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Zara Daghbashyan

Björn Hårsman

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Entrepreneurship and Arts Related Education

Zara Daghbashyan [1]& Björn Hårsman[2]

Abstract

The aim of this paper is to improve understanding of the observed high level of entrepreneurship among arts graduates. Specifically, the entrepreneurship rates of university graduates in the arts, architecture and engineering are compared. The occupational choice model applied has three options: wage employment, owning and a combination of the two. The utility function governing the choice includes income as well as an indicator of the disutility resulting from differences between the skills required and the skills supplied. The model implies that an alternative providing a better match might be preferred to one providing a higher income. Using Swedish data, this paper shows that the possibility of using artistic skills has stronger impact on the choice of occupation than income considerations.

***Keywords*:** arts graduates, education, occupational choice

***JEL classification*:** I21, L26, M53, M54

[1] Industrial Economics and Management, Royal Institute of Technology, Stockholm; email: zarad@kth.se

[2] Industrial Economics and Management, Royal Institute of Technology, Stockholm; email: bjorn.harsman@indek.kth.se

1. Introduction

The increased interest in the arts and culture among policy-makers during the last two decades seems to have gone hand in hand with increasing ambitions to foster innovation and entrepreneurship, and a belief that the creative potential of arts graduates also might stimulate creativity and entrepreneurship in other parts of the economy (Tillväxtanalys, 2010, Markusen and Schrock, 2006). Whether they are more creative than other groups or not and whether their capacities and values spill over to others or not will only be touched upon in this paper, the focus of which is to look closer at the high entrepreneurship rates observed among arts graduates.

An earlier paper, Hårsman (2012)[3], shows that self-employment is much more common among arts and media graduates than among graduates within other broad educational fields. According to Swedish data, the rate of self-employment[4] for arts and media graduates was about 22% in 2007, which is about three times the rate for social and technical science graduates. A similar observation is reported for the US. According to a field test questionnaire, 6 out 10 arts graduates in the US are self-employed (The Strategic Arts Alumni Project, 2010). The results are also supported by Markusen and Schrock (2006), according to which the average self-employment rate among all artistic occupations in the US is 38 percent as compared to 8 percent across all occupations.

The aim of this paper is to shed light upon possible reasons for the high level of entrepreneurship among university graduates with different kinds of arts related education.[5] Specifically, using Swedish data, we compare and analyze possible reasons for the high interest in self-employment among seven groups with an arts oriented education[6].

In order to handle the heterogeneity of entrepreneurial activities when using a raw measure of self-employment, some studies try to distinguish necessity- and opportunity-based firms. The former refers to self-employment as an alternative to unemployment, and the latter to those who, as defined by Schumpeter (1934), "disrupt the circular flow, introducing new products, new methods of production, new sources of raw material, new markets or new principles of

[3]This study was conducted within the framework of the project launched by Stockholms Akademiska Forum to study entrepreneurship among arts' graduates in Stockholm.
[4] The ratio of self-employed to self-employed + wage employed
[5] Three or more years of study at a university or college.
[6] About 13% of Swedish entrepreneurs with higher education are arts' graduates, whereas the fraction of arts' graduates among all individuals with higher education is only 2%.

industrial organization" (in Andersson and Andersson, 2006, page 144).[7] The problem of this approach is, of course, that it is easier to apply ex post than ex ante.

Few studies on entrepreneurship consider the possibility of combining self-employment and wage employment. Such a simplification might lead to wrong conclusions when focusing on groups who, like the arts graduates, have a rather high percentage of combiners. Furthermore, combiners make the concepts of necessity- versus opportunity-based firms even more troublesome. Assuming that the income combiners derive from wage employment is used for the consumption of necessities, it is tempting to categorize all their firms as opportunity-based. However, such a conclusion is at odds with the seemingly likely hypothesis that an opportunity-based firm will need very strong and probably also time consuming efforts by the owner in order to realize its potential. Therefore, our definition of an entrepreneur is based upon individual data on wage employment, self-owning and co-owning, but extends the view by also considering mixed forms of wage employment and owning.

Our paper outlines a theoretical framework for occupational choice based upon the demand for skills and the skills supplied by different categories of arts graduates. Specifically, we assume that the utility derived from each occupation depends upon the expected income and the match between the skills required and the skills supplied. It follows that a better match might make owning or combining preferable to wage employment, even if the associated income is lower. Another reason for not "choosing" wage employment might be a limited demand. Because of labor market regulations, the wage rate for arts graduates might be higher than the one equalizing demand and supply.

Empirically, we test our model using individual panel data. We find support for the hypotheses that the possibility of using their skills is among the main factors affecting the selection into entrepreneurship for arts graduates, and that the possibility of using artistic skills has a bigger impact on the choice of occupation than income considerations. Our analysis also sheds light upon the relationship between the occupational choice and education specific unemployment rates, as well as the relationship between occupational choice and past experience. We further investigate and compare the effect of experience and other personal characteristics on the propensity of being an owner rather than a combiner.

This paper contributes to the existing literature, by underlining the importance of educational differences in making career decisions, by providing a formal and empirical analysis of the

[7] The "classical" innovative dimension of entrepreneurship is thoroughly discussed in a literature overview of the role of entrepreneurs in the economic system provided in this book.

needs of arts graduates for self-expression, and by extending carrier alternatives traditionally used in previous literature.

The paper is organized as follows. The next section reviews some earlier literature. Section 3 describes the definitions used for arts oriented education and entrepreneurs, and also provides an overview of the educational areas included. In section 4 a conceptual framework is outlined for discussing why those having an arts oriented university education might establish firms of their own more frequently than others. The empirical model and choice of variables are described in section 5. The econometric model and results are presented in section 6. Section 7 provides a brief summary of the main results.

2. Literature review

Whether a member of the workforce or a person entering the labor market becomes an entrepreneur or a wage employee is usually assumed to depend upon the associated utilities Baumol (1990). Douglas and Shepherd (1999) assume that an individual's utility depends on income as well as working conditions such as decision-making control, risk exposure, work effort required and other working conditions associated with each occupation. The main implication in the Douglas and Shepherd (1999) model is that individuals have different preferences or aversions towards each of the specified dimensions/working conditions and that these preferences and aversions will determine their choices. Whether these preferences and aversions differ among individuals with different education areas or not is not discussed. It is not clear, for example, if arts graduates value the utility from income and working conditions as much as engineers. However, the anecdotic evidence suggests that the arts graduates have a stronger preference for using their special talent than other groups. If this is true one can expect different patterns of occupational choice for graduates of different education areas.

