Knoll, Bodo; Riedel, Nadine; Schlenker, Eva

Working Paper

He's a chip off the old block: The persistency of occupational choices among generations

SOEPpapers on Multidisciplinary Panel Data Research, No. 561

Provided in Cooperation with:
German Institute for Economic Research (DIW Berlin)

Suggested Citation: Knoll, Bodo; Riedel, Nadine; Schlenker, Eva (2013) : He's a chip off the old block: The persistency of occupational choices among generations, SOEPpapers on Multidisciplinary Panel Data Research, No. 561, Deutsches Institut für Wirtschaftsforschung (DIW), Berlin

This Version is available at:
https://hdl.handle.net/10419/75400

SOEP Das Sozio-oekonomische Panel

561 2013

SOEPpapers
on Multidisciplinary Panel Data Research

SOEP – The German Socio-Economic Panel Study at DIW Berlin 561-2013

He's a chip off the old block – The persistency of occupational choices among generations

Bodo Knoll, Nadine Riedel, Eva Schlenker

DIW SOEP

SOEPpapers on Multidisciplinary Panel Data Research
at DIW Berlin

This series presents research findings based either directly on data from the German Socio-Economic Panel Study (SOEP) or using SOEP data as part of an internationally comparable data set (e.g. CNEF, ECHP, LIS, LWS, CHER/PACO). SOEP is a truly multidisciplinary household panel study covering a wide range of social and behavioral sciences: economics, sociology, psychology, survey methodology, econometrics and applied statistics, educational science, political science, public health, behavioral genetics, demography, geography, and sport science.

The decision to publish a submission in SOEPpapers is made by a board of editors chosen by the DIW Berlin to represent the wide range of disciplines covered by SOEP. There is no external referee process and papers are either accepted or rejected without revision. Papers appear in this series as works in progress and may also appear elsewhere. They often represent preliminary studies and are circulated to encourage discussion. Citation of such a paper should account for its provisional character. A revised version may be requested from the author directly.

Any opinions expressed in this series are those of the author(s) and not those of DIW Berlin. Research disseminated by DIW Berlin may include views on public policy issues, but the institute itself takes no institutional policy positions.

The SOEPpapers are available at
http://www.diw.de/soeppapers

ISSN: 1864-6689 (online)

German Socio-Economic Panel Study (SOEP)
DIW Berlin
Mohrenstrasse 58
10117 Berlin, Germany

Contact: Uta Rahmann | soeppapers@diw.de

He's a chip off the old block – The persistency of occupational choices among generations*

Bodo Knoll Nadine Riedel Eva Schlenker
Universität Hohenheim

28th May 2013

Abstract:

The purpose of this paper is to assess if parents exert an influence on the occupation choices of their children. Using data from the German Socioeconomic Panel (SOEP), we find a high persistency of occupational decisions across fathers and children using nested and conditional logit models. To separate effects related to genetic factors (nature) and parental education or role models (nurture), we determine the persistency separately for children who grew up with their biological fathers and for those who did not. Our results suggest that especially nurture plays a decisive role in explaining the choice of one's occupation.

JEL classification: J24, J62
Keywords: Occupational choice, SOEP, parental educational investment

*Corresponding author: Eva Schlenker, email: eva.schlenker@uni-hohenheim.de

1 Introduction

The purpose of this paper is to assess the determinants of occupational choice. The question is of utmost importance, as the quality of the match between individuals and occupations may affect productivity and wages as well as other socio-economic characteristics later in life. Remarkably, the analysis of occupational choice has received rather little attention in the economic literature so far. Notable exceptions are papers that investigate the impact of labour market conditions and individual characteristics, such as gender, on occupational choice (see, e.g., Robertson and Symons (1990), Drost (2002), Sookram and Strobl (2009) and Kleinjans (2010)).[1]

This study analyses the intergenerational persistence of occupational choices. In particular, we are interested in the role of the family in determining individual occupational choice. Occupational decisions are made early in life, when the individual usually still lives with his/her parents, who financially support the individual's vocational education and training. Parents may therefore influence their children's occupational decisions. Even if parents are altruistic towards their children, strategic motives may play a role. To ensure the stability of family-owned businesses, for example, parents may want their children to choose vocational training that enables them to take over the family business later in life. Moreover, the bonding between parents and children may be closer if they work in similar occupations and can share common experiences. Furthermore, parents are a natural and important source of advice and information for children looking for information regarding potential employment at the beginning of their career. Given that the search for credible information is costly and difficult, information shared by parents may bias their children's opinions and decisions. All these aspects may increase the individual's propensity to choose the same occupation as his/her parents, although it does not necessarily improve the quality of the occupational match.

