Çankırı Karatekin Üniversitesi
İktisadi ve İdari Bilimler
Fakültesi Dergisi
Y.2016, Cilt 6, Sayı 1, ss.723-748

Çankırı Karatekin University
Journal of The Faculty of Economics
and Administrative Sciences
Y.2016, Volume 6, Issue 1, pp.723-748

Formal and Informal Social Capital as Determinants of Male and Female Entrepreneurship in Europe

Dilek CETIN

Corresponding Author, Department of Economics, Kirikkale University, Kirikkale, Turkey, dilekcetin@kku.edu.tr

Ana FERNANDEZ-ZUBIETA

University Complutense of Madrid, Spain, anfern17@ucm.es

Fulvio MULATERO

Economics Unit of the Regional Statistical Office of Canton Ticino (Ustat), Ticino, Switzerland, fulviomulatero@hotmail.com

Abstract

This article analyses the effect of social capital on entrepreneurship in Europe, distinguishing between formal and informal social capital. The analysis is based on an integrated dataset on 27 European countries from the European and World Values Surveys. Social capital has a significant impact on entrepreneurship that differs according to its formal and informal components. Men use the opportunities opened up to individuals in Europe by formal social capital through involvement in organisations to access wage employment. Women tend instead to take advantage of formal social capital to turn to entrepreneurship. Informal social capital, through strong interpersonal relationships, facilitates entrepreneurial activity.

Keywords: Entrepreneurship, Female Employment, Self-Employment, Social Capital, Europe.
JEL Classification Codes: L26, J16.

Avrupa'da Erkek ve Kadın Girişimciliğinin Belirleyicisi Olarak Resmi ve Gayriresmi Sosyal Sermaye

Öz

Bu makalede, Avrupa'da girişimcilik üstüne resmi ve gayri resmi olarak ikiye ayrılmış olan sosyal sermayenin etkisi incelenmektedir. Analiz, Avrupa ve Dünya Değerler Anketi (European and World Values Survey) kullanarak oluşturulmuş 27 Avrupa ülkesinin bütünleştirilmiş veri setine dayanmaktadır. Sosyal sermayenin resmi ve gayri resmi bileşenlerine göre farklılaşan önemli bir etkisi vardır. Erkekler, ücretli istihdama geçişte organizasyonlara dahil olarak resmi sosyal sermayeleri ile Avrupa'da bireylere sunulan fırsatları değerlendirmektedirler. Kadınlar ise girişimci olabilmek için resmi sosyal sermayelerinin avantajını kullanmayı tercih etmektedirler. Bireyler arası güçlü ilişkiye dayanan gayri resmi sosyal sermaye girişimcilik faaliyetlerini kolaylaştırmaktadır.

Anahtar Kelimeler: Girişimcilik, Kadın İstihdamı, Serbest Meslek, Sosyal Sermaye, Avrupa.
JEL Sınıflandırma Kodları: L26, J16.

Atıfta bulunmak için…| Cite this paper…| Cetin, D., Fernandez-Zubieta, A. & Mulatero, F. (2016). Formal and Informal Social Capital as Determinants of Male and Female Entrepreneurship in Europe. *Çankırı Karatekin Üniversitesi İİBF Dergisi*, 6(1), 723-748.

Geliş / Received: 06.12.2015 Kabul / Accepted: 27.01.2016
Çevrimiçi Erişim / Available Online: 17.02.2016 DOI: 10.18074/cnuiibf.324

1. Introduction

Policymakers' attitudes towards entrepreneurship have evolved in recent decades. Increasing attention has been devoted to entrepreneurship as an engine of innovation and growth (Audretsch et al., 2002; Braunerhjelm, et al., 2010). This widespread interest notwithstanding, there are still some policy-relevant questions that need more attention. This article focuses on three particular aspects: (i) the role of the social determinants of entrepreneurship, (ii) a comprehensive analysis of the European case and (iii) the differences in entrepreneurship rates between men and women. The variables used to explain the individual decision to become an entrepreneur are mostly personal: demography, psychological traits, ability, education and other skills, financial assets, family background and previous work experience. While there are indications that social factors have a bearing on the occupational status of an individual (Reynolds et al., 1999), they have generally attracted less attention as explanatory variables of entrepreneurship. One reason is the relative scarcity of databases able to provide extensive and internationally comparable data focusing on the social dimension.

Concerning country coverage, the economic literature has produced quite a consolidated body of evidence on entrepreneurship in the US. Transposing these findings to Europe, however, is not straightforward, especially if social and cultural factors are considered. The available evidence does indeed suggest that the characteristics of entrepreneurship follow a different behaviour pattern in the US and Europe. For instance, while the education level has a positive effect on the probability of being self-employed in the US, the effect appears to be negative in Europe (Blanchflower, 2004; Freytag & Thurik, 2010). Moreover, evidence on entrepreneurship in the European Union (EU) consists mainly of studies conducted at national level which, although they give a detailed picture for some countries, are not always comparable. Finally, concerning the gender dimension, female entrepreneurship – within the EU, as in most countries –features a significantly lower proportion of entrepreneurs, but it is not clear to what extent this is due to common or gender-specific determinants.

In all of these respects, the European and World Values Surveys (EVS and WVS, respectively) offer a rich source of information. The availability of non-economic variables and coverage of European countries can be exploited to determine the extent to which cultural and social factors influence entrepreneurial activity. This study analyses the effect of social capital on entrepreneurship in the EU, controlling for the usual individual variables. It distinguishes between formal social capital (belonging to organisations) and informal social capital (having frequent contacts with different social milieus, such as family and friends). The results point to an important role for social capital, with formal capital hindering entrepreneurship and the informal type helping it. It is also investigated whether and to what extent social factors may be partly responsible for the different

entrepreneurship rates of men and women, and find that social capital influences entrepreneurship differently for men and women.

The article is organised as follows: Section 2 introduces the theoretical background; Section 3 presents the empirical strategy; Section 4 summarises the dataset and methodology; Section 5 reports the results; Section 6 concludes.

2. Literature

2.1. Entrepreneurship and Social Capital

The concept of social capital is increasingly being used to explain a broad range of economic and social phenomena (Alder & Kwon, 2000; Halpern, 2005; Jackman & Miller, 1998; Kwon & Arenius, 2010; Lin, 1999; Woolcock, 1998). The concept of social capital has its roots in the work of European and American sociologists such as Bourdieu (1986), Coleman (1988, 1990) or Burt (1992).[1] Political scientists like Putnam (1993, 1995) or Fukuyama (1995) also invoke the concept of social capital to study the factors that create mutual trust, thus ensuring adequate policy and institutional development.[2] Although they do not often explicitly mention the concept, the studies on social networks that follow Granovetter's work (1973, 1985) and analyse individual social resources as the result of the number of relationships in which the subject is involved (De Graaf & Flap,1988; Lin 1999; Lin et al., 1981) can be considered as relating to social capital. Recently, some economists, like Becker (1996), Dasgupta (2000) or Ostrom (2000), have started to integrate the concept of social capital in their analysis, although others show more reluctance, in particular with respect to its equivalence with traditional definitions of capital (Sobel 2002; Solow 1997). Social capital appears to be more readily accepted among economists who study local development (see, Knack, 2001; Knack & Keefer, 1997; Keefer & Knack, 2008; Woolcock, 1998). Although the concept of social capital has been applied increasingly by different disciplines, with the exception of some studies on immigrants and minority groups (e.g. Ram et al., 2008; Vershinina et al., 2011), or more theoretical analyses like Westlund & Bolton (2003), the relationship between social capital and entrepreneurship has received less attention.