Nonetheless, the literature on the relationship between education and occupational choice seems to focus on the role played by the level rather than the field of education. As argued by Kim et al. (2006), nascent entrepreneurs in some industries have little need for formal education, while those in others might benefit a lot from a college degree. In spite of the resulting theoretical ambiguity, their estimates indicate that the likelihood of starting a business is positively related to formal education. They suggest that this may be related to a correlation between educational achievements and characteristics such as ambitions, assertiveness and endurance.

The relationship between education and entrepreneurship at the individual level may also be related to the level of education of the workforce in the regions where the entrepreneurs operate. Dooms et al. (2010) find that more educated regions have more educated business owners, and that business outcomes tend to be positively associated with the education of the workforce and the owner. They also report a positive relationship between education and the probability of being a self-owner as well as between the level of education and business outcome.

Douhan and van Praag (2009) show that entrepreneurs have more control over human capital and enjoy higher returns to human capital than employees, implying that those willing to make better use of their human capital will be more interested in entrepreneurship.

Van Der Sluis et al (2010) provide a meta-analytical review of 94 studies on the impact of education on the propensity of being or becoming an entrepreneur, and on entrepreneurship performance. They conclude that there is no systematic relationship between the level of education and the probability of being or becoming an entrepreneur, but that the impact of education on performance is positive and significant. Poschke (2008) argues that this happens because the relationship between abilities and entrepreneurship is not linear. He points out that the results from empirical literature suggest that, when educational attainment is used as a proxy for ability, there is a U-shaped relationship between education and entrepreneurship. Self-employment rates are higher for people with relatively high or low levels of education, and lower for people with intermediate levels of education.

One reason for the seemingly conflicting empirical evidence concerning the relationship between level of education and selection into entrepreneurship might be that few studies consider the heterogeneity of entrepreneurs with respect to the main discipline of their education. Murphy et al. (1991) find evidence that countries with a higher proportion of engineering college students grow faster, whereas those with a higher proportion of law students grow slower than other countries. However, the focus of their paper is on the sorting of talented people into entrepreneurship versus rent seeking activities rather than on the role educational orientation plays in entrepreneurship. Van Praag and Cramer (2001) are another exception. They estimate a model linking entrepreneurial talent, business formation and the labor demand of entrepreneurs, and find that entrepreneurial talent is enhanced by a science-oriented education, but negatively related to arts-oriented education. The explanation they offer is that a science-oriented education might be associated with analytical skills enhancing entrepreneurial talent, and that those with an arts-oriented education might be less interested in an entrepreneurial career. Whatever the explanation, their results support the importance of

considering not only the level, but also field of education, when discussing the relationship between human capital and entrepreneurship rates, implying a corresponding difference in entrepreneurship rates.

Lazear (2004, 2005) develops a more fruitful model for considering the relationship between the skill profile and occupational choice. According to him, the occupational choice is driven by the broadness of skills, implying that the breadth of education and experience should be more common among entrepreneurs, whereas wage employees need more peaked skill profiles. The predictions of his model have been empirically confirmed by Lazear´s empirical analysis and by Wagner (2003). Discussing the model, Lazear (2005, p657) specifically argues that there is no reason to expect strong correlation between artistic talent and business skills" and concludes that entrepreneurial choice will be rarer among arts graduates. It might be true that the correlation between artistic talent and business skills is weak but, contrary to Lazear´s conclusion, entrepreneurship is more rather than less common among arts graduates. One reason might be that the utility they gain from their occupational choice does not depend on generated income only, but also on non-monetary considerations not considered in Lazear's setup. Referring to pecuniary and non-pecuniary incentives literature, Parker (2009) argues that money is not the only or even necessarily the most important incentive for entrepreneurs. Hamilton (2000) conducts an empirical analysis to compare the returns to self-employment and wage employment, and shows that the non-pecuniary benefits of self-employment are substantial. Likewise, Croson and Minniti (2012) show that the self-employed are willing to accept lower earnings in exchange for the psychic benefits from self-employment.

Assuming that it is an important challenge for entrepreneurs to develop new and commercially viable ideas, it is particularly interesting to reflect upon the role played by ingenuity and creativity. To the extent that creativity is both a supplement and complement to education and skills (Mellander, 2008) one could ask if those with an arts oriented education are on average more creative than e g engineers, and if such a difference is reflected as a stronger likelihood that they will become entrepreneurs. Research in the field of cognitive psychology provides some basis for discussing this issue. According to Ward (2004), a common starting point for entrepreneurship studies in this field of science is that new ideas are formed by using different ways to modify, extend or transform existing knowledge, and that the novelty or innovative traits of new ideas are closely related to the mental processes used to generate them. Existing knowledge can be transformed and extended in a countless number of ways, but the following three types of cognitive processes seem to be especially

important for fostering creative leaps between existing knowledge and fundamentally new insights

- conceptual combination of separate ideas
- the use of analogies and metaphors
- abstraction and initial problem formulation.

Research in cognitive psychology provides no answer to the question of whether those with arts oriented education in general tend to be more creative than other groups. What it suggests, however, is that the mental processes and techniques, that historically and in experiments have been shown to promote creativity, are very often applied in arts oriented work.

3. Definitions and data

The data we are relying on is provided by Statistics Sweden and comprises linked individual time series data on all Swedish employees, firms and establishments from 2004 to 2008. Anyone working at least one hour per week in November – 4.4 millions in 2008 - is counted as being employed the same year, implying that both full-time and part-time workers are included. The employees are characterized in terms of income, employment status, education, age etc. Employment status is defined as wage employee, self-employed owner or co-owner. The classification used for those combining wage-employment and owning is made according to the main source of income, implying that someone having both an employment and a firm will be categorized as a wage-employee if the corresponding wage is at least as large as his/her business income. [8] In this paper we define wage employed, owners or co-owners and combiners as:

- Wage employed = employees with only a wage income
- Owners = self-employed with only a business income or possibly also an income from co-owning, and co-owners who may also have an income from self-employment
- Combiners = those combining wage-employment and owning. Though individuals in this category may have different sources of main income, they are involved in both wage employment and own business activities.

[8] Statistics Sweden multiplies the reported business income by 1.6 in order to adjust for an observed tendency by business owners to underestimate their business income.

Table 1 presents the seven educational fields considered to have an artistic orientation, and the corresponding numbers of employed by occupation. Engineers are included for comparison.[9]

Table 1. No of employed in 2008 with at least three years of university education by employment status and educational field.

	Wage-employed		**Owners**		**Combiners**		**Sum**	
	abs.	**%**	**abs.**	**%**	**abs.**	**%**	**abs.**	**%**
Architecture	2 774	56	1 142	23	1 028	21	4 944	100
Visual arts	1 236	42	744	25	958	33	2 938	100
Engineering	72 481	83	6 493	7	8 715	10	87 689	100
Dance, theater & drama	1 448	71	174	9	420	21	2 042	100
Music	2 248	68	177	5	862	26	3 287	100
Design	996	52	439	23	485	25	1 920	100
Crafts	200	49	62	15	149	36	411	100
Media production	753	58	243	19	303	23	1 299	100

All in all, some 17 000 individuals have an arts related university education and 88 000 a "Master of science in engineering". This corresponds to around 2 and 10 percent, respectively, of all employed in Sweden with a university degree.