To assess whether there is a link between parental occupations and the occupational choice of their children, we exploit data from the SOEP. The data set comprises rich socio-economic information on children and their parents, including detailed information on the occupational choices of both. As a first step, we analyse whether

[1] However, determinants of an individual's level of educational attainment (e.g., the years of schooling) and the socio-economic status that corresponds to an individual's occupation have received considerable attention.

occupational decisions are indeed persistent across generations. Estimating nested and conditional logit models, we find strong evidence in favour of persistence. The main empirical challenge is to disentangle effects related to nature and nurture. Nature effects suggest that children have an increased propensity to choose an occupation in the same (or similar) industry as their parents due to inherited genetic endowments and according similarities in talent or preferences for certain occupations. Nurture effects, in turn, suggest that parents may exert a direct influence on their children's occupational decision due to advice, educational elements, or serving as role models.

Our empirical strategy disentangles these two effects by determining the persistence separately for individuals who have grown up with their biological parents and individuals who have not. Our estimations suggest that the effect of biological fathers is significantly different between these groups. Individuals' biological fathers exert a strong and statistically significant effect on individuals' occupational choices if fathers have lived with the family during childhood. Otherwise, fathers have only a weak and quantitatively small influence. This finding underpins the importance of the nurture component in determining an individuals' occupational decision.

The paper is structured as follows: in section 2, we provide a theoretical motivation for our analysis and give a short review of the existing literature. In section 3, we present our data set. Section 4 describes the estimation methodology. The estimation results are presented in 5. Section 6 concludes.

2 Theory and Existing Literature

For several decades, scientists have discussed whether individuals are defined by genetic endowment or socialisation. The answer to this question is not clear-cut. With respect to nature, a person's genetic endowment may influence his/her occupational choice for several reasons. First, job requirements differ across economic sectors. Agriculture, craft, and many blue-collar jobs require some physical fitness and ability; cognitive abilities and social competencies are more important in the service sector. Genes, at least partly, influence these characteristics: according to psychological studies, the heritability of intelligence seems to be quite high (see, e.g., Bouchard (2004)). Physical strength and body height are determined by one's genetic endowment to an even greater degree.

Additionally, recent studies find that non-cognitive skills influence occupational

choice. People with high self-esteem and high self-efficacy, for example, seek more challenging occupations (see Judge and Bono (2001)), while gregarious people tend to choose jobs with more social interactions (see Krueger and Schkade (2008)). There is also some empirical evidence that "male" traits push highly educated young workers into male-dominated disciplines. Risk aversion accounts for the search for a safe job (see, e.g., DeLeire and Levy (2004), Grazier and Sloane (2008), Antecol and Cobb-Clark (2010)). Furthermore, women dislike competition more than men, which partly explains gender segregation in occupational fields (see Kleinjans (2010), Fossen (2012)). Boehm and Riedel (2012) find also that risk-averse individuals are more likely to pursue civil service, even if intrinsic motivation for these occupations is low.

With respect to nurture, families may transmit value systems from one generation to the next. People choose occupations not only to achieve high material well-being but also to enjoy high reputation in their personal environment (see Corneo and Jeanne (2009)). Parental influence on children's preference formation may be more complex. Doepke and Zilibotti (2008) argue that middle-class and upper-class families recognize different types of income and, therefore, react by imparting class-specific values to their children. Here, material incentives are the driving force of preference formation. Intergenerational social links also have positive effects on the material well-being of the family.

Past economic studies have focused on certain sectors in which productivity increasing skills and knowledge are acquired during childhood (see, e.g., Laband and Lentz (1983)). Agriculture has often been studied as an example of intergenerational persistence in occupational choices. There inheriting the family farm increases productivity in comparison to working on someone else's farm.[2] Lentz and Laband (1989, 1990) and Laband and Lentz (1992) also apply this model to children of doctors, lawyers and self-employed parents.

