The intergenerational transmission of liberal professions: nepotism versus abilities

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Abstract

This paper analyzes the transmission of liberal professions from fathers to sons and from fathers to daughters. By using administrative data with details on the whole population of graduates in 2002 and 2003 in 22 Italian Universities together with follow up interviews up to 5 years after their graduation, we consider different channels through which this transmission operates. In particular we focus on the intergenerational transfers of financial resources, formal and informal human capital, and job preferences. Even after controlling for these intergenerational transfers, we find that nepotism and networking play an important role.

Keywords: Professional licensing, liberal profession, intergenerational mobility, nepotism

JEL codes: J44, J62, J24

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1 Introduction

A strong association between children's occupational success and their family background is usually perceived as a signal of an unfair society and this has given rise to many empirical studies on intergenerational mobility (see for a review Solon 1999, Björklund and Jantti 2009, and Black and Devereux 2010). Contrary to most of previous studies on the transmission of occupational outcomes from fathers to children, which usually summarizes the occupational transmission with simple measures of association between parents and children, we deepen the understanding of the transmission mechanisms by estimating different processes and channels through which father's occupation can affect children.

By using rich administrative data on university students linked with surveys data that cover the whole population of graduates in 2002 and 2003 in 22 Italian Public Universities (see details on AlmaLaurea data in Section 4), we study the mechanisms explaining the intergenerational transmission of liberal professions in Italy. By liberal professions we mean professions which require to first obtain a recognized degree and then to pass a licensing exam (state exam), they include lawyers, notaries, accountants, pharmacists, psychologists, architects and engineers.[1] We find that the odds to become a liberal professional if one's father is a liberal professional are twice the corresponding odds if one's father is not a liberal professional for both men and women. The odds ratio are even higher when looking at the transmission of specific types of liberal professions, in particular pharmacists, architects and psychologists.

Similarly to the intergenerational transmission of income, the occupational transmission has been explained by inheritability of endowments and parents' investments in their children's human capital (see Becker and Tomes 1979, 1986). But, to justify a different degree of transmission for different occupations, it is necessary to recognize that there are two types of human capital investments: the indirect investment through formal education and the direct

[1] See Catania and Monti (2011) for details on the institutional context of licensed occupations in Italy.

investment through the transmission of job-specific abilities and knowledge from fathers to children (see Evans and Jovanovic 1989, and Laband and Lentz, 1983). Laband and Lentz (1983) find that for occupations where the direct transmission of job-specific knowledge and abilities is more relevant, such as farmers and self-employees, there is a higher percentage of children following their father's occupation. Liberal professions are another example of occupation where the intergenerational transmission of skills and knowledge is important and helps in lowering the entry barrier costs, e.g. shortening the time needed to set a portfolio of customers and increasing potential early profits.

If parental human capital investments were the only explanation for the occupational transmission from fathers to children, then there would be no reason for thinking that a high degree of occupational transmission is unfair. However, other possible explanations are the presence of credit market imperfections, which may lead to a failure of meritocracy (see Evans and Jovanovic 1989, Holtz-Eakin et al 1994, Dunn and Hotz-Eakin 2000, Caselli and Gennaioli 2005 and Fairlie and Kranshinsky, 2012), and nepotism, which could explain the higher probability of passing a licensing exam for children of liberal professionals (see Lentz and Laband 1989, Basso and Labartino 2011).

In our empirical application we take account that chidlren's chances to become a liberal professional can be improved by having a liberal professional father because of the intergenerational transmission of formal and informal human capital, preferences, financial resources, but possibly also through nepotism and networking. We focus on intergenerational transmission operating in the window that goes from the choice of university to the entry into the labour market, we estimate three sequential processes which lead to the liberal profession: (i) choosing a degree which gives access to liberal professions, (ii) obtaining a licensing, (iii) beginning to practice a liberal profession. By using AlmaLaurea data, we are able to control extensively for the intergenerational transmission of formal human capital and of job preferences, but we are unable to control for the direct transmission of financial resources and of informal human capital. Nevertheless, assuming that the transmission of financial resources

from fathers who are liberal professionals and who are managers be similar, and that the transmission of job specific knowledge and skills is possible only for children whose fathers are liberal professionals in the same field;[2] we can compute an upper bound on the effect of the transmission of informal human capital and a lower bound on the effect of nepotism and family networking on the probability of obtaining a licensing and on the probability of beginning a liberal profession.

2 Background and literature

Several papers have looked for explanations for the transmission of occupations and employers from fathers to children (e.g. Laband and Lentz 1983, and Corak and Piraino, 2011) and the two main channels of transmission which have been suggested are the financial and human capital transfers (see Laband and Lentz 1983 and 1992, Evans and Jovanovic 1989, Dunn and Hotz-Eakin 2000, Fairlie and Robb 2007, Fairlie and Krashinsky 2012). By assuming that the cost to acquire human capital related to a specific occupation is lower for children who follow their father's occupation and that fathers with a child who is a follower maximize their own earnings as well as their child's ones, Laband and Lentz (1983) develop an economic model which allows explaining the mechanisms behind the intergenerational occupational transmission and the differences in this transmission across occupations. Direct and indirect human capital transfers from fathers to children are assumed to be the mechanisms of intergenerational transmission at work, and the explanation given for why some types of occupations are more often transmitted than others is that they require job-specific human capital which can be easily and cheaply transmitted from fathers to children. Examples of such occupations are farmers, entrepreneurs and self-employment professions (see Laband and Lentz 1983 and 1992). Evans and Jovanovic (1989) propose an economic model for the decision to be a self-employee, and they provide empirical evidence that wealthier

[2] We say that a father is a liberal professional in the same field if he has the same type of university degree than his child.

people have higher probability of starting a self-employment activity. Dunn and Hotz-Eakin (2000) extend the model to allow for financial capital transfers from fathers to children, so that the decision to become a self-employee depends on personal human and financial capital as well as human and financial capital transmitted from the father. Several papers have provided empirical evidence that the probability of starting a self-employed activity, such as own-account workers or entrepreneurs, is higher for children whose fathers are wealthier (see Holtz-Eakin et al (1994) and Dunn and Hotz-Eakin 2000). This evidence seems to prove that there are financial constraints and that family credit market may replace the more formal credit market, so that intergenerational occupational transmission may operate through financial capital transfers from fathers to children.

Another potential mechanism which has been mentioned but not formalized in a theoretical economic framework is the intergenerational transmission of preferences and attitudes. For example risk averse fathers will be less likely to begin an entrepreneurial activity and by transmitting their risk aversion to their child, he/she will also have lower probability of becoming an entrepreneur (see Dunn and Hotz-Eakin 2000, Fairlie 2002).