According to table 1, the rates of entrepreneurship are much higher among those with an arts oriented education than among engineers.[10] The fraction earning their living by "only" a wage employment ranges from between 42 and 71 percent as compared to 84 percent for engineers. A substantial fraction of the architects and artists combines wage employment and self-employment. By way of example, 33 percent of those specializing in the visual arts and 10 percent of the engineers are combiners[11].

The underlying data shows that the rate of entrepreneurship is lower among those new to the labor market and those who have been in the labor market for more than 1 year.

The information on occupational status in our data base is more detailed for the years 2006-2008. Using that level of detail it turns out that some of those classified as wage-employees in table 1 combine their wage-employment with co-owning. One general conclusion that can be drawn from this information is that the table underestimates the rates of entrepreneurship. Another observation is that co-owning is much more common among architects than among

[9] In Sweden, both architects and engineers are educated at technical universities.

[10] A comparison between arts and media and correspondingly broad educational fields such as social sciences, natural sciences and humanities confirms the high level of entrepreneurship among those with an arts oriented education, see Hårsman (2012)

[11] On average about 84% of combiners have wage employment as a main occupation (73% for arts educated and 90% for engineers).

the other groups with an arts oriented education – the engineers fall in between. The difference between those with degrees in architecture, and say visual arts, in this respect may reflect differences in both demand and production technology. The average contract volume for architectural firms is perhaps larger, and the number of different kinds of skills needed to accomplish the work specified may also be larger. We will not elaborate on possible reasons for choosing between the two options in this paper, but provide some comments when presenting our theoretical framework later.

Table 2 provides information about the median income by area of education and occupation.

Table2. Median income by area of education and employment status in 2008. In thousands SEK.

	Wage employed	**Owners**	**Combiners**
Architecture	363	331	384
Visual arts	224	55	122
Engineering	469	396	499
Dance, theater and drama	255	198	276
Music	302	80	298
Design	292	154	237
Crafts	198	10	113
Media production	274	161	245

The yearly income ranges from 10 000 SEK for arts graduates specialized in crafts and being owners to 499 000 SEK for civil engineers who are combiners. The table also shows that the income is lowest for owners within each educational area. The difference, compared to wage employees and combiners, is less pronounced for engineers and architects.

Considering these differences, one would expect self- and co-owning to be more rather than less common among engineers than arts graduates. A possible reason for artists to become owners in spite of low expected income is suggested by anecdotal evidence, according to which those having an arts oriented education are willing to sacrifice some income for the possibility of using their artistic talent.

Using the detailed data on professions and industries, we have constructed a variable indicating whether or not the employees have a job corresponding to their education. In consultation with representatives from Stockholm's arts colleges, we have categorized every profession and every industry as artistically or not artistically oriented. A similar categorization has been made for engineers and architects[12]. For the group of combiners, the

[12] See Appendix 3 for more details about the classification.

correspondence of education with job is related to the primary activity, i.e. the activity that generates the major part of their income. Applying this categorization, Table 3 shows the percentage number with a job corresponding to their education by area of education and employment status.

Table 3. The percentage of wage employed, owners and combiners engaged in arts oriented activities compared to engineering (2008).

	Wage employed	**Owners**	**Combiners**
Architecture	58	78	60
Visual arts	11	57	23
Engineering	88	85	86
Dance, theater and drama	43	70	56
Music	48	65	52
Design	41	67	47
Crafts	11	51	27
Media production	27	72	47

As expected, self-employment provides much greater opportunities than wage employment to engage in artistic activities. The combiners fall in between. By way of example, the fraction with a job in line with their education is 48 percent among wage-employed musicians, 65 percent among those who are owners and 52 percent among combiners. The proportion of engineers with a job in line with their education is higher regardless of their employment status. More surprising perhaps is that a large proportion of arts graduates run companies that lack artistic orientation. It might indicate not only that the market for artistic products and services is quite limited, but also that artists are likely to have to develop business ideas even outside their domain of expertise.

The proportion of wage employed working in line with their education varies considerably among different artistic fields, from one out of ten among visual artists, to nearly two out of three among architects. The differences reflect the labor market conditions - only a few companies and government authorities employ visual artists, and both companies and authorities demand architects. To some extent this difference is reflected in the unemployment rates. As shown in table 4, they vary from close to one percent for architects and engineers, to between five and eight percent for other groups in 2008.

Table4. Unemployment rate by field of education in 2008 and the mean for 2004-2008

	2008	**2004-2008**
Architecture	1.1	3.5
Visual arts	6.6	9.1
Engineering	0.7	1.8
Dance, theater and drama	5.6	8.1
Music	5.6	8.1
Design	6.8	12
Crafts	8.3	13
Media production	5.6	9

The large differences in unemployment rates between arts graduates and engineers might be important factors behind the corresponding differences regarding self-owning. For the period 2004-2008, the average unemployment rates range from 1.8 percent for engineers to 13 percent for those educated in the arts.

4. Outline of a theoretical framework

What are the main reasons for initiating self-employment for arts graduates? Higher income, better possibilities for self-expression, more flexible work conditions, difficulties in finding wage employment? In-depth interviews with employees with an arts education indicate that quite a few would rather be poor self-owners making use of their artistic skills than better paid wage-employees without opportunities to make use of these skills (see Högstrom, 2012). Others dislike, or do not think they are able enough, to manage a firm of their own. Sometimes they succeed in finding temporary short-term jobs demanding their special skills, but they may also have to accept any job available to use their spare time to develop their creative and artistic skills.

Priorities and trade-offs of this kind will not be captured by a model of entrepreneurship selection based "only" on factors such as expected income, risk and need for start-up capital. Models that can explicitly handle the supply of and demand for different kinds of skills seem more promising in this respect. We will use Lazear's jack-of-all-trades model of entrepreneurial choice (Lazear 2005) as a starting point for outlining a somewhat different model. Lazear assumes that the income of an entrepreneur will be related to λMin (X_1,X_2), where X_1 and X_2 are skills of type one and two, respectively, and the income of a wage employee will correspond to Max (X_1, X_2)[13]. The difference is motivated by the hypothesis

[13] Lazear introduces a scale factor λ that is interpreted as the market value of entrepreneurial talent and is determined by market equilibrium. It is implicitly assumed that there is equilibrium between supply of and demand for entrepreneurial talent.

that self-employed need different kinds of skills to succeed, but that employers mainly look for specialists. The primary theoretical predictions from the model are the following:

- Individuals with a balanced set of skills are more likely to become entrepreneurs, whereas those excelling in special skills will prefer wage employment.
- The supply of entrepreneurs will be smaller for production processes requiring a higher number of independent skills.

