

Two decades of European Entrepreneurship: Is the answer to who makes an entrepreneur different over time and countries?

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Abstract

Europe has become increasingly entrepreneurial over the last generation with a substantial rise in the numbers of working people choosing an entrepreneurial career path. This dynamic reflects longer-term changes in the nature of work itself and profound changes in the composition of the labour force. In this paper we consider two basic research questions: Who makes an entrepreneur? And, how has this changed over time and across countries? Using 1995 as our reference point this research examines how the demographics of people who choose an entrepreneurial career path has changed over a 20 year period, focusing particularly on gender, age, and educational dynamics. We find that the gender ‘gap’ has diminished in Old Europe but remains large in New Europe. Further, we re-iterate the importance of formal and informal human capital in the determination of self-employment. But we also find that economic and political turbulence matter, and both have a slow, but increasing effect on the rate of self-employment.

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1. Introduction

A significant feature of labour markets since the 1980s has been substantial increases in the numbers and share of the workforce that are self-employed (Berglann et al, 2011; Cueto and Mato, 2006; Blanchflower, 2000; Cowling and Mitchell, 1997). This trend, at least in part, has been promoted and facilitated by active labour market policies (ALMPs) in many countries designed explicitly to increase flows into self-employment, particularly as a response to rising unemployment and a desire to create jobs (Meager, Bates, and Cowling, 2003). In addition, the trend towards higher levels of self-employment in modern economies may also be a response to increased outsourcing of work by established firms, enabling the latter to be more flexible (Burke, 2011) and the rise of freelancing (Burke and Cowling, 2015). It may also reflect different human motivations, particularly in wealthier economies where non-pecuniary aspects of work become increasingly important, such as a need for autonomy and self-realization (Taylor, 1996). All these factors may help improve our understanding of why more people are choosing an entrepreneurial and self-employed career path, and why the types of people that choose this employment alternative might also be changing over time.

This research will build upon the original Blanchflower and Oswald (1998) paper “What makes an entrepreneur?”, but explicitly replicate the Cowling (2000) paper “Who makes an entrepreneur?” In taking this approach, we respond to the direct question posed by Simoes and Crespo (2016), in their review of the state of the knowledge base relating to self-employment, as to whether, “research on self-employment is reaching a steady-state equilibrium in which additional research does not deserve high priority?” Their answer to this question was, “definitely “no” for two main reasons. First, only additional empirical efforts will allow the clarification of some of the puzzles that remain on this subject, such as those related to the impact of education and health condition. Second, and perhaps even more important, we should bear in mind that as time goes by, societies and economies change. Scientific research needs to stay abreast, encompassing the new trends and providing the answers they seek (page 799)”.

In particular, they argue that there has been a crucial transformation that relates to the role of women in society and in the household (albeit with strong differences depending on cultural aspects), including increased access to education, higher female participation rates, lower discrimination in the labour market, and greater control over fertility. These features may help to challenge what is commonly accepted as being the predominant link between gender and self-employment propensity. But on this they state that, “a much more systematic analysis is still needed”.

In addition, they also state that, “the world’s current economic dynamic also poses new questions to research. This deserves special consideration. This is particularly important as the dominant literature on self-employment refers to the context of the developed countries of Europe, North America, and Australia, while the emerging countries and less developed ones are the focus of a far lower number of studies (Djankov et al., 2002). We explicitly address these concerns by including ‘new’ European countries which re-emerged after the collapse of the former Soviet Union.

In the context of the replication we directly replicate the Cowling (2000) study which was set in 1990s Europe, and our study will provide new evidence on the dynamics of self-employment over the next 20 years in the originally studied ‘old’ Europe. But it will also set these dynamics against those apparent in the ‘new’ Europe. And all these dynamics will be set in the unique contexts of some huge social and economic events that have occurred in Europe of the last generation.

It will explore in cross-section, across 35 European countries, and over time, differences in the nature of the entrepreneurial population in terms of gender, education, age, accumulated experience, and key personal, and job, characteristics. Importantly, we cover 5 waves of the European Foundation working conditions survey from 1995 to 2015. During this period profound changes occurred in Europe with the collapse of the former Soviet Union, the reunification of

Germany, the accession of eight former Eastern European countries into the EU, the dotcom crash, and ultimately the Global Financial Crisis in September 2008. Our starting assumption is that who becomes an entrepreneur will be different across time and countries. And this is our key empirical question. In addition, as later waves of the survey incorporated more countries, we are able to add important new insights comparing ‘old’ Europe with ‘new’ Europe on the same demographics.

The following set-up is used in the paper. In Section 2 we first derive hypotheses regarding the relationship between education, age, gender and ‘old’ vs. ‘new’ Europe, and self-employment rates. Our database and the variables that we employ from it are discussed in Section 3. Section 4 describes our empirical framework and methods while Section 5 describes the empirical results. Finally, Section 6 concludes.

2. Background and hypotheses

2.1. Education

Formal educational qualifications are viewed as an important indicator of expected productivity through their human capital enhancing qualities. In the waged sector of the labour market, formal educational qualifications are considered as a key mechanism through which workers send a positive signal to potential employers about their underlying ability (Belman and Heywood, 1991; Weiss, 1995). But in the self-employed sector this direct signalling effect is not relevant. But where a formal education can play a key role is through enhanced problem solving abilities, detailed and specialist knowledge accumulation, and importantly through reducing the opportunity costs of failing in self-employment through superior re-employment opportunities in the waged sector. Further, as established by Backes-Gellner and Werner (2007), education quality can send a positive signal to key external markets and agents relevant to entrepreneurs including financiers and potential employees.

On the negative side, the income earning opportunities for highly educated individuals in the wage sector are high, particularly when compared to the risky, and uncertain, incomes associated with self-employment (Guiso, Jappelli, and Terlizzese, 1996). Other issues such as the changing nature of jobs and the growth of new industries, such as knowledge intensive services, mean that there are enhanced opportunities for highly educated individuals to pursue a more entrepreneurial career path over the more traditional corporate career that many well educated people historically chose (Simoes, Crespo, and Moreiras, 2016).