A final mechanism of transmission is the nepotism, which may affect the outcomes of school admission exams and licensing exams, and ultimately the probability of beginning specific occupations.[3] It is generally difficult to distinguish the roles of nepotism and of human capital transfers in the intergenerational occupational transmission. This is because the intergenerational transmission of knowledge and the father's work network may increase intergenerational mobility without implying favoritism. It is perhaps easier to identify the contribution of nepotism when looking at admission and licensing exams for which the probability of success should be independent of the father's occupation once controlled for the child's ability. In this paper we identify the effect of nepotism on the probability of obtaining a professional licensing in Italy.

[3]See Lentz and Laband (1989) and Arulampalam et al (2005) for the effect of nepotism in school admission, Pérez-González (2006) and Bennedsen et al (2007) for the effect of nepotism in the chief executive officer (CEO) successions, and Basso and Labartino (2011) for the effect of nepotism in the starting age of licensed professions.

Liberal professions in Italy have been traditionally heavily regulated and require to pass a professional licensing exam (see Paterson et al 2003, Catania and Monti 2011 and Pellizzari and Pica 2011). The licensing is usually introduced to increase the quality of the professional services and reduce the uncertainty of the consumers on the quality. Nevertheless, it has been recognized that there can be also negative effects of professional licensing, in particular an increase in the price of the services, a reduction of competition and a possible quality worsening (see Maurizi 1974 and Kleiner 2000). By focusing on the intergenerational transmission of liberal professions, we examine another potential negative effect which is an increase in the transmission of liberal professions from fathers to children caused by nepotism rather than better work abilities. This may result in a reduction of the quality of the professional services, which is opposite to the outcome intended by the introduction of licensing.

Italian licensing examinations have been often accused of favoritism toward children of liberal professionals, but the empirical evidence is mostly anecdotal or based on statistical analysis which cannot adequately control for the intergenerational transmission of financial resources, formal and informal human capital and preferences (see Basso and Labartino 2011). The most intriguing evidence on the effect of fathers on children entry into a liberal profession is given by Basso and Pellizzari (2011).[4] Using local administrative registers of professionals in Italy, they find a negative relationship between the age when people start a lawyer profession and the frequency of their family name in the local register. Since the frequency of their surname is likely to indicate family connections, the negative relation might suggest a potential effect of nepotism on the probability of passing a licensing exam. The presence of nepotism is confirmed by a comparison of the relationship between starting age of lawyer professions and frequency of the family names before and after the introduction of a reform aimed at reducing biases in the marking of the licensing exams. The association between starting age and surname frequency decreases after the introduction of the reform, indicating a potential reduction in the nepotism effect.

[4]The main results are also summarized in Basso and Labartino (2011).

3 Institutional background

3.1 Professional licensing in Italy

In the following we provide a brief description of the institutional context of licensed occupations in Italy, but for more details we refer the reader to Catania and Monti (2011).

3.2 The Italian tertiary education system

In Italy all students with a high school diploma (i.e. an upper secondary qualification which is usually completed at age 19) can enrol in a university. High school diplomas can be academic (licei classici and licei scientifici) or vocational (istituti tecnici and istituti professionali) and both types of diplomas give access to any university degree.

The Italian university system traditionally includes only academic degrees with little vocational or professional purposes and with an official duration which varies between 4 and 6 years. This university system has been changed in 2001 by a reform that split the long degrees into two levels, an initial three-year degree called *Laurea Breve* (Honour Degree) followed by a two-year degree called *Laurea Magistralis* (Master Degree). Our sample includes only graduates in 2002 and 2003 who are unaffected by the 2001 reform because they all began their degree in the pre-reform period and in the following we give some more details on the Italian university system during this pre-reform period.

Most of the Italian Universities are public and, with the exceptions of few types of faculties (e.g. Medical Schools and Architecture) there are no university admission exams. This is because progression from one year to another is generally not conditional on past performance, and, if students fail an exam or are unhappy with the mark obtained, they can re-sit the exam several times. Consequently, students usually take much longer than the minimum official period to complete their degree. Four-year degrees are usually completed

in an average of 7.5 years, with only one in eight students completing within 4 years (ISTAT 2000).

Financial aid for university students is limited,[5] but public university fees are very low and the universities are mainly state funded. Nevertheless, there is a clear socio-economic gradient in university enrolment. Children with low income or low educated parents usually choose a secondary qualification which is vocational and are unlikely to enrol in a university (Checchi et al 1999). This socio-economic gap in the university enrolment is in part caused by the lack of vocational degrees and it is one of the main factors explaining the strong intergenerational correlation in educational attainment in Italy (Hanushek and Wößmann 2006; Brunello and Checchi 2007; Checchi and Flabbi 2006).

4 Data

In our empirical application we use AlmaLaurea data. AlmaLaurea is a consortium of Italian Universities whose aim is providing employers with information on graduates. From 1994 onward it has been running surveys for each cohort of graduates from the universities belonging to the consortium. Graduates are interviewed at the completion of their degree ("Profilo dei Laureati" survey), and then they are followed and interviewed again after 1, 3 and 5 years from the degree ("Condizione Occupazionale dei Laureati" survey). All interviews are computer assisted telephone interviews administered by trained interviewers.

Information from the four interviews is matched with students' details contained in the universities' administrative data registers, so that for each cohort of graduates AlmaLaurea is able to provide details on age, sex, area of residence, family background (e.g. parents' occupation and education), educational choices and test scores pre and during university, labour market status during and after the university, and occupational characteristics and wage after the degree.

[5] In 2000 only 12% of students received a public university grant (Fondazione RUI and Università di Camerino 2002).

The initial survey at the completion of the degree covers almost the whole population of new graduates from the Universities belonging to the AlmaLaurea consortium. The response rates in these initial surveys are usually well above 80%. Looking at the interviews at 5 years after the degree the responding people still represent more than 80% of the population of graduates who answered to the initial interviews.

4.1 Samples definitions

Our main sample is given by all graduates in 2002 and 2003 and interviewed 5 years after the degree, i.e. in 2007 and 2008. We include all universities and departments belonging to the Consortium in either 2002 or 2003 except for Sport Science and Medical Departments and the IULM (Istituto Universitario di Lingue Moderne).[6] The universities included in our sample of graduates are the following 22: University of Bologna, Cassino, Catania, Chieti, Ferrara, Firenze, Genova, Messina, Modena and Reggio Emilia, Molise, Padova, Parma, Piemonte Orientale, Roma LUMSA, Sassari, Siena, Torino Politecnico, Torino, Trento, Trieste, Udine, and Venezia Architecture. We drop from our sample all students that are older than 40 at the completion of their degree and the few ones that were resident in a foreign country or with a foreign high school diploma before beginning university.

