

Gender and field of study as determinants of self-employment

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Abstract This article concentrates on gender differences among university graduates with respect to self-employment. We investigate the characteristics of self-employed men and women, focusing in particular on the contribution of field of study as a determinant of the gender gap in self-employment rates. Our approach is based on probit regressions and on the application of a non-linear decomposition technique to the gender gap in self-employment. We find that age and field of study account for two-thirds of the observed gender gap in self-employment.

Keywords Labour force composition · Professional labour markets · Economics of gender · Human capital, skills

JEL classifications J82 · J44 · J16 · J24 · L26

1 Introduction

One major problem when investigating self-employment (SE) is the heterogeneity of this form of labour

force participation. Different objectives and motivations can drive the decision to “set up shop”, and SE is accordingly chosen by groups of persons with diverse characteristics. In order to shape policy effectively, one must have a proper understanding of these diverse approaches to entrepreneurship. A growing body of literature is contributing to this field by looking at the form and size of gender disparities with respect to SE. There is evidence that self-employed women have different characteristics than self-employed men (Cowling and Taylor 2001; Georgellis and Wall 2005). This difference is partly driven by changing household structures, employment status of the partner, and familial responsibilities (Brown et al. 2006; Wellington 2006). Women and men usually have different SE rates, with women choosing SE less often than men. Most recent studies analyse this topic using methodological approaches based on data disaggregated by gender. Limitations on sample size usually restrict the analysis to broadly defined populations. Education is treated as just one of a host of explanatory variables. Thus, differences between groups with varying skill levels often remain unaddressed. To our knowledge, there is no evidence of the consequences of horizontal gender segregation in education on the choice of SE. This makes it difficult to establish whether female SE is affected more by the level and type of skills possessed by women and therefore by their labour market opportunities, or by gender-specific occupational strategies.

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In this article, we focus on gender differences among university graduates. In particular, we ask how important field of study is in explaining gender differences in SE. The analysis draws on exhaustive cross-sectional data from Austria's 2001 population census, which contains a number of socio-demographic indicators as well as information on field of study. We can observe the employment status of persons with a homogeneous (formal) skill level and investigate the link between SE and specific fields of education. In order to do this, we estimate a series of probit models to determine the propensity of men and women to be self-employed. The core of our analysis lies in the application of a non-linear Fairlie decomposition technique, which yields estimates of the effect had by groups of factors on the gender gap in SE. Since the effects of individual characteristics may vary over time, we also investigate how a number of factors influence age-specific gender differences in SE. This allows us to capture differences in the relevance of field of study for the employment decisions of subsequent generations. In a further extension, we look more closely at each field of study separately, investigating whether the observed groups of factors have the same explanatory power with regard to probability of SE across all fields.

Since the issues of education choice and horizontal gender segregation are of particular relevance to our article, the next section is dedicated to a brief discussion of the link between education and SE. The remainder of the article is structured as follows: Sect. 3 provides an overview of the relevant literature, whereas Sect. 4 describes recent trends in Austrian SE. We then present the empirical model and the data used along with descriptive statistics of our dataset. The last sections of the article are used to discuss our results and provide some concluding remarks.

2 Education and self-employment

Most authors suggest that higher education is not only a crucial factor of the potential success of self-employed individuals, but also serves as a decisive determinant of initial entry into SE, at least in non-agricultural sectors (e.g. Rees and Shah 1986; Robinson and Sexton 1994; Luber et al. 2000). Although there is no conclusive evidence of the link

between education and entrepreneurship, a number of studies indicate that highly skilled individuals have a higher SE rate than other groups of labour force participants (see Le 1999). This is consistent with the expectation that human capital is positively associated with entrepreneurship. In a recent contribution, Lazear (2005) introduces a new hypothesis, suggesting that entrepreneurial selection and performance are guided by the mix of skills held by individuals rather than by specialised expertise. To put it in Lazear's terms, entrepreneurs are "jacks of all trades" rather than specialised experts as usually found in wage and salary employment. One implication of this view is that a less specialist and more versatile education may facilitate entrepreneurial activity. It could even be argued that, as a consequence, field of study in tertiary education is only of minor importance for an individual's decision to become self-employed. However, there are good reasons to think that the choice of field of study is by itself a significant determinant of SE. For one thing, this is due to the fact that the probability of SE varies across industries and that employment in a specific industry is not independent of field of study. An individual's field of occupation is to a certain extent endogenous with respect to his or her choice of field of education, which makes it difficult to separate the effect of the two variables.¹ Our article focuses on the educational variable since educational field is the more relevant and—at least from a policy perspective—the more interesting indicator, as well.²

In spite of the convergence in educational attainments of men and women, there is evident separation into male and female educational choices. This gender segregation is particularly visible at the tertiary level. In most OECD countries, women are over-represented in fields such as health and education, and they are a minority in technical and

¹ For instance, our own calculations indicate that in Austria, almost all university graduates with a degree in agriculture are employed in the agricultural industry; an almost complete overlap can also be found for education as a field of study and the educational sector. Note that the agricultural sector is excluded in the following empirical analysis.

² This decision was taken in the course of the peer review process and serves to highlight the role of education choice in the gender gap in SE. In Sect. 6 of the article, in which we present our results, we discuss the sensitivity of our results to the inclusion of information on field of occupation.

engineering programmes (Charles and Bradley 2002). The gender segregation in academic fields can partly be attributed to differences in cultural preparation, parental influences, and more generally to prior socialisation (Jacobs 1996). Decisions concerning field of study also reflect perspectives and options in the labour market. Accordingly, it could be argued that the aspects that lead female and male students to enrol in different fields might be intertwined with those that determine their decision to “set up shop”. However, it is difficult to make assumptions on the existence and strength of such a link. The decision to become one’s own boss is usually taken at a later stage in life and gender-specific determinants of SE do not coincide with those of entry into tertiary education. As Borghans and Groot (1999) point out, the presorting that results from the different educational choices of men and women is only one component of gender differences in the labour market. A second and distinct component of gender gaps in the labour market concern the different occupational decisions of men and women with the same educational background. As a consequence, changes in educational segregation do not go hand in hand with corresponding changes in the labour market. For instance, both Jacobs (1996) and Borghans and Groot (1999) find that, in the United States and the Netherlands, educational and occupational segregation have developed in a different way over time.

3 Determinants of self-employment: theory and empirical findings

One strand of research has devoted itself to the outcomes of entrepreneurship, analysing the factors that determine success (e.g. Burke et al. 2002). Most work, however, has focused on the determinants of SE. The analytical framework for this research is provided by a rational agent model, according to which an individual opts for SE if the expected utility of doing so is greater than the expected utility of wage employment (e.g. Lofstrom 2002). One of the main factors in the economic theory of SE refers to the capital constraints faced by an individual who wishes to establish a business. A number of studies have identified the lack of sufficient start-up capital and limitations on access to capital markets as

significant constraints on SE (Le 1999). On the other hand, and in accordance with theoretical expectations, windfall gains such as an inheritance or redundancy payment increase the probability of switching to SE (Holtz-Eakin et al. 1994; Georgellis and Wall 2005). However, recent literature has questioned the importance of financial assets as a determinant of SE. Dunn and Holtz-Eakin (2000) find that such assets play a statistically significant, yet quantitatively small role in favouring the transition to SE. Hurst and Lusardi (2002) have added further evidence of this, arguing that the positive relationship between wealth and entrepreneurship holds only for households in the top deciles of wealth distribution.³