Using Lazear's model, can we predict a high interest in entrepreneurship for arts graduates? In general, one can expect that arts graduates will more often have a peaked profile of skills, since people choose an arts oriented education mainly if they have some sort of artistic talent, which is later transformed into skills via education. If this is true, then, according to the Lazear's model, artists will be more interested in wage employment. In addition, as predicted by the model, the balance between the skills required for business operation and special skills, i.e. high correlation between X_1 and X_2, increases the likelihood of entrepreneurial choice. As noted by Lazear, there is no reason to expect strong correlation between artistic talent and business skills, and hence he expects arts graduates to be less interested in entrepreneurship.

From Lazear's model, it follows that individuals choosing wage employment use their strongest skill and earn income corresponding to the "magnitude" of that skill. Provided that the strongest skill corresponds to the area of education and education signals the availability of corresponding skills, the most talented in each education area will prefer wage employment. Hence this explanation seems to exclude the possibility of "forced" self-employment, referred to as a "push" effect in Gilad and Levine (1986), as well as the possibility of wage employment not corresponding to the strongest skill.

Furthermore, Lazear does not consider the opportunity of combining wage employment with self-owning or co-owning. As shown by the data, a considerable fraction of arts educated prefer combining to either wage employment or just self/co-owning. There might be several reasons for such a choice. For a person with strong special skills, combining might happen either due to difficulties in finding corresponding full-time wage employment or due to wider possibilities of self-expression in self-employment or both. For a person with balanced skills combining might be preferred due to income motivations. Folta et al. (2010) suggest three main reasons for combining or "hybrid entrepreneurship": a path to supplementary income, a path to non-monetary benefits, a path to transition from wage-employment to self-employment. Whatever the reason, a considerable number of people give preference to this choice, which is not considered in Lazear's setup. In the light of Lazear´s model a combiner would have the following expected income:

$$w\lambda \text{Min}\,(X_1, X_2) + (1\text{-}w)\text{Max}(X_1, X_2) \quad (1)$$

where *w* denotes the time allocated to operate the firm and *(1-w)* the time allocated to wage employment. If full-time wage-employment and full-time self-employment do not generate equal income, combining seems to be an inferior alternative. Hence, the Lazear model rules out combiners.[14]

Another drawback of Lazear's model is the assumption that the utility function is related to income considerations only. However, individuals might be more inclined to operate their own business if self-owning or co-owning makes it possible for them to make more or less full use of their special skills, e.g. artistic skills. If we assume that some are keener on making use of their special skills, and care somewhat less about their consumption, it follows that they would be more likely to start own business either as owners or combiners provided they have the abilities to manage a firm. Hence different opportunities to use skills specific to each occupation might be another reason for the high interest of the arts graduates in entrepreneurship.

In the following section we extend Lazear's model by adding the difference between the skills supplied and demanded, and show that the individual choice of occupation is not guided by income considerations only, but also by the opportunity to make use of their special skills to the highest possible level.

Based upon this reasoning the following utility function can be formulated:

$$U = U(Y, f((X_{R1} - X_{S1}), (X_{R2} - X_{S2})) \quad (2)$$

Here Y denotes income, X_{R1} and X_{R2} the skills of type one and two required by the employer and X_{S1}, X_{S2} the skills supplied. We assume that type one skills correspond to the area of education. The function f should be designed to increase when the differences increase between skills required and skills supplied, and is supposed to have a negative effect on the utility. We assume that an individual may choose to be an employee, self-employed or combine wage employment and owning.

The following main hypotheses are formulated based on the utility model given by equation (2) and the data presented in section 3.

H1: Occupations providing a better match of skills are more likely to be chosen ceteris paribus.

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[14] However, his model seems to be useful for explaining co-owning. Provided two individuals are able to cooperate and their skill profiles express some complementarity, they will earn more as co-owners than as separate self-owners.

H2: The occupational choice of artists is more influenced by the match between skills, i.e. the possibility of self-expression, than expected earnings.

H3: The interest in entrepreneurship varies with types of skills. Assuming that the education field indicates the type of skill, we argue that the choice of occupation will vary with type of education. This is due to differences in the production processes corresponding to each type of education, as well as demand-side differences. Specifically we expect that graduates of visual arts and crafts will be more interested in having their own business than architects, due to limited wage opportunities in their field. Similarly, the specifics of production processes corresponding to those qualified in music, dance, theater and drama, in particular the difficulties associated with providing special conditions required for performing their arts, might decrease their interest in entrepreneurial occupations as compared to architects.

5. Empirical setup and variables

To test the above hypotheses the following empirical setup is proposed. Assume each individual ($i = 1,2,3 \ldots n$) makes his/her choice based on the highest perceived utility U_{ij} associated with each alternative $j = 1,2,3$ described earlier.

- Employee
- Owner
- Combiner

The alternatives are mutually exclusive; no individual can be in two categories simultaneously. The probability that individual i will choose occupation j is

$$P_i(j) = \Pr(U_{ij} \geq U_{ik,}\ j = 1,23,\ j \neq k) \quad (3)$$

Each individual aims to maximize the utility (U_{ij}), which has an observable part (V_{ij}), and an unobservable disturbance term (ε_{ij}). The latter is assumed to have a multivariate normal distribution.

$$U_{ij} = V_{ij} + \varepsilon_{ij} \quad (4)$$

In our setup V_{ij} is a linear function of the expected income and the tension between skills supplied and demanded. We also include control variables to reflect labor market conditions for graduates from each area of education and for personal characteristics such as experience, education field, gender, age, ethnic background. Thus, the observable part of the utility function for alternative j is described as follows:

$$V_j = \beta_0 + \sum_{j=1}^{3} \beta_{1j} ExpectedIncome_j + \sum_{j=1}^{3} \beta_{2j} IncomeVariability_j + \beta_3 Inline + \sum_{n=1}^{6} \beta_{4j} EducationArea_n + \beta_5 Uempl + \beta_6 Age + \beta_7 Age^2 + \beta_8 ForBackground + \beta_9 New + \beta_{10} Year_{Emp} + \beta_{11} Year_{Ent} + \beta_{12} IndSwitch + \sum_{n=1}^{4} \beta_{13j} YearDummy + \sum_{n=1}^{2} \beta_{14j} LaborMarketDummy \quad (5)$$

Main variables

Expected Income is the expected income from alternative *j*. The variable is constructed as follows: the expected income in category *j* is equal to the observed income for individuals in category *j* and to the mean income of similar individuals[15] in category *j* for others. We assume that, before making their choice, individuals know about their expected income from each choice. If they are income maximizers, then they will choose the occupation with the highest expected income, everything else equal.