The empirical evidence on the effects of formal education on self-employment is far from conclusive. Cowling (2000), in his study of self-employment across 13 Western European countries, found significant formal education effects were evident in 7 countries. Importantly, the most important effects were apparent for a degree level education when compared to an elementary (and intermediate in most cases) education. In Germany and Italy the marginal increase in the probability of being self-employed over waged employed for individuals with a degree level education were positive and of the order of 18%. Large positive effects were also identified in Belgium, +11%, and Denmark, +8%. These results are consistent with the US work of Bates (1995) on self-employment entry. For Greece, however, this positive degree effect was reversed for degree educated individuals with a large reduction in the probability of self-employment of the order of 11%. Possessing an intermediate level education was only found to be significant in Spain and Sweden where it reduced the probability of self-employment by 7% and 8% respectively.

Taken overall, even within a single multi-country study, the inconsistency in the results regarding the effect of various levels of education on self-employment would suggest general support for the contention of Simoes, Crespo, and Moreiras (2016: 791) that, the role of education in encouraging or discouraging self-employment activity “is still an underexploited avenue, thereby suggesting future research opportunities to shed more light on this question”. However, in the

knowledge that the right-tail of the earnings distribution for the self-employed (the rich end) extends far beyond that in the wage sector of the economy and as does the left tail (the poor end) as identified by Parker (1996) and Meager and Bates (2001), we tentatively posit that there will be a ‘U’ shaped relationship between formal education and self-employment with higher self-employment rates amongst the least and most educated in the working population, but for completely different reasons. At the low education end, individuals with potted work histories interspersed with periods of unemployment will gravitate towards self-employment for necessity reasons. At the high education end, individuals will positively select into self-employment to maximise the returns to their human capital. The above arguments lead to the following hypothesis:

Hypothesis 1: *There will be a ‘U’ shaped relationship between formal education and self-employment*

2.2. Informal human capital

Age of individual is one of the most common proxy variables to capture aspects of informal human capital accumulation. This is intended to represent the accumulation of work related experience and experiential learning (learning-by-doing). As such theoretical models of the self-employment-waged decision often predicted an initially positive age relationship as individuals gain experience through their early attachment to the labour force which was then subject to decay leading to an inverted ‘U’ shaped age-self-employment relationship. The decay at older stages of life prediction is particularly interesting given higher life expectancy rates in Europe, and is predicated on the decay in physical and mental abilities in old age, and also to psychological and attitudinal factors such as increasing risk aversion (Ahn, 2010; Douglas and Shepherd, 2002), unwillingness to try new things (Minola, Criaco, and Obschonka, 2016), and shorter self-employment tenure which reduces the ability of the individual to recover the sunk costs of entry (Hintermaier and Steinberger, 2005).

And this non-linear relationship was supported in several empirical studies (e.g. Caliendo, Fossen, and Krikitos, 2014; Blanchflower, 2004; Kuhn and Schuetze, 2001). But this is not without contention according to the Cowling (2000) study which only confirmed this non-linear age relationship for a single European country of the thirteen examined. Interestingly, that single country was the UK which experienced the earliest reversal in the long-run labour dynamic in favour of waged work towards self-employment in Europe (Cowling and Mitchell, 1997). In the seven other European countries examined where a significant age relationship was identified (including Portugal, Austria, Sweden, Germany, Greece, Spain, and Italy) it was positive across the full age range.

So what are the potential explanations for the failure of European studies to confirm this inverted ‘U’ shaped age relationship in respect of self-employment? Simoes, Crespo, and Moreira (2016) offer some unique insights which merit further consideration and empirical attention. Firstly, they argue that older people simply have had the longest elapsed time to accumulate key resources relevant to entering and surviving in self-employment such as financial capital, social capital, and experiential capital. On the latter they reject the contention that experiential human capital is subject to decay in later life. Secondly, they argue that time flexibility becomes increasingly important to individuals in later life (due to physical exhaustion and increased episodes of illness, and we could add in the increased prevalence of caring for grandchildren). This desire for hours and time flexibility has been identified as a key non-pecuniary aspect of the self-employment decision per se (Taylor, 1996), but they argue that this aspect is even more important for older people. Thirdly, they contend that the decision to move into self-employment in later life is a key stepping stone between exiting the waged employment sector and entering full-time retirement. In short, older individuals will have an increasing preference for self-employment the nearer they approach retirement. In this sense their latter arguments are in line with empirical evidence from Walker and Webster (2007: 122) for Australia which found that, “self-employment is a reactive rather than proactive decision for both older women and men”. Setting aside this unresolved

debate, we opt to formulate a simple hypothesis for the age relationship suitable for empirical testing. Hence, we hypothesize the following:

Hypothesis 2: *There will be a positive relationship between an individuals' age and self-employment*

2.3. Gender

Empirically, the core findings that women have a lower entry rate into self-employment, and more generally a lower propensity to be self-employed is well established (Blanchflower, 2000; Sorgner and Fritsch, 2013). Cowling (2000) finds that in 13 of the 15 European countries studied the magnitude of women's representation in self-employment is substantially lower than is the case in waged employment, with the exceptions being Belgium and Greece. Many explanations have been put forward to explain these gender imbalance including psychological and attitudinal characteristics such as greater risk aversion (Parker, 2009), and a more cautious approach to saving and borrowing (Liu, Cowling, and Marlow, 2019). In addition, researchers have identified different labour market histories, and in particular occupational and industry sector segregation as explanations (Bates, 1995; Leoni and Falk, 2010). But once a small set of personal and job related characteristics are added into the analysis, many studies find that the effect of gender on its own either disappears or is reduced substantively. For example, the Cowling (2000) study found that of the 13 Western European countries where females were under-represented in self-employment at the univariate level, once a small set of personal, marital, and educational characteristics were included the gender effect disappeared completely in eight of the thirteen. It did, however, remain in Ireland where males had a 17% higher probability of being self-employed, Italy (+10%), France and the UK (+9%), and Sweden (+6%).