The business environment and the general labour market situation are further aspects that influence a person’s decision to become his or her own boss. A number of studies support the theoretical expectation that laws and taxes have a significant effect on entrepreneurship, although empirical evidence is still limited. For instance, Fonseca et al. (2001) show that start-up costs influence the SE rate across OECD countries. In another international comparison, Torrini (2005) finds tax evasion opportunities to be correlated positively with SE. With respect to the effects of the labour market situation on entrepreneurship, most evidence suggests that SE becomes a more appealing option when unemployment is on the rise: According to the recession-push theory, bad or worsening perspectives in wage employment push workers towards SE (Taylor 1996; Martinez-Granado 2002). Alternatively, the emphasis can also be laid on those factors that pull workers into SE rather than on those pushing them out of wage employment. The comparative advantage of SE has usually been captured using the size of the earning differential between salaried employment and SE (e.g. Fujii and Hawley 1991). In recent years, more attention has been paid to non-pecuniary factors like job satisfaction and the compatibility of work and family life. The positive value attached by many individuals to personal autonomy might help explain

³ The relevance of liquidity constraints may differ greatly among countries and the conclusions reached by Hurst and Lusardi (2002), which are based on U.S. data, might not apply to countries with less developed credit markets.

why entrepreneurs report a higher level of satisfaction with their jobs and lives than other workers (Blanchflower and Oswald 1998).

Empirical research has tried to shed light on the personal attributes of self-employed workers, using micro-level data to identify socio-demographic subgroups that are particularly likely to seek SE (e.g. Delmar and Davidsson 2000). Age is widely seen to correlate positively, although not linearly, with the probability of choosing SE. This effect is consistent with the expectation that individuals accumulate both human and financial capital over time, thus enhancing their likelihood to become entrepreneurs. Storey (1994) finds that people aged 25 to 45 years are most likely to take up an entrepreneurial activity; Evans and Leighton (1989) single out an increase in SE rates up to the early 40s and constant rates thereafter. In a number of studies, marriage is associated with a positive effect on SE, but the empirical evidence of this positive relationship is not conclusive. Taniguchi (2002) claims that marriage is a significant facilitator of SE. Parker (2007) develops a framework in which a wife and husband mutually reinforce each other's decision to become self-employed. The author argues that married people can exploit knowledge spillovers from their spouses, a hypothesis that finds corroboration in U.S. data showing the existence of a positive interdependence between couples' business ownership decisions. For other variables such as race and citizenship, more complex interpretation proves necessary. One hypothesis refers to the existence of "enclave effects" to explain differences in the propensity of ethnic minorities and immigrants to become entrepreneurs (Borjas 1986). The evidence on the existence of these enclave effects is mixed, however. Yuengert (1995) finds little support for it, whereas Clark and Drinkwater (2002) provide results that even contradict the hypothesis. Quite conversely, Lofstrom (2002), who focuses his investigation on highly skilled migrants, confirms the existence of positive enclave effects. He also shows that, at least in the U.S., highly skilled persons with a migratory background are less likely to be self-employed than native individuals.

One empirical result that finds confirmation in most studies is that women are less likely to be

entrepreneurs than men.⁴ Among other things, this can be explained by the sizeable earnings differential between self-employed men and women (Hundley 2001). A large gender gap in SE can be observed in many countries, but SE is becoming more popular—especially among women with more extensive educational backgrounds (e.g. Hughes 2006). As Lombard (2001) points out, a significant share of this increase can be traced back to the rise in women's earning potential in self-employment. In addition, being one's own boss is a strategy women can potentially use to cope with the dual responsibility of work and family (Edwards and Field-Hendrey 2002). Wellington (2006) finds evidence that the presence of a small child increases the likelihood of a mother being self-employed, a finding corroborated by U.S. data spanning the period 1977–1999. These findings confirm the view expressed in numerous studies that there are notable differences in the motivations of women and men to start a business. As Georgellis and Wall (2005) state, "For women, SE is a closer substitute for part-time work and labour market inactivity than it is for men". This might result not only from occupational choices related to family responsibilities, but also, as Rosti and Chelli (2005) point out, from gender discrimination on the labour market. These authors analyse the sizeable gender gap that exists in SE in Italy. They argue that women become entrepreneurs (also) because discrimination excludes them from wage employment, whereas self-employed men continue an activity already performed as wage or salary workers. This results in a higher probability of failure for female entrepreneurs, leading to higher exit rates and lower SE rates for women.

4 Self-employment trends in Austria

In Austria, an increase in the number of self-employed people in the service industry has been observed since the late 1980s. Overall, the rate of non-agricultural SE increased from 6.6% in 1991 to 8.3% in 2001. Persons with tertiary education are more likely to be entrepreneurs than other labour

⁴ There are some exceptions: According to Georgellis and Wall (2005), in the period 1984–1997 in Germany, women and men had very similar self-employment rates.

force participants, with a SE rate that increased from 12.8% (1991) to 14% (2001). A significant gap remains between female and male SE, with 10% of men but only 6.2% of women self-employed in sectors other than agriculture. Female-owned enterprises are highly concentrated in typically female-dominated services such as retail, restaurants and catering. If we look at the total population, the gender gap in SE has actually increased: In absolute numbers, female entrepreneurs have increased from 76,000 to 89,000 (+16%), while their male counterparts have gone from 151,000 to 189,000 (+25%). Among the highly educated, where the strongest development has taken place, the increase in SE was more pronounced for women than for men. The number of self-employed women holding a university degree (or equivalent) more than doubled between 1991 and 2001, rising from 8,000 to almost 18,000; the corresponding figures for men were 25,000 and 37,000, respectively.⁵ In relative terms, however, the gender gap in the SE rate of university graduates is still high: The shares are 18.2% (1991: 16.5%) and 9.4% (1991: 7.6%) for men and women, respectively.⁶ It is worth noting that in Austria, unemployment among persons with tertiary education is very low. In 2001, this group had an unemployment ratio (which measures the share of the unemployed as a percentage of the population aged 25 to 64) of 1.3%, against an OECD average of 2.7% (OECD 2004).

5 Empirical model and description of the data

Our main interest consists of the fundamental factors determining an individual's state of employment at a given point in time. In other words, we are concerned with the probability of observing an individual in either wage employment or SE. The starting point for the empirical model is the utility maximisation function of a labour force participant

(Rees and Shah 1986). For simplicity's sake, we initially assume that the individual faces two choices: self-employment (SE) or wage employment (WE). These two alternatives provide the individual with a hypothetical utility, the level of which is determined by the pecuniary and non-pecuniary returns from either SE or WE and by the individual's idiosyncratic characteristics as captured by a set of variables. Changes in any of these variables may change the probability of a person being self-employed. Accordingly, the utility maximisation process will induce a labour force participant to opt for SE if the utility of being self-employed is higher than that of working for a wage. Provided the above decision procedure is valid, our estimation takes the form of a simple probit equation. In order to analyse the determinants of the probability of being self-employed for university graduates, we use the following binary probit model (the individual index i is suppressed for convenience):

$$y = x'\beta + \varepsilon,$$

where the latent variable y^* is observed as a binary variable y , which is defined as:

$$y = \begin{cases} 1 & \text{if } y^* > 0 \\ 0 & \text{if } y^* \leq 0 \end{cases}$$

The binary dependent variable y takes the value of 1 for SE of graduates and 0 for wage employment. x is a vector of covariates and β is the corresponding coefficient vector. Random factors, as well as unobservable factors influencing the employment decision are captured by the error term ε . The probit model takes into account that the residuals are neither identically distributed nor independent within regions. The parameters can be estimated by maximum likelihood. The set of explanatory variables include age; the female dummy taking the value 1 for women; a set of dummies for marital status; a set of dummies that capture regional districts with distinctive economic features; a set of dummies for field of study; a set of dummies for language spoken in the household; and a set of dummies that indicates the individual's country of birth. In order to account for gender differences, we estimate separate probit models for men and women. Furthermore, we estimate separate probit models for various fields of study and for different age cohorts to reveal whether there are any differences in the determinants of SE

⁵ Over the same period (1991–2001), the number of female university graduates in the population increased by 70%; the number of male university graduates increased by 35%.