The use of different conceptualisations of social capital by different disciplines has led some authors to consider ‘social capital’ as a vague concept (Casson & Della Giusta, 2007; Cope et al., 2007). The meaning of ‘social capital’ can change according to different understandings of what it is composed of (e.g. norms or interpersonal trust), where it comes from (network or social structure) and where it operates (individual or social level). 'Social capital' can be considered equivalent to 'interpersonal capital' or 'networking capital' (the network approach to 'social capital') when it is understood as being derived from the place that an individual has within a network. Instead 'social capital' can be understood as coming from an individual's place in the social structure (the sociological

understanding of social capital). This article considers social capital as emerging from the social structure (and networks) and providing a competitive advantage to some individuals or groups (Burt, 2001), entrepreneurs in our case. In this sense, although social capital is distinct from human and financial capital, it can be accumulated and it yields returns in a way that is analogous to human or financial capital (Aldrich & Martinez, 2001; Anderson & Jack, 2002; Cope et al., 2007).[3]

Human capital (Becker, 1962) has received a great deal of attention due to its possible influence on the development of the abilities and opportunities of entrepreneurs. However, the evidence of a positive relationship between education and entrepreneurship is not very clear and it seems to vary across countries. In the US, higher educational attainment increases the probability of becoming an entrepreneur (Blanchflower, 2000), whereas in countries like the United Kingdom or Canada the relationship is negative, or less clear (Blanchflower & Shadford, 2007). Devine (1994), using US data, shows that the self-employed are more educated than wage and salary workers. The diverse effect of human capital on entrepreneurship thus warrants more attention, as well as its relationship with other factors, such as social capital.

By contrast, the importance of financial capital in facilitating entrepreneurship is well recognised (Blanchflower & Shadforth, 2007; Dunn & Holtz-Eakin, 2000; Meyer, 1990). Blanchflower & Oswald (1998, 2007), using UK data, show that receiving financial capital (e.g. inheritances or gifts) increases the probability of an individual becoming an entrepreneur. However, (would-be) entrepreneurs often face financial constraints (Blanchflower et al., 2003; Evans & Jovanovic, 1989; Evans & Leighton, 1989; Holtz-Eakin et al., 1994).

'Social capital' provides an advantage, or helps to overcome a disadvantage, by channelling information and trustworthiness. To entrepreneurs information is important because, among other things, it reveals opportunities and reduces market uncertainty (Birley, 1985; Chell & Baines, 2000; Dubini & Aldrich, 1991; Greene & Brown, 1997; Johannison, 1998; Lechner & Dowling, 2003; Uzzi, 1999). Trust has an important role in the relationship with customers and suppliers. In the same way, social capital can help overcome difficulties (Davidsson & Honig, 2003), for example through the provision of bank financing (Casson & Della Giusta, 2007). As a result, entrepreneurs can benefit from social capital to gain advantages and overcome disadvantages.

The different approaches to the concept of social capital thus highlight its similarities and differences with respect to other forms of capital – i.e. financial and human. Social capital could facilitate the management of information, helping individuals to achieve objectives that otherwise would not have been achieved.

2.2. Formal and Informal Social Capital

Regardless of the differences between a more sociological and a more network oriented conceptualisation of social capital, both streams of literature agree on the need to distinguish either social capital according to its formal and informal aspects or social networks according to the type of ties that bind individuals together (weak and strong ties). Formal and informal interactions are very different in nature and facilitate different social processes (Pichler & Wallace, 2007). In the same way, different types of relationships generate different types of social networks (Casson & Della Giusta, 2007; Doreian & Stokman, 1997). Formal social capital is defined by formal participation in civic organisations (Kerrissey, & Schofer, 2013; Putnam, 1995; Schofer & Fourcade-Gourinchas, 2001), while informal social capital is defined by the social relationships that individuals establish with family, friends, colleagues, neighbours, etc.[4] Formal social capital gives access mainly to information, whereas informal social capital establishes trust. Because of their different behaviours, this study makes a distinction between formal and informal social capital.

In principle, entrepreneurs can benefit from both formal and informal social capital. By participating in voluntary organisations (formal social capital) they can get access to valuable information, providing business opportunities or bringing new partners into a business, for example (Birley, 1985; Casson & Della Giusta, 2007; Davidsson & Honig, 2003; Uzzi, 1999). Informal social capital can help entrepreneurs overcome difficulties. For example, an extended family may help entrepreneurship by providing funds, unpaid work or other types of resources (Casson & Della Giusta, 2007; Davidsson & Honig, 2003). On the other hand, informal social capital, with its close relationships, could also reduce opportunities for business enterprise and growth. The relationship between formal and informal social capital is not clear (Pichler & Wallace, 2007). In addition, formal and informal social capital could also help employees find new job opportunities.

Recent evidence on the different effects of formal and informal aspects of social capital thus indicates the need to analyse the effects of these two components of social capital on entrepreneurship separately. However, the evidence comes mainly from the US, and the nature of the involvement in voluntary organisations might be different in Europe.

2.3. Entrepreneurship and Social Capital among Women

There has been an expansion of self-employment in most OECD countries among groups where entrepreneurship was under-represented: there are now more women among the self-employed, both in total and in relative terms (Blanchflower, 2004, 2008; Devine, 1994; Minniti & Naudé, 2010), and women represent one of the fastest growing groups among the self-employed (Carrasco &

Ejrnaes, 2003; Devine, 1994).[5] The rate of female business ownership is also rising in the US (Coleman & Robb, 2009; Fairlie & Robb, 2009).

Women entrepreneurs have specific characteristics.[6] Evidence from the US shows that the average self-employed woman is older, more educated and more likely to be married than average employed women (Devine, 1994).[7] Women and men appear to become self-employed for different reasons. Female entrepreneurship tends to be influenced by personal characteristics, such as family size, marital status and the age of their children more so than is the case for men (Carr, 1996), while male entrepreneurs appear to pursue financial success and innovation more than women do (Carter et al., 2003). Socio-cultural and family features therefore appear to have an important role in explaining entrepreneurship among women.