Income Variability is the standard deviation of income in each occupation for individuals with the same personal characteristics[16]. The variable reflects the variation in expected earnings for individuals with similar background. A high variability indicates higher chance/risk of being either in the upper or the lower tail of income distribution. We expect that occupations with lower variability will be preferred, everything else equal.

InLine is a dummy variable reflecting the correspondence between the field of education and the main activity of the individual. The variable is constructed based on detailed data on professions and industry codes, described in section 3, and is used to test hypothesis 1. We argue that the possibility of working in line with their qualifications is among the main motivations for the occupational choice of arts graduates; the effect of this variable is supposed to be strongly positive.

EducationArea is a categorical dummy variable to reflect the field of education with architecture as a base category. According to hypothesis 3 we expect that the interest in entrepreneurship will differ with the field of education.

[15] Individuals are divided into 360 groups based on their education field, gender, age group, foreign background and place of work.

[16] See footnote 14

Unempl captures unemployment differences and varies by education field and year. High unemployment is expected to positively affect the decision to become either self-employed or combiner.

Control variables

Age and Background, which refer to individual characteristics, are captured by a dummy variable for ethnic background and a continuous variable for age. Age squared is included to account for the non-linear relationship between age and choice of occupation.

New is a dummy variable indicating whether the individual is new in the labor market or not. The individual is considered to be new if she/he has not been observed in the labor market in the preceding four years. Thus, a person is new in 2008 if he/she has not been registered in the labor market in 2004, 2005, 2006, and 2007. The variable captures the difference between fresh market entrants and established labor market participants.

$Year_{Ent}$ and $Year_{Emp}$, indicate the number of years each individual is registered as an entrepreneur and employee in the previous 4 years. We use these variables as indicators of previous experience. Those with experience in both will probably have a broader set of skills and hence will be more likely to choose self-owning or co-owning.

IndSwitch, measures the number of different industries the individual has been affiliated to in the previous four years. This variable signals the broadness of experience and is expected to increase the likelihood of choosing self-owning or co-owning.

LaborMarketDummy - we assume that labor market conditions affect the choice of occupation, and distinguish between the Stockholm labor market, which is the largest in Sweden, Gothenburg/Malmö labor market, which is the second largest, and the rest of Sweden. We expect entrepreneurship to be more active in the largest regions.

YearDummy a variable used to capture time effects.

The descriptive statistics for the main and control variables, included in the empirical model as well as the corresponding correlation matrix, are presented in Appendix 1. It is worth mentioning that for the purpose of this analysis we have used pooled data with approximately 20 percent of the observations each year.

6. Econometric model and the results

The traditional approach for estimation of the unordered multivariate choice model is to use either multinomial logit or probit estimation techniques. The difference between the two has to do with the assumptions about the functional form of the probability density function, and distribution of the unobserved component in the utility function. The multinomial logit

models assume independence of irrelevant alternatives, which means that the likelihood of choosing each alternative does not depend on other alternatives (Train, 2009). This corresponds to assuming that the disturbance term has an independent and identical Gumbel distribution, which is not always fulfilled in practice. Multinomial probit models allow us to relax this assumption and introduce correlation across choices through a normally distributed error term[17]. This is achieved at the cost of the more complicated functional form of the probability density function. As stated in Cameron & Trivedi (2005, p.527), the multinomial logit model is adequate for describing data or estimating the marginal probabilities, but is considered to be a poor model if a more structural interpretation of parameters is required.

Thus, for estimation of our empirical model, we have used a multinomial probit approach to avoid the assumption on the independence of irrelevant alternatives and to provide a structural interpretation of parameters. We have particularly chosen an alternative–specific multinomial probit model[18], where the utility is modeled as a function of both alternative-specific[19] and individual-specific variables (see e.g. Long and Freeze, 2006). In this model the error term ε_i, is assumed to have a multivariate normal distribution with a mean vector of zero and covariance matrix Ω. The probability of choosing alternative *j* is defined as

$$P_{ij} = Prob\left(V_{ij} + \varepsilon_{ij} \geq V_{ik} + \varepsilon_{ik} \ \forall j \neq k\right).$$

This is computed via integration of the multivariate normal distribution for the εs, and, since the integral does not have a closed form, it must be numerically evaluated through simulation (for more details see Train, 2009). Furthermore, to ensure the identification of all the *j* sets of regression coefficients and the elements of the variance–covariance matrix, and that the level and scale of utility are irrelevant, the model should be normalized with respect to location and scale[20]. As explained in Train (2009), normalization ensures that adding a constant to the utility does not change which alternative has the highest utility; nor does multiplying it by a constant. The normalization procedure suggested in Train (2009) has been used for developing the alternative-specific multinomial probit model in the Stata statistical package, which we have used in this paper.

[17] Likelihood ratio test for comparing models with independent error terms and models allowing for correlation support of the latter.

[18] As noted in Cameron and Trivedi (2005), the parameters in a multinomial probit model may be imprecisely estimated in models with regressors that do not vary across alternatives.

[19] In our utility model given by (5) utility is the function of expected income and income variability, both of which are alternative specific variables.

[20] This is accomplished through imposing additional restrictions on Ω.

The estimation results are presented in table 5, with marginal effects reported in table 6. The category of wage employed is chosen as a reference group.

Table 5. Regression results from alternative-specific multinomial probit model.

Variables		**Owner**	**Combiner**
Expected Income	0.001***		
	($1.5x10^{-4}$)		
Income Variability	$-2.5x10^{-4}$**		
	($1.2x10^{-4}$)		
InLine		0.522***	0.105**
		(0.043)	(0.043)
Unempl		0.023*	0.004
		(0.012)	(0.009)
Visual arts		0.563***	1.504***
		(0.078)	(0.088)
Music		-0.836***	0.501***
		(0.088)	(0.079)
Design		0.103	0.719***
		(0.171)	(0.119)
Crafts		0.458**	1.783***
		(0.209)	(0.183)
MediaProduction		-0.143	0.579***
		(0.116)	(0.106)
DanceTheaterDrama		-0.980***	0.022
		(0.102)	(0.087)
Emp_Experience		-0.969***	0.190***
		(0.046)	(0.03)
Ent_Experience		1.827***	1.688***
		(0.054)	(0.067)
Industry switches		0.122**	0.265***
		(0.052)	(0.038)
Female		-0.283***	-0.224***
		(0.04)	(0.044)
Age		0.067***	0.036**
		(0.014)	(0.015)
Age Squared		$-0.5x10^{-4}$***	$-0.4x10^{-4}$**
		($0.1x10^{-4}$)	($0.1x10^{-4}$)
Foreign Background		-0.066	-0.402***
		(0.06)	(0.071)
New		0.370***	-0.257***
		(0.047)	(0.079)
Constant		-3.197***	-4.075***
		(0.315)	(0.367)
No of observations (No of cases)	216,198 (72,066)		
Log simulated pseudolikelihood	-42,726		