⁶ The data relates to the (working) population aged 15 years and older. In the empirical analysis, we restrict the sample to the working population between the ages of 22 and 64.

between younger and older workers and between the type of degree held by university graduates. The first hypothesis is that there are significant differences in the determinants of SE between men and women. The second hypothesis is that gender remains a significant explanatory variable when we control for skill differences caused by selection into gender-specific fields of study.

In order to identify the major factors responsible for the differences in SE rates between men and women, we use the Oaxaca-Blinder decomposition, adapting it for use with a binary probit model (Fairlie 1999, 2005). This technique decomposes the gender difference in the SE rate, $Y_m - Y_f$, into the coefficients (or residual) effect and the characteristic effect:

$$\begin{aligned} Y_m - Y_f &= [\bar{P}(\beta_p, X_m) - \bar{P}(\beta_p, X_f)] \\ &\quad + [\bar{P}(\beta_m, X_m) - \bar{P}(\beta_f, X_m)] \\ &= \text{characteristics effect} + \text{coefficients effect,} \end{aligned}$$

where \bar{P} represents the average predicted probability of SE; X_m and X_f refer to the workers' characteristics of the sample of men and women, respectively; β_m , β_f and β_p refer to the parameters of the probit estimations for the sample of men and women and the pooled model, respectively. The characteristics effect measures the difference in predicted SE probabilities when the individual characteristics of both women and men are used and the parameter vector is held constant. The coefficient effect is the difference in predicted SE probabilities that results when the characteristics of men are held constant but the coefficient vector of both men and women are used.

In order to analyse whether the characteristics effect is constant across age cohorts and fields of study, we apply the decomposition to four different age groups and eight broad categories of fields of study (arts & humanities, law, social science, natural sciences, medicine, health, engineering and education). These disciplines are classified according to UNESCO's one-digit ISCED-97 codes. The main parameter of interest is the gender difference in the probability of SE for each field of study.

We use data from Austria's 2001 population census, which contains socio-demographic

characteristics, as well as information covering field of study and regional district.⁷ A set of variables that enable us to account for ethnic background and citizenship is also included. Self-employed workers are defined as those individuals who identify themselves as self-employed by their own business or professional practice. Unpaid family workers are also counted as self-employed, but persons working in the agricultural sector are excluded from the sample.⁸ Information on the regional districts has been clustered using a classification based on economic and demographic characteristics.⁹ Education level is measured by the ISCED (International Standard Classification of Education). The ISCED is a system for classifying educational statistics to facilitate international comparison. ISCED 0–2 are the lowest levels, while 5–6 are the highest (university degree or equivalent). The analysis is restricted to university graduates and labour force participants between the ages of 20 and 64 years. The resulting sample size is 366,000.

From Table 1, which presents descriptive statistics for labour force participants with tertiary education, notable differences between the sexes are apparent. Due to the catching-up process in terms of educational achievement, women are younger on average than their male counterparts. The regional distribution shows a high share of highly educated men in metropolitan and urban areas, while highly educated women are slightly more present in peripheral and rural areas. This can be explained mainly by the high concentration of women in education, where, in comparison to other fields, graduates are much more evenly distributed in regional terms (Table 2). There are gender-based differences in marital status in the distribution, with men more likely to be married than

⁷ Unfortunately, due to data restrictions, we are not able to control for the presence of children in the household.

⁸ Here, the agricultural sector is understood to include fishing. It consists of the NACE (Classification of Economic Activities in the European Community) categories 1 through 5. Since the vast majority of unpaid family workers can be found in the agricultural sector, there are only 986 unpaid family workers left in our sample (corresponding to 0.27% of the total). Hence, our results are not sensitive to the inclusion of this group.

⁹ The classification of the regional districts is based on factors like capital intensity, population density, and sectoral employment concentration. For a detailed description of the methodology, see Palme (1995).

Table 1 Descriptive statistics (sample split by gender)

	Female	Male	Difference	<i>p</i> -value
Self-employed	10.9	18.3	-7.4	0.000
Age	39.7	42.6	-2.9	0.000
Single	38.7	30.7	8.0	0.000
Married	50.6	62.6	-12.0	0.000
Divorced/widowed	10.7	6.8	3.9	0.000
Arts & humanities	23.3	15.1	8.2	0.000
Law	5.3	10.1	-4.8	0.000
Social science	9.0	15.5	-6.5	0.000
Medicine	7.5	10.3	-2.8	0.000
Science	5.4	9.0	-3.6	0.000
Health	11.5	2.3	9.2	0.000
Engineering	2.3	17.2	-14.9	0.000
Agriculture	1.6	3.8	-2.2	0.000
Polytechnical degree	1.1	2.4	-1.3	0.000
Education	29.3	9.3	20.0	0.000
Other field of study	3.6	5.0	-1.4	0.000
Metropolitan area	35.3	36.7	-1.4	0.000
Large cities	18.8	22.1	-3.3	0.000
Suburban areas	10.5	9.3	1.2	0.000
Regional centres	6.7	7.3	-0.6	0.000
Industrialised areas	9.6	9.4	0.2	0.425
Tourism-heavy areas	4.4	4.0	0.4	0.000
Peripheral industrialised areas	6.7	5.2	1.5	0.000
Rural areas	8.0	6.1	1.9	0.000
German	90.3	88.4	1.9	0.000
Slavic	5.2	5.3	-0.1	0.000
Turkish	0.2	0.6	-0.4	0.000
English	1.9	2.4	-0.5	0.000
French	0.5	0.4	0.1	0.000
Italian	0.3	0.3	0.0	0.040
Other European languages	0.8	0.8	0.0	0.160
Other languages	0.8	1.7	-0.9	0.000
Birth country Austria	86.1	83.4	2.7	0.000
Birth country EU15/EFTA	5.4	6.1	-0.7	0.000
Birth country NEW EU	2.9	2.8	0.1	0.020
Birth country other OECD	0.7	0.7	0.0	0.158
Birth country other CEEC	1.5	1.3	0.2	0.000
Birth country former Yugoslavia	1.3	1.8	-0.5	0.000
Birth country Turkey	0.2	0.6	-0.4	0.000
Birth country Africa, Arabic country	0.4	1.6	-1.2	0.000
Birth country Asia	1.0	1.4	-0.4	0.000
Birth country South America	0.4	0.3	0.1	0.000
No. of observations	173,094	192,934		

Notes: Means (except for age) are multiplied by 100

Source: Population census, Statistics Austria; own calculations

women. The most interesting differences can be found by looking at the issue of gender segregation. The horizontal segregation is apparent from the gender concentration by field of education. For instance, almost one woman in four, but only one man in eight, obtained a degree in arts & humanities. Conversely, just 2.3% of the observed females hold a degree in engineering, compared to 17.2% of the men. Accordingly, women represent almost 74% of university graduates in education, but only 10% of those in engineering (Table 2).

