuals. The relationship between *age* and the likelihood of starting a new business picks at a relatively early age and decreases thereafter.	Blanchflower (2004) Levesque & Minniti (In Press) Reynolds et al. (2003)	Age
Entrepreneurs often possess a broad range of talents but no advanced education in any specific area. The relationship between education and new firm formation is uncertain, except for richer countries where post graduate training has been shown to have positive effects on high-tech start-up rates.	Blanchflower (2004) Lazear (2002) Murphy et al. (1991)	Education
Financial resources are among the main constraints faced by potential entrepreneurs, especially in poorer countries and among women. Entrepreneurial decisions are shown to be positively related to individuals' incomes.	Evans & Jovanovic (1989) Khilstrom & Laffont (1979)	Household income
Employed individuals are more likely to start new businesses. This is true for both men and women. However, it is not clear whether high unemployment discourages entrepreneurship by reducing its potential markets or increases it by providing an income producing activity for otherwise displaced workers	Blanchflower (2004) Minniti et al. (2005)	Work status
		Perceptual characteristics
Role models, whether positive or negative, are important because of their ability to enhance self-efficacy. They also provide information and reduce the ambiguity associated with starting a business.	Begley and Boyd (1987) Minniti (2004, 2005)	Knowing entrepreneurs
Entrepreneurs are individuals who are more likely than others to be "alert" to the existence of profit opportunities. Opportunity recognition represents the most distinctive and fundamental entrepreneurial behavior.	Kirzner (1973, 1979) Stevenson & Jarillo (1990) Venkataraman (1997)	Opportunity perception
Starting a new firm is an intentional act that involves repeated attempts to exercise control over the process in order to achieve the desired outcome. Thus, self-confidence plays a crucial role in the decision to start a new business. An internal locus of control increases entrepreneurial alertness and leads to the creation of more new firms.	Baron (2000) Gartner (1985) Harper (1998)	Self-confidence
Since individuals are risk averse, the perceived (rather than objective) possibility of failure is an important component of an individual's decision to start a new business. What matters is not the respondents' fear of failure. Rather, it is the degree to which fear of failure affects the behavior of individuals. Women are usually described as being more risk averse than men but no agreement exists on this topic.	Schubert et al. (1999) Jianakoplos & Bernasek (1998) Johnson & Powell (1994) Levin et al. (1988) Weber and Milliman (1997)	Fear of failure
		Economic context
New firm creation is an economic process embedded in a specific environment. Significant differences exist in the levels of new firm creation across countries and over time and country effects may be quite important for entrepreneurial decisions. Technology, level of economic development, culture, and institutions all influence the demand for entrepreneurship by creating opportunities available for start-ups.	Acs & Audretsch (1993) Chell & Baines (2000) Jack & Anderson (2002) Thurik et al. (2002)	Country effects

* The list of works cited in Table 1 shows only a small sample of the literature existing on the causes and motivations of entrepreneurial behavior and does not pretend to be comprehensive. Also, the scope of some of the listed works spans across more than one group of variables. In such a case, they have been listed as part of the group in which they provide the strongest contribution.

Table 2: Details for all variables included in the study

Variables	Code	Description	Source
Dependent variable			
Nascent entrepreneur	*SUBOANW*	Respondents who, at the time of the survey, were trying alone, with others, or as part of normal work, to start a new business to which they had already committed resources, and that they expected to own entirely or in part. YES/NO Answers	Constructed from GEM survey
Socio-economic characteristics			
Gender	*GENDER*	Respondents were asked to provide their gender	GEM survey
Age	*AGE*	Respondents were asked to provide their year of birth and divided into six age cohorts. Six categories: 18-24 yrs.; 25-34 yrs.; 35-44 yrs.; 45-54 yrs.; 55-64 yrs.; 65-74 yrs.	GEM survey
Education	*GEMEDUC*	Respondents were asked to provide the highest degree they had earned. Responses were then harmonized across all countries into a five-category variable. Five categories: Some secondary school; Secondary degree; Post secondary degree; Grad exp; No education.	Constructed from GEM survey
Household income	*GEMHHINC*	Respondents were asked to provide information about their household income and divided into three categories based on the income distribution of their country of origin. Three categories: Lower 33%; Middle 33%; Upper33%.	Constructed from GEM survey
Work status	*GEMWORK*	Respondents were asked to provide their occupational status at the time of the survey Six categories: Full/Full or part time; Part time only; Retired/disabled; Homemaker; Student; Not working.	GEM survey
Perceptual characteristics			
Knowing entrepreneurs	*KNOWENT*	Respondents were asked whether they knew someone personally who had started a business in the twelve months preceding the survey YES/NO Answers	GEM survey
Opportunity perception	*OPPORT*	Respondents were asked if they believed that, in the six months following the survey, good business opportunities would exist in the area where they lived YES/NO Answers	GEM survey
Self-confidence	*SUSKILL*	Respondents were asked whether they believed to have the knowledge, skill and experience required to start a new business YES/NO Answers	GEM survey
Fear of failure	*FEARFAIL*	Respondents were asked whether fear of failure would prevent them from starting a new business YES/NO Answers	GEM survey