1. Estimation coefficients and robust standard errors (standard errors adjusted for individual clusters)
2.*** p<0.01, ** p<0.05, * p<0.1
3. Architects are chosen as a reference group. Year and labor market controls are included

Overall, the results support our hypotheses. The possibility of using skills, proxied by the correspondence of education to the main occupation, i.e. the "Inline" variable, is found to have a positive and significant effect on the propensity of being both owner and combiner. This supports our H1 hypothesis, i.e. arts graduates' choice of entrepreneurial occupations is affected by wider possibilities of using their skills. A wish to express their talent seems to be one of the motivations for being an entrepreneur. For combiners it implies that the interest in combining increases if there is a possibility of using skills as a primary activity, i.e. having satisfied the need for self-expression, artists look for other occupations, where one motivation might be income considerations. Still, the marginal effect of an opportunity to use their skills, reported in table 6, is not significant for combiners, suggesting that though combining is more likely if there is a possibility of using skills in the main occupation, it does not substantially change the interest in combining. This might mean that the intention to use skills will more often lead to owning than combining. To shed more light upon the effect of the "InLine" variable on combiners, we distinguish between combiners with employment as a primary occupation and combiners with business activity as a main occupation, and run the same regression for two different samples. The results in Table 1 of Appendix 2 suggest that the possibility of using skills in wage employment makes the first group of combiners indifferent to combining, while the second group remains interested in combining, which might be due to income considerations.

The effect of income-related variables is as expected, i.e. occupations providing higher income and lower income variability are more likely. However, the marginal effect of income reported in table 2 is negligible; the increase of annual expected income by SEK 100,000 (about EUR 10 000) increases the propensity of being an owner by only 1 percent.

Table 6. Marginal effects corresponding to the regression results in Table 5

	Owner	**Combiner**
Expected income (change by SEK 100 000)	1	1
Inline	5	0
Unemployment	0	0
Visual Arts	1	23
Music	-8	9
Design	0	11
Crafts	0	29
Media production	-3	9
DanceTheatherDrama	-8	2

Marginal effects (in %) are calculated at mean values for continuous variables and discrete change of indicator variables. They are interpreted as the percentage change in the probability of choosing the respective alternative.

At the same time, the possibility of using skills increases the propensity of being an owner by 5 percent as compared to being a wage employee. The Wald test on significant difference

between the coefficients of income and "Inline" is accepted at the 1 percent level. This finding supports our H2, implying that the possibility of using artistic skills has bigger impact on the choice of occupation than income considerations.

Concerning H3, our third hypothesis, the results indicate that graduates of visual arts and crafts are more interested in owning, whereas music, dance, theater and drama graduates prefer wage employment when compared to architects. Graduates of design and media production do not significantly differ from architects in their choice of owning. In addition, graduates of all education fields seem to be more interested in combining than wage employment in comparison to architects. The only exceptions are dance, theater and drama graduates. Thus, overall, the results indicate that the field of education matters, which could be due to labor market conditions specific to each field of education not captured by our model, differences in the respective production processes, entrepreneurial attitudes or other education specifics. It is worth mentioning that we have also run the regression for the sample of engineers and architects and the results indicate that engineers are less likely to choose entrepreneurial occupations as compared to architects, everything else equal. [21]

When it comes to unemployment effects, the results suggest that education field-specific unemployment has a positive and significant effect on selection into owning, implying that artists are more likely to start their own businesses in conditions of high unemployment, and that "forced" self-employment is possible. However, it should be noted that a 1 percent increase in unemployment increases the propensity of being an owner by less than 1 percent, implying that unemployment should not be treated as the main reason for arts graduates to start their own business. It should be mentioned that we find no unemployment effect for combining. Hence, combining does not happen due to the impossibility of job finding, but for other reasons.

The results also suggest that experience is crucial for explaining individuals' occupational choice. The number of years as an entrepreneur has a positive and significant effect on the decision to be either an owner or combiner, which seems to be logical. The employment experience negatively affects the choice of owner and positively affects the choice of combiner. Thus, a longer stay in wage employment seems to strengthen the reluctance to become an owner. However, experience of both occupations will encourage the choice of combiner. Not surprisingly, the broadness of experience in terms of number of switches

[21] The results of these regressions can be requested from the authors.

between industries has a positive effect on the choice of both owner and combiner, supporting Lazear's idea of broadness of skills required for entrepreneurship.

As in other studies women are less inclined to become entrepreneurs and the age effect is positive. Besides, arts graduates with a foreign background are found to be less likely to become combiners, but the likelihood of being an owner seems to be unaffected by this variable. New labor market participants are more interested in owning and less in combining, which seems to be reasonable as the latter requires some sort of experience.

We should mention that we have run the same regression for the sample of new and established labor market participants. The results presented in Table 2 of Appendix 2 are rather identical regarding the main variables of interest. The only difference is that income effects are found to be negative for new labor market participates, which is hard to explain.

7. Conclusion

The aim of this paper is to shed light upon the possible reasons for the high level of entrepreneurship among university graduates with different kinds of arts related education.

In particular, we try to explain the contradiction between the data and the prediction of Lazear's jack-of-all-trades model of entrepreneurial choice (Lazear, 2005), according to which arts graduates have a low interest in entrepreneurship.

After demonstrating large differences among seven artistic groups and engineers in entrepreneurship rates, incomes and e.g. unemployment rates, a conceptual model for occupational choice is outlined. The choice is assumed to be governed by the expected income from each choice and by the match between the skills required and the skills supplied.

Using Swedish data, we find support for the hypothesis that the possibility of using their skills is among the main factors explaining the selection into entrepreneurship for arts graduates, and that the possibility of using artistic skills has a bigger impact on the choice of occupation than income considerations. We further find that field of education affects the choice of occupation, with visual arts and crafts being the most entrepreneurial, and music, dance, theater and drama being less entrepreneurial categories as compared to architects. According to our results, engineers are less likely to be owners than architects.