6 Results

6.1 Characteristics of male and female self-employment

Table 3 displays the marginal effects and the corresponding *z*-values of the probit model of the determinants of SE for university graduates, split by gender. This first set of regressions, based on data disaggregated by gender, serves the purpose of highlighting differences in the characteristics of highly skilled men and women who have chosen SE. In order to test for the sensitivity of our results to the inclusion of information on field of occupation, we also run regressions including a set of industry controls.

The most striking differences in the effect of the observed characteristics on entrepreneurship concern age and marital status. Being married has a positive and a negative impact on the probability of SE for women and men, respectively. Our finding fits in well with the conclusions reached by Wellington (2006), who finds support for the hypothesis that women with an extensive educational background and family responsibilities are more likely to be self-employed. The negative effect of marriage on male SE contradicts most previous empirical findings (Le 1999). Since we cannot control for the presence of children in the household, we have to be careful in interpreting our results. Marital status might be of secondary importance with respect to the presence of children. However, since marriage can be considered a proxy for having familial responsibilities,¹⁰ our findings

might indicate that being married is associated with higher risk aversion and therefore a higher propensity of the (main) breadwinner to choose wage employment over SE. The age effect, which can be interpreted as an indicator of life experience and informal human capital is much more pronounced for men than for women. As can be seen from the marginal effect of age squared, the age curve has a statistically significant concave shape for men only. Given the mean of approximately 43 years of age, one additional year increases the probability of SE for men by 0.4 percentage points. The corresponding effect for woman is 0.24 percentage points.¹¹ This is in line with the expectation that—for men more often than women—SE follows an extended period of wage employment, during which skills and human capital have been enhanced (Cowling and Taylor 2001).

The dummy variables for field of study reveal both similarities and differences between the two groups. All the statistically significant coefficients have the same sign and, in many instances, a similar magnitude, as well. On the other hand, not all fields of study represent significant explanatory variables for both sexes. The propensity of SE, as compared with the reference group consisting of graduates in social sciences is highest for women in agriculture and medicine and for men in medicine and law. Interestingly, however, law turns out to be insignificant for female SE, whereas a degree in engineering is associated with a significantly positive effect on female SE and an insignificant effect on male SE. Not surprisingly, a degree in education signals a low SE propensity for individuals of both sexes. The marginal effects on language spoken in the household and on the country of birth provide evidence of the likelihood of persons with a migratory background to be self-employed. Here, the results show similar effects for men and women. The language variable has limited explanatory power, with the clearest result referring to a significant positive effect of English on the SE propensity of men and women. The dummies for country of birth are slightly more significant, suggesting that persons born outside of Austria and Western Europe tend to have a lower likelihood of being self-employed. As argued by

¹⁰ In 2006, 75% of Austrian children below the age of 15 were living in households with married couples; such households represented a share of 49% of all households.

¹¹ The effect is calculated as $CDF(0.062 * age + (-0.005) * age * age + constant)$. For women, the effect is: $CDF(0.008 * age + (0.0001) * age * age + constant)$.

Table 2 Descriptive statistics (sample split by field of study and gender)

	Arts & humanities		Law		Social science		Science	
	Female	Male	Female	Male	Female	Male	Female	Male
Self-employed	16.4	18.6	10.1	23.4	10.9	17.5	7.4	9.2
Age	40.5	43.9	37.0	43.0	36.7	40.8	40.0	43.2
Single	42.5	37.7	50.9	31.4	49.1	35.2	40.2	30.8
Married	45.7	54.5	41.1	61.9	43.2	58.8	50.8	63.2
Divorced/widowed	1.1	0.4	0.6	0.5	0.6	0.4	1.0	0.4
Metropolitan area	42.8	37.2	48.2	42.5	52.3	49.7	44.0	40.9
Large cities	23.5	23.7	29.1	30.1	19.3	19.7	23.7	24.9
Suburban areas	8.6	8.3	5.1	5.3	9.0	9.1	8.7	8.9
Regional centres	6.1	6.6	6.1	7.1	5.2	5.8	6.2	6.3
Industrialised areas	6.7	8.9	4.7	6.1	5.7	6.8	6.5	8.1
Tourism-heavy areas	3.0	3.7	1.7	2.7	2.3	2.5	2.8	2.7
Peripheral industrialised areas	4.2	4.9	2.5	3.1	2.9	3.2	3.8	3.9
Rural areas	5.1	6.6	2.6	3.0	3.3	3.2	4.4	4.2
German	85.4	84.5	93.8	95.4	87.0	88.8	88.4	88.7
Slavic	6.1	6.5	3.8	2.2	6.9	4.0	6.2	4.2
Turkish	0.3	0.8	0.0	0.1	0.5	0.8	0.3	0.4
English	3.7	3.8	1.0	1.0	2.3	2.8	2.4	3.2
French	1.1	0.7	0.4	0.3	0.6	0.6	0.4	0.5
Italian	0.8	0.6	0.2	0.2	0.3	0.3	0.4	0.3
Other European languages	1.3	1.3	0.5	0.3	1.2	0.9	0.8	0.8
Other languages	1.2	1.8	0.3	0.6	1.2	1.9	1.2	1.8
Birth country Austria	79.2	78.4	91.8	93.6	82.2	84.2	82.8	82.5
Birth country EU15/EFTA	9.5	9.1	3.1	2.7	5.6	6.2	6.8	8.2
Birth country NEW EU	3.7	3.3	1.6	1.1	4.1	1.9	3.2	2.3
Birth country other OECD	1.8	1.6	0.3	0.3	0.7	0.8	0.6	0.8
Birth country other CEEC	2.1	1.6	0.5	0.3	2.0	1.0	2.6	1.2
Birth country former Yugoslavia	1.3	1.8	1.8	0.9	2.0	1.3	1.6	1.3
Birth country Turkey	0.2	0.7	0.0	0.1	0.5	0.8	0.2	0.4
Birth country Africa, Arabic	0.6	1.5	0.3	0.7	0.8	2.2	0.5	1.4
Birth country Asia	1.1	1.3	0.2	0.2	1.6	1.3	1.5	1.7
Birth country South America	0.5	0.5	0.4	0.1	0.6	0.3	0.4	0.2
No. of obs.	40,511	29,112	9,220	19,476	15,695	29,971	9,353	17,428
	Medicine		Health		Engineering		Education	
	Female	Male	Female	Male	Female	Male	Female	Male
Self-employed	26.7	37.1	10.9	19.5	19.7	18.2	1.7	2.0
Age	41.2	44.8	38.5	40.8	38.7	41.9	40.8	44.4
Single	35.8	19.3	41.0	36.0	41.3	31.1	28.6	18.5
Married	53.3	72.9	48.6	56.7	49.1	63.4	59.7	73.1
Divorced/widowed	1.0	0.6	1.0	0.5	0.9	0.4	1.2	0.5
Metropolitan area	38.0	29.1	33.2	31.9	51.8	39.6	17.9	12.2
Large cities	22.5	21.9	23.5	22.4	20.5	25.4	9.8	10.4
Suburban areas	7.9	7.7	9.8	9.8	8.8	9.8	14.5	12.2