Our final sample of graduates, which we call main sample, includes 24,456 people. We also use three subsamples of this main sample of graduates which we call

1. the sample of graduates with access to liberal professions (16,335 people), i.e. the subsample of graduates with degrees which allow them to obtain a professional licensing and to begin a liberal profession;

[6] We exclude students graduating in Sport Science because of the very small sample size. Medical schools are excluded because, contrary to all other departments, they have a very selective admission exam and almost all medical graduates end up obtaining professional licensing. Finally, the IULM is dropped from the sample because it is the only private university and has a high incidence of missing cases for some of the variables in 2002.

2. the sample of graduates with a period of practice (7,579 people), i.e. the subsample of graduates with access to liberal professions who completed a period of compulsory practice (within 5 years from graduation) which is required for some liberal professions before obtaining a licensing;[7]

3. the sample of graduates with professional licensing (9,558 people), i.e. the subsample of the graduates with access to liberal professions which actually obtained a professional licensing within 5 years from the degree (either with or without a compulsory practice period).

4.2 Variables definitions

4.2.1 Dependent Variables

We consider three dependent variables that are three dummy variables taking value 1 respectively for graduates who chose a degree with access to liberal professions, who obtained a professional licensing and who began a liberal profession. Degrees for which more than 3% of the graduates obtain a professional licensing within 5 years are defined as degrees giving access to liberal professions. These degrees are Agriculture, Pharmacy, Architecture, Engineer, Law, Psychology, Geo-Biology and Economics. The degrees with no access to a liberal profession are Language and Linguistics, Modern Literature and Philosophy, Education, Political Science, Mathematics and Physics. We say that an individual obtains a professional licensing if he/she is successful in passing a professional licensing exam (state exam). An individual is defined to have begun a liberal profession if he/she reports to be a liberal professional in the interview administered 5 years after his/her graduation. Summary statistics using the main sample are reported in top panel of Table 1.

[7]Liberal professions considered in our sample for which a period of practice is compulsory are architects, accountants, pharmacists, psychologists, lawyers and notaries. In other words degrees whose access to a liberal profession require a period of practice are Architecture, Economics, Pharmacy, Psychology and Law.

4.2.2 Explanatory Variables

The explanatory variables used in our analysis include observable characteristics at the start and at the completion of the university degree.

The characteristics observed at the start of the university are:

- gender,
- age at the start of university and its square term,
- high school grade, i.e. the high school final mark which ranges between 36 and 60,
- high school type, i.e. a dummy variable taking value 1 for vocational high schools (istituti tecnici and istituti professionali) and 0 for academic high schools (licei classici and licei scientifici),
- area of residence in Southern Italy, which is given by a dummy variable taking value 1 for individuals living in the Southern regions and the two mains Islands (Campania, Apulia, Calabria, Abruzzo, Basilicata, Molise, Sardinia and Sicily) and 0 for individuals living in the Northern and Central regions (Aosta Valley, Piedmont, Liguria, Lombardy, Veneto, Friuli Venezia Giulia, Trentino Alto Adige, Emilia-Romagna,Tuscany, Lazio, Marche, Umbria),[8]
- father's occupation, i.e. a set of dummy variables to distinguish between fathers who are liberal professionals, managers, entrepreneurs, own-account workers, non-manual workers and blue collars.[9]

Entrepreneurs, own-account workers and liberal professionals are self-employed; whereas blue collars, non-manual workers and managers are employees. Both own-account workers and

[8]Southern regions, Sicily and Sardinia are the regions with the least favorable employment conditions in Italy and this could have effects on the decision to enrol in one of the degrees which give access to a liberal profession.

[9]For fathers who are retired, unemployed or dead we consider their last occupation.

entrepreneurs work on their own account, but, while entrepreneurs engage one or more employees on a regular basis, own-account workers do not usually engage employees. Liberal professionals are self-employed who provide a public service which requires specific intellectual skills and an official licensing. Blue collars include unskilled and semi-skilled manual workers. Non-manual workers include technicians, teachers, clerical workers and lower supervisors. Managers include higher managerial occupations such as bank directors, head teachers, university professors and chief physicians.

The characteristics we observe at the completion of the university are:

- a set of dummy variables for the type of degree;
- a dummy for having graduated from a South university (Campania, Apulia, Calabria, Abruzzo, Basilicata, Molise, Sardinia and Sicily);
- the final university grade standardized at department level by using all the observations available in the main sample;[10]
- the interaction term between the dummy for Southern university and the standardized university final grade;
- a set of dummy variables for having graduated with 1, 2, 3, 4 and 5 or more years of delay, where the delay is computed as additional number of years spent to get a degree beyond the minimum period;
- having worked during university;
- having a liberal professional father with the same degree;
- having a preference for jobs with high security;
- having a preference for jobs with independence/autonomy.

[10]The unstandardized final degree ranges between 73 and 111 and its mean and standard deviation are reported in Table 1.

To measure the graduates' preferences for jobs with high degree of autonomy and independence and for jobs with high security, all graduates, at the completion of university, are asked the following two questions: "How much important is to have high stability/security in the job you are looking for?" and "How much important is independence/autonomy in the job you are looking for?" The answers are reported in a 5-point scale, where 1 means "not at all important" and 5 means "extremely important". We use these responses to derive the two dummy variables for having a preference for jobs with high security and for jobs with independence and autonomy, each one taking value 1 if the corresponding answer is greater than 3 and 0 otherwise.

Tables 1 and 2 summarize the explanatory variables of graduates and their fathers, respectively. We report mean and standard deviation for each explanatory variable using our main sample of 12,456 graduates matched with their fathers. Results are very similar when using the subsamples of graduates with access to liberal professions, of graduates with a period of practice and of graduates with professional licensing. In our main sample, average high school final grade is about 49 (with a minimum of 36 and a maximum of 60) and only one in three individuals has a vocational diploma. The age at matriculation varies between 18 and 25, with a mean of 19, and only 4.6% of the individuals complete their degree within the minimum required period. The majority of individuals chooses a degree programme with access to liberal professions (about 67%). 46.5% of the graduates were resident in the South of Italy before starting the university, but only 24.8% obtain their degree in a university located in the South of Italy. 64.5% of people in our main sample has some work experiences during university, and 73.1% and 62.8% care a lot about the stability and independence of the job they are looking for after the completion of university. More than 50% of the fathers are either blue collars or non-manual workers (19.2% and 31.6%, respectively), while 9.6% are liberal professionals, whereof 1.6% with the same degree.