Another strand of literature focusses on the impact of parental social environments on children's job opportunities. Parents may help their children to find a job by using family and business contacts. Corak and Piraino (2011), for example, show that 40 % of young Canadian men have worked or currently work for an employer for whom their father also worked. The authors relate this phenomenon to the intergenerational elasticity of earnings. According to their study, the intergenerational correlation of

[2]For an overview of studies describing this effect in the agricultural sector, see Corak and Piraino (2011), p. 41.

sons' and fathers' earnings is increased by the fact that many sons work for their fathers' employers. The authors hypothesise that signalling effects may explain the increased earnings of men whose father previously worked for this employer. Bentolila et al. (2008) find empirical evidence that social relationships and family contacts have an impact on finding a new job (or the first permanent job) more quickly but at the cost of lower wages and lower worker productivity. Again, these studies are conditioned upon the individual's occupational choice and thus, abstract from the family influence on the individual's occupational decision.

Most of the literature on the impact of nature versus the impact of nurture has thus focussed on economic and educational outcomes: e.g., on the duration of schooling, earnings, or the socio-economic status of jobs. At least some part of the intergenerational correlation of education and income is found to be genetically determined. Björklund et al. (2005) distinguish nature-related and nurture-related effects by using data on different types of siblings (for example biological siblings reared together or apart, twins, and adoptive siblings) and find that siblings' shared genetic endowment significantly influences the variation in earnings. However, environmental factors that are shared by siblings also explain some of the observed differences. Using data on twins or adoptees, several studies find a causal effect of parental educational attainment on children's schooling outcomes even after accounting for potential genetic factors (see Black and Devereux (2011), p. 1511 ff. and the literature cited there). However, even conditional upon the level of educational attainment, there is a wide array of occupations an individual might pursue. The quality of the match between occupation and individual appears decisive for economic productivity and the individual's socio-economic characteristics. Our paper thus extends the existing literature in investigating the nature-related versus the nurture-related effects on the particular occupational choice of the individual, conditional upon his/her level of education.

Finally, it is important to remember that occupational decisions may also be influenced by demand-side factors, such as occupational opportunities in certain industries and fields. For example, Robertson and Symons (1990) explain the occupational choice of workers in professional, skilled, or unskilled occupations by relative income and personal tastes. They find that relative earnings have an effect on initial occupations as well as personal job preferences. Drost (2002) sheds some light on the cyclicity of student enrolment in different academic fields and on its relationship to the business cycle and unemployment.

Another strand of literature refers to gender segregation in the labour markets. Women tend to choose occupations with high entry earning levels and low growth rates over the working life. Polachek (1981) shows that typical female occupations are characterised by slowly decreasing earning potential during times taken out of the labour force (for a survey see Anker (1997)).

3 Data Set and Sample Descriptives

We use data from the SOEP, a nationally representative random sample survey covering more than 11,000 GErman households.[3] The SOEP contains detailed information regarding the family background at the individual level, as every respondent is asked to complete a biographical questionnaire. Our analysis is based on a pooled data set from 1984 to 2010. The sample comprises individuals from Western Germany who were born before the year 1985 and who have completed their education and made their first occupational decision. Our data set comprises 8,162 observations.

The variable of main interest is the occupation chosen by individuals and their parents. We use the information concerning the first job from the job biography as well as the father's occupation from the biography questionnaire. The SOEP adopts the occupational classification of the German Federal Statistical Office ("Statistisches Bundesamt") introduced in 1992 (Statistisches Bundesamt (1992)).

This hierarchical classification defines 2,287 occupations ("Berufsklassen"). The next level defines 33 "Berufsabschnitte", which group occupations according to the tasks performed by the worker or the materials used. These "Berufsabschnitte" are clustered into 6 so-called "Berufsbereiche" following the traditional concept of structural change and the three sectors: extraction of raw materials, manufacturing, and services (see Statistisches Bundesamt (1992), p. 13). We prefer this occupational classification to the international ISCO classification because more-detailed occupational groups are defined and the educational level of occupations is less emphasized in the job classification of the German Federal Statistical Office. Following the classification of the German Federal Statistical Office in general, we have merged adjacent classes including only few observations due to technical reasons. We have merged (1) miners, stone workers, and workers in ceramic and glass industries; (2) workers in wood and pa-

[3]See Wagner et al. (2007) for further details.

per manufacturing industries; and (3) workers in textile and leather industries.[4] Table 1 provides the descriptive statistics of the data. Table 2 depicts the sample statistics for the two subsamples of individuals grown up with and without their father, respectively.