Aside from more explicit and identifiable differences in education pathways, and the subsequent occupational and industry segregation that this can lead to, researchers have also argued that labour market discrimination can play a key role (Williams, 2012). But the role of discrimination in the formal waged sector is predicted to push women (and other discriminated groups) into self-employment to escape from these effects. In this sense it follows that where the rate of female self-employment is high, this might be an indicator of higher levels of labour market discrimination in the waged sector. Social capital has also been identified as an important feature which presents a potential disadvantage to women seeking to enter, and remain, in self-employment. Here, it is argued that men build wider and more diverse social networks relevant to self-employment (Simoes, Crespo, and Moreiras, 2016). This occurs as women are more likely to have lower status jobs, but also more fragmented labour market histories due to child care and other responsibilities. On gender, we propose the following hypothesis;

Hypothesis 3: *Females will have a lower rate of self-employment.*

2.5. 'Old' vs. 'new' Europe

Given the data to hand which covers the time period 1995-2015, we are also able to propose an additional hypothesis which seeks to test and capture the dynamic and time-changing aspects of entrepreneurship in an expanded Europe. We observe from general labour market data that self-employment rates are higher in less developed countries (Gindling and Newhouse, 2012), and it has been argued that this reflects an interesting relationship between per capita income growth at the country level which sets off two quite distinct changes in the general structure of employment. Firstly, for under-developed countries changes in per capita incomes lead to a shift out of agricultural employment into low quality self-employment. But as countries progress in terms of further increases in per capita incomes, this triggers a shift into non-agricultural waged and salaried employment as institutional changes such as minimum wages and employee protection increase the attractiveness of waged jobs to the extent that only an elite cadre of the self-employed can achieve the income levels of a similar worker in a waged position (Taylor, 1996). As the majority of our 'New European' countries were in the former Soviet Bloc (i.e under Communist control) until the late 1980s, additional factors such as the large-scale privatisation of state

industries may have also led to an increase in the opportunities available for new entrepreneurial activity and hence led to increasing rates of self-employment, particularly compared to the more stable macroeconomic and institutional environments that characterise the wealthier Western European economies that constitute the older members of the European Union (and we refer to as ‘Old Europe’), and detail below.

Hypothesis 4: *New European countries will have a higher rate of entrepreneurship than ‘old’ European countries (Gindling and Newhouse, 2014).*

3. Data and variables

3.1. Data and sample

The data we use for the empirical part of this paper is derived from a survey of the working populations (employed + self-employed) of the core European Union member states: the *European Working Conditions Survey* (EWCS; Eurofound, 2018). As comparability and reliability of information are key requirements when carrying out cross-national investigations, a unified methodological approach and a quality assurance system was developed to provide comparable and reliable data on working conditions across Europe. Over the years, methods have been improved, new concerns integrated and geographic scopes expanded with the enlargement of the European Union. The survey is questionnaire-based and includes a comprehensive quality control framework, to ensure the highest possible standards in all data-collection and editing processes.

A network of national contractors carried out the data collection in each country. The EWCS is conducted by the EU Agency *Eurofound* (*European Foundation for the Improvement of Living and Working Conditions*), which is an autonomous agency of the European Union (EU), funded from the general budget of the European Commission.¹ The EWCS series began in 1990-1991, and is generally conducted once every five years, although an extra wave was conducted in 2001 to cover the new acceding and candidate EU countries. The survey is based on a questionnaire which is administered face-to-face to a random sample of ‘persons in employment’ (i.e. employees and the self-employed), representative of the working population in each EU country. The surveys are conducted in interviewees’ homes.

The aim of the EWCS is to provide an overview of the state of working conditions in the EU, to identify major issues and changes affecting the workplace and to contribute to a better monitoring of the quality of work and employment in Europe. The questionnaire covers all aspects of working conditions, including working time; physical risk factors; violence, harassment and discrimination in the workplace; nature and organisation of work; impact of work on health; management and communication structures; work-life balance; income and payment systems.

The coverage of the EWCS over time reflects the evolution of the EU, as more states have joined over time. Hence, in 1991, the survey covered the 12 EU member states of the time (EU12); in 1995, 15 states (EU15); in 2000 the EU15 countries plus Norway; in 2001 the 10 new EU member states plus Bulgaria, Romania and Turkey; in 2005 the survey covered 31 countries including the EU25 together, the two countries that would join in 2007 (Bulgaria and Romania), 2 candidate countries (Croatia and Turkey) and 2 European Free Trade Association (EFTA) countries (Norway and Switzerland); in 2010 the survey covered 34 countries including the EU27 together, 5 candidate countries (Albania, Croatia, the Former Yugoslav Republic of Macedonia, Montenegro and Turkey), 1 potential candidate country (Kosovo) and 1 European Free Trade Association (EFTA) country (Norway; Switzerland was not included). Finally, the last available survey for 2015 covers the following 35 countries: the current EU28 member states, 5 candidate

¹ This Foundation is created to assist in the formulation of future policy on social and work-related matters. Further information can be found at www.eurofound.europa.eu.

countries (Albania, the former Yugoslav Republic of Macedonia, Montenegro, Serbia, and Turkey), as well as 2 European Free Trade Association (EFTA) countries (Norway and Switzerland).

The number of questions and issues covered in the EWCS has expanded in each subsequent survey, but a core set of key questions has remained unchanged to enable the study of trends in working conditions. In this sense, a comparable definition of our both main statuses self- and paid employment is only available for waves 1995, 2000-01, 2005, 2010 and 2015 and, therefore, our analysis of *two decades of European entrepreneurship* is precisely carried out for the period 1995-2015 based on these 5 surveys.

The survey covered the total active population of the respective nationalities of the EU member states, aged 15 years and over, resident in the countries involved in the survey. Retired and unemployed persons, housewives and students, etc., were excluded. Non-Europeans were included, on condition that they could be interviewed in the national language(s) of the country where they work. The data were collected in face-to-face interviews conducted in interviewees' homes and were released for researchers use. Depending on country size and national arrangements, the sample ranges from 1,000 to 4,000 workers per country and wave. For the smallest states, i.e., Luxembourg, Cyprus, Estonia, Malta and Slovenia, however, the sample was reduced to around 500 observations for some of the waves 1995, 2000-01 and 2005. The basic sample design is a multistage, random sampling of the active population of the respective countries. In particular, the weighting is based on the Eurostat Labour Force Survey (LFS), meaning that the distribution by region, locality size, gender, age, economic activity and occupation in the surveys is identical to that of the LFS distribution.

Our final sample includes men and women aged 18 to 65 who are classified as either self-or paid employed individuals within the following 35 countries: the current EU28 member states, 5 candidate countries (Albania, the former Yugoslav Republic of Macedonia, Montenegro, Serbia, and Turkey) and 2 EFTA countries (Norway and Switzerland). All individuals working part-time, i.e., working under 15 hours per week, are excluded. The final dataset, after removing cases with missing data for any of the relevant variables, yields 136,046 observations. Workers in the public sector are also excluded in many of our specifications. When doing so, our final data set yields 95,271 observations.

Table 1 below shows the distribution of observations across countries in our sample and their associated self-employment rates.