Table 2 continued

	Medicine		Health		Engineering		Education	
	Female	Male	Female	Male	Female	Male	Female	Male
Regional centres	8.6	9.2	8.5	10.2	4.5	6.8	6.8	7.8
Industrialised areas	8.0	11.2	9.0	10.1	6.5	8.7	15.5	17.5
Tourism-heavy areas	3.5	5.6	3.9	4.6	2.0	2.3	7.6	9.6
Peripheral industrialised areas	4.5	6.3	5.3	4.9	3.1	4.2	13.0	13.3
Rural areas	7.1	8.9	6.8	6.1	2.9	3.0	14.8	17.0
German	90.1	90.9	94.1	89.8	69.5	84.4	97.1	95.8
Slavic	6.3	4.3	3.7	4.5	20.6	9.0	2.0	2.5
Turkish	0.3	0.5	0.1	0.4	0.6	0.6	0.0	0.5
English	1.1	1.1	0.8	1.4	2.8	2.4	0.5	0.5
French	0.2	0.3	0.2	0.4	0.5	0.4	0.1	0.1
Italian	0.2	0.3	0.0	0.0	0.6	0.2	0.1	0.0
Other European languages	0.6	0.6	0.7	1.3	2.0	0.9	0.2	0.2
Other languages	1.1	1.9	0.5	2.2	3.3	2.0	0.1	0.2
Birth country Austria	83.6	84.4	90.7	85.7	58.3	78.1	96.5	95.7
Birth country EU15/EFTA	5.4	5.4	4.0	4.7	8.8	6.5	1.7	1.3
Birth country NEW EU	4.3	3.1	2.7	2.7	9.6	4.9	0.7	0.6
Birth country other OECD	0.4	0.3	0.2	0.2	0.8	0.4	0.1	0.1
Birth country other CEEC	2.1	1.2	0.4	0.5	9.9	2.4	0.2	0.2
Birth country former Yugoslavia	1.7	1.2	0.9	1.7	6.2	3.2	0.5	1.1
Birth country Turkey	0.3	0.5	0.1	0.4	0.6	0.7	0.0	0.5
Birth country Africa, Arabic	0.5	1.8	0.2	2.2	1.1	1.6	0.1	0.3
Birth country Asia	1.5	1.9	0.7	1.7	3.8	1.9	0.2	0.2
Birth country South America	0.3	0.2	0.2	0.3	0.9	0.4	0.1	0.1
No. of obs.	12,875	19,755	19,843	4,420	4,016	33,260	50,474	17,817

Notes: Means (except for age) are multiplied by 100

Source: Population census, Statistics Austria; own calculations

Lofstrom (2002) with respect to the United States, (highly skilled) individuals who have migrated to a country are likely to face capital constraints more binding than those faced by natives. For both sexes, the negative marginal effects are strongest for individuals born in the former Yugoslavia.

The inclusion of a set of variables that capture industry affiliation does not change the main results discussed so far.¹² Age and marital status are unaffected by the inclusion of industry dummies,

whereas the coefficients on field of study undergo only minor changes. When we account for field of occupation, arts & humanities is associated with a positive SE effect for both sexes (instead of for women only). In addition, the negative coefficient for women with a degree in health (excluding medicine) turns out to be statistically significant. This finding is not surprising if we consider that the majority of women, who account for 80% of graduates in the health field, have probably attained a professional qualification (in nursing or physical therapy, for example), which usually does not lead to SE. The inclusion of industry controls also increases the significance of the dummies for country of birth, indicating a clear negative relationship between entrepreneurship and migration

¹² Not surprisingly, for both men and women the probability of SE is highest in business services, wholesale and retail trade and hotels and restaurants. We find that the probability is lowest in public administration, education, and manufacturing. Detailed results are available upon request.

Table 3 Probit estimates for SE of university graduates by gender

	Female		Male	
	Marg. eff.	<i>z</i>	Marg. eff.	<i>z</i>
Age	0.0013	1.31	0.0150***	10.4
Age squared	0.0000	0.93	-0.0001***	-7.60
Married (ref. category: single)	0.014***	6.81	-0.021***	-4.80
Divorced/widowed	0.013***	5.59	0.025***	5.90
Arts & humanities (ref. cat.: social science)	0.030***	4.47	-0.008	-0.63
Law	-0.005	-1.26	0.051***	5.05
Medicine	0.110***	8.86	0.145***	7.13
Science	-0.033***	-5.00	-0.088***	-11.11
Health	-0.005	-0.66	0.011	1.02
Engineering	0.070***	7.82	0.003	0.28
Agriculture	0.120***	10.65	0.035***	3.06
Polytechnical degree	0.005	0.68	-0.013	-1.33
Education	-0.116***	-16.15	-0.175***	-22.97
Other	-0.009	-1.26	-0.040***	-3.87
Large cities (ref. category: metropolitan)	-0.010	-1.26	-0.012	-0.76
Suburban areas	0.025***	3.19	0.063***	3.67
Regional centres	-0.011	-1.31	-0.006	-0.27
Industrialised areas	0.008	0.99	0.049***	2.95
Tourism-heavy areas	0.005	0.53	0.083***	4.69
Peripheral industrialised areas	0.010	1.04	0.082***	4.89
Rural areas	0.002	0.28	0.065***	3.79
Slavic (ref. category: German)	-0.005	-1.15	-0.014**	-2.09
Turkish	-0.009	-0.55	-0.007	-0.34
English	0.035***	4.05	0.032***	3.67
French	-0.005	-0.53	-0.004	-0.27
Italian	0.048***	4.28	0.020	1.10
Other European languages	0.003	0.37	0.003	0.24
Other languages	-0.005	-0.50	0.032***	3.12
Birth country EU15/EFTA (ref. category: AT)	0.033***	9.74	0.008	1.25
Birth country NEW EU	-0.007	-1.59	-0.008	-0.87
Birth country other OECD	0.032***	4.55	0.023**	2.06
Birth country other CEEC	-0.004	-0.71	0.033***	2.72
Birth country former Yugoslavia	-0.027***	-3.67	-0.047***	-4.07
Birth country Turkey	0.017	0.78	0.026	1.11
Birth country Africa, Arabic country	-0.013	-1.14	0.022**	2.15
Birth country Asia	-0.021***	-2.91	-0.014	-1.0
Birth country South America	0.026**	2.48	0.037*	1.78
No. of obs.	173,094		192,934	
Wald test $\text{age}^2 = 0$ (<i>p</i> -value)	0.000		0.000	

Notes: ***, **, * denotes significance at the 1, 5 and 10% level, respectively. This table reports the marginal effects and the corresponding *z*-values. The *z*-values are based on heteroskedasticity robust standard errors. The standard errors are clustered by region

Table 4 Probit estimates for SE of university graduates for total and different subsamples