– Tables 1 and 2 about here –

Our empirical analysis links information on an individual's occupational choice to the occupation of his/her biological father. We focus on the father's occupation because, in our sample period, information on the mother's occupation is frequently missing (75 %). Moreover, many mothers apparently did not participate in or participated only to a limited extent in the labour market during their offspring's childhood. Therefore, we expect the father's occupation to be more influential in guiding children's occupational choices.

The first subsample comprises individuals who lived at least half of their childhood in a family with their biological father. As we assume that occupational choices are made after the age of 16, this definition corresponds to 8 or more years with the father present. We calculate how many years the individual has spent with a single mother, with a stepfather, with other relatives, with foster parents, or in a children's home at the age of 15. If these periods total more than 7 years, we consider nurture effects to be absent or restricted and assume that the biological father's occupation does not affect the child's career by serving as an example or by shaping his/her interests, abilities, or skills. The number of individuals whose biological father was absent for more than 7 years during their childhood is rather small in our sample: 6.2 % of individuals were raised without their father[5]

Occupational information for individuals and their fathers is available in 8,162 cases. We employ two alternative definitions of when children select their fathers' occupations. A strict definition implies that the same occupation is only chosen if the child's occupation is exactly the same occupational group as his/her father's (*father's job*). According to our classification, approximately 14 % of the individuals choose the same occupation as their fathers. We find that 14.5 % of children who have grown up with their fathers choose the same occupation as their fathers. If the fathers did not live with

[4] A detailed description of the occupational classification is available in table 3 in the appendix.

[5] During our sample period (birth year of respondents before 1985) parental mortality and divorce rates were low on average. Therefore, most children were raised with both parents.

the children when children were young, this percentage drops to 10 %. Alternatively, the definition of same occupational choice implies that children work in the same or an adjacent group with respect to sector thresholds (*father's sector*). According to this definition, approximately 21 % of our observations choose the same or similar occupation as their fathers. Comparing these results, we see that children not only tend to choose the same occupation as their fathers, but also occupations in the same sector. We use also information on age, sex, education and residence to explain occupational choice. $female_i$ represents a dummy variable that takes a value of 1 if the individual is female and 0 if male. In our sample, 52 % of the individuals are female. Education is measured in years of education, as this measure is universally meaningful for all types of occupations. On average, individuals attend school for 12 years, including vocational training. The average age in our sample is approximately 60 years, with most individuals born between 1940 and 1960. The dummy variable *northern Germany*$_i$ equals 1 if an individual lives in Schleswig-Holstein, Hamburg, Bremen or Lower Saxony.

– Tables 4 and 5 about here –

Table 4 denotes the frequencies of the occupational groups in our classification. Additionally, the percentage of children with fathers in the same occupational group is presented in table 5. The relative frequencies of occupations demonstrate that occupational choices do not differ significantly between children who were raised (mainly) without their biological father and those who were raised exclusively with their biological father. Jobs in administration and the metal industry are chosen most often. Sales is also popular in our data set. However, children's transition rates differ among occupations: children are especially likely to pursue the same occupation as their fathers if the fathers work as farmers (58 %), in the masonry industry (32 %), or as housepainters (24 %). Jobs in the chemical industry and in goods issuing departments have low transmission rates (3 %).

The high rate of transmission in farming is not surprising, as bequeath motives may be important: farms are passed on to the next generation, and so both parents and children may have material incentives in the intergenerational continuity of the farm (see, e.g., Laband and Lentz (1983)). While some social classes with specific social values have worked in handcrafts, and while a tradition of small business ownership

in some occupations of the salesman category exist, no such prestige or ownership has developed in, e.g., jobs in the chemical industry.

Fathers' influence also depends on the gender of their offspring. Sons pursue the same job as or a similar job to their father's more often than daughters do. With respect to the classification of jobs, approximately 18 % of men choose a job within the same group as their fathers. This proportion is much smaller for women. Only 11 % of daughters choose an occupation in the same occupational group as their father.

4 Estimation Strategy

As we are not interested in the economic performance of the employee, i.e., his/her wages or annual income, there is no natural ordering of outcomes. Therefore, using simple ordered probit models is inadequate for our research question. In our case, the outcome of the worker's choice is, e.g., "working in the service sector" or another sector of our occupational classification. Specifying multinomial logit models is a straightforward discrete choice approach in this setting. Previous empirical studies of occupational choice have employed different versions of this empirical strategy. For example, Harper and Haq (1997) use a multinomial logit selection model to correct for panel dropouts.