Financial capital and human capital are also important factors explaining entrepreneurship among women. Cowling & Taylor (2001) find that women entrepreneurs are better educated than men entrepreneurs. Women have less start-up capital and less prior work experience in a family business (Coleman & Robb, 2009). Lack of opportunities for wage employment and the need for flexibility appear to be important determinants of self-employment among women (Devine, 1994; Evans & Leighton, 1989; Fairchild, 2009). Disadvantaged groups facing problems in accessing labour market may use self-employment as an alternative to unemployment or rigid labour markets (Carrasco & Ejrnaes, 2003). These groups also tend to use personal and extended networks to obtain human and financial resources (Loewen, 1971; Sanders & Nee, 1996). Female entrepreneurs could thus use social capital to overcome some disadvantages.

Socio-cultural and family factors have an important role in explaining entrepreneurship among women. They appear to opt for self-employment as a way to overcome their difficulties in accessing to the labour market. They seem to rely on formal and informal social capital to overcome difficulties. Because women find it difficult to access the labour market and face specific constraints, it can be expected that formal and informal social capital have a different effect on their entrepreneurship.

3. Hypotheses

This article tests three hypotheses: first, it aims to determine whether social capital plays a significant role in determining entrepreneurship; second, whether formal and informal social capital play different roles in determining entrepreneurship; and, finally, whether different forms of social capital have a different impact on entrepreneurship among women.

Summarising:

- H1 – Social capital has a significant effect on entrepreneurial activity.

- H2 – Formal and informal social capital influence entrepreneurship differently.
- H3 – The effect of formal and informal social capital on entrepreneurship is different for women.

4. Material and Methods

4.1. Data and Sample

The data is drawn from the European and World Values Surveys Four-wave Integrated Data File. It contains representative data from 60 different countries for the four most recent waves (1981-4, 1990-3, 1995-7 and 1999-2004). In addition to more traditional demographic information, such as age, sex, occupation, education, family income and size of household, the topics covered include personal opinion and behaviour with regard to a number of personal, family, ethical, political, social and religious issues. The analysis focuses on the 27 countries that currently belong to the European Union After selecting the sample of countries and variables and due to changes in the questionnaire across rounds, the model is based on the most recent wave of the EVS and WVS (1999-2004) with a sample of 13,670 workers aged between 18 and 64 years.

4.2. Variables

Self-employment is used as a dependent variable and proxy for *entrepreneurship*.[8] From the eight categories of the question on employment status, the three referring to those who are active on the labour market are selected and transformed into a dummy, taking the value 1 for the self-employed and 0 for employees (both full time and part time).[9]

The central independent variables in this analysis are *formal social capital* and *informal social capital*. *Formal social capital* includes a set of questions on 'belonging' to one or more of thirteen different voluntary organisations, ranging from social services to community organisations.[10] *Informal social capital* is constructed on the basis of two questions on the frequency of contacts with family and friends.[11] Both questions have four possible answers that are transformed into dummies, where 1 stands for frequent (weekly) meetings and 0 for infrequent contacts (once or twice a month, only a few times a year or no contact at all). In other words, a low frequency of contacts reduces the effect of informal social capital. If either dummy is equal to 1, the individual is considered as being endowed with informal social capital.[12]

Other important independent variables are *human capital* and *financial capital*. *Human capital* recodes in a harmonised way the highest education level attained (lower, middle and upper).[13] *Financial capital* is proxied by a scale of incomes –

the most reliable financial information available in the questionnaire. It is a categorical variable with three categories (low, medium and high).

The following explanatory variables are also considered: *sex* (1 for females and 0 for males), *age, age squared, marriage* (1 for married and 0 for unmarried) and *children* (1 is with children and 0 is without children). *Trust* reflects trust in other individuals (1 if 'most people can be trusted', 0 if they can't).[14]

4.3. The Model

The dependent variable, being self-employed, is binary and can be formalised as follows:

$$E_i = \begin{cases} 1 & \text{if the individual is self - employed} \\ 0 & \text{otherwise} \end{cases} \quad (1)$$

To explain it, a logit model is used[15]:

$$p_i = \Pr\left[E_i = 1 \middle| X_i\right] = \frac{\exp(\beta_0 + \beta_1 X_i)}{1 + \exp(\beta_0 + \beta_1 X_i)} \quad (2)$$

where X_i is the set of explanatory variables. Self-employment among women is further estimated both through separate equations and within a single equation (Eq. 3) with dummy variables. Estimating separate equations assumes that the relationship between entrepreneurship and the explanatory variables is different for men and women. The use of a single equation with dummy variables makes it possible to pinpoint the elements that differentiate female entrepreneurship:

$$p_i = \Pr\left[E_i = 1 \middle| X_i\right] = \frac{\exp(\beta_0 + \beta_1 X_i + \alpha_0 D_{ki} + \alpha_1 X_i D_{ki})}{1 + \exp(\beta_0 + \beta_1 X_i + \alpha_0 D_{ki} + \alpha_1 X_i D_{ki})} \quad (3)$$

where $\alpha_0 + \beta_0$ and $\alpha_1 + \beta_1$ correspond to the coefficients of the separate regressions.

5. Results and Discussion

This section presents the descriptive statistics and an econometric analysis based on the logit model specified in the previous section.

5.1. Descriptive Statistics

Table 1 presents descriptive statistics for the total sample, entrepreneurs and employees relative to a number of key dimensions. The total sample has 13,670 observations,[16] 1154 of them are entrepreneurs and 12,516 are employees.

Women constitute 45.8% of total sample and the average respondent is 39.3 years old. A total of 64% of workers are married and 70.9% have children. Regarding human capital, 28% of the individuals included in the sample have a low level of education, 46.1% have an intermediate level and 25.9% have achieved an upper level. A share of 17.9% workers report low levels of financial capital; 37.4% and 44.7% report middle and upper levels respectively. 57.7% of workers belong to a voluntary organisation and 55.5% of the sample has frequent meetings with family and friends.

Table 1: Characteristics of total sample, entrepreneurs and employees (EU27) – Explanatory variables

Variable	***Total***	***Employees***	***Entrepreneurs***	***Mean Comparison***	
Women (%)	45.8	47.0	32.8	-14.2	***
Average age	39.3	39.1	41.5	2.4	***
Distribution by social capital (%)					
Formal	41.3	41.8	36.0	-5.8	***
Informal	55.5	55.3	56.7	1.4	
Distribution by level of human capital (%)					
Low	28.0	27.5	33.6	6.1	***
Middle	46.1	46.3	43.4	-2.9	*
Upper	25.9	26.2	23.0	-3.2	**
Distribution by level of financial capital (%)					
Low	17.9	17.7	20.5	2.8	**
Middle	37.4	37.7	33.5	-4.2	***
Upper	44.7	44.6	46.1	1.5	
Married (%)	64.0	63.5	69.6	6.1	***
With children (%)	70.9	70.7	72.9	2.2	
Trust	35.0	34.8	37.3	2.5	*
Number of observations	13,670	12,516	1154		

*** p<0.01, ** p<0.05, * p<0.1

Concerning the characteristics of entrepreneurs and employees – third and fourth column – although women account for just about one-third of entrepreneurs (32.8%), they account for nearly half of the employees in the sample (47%). The share of entrepreneurs that is married is higher than that of employees, 69.6% against 63.5%. Other demographic characteristics such as age and existence of an offspring do not vary much across the two categories, although entrepreneurs show higher figures than employees: entrepreneurs are older and have more children. Turning to differences in capital endowment (human, financial and social), entrepreneurs feature a higher share of individuals with little human capital (33.6% against 27.5%) and a lower proportion of medium and high level of education, (43.4% and 23% as against 46.3% and 26.2%, respectively). These results are in line with the findings of the literature on the negative correlation of education and entrepreneurship in Europe.[17] As regards financial capital, entrepreneurs have a lower share of individuals with medium financial capital (33.5% against 37.7%), but a higher share for the other two categories, (20.5% and 46.1% against 17.7% and 44.6%, respectively). As regards social capital, the share of individuals with formal social capital is lower for entrepreneurs than for employees (55.4% against 57.9%), while the share of those possessing informal social capital is higher (56.7% against 55.3%, respectively). The average European entrepreneur is male, middle aged, married with children and he is less educated, with either higher levels of low or upper financial capital and lower formal, but higher informal, social capital than the average employee.