	Total sample	Age \leq 34	35 \geq age \leq 44	45 \geq age \leq 54	54 \geq age \leq 64			
Marg eff	-0.026	-0.020	-0.028	-0.034	0.002			
<i>z</i>	-12.19	-7.95	-8.96	-9.97	0.31			
	Wald tests: <i>p</i> -value							
Age	0.00	0.00	0.00	0.00	0.00			
Status	0.00	0.00	0.00	0.00	0.00			
Field of study	0.00	0.00	0.00	0.00	0.00			
Region	0.00	0.00	0.00	0.00	0.00			
Language	0.00	0.00	0.00	0.00	0.00			
Birth country	0.00	0.00	0.00	0.00	0.00			
No. of obs.	366,028	99,851	133,939	95,940	36,298			
	Arts & humanities	Law	Social science	Science	Medicine	Health	Engineering	Education
Marg eff	-0.031	-0.095	-0.042	-0.021	-0.014	-0.065	0.043	-0.031
<i>z</i>	-4.51	-10.91	-9.69	-5.25	-1.33	-10.33	4.25	-2.79
	Wald tests: <i>p</i> -value							
Age	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Status	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34
Region	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
Language	0.00	0.25	0.00	0.00	0.07	0.00	0.35	0.00
Birth country	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.01
No. of obs.	69,623	28,709	45,466	26,781	32,630	24,263	37,276	68,342

Notes: ***, **, * denotes significance at the 1, 5 and 10% level, respectively

from Asia, Africa, or the new EU member states. Interestingly, the marginal effects suggest that women's likelihood of SE is more sensitive to a migratory background. The variables capturing regional distribution show that the propensity of SE is lowest in metropolitan and urban areas and strongest in suburban and peripheral areas. While this pattern is stronger for men, controlling for field of occupation results in statistically significant coefficients for women, as well.

6.2 Decomposition of the gender gap

Even after controlling for the socio-demographic and economic characteristics included in our data, there remains a sizeable gender gap in the SE rate. Table 4 shows that the marginal effect of the female dummy variable is negative and highly significant for the total population and for all age groups, with the exception of persons aged 55–64. The gender gap is largest for groups of people aged 35–44 and 45–54, while it is

smaller for the youngest age group. This is consistent with the fact that, for men, the likelihood of SE exhibits a stronger age effect and a statistically significant concave age curve. Disaggregation into groups of graduates with the same type of degree indicates a clear gender effect for the majority of fields of study. The gap is particularly pronounced among graduates in health, law, and the social sciences. Medicine can be distinguished from the remaining fields of study: Here, we could not find evidence of a statistically significant gap between men and women in the propensity to be self-employed. Engineering stands out as the only field where women show a higher SE propensity than men. However, this finding carries a modest weight given the small number of self-employed women in this field.

In order to identify the major factors responsible for the differences in SE rates between men and women, we apply the Oaxaca-Blinder decomposition for binary probit models as developed by Fairlie

(1999).¹³ This allows us to decompose gender differences in SE into the coefficients effect and characteristics effects. The latter measure the extent to which differences in SE rates between men and women are accounted by the observed geographic, socio-demographic, and educational characteristics. The remaining unexplained part provides evidence of the nature and extent of the characteristics' differential impact on the propensity of SE.

Tables 5 and 6 display the effects of the decomposition analysis of the differences in the SE rate between men and women for (i) the total sample, (ii) for four age groups, and (iii) for eight fields of study. The aggregate decomposition analysis shows that the characteristics effect accounts for 66% of the difference in SE between men and women. In other words, if women shared the same characteristics as men, the observed difference in the SE rate would be reduced from 7.4 to 2.5% points. As can be seen in Table 5, field of study has the largest effect and accounts for 79% of the explained gap. Accordingly, if the distribution of female graduates over fields of study were identical to that of male graduates, the gender gap in the SE share would amount to 3.5 instead of 7.4% points. Furthermore, the field effect is mainly due to the over-representation of women in health-related studies and education programmes, both of which are characterised by low SE rates. The other main factor is age (17%). The remaining factors—namely status, region, language and birth country—play only marginal roles. The significant role played by age in the decomposition analysis stems from the uneven age distribution of female and male university graduates. Table 1 shows that the mean age of women with a university degree is almost three years lower than that of men.

Table 5 also shows that the contribution of the characteristics effect increases steadily with age. In particular, the share of the characteristics effect on the total gap ranges between 35% for the age group 34 years and younger, 68% for people aged 45 to 54 years, and 100% for the oldest age group. The contribution of field of study to the gender gap is the most interesting result of this analysis. For the older age groups, the horizontal gender segregation in higher education represents a significant explanatory

variable of the gender gap in the SE rate. It accounts for 66% and 71% of the total gender gap among persons aged 45–54 and 55–64, respectively. The explanatory power of field of study drops to 55% in the group aged 35–44, and to 24% for the youngest university graduates. Analogous to the previous section, we tested these results with a specification that contains industry dummies.

The size of the measured effects is somewhat sensitive to the inclusion of dummies for industry affiliation, a fact that is not surprising in light of the strong link that exists between certain fields of study and employment in specific sectors of the economy. However, the key insights that emerge from our analysis do not change. Once we include the industry controls, the characteristics effects account for 75% of the total difference in self-employment between men and women. The observed characteristics account for 43% of the gender gap in the youngest age group, 73% for persons aged 35–44, and 79% for those aged 45–54. The difference in SE between men and women over 55 is fully explained by individual characteristics. Sector effects account for 53% of the total gap, while the contribution of age amounts to 12%. Field of study accounts for 10% of the total gender gap; its explanatory power is still much higher for older cohorts than for the youngest group of graduates.¹⁴

The Fairlie decomposition disaggregated by field of study is presented in Table 6. We find notable differences in the importance of the characteristics effect across fields of study. The characteristics effect explains a large part (37% and more) of the gender difference in the SE rate in law, social science and medicine, but explains only a moderate fraction in arts & humanities, science, health and education degrees. Again, we find that age is a dominant factor contributing to the gender difference in SE. An exception can be observed in the contribution of regional factors in medicine. Here, the uneven regional distribution of male and female graduates accounts for 20% of the gender difference in SE. This is arguably the result of the fact that, although the number of women in the medical profession is rapidly increasing, men still represent

¹³ We use the Stata program implemented by Jann (2006).

¹⁴ Younger women make education choices that by themselves should not lead to SE rates different from those of their male counterparts.