One major disadvantage of multinomial logit models is that the assumption of the independence of irrelevant alternatives (IIA) must hold. Intuitively, it is difficult to justify this assumption in our setting. In our case, the IIA assumption states that the probability of becoming a doctor, given the choice between becoming either a doctor or a metal worker, is independent of whether becoming a nurse is an option. The introduction of the option "nurse" should have little impact on becoming a metal worker; however, it should reduce the probability of becoming a doctor. This choice would lead to an increase in the conditional probability of becoming a metal worker given the occupational choice between "doctor" and "metal worker".

We ran a Hausman test (not reported here) that provides weak empirical evidence that IIA does not hold. We employ two empirical strategies to account for this shortcoming: (1) Our baseline regressions employ McFadden's choice model (McFadden (1974)). McFadden's choice model is essentially equivalent to multinomial logit models, but it allows us to consider both the impact of individual characteristics and occupation-specific variables. However, it is important to remember that the condi-

tional logit model implies the assumption of IIA.

We estimate a model of the following form for different subsamples:

$$job_{ij} = \alpha_1 + \alpha_2 occ\_fath_{ij} + \mathbf{x}_i\boldsymbol{\beta} + \epsilon_{ij} \tag{1}$$

where the binary outcome variable job_{ij} indicates whether individual i has chosen occupation j,[6] occ_fath_{ij} represents a dummy variable indicating whether an individual has chosen his/her father's occupation; $\mathbf{x}_i$ is a vector of all individual specific control variables, such as age, sex, residence and education.

To disentangle nature-related and nurture-related effects, we employ this model both for the subsample of people who were raised without their biological father and for the subsample of people in "normal" family constellations with both parents. If the probability of choosing the same (or a similar) occupation differs significantly, this result indicates that there is some influence of education and parental role models during childhood. Otherwise, we cannot exclude that the intergenerational persistence of occupational choices is driven by genetic endowment only.

In order to test the hypothesis of significant differences between both subsamples, we estimate models that include both subsamples and interact the binary variable indicating the father's absence during childhood with all other independent variables. This approach is necessary for applying meaningful t-tests. We confirm the hypothesis of nurture-related effects if the estimated coefficient of the interaction term $occ\_fath_{ij} \times fatherless_i$ is significantly negative.

(2) Because more general multinomial models allow for correlated error terms, we use nested logit models as a robustness check, which are a tractable version of these models. These models were introduced as an expansion of the conditional logit model by McFadden (1978). For this purpose, occupational choice is split into two career decisions, assuming independence of alternatives in each of the nested groups.

We use a hierarchical tree structure that follows the distinction of three economic sectors: extraction of raw materials, manufacturing, and services. The job group Ia belongs to the sector "extraction of raw materials". The sector "manufactoring" includes the job groups with code II, III and, IV. Job groups with coding V belong to the sector "services". Hence, we must rely on the assumption that our nested structure in the tree is correctly specified. We have tested several hierarchical tree structures

[6]The observations show all potential occupations for each individual in the sample. Therefore, $i \times j$ observations are included.

and find that the estimation results, especially the estimated coefficient of the effect of father's job that is of most interest, are quite robust against changes in the nested structure of the tree.

5 Empirical Results

5.1 Estimation Results of CL- and NL-Regressions

5.1.1 Results of Conditional Logit Models

We run conditional logit regressions both for the subsample of people who did not live in the same household as their biological father for many years during childhood (N=506) and for the subsample of people who grew up in family constellations with both parents living in the household (for most of the time) (N=7,654). Tables 6 and 7 present the results of our conditional logit regressions for the subsamples of individuals raised with their fathers and raised without their father, respectively. Working in the metal industry (group IIIg) is the reference category throughout.

We find a highly significant and positive effect of father's occupation for the subsample of individuals raised with their father living in the same household (see table 6). This effect implies the persistence of occupational choice among generations. A significant positive effect of father's occupation is found in the estimation results for the subsample of individuals who spent more than half of their childhood without their father as well (see table 7). However, the effect of father's occupation becomes much smaller in size: the estimated coefficients for the subsamples differ by approximately 50 %. The 95 %-confidence intervals of both coefficients also do not overlap, indicating significant differences in the size of the effects in both subsamples.