5 Empirical Results

5.1 Intergenerational mobility in liberal professions

We begin by reporting the probability of a child of being a liberal professional when interviewed 5 years after graduation[11] conditioning on the father's occupation,

$$Pr(Y^c = 1|D^f = j) \quad j = 1, ..., 6, \tag{1}$$

where Y^c is a dummy variable taking value 1 if a child becomes a liberal professional, and D^f is a categorical variable denoting his/her father's occupation, which takes value 1 for liberal professionals, 2 for managers, 3 for entrepreneurs, 4 for own-account workers, 5 for non-manual workers and 6 for blue-collar workers. In the top panel of Table 3 we report these conditional probabilities for the whole sample of graduates (first column) and then separately for men and women (second and third columns). The probability of a child of being a liberal professional given that his/her father is a liberal professional is higher than the corresponding probabilities conditional on other types of father's occupation. In the bottom panel of Table 3 we also report the odds ratios, i.e. the ratio of the odds of being a liberal professional if one's father has occupation j to the odds of it if one's father has a different occupation,

$$\frac{Pr(Y^c = 1, D^f = j)Pr(Y^c = 0, D^f \neq j)}{Pr(Y^c = 1, D^f \neq j)Pr(Y^c = 0, D^f = j)}. \tag{2}$$

The odds ratio measures the so called intergenerational exchange mobility, which is unaffected by changes in the frequency of liberal professionals from the fathers to the children generation. It measures the association between being a liberal professional and having a father with occupation j and takes values higher (lower) than 1 when the association is positive (negative). Considering the whole sample of graduates, we find that the odds to be a liberal professional if one's father is a liberal professional is about twice the corresponding odds if one's father is not a liberal professional, and this seems to hold for both men and women.

[11] For brevity in the following we will stop to specify "5 years after graduation".

Table 4 reports the probability of a child of practicing the same type of liberal profession than his/her father conditioning on the father's liberal profession, i.e. the intergenerational mobility in specific liberal professions. The transmission seems very high and the odds ratios range from 2.5 for engineers to 26.9 for pharmacists. The transmission from fathers to daughters seems stronger than the transmission from fathers to sons for psychologists, pharmacists and architects, while it is generally weaker or similar for the remaining types of liberal professions (lawyers and notaries, accountants, and engineers).

A strong transmission of liberal professions from fathers to children can be a signal of inequality in opportunities; but stating whether this intergenerational association is really a signal of an unfair society requires to assess and distinguish between different mediating channels of the transmission from fathers to children. Focusing on our sample of children who are graduates, we can consider three sequential steps that a child has to take if he/she wants to become a liberal professional. These steps are choosing a degree which can give access to a liberal profession, passing a licensing exam, and eventually beginning a liberal profession. Therefore we can decompose the probability of a child of being a liberal professional given his father's occupation in the product of three probabilities: (i) the probability of choosing a degree which can lead to a liberal profession; (ii) the probability of passing a licensing exam conditional on having chosen a degree which can lead to a liberal profession, (iii) the probability of beginning a liberal profession conditional on having obtained a professional licensing.

Let Y_1^c, Y_2^c and Y_3^c be three dummy variables taking value 1 respectively if the child chooses a degree which can lead to a liberal profession, if he/she obtains a licensing exam and if he/she begins a liberal profession. Then we can analytically decompose the probability of a child to become a liberal professional given that his/her father occupation is j in the following way

$$\begin{aligned} Pr(Y^c = 1|D^f = j) = Pr(Y_1^c = 1|D^f = j) \\ \cdot Pr(Y_2^c = 1|D^f = j, Y_1^c = 1) \cdot Pr(Y_3^c = 1|D_i^f = j, Y_2^c = 1). \end{aligned} \tag{3}$$

In Tables 5, 6 and 7 we report the three right hand side probabilities conditional on 6 types of father's occupation, $j = 1, ...6$. For the probability of obtaining a licensing and the probability of beginning a liberal profession we also report two additional probabilities which are conditioning on having a father who is liberal professional in the same and in a different field, i.e. with and without the same type of university degree than his child (see rows two and three in Tables 6 and 7).

Table 5 suggests that the effect of having a father who is a liberal professional on the university choice is small and it is comparable with the effect of having a father who is manager, entrepreneur or own-account worker. There is just a 4% (7%) points differences in the probability of choosing a degree which gives access to a liberal profession between sons (daughters) of blue collars and sons (daughters) of liberal professionals. Table 5 also shows that there are big differences between men and women. Women seem much less likely to choose a degree which gives access to a liberal profession with a difference of at least 20% points with respect to men. To take account of this low probability for women, we also report the odds ratios in the bottom panel of Table 5. These odds ratios measure the association between having a father in occupation j and choosing a degree which can give access to a liberal profession, and it allows to compare this measure for daughters and sons taking account of the much lower daughters' probability of choosing a degree with access to liberal professions. Looking at these odds ratios, we find that the transmission of preferences for degrees with access to liberal professions does not strongly depend on the father's occupation and it is very similar across gender.

When looking at the probability of passing a licensing exam conditional on having a degree, the effect of having a liberal professional father seems larger than the effect of any other type of father's occupation and results are comparable between daughters and sons (see Table 6). Having a father who is a liberal professional rather than a blue collar implies an increase in the probability of obtaining a licensing of 10.7 percentage points for the sample of daughters and sons together. This father's effect becomes even larger (18.5) when considering

fathers who are liberal professionals with the same type of degree as their child, i.e. with the same field of specialization. While the transmission from fathers to children who work in the same field is likely to be in part explained by the transfer of specific knowledge and abilities in the field, the direct transfer of human capital from parents to children is unlikely to occur when fathers and children are specialized in different fields. The importance of having a liberal professional father in the same field is evident also when looking at the odds ratios reported in the bottom panel of Table 6.

Prerequisites for some types of licensing exam are to have a specific degree as well as to have spent a period of practice supervised by a recognized liberal professional. This implies that a father can affect his child's probability of obtaining a licensing by improving his/her chances of getting accepted for a period of practice (through for example networking) and by financially supporting him/her during this practice period that is usually poorly paid. To control for these two channels of transmission (networking and financial resources transfer), we also report the probability of passing a licensing conditional on having already completed the required period of practice (see Table 8). This new probability is substantially higher than the corresponding probability unconditional to the period of practice and differences in this probability by father's occupation are slightly smaller. Having a father who is a liberal professional rather than a blue collar gives an advantage of 8.2 percentage points, when looking at the sample of daughters and sons together. Liberal professional fathers with the same degree as their child have a similar effect than liberal professional fathers without a same degree. This seems to suggest that there is not a direct intergenerational transmission of abilities useful to pass the licensing exam. Nevertheless, the analysis separate by gender suggests that there is a small advantage for sons of liberal professional fathers in the same field but not for daughters. Looking at the odds ratios reported in the bottom panel of Table 8, we get similar conclusions.