--- Insert Table 1 about here ---

3.2. Variables

Conditional on self-classification, the EWCS allows identifying the worker main activity status: self-employed and paid-employee. A dummy equaling 1 for workers who declare being self-employed and 0 for those who declare being paid employees will be used as our dependent variable.

Our hypotheses-related variables are the following: education² (H1), age (H2), female (H3) and a dummy capturing whether the worker live in an 'old' Europe country (H4).

Finally, in order to isolate the effect of our hypotheses-related variables, the empirical models also include a set of explanatory variables that are known to influence self-employment choice

² Education variables are based on the *International Standard Classification of Education* (ISCED) for waves 2005, 2010 and 2015. For waves 1995 and 2001 (non-EU countries), the information as regards age when stopped full-time education is used to create education variables. Finally, for wave 2000 (EU-countries), education is proxied by means of income quartiles.

(see e.g. Millán, Congregado, and Román, 2010; Román, Congregado, and Millán, 2013; Congregado, Millán, and Román, 2014; Parker 2018): some demographic indicators (immigrant, cohabitation status, household size) and job-related aspects (tenure, working hours, business sector). Country and wave dummies are also part of our specifications. We refer to the Appendix for all variable descriptions.

4. Econometric framework

As most previous studies on self-employment and entrepreneurship, the theoretical approach underlying this study is based on the standard theory on-the-job search (Mortensen, 1986) where the individual chooses the labour market state that yields the highest expected utility. Thus, a model of a rational agent which choose self-employment if the expected utility associated to this occupation $E(U_i^{SE})$ exceeds the expected utility of paid-employment $E(U_i^{PE})$. Consequently, several factors will affect their relative returns from self-employment versus wage work.

In order to provide a framework for the empirical analysis, standard binary logit models are used. Thus, as usual, the probability of choosing self-employment is assumed to depend on a set of observed individual characteristics. Consequently, the actual estimating equation can be expressed thus:

$$Prob(U_i^{SE} - U_i^{PE} > 0) = Prob(\beta'X_i + \varepsilon_i > 0) = F(\beta'X_i + \varepsilon_i)$$

where the vector X_i represents individual characteristics, β is the associated vector of coefficients to be estimated, ε_i is a random error term, and $F(\cdot)$ follows a logit distribution³ with:

$$F(z) = \frac{\exp(z)}{1 + \exp(z)}$$

5. Results

5.1. Descriptive analysis

Table 2 below compares self- and paid employed workers in terms of education, informal human capital (age), gender and country of residence ('old' vs. 'new' Europe).

--- *Insert Table 2 about here* ---

We first observe how self-employed workers are more likely to be lower educated and less likely to have secondary education than their paid employees counterparts. As regards tertiary education, both groups present similar rates. Therefore, these figures are coherent with the 'U' shaped relationship between formal education and self-employment stated in our Hypothesis 1.

We also observe in our sample that, compared with paid employees, self-employed are more often older, males, and live more often in countries belonging to the 'new Europe'. These figures are hence consistent with our Hypotheses 2, 3 and 4.

Furthermore, self-employed workers are also less often immigrants, more often with partner and have larger families. Finally, self-employed individuals work longer hours and have longer tenures.

³ The same exercises has been reproduced by using a probit specification of $F(\cdot)$. However, this estimation does not alter our empirical conclusions in any significant way.

5.2. Multivariate analysis

Although our univariate analysis seems to support the validity of some of our hypotheses, a conditional analysis is needed to draw robust conclusions. The estimation results are presented in Tables 3, 4 and 5. Tables 3 and 4 in subsection 5.2.1 show the results from 10 specifications aimed to explore the role of our hypotheses related variables over self-employment likelihood in Europe. The following structure is used to present these results. First, average predicted self-employment probabilities are indicated at the top of each specification. These predicted probabilities are useful to understand the relative importance of our marginal effects, presented below. Specifically, each model is presented in a two-column format, where marginal effects (with respect to average predicted values of our dependent variables) and associated t-statistics are reported. Also in subsection 5.2.1, a summary of results is presented in Table 5. Finally, section 5.2.2 presents some robustness checks which are part of the analysis.

5.2.1 Results

Tables 3 and 4 show the estimation results from 10 specifications, which are aimed to test our 4 hypotheses.

--- Insert Tables 3 and 4 about here ---

Model 1 serves as our baseline model and includes all our observations and country dummies. Model 2 exclude those individuals working in the public sector. Model 3 substitute our country dummies by our old vs. new Europe indicator. Models 3A and 3B present separate results for 'old' and 'new' European workers, respectively. Finally, Models 4A to 4E presents independent results for waves 1995, 2000-01, 2005, 2010 and 2015, respectively.

Overall, our empirical tests support most of the hypotheses advanced in this article. First, compared with having basic education, having secondary education consistently decreases self-employment likelihood in all models presented. Conversely, having tertiary education increases self-employment chances in some but not all of our models. Interestingly, this effect is relevant when excluding the public sector (model 2) and for countries in 'old Europe' (model 3A). All in all, these results suggest the existence of an 'U' shaped relationship between educational attainment and self-employment chance, which supports our Hypothesis 1.

As regards age, most of our models supports the existence of a positive non-linear effect on self-employment chances. However, the negative quadratic term begins to dominate the positive linear term outside of the existing age range in the sample (18-65) and, hence, the higher self-employment likelihood is reached when the worker is 65 years old, which supports our Hypothesis 2.

We also find for all our specifications that females are less likely to be self-employed, which is consistent with that stated in our Hypothesis 3. Finally, self-employment seems to be more likely in countries in the 'old' Europe, which does not give support to our Hypothesis 4. However, when distinguishing by each of the waves in our sample, we observe how H4 is rejected in 2000-01 and 2005 (models 4B and 4C) whereas it is supported in 2010 and 2015 (models 4D and 4E).

Table 5 below shows a summary of our hypotheses-related results, just discussed.

--- Insert Table 5 about here ---

As regards the results for our control variables, immigrants are found to present lower self-employment likelihood, being this effect particularly strong in 'old' European countries (model 3A). Cohabiting individuals and those having larger families are also observed to be self-employed with higher likelihood. Finally, the effect of both tenure and working hours on the probability of being self-employed is observed to be positive.

5.2.2 Robustness checks

We performed several robustness checks. *First*, although we present only a few models in Table 3, a complete stepwise regression approach (in which models incorporate covariates one-by-one) was followed, which serves as a robustness check for the results obtained in previous models. *Second*, our findings are also robust to the exclusion/inclusion of the public sector in our sample. *Third*, our results indicate no major change when estimated by means of probit (instead logit) specification. *Fourth*, the robustness of our t-statistics was verified by re-estimating them from variance–covariance matrices of the coefficients obtained by bootstrapping. All results as regards these robustness checks are available upon request.