Table 5 Decomposition analysis of the gender gap in SE by age cohorts

	Total		Age ≤ 34		35 ≥ age ≤ 44		45 ≥ age ≤ 54		55 ≥ age ≤ 64	
	Means		Means		Means		Means		Means	
SE rate men in percent	18.2		11.1		18.0		21.0		25.4	
SE rate women, in percent	10.9		8.2		11.5		11.2		20.3	
<i>Difference in percentage points</i>	7.4		3.0		6.5		9.9		5.0	
	Effect	<i>p</i> -value	Effect	<i>p</i> -value	Effect	<i>p</i> -value	Effect	<i>p</i> -value	Effect	<i>p</i> -value
<i>Coefficient effect</i>	2.51		1.93		2.64		3.11		-0.07	
<i>Characteristics effect</i>	4.89		1.04		3.83		6.76		5.10	
<i>Age</i>	0.81		0.21		-0.13		0.08		0.60	
<i>Age squared</i>										
<i>Status</i>	-0.14		-0.02		-0.08		-0.41		-0.24	
Married (ref. category: single)	-0.01	0.66	-0.03	0.00	-0.02	0.38	-0.14	0.06	0.98	0.00
Divorced/widowed	-0.13	0.00	0.00	0.70	-0.06	0.02	-0.27	0.00	-1.22	0.00
<i>Field of studies</i>	3.86		0.70		3.59		6.53		3.56	
Arts & humanities (ref. cat.: law)	0.18	0.05	-1.42	0.00	0.29	0.01	0.65	0.00	1.54	0.00
Social science	-0.25	0.00	0.02	0.64	-0.45	0.00	-0.30	0.00	0.00	0.98
Medicine	0.35	0.00	0.00	0.87	0.07	0.02	1.03	0.00	0.26	0.00
Science	-0.46	0.00	0.04	0.06	-0.50	0.00	-1.10	0.00	-0.49	0.00
Health	0.48	0.00	0.05	0.51	0.65	0.00	0.69	0.00	0.28	0.29
Engineering	-0.27	0.01	0.62	0.00	-0.65	0.00	-0.52	0.00	0.16	0.36
Agriculture	0.08	0.00	0.32	0.00	0.08	0.06	0.01	0.83	-0.21	0.00
Polytechnical degree	-0.06	0.00	-0.01	0.64	-0.03	0.00	-0.03	0.00	0.00	0.78
Education	3.91	0.00	1.05	0.00	4.33	0.00	6.35	0.00	2.12	0.00
Other field of study	-0.11	0.00	0.04	0.01	-0.20	0.00	-0.23	0.00	-0.10	0.00
<i>Region</i>	0.25		0.03		0.29		0.42		1.04	
Large cities (ref. cat.: metropolitan)	0.03	0.28	0.00	0.91	0.06	0.22	0.06	0.28	0.01	0.61
Suburban areas	0.05	0.00	0.01	0.34	0.06	0.00	0.07	0.00	0.11	0.00
Regional centres	0.00	0.58	0.01	0.12	0.01	0.63	0.00	0.82	0.01	0.80
Industrialised areas	0.06	0.03	0.00	0.93	0.07	0.02	0.10	0.01	0.28	0.00
Tourism-heavy areas	0.05	0.00	0.00	0.94	0.05	0.00	0.07	0.01	0.20	0.00
Peripheral industrialised areas	0.04	0.01	0.00	0.71	0.04	0.01	0.06	0.00	0.19	0.00
Rural areas	0.02	0.11	0.01	0.61	0.00	0.59	0.06	0.03	0.24	0.00
<i>Language</i>	0.06		0.03		0.06		0.10		0.14	
Slavic (ref. category: German)	0.02	0.02	0.00	0.45	0.01	0.46	0.05	0.00	0.14	0.01
Turkish	0.00	0.57	-0.02	0.46	-0.01	0.26	0.02	0.06	0.00	0.64
English	0.02	0.00	0.03	0.01	0.04	0.00	0.01	0.00	-0.05	0.00
French	0.00	0.87	0.00	0.02	0.00	0.93	0.00	0.45	0.00	0.72
Italian	0.00	0.01	0.00	0.05	0.00	0.01	0.00	0.05	-0.01	0.18
Other European languages	0.00	0.56	0.00	0.63	0.01	0.03	0.00	0.20	0.00	0.75
Other languages	0.02	0.01	0.01	0.48	0.02	0.10	0.02	0.01	0.06	0.05
<i>Country of origin</i>	0.05		0.09		0.11		0.03		0.01	
Birth co. EU15/EFTA (ref. cat.: AT)	0.01	0.00	0.02	0.00	0.01	0.01	0.00	0.13	-0.04	0.01
Birth country NEW EU	0.00	0.24	-0.01	0.19	0.03	0.00	0.01	0.65	0.00	0.97
Birth country other OECD	0.00	0.00	0.00	0.01	0.00	0.01	-0.01	0.02	-0.02	0.24

Table 5 continued

	Effect	<i>p</i> -value	Effect	<i>p</i> -value	Effect	<i>p</i> -value	Effect	<i>p</i> -value	Effect	<i>p</i> -value
Birth country other CEEC	−0.01	0.02	0.00	0.08	0.00	0.88	0.00	0.01	−0.02	0.55
Birth country former Yugoslavia	0.02	0.00	0.02	0.01	0.05	0.00	0.01	0.12	0.03	0.07
Birth country Turkey	0.01	0.24	0.04	0.17	0.01	0.30	0.00	0.90	0.01	0.53
Birth country Africa, Arabic country	0.02	0.10	0.02	0.07	−0.02	0.33	0.02	0.19	0.05	0.15
Birth country Asia	0.00	0.01	0.00	0.54	0.01	0.04	0.01	0.18	0.00	0.81
Birth country South America	0.00	0.00	0.00	0.28	0.00	0.39	−0.01	0.00	0.00	0.83
No. of obs	366,028		99,851		133,939		95,940		36,298	

Notes: This table reports the effects of the decomposition analysis of the difference in self-employment of men and women into the characteristics effect, measured as percentage points and residual effect

the vast majority of doctors in rural areas of the country.

7 Conclusions

In this article, we provide evidence of gender differences in SE among Austrians with tertiary education. We control for a large number of characteristics, focusing mainly on field of study as a measure of horizontal gender segregation in higher education. Our findings lend support to the view that—among the highly-educated, as well—men and women often follow different paths to SE. Gender-specific differences become apparent when we look at the impact of socio-demographic characteristics. The SE status of women is much less sensitive to age than that of men. In addition, for women, marriage is associated with a positive effect on entrepreneurship, whereas for men the evidence points in the opposite direction. The fact that migratory background is particularly important in understanding female entrepreneurship is an interesting finding that warrants further attention. Furthermore, we have looked at graduates in distinct age groups and fields of study separately. The gender gap is largest for groups of persons aged 35–44 and 45–54, while it is smallest for the youngest age group. In the majority of fields, being female is associated with a negative effect on the likelihood of SE. The most notable exception to this overall pattern is the field of medicine, where men and women do not reveal a statistically significant difference in their propensity to be self-employed.

The decomposition of the gender gap reveals that differences in the socio-demographic characteristics of the workers in our model explain two-thirds of the

differences in the SE rate of men and women. In particular, the dominance of women in specific fields of study such as health and education is a main factor contributing to the gender gap in entrepreneurship. A detailed investigation by age cohorts indicates that the characteristics effect increases with age and that, conversely, the observed factors account only for a minor part of the gender gap in the SE rate of young persons. Quantifying the extent to which gender disparities in SE result from differences in labour market opportunities goes beyond the scope of this article. However, it is striking that in older generations, field of study accounts for a significant share of the gender gap, while younger women make educational decisions that by themselves lead to a comparatively small difference in SE rates of men and women. Given the cross-sectional nature of our analysis, it is not possible to draw conclusions on the effect of educational choice on SE in the course of people's lives. However, our finding might indicate the existence of a decreasing trend (along cohorts) in the impact of educational segregation on entrepreneurship. Further research, particularly on the determinants of SE among young graduates is needed to clarify this issue.