Table 3: Summary of countries' economic classification

Economic classification	Number of observations	% of total observations	Countries included
PS	11999	10.28%	Brazil, Israel, Mexico, South Africa
PGN	17336	14.85%	Argentina, China, Croatia, India, Korea, Poland, Russia, Slovenia
PGF	11295	9.67%	Chile, Chinese Taipei, Hungary, New Zealand, Spain, Thailand
RS	38690	33.13%	Belgium, Denmark, France, Germany, Hong Kong, Ireland, Italy, Netherlands, Norway, Singapore, Switzerland
RG	37456	32.08%	Australia, Canada, Finland, Iceland, Japan, Sweden, UK, USA

Table 4: Propensity to start a new business by gender - Percentage of YES responses (%p-avg) with 95% confidence interval (%p-low, %p-high)

	Yes	No	%p-low	%p-avg	%p-high
Men	1784	33845	4.78	5.01	5.24
Women	1035	37149	2.55	2.71	2.88

Table 5: Propensity to start a new business by gender and by country group - Percentage of YES responses (%p-avg) with 95% confidence interval (%p-low, %p-high)

	Gender	Yes	No	%p-low	%p-avg	%p-high
Poor, Stagnant	*Men*	152	2498	4.88	5.74	6.69
	Women	95	2646	2.81	3.47	4.22
Poor, Growing, Non Econ. Free	*Men*	348	5677	5.20	5.78	6.40
	Women	266	6621	3.42	3.86	4.34
Poor, Growing, Econ. Free	*Men*	164	1431	8.83	10.28	11.88
	Women	76	1580	3.63	4.59	5.71
Rich, Stagnant	*Men*	539	12142	3.91	4.25	4.62
	Women	259	13342	1.68	1.90	2.15
Rich, Growing	*Men*	581	12097	4.23	4.58	4.96
	Women	339	12960	2.29	2.55	2.83

Table 6: Propensity to start a new business by gender and by perceptual variables - Percentage of YES responses (%p-avg) with 95% confidence interval (%p-low, %p-high)

	Gender	**Yes**	**No**	**%p-low**	**%p-avg**	**%p-high**
KNOWENT						
Yes	*Men*	1079	10858	8.53	9.04	9.57
	Women	528	8464	5.39	5.87	6.38
No	*Men*	467	16629	2.49	2.73	2.99
	Women	354	20925	1.50	1.66	1.84
OPPORT						
Yes	*Men*	890	8126	9.26	9.87	10.51
	Women	470	6396	6.26	6.85	7.47
No	*Men*	656	19361	3.03	3.28	3.53
	Women	412	22993	1.60	1.76	1.94
SUSKILL						
Yes	*Men*	1347	13395	8.68	9.14	9.61
	Women	699	9075	6.65	7.15	7.68
No	*Men*	199	14092	1.21	1.39	1.60
	Women	183	20314	0.77	0.89	1.03
FEARFAIL						
Yes	*Men*	318	8386	3.27	3.65	4.07
	Women	210	10778	1.66	1.91	2.18
No	*Men*	1228	19101	5.72	6.04	6.38
	Women	672	18611	3.23	3.48	3.75

Table 7: Propensity to start a new business by gender and by socio-economic variables - Percentage of YES responses (%p-avg) with 95% confidence interval (%p-low, %p-high)