We get even a larger effect of having a liberal professional father on the probability of beginning a liberal profession conditional on having passed a licensing exam (see Table

7). This effect amplifies if the father is a liberal professional with the same type of degree regardless of the child's gender. While the odds to choose a degree with access to liberal professions and to obtain a licensing are similar across gender (see Tables 5, 6 and 8), the odds to begin a liberal profession differ across gender and the transmission of the liberal profession from fathers to sons is stronger than from fathers to daughters.

The large effect of having a liberal professional father on the conditional probability of obtaining a licensing and of beginning a liberal profession may be explained by the transmission of human capital, preferences, financial resources, but possibly also through networking or nepotism. In the following we investigate better these different channels of transmission by estimating probability models for the three sequential probabilities in the right hand side of equation (3) and controlling for a set of explanatory variables.

5.2 Modelling the probability of choosing a degree which can lead to a liberal profession

We model the probability of choosing a degree which can lead to a liberal profession considering a probit model and using explanatory variables observed when individual started the university. These variables are a dummy for women (only in the model which pool together men and women), a dummy for vocational high school diploma, high school final mark, age and age square when started university, dummy for being resident in the South of Italy, and a set of dummy variables for the father's occupation (liberal professional, manager, entrepreneur, own-account worker, non-manual worker and blue collar). In Table 9 we report the marginal effect of having a father in different types of occupation and defining blue collars as reference category. Having a father who is a liberal professional has a marginal effect which is significantly higher than the one of having a father who is a non-manual worker or a blue collar worker; but there are large and significant effects also for fathers who are managers, entrepreneurs and own-account workers. This confirms the results found in Table 5 and suggests that the intergenerational transmission of preferences for degrees which give

access to a liberal profession is not limited to fathers who are liberal professionals and extend to fathers who are managers, entrepreneurs and own-account workers. Looking at differences between gender, we find that the marginal effect of having a liberal professional father is slightly higher for women than for men.

To summarize the results in Table 9, there seems to be a transmission of preferences for degrees with access to liberal professions from fathers to children for any of the father's occupations except for non-manual worker and blue collar. Since degrees with access to liberal professions usually involve periods of post-graduate training or practice which are unpaid or very low paid, they might be less affordable for children of non-manual and blue collar workers.

5.3 Modelling the probability of obtaining a licensing

We explain the probability of obtaining a licensing considering a probit model and controlling for abilities acquired through a formal education (final mark at the end of secondary school and of the university,[12] dummy variables for different level of delays in the completion of the university degree, dummy for vocational high school, age and age square when started university, dummy for working during the university, type of degree, dummy for South university, interaction between university final mark and dummy for South University), preferences for jobs with high degree of autonomy and independence and for jobs with high security, a gender dummy (only in the model which pool together men and women) and the type of occupation of the father (blue collar, which is the reference category, non-manual worker, manager, entrepreneurs, self-employed, liberal professional and liberal professional with the same degree as his child).

After controlling for abilities acquired through a formal education and job preferences, the effect of having a professional father can be explained by the direct transmission of job specific skills and knowledge, the transfer of financial resources and the effect of nepotism

[12]The university final mark is standardized, see Section Sec:Data for more details

and networking. This is because our probability of obtaining a licensing is computed for a dummy variable which takes value 0 for people who either fail the licensing exam or do not attempt it. People who do not attempt the licensing exam are individuals who either are not interested to become a liberal professional or cannot yet take a licensing exam because they have not completed the compulsory period of practice required by some specific liberal professions. This implies that the fathers can affect the probability of obtaining a licensing not only through human capital transfers but also by supporting the child during the period of practice and/or the period during which the child is preparing to pass the licensing exam (financial transfer) and by improving the chance of his child to get accepted for a period of practice (networking effect).

By assuming that the direct intergenerational transmission of human capital can work only when the father is a liberal professional with the same university degree as his child, the difference between the marginal effect of having a father who is a professional in the same field and the one of having a father who is liberal professional in a different field is explained by the direct transmission of human capital but also by a potential bigger effect of nepotism and networking of fathers who specialized in the same field. Therefore, this difference represents an upper bound on the effect of transmission of job specific skills and knowledge. Notice that we assume that the intergenerational transmission of financial resources from fathers who are liberal professionals in the same field be similar to the transmission of financial resources from fathers who are liberal professionals in a different field.

We also compute a lower bound on the effect of nepotism and networking of liberal professional fathers specialized in the same field as their children. Assuming that (i) there are no differences in the intergenerational transfer of financial resources between fathers who are liberal professionals in a different field and fathers who are managers, (ii) the effect of nepotism and networking be higher for fathers who are liberal professionals in the same field rather than in a different field, and (iii) managers cannot affect the probability of their child to obtain a professional licensing through nepotism and networking; the difference in the

marginal effect of having a father who is a liberal professional in a different field and the one of having a father who is a manager provides a lower bound on the effect of nepotism and networking for children's of liberal professionals with the same degree.

Using the marginal effects reported in Table 10, we can compute an upper bound on the effect of direct transmission of human capital from fathers who are liberal professionals with the same degree as their child, which we report in Table 11 top panel. This upper bound is of 14.0% points for the pooled sample of male and female graduates and 15.4% and 12.4% for the samples of male and female graduates. In Table 11 we also report the lower bound on the effect of nepotism and networking for fathers who are liberal professionals in the same field, which is 5.2% points for the pooled sample and 4.0% and 6.4% for the samples of men and women. If we assume that the transmission of direct human capital does not affect the chance of children of obtaining a licensing after having controlled extensively for abilities acquired through formal education, then the effect of nepotism and networking for children of liberal professionals in the same field would be of 19.2% points for the pooled sample and 19.4% and 18.8% points for male and female graduates (these are differences between the marginal effect of liberal professional fathers with the same degree as their child and the marginal effect of fathers who are managers). In other words, the effect of nepotism and networking is at least of 5.2% (4.0% and 6.4%) and at most of 19.2% (19.4% and 18.8%) points for the sample of sons and daughters together (for the sample of sons and daughters separately).