6. Conclusions

We set out to replicate, and extend, an empirical study of European self-employment conducted almost 20 years ago amongst 15 of the wealthier Western European countries to see if (a) the original findings in terms of who makes an entrepreneur still held, and, (b) to test whether two decades of European Union expansion had fundamentally changed the nature of self-employment in the New Europe. We proposed three tried and tested hypotheses relating to formal and informal human capital that have been empirically tested in a wide range of time-periods, countries, and contexts. But, as our data covered a generation of change in Europe, including the decade after the collapse of the former Soviet Union and German reunification, a significant expansion of the European Union itself, a Global Financial Crisis, and a Greek bail out, we also wanted to see if economic circumstance and political upheaval was associated with a changing and different dynamic in respect of self-employment.

On our core hypotheses we find a particularly interesting ‘U’ shape relationship between formal human capital captured by education level. On this we find that the least (primary education) and highest educated (tertiary education) have the highest propensity to be self-employed. This suggests that there is a clear separation in terms of who becomes, and remains in, self-employment and that formal human capital is a clear and significant predictor. This also suggests that the least educated might choose self-employment as they are marginalised in the waged sector of the labour market. The opposite is true for the most highly educated who become self-employed for more positive reasons. These findings have interesting implications for policy-makers interested in promoting a more educated workforce *per se*, for productivity enhancing reasons, but also in promoting entrepreneurial activity for a variety of economic reasons, not least their contribution to job creation, competition, and innovation. The UK government, for example, has focused on enhancing secondary levels of education which would result in increasing flows into waged employment to the detriment of self-employment. Other governments have shown an interest in promoting graduate entrepreneurship which, our findings suggest, is a good policy choice.

On informal human capital, we also find a consistent and clear relationship with self-employment, but with a particularly nuance around retirement age. In general, we find that the greater the accumulated experience an individual has built up through life and work, the more likely it is that they will become self-employed. These results also suggest that the relationship between informal human capital and self-employment is more direct than that with formal human capital. The nuance at the end, evidenced by the fact that self-employment peaks around the age of 65, suggests that for many at or around retirement, their preference is for waged employment rather than the risks and uncertainty of self-employment.

In relation to gender, we find that in general women are significantly less likely to be self-employed. This is a common finding over time and country. But the more interesting findings relate to the difference in the propensity for self-employment, particularly given the raw data suggests a difference of 2/3rds – 1/3rd in favour of males. But once we control for a number of other key personal, familial, and industry characteristics, the magnitude of the gender difference

falls considerably. Further, we also found that the gender difference in general is much larger, possibly as much as four times, in 'New Europe' than 'Old Europe' suggesting both history and economic development play a role in respect of the gender structure of work and employment. In 'Old Europe' the gender difference may be as low as 6-7%.

On our final hypothesis, which explored the extent to which the original results for 'Old Europe' still held in the light of a significantly expanded Europe, we found some particularly interesting findings which highlight that the evolution of countries over time, from different starting points, is hugely important. Until 2005, just 16 years after the fall of the Berlin Wall, there were no differences in the self-employment rate between *old* and *new* Europe. But over the next decade, to 2015, we found that self-employment rates in New Europe were significantly higher. This strongly suggests that the tremendous economic and political turbulence and change that followed the collapse of the Soviet Union and the re-birth of many European countries created a slow burning, but exciting new entrepreneurial dynamic, at a time when Old Europe continued on its more stable long-run path.

To summarise, we believe that our new study has helped to justify the case for conducting replication work which has been shamefully ignored in entrepreneurship and more broadly business and management for a long time. We have uncovered some important new results, particularly in respect of gender and stages of economic and political development, but also found support for well-established empirical features of self-employment, around formal and informal human capital. Time and context do matter, even in a world where some things don't change too much.

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Tables (to be inserted in the text)

Table 1. Distribution of observations and self-employment rates across countries

Country	# obs.	% obs.	% Self-employment –Public sector included–	% Self-employment –Public sector excluded–
Austria	4,612	3.39	11.0	13.6
Belgium	8,461	6.22	13.3	18.3
Denmark	4,973	3.66	6.7	9.7
Finland	5,093	3.74	11.8	18.5
France	7,065	5.19	10.5	13.2
Germany	5,636	4.14	9.8	11.7
Greece	4,903	3.60	38.1	37.9
Ireland	4,407	3.24	18.2	22.6
Italy	5,080	3.73	24.1	30.4
Luxembourg	3,075	2.26	10.0	13.5
Malta	2,854	2.10	12.4	17.2
Netherlands	4,734	3.48	10.7	12.4
Norway	2,711	1.99	7.9	13.4
Portugal	4,633	3.41	18.6	21.8
Spain	6,622	4.87	17.7	21.0
Sweden	5,139	3.78	7.1	10.8
Switzerland	1,767	1.30	13.5	17.6
United Kingdom	5,476	4.03	12.9	16.3
‘Old’ Europe	87,241	64.1	14.3	18.1
Albania	1,618	1.19	45.4	58.0
Bulgaria	3,700	2.72	11.9	16.5
Croatia	2,235	1.64	11.2	17.4
Cyprus	2,908	2.14	18.6	22.8
Czech Republic	3,413	2.51	14.0	17.2
Estonia	3,133	2.30	7.9	10.5
Hungary	3,619	2.66	12.1	16.4
Latvia	3,366	2.47	7.3	10.1
Lithuania	3,454	2.54	8.9	11.9
Macedonia	799	0.59	20.9	26.7
Montenegro	827	0.61	23.5	30.8
Poland	3,692	2.71	18.1	23.4
Romania	3,289	2.42	14.0	16.8
Serbia	796	0.59	23.9	28.1
Slovakia	3,668	2.70	12.4	16.9
Slovenia	4,039	2.97	10.3	14.4
Turkey	4,249	3.12	35.4	39.7
‘New’ Europe	48,805	35.9	15.9	20.6
All Europe	136,046	100	14.9	19.0

Data source: EWCS 1995, 2000-01, 2005, 2010, 2015.