Table 2: Comparison of characteristic for men and women (EU27)

Variable	***Total***	***Men***	***Women***	***Mean Comparison***	
Entrepreneurs (%)	8.4	10.5	6.0	-4.5	***
Average age	39.3	39.6	39.0	-0.6	***
Social capital					
Formal (%)	41.3	42.2	40.3	-1.9	**
Informal (%)	55.5	57.2	53.3	-4.1	***
Human capital					
Low (%)	28.0	31.1	24.3	-6.8	***
Average (%)	46.1	44.9	47.4	2.5	***
Upper (%)	25.9	24.0	28.3	4.3	***
Financial capital					
Low (%)	17.9	17.0	19.0	2.0	***
Average (%)	37.4	38.3	36.2	-2.1	**
Upper (%)	44.7	44.7	44.7	0.0	
Married (%)	64.0	66.4	61.3	-5.1	***
With children (%)	70.9	68.7	73.5	4.8	***
Trust	35.0	34.7	35.4	0.7	
Number of observations	13,670	7409	6261	0.7	

*** p<0.01, ** p<0.05, * p<0.1

Table 2 compares the characteristics of the explanatory variables for women and for men. The average self-employment in the sample is 8.4%, but it decreases to 6.0% for women. Women have lower levels of entrepreneurship, with a highly significant difference of more than 4 percentage points.

Table 2 also highlights other important differences. Women are significantly younger than men, with a difference of 0.6 years. The percentage of married women is lower, with a significant difference of 5.1 percentage points. A significantly higher percentage of women have children. Women are better educated than men, and the difference is very significant. The difference in education for women is more important for upper levels of education. Women tend to be concentrated more at the lower levels of financial capital than men. The differences in the distribution of financial capital for women are significant for low and average levels of financial capital, with -2.0 and 2.1 percentage points of difference respectively. Women show lower levels of formal and informal social capital. Women present significantly lower levels of both formal and informal social capital than men, by 1.9 and 4.1 percentage points respectively. Women thus tend to be less entrepreneurial, younger, with higher levels of human capital and less financial and social capital than men.

Descriptive statistics show that the average entrepreneur is a middle-aged male, with children and less educated and less likely to have middle levels of financial capital; he has lower formal but higher informal social capital than the average employee. Women show lower levels of entrepreneurship, they are younger and with higher levels of human capital and less financial and social capital than men.

5.2. Multivariate Analysis

Table 3 displays the results of the econometric analysis, showing marginal effects from the logit regression. The results are reported in three sets: (i) shows results for a regression of entrepreneurship on basic demographic exogenous characteristics and formal social capital. Specification (ii) adds informal social capital and (iii) adds all other controls.

The results of the first estimation (i) show that sex has a very significant and negative effect. This indicates that being a woman decreases the likelihood of being an entrepreneur. Age also has a positive coefficient, indicating that the probability of becoming an entrepreneur increases with age. Formal social capital has a significant negative effect.

When considering specification (ii), it appears that, unlike formal social capital, informal social capital has a positive and very significant effect on entrepreneurship. Informal social capital is thus more important in stimulating entrepreneurial activity than formal social capital.

Table 3: Regression results for entrepreneurship (EU27): Logit model (Marginal effects)

Variable	(i)	(ii)	(iii)
Sex	-0.0437***	-0.0431***	-0.0408***
	(0.00465)	(0.00465)	(0.00476)
Age	0.0034***	0.0039***	0.0050***
	(0.00148)	(0.00149)	(0.00164)
Age squared	-0.0000	-0.0000	-0.0000***
	(0.00002)	(0.00002)	(0.00002)
Formal Social Capital	-0.0178***	-0.0189***	-0.0198***
	(0.00469)	(0.00469)	(0.00477)
Informal Social Capital		0.0128***	0.0122***
		(0.00473)	(0.00483)
Human Capital (Middle)			-0.0140***
			(0.00533)
Human Capital (Upper)			-0.0269***
			(0.00663)
Financial Capital (Low)			0.0225***
			(0.00658)
Financial Capital (Upper)			0.0159***
			(0.00539)
Marriage			0.0168***
			(0.00636)
Children			-0.0215***
			(0.00692)
Trust			0.0103***
			(0.00485)
Constant	-0.2462***	-0.2643***	-0.2638***
	(0.02869)	(0.02938)	(0.03264)
Observations	13,670	13,670	13,202

Standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

When considering the full specification, the effect of age on entrepreneurship describes an inverted U-shaped curve. This indicates that the probability of being an entrepreneur increases with age to a certain point, at which it starts to decrease. Social capital has a significant effect on entrepreneurship, even when controlling for other types of capital - financial and human - and, consistent with the hypotheses, the effect of social capital is still different between different types of social capital. As in the case of education, formal bonds seem to inhibit entrepreneurship. This could indicate that, in Europe, individuals with more education also have more formal networks that allow them to access other alternatives to self-employment.

Human capital has a significant negative effect. There is less likelihood of finding entrepreneurs with a middle or high level of education, compared to those with a low level of education. Middle and high levels of human capital display negative and significant coefficients. These results are consistent with the literature on the effect of education on entrepreneurship in Europe, which consistently shows an opposite pattern to that for the US.[18]

Financial capital has a strongly significant effect and follows a U-shaped curve. This means that there is a greater probability of finding entrepreneurs with low or high levels of financial capital, as compared with the middle level of financial capital. This could indicate that low levels of financial capital may act as an incentive for someone to become an entrepreneur, in the same way as high levels of financial capital may help the development of an entrepreneurial activity. This could point to the existence of two different types of entrepreneurs: those who are entrepreneurs out of necessity (those with low financial capital) and those who are entrepreneurs out of opportunity (those with high financial capital).