In Table 8 we also report the marginal effects of the father's occupation on the probability of obtaining a licensing conditional on having already completed a compulsory period of practice using again a probit model with the same set of explanatory variables described above. In principle, all graduates with a compulsory period of practice aim at getting a licensing and take a licensing exam. Therefore, the new model explains the probability to pass a licensing exam for people who actually take the exam. This probability should be unrelated to father's financial resources and networking but can be related to the direct

transmission of job specific abilities and nepotism. Therefore the lower bound on the effect of nepotism for fathers who are liberal professionals with the same degree is directly given by the first row in Table 8 and it is equal to 6.1% points for the pooled sample, and 7.1% and 5.8% points for the samples of male and female graduates; whereas the upper bound on the effect of direct intergenerational transmission of job-specific skills is 3.8% points for the pooled sample and 5.8% and 1.8% for the samples of male and females graduates (see Table 11, middle panel). These results imply that the effect of nepotism on the probability of passing a licensing exam is bigger than the effect of the direct transmission of job specific skills for both male and female graduates. This seems to suggest a licensing exam system which is not completely meritocratic and favors children of liberal professionals, and this could ultimately lead to a reduction of the quality of the professional services rather than an increase as intended by the introduction of the licensing exams.

A puzzling result is that having a father who is an entrepreneur seems also to have a positive effect on the probability to pass a licensing exam and this makes us wonder whether the nepotism effect extends to children of entrepreneurs as well.

5.4 Modelling the probability of beginning a liberal profession

As for the probability of obtaining a licensing, we model the probability of beginning a liberal profession (given that the licensing exam has been passed) considering a probit model and controlling for abilities acquired through formal education, preferences for jobs with high degree of autonomy and independence and for jobs with high security, a gender dummy (only in the model which pool together men and women) and the type of occupation of the father. Beside the transmission of preferences and the indirect transfer of formal human capital, a father who is liberal professional can affect the probability of his child to begin a liberal profession by (i) the direct transmission of job-specific knowledge and skills which can reduce the entry cost, (ii) the networking and nepotism which can help the child in setting

a portfolio of customers and in increasing potential early profits, (iii) the direct financial support.

We report the marginal effects of the father's occupation in Table 13. We find that there is positive effect not only of fathers who are liberal professionals but also of fathers who are entrepreneurs and own-account workers. Nevertheless, the largest effect is observed for liberal professional fathers and especially if they have the same degree as their child. There are quite large differences in the effect of father's occupation between men and women and generally having a liberal professional father has a much smaller effect on daughters than on sons. These results are in line with the odds ratios of beginning a liberal profession observed in Table 7.

Adopting the same approach used in last section, we find that the upper bounds on the effect of direct transmission of job-specific skills and knowledge are 12.2%, 11.4% and 10.1% points respectively for the pooled sample of daughters and sons and for the separate samples of sons and daughters, while the corresponding lower bounds on the effect of nepotism and networking are 9.8%, 15.4% and 5.0% (see Table 11).

For sons the effect of nepotism and networking is larger than the one of direct transmission of job-specific skills and knowledge, which seems to suggest a potential failure of meritocracy. For women, the effect of nepotism seems smaller and suggests perhaps a fairer selection process into the liberal profession.

Having a liberal professional father has a larger effect on the probability of beginning a liberal profession than on the probabilities of choosing a degree with access to a liberal profession and of passing a licensing exam.

6 Conclusions

In this paper we study the mechanisms of transmission of liberal professions from fathers to children and we examine whether the intergenerational transmission of liberal professions is fair, i.e. whether it is caused by the intergenerational transmission of human capital rather than nepotism.

Using AlmaLaurea data to estimate and explain the intergenerational transmission of liberal professions from fathers to children in Italy, we find that there is a very strong intergenerational transmission. The odds of being a liberal professional for children of liberal professionals is twice the corresponding odds for children of non-professionals for both daughters and sons. Furthermore this odds ratio amplifies a lot when focusing on intergenerational transmission of specific types of liberal professions such as pharmacists, psychologists and architects.

The effect of having a liberal professional father on the choice of a university degree which gives access to a liberal profession is not different from the effect of having a father who is manager, entrepreneur or own-account worker. On the contrary, liberal professional fathers have a much larger and positive effect on the probability of passing a licensing exam (conditional on having chosen a degree that gives access to a liberal profession) and on the probability of beginning a liberal profession (conditional on having passed a licensing exam) than any other type of father's occupation.

To check whether this large advantage given by a liberal professional father is fair, we identify an upper bound on the effect of the direct transmission of job specific skills and knowledge and a lower bound on the effect of nepotism and networking. We find that the effect of nepotism on the probability of passing a professional licensing (conditioning on having had a compulsory period of practice) is at least of 6-7% points. The effect of nepotism on the probability to pass a licensing exam is higher than the effect of the direct transmission of human capital and this seems a signal of failure of meritocracy of the licensing

exam system. There seems to be some lack of meritocracy also for the selection process of new liberal professionals, the effect of nepotism and networking on the probability of beginning a liberal profession (conditioning on having obtained a licensing) is at least of 5.0% points for women and 15.4% for men.

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Table 1: Summary statistics of the variables for children

Variable	Mean	Std. Dev.
Child Dependent Variables		
Degrees with access to a liberal profession	0.668	
Obtaining a licensing exam	0.406	
Practicing a liberal profession	0.130	
Child Explanatory Variables		
Female	0.600	
Age at the start of university	19.184	0.864
Age squared at the start of university	368.753	35.497
Vocational high school	0.336	
High school final grade	48.82	7.158
University final grade	102.816	7.432
Area of residence in Southern regions	0.465	
Standardized university final grade	0.037	0.983
University located in Southern regions	0.248	
Standardized university final grade*University located in the South	0.036	0.496
Having worked during university	0.645	
Agricultural	0.031	
Pharmacy	0.047	
Architecture	0.049	
Engineer	0.126	
Law	0.145	
Economics	0.176	
Psychology	0.048	
Geo-Biology	0.046	
Education	0.057	
Language and Linguistics	0.059	
Modern Literature and Philosophy	0.101	
Political Science	0.084	
Mathematics and Physics	0.031	
Graduation within the minimum period	0.046	
Graduation with 1 year of delay	0.196	
Graduation with 2 years of delay	0.210	
Graduation with 3 years of delay	0.167	
Graduation with 4 years of delay	0.122	
Graduation with 5 years or more of delay	0.259	
High preferences for job security	0.731	
High preferences for job independence	0.628	
Number of observations	24,456	