In future research, it would also be interesting see more international evidence gathered on the entrepreneurial activity of highly skilled persons. As international studies show, there is a considerable degree of variation in SE across countries (Parker and Robson 2004; Torrini 2005). These international differences highlight the relevance of institutional and other country-specific factors. The transferability of our findings to other countries depends on the comparability of these aspects. For Austria in particular, the dual education system and the comparatively high share of manufacturing in the

Table 6 Decomposition analysis of the gender gap in SE by field of study

	Arts & humanities		Law		Social science		Medicine	
	Means		Means		Means		Means	
SE rate men, in percent	18.6		23.4		17.5		37.1	
SE rate women, in percent	16.4		10.1		10.9		26.7	
<i>Difference in percentage points</i>	2.2		13.4		6.6		10.4	
	Effect	<i>p</i> -value	Effect	<i>p</i> -value	Effect	<i>p</i> -value	Effect	<i>p</i> -value
<i>Coefficient effect</i>	2.89		8.45		3.80		1.43	
<i>Characteristics effect</i>	−0.70		4.91		2.79		8.98	
<i>Age effect</i>	−0.19		3.36		2.38		5.20	
Age	−2.29	0.06	8.53	0.00	3.56	0.00	13.26	0.00
Age squared	2.10	0.07	−5.16	0.00	−1.18	0.09	−8.06	0.00
<i>Status effect</i>	−0.29		0.42		−0.20		0.81	
Married (ref. category: single)	−0.22	0.00	0.53	0.00	−0.13	0.02	1.04	0.00
Divorced/widowed	−0.08	0.00	−0.11	0.00	−0.07	0.00	−0.23	0.00
<i>Region effect</i>	−0.23		0.92		0.41		2.39	
Large cities (ref. Cat.: metropolitan)	−0.21	0.08	0.01	0.69	−0.02	0.51	0.11	0.45
Suburban areas	0.00	0.27	0.03	0.00	0.06	0.00	0.24	0.00
Regional centres	−0.04	0.00	0.07	0.25	0.03	0.18	0.00	0.80
Industrialised areas	−0.11	0.00	0.22	0.00	0.12	0.01	0.72	0.00
Tourism-heavy areas	−0.03	0.00	0.23	0.00	0.09	0.00	0.48	0.00
Peripheral industrialised areas	−0.02	0.00	0.21	0.00	0.06	0.02	0.48	0.00
Rural areas	−0.03	0.00	0.16	0.00	0.06	0.01	0.47	0.00
<i>Language effect</i>	−0.03		0.12		0.10		0.17	
Slavic (ref. category: German)	0.00	0.84	0.10	0.04	0.01	0.85	0.15	0.01
Turkish	−0.03	0.29	0.00	0.26	0.01	0.22	0.00	0.84
English	0.01	0.01	0.00	0.44	0.01	0.05	0.01	0.12
French	0.00	0.83	0.01	0.36	0.00	0.46	0.00	0.70
Italian	−0.02	0.00	0.00	0.92	0.00	0.59	0.00	0.27
Other European languages	0.00	0.30	0.00	0.86	0.01	0.02	0.00	0.54
Other languages	−0.01	0.52	0.01	0.33	0.05	0.01	0.00	0.83
<i>Country of origin effect</i>	0.05		0.08		0.09		0.40	
Birth co. EU15/EFTA (ref. Cat.: AT)	0.00	0.90	−0.01	0.16	0.00	0.95	0.05	0.00
Birth country NEW EU	−0.01	0.00	0.00	0.85	0.04	0.31	0.15	0.00
Birth country other OECD	0.00	0.12	0.00	0.70	0.00	0.85	0.00	0.53
Birth country other CEEC	−0.02	0.00	0.00	0.82	−0.02	0.33	0.04	0.11
Birth country former Yugoslavia	−0.01	0.08	0.12	0.01	0.02	0.39	0.19	0.00
Birth country Turkey	0.03	0.34	0.00	0.80	0.00	0.74	0.00	0.65
Birth country Africa, Arabic country	0.01	0.57	−0.01	0.03	0.03	0.19	−0.06	0.04
Birth country Asia	0.04	0.00	0.00	0.84	0.03	0.08	0.00	0.94
Birth country South America	0.01	0.01	−0.02	0.22	0.00	0.72	0.03	0.00
No. of obs	69,623	28,671	45,466	32,630				

Table 6 continued

	Science		Engineering		Health		Education	
	Means		Means		Means		Means	
SE rate men, in percent	9.2		18.1		19.4		2.0	
SE rate women, in percent	7.4		19.7		10.9		1.7	
<i>Difference in percentage points</i>	1.8		-1.6		8.5		0.4	
	Effect	Sig. level <i>p</i> -value	Effect	Sig. level <i>p</i> -value	Effect	Sig. level <i>p</i> -value	Effect	Sig. level <i>p</i> -value
<i>Coefficient effect</i>	2.19		-4.15		6.50		0.34	
<i>Characteristics effect</i>	-0.38		2.53		2.02		0.05	
<i>Age effect</i>	-0.31		1.52		1.08		0.01	
Age	-10.31	0.00	3.63	0.00	1.21	0.00	-2.92	0.07
Age squared	9.99	0.00	-2.10	0.00	-0.13	0.48	2.93	0.07
<i>Status effect</i>	-0.36		-0.73		0.28		0.03	
Married (ref. category: single)	-0.32	0.00	-0.52	0.03	0.39	0.00	0.04	0.12
Divorced/widowed	-0.05	0.10	-0.21	0.00	-0.11	0.00	0.00	0.38
<i>Region effect</i>	0.04		1.14		0.43		-0.05	
Large cities (ref. Cat.: metropolitan)	0.00	0.95	-0.08	0.23	0.00	1.00	0.00	0.61
Suburban areas	0.00	0.79	-0.80	0.00	0.02	0.41	0.00	0.85
Regional centres	0.00	0.70	0.02	0.88	0.02	0.53	0.00	0.62
Industrialised areas	0.03	0.29	0.55	0.00	0.17	0.01	-0.02	0.09
Tourism-heavy areas	0.00	0.59	0.55	0.00	0.14	0.00	-0.01	0.01
Peripheral industrialised areas	0.01	0.32	0.34	0.00	0.04	0.07	-0.03	0.01
Rural areas	0.00	0.89	0.49	0.00	0.04	0.19	0.01	0.57
<i>Language effect</i>	0.12		0.41		0.34		0.00	
Slavic (ref. category: German)	-0.04	0.18	0.35	0.00	0.14	0.00	0.01	0.21
Turkish	0.00	0.92	0.00	0.79	0.01	0.52	0.00	0.80
English	0.07	0.00	0.00	0.94	0.00	0.74	0.00	0.26
French	-0.01	0.18	0.00	0.85	-0.01	0.48	0.00	0.36
Italian	0.00	0.88	0.00	0.67			-0.01	0.01
Other European languages	0.00	0.54	0.04	0.22	0.03	0.23	0.00	0.62
Other languages	0.09	0.00	0.03	0.67	0.16	0.00	0.00	0.53
<i>Country of origin effect</i>	0.14		0.19		-0.11		0.06	
Birth co. EU15/EFTA (ref. Cat.: AT)	0.07	0.01	-0.07	0.31	0.03	0.11	-0.05	0.00
Birth country NEW EU	-0.02	0.05	0.11	0.07	0.01	0.38	0.00	0.84
Birth country other OECD	0.00	0.42	-0.01	0.50	0.00	0.53	0.00	0.94
Birth country other CEEC	-0.06	0.02	0.09	0.08	0.00	0.59	0.01	0.00
Birth country former Yugoslavia	0.00	0.79	0.12	0.04	-0.02	0.00	0.01	0.38
Birth country Turkey	0.04	0.17	0.00	0.94	-0.01	0.83	0.06	0.04
Birth country Africa, Arabic country	0.09	0.02	-0.03	0.69	-0.13	0.10	0.03	0.08
Birth country Asia	0.02	0.20	0.00	0.50	0.00	0.92	0.00	0.97
Birth country South America	-0.01	0.24	0.00	0.59	0.00	0.91	0.00	0.30
No. of obs	26,781	37,276	24,263	68,342				

Notes: See Table 5

economy are relevant. Here, a comparison with Germany and, to a lesser extent, Switzerland, seems warranted.

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