The effect of marriage is also positive and very significant, while the coefficient associated with *c*hildren is negative and very significant. Trust in other people has a positive influence on entrepreneurship.[19]

Table 4 displays the results of the econometric analysis, showing marginal effects from the logit regression. Three sets of results corresponding to the estimation strategy presented in section 4.3 are reported. Estimation (i) yields results for the total sample, while specifications (ii) and (iii) present results for women. Regression (ii) thus shows results for men as a baseline on one side (the β coefficients) and the differential impact of exogenous characteristics for women (α) on the other. Coefficients in (iii) correspond to the regression output from estimating a separate equation for women.[20]

Regarding the situation of women, formal social capital is the only characteristic that distinguishes female from male entrepreneurship. Contrary to the general specification of the model, formal social capital has a positive and significant differential effect for women compared to men. This means that, although formal social capital retains a negative effect on entrepreneurship for men, it has a positive effect for women. The coefficients in (iii) yield significant results only for human capital and marriage. This means that education negatively affects entrepreneurship among women (and that this effect is stronger for women than for men), whereas marriage has a positive effect on female entrepreneurship. This does not exclude the possibility that there may be other variables affecting entrepreneurship among women, which are different from those that play an important role for men. In summary, what distinguishes female entrepreneurs from their male counterparts is the positive and differential effect of formal social capital.[21]

Table 4: Regression results for entrepreneurship (EU27): Logit model (Marginal effects)

	Total		***Women***	
	(i)	(ii)		(iii)
VARIABLES	Self-employment	Men (β)	Women Dummy (α)	Women (γ = α + β)
Sex	-0.0408***	0.0753		
	(0.00476)	(0.06746)		
Age	0.0050***	0.0063***	-0.0039	0.0024
	(0.00164)	(0.00203)	(0.00344)	(0.00278)
Age squared	-0.0000***	-0.0001**	0.0000	-0.0000
	(0.00002)	(0.00002)	(0.00004)	(0.00003)
Formal Social Capital	-0.0198***	-0.0261***	0.0187*	-0.0074
	(0.00477)	(0.00585)	(0.01020)	(0.00834)
Informal Social Capital	0.0122***	0.0152**	-0.0091	0.0061
	(0.00483)	(0.00604)	(0.01011)	(0.00809)
Human Capital (Middle)	-0.0140***	-0.0086	-0.0161	-0.0248***
	(0.00533)	(0.00651)	(0.0113)	(0.00919)
Human Capital (Upper)	-0.0269***	-0.0205**	-0.0190	-0.0395***
	(0.00663)	(0.00819)	(0.01387)	(0.01115)
Financial Capital (Low)	0.0225***	0.0287***	-0.0182	0.0104
	(0.00658)	(0.00803)	(0.01413)	(0.01160)
Financial Capital (Upper)	0.0159***	0.0162**	-0.0020	0.0143
	(0.00539)	(0.00657)	(0.01146)	(0.00937)
Marriage	0.0168***	0.0128	0.0064	0.0192*
	(0.00636)	(0.00824)	(0.01316)	(0.01023)
Children	-0.0215***	-0.0226***	0.0064	-0.0162
	(0.00692)	(0.00871)	(0.01461)	(0.01172)
Trust	0.0103***	0.0061	0.0111	0.0171**
	(0.00485)	(0.0060)	(0.01022)	(0.00825)
Constant	-0.2638***	-0.3034***		
	(0.03264)	(0.04139)		
Observations	13,202	13,202		

Standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

This different effect of formal social capital for women could indicate that, in order to become entrepreneurs, women benefit from greater integration within formal social networks and organisations. It could also reveal that the same level of education does not provide them with access to job alternatives other than self-employment.

Although they do a good job in explaining entrepreneurship for the overall sample, the exogenous variables considered perform poorly for women in the active population. In terms of prediction capacities of the specifications used, 686 out of a total of 1121 entrepreneurs are correctly identified as entrepreneurs in specification (i), representing the 61.2% of entrepreneurs. This rate tends to remain constant around 60% across specifications (i) and (ii). In the case of women, specification (ii) allows 56 out of 365 female entrepreneurs to be classified, representing 15.3% of the total. These results confirm the intuition emerging from the analysis of regression output and only serve to reinforce the need to design models aimed at capturing the specific characteristics of female entrepreneurs.[22]

The analysis highlighted several important features. The hypotheses of a distinctive effect of social capital, compared to other types of capital, and with a different effect across forms of social capital are confirmed. Consistent with the first hypothesis, social capital variables have a significant effect, even when controlling with other types of capital (financial and human capital). Consistent with the second hypothesis, formal and informal social capital influence entrepreneurship differently. Formal social capital decreases the probability of becoming an entrepreneur, while informal social capital increases it. It is also confirmed that education negatively affects entrepreneurship in Europe. The significant effect of social capital is also confirmed when analysing female entrepreneurship. The social capital is the only variable that distinguishes the way entrepreneurship is characterised in this group. Consistent with the third hypothesis, contrary to the general specification of the model, formal social capital has a positive and significant differential effect for female entrepreneurs. Further analysis will be needed in order to identify the specific factors affecting entrepreneurship among women.

6. Conclusions

This investigation of the wealth of information contained in the European and World Value Surveys has allowed us to replicate a number of stylised facts known from previous studies on entrepreneurship: men tend to be more disposed to entrepreneurship than women; age facilitates entrepreneurship at the early stages of working life, but its positive effect decreases in later stages; marriage has a positive effect on self-employment and children negatively affect entrepreneurship. The negative effect of human capital on entrepreneurship confirms previous studies on the different role of education in the US and Europe and highlights the need to study more carefully the relationship between human capital and entrepreneurship in Europe. Financial capital has a positive effect either at low or at high levels. This could point to the existence of two types of entrepreneurs: those out of necessity and those out of opportunity.

This analysis went further than existing studies to pin down the contribution of social capital to entrepreneurship as distinct from other forms of capital (financial and human). Consistent with the first and second hypotheses, the results show that social capital have an effect when explaining entrepreneurship and that its formal and informal aspects contribute differently to the probability of being an entrepreneur. Formal social capital has a negative effect on entrepreneurship. In this sense, it is similar to education. On the other hand, informal social capital has a positive effect on entrepreneurship. This proves the importance of distinguishing the formal and informal components of social capital.

Social capital is the only factor that distinguishes female entrepreneurship: formal social capital has a positive and significant differential effect for women compared to men. Consistent with the third hypothesis, the effect of formal social capital distinguishes female entrepreneurship. This could indicate that, to become entrepreneurs, women benefit from greater integration within formal social networks. More research is needed in order to identify additional variables that explain female entrepreneurship and to fully explore the mechanisms by which formal and informal relations influence entrepreneurship.

The negative effect of education on entrepreneurship in Europe, compared to the positive effect found in the literature for the US, requires more policy attention. Given that this analysis does not allow us to establish an optimal level of entrepreneurship for skilled individuals, policies aimed at encouraging entrepreneurship in Europe should be aware of the relatively low level of entrepreneurs with an upper level of educational attainment. The low levels of entrepreneurship among women also deserve policy attention. The positive role of formal social capital in explaining entrepreneurship among women, as opposed to its negative effect for the rest of the working population, points to the possible existence of barriers to entry: the higher endowment of formal social capital associated with female entrepreneurs could be an indicator that women cannot start an entrepreneurial activity unless they accumulate enough formal social relations. In order to identify barriers to entrepreneurship for women, it will also be necessary to include in the analysis other factors in addition to those that help explain entrepreneurship rates in the overall population.