	Gender	Yes	No	%p-low	%p-avg	%p-high
AGE						
16-24 yrs. old	*Men*	233	3477	5.52	6.28	7.10
	Women	104	3278	2.52	3.08	3.71
25-34 yrs. old	*Men*	464	5407	7.23	7.90	8.62
	Women	248	5857	3.58	4.06	4.59
35-44 yrs. old	*Men*	418	6122	5.81	6.39	7.01
	Women	287	6913	3.55	3.99	4.46
45-54 yrs. old	*Men*	275	5422	4.28	4.82	5.42
	Women	164	5962	2.29	2.68	3.11
55-64 yrs. old	*Men*	122	4375	2.26	2.71	3.23
	Women	68	4685	1.11	1.43	1.81
65-74 yrs. old	*Men*	34	2684	0.87	1.25	1.74
	Women	11	2694	0.20	0.40	0.72
HHINC						
Upper 33%	*Men*	637	9488	5.83	6.29	6.78
	Women	291	7840	3.19	3.58	4.01
Middle 33%	*Men*	550	11062	4.36	4.74	5.14
	Women	352	11720	2.62	2.92	3.23
Lower 33%	*Men*	359	6937	4.44	4.92	5.44
	Women	239	9829	2.09	2.37	2.69
EDUC						
Grad. Exp.	*Men*	620	865	5.17	6.69	8.49
	Women	320	643	3.26	4.74	6.63
Post Secondary	*Men*	576	8077	6.14	6.66	7.20
	Women	341	7886	3.72	4.14	4.60
Secondary Degree	*Men*	551	9915	4.84	5.26	5.71
	Women	288	11202	2.23	2.51	2.81
Some Secondary	*Men*	351	8460	3.58	3.98	4.41
	Women	219	9374	1.99	2.28	2.60
None	*Men*	6	170	1.26	3.41	7.27
	Women	2	284	0.08	0.70	2.50
WORK STATUS						
Not working	*Men*	173	3625	3.91	4.56	5.27
	Women	137	4875	2.30	2.73	3.22
Student	*Men*	40	981	2.81	3.92	5.30
	Women	17	1084	0.90	1.54	2.46
Home Maker	*Men*	12	259	2.31	4.43	7.61
	Women	74	3378	1.69	2.14	2.68
Retired/ Disabled	*Men*	42	3092	0.97	1.34	1.81
	Women	24	3422	0.45	0.70	1.03
Part Time Only	*Men*	69	848	5.90	7.52	9.43
	Women	74	2587	2.19	2.78	3.48
Full/Part Time	*Men*	1210	18682	5.75	6.08	6.42
	Women	556	14043	3.50	3.81	4.13

Table 8: Factors defining the categories in the bootstrap procedure and their corresponding multiplicities

Socio-Economic Factors	**Multiplicity**
COUNTRY ECONOMY	5
GEMWORK	6
HHINC	3
EDUC	5
AGE	6
Total socio-economic factors multiplicity	2700
Perceptual Factors	**Multiplicity**
KNOWENT	2
FEARFAIL	2
OPPORT	2
SUSKILL	2
Total perceptual factors multiplicity	16
Total multiplicity	43200

Table 9: Combinations of variables and records included in the equalization study.

	No. of combinations	**Total no. of combinations**	**% included**	**No. of records included**	**Total no. of records**	**% included**
Socio-economic variables	1064	2700	39.4%	57074	59304	96.2%
Perceptual variables	16	16	100.0%	59304	59304	100.0%
All variables	4500	43200	10.4%	48578	59304	81.9%
All variables except SUSKILL	3477	21600	16.1%	52119	59304	87.9%

Table 10: Propensity to start a new business by gender with and without equalization of the socioeconomic variables for a subset of 59304 useful records. The subset includes 1064 combinations out of 2700 possible and 96.2% of the records considered. Percentage of YES respondents (%p-avg) with 95% confidence interval (%p-low, %p-high) for the bootstrap simulation (2000 replications of 100,000 records each). Odds ratios between men and women propensity with 95% confidence interval for the bootstrap simulation.

	Gender	**%p-low**	**%p-avg**	**%p-high**
Observed frequencies	*Men*		5.29%	
	Women		2.90%	
	Odds ratio		1.873	
Observed frequencies under an equalizing distribution	*Men*		5.34%	
	Women		3.03%	
	Odds ratio		1.804	
Bootstrap simulation	*Men*	5.16%	5.30%	5.44%
	Women	2.79%	2.90%	3.00%
	Odds ratio	1.788	1.874	1.962
Bootstrap simulation under an equalizing distribution	*Men*	5.20%	5.34%	5.49%
	Women	2.93%	3.03%	3.13%
	Odds ratio	1.728	1.805	1.886

Table 11: Propensity to start a new business by gender with and without equalization of the perceptual variables for a subset of 59304 useful records. The subset includes 16 combinations out of 16 with 100% of the records considered. Percentage of YES respondents (%p-avg) with 95% confidence interval (%p-low, %p-high) for the bootstrap simulation (2000 replications of 100,000 records each). Odds ratios between male and female propensity with 95% confidence interval for the bootstrap simulation.