Table 2. Descriptive statistics

	Public sector included				Public sector excluded			
	<i>Self-employed</i>		<i>Paid employee</i>		<i>Self-employed</i>		<i>Paid employee</i>	
# observations	20,222		115,824		18,135		77,136	
Variables	Mean	SD	Mean	SD	Mean	SD	Mean	SD
<i>Hypotheses related variables</i>								
<i>H1. Education</i>								
Basic education ^a	0.16		0.08		0.16		0.10	
Secondary education ^a	0.57		0.61		0.57		0.65	
Tertiary education ^a	0.28		0.31		0.27		0.26	
<i>H2. Informal human capital</i>								
Age (18 – 65)	43.7	11.2	40.4	11.3	43.7	11.2	39.1	11.4
<i>H3. Gender</i>								
Female ^a	0.35		0.50		0.35		0.46	
<i>H4. ‘Old’ vs. ‘new’ Europe</i>								
Old Europe ^a	0.62		0.65		0.61		0.64	
<i>Control variables</i>								
<i>Demographic characteristics</i>								
Immigrant ^a	0.07		0.09		0.07		0.09	
Cohabiting ^a	0.68		0.63		0.68		0.61	
Household size	3.19	1.37	2.97	1.31	3.19	1.37	2.98	1.31
<i>Job aspects</i>								
Tenure (1 – 50)	12.9	10.7	9.83	9.42	12.8	10.6	8.56	8.74
Working hours (15 – 100)	48.2	15.9	39.0	9.44	48.6	15.8	39.9	9.69
<i>Business sector dummies</i>								
Agriculture ^a	0.19		0.02		0.18		0.03	
Industry ^a	0.10		0.20		0.11		0.26	
Construction ^a	0.09		0.06		0.09		0.09	
Commerce ^a	0.23		0.14		0.24		0.19	
Hotels and restaurants ^a	0.06		0.04		0.06		0.06	
Transport ^a	0.04		0.07		0.04		0.07	
Financial intermediation ^a	0.02		0.03		0.02		0.04	
Real estate ^a	0.10		0.08		0.10		0.09	
Public administration ^a	0.007		0.09					
Other services ^a	0.17		0.27		0.16		0.16	

Notes: ^a Dummy variable; Data source: EWCS 1995, 2000-01, 2005, 2010, 2015.

Table 3. Determinants of self-employment in Europe –*logit regressions*–

# Model	1		2		3		3A		3B	
Observations	136,046		95,271		95,271		60,515		34,756	
Average predicted SE likelihood (y)	0.149		0.190		0.190		0.181		0.206	
Independent variables (x)	$\frac{dy/dx}{y}$ %	t-statistic	$\frac{dy/dx}{y}$ %	t-statistic	$\frac{dy/dx}{y}$ %	t-statistic	$\frac{dy/dx}{y}$ %	t-statistic	$\frac{dy/dx}{y}$ %	t-statistic
<i>Hypotheses related variables</i>										
<i>H1. Education</i>										
Basic education ^a (ref.)										
Secondary education ^a	-12.9	-6.09***	-8.30	-4.02***	-20.6	-9.73***	-5.91	-2.41**	-13.0	-3.36***
Tertiary education ^a	0.011	0.01	13.7	5.88***	-0.07	-0.03	18.2	6.53***	2.49	0.57
<i>H2. Informal human capital</i>										
Age (18 – 65)	3.44	9.05***	3.62	9.28***	2.80	7.13***	3.36	6.66***	3.75	5.98***
Age (squared)	-0.02	-4.47***	-0.02	-4.87***	-0.01	-3.23***	-0.01	-2.53**	-0.03	-4.18***
<i>H3. Gender</i>										
Female ^a	-17.5	-13.8***	-14.8	-11.4***	-15.8	-12.0***	-6.68	-3.88***	-24.3	-12.1***
<i>H4. 'Old' vs. 'new' Europe</i>										
Old Europe ^a					4.73	3.48***				
<i>Control variables</i>										
<i>Demographic characteristics</i>										
Immigrant ^a	-6.03	-2.74***	-9.49	-4.27***	-17.8	-8.68***	-13.5	-5.21***	2.80	0.62
Cohabiting ^a	8.18	6.11***	9.34	6.83***	7.14	5.11***	8.05	4.69***	11.6	5.02***
Household size	2.43	5.04***	2.49	5.05***	5.58	11.4***	2.21	3.50***	2.80	3.52***
<i>Job aspects</i>										
Tenure (1 – 50)	0.85	12.1***	1.55	21.2***	1.74	23.8***	1.28	13.8***	1.89	15.8***
Working hours (15 – 100)	3.70	74.4***	3.45	68.6***	3.74	75.1***	4.32	63.9***	2.28	29.8***
<i>Business sector dummies</i>										
Agriculture ^a	163.9	34.6***	130.9	32.5***	136.0	33.9***	110.1	18.6***	142.5	26.4***
Industry ^a	-62.1	-23.4***	-52.4	-23.2***	-51.8	-23.0***	-58.2	-19.8***	-43.7	-12.5***
Construction ^a (ref.)										
Commerce ^a	24.0	7.94***	17.3	6.80***	20.9	8.17***	16.6	5.01***	18.7	4.75***
Hotels and restaurants ^a	-16.0	-4.24***	-11.5	-3.56***	-4.12	-1.23	-10.8	-2.54**	-15.5	-3.17***
Transport ^a	-59.6	-19.9***	-39.4	-14.2***	-39.3	-14.2***	-50.7	-14.6***	-22.1	-4.84***
Financial intermediation ^a	-52.5	-13.5***	-43.8	-13.1***	-43.4	-13.0***	-55.4	-14.0***	-14.3	-2.08**
Real estate ^a	10.0	2.90***	11.6	3.84***	13.0	4.28***	7.52	1.99**	16.9	3.34***
Public administration ^a	-109.8	-42.6***								
Other services ^a	-33.1	-11.7***	21.9	7.81***	23.1	8.21***	16.5	4.65***	31.3	6.79***
<i>Wave</i>										
1995 ^a	31.8	12.4***	31.1	13.3***	31.9	14.3***	26.6	10.1***		
2000-01 ^a (ref.)										
2005 ^a	7.94	4.11***	30.8	15.3***	34.6	17.9***	24.5	9.12***	39.6	13.0***
2010 ^a	7.12	3.89***	26.4	14.2***	38.2	21.6***	18.7	7.42***	36.4	13.1***
2015 ^a	5.19	2.86***	21.1	11.6***	34.3	20.1***	17.0	6.97***	25.8	9.41***
<i>Countries</i>	<i>All Europe</i>		<i>All Europe</i>		<i>All Europe</i>		<i>Old Europe</i>		<i>New Europe</i>	
<i>Waves</i>	<i>All</i>		<i>All</i>		<i>All</i>		<i>All</i>		<i>Wave 1995 excluded</i>	
<i>Public sector included</i>	<i>Yes</i>		<i>No</i>		<i>No</i>		<i>No</i>		<i>No</i>	
<i>Country dummies</i>	<i>Yes</i>		<i>Yes</i>		<i>No</i>		<i>Yes</i>		<i>Yes</i>	
<i>Log likelihood</i>	-45,595.8		-36,812.9		-37,771.9		-22,556.8		-13,992.6	