– Tables 6 and 7 about here –

With respect to the effects of other independent variables, estimation results for individuals whose fathers were absent for more than half of their childhood do not differ significantly from the estimations of the subsample who were were brought up by both both parents. We find for the subsample with fathers that women make significantly different occupation choices than men (see table 6). Women choose a job

in metal or steel industries less often than men. Women's probability of working in technical jobs or in agriculture is significantly higher. Women are most likely to choose occupations in administration, sales, or health and education services. Notably, nearly all occupation groups show significant differences between women and men; the only exception is the occupational group related to building industries, such as painting and architecture.

Not surprisingly, we find that the educational level has a large and significant effect on occupational choice. By controlling for educational levels, we ensure that our estimations extend beyond the effect of intergenerational educational immobility. Even if children and parents have the same level of education, they can choose between different occupational groups, e.g., after graduating from university, individuals can become engineers, teachers, or doctors. Educational level, measured by the number of years in education, has a significant effect on most occupational groups (see table 6). Workers in the metal and steel industry have a lower level of education compared to workers in all other occupational groups. Higher levels of education significantly increase the probability of choosing jobs in technical fields (groups IVa, IVb). People with more years in education find it, in general, more attractive to work in the tertiary sector. Fewer years of education significantly increases an individual's likelihood of being a farmer. Most other jobs in production industries do not show significant differences in education.

A linear time trend is included in the estimated models to reflect changes over time in labour market conditions. The effect implies the following expected pattern: older cohorts have a significantly higher probability of working in the agricultural sector or as miners. The time effect is, however, insignificant for most other occupational groups and indicates that all jobs in metal, chemical or paper industries have been selected more frequently over time. Additionally, jobs in the tertiary sector have increased over time; therefore, the probability of working in sales, administration, education or health does not change over time compared to the reference group.[7]

All these effects are also visible in the subsample of individuals who grew up without fathers. However, they are not always significant due to the small sample size (N=508) (see table 7). Nevertheless, the results reflect similar behavioural patterns in this subsample as described above. That is, women prefer working in the tertiary sectors

[7]Age group dummies are used as alternative measures of effects of economic history. However, the estimation results are not significantly altered by these specifications.

and tend to choose jobs in administration, sales, education and health. Jobs in the metal industry are chosen significantly less often by women. The effect of education also prevails: more years of education increases an individual's likelihood of working in technical occupations (group IVa), in education (Vh) and health (Vg) or in other jobs in the tertiary sector. Lower levels of education are more common among individuals holding blue-collar jobs. Time effects are small and insignificant for occupational groups in the secondary sector. However, the negative time effect remains significant for agriculture: younger cohorts are more likely to pursue occupations in production or services than agriculture.

In both models, the results indicate that the probability of occupation choices differs broadly independent of individual characteristics: e.g., jobs in mining are not common today compared to jobs in services. This finding is reflected by different levels of the estimated constant coefficients (see tables 6 and 7). Most occupational groups have highly significant constants. We consider these effects to be in line with past research: job-specific characteristics, such as prestige and wages, are considered before an occupational choice is made. However, real income levels may differ from young individual's wage expectations because wage expectations may be influenced by the information received in their living environment.

Marginal effects of the conditional logit models are shown in table 8 in the appendix. The effect of father's occupation differs significantly between occupational groups. It is lower for jobs in chemical or wood production compared to managerial positions, sales, or agriculture. We find marginal effects of, e.g., 10 % for father's occupation for the occupational group "Service sales and related occupations", while the average marginal effect for the occupational group "Chemicals and plastic products" is 1 %. However, even if the size of the marginal effects differs between occupational groups, we find a regular pattern for the differences between children who grew up with their fathers and those who did not: the effect of father's job is reduced by approximately 50 % if the father was absent during the individual's childhood (see table 8).

5.1.2 Results of Nested Logit Models

Tables 9 and 10 present the results of our nested logit regressions for the subsamples of individuals raised with their fathers and without their fathers, respectively. Working in the manufacturing sector is the reference category for the regressions.

Nested logit estimation models divide occupation choices into two levels. We define the first level as the three economic sectors (agriculture, production, services). Our classification of 28 occupational groups defines branches on the second level of individuals' decisions. Compared to the conditional logit models, the IIA assumption is relaxed and the choice between different occupations within the second level can depend on each other.