	Gender	%p-low	%p-avg	%p-high
Observed frequencies	*Men*		5.32%	
	Women		2.91%	
	Odds ratio		1.874	
Observed frequencies under an equalizing distribution	*Men*		4.38%	
	Women		3.72%	
	Odds ratio		1.185	
Bootstrap simulation	*Men*	5.19%	5.32%	5.46%
	Women	2.81%	2.91%	3.02%
	Odds ratio	1.791	1.874	1.963
Bootstrap simulation under an equalizing distribution	*Men*	4.26%	4.38%	4.52%
	Women	3.61%	3.72%	3.84%
	Odds ratio	1.135	1.185	1.240

Table 12: Propensity to start a new business by gender with and without equalization of the variables (*FEARFAIL, OPPORT, SUSKILL*) for a subset of 59304 useful records. The subset includes 8 combinations out of 8 with 100% of the records considered. Percentage of YES respondents (%p-avg) with 95% confidence interval (%p-low, %p-high) for the bootstrap simulation (2000 replications of 100,000 records each). Odds ratios between men and women propensity with 95% confidence interval for the bootstrap simulation.

	Gender	%p-low	%p-avg	%p-high
Observed frequencies	*Men*		5.32%	
	Women		2.91%	
	Odds ratio		1.874	
Observed frequencies under an equalizing distribution	*Men*		4.48%	
	Women		3.62%	
	Odds ratio		1.249	
Bootstrap simulation	*Men*	5.18%	5.32%	5.46%
	Women	2.81%	2.91%	3.02%
	Odds ratio	1.794	1.875	1.963
Bootstrap simulation under an equalizing distribution	*Men*	4.35%	4.48%	4.61%
	Women	3.50%	3.62%	3.73%
	Odds ratio	1.194	1.249	1.305

Table 13: Propensity to start a new business by gender with and without equalization of the variables (*FEARFAIL, SUSKILL*) for a subset of 59304 useful records. The subset includes 4 combinations out of 4 with 100% of the records considered. Percentage of YES respondents (%p-avg) with 95% confidence interval (%p-low, %p-high) for the bootstrap simulation (2000 replications of 100,000 records each). Odds ratios between men and women propensity with 95% confidence interval for the bootstrap simulation.

	Gender	%p-low	%p-avg	%p-high
Observed frequencies	*Men*		5.32%	
	Women		2.91%	
	Odds ratio		1.874	
Observed frequencies under an equalizing distribution	*Men*		4.57%	
	Women		3.51%	
	Odds ratio		1.317	
Bootstrap simulation	*Men*	5.19%	5.32%	5.47%
	Women	2.81%	2.91%	3.02%
	Odds ratio	1.790	1.873	1.963
Bootstrap simulation under an equalizing distribution	*Men*	4.44%	4.57%	4.70%
	Women	3.40%	3.51%	3.62%
	Odds ratio	1.262	1.317	1.378

Table 14: Propensity to start a new business by gender with and without equalization of all variables for a subset of 59304 useful records. The subset includes 4500 combinations out of 43200 and 81.9% of the records considered. Percentage of YES respondents (%p-avg) with 95% confidence interval (%p-low, %p-high) for the bootstrap simulation (2000 replications of 100,000 records each). Odds ratios between men and women propensity with 95% confidence interval for the bootstrap simulation.

	Gender	%p-low	%p-avg	%p-high
Observed frequencies	*Men*		5.02%	
	Women		2.92%	
	Odds ratio		1.759	
Observed frequencies under an equalizing distribution	*Men*		4.26%	
	Women		3.61%	
	Odds ratio		1.188	
Bootstrap simulation	*Men*	4.89%	5.03%	5.15%
	Women	2.82%	2.92%	3.02%
	Odds ratio	1.681	1.759	1.843
Bootstrap simulation under an equalizing distribution	*Men*	4.14%	4.26%	4.38%
	Women	3.49%	3.61%	3.72%
	Odds ratio	1.140	1.188	1.240

Table 15: Propensity to start a new business by gender with and without equalization of all variables except SUSKILL for a subset of 59304 useful records. The subset includes 3477 combinations out of 21600 and 87.9% of the records considered. Percentage of YES respondents (%p-avg) with 95% confidence interval (%p-low, %p-high) for the bootstrap simulation (2000 replications of 100,000 records each). Odds ratios between men and women propensity with 95% confidence interval for the bootstrap simulation.

	Gender	**%p-low**	**%p-avg**	**%p-high**
Observed frequencies	*Men*		5.16%	
	Women		2.89%	
	Odds ratio		1.826	
Observed frequencies under an equalizing distribution	*Men*		4.73%	
	Women		3.31%	
	Odds ratio		1.452	
Bootstrap simulation	*Men*	5.03%	5.16%	5.29%
	Women	2.79%	2.89%	3.00%
	Odds ratio	1.743	1.828	1.910
Bootstrap simulation under an equalizing distribution	*Men*	4.59%	4.73%	4.86%
	Women	3.20%	3.31%	3.42%
	Odds ratio	1.388	1.452	1.518