Acknowledgements

The authors wish to thank Francesco Bogliacino, Rene van Bavel, Mirjam van Praag, two anonymous referees, participants in the VIII Triple Helix Conference for their comments. Any errors are our own.

References

Alder, P. & Kwon, S. (2000). Social Capital: The Good, the Bad and the Ugly, E. Lesser (Eds.), *Knowledge and Social Capital: Foundations and Applications* içinde (89-115), Boston MA: Butterworth-Heinemann.

Aldrich, H.E. & Martinez, M.A. (2001). Many are Called but Few are Chosen: An Evolutionary Perspective for The Study of Entrepreneurship. *Entrepreneurship Theory and Practice*, 25(4), 41–56.

Anderson, A.R. & Jack, S.L. (2002). The Articulation of Social Capital: A Glue or a Lubricant. *Entrepreneurship and Regional Development*, 14(3), 193–210.

Audretsch D., Thurik, R., Verheul, I. & Wennekers, S. (2002). Understanding Entrepreneurship across Countries and Over Time, D.B. Audretsch, R. Thurik, I. Verheul & S. Wennekers (Eds.), *Entrepreneurship: Determinants and Policy in a EU-US Comparison* içinde (1-10), Springer Series: Economics of Science, Technology and Innovation 27.

Becker, G.S. (1962). Investment in Human Capital: A Theoretical Analysis. *Journal of Political Economy*, 70(5), 9–49.

Becker, G.S. (1996). *Accounting for Tastes*, Harvard University Press, Cambridge MA.

Birley, S. (1985). The Role of Networks in the Entrepreneurial Process. *Journal of Business Venturing*, 1(1), 107–17.

Blanchflower, D.G. (2000). Self-Employment in OECD Countries. *Labour Economics*, 7(5), 471–505.

Blanchflower, D.G. (2004). *Self-Employment: More may not be Better*. NBER Working Paper, 10286.

Blanchflower, D.G. (2008). *Minority Self-Employment in The United States and the Impact of Affirmative Action Programs*. NBER Working Paper, 13972.

Blanchflower, D.G., Levine, P.B. & Zimmerman, D. (2003). Discrimination in the Small Business Credit Market. *Review of Economics and Statistics*, 85(4), 930–943.

Blanchflower, D.G. & Oswald, A.J. (1998). What Makes an Entrepreneur?. *Journal of Labor Economics*, 16(1), 26–60.

Blanchflower, D.G. & Oswald, A.J. (2007). *What Makes a Young Entrepreneur?*. IZA Discussion Paper, 3139.

Blanchflower, D.G. & Shadforth, C. (2007). Entrepreneurship in The UK. *Foundations and Trends in Entrepreneurship*, 3(4), 257–364.

Boden, R. (1996). Gender and Self-Employment Selection: An Empirical Assessment. *Journal of Socio-Economics*, 25(6), 671–682.

Bourdieu, P. (1986). The Forms of Capital, J.G. Richardson (Eds.), *Handbook of Theory and Research for The Sociology of Education* içinde (241-258), New York NY: Greenwood.

Braunerhjelm, P., Acs, Z. J., Audretsch, D. B. & Carlsson, B. (2010). The missing link: knowledge diffusion and entrepreneurship in endogenous growth. *Small Business Economics*, 34(2), 105-125.

Burt, R.S. (1992). *Structural Holes: The Social Structure of Competition*, Cambridge MA: Harvard University Press.

Burt, R.S. (2001). Structural Holes versus Network Closure as Social Capital, N. Lin, K. Cook & R.S. Burt (Eds.), *Social Capital: Theory and Research* içinde (31-56), New York: Sociology and Economics: Controversy and Integration Series, Aldine De Gruyter.

Carr, D. (1996). Two Paths to Self-Employment: Women's and Men's Self-Employment in The United States. *Work and Occupations*, 23(1), 26–53.

Carrasco, R. & Ejrnaes, M. (2003). *Self-Employment in Denmark and Spain: Institution, Economic Conditions and Gender Differences*. CAM Working Papers 2003-06, Institute of Economics, University of Copenhagen.

Carter, N., Gartner, W., Shaver, K. & Gatewood, E. (2003). The Career Reasons of Nascent Entrepreneurs. *Journal of Business Venturing*, 18(1), 13–39.

Casson, M. & Della Giusta, M. (2007). Entrepreneurship and Social Capital: Analysing the Impact of Social Networks on Entrepreneurial Activity Form A Rational Action Perspective. *International Small Business Journal*, 25(3), 220–244.

Chell, E. & Baines, S. (2000). Networking, Entrepreneurship and Micro-Business Behaviour. *Entrepreneurship and Regional Development*, 12(3), 195–215.

Coleman, J. (1988). Social Capital in the Creation of Human Capital. *American Journal of Sociology*, 94, 95–120.

Coleman, J. (1990). *Foundations of Social Theory*, Harvard University Press, Cambridge MA.

Coleman, S. & Robb, A. (2009). A Comparison of New Firm Financing by Gender: Evidence from the Kauffman Firm Survey. *Small Business Economics*, 33(4), 397–411.

Cope, J., Jack, S. & Rose, M. (2007). Social Capital and Entrepreneurship. *International Small Business Journal*, 25(3), 213–219.

Cowling, M. & Taylor, M. (2001). Entrepreneurial Women and Men: Two Different Species? *Small Business Economics*, 16(3), 167–175.

Dasgupta, P. (2000). Economic Progress and the Idea of Social Capital, P. Dasgupta & I. Serageldin (Eds.), *Social Capital: A Multifaceted Perspective* içinde (325-424), Washington DC: The World Bank.

Davidsson, P. & Honig, B. (2003). The Role of Social and Human Capital among Nascent Entrepreneurs. *Journal of Business Venturing*, 18, 301–331.

De Graaf, N.D. & Flap, H.D. (1988). With a Little Help from My Friends: Social Resources as an Explanation of Occupational Status and Income in West Germany, The Netherlands, and The United States. *Social Forces*, 67(2), 452–472.

Devine, T. (1994). Characteristics of Self-Employed Women in The United States. *Monthly Labor Review*, 117(3), 20–33.

Doreian, P. & Stokman, F.N. (1997). *Evolution of Social Networks*, Amsterdam: Gordon and Breach.

Dubini, P. & Aldrich, H. (1991). Personal and Extended Networks are Central to the Entrepreneurial Process. *Journal of Business Venturing*, 6, 305–13.

Dunn, T.A. & Holtz-Eakin, D.J. (2000). Financial Capital, Human Capital, and the Transition to Self-Employment: Evidence from Intergenerational Links. *Journal of Labor Economics*, 18(2), 282–305.

European Values Study Group and World Values Survey Association. (2006a). European and World Values Surveys Four-Wave Integrated Data File, 1981-2004, V.20060423.