– Tables 9 and 10 about here –

Table 9 shows the estimation for the subsample of individuals who were raised with their fathers living in the same household. We again find a large and highly significant positive effect of father's occupation. The size of the effect is similar to that for conditional logit models. However, an LR-test shows weak empirical evidence that the assumption of independence of irrelevant alternatives does not hold and that nested models increase the validity of the results.

The influence of other socio-demographic characteristics remains unchanged: women tend to choose jobs in steel and metal industries significantly less often than do men. Instead, they display a significantly higher probability of working in occupations concerning nutrition, health, or education, and they prefer working in sales and administration. Time effects again indicate that the selection of occupations in the secondary and tertiary sectors has increased over time. However, significant results are only found for particular occupational groups, such as sales services or health services. Considering different levels of education, we again find a significant and positive effect for most occupational groups in the tertiary sector.[8]

The results for the subsample of individuals whose fathers were absent for more than half of their childhood do not differ largely from the estimations described above (see table 10). The effect of father's occupation diminishes but is still positive and significant. However, the 95 %-confidence intervals of the estimated coefficients overlap for the nested logit estimations. The influence of other control variables does not change significantly compared to the conditional logit estimations discussed above.

[8]These results remain mainly unchanged for alternative specifications as well as for different tree constructions of occupations. Further results are available upon request.

5.2 Robustness Checks

5.2.1 Conditional Logit Regressions for Sons

Gender segregation in the labour market is a much debated research topic. Although this paper does not focus on gender segregation, we cannot deny that sons and daughters might be influenced differently by their father's absence. Therefore, we focus only on male individuals for robustness checks. The results of conditional logit estimations are displayed in tables 11 and 12.

– Tables 11 and 12 about here –

We again find a positive and significant effect of father's occupation. The estimated effect is larger for the subsample that grew up with their father living in the same household. However, the estimated coefficient for the fatherless individuals is lower than in the baseline regression for fatherless individuals. These findings imply that sons and daughters are affected differently by father's absence. Sons seem to suffer more from their father's absence in terms of occupational socialisation.[9] Further research should address the impact of mother's occupation on girls. We cannot answer this question due to missing data and historic employment patterns of mothers in Germany.

5.2.2 Results of CL- and NL-Regressions for Pooled Subsamples

Test theory states that t-tests cannot be used to test differences between coefficients that result from different estimations. To address the problem of adequate testing, we pool our two subsamples and test whether the hypothesis of the existence of considerable nurture effects holds by estimating the same models for all individuals. To disentangle nurture effects, we include interaction terms for all explanatory variables and the dummy variable indicating that the individual did not grow up with his/her biological father. We estimate these models for the full data set as well as for the subsample of boys. The relevant coefficients of the conditional logit estimations are presented in table 13.

[9] Hellerstein and Morrill (2011) examine father's impact on girls' occupational choice. They find that daughters are also influenced by their father's occupation in terms of occupational choice.

– Table 13 about here –

Confirming the results of the separately estimated conditional logit models, we again find a significant and positive effect of father's occupation. Additionally, the interaction term of father's occupation and father's absence during childhood is negative and highly significant. This finding confirms that the influence of father's occupation is significantly reduced if fathers are absent for most of individual's childhood.

This result remains valid for the whole sample as well as for sons only. However, the size of both effects – the positive effect of father's job and its decrease if the father was absent – is significantly distinct: on the one hand sons respond stronger to fathers in terms of occupational choice. The effect is, on the other hand, more decreased if fathers did not live in the one household with their children during most years of childhood.

– Table 14 about here –

Table 14 presents the relevant coefficients for the nested logit estimation. The estimates do not differ much from the results of the conditional logit regressions. The effect of father's occupation is still positive and highly significant. A t-test again shows that the effect of father's occupation is significantly higher for the subsample of individuals raised with their fathers.

Genetic factors, therefore, do not seem to be the main driving force behind the low intergenerational mobility in the labour market. Children seem to identify themselves more with their father's occupation when he is present. Thus, nurture and socialisation within the core family, both appear to be important influences on children's occupation. Fathers not living with their children when children are young, influence children's occupational decisions less; also they do not serve as role models to the same extent that they otherwise would. In this case, children might find role models more in their mothers or other persons being close to them.[10]

[10]One of our readers has suggested to estimate mixed logit models, too. Thereby, no assumption on a nested structure of occupational choice is needed. Due to the required computing capacity and the running time of several weeks per model we present only one mixed logit model as a robustness check in table 23 in the appendix. We find again some weak empirical evidence that father's absence decreases the probability of choosing father's occupation also in this setting (p-value: 0.07 in a one-sided test). However, we have to estimate further mixed logit models to gain robust empirical results.