Notes: ^a Dummy variable; * 0.1 > p ≥ 0.05; ** 0.05 > p ≥ 0.01; *** p < 0.01; The maximum correlation is 0.561 (between age and tenure), and the VIFs values (from model 1) range from 1.01 to 1.54. Thus, multicollinearity does not pose a concern, especially in consideration of the large size of our sample; Data source: EWCS 1995, 2000-01, 2005, 2010, 2015.

Table 4. Determinants of self-employment across waves in Europe –logit regressions–

# Model	4A		4B		4C		4D		4E	
Observations	12,973		19,285		15,967		21,824		25,222	
Average predicted SE likelihood (y)	0.210		0.131		0.205		0.214		0.196	
Independent variables (x)	$\frac{dy/dx}{y}$ %	t-statistic	$\frac{dy/dx}{y}$ %	t-statistic	$\frac{dy/dx}{y}$ %	t-statistic	$\frac{dy/dx}{y}$ %	t-statistic	$\frac{dy/dx}{y}$ %	t-statistic
<i>Hypotheses related variables</i>										
<i>H1. Education</i>										
Basic education ^a (ref.)										
Secondary education ^a	-3.00	-0.78	-33.8	-5.60***	-17.8	-3.76***	-15.2	-3.49***	-11.3	-2.16**
Tertiary education ^a	7.12	1.67*	-9.37	-1.42	12.5	2.17**	4.54	0.92	13.8	2.45**
<i>H2. Informal human capital</i>										
Age (18 – 65)	3.02	3.20***	8.13	6.82***	2.13	2.38**	3.22	4.10***	2.99	3.85***
Age (squared)	-0.02	-1.46	-0.07	-4.98***	-0.01	-0.82	-0.02	-2.64***	-0.02	-1.77*
<i>H3. Gender</i>										
Female ^a	-3.45	-1.06	-23.3	-6.22***	-16.5	-5.48***	-16.5	-6.52***	-19.3	-7.58***
<i>H4. 'Old' vs. 'new' Europe</i>										
Old Europe ^a			20.8	5.65***	6.57	2.21**	-7.05	-2.79***	-9.27	-3.71***
<i>Control variables</i>										
<i>Demographic characteristics</i>										
Immigrant ^a	8.89	1.07	-27.7	-3.38***	-17.9	-3.01***	-21.3	-6.30***	-10.6	-3.14***
Cohabiting ^a	-3.09	-0.83	15.2	3.56***	5.94	1.72*	5.60	1.92*	2.40	0.84
Household size	0.33	0.27	3.19	2.19**	5.06	4.34***	6.21	6.28***	6.49	6.51***
<i>Job aspects</i>										
Tenure (1 – 50)	0.50	2.77***	0.23	1.11	1.86	11.2***	2.34	16.2***	2.72	19.6***
Working hours (15 – 100)	4.23	34.0***	4.56	33.5***	3.71	33.3***	3.32	36.0***	2.90	27.2***
<i>Business sector dummies</i>										
Agriculture ^a	69.4	9.95***	85.1	8.08***	141.0	15.2***	142.5	18.7***	171.4	21.6***
Industry ^a	-51.0	-8.69***	-47.5	-7.44***	-48.7	-9.64***	-57.1	-13.4***	-57.8	-12.8***
Construction ^a (ref.)										
Commerce ^a	33.6	6.12***	45.3	5.94***	18.8	3.24***	7.51	1.59	5.46	1.09
Hotels and restaurants ^a	-2.34	-0.29	1.60	0.16	-4.50	-0.57	-8.07	-1.30	-5.00	-0.79
Transport ^a	-49.3	-6.28***	-41.0	-5.45***	-29.9	-4.44***	-36.3	-6.69***	-41.8	-7.73***
Financial intermediation ^a	-41.2	-4.21***	-10.6	-0.98	-43.6	-5.90***	-52.9	-8.46***	-57.0	-9.22***
Real estate ^a	13.5	1.80*	22.8	2.41**	14.6	2.06**	14.9	2.64***	4.58	0.83
Public administration ^a										
Other services ^a	7.21	1.28	9.30	1.21	29.6	4.53***	36.9	6.55***	44.3	7.31***
<i>Countries included</i>										
	EU15		EU27		EU28 Turkey Norway Switzerland		EU28 Albania Turkey Norway		EU28 Albania Macedonia Montenegro Serbia Turkey Norway Switzerland	
Wave	1995		2000-01		2005		2010		2015	
Public sector included	No		No		No		No		No	
Country dummies	No		No		No		No		No	
Log likelihood	-4,938.9		-6,286.4		-6,419.5		-9,088.3		-10,322.2	

Notes: ^a Dummy variable; * 0.1 > p ≥ 0.05; ** 0.05 > p ≥ 0.01; *** p < 0.01; The maximum correlation is 0.560 (between age and tenure), and the VIFs values (from model 4E) range from 1.02 to 1.45. Thus, multicollinearity does not pose a concern, especially in consideration of the large size of our sample; Data source: EWCS 1995, 2000-01, 2005, 2010, 2015.