Table 2: Summary statistics of the explanatory variables for fathers

Variable	Mean
Father's Variables	
Liberal professional	0.096
Liberal professional different degree	0.084
Liberal professional same degree	0.012
Manager	0.180
Entrepreneur	0.073
Own-account worker	0.144
Non-manual worker	0.316
Blue collar	0.192
Number of observations	24,456

Table 3: Associations between father's occupation and child's probability of being a liberal professional

	Probability of a child of being a liberal professional		
Father's occupation	All graduates	Male graduates	Female graduates
Liberal professional	21.4	27.5	17.1
Manager	13.6	15.1	12.3
Entrepreneur	16.1	19.2	13.7
Own-account worker	13.6	17.0	11.8
Non-manual worker	11.2	13.7	9.6
Blue collar	9.7	12.4	8.7
	Odds ratios of being a liberal professional		
Father's occupation	All graduates	Male graduates	Female graduates
Liberal professional	2.0	2.2	1.8
Manager	1.1	0.9	1.2
Entrepreneur	1.3	1.3	1.3
Own-account worker	1.1	1.1	1.1
Non-manual worker	0.8	0.8	0.8
Blue collar	0.7	0.7	0.7
No. of observations	24,456	9,788	14,668

Notes: The sample used is the main sample of graduates.

Table 4: Associations between father's type of liberal profession and child's probability of being a liberal professional in the same field

	Probability of a child of being a liberal professional in the same field		
Father's occupation	All graduates	Male graduates	Female graduates
Lawyers and notaries	16.3	18.5	14.6
Accountants	4.8	7.5	3.0
Pharmacists	3.1	3.4	2.9
Psychologists	7.1	0.0	11.1
Architects	15.9	16.4	15.4
Engineers	4.8	8.3	1.5
	Odds ratios of being a liberal professional in the same field		
Father's occupation	All graduates	Male graduates	Female graduates
Lawyers and notaries	4.2	4.9	3.7
Accountants	4.6	5.1	4.0
Pharmacists	26.9	19.6	32.9
Psychologists	7.0	0.0	7.8
Architects	7.4	6.0	8.7
Engineers	2.5	2.2	2.4
No. of observations	24,456	9,788	14,668

Notes: Lawyers and notaries = liberal professionals with degree in Law, Accountants = liberal professionals with degree in Economics, Pharmacists = liberal professional with degree in Pharmacy, Psychologists = liberal professionals with degree in Psychology, Architects = liberal professional with degree in Architecture and Engineers=liberal professional with degree in Engineer. The sample used is the main sample of graduates.

Table 5: Probability of choosing a degree which gives access to a liberal profession

	Probability of choosing a degree with access to liberal professions		
Father's occupation	All graduates	Male graduates	Female graduates
Liberal professional	69.8	82.0	61.0
Manager	68.6	80.3	58.9
Entrepreneur	73.4	86.2	64.3
Own-account worker	67.9	81.3	60.7
Non-manual worker	65.3	78.1	56.8
Blue collar	62.8	78.0	53.6
	Odds ratios of choosing a degree with access to liberal professions		
Father's occupation	All graduates	Male graduates	Female graduates
Liberal professional	1.2	1.2	1.2
Manager	1.1	1.0	1.0
Entrepreneur	1.4	1.6	1.3
Own-account worker	1.1	1.1	1.1
Non-manual worker	0.9	0.9	0.9
Blue collar	0.8	0.9	0.8
No. of observations	24,456	9,788	14,668

Notes: The sample used is the main sample of graduates.

Table 6: Probability of obtaining a licensing conditional on having a degree which gives access to a liberal profession

	Probability of obtaining a licensing		
Father's occupation	All graduates	Male graduates	Female graduates
Liberal professional	67.4	67.2	67.7
Liberal professional different degree	65.7	64.8	66.4
Liberal professional same degree	75.2	76.5	73.8
Manager	59.7	60.1	59.2
Entrepreneur	54.8	54.9	54.4
Own-account worker	55.8	59.8	52.9
Non-manual worker	58.8	60.0	57.7
Blue collar	56.7	61.9	52.0
	Odds ratios of obtaining a licensing		
Father's occupation	All graduates	Male graduates	Female graduates
Liberal professional	1.5	1.4	1.7
Liberal professional different degree	1.4	1.2	1.6
Liberal professional same degree	2.2	2.1	2.2
Manager	1.0	1.0	1.1
Entrepreneur	0.8	0.8	0.9
Own-account worker	0.9	1.0	0.8
Non-manual worker	1.0	1.0	1.0
Blue collar	0.9	1.1	0.8
No. of observations	16,335	7,822	8,513

Notes: The sample used is the sample of graduates with access to liberal professions.

Table 7: Probability of beginning a liberal profession conditional on passing a licensing exam

	Probability of beginning a liberal profession		
Father's occupation	All graduates	Male graduates	Female graduates
Liberal professional	45.5	49.9	41.3
Liberal professional different degree	42.7	46.4	39.3
Liberal professional same degree	56.3	61.4	50.0
Manager	33.0	31.2	35.0
Entrepreneur	40.1	41.4	38.9
Own-account worker	35.5	34.5	36.3
Non-manual worker	28.7	28.7	28.7
Blue collar	26.8	25.4	28.4
	Odds ratios of beginning a liberal profession		
Father's occupation	All graduates	Male graduates	Female graduates
Liberal professional	1.8	2.3	1.5
Liberal professional different degree	1.6	1.9	1.3
Liberal professional same degree	2.7	3.4	2.1
Manager	1.0	0.9	1.1
Entrepreneur	1.4	1.5	1.3
Own-account worker	1.1	1.1	1.2
Non-manual worker	0.8	0.8	0.7
Blue collar	0.7	0.7	0.8
No. of observations	9,588	4,746	4,842

Notes: The sample used is the sample of graduates with professional licensing.

Table 8: Probability of passing a licensing exam conditional on having a degree which gives access to a liberal profession and after completing a practice period

	Probability of passing a licensing exam		
Father's occupation	All graduates	Male graduates	Female graduates
Liberal professional	74.8	71.5	77.1
Liberal professional different degree	74.8	69.7	78.0
Liberal professional same degree	74.9	75.9	73.9
Manager	69.4	66.2	71.8
Entrepreneur	68.8	64.5	71.6
Own-account worker	67.5	65.7	68.4
Non-manual worker	67.5	63.1	70.0
Blue collar	66.6	66.0	66.9
	Odds ratios of passing a licensing exam		
Father's occupation	All graduates	Male graduates	Female graduates
Liberal professional	1.4	1.4	1.5
Liberal professional different degree	1.4	1.2	1.6
Liberal professional same degree	1.4	1.7	1.2
Manager	1.0	1.0	1.1
Entrepreneur	1.0	0.9	1.1
Own-account worker	0.9	1.0	0.9
Non-manual worker	0.9	0.8	1.0
Blue collar	0.9	1.0	0.8
No. of observations	7,579	2,864	4,715

Notes: The sample used is the sample of graduates with a period of practice.