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Appendix 1

Table 1. Descriptive statistics of main and control variables

Variables	mean	sd	min	max
Expected Income in ths. SEK (Wage Empl)	302	117	120	1553
Expected Income in ths. SEK (Owning)	182	117	0	590
Expected Income in ths. SEK (Combining)	252	109	57	736
Income Variability in ths. SEK (Wage Empl)	138	52	13	569
Income Variability in ths. SEK (Owning)	182	118	3	2172
Income Variability in ths. SEK (Combining)	170	76	2	668
Women	0.49	0.5	0	1
Age	47	11	21	84
Foreign Background	0.11	0.31	0	1
InLine	0.47	0.5	0	1
Unempl	7.53	4.06	1	22
Year2004	0.18	0.39	0	1
Year2005	0.19	0.39	0	1
Year2006	0.20	0.4	0	1
Year2007	0.21	0.41	0	1
Year2008	0.22	0.41	0	1
Work_Stockholm	0.52	0.5	0	1
Work_ Göteborg/Malmö	0.26	0.44	0	1
Architecture	0.32	0.47	0	1
Visual Arts	0.2	0.4	0	1
DanceTheaterDrama	0.11	0.31	0	1
Music	0.19	0.39	0	1
Design	0.1	0.3	0	1
Crafts	0.02	0.13	0	1
Media Production	0.07	0.25	0	1
Emp_experince	2.14	1.62	0	5
Ent_experince	0.68	1.26	0	5
Industry switches	0.28	0.54	0	4
New	0.03	0.16	0	1
No of observations	72,066			

Table 2. Correlation coefficients of main and control variables

Varaibales	Expected Income (Wage Empl)	Expected Income (Owning)	Expected Income (Combining)	Income Variation (Wage Empl)	Income Variation (Owning)	Income Variation (Combining)	Women	Age	Foreign Background	InLine	Unempl
Expected Income (Wage Empl)	1										
Expected Income (Owning)	0.386	1									
Expected Income (Combining)	0.389	0.444	1								
Income Variation (Wage Empl)	0.367	0.346	0.308	1							
Income Variation (Owning)	0.233	0.383	0.228	0.197	1						
Income Variation (Combining)	0.311	0.337	0.427	0.285	0.325	1					
Women	-0.278	-0.300	-0.299	-0.281	-0.228	-0.221	1				
Age	0.239	0.123	0.166	0.259	0.239	0.302	-0.170	1			
Foreign Background	-0.047	-0.022	0.010	-0.054	-0.022	0.050	-0.021	0.077	1		
InLine	0.167	0.186	0.213	0.097	0.051	0.085	-0.051	-0.019	-0.068	1	
Unempl	-0.356	-0.354	-0.400	-0.185	-0.220	-0.339	0.093	-0.140	-0.082	-0.155	1
Architecture	0.439	0.502	0.440	0.289	0.184	0.324	-0.090	0.143	0.117	0.202	-0.664
Visual Arts	-0.301	-0.401	-0.498	-0.123	-0.120	-0.211	0.041	0.121	0.021	-0.226	0.201
DanceTheaterDrama	-0.098	0.078	0.057	-0.040	0.083	0.079	0.051	-0.038	-0.069	0.005	0.057
Music	-0.045	-0.145	0.098	-0.167	-0.074	-0.071	-0.103	-0.033	-0.061	0.025	0.068
Design	-0.007	-0.060	-0.089	0.096	-0.025	-0.087	0.072	-0.172	-0.005	0.007	0.441
Crafts	-0.129	-0.130	-0.151	-0.150	-0.092	-0.108	0.129	-0.049	-0.040	-0.072	0.192
Media Production	-0.070	-0.029	-0.067	-0.071	-0.063	-0.094	0.047	-0.128	-0.045	-0.035	0.112
Empl_experince (years)	0.121	-0.014	0.144	-0.009	0.084	0.104	0.044	-0.013	-0.008	-0.103	-0.341
Ent_experince (years)	0.029	0.079	-0.026	0.118	0.084	0.096	-0.061	0.151	0.017	0.190	-0.123
No of industry switches	-0.151	-0.127	-0.144	-0.092	-0.047	-0.064	0.080	-0.211	0.011	-0.112	-0.073
New	-0.103	-0.093	-0.092	-0.054	-0.044	-0.052	0.030	-0.074	0.034	-0.064	0.062

Table 2. (cont.)

Variables	Architecture	Visual Arts	DanceTheaterDrama	Music	Design	Crafts	Media Production	Empl_experince (years)	Ent_experince (years)	No of industry switches	New
Architecture	1										
Visual Arts	-0.341	1									
DanceTheaterDrama	-0.238	-0.173	1								
Music	-0.331	-0.240	-0.168	1							
Design	-0.231	-0.166	-0.117	-0.162	1						
Crafts	-0.089	-0.065	-0.045	-0.063	-0.044	1					
Media Production	-0.183	-0.133	-0.093	-0.129	-0.090	-0.035	1				
Empl_experince (years)	-0.035	-0.078	0.049	0.152	-0.053	-0.009	-0.040	1			
Ent_experince (years)	0.042	0.090	-0.059	-0.161	0.049	0.012	0.038	-0.571	1		
No of industry switches	-0.094	0.029	0.017	-0.061	0.081	0.055	0.080	0.039	-0.008	1	
New	-0.006	-0.010	-0.025	-0.011	0.010	-0.029	0.034	-0.011	-0.043	0.045	1

Appendix 2

Table 1. Regression results from alternative-specific multinomial probit model for two different types of combiners: Mixed entrepreneurs (combiners with self-employment as a primary occupation) and Mixed employees (combiners with wage employment as a primary occupation).

Variables		**Owner**	**Combiner (Mixed entr.)**		**Owner**	**Combiner (Mixed empl.)**
Expected Income	$0.4x10^{-4}$*** ($0.9x10^{-5}$)			$0.1\ x10^{-3}$*** ($0.1x10^{-4}$)		
Income Variability	$-0.1x10^{-4}$*** ($0.6x10^{-5}$)			$-0.1x10^{-4}$*** ($0.6x10^{-5}$)		
InLine		0.778***	0.855***		0.902***	-0.003
		(0.040)	(0.040)		(0.040)	(0.003)
Unempl		0.031***	0.019		0.023*	0.001*
		(0.015)	(0.015)		(0.012)	(0.001)
Visual arts		0.523***	0.874***		0.250***	0.088***
		(0.084)	(0.092)		(0.080)	(0.006)
Music		-0.432***	0.239**		-0.651***	0.009*
		(0.086)	(0.100)		(0.080)	(0.005)
Design		0.041	0.326		0.026	0.035***
		(0.208)	(0.207)		(0.200)	(0.008)
Crafts		0.404*	0.892***		0.044	0.099***
		(0.214)	(0.216)		(0.213)	(0.012)
MediaProd.		0.083	0.465***		0.026	0.017**
		(0.121)	(0.128)		(0.119)	(0.007)
DanceTh.Dr.		-0.184**	0.431***		-0.545***	-0.031***
		(0.092)	(0.106)		(0.093)	(0.006)
Emp_Exp.		-0.815***	-0.622***		-1.284***	0.013***
		(0.033)	(0.035)		(0.040)	(0.002)
Ent_Exp.		2.207***	2.209***		1.386***	0.101***
		(0.058)	(0.059)		(0.033)	(0.003)
Ind. Switches		0.469***	0.565***		0.466***	0.013***
		(0.054)	(0.051)		(0.059)	(0.003)
Female		-0.173***	-0.098***		-0.216***	-0.018***
		(0.036)	(0.037)		(0.035)	(0.003)
Age		0.021**	0.041***		0.024**	0.004***
		(0.012)	(0.012)		(0.011)	(0.001)
Age Squared		$0.4x10^{-4}$	$0.4x10^{-4}$***		$0.5x10^{-4}$	$0.4x10^{-4}$***
		($0.1x10^{-4}$)	($0.1x10^{-4}$)		($0.1x10^{-4}$)	($0.1x10^{-4}$)
For. Backgr.		0.093*	0.075		0.090	-0.033***
		(0.055)	(0.058)		(0.052)	(0.005)

Table1.(cont.)