European Values Study Group and World Values Survey Association. (2006b). European and World Values Surveys Four-Wave Integrated Data File, 1981-2004, V.20060423. Integrated Questionnaire.

Evans, D. & Jovanovic, B. (1989). An Estimated Model of Entrepreneurial Choice under Liquidity Constraints. *Journal of Political Economy*, 97(4), 808–827.

Evans, D. & Leighton, L. (1989). Some Empirical Aspects of Entrepreneurship. *American Economic Review*, 79(3), 519–535.

Fairchild, G. (2009). Racial Segregation in the Public Schools and Adult Labor Market Outcomes: The Case of Black Americans. *Small Business Economics*, 33(4), 467–484.

Fairlie, R. & Robb, A. (2009). Gender Differences in Business Performance: Evidence from the Characteristics of Business Owners Survey. *Small Business Economics*, 33(4), 375–395.

Florida, R. (2002). *The Rise of the Creative Class: and How It's Transforming Work, Leisure, Community and Everyday Life*, New York: Perseus Book Group.

Freytag, A. & Thurik, R. (2010). *Entrepreneurship and Its Determinants in a Cross-Country Setting*, Springer Berlin Heidelberg: Springer.

Fukuyama, F. (1995). *Trust: The Social Virtues and The Creation of Prosperity*, London: Hamish Hamilton.

Granovetter, M.S. (1973). The Strength of Weak Ties. *American Journal of Sociology*, 78(6), 1960–1980.

Granovetter, M.S. (1985). Economic Action and Social Structure: The Problem of Embeddedness. *American Journal of Sociology*, 91(3), 481–510.

Greene, P. & Brown, T. (1997). Resource Needs and the Dynamic Capitalism Typology. *Journal of Business Venturing*, 12(3), 161–173.

Hardin, R. (1999). Social Capital, J.E. Alt, M. Levi & E. Ostrom (Eds.), *Competition and Cooperation: Conversations with Nobelists about Economics and Political Science* içinde (170-189), New York: Russell Sage Foundation.

Halpern, D. (2005). *Social Capital*, Malden MA: Polity Press.

Holtz-Eakin, D.J., Joulfaian, D. & Rosen, H.S. (1994). Sticking it out: Entrepreneurial Survival and Liquidity Constraints. *Journal of Political Economy*, 102(1), 53–75.

Jacobs, J. (1961). *The Death and Life of Great American Cities,* New York: Random House.

Jackman, R. & Miller, R. (1998). Social Capital and Politics. *Annual Review of Political Science*, 1, 47–73.

Johannison, B. (1998). Personal Networks in Emerging Knowledge Based Firms: Spatial and Functional Patterns. *Entrepreneurship and Regional Development*, 10(4), 297–312.

Keefer, P. & Knack, S. (2008). Social Capital, Social Norms and the New Institutional Economics, *Handbook of New Institutional Economics* (701-725), Berlin Heidelberg: Springer.

Kerrissey, J. & Schofer, E. (2013). Union Membership and Political Participation in the United States. *Social Forces*, 94(2),895-928.

Knack, S. (2001). Trust, Associational Life and Economic Performance, J.F. Helliwell (Eds.), *The Contribution of Human and Social Capital to Sustained Economic Growth and Well-Being. International Symposium Report* içinde (172-202), Quebec: Human Resources Development Canada and OECD.

Knack, S. & Keefer, P. (1997). Does Social Capital have an Economic Payoff? A Cross-Country Investigation. *Quarterly Journal of Economics*, 112(4), 1251–1288.

Kwon, S. W. & Arenius, P. (2010). Nations of entrepreneurs: A social capital perspective. *Journal of Business Venturing*, 25(3), 315-330.

Lechner, C. & Dowling, M. (2003). Firm Networks: External Relationships as Sources of Growth and Competitiveness of Entrepreneurial Firms. *Entrepreneurship and Regional Development*, 15, 1–26

Lin, N. (1999). Social Networks and Status Attainment. *Annual Review of Sociology*, 25, 467–487.

Lin, N., Vaughn, J. & Ensel, W. (1981). Social Resources and Occupational Status Attainment. *Social Forces*, 59(4), 1163–1181.

Loewen, J. (1971). *Mississippi Chinese: Between Black and White,* Cambridge MA: Harvard University Press.

Long, J.S. & Freese, J. (2006). *Regression Models for Categorical Dependent Variables Using Stata,* 2nd Ed. Station TX: Stata Presscollege.

Loury, G.C. (1977). A Dynamic Theory of Racial Income Differences, P.A. Wallace & A. Le Mund (Eds.), *Women, Minorities and Employment Discrimination,* Lexington MA: Lexington Books.

McPherson, D. (1988). Self-Employment and Married Women. *Economics Letters*, 28(3), 281–84.

Meyer, B. (1990). *Why are there so Few Black Entrepreneurs?*. NBER Working Paper, 3537.

Minniti, M. & Naudé, W. (2010). What Do We Know About The Patterns and Determinants of Female Entrepreneurship Across Countries. *European Journal of Development Research*, 22(3), 277-293.

Ostrom, E. (2000). Risk Sharing in the Supplier Relationship: New Evidence from the Japanese Automotive Industry. *Journal of Economic Behavior and Organization*, 45(4), 361–381.

Pichler, F. & Wallace, C. (2007). Patterns of Formal and Informal Social Capital in Europe. *European Sociological Review*, 23(4), 423–435.

Portes, A. & Landolt, P. (1996). The Downside of Social Capital. *The American Prospect*, 26, 18–21.

Putnam, R. (1993). *Making Democracy Work. Civic Traditions in Modern Italy*, Princeton NJ: Princeton University Press.

Putnam, R. (1995). Bowling Alone: America's Declining Social Capital. *Journal of Democracy*, 5(2), 18–33.

Ram, M., Theodorakopoulos, N. & Jones, T. (2008). Forms of Capital, Mixed Embeddedness and Somali Enterprise. *Work, Employment and Society*, 22(3), 427-446.

Reynolds, P.D., Michael, H. & Camp, S.M. (1999). *Global Entrepreneurship Monitor: 1999 Executive Report.* Babson College, London Business School and The Kauffman Center for Entrepreneurial Leadership.

Sanders, J. & Nee, V. (1996). Immigrant Self-Employment: The Family as Social Capital and the Value of Human Capital. *American Sociological Review*, 61(2), 231–249.

Schofer, E. & Fourcade-Gourninchas, M. (2001). The Structural Context of Civic Engagement: Voluntary Association Membership in Comparative Perspective. *American Sociological Review*, 66(6), 806–828.

Sobel, J. (2002). Can we Trust Social Capital? *Journal of Economic Literature*, 40(1), 139–154.

Solow, R.M. (1997). Tell Me Again What we are Talking About. *Stern Business Magazine*, 4(1), 12–19.