6 Summary of the Findings and Outlook

This paper analyses young people's occupational choices in Germany. Using data from the SOEP, we find that children are highly influenced by their father's occupation. Many individuals pursue the same occupation as or a similar occupation to their father's. Young men tend to be influenced even more than young women. This fact may also be driven by gender differences in occupational choice. Gender segregation in the German labour market is a well-documented phenomenon and might explain why daughters are less affected by father's occupation. We also find systematic differences between occupations: jobs in health and sales have high transition rates over generations, while jobs in chemical and wood industries display lower transition rates.

We divide our data set into two subsamples: one contains people who were raised in family constellations with their fathers, and the other contains individuals who were raised without their fathers. If transition rates are driven by genetic factors, no differences should arise between the two groups. Therefore, differences between the subsamples imply an additional effect of socialisation and of children's commitment towards their parents. This paper, therefore, makes a contribution to the enduring debate over "nature versus nurture", i.e., the question of whether people are influenced most by genetics or socialisation. Occupational choices mirror this general question. Our results show that genetic factors alone cannot explain the high transition rates. By running conditional logit models for the pooled subsamples of individuals raised with and without their fathers, we find significantly different coefficients. A t-test confirms the hypothesis of a smaller effect of father's occupation when the father does not live with his children during childhood. Thus, we find a positive effect of nurture and education and show higher influences of father's occupation for individuals raised with their fathers. When it comes to occupational choice, we conclude that children find a role model in their parents. Estimating nested logit models confirms these results and relaxes the IIA assumption.

Occupational choices that do not reflect one's personal interests and abilities induce suboptimal economic outcomes. Negative effects arise from individuals who are not employed according to their talents. These individuals suffer considerable wage losses. A lower overall productivity also yields negative effects for society. Inefficiency in the labour market is especially costly in the context of a shrinking labour force which is expected to prevail during the next decades due to demographic changes in industrialised

countries.

Our analysis shows that efficiency in the labour market may be improved by increasing the influence of individual's abilities on their occupational choices. One possible approach to disentangle occupational choices from parents' wishes might be to offer children additional alternative role models, e.g., by presenting different occupations more regularly or by providing more extensive vocational guidance in schools. However, further research is needed before policy implications shall be made. In a welfare analysis, costs and benefits should be estimated before policy measures, e.g., additional vocational guidance programs, are introduced.

To develop appropriate educational policies, the complex linkages between genetic and social determinants have ti be analysed in more detail in the future. Nature and nurture should not be understood as direct influences but rather as interacting effects within their context. Further analysis of these links will enable policy makers to significantly improve the efficiency of occupational choices and will help scientists to explain why some children are more affected than others by their parents.

7 Appendix A

Table 1: Summary statistics in the data set

	N	mean	st. dev.	min	max
father's job	8162	.143	.350	0	1
father's sector	8162	.214	.410	0	1
fatherless at youth	8162	.062	.242	0	1
female	8162	.520	.500	0	1
years of education	8162	12.332	2.769	7	18
year of birth	8162	1952.265	15.543	1902	1984
northern Germany	8162	0.251	.433	0	1

Table 2: Summary statistics of individuals grown up with and without father

variable	mean	std. dev.	min	max	N
Individuals grown up with their father					
father's job	0.145	0.353	0	1	7654
father's sector	0.216	0.412	0	1	7654
female	0.52	0.5	0	1	7654
year of birth	1952.333	15.505	1902	1984	7654
years of education	12.358	2.773	7	18	7654
northern Germany	0.221	0.41	0	1	7654
Individuals grown up without their father					
father's occupation	0.1	0.301	0	1	508
father's sector	0.177	0.382	0	1	508
female	0.52	0.5	0	1	508
year of birth	1951.244	16.077	1913	1984	508
years of education	11.944	2.694	7	18	508
northern Germany	0.246	0.431	0	1	7654

Table 3: Occupational classification (28 groups)

job code (4 digits)	job group	group code	description of job group
110/629	1	Ia	Agriculture, animal agriculture, forestry