Table 9: Probit model for the probability of having chosen a degree which gives access to a liberal profession

	Marginal effect of father's occupation					
Father's occupation	All	(S.E.)	Men	(S.E.)	Women	(S.E.)
Liberal professional	0.074	(0.029)	0.052	(0.030)	0.083	(0.034)
Manager	0.052	(0.026)	0.040	(0.023)	0.057	(0.033)
Entrepreneur	0.106	(0.026)	0.086	(0.037)	0.112	(0.026)
Own-account worker	0.057	(0.015)	0.036	(0.017)	0.068	(0.016)
Non-manual worker	0.027	(0.014)	0.011	(0.017)	0.037	(0.013)
Blue collar (reference category)						
No. of observations	24,456		9,788		14,668	

Notes: Standard errors are reported in parenthesis. Beside the dummy variables for the father's occupation, the control variables include a dummy for women, vocational high school, high school final mark, age and age square when started university, and a dummy for being resident in the South of Italy. The sample used is the main sample of graduates.

Table 10: Probit model for the probability of obtaining a licensing conditional on having a degree which gives access to a liberal profession

	Marginal effect of father's occupation					
Father's occupation	All	(S.E.)	Men	(S.E.)	Women	(S.E.)
Liberal professional different degree	0.062	(0.018)	0.044	(0.027)	0.075	(0.025)
Liberal professional same degree	0.202	(0.026)	0.198	(0.033)	0.199	(0.041)
Manager	0.010	(0.015)	0.004	(0.022)	0.011	(0.022)
Entrepreneur	0.032	(0.019)	0.000	(0.028)	0.057	(0.026)
Own-account worker	0.011	(0.016)	-0.001	(0.024)	0.020	(0.021)
Non-manual worker	-0.004	(0.014)	-0.018	(0.020)	0.005	(0.019)
Blue collar (reference category)						
No. of observations	16,335		7,822		8,513	

Notes: Standard errors are reported in parenthesis. Beside the dummy variables for the father's occupation, the control variables include a dummy for women, vocational high school, high school final mark, age and age square when started university, university final mark, dummy for South university, interaction between university final mark and dummy for South University, dummy variables for different types of degree, dummy for working during the university, dummy variables for different level of delays in the completion of the university degree. The sample used is the sample of graduates with access to liberal professions.

Table 11: Upper bounds on the effect of direct human capital transfers (UB) and lower bounds on the effect of nepotism/networking (LB)

	Probability of obtaining a licensing					
	All		Men		Women	
UB on the effect of direct human capital	0.140	**	0.154	**	0.124	**
LB on the effect of nepotism/networking	0.052	**	0.040		0.064	*
	Probability of passing a licensing					
	All		Men		Women	
UB on the effect of direct human capital	0.038		0.058		0.018	
LB on the effect of nepotism/networking	0.061	**	0.071	**	0.058	+
	Probability of beginning a liberal profession					
	All		Men		Women	
UB on the effect of direct human capital	0.122	**	0.114	*	0.101	+
LB on the effect of nepotism/networking	0.098	**	0.154	**	0.050	+
No. of observations	7,579		2,864		4,658	

Notes: Notes: + p < .10, * p < .05, ** p < .01. The LBs are given by the differences between the marginal effect of having a father who is a liberal professional in a different field and the marginal effect of having a father who is a manager, except for the model for the probability of passing a licensing exam for which the LB is given directly by the marginal effect of having a liberal professional father specialized in a different field. The UBs are given by the differences between the marginal effect of a liberal professional father specialized in the same field and the one of a liberal professional father specialized in a different field. Marginal effects are from Tables 12, 12 and 13.

Table 12: Probit model for the probability of passing a licensing exam conditional on having a degree which gives access to a liberal profession and after completing a practice period

	Marginal effect of father's occupation					
Father's occupation	All	(S.E.)	Men	(S.E.)	Women	(S.E.)
Liberal professional different degree	0.061	(0.021)	0.071	(0.034)	0.058	(0.026)
Liberal professional same degree	0.099	(0.021)	0.129	(0.038)	0.076	(0.039)
Manager	0.017	(0.018)	0.035	(0.030)	0.007	(0.024)
Entrepreneur	0.053	(0.021)	0.036	(0.036)	0.063	(0.026)
Own-account worker	0.021	(0.019)	0.025	(0.034)	0.020	(0.023)
Non-manual worker	-0.002	(0.017)	-0.006	(0.029)	-0.001	(0.021)
Blue collar (reference category)						
No. of observations	7,579		2,864		4,658	

Notes: Standard errors are reported in parenthesis. Beside the dummy variables for the father's occupation, the control variables include a dummy for women, vocational high school, high school final mark, age and age square when started university, university final mark, dummy for South university, interaction between university final mark and dummy for South University, dummy variables for different types of degree, dummy for working during the university, dummy variables for different level of delays in the completion of the university degree. The sample used is the sample of graduates with a period of practice.

Table 13: Probit model for the probability of beginning a liberal profession conditional on passing a licensing exam

	Marginal effect of father's occupation					
Father's occupation	All	(S.E.)	Men	(S.E.)	Women	(S.E.)
Liberal professional different degree	0.143	(0.023)	0.198	(0.034)	0.087	(0.031)
Liberal professional same degree	0.265	(0.039)	0.312	(0.052)	0.188	(0.059)
Manager	0.045	(0.018)	0.044	(0.025)	0.037	(0.025)
Entrepreneur	0.086	(0.024)	0.112	(0.034)	0.057	(0.033)
Own-account worker	0.087	(0.019)	0.103	(0.029)	0.067	(0.026)
Non-manual worker	0.017	(0.016)	0.028	(0.023)	0.002	(0.022)
Blue collar (reference category)						
No. of observations	9,588		4,746		4,842	

Notes: Standard errors are reported in parenthesis. Beside the dummy variables for the father's occupation, the control variables include a dummy for women, vocational high school, high school final mark, age and age square when started university, university final mark, dummy for South university, interaction between university final mark and dummy for South University, dummy variables for different types of degree, dummy for working during the university, dummy variables for different level of delays in the completion of the university degree. The sample used is the sample of graduates with liberal licensing.