Verheul, I., Wennekers, S., Audretsch, D. & Thurik, R. (2002). An Eclectic Theory of Entrepreneurship: Policies, Institutions and Culture, D.B. Audretsch, R. Thurik, I. Verheul & S. Wennekers (Eds.), *Entrepreneurship: Determinants and Policy In A EU-US Comparison* içinde (11-81), Springer Series: Economics of Science, Technology and Innovation 27.

Vershinina, N., Barrett, R. & Meyer, M. (2011). Forms of Capital, Intra-Ethnic Variation and Polish Entrepreneurs in Leicester. *Work, Employment and Society*, 25(1), 101-117.

Uzzi, B. (1999). Embeddedness in the Making of Financial Capital: How Social Relations and Networks Benefit Firms Seeking Financing. *American Sociological Review*, 64(4), 481–505.

Westlund, H. & Bolton, R. (2003). Local Social Capital and Entrepreneurship. *Small Business Economics*, 21(2), 77–113.

Williams, D.R. (2000). Consequences of Self-Employment for Women and Men in the United States. *Labour Economics*, 7(5), 665–687.

Woolcock, M. (1998). Social Capital and Economic Development: Toward a Theoretical Synthesis and Policy Framework. *Theory and Society*, 27(2), 151–208.

Notes

Note 1. Jacobs (1961) and Loury (1977) also contributed to early works on social capital. For an historical review of the concept, see Portes & Landolt (1996).

Note 2. Portes & Landolt (1996) and Sobel (2002) offer a critical view on Putnam's concept of social capital. Hardin (1999) offers a distinction between the approach to social capital by sociologists and political scientists. The sociological view, especially Coleman, focuses on how social capital facilitates social action, while political scientists focus on how social action facilitates institutional and governmental development.

Note 3. See Hardin (1999) for the differences between the various types of capital and conceptualisations of social capital.

Note 4. Referring to the terminology of network approach, 'formal social capital' would be similar to 'bridging social capital' (Davidsson & Honig, 2003) and would be mainly based on weak ties. In the same way, 'informal social capital' would be similar to 'bonding social capital' (Davidsson & Honig, 2003) and would be based on strong ties.

Note 5. The most abundant evidence refers, once again, to the US.

Note 6. Some studies that include women in their estimates of the determinants of self-employment are McPherson (1988), Boden (1996), Dunn & Holtz-Eakin (2000), Williams (2000) and Cowling & Taylor (2001).

Note 7. Self-employed women also tend to have a 'spouse present to be covered by someone else's health care policy, to be in a managerial or administrative occupation, and to work either a relatively small number of hours or a relatively large number of hours per week than the average wage and salary woman. She also was less likely to be black labour as likely to have young children and, if married, more likely to have a self-employed husband. And she earned less money' (Devine, 1994).

Note 8. For a detailed discussion, see Verheul et al. (2002).

Note 9. To assess the robustness of these results, slightly different definitions of entrepreneurship are also considered by (i) excluding agricultural workers and (ii) using the category 'employers/managers' as a proxy for entrepreneurs. In both cases, the results on social capital are confirmed. Extending the control group beyond employees (to the unemployed, the inactive and so on) does not affect the results on social capital.

Note 10. Two types of organisations were explicitly excluded from the construction of the formal social capital variable: 'professional associations', because for some occupations membership is compulsory, and 'trade unions', because their membership is made up almost uniquely of employees. The integrated questionnaire also includes a question on 'active / inactive membership'. However, this variable was not included in the wave EVS-WVS 1999-2004 and, therefore, was not incorporated in the analysis. The results are robust to alternative specifications of formal social capital, namely the inclusion of 'voluntary work' for the organisations listed.

Note 11. Contrary to other surveys focusing on European countries, such as the Eurobarometer, the EVS includes questions on the frequency of contacts with family and friends. Even though contacts with colleagues from work have not been considered in the final presentation of the results to avoid the risk of introducing a bias due to a different distribution of these contacts among the self-employed and the employees, the results are robust to their inclusion.

Note 12. This categorisation of informal social capital is used in order to enhance the reliability of the results. The inclusion of the frequencies 'once or twice a month' and 'a few times a year' would greatly increase the number of observations for informal social capital diluting the effect of 'frequent' contacts. It could be argued that the time available to join organisations (formal social capital) and to meet with family and friends (informal) is endogenous: entrepreneurs have less time for social activities. However, belonging to an organisation does not necessarily encroach on available time, since an organisation can provide time-saving services (e.g. associations supporting parents of handicapped children, clubs organising free-time activities and holidays) or increase the productivity of time devoted to social contacts (e.g. providing business partners and customers). For informal social capital, looking at the means for entrepreneurs and employees does not reveal a significant difference (see Table I).

Note 13. Other variables on education attainment were used, like a continuous variable that answers the question about the age of completion of full time education or the re-codification of the same variable into an ordinal one with 10 categories, ranging from 12 years to more than 21 years. The results are consistent across educational variables. Due to the slightly greater availability of observations and for expositive purposes (3 categories only), we present the analysis using the 3-categories variable.

Note 14. The effect of other variables, such as risk aversion, happiness, satisfaction, financial satisfaction, city size is also controlled for. The results are not presented in the results due to the low number of observations for some of these variables.

Note 15. Logit and probit models yield the same qualitative results. The logit model was used for the higher availability of post-estimations commands in Stata (Long & Freese, 2006).

Note 16. 13,202 when trust is considered.

Note 17. The same descriptive statistics for the US and Japan were calculated. Differences are not discussed in detail here. What is interesting to note is that, consistent with the literature, higher levels of educational attainment in the US are correlated with higher rates of entrepreneurship. Figures for Japan are instead more similar to those for the EU. Tables are available for request.

Note 18. Results are robust to the inclusion of time dummies and to the use of the alternative definitions of human capital presented in Section 3. Adding country dummies makes informal social capital lose significance, but does not affect the sign or the significance of formal social capital.

Note 19. It could be argued that endogeneity might affect some of the control variables used in specification (iii). What is relevant for the purposes of this analysis, however, is that adding controls does not alter the sign or the significance of formal and informal social capital.

Note 20. Coefficients in (iii) correspond, in principle, to estimating a separate equation for women. This would have reduced the number of observations considerably and decreased efficiency. We used instead the regression output from (ii) to estimate the coefficient for the separate regressions as a linear combination of the marginal effects associated to α and β, thus relying on the same number of observations as for regression (ii). Also, with this specification we can easily identify the factors which differ between men and women. Estimating separate regressions yields qualitatively similar results. Independently of the specification used, the lower numbers of female entrepreneurs are likely to affect the results.

Note 21. This could be the case also for other subgroups of the population, such as immigrants. In the EVS, immigrants, like women, have a lower rate of entrepreneurship and a lower level of formal social capital than the average. Once separate equations are estimated, formal social capital plays a positive role in determining entrepreneurship. Given the limited number of immigrants in this sample this study does not report results here; it will be interesting for future research to explore more in detail whether these similarities are confirmed.

Note 22. Goodness of fit was also assessed by means of the usual Akaike and Bayesian Information Criteria, as well as log likelihood, with no major differences across the two specifications.