Table 5. Results summary

# Model	3	3A	3B	4A	4B	4C	4D	4E	Predicted sign	Hypothesis Accepted / Rejected
	$\frac{dy/dx}{y}$ %	$\frac{dy/dx}{y}$ %	$\frac{dy/dx}{y}$ %	$\frac{dy/dx}{y}$ %	$\frac{dy/dx}{y}$ %	$\frac{dy/dx}{y}$ %	$\frac{dy/dx}{y}$ %	$\frac{dy/dx}{y}$ %		
H1. Education										
Basic education ^a (ref.)										Accepted
Secondary education ^a	-20.6***	-5.91**	-13.0***	-3.00	-33.8***	-17.8***	-15.2***	-11.3**	-	
Tertiary education ^a	-0.07	18.2***	2.49	7.12*	-9.37	12.5**	4.54	13.8**	+/-0	
H2. Informal human capital										
Age (18 – 65)	2.80***	3.36***	3.75***	3.02***	8.13***	2.13**	3.22***	2.99***	+	Accepted
Age (squared)	-0.01***	-0.01**	-0.03***	-0.02	-0.07***	-0.01	-0.02***	-0.02*	-/0	
Max. SE rate is reached at age	65	65	60.5	65	56.9	65	65	65	65	
H3. Gender										
Female ^a	-15.8***	-6.68***	-24.3***	-3.45	-23.3***	-16.5***	-16.5***	-19.3***	-	Accepted
H4. 'Old' vs. 'new' Europe										
Old Europe ^a	4.73***				20.8***	6.57**	-7.05***	-9.27***	-	Rejected in 2000-01 and 2005 Accepted in 2010 and 2015
Countries	All	'Old' Europe	'New' Europe	EU15	EU27	EU28 Turkey Norway Switzerland	EU28 Albania Turkey Norway	EU28 Macedonia Montenegro Serbia Turkey Norway Switzerland		
Waves	All	All	Wave 1995 excluded	1995	2000-01	2005	2010	2015		

Notes: ^a Dummy variable; * 0.1 > p ≥ 0.05; ** 0.05 > p ≥ 0.01; *** p < 0.01; Data source: EWCS 1995, 2000-01, 2005, 2010, 2015.

Appendix. Variable definitions

Variable	Description
Dependent variables	
<i>Self- vs paid employment dummies</i>	
Self-employed	Dummy equals 1 for workers who declare being self-employed and 0 for those who declare being paid employees.
Main independent variables	
<i>Hypotheses related variables</i>	
<i>H1. Education</i>	
Basic education	Waves 2005, 2010 and 2015: Dummy equals 1 for workers with less than lower secondary education (ISCED-1997, 0-1). Waves 1995, 2001 (non-EU countries): Dummy equals 1 for workers whose age when stopped full-time education was 15 or less. Wave 2000 (EU-countries): Dummy equals 1 for workers with (harmonised) income in quartile 4.
Secondary education	Waves 2005, 2010 and 2015: Dummy equals 1 for workers with, at least, lower secondary education but non-tertiary education (ISCED-1997, 2-4). Waves 1995, 2001 (non-EU countries): Dummy equals 1 for workers whose age when stopped full-time education was between 16 and 19. Wave 2000 (EU-countries): Dummy equals 1 for workers with (harmonised) income in quartiles 2 or 3.
Tertiary education	Waves 2005, 2010 and 2015: Dummy equals 1 for workers with tertiary education (ISCED-1997, 5-6). Waves 1995, 2001 (non-EU countries): Dummy equals 1 for workers whose age when stopped full-time education was 20 or more. Wave 2000 (EU-countries): Dummy equals 1 for workers with (harmonised) income in quartile 1.
<i>H2. Informal human capital</i>	
Age	Age reported by the workers.
<i>H3. Gender</i>	
Female	Dummy equals 1 for females.
<i>H4. Old vs. new Europe</i>	
Old Europe	Dummy equals 1 for individuals living in the 'old' Europe: EU15, Malta, Norway and Switzerland.
Control variables	
<i>Demographic characteristics</i>	
Immigrant	Dummy equals 1 for citizens of a different country from that of residence.
Cohabiting	Dummy equals 1 for individuals cohabiting with spouse/partner.
Household size	Number of people in the household.
<i>Job aspects</i>	
Tenure	Years of experience in the company or organization.
Working hours	Working hours per week.
<i>Business sector dummies</i>	
Agriculture	Dummy equals 1 for workers whose code of main activity of the local unit of the business, by means of the Nomenclature of Economic Activities (NACE rev. 1, 1996) are A = Agriculture, forestry and fishing, and B = Fishing.
Industry	Dummy equals 1 for workers whose codes of main activity of the local unit of the business, by means of the Nomenclature of Economic Activities (NACE rev. 1, 1996) are C = Mining and quarrying, D = Manufacturing, E = Electricity, gas and water supply.
Construction	Dummy equals 1 for workers whose code of main activity of the local unit of the business, by means of the Nomenclature of Economic Activities (NACE rev. 1, 1996) is F = Construction.
Commerce	Dummy equals 1 for workers whose codes of main activity of the local unit of the business, by means of the Nomenclature of Economic Activities (NACE rev. 1, 1996) is G = Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods.
Hotels and restaurants	Dummy equals 1 for workers whose code of main activity of the local unit of the business, by means of the Nomenclature of Economic Activities (NACE rev. 1, 1996) is H = Hotels and restaurants.
Transport	Dummy equals 1 for workers whose codes of main activity of the local unit of the business, by means of the Nomenclature of Economic Activities (NACE rev. 1, 1996) is I = Transport, storage and communication.
Financial intermediation	Dummy equals 1 for workers whose codes of main activity of the local unit of the business, by means of the Nomenclature of Economic Activities (NACE rev. 1, 1996) is J = Financial intermediation.
Real estate	Dummy equals 1 for workers whose code of main activity of the local unit of the business, by means of the Nomenclature of Economic Activities (NACE rev. 1, 1996) is K = Real estate, renting and business activities.
Public administration	Dummy equals 1 for workers whose code of main activity of the local unit of the business, by means of the Nomenclature of Economic Activities (NACE rev. 1, 1996) is L = Public administration and defence; compulsory social security.
Other services	Dummy equals 1 for workers whose codes of main activity of the local unit of the business, by means of the Nomenclature of Economic Activities (NACE rev. 1, 1996) are M = Education, N = Health and social work, O = Other community, social and personal service activities, P = Private households with employed persons, and Q = Extra-territorial organizations and bodies.
<i>Wave</i>	
1915	Dummy equals 1 for observations corresponding to the EWCS 1995 (2 nd wave).
2000-01	Dummy equals 1 for observations corresponding to the EWCS 2000-01 (3 rd wave).
2005	Dummy equals 1 for observations corresponding to the EWCS 2005 (4 th wave).

2010 Dummy equals 1 for observations corresponding to the EWCS 2010 (5th wave).

2015 Dummy equals 1 for observations corresponding to the EWCS 2015 (6th wave).

Country dummies

35 dummies equaling 1 for individuals living in the named country: Albania, Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Macedonia, Malta, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, and the United Kingdom.

Notes: Data source: EWCS.