Variables	Owner	Combiner (Mixed employee)	Owner	Combiner (Mixed ent.)
New	0.328***	0.125**	0.417***	-0.008
	(0.040)	(0.053)	(0.042)	(0.006)
Constant	-2.928***	-2.737***	-1.912***	-0.269***
	(0.271)	(0.273)	(0.272)	(0.025)
No of obs.		175,662		202,878
No of cases		58,554		67,626
Log simulated pseudolikelihood		-15,582		-34,924

1. Estimation coefficients and robust standard errors (standard errors adjusted for individual clusters)
2 .*** p<0.01, ** p<0.05, * p<0.1
3. Architects are chosen as a reference group.
4. Year and labor market controls are included

Table 2. Regression results from alternative-specific multinomial probit model. Estimation for the sample of New and Not New[1]

	New		Not new	
Variables	**Owner**	**Combiner**	**Owner**	**Combiner**
Expected Income	-0.013***		0.001***	
	(0.001)		($1.5x10^{-4}$)	
Income Variability	0.001*		$-2.5x10^{-4}$**	
	(0.001)		($1.2x10^{-4}$)	
InLine	1.263***	0.351***	0.512***	0.093**
	(0.144)	(0.117)	(0.044)	(0.041)
Unempl	0.038	-0.059**	0.027**	0.009
	(0.035)	(0.027)	(0.013)	(0.008)
Visual arts	0.437*	0.918***	0.498***	1.392***
	(0.238)	(0.22)	(0.082)	(0.087)
Music	-1.144***	0.439*	0.895***	0.430***
	(0.308)	(0.225)	(0.09)	(0.075)
Design	-0.087	0.731**	0.046	0.633***
	(0.444)	(0.334)	(0.178)	(0.115)
Crafts	0.033	1.421***	0.388*	1.625***
	(0.541)	(0.406)	(0.219)	(0.178)
MediaProduction	0.273	0.394	-0.202*	0.520***
	(0.325)	(0.279)	(0.12)	(0.102)
DanceTheaterDrama	-0.378	(0.044)	-1.036***	-0.016
	(0.342)	(0.271)	(0.104)	(0.083)
Emp_Experience			-0.980***	0.177***
			(0.044)	(0.03)
Ent_Experience			1.727***	1.570***
			(0.056)	(0.069)
Industry switches			0.118**	0.258***
			(0.051)	(0.037)

Table2 (cont.)

	New		Not new	
Variables	**Owner**	**Combiner**	**Owner**	**Combiner**
Female	-0.046	0.159	-0.291***	-0.219***
	(0.137)	(0.103)	(0.041)	(0.042)
Age	0.164***	0.000	0.059***	0.038**
	(0.034)	(0.025)	(0.015)	(0.015)
Age Squared	-0.001***	0.000	$-0.4x10^{-4}$**	$-0.4x10^{-4}$**
	$(0.1x10^{-4})$	(0.000)	$(0.1x10^{-4})$	$(0.1x10^{-4})$
Foreign Background	-0.333**	-0.306**	-0.04	-0.389***
	(0.154)	(0.143)	(0.062)	(0.068)
Constant	-7.127***	-1.927***	-2.848***	-3.905***
	(0.843)	(0.602)	(0.33)	(0.363)
No of observations		5,778		210,420
No of cases		1,926		70,140
Log simulated pseudolikelihood		-962		-41608

1. The sample of New includes individuals not observed in the labor market in the preceding 4 years.
2. The sample of Not New includes individuals observed in the labor market more than once in the preceding 4 years.
3. Estimation coefficients and robust standard errors (standard errors adjusted for individual clusters)
4. *** p<0.01, ** p<0.05, * p<0.1
5. Architects are chosen as a reference group.
6. Year and labor market controls are included

Appendix 3

Categorization of professions and industries according to SCB's Swedish Standard Classification of Professions, SSYK 96 and Standard for Swedish Classification of Industries in 2002, SNI 2002.

Professions categorized as artistically oriented

2141 Architects and urban planners

2451 Journalists, writers, communicators and others

2452 Sculptors, painters, etc.

2453 Composers, musicians, and singers

2454 Choreographers and dancers

2455 Director and actor

2456 Designers

3471 Artistic illustrators, decorators, etc.

3473 Musicians, singers, dancers and others in entertainment

3474 Circus and other artists, etc.

3476 Stage manager etc.

7321 Turner et al

7322 Glass Cab Workers et al

7323 Glass engravers

7324 Decorative Painters

733 Handicraft workers in wood, textile, leather, etc.

7343 Private Bookbinders

7431 Tailors, milliners and dressmakers studio

7432 Furriers

7433 Cutters

7434 Stitches

7435 Upholsterers

Industries categorized as artistically oriented

74201 Architectural activities

74811 Portrait, photography business

74812 Advertising photography

74813 Press and other photography

74102 Graphic design and service

74872 Other designers

92110 Motion picture and video production company

92310 Performers and producers of artistic, literary and other works

9320 Theatre and concert hall companies

Professions corresponding to the master's degree in civil engineering

12 Senior officials and managers in large and medium-sized businesses, governments etc.

13 Managers of small enterprises, etc.

21 Technicians and professionals in engineering and computer science, etc.

231 University and college teachers

241 Business, marketing professionals

31 Technicians and associate professionals, etc.

341 Finance and sales associate professionals

Industries corresponding to the master's degree in civil engineering

1-14 Mining and quarrying

15-37 Manufacturing

40-41 Electricity, gas heating and water

45 Construction

518 Wholesale of machinery and equipment

519 Other wholesale

60 Land Transport

61 Lines

62 Airlines

63 Transport services, tour operators, travel agents and transportation brokers

67 Financial intermediation services

70 Real estate and property managers

72 Computer and related service agencies

73 Research and development institutions

741 Legal and accounting firms, holding companies

742 Architects, technical consultants and the like

743 Technical testing and analysis

748 Other business services companies

90 Treatment plants, waste facilities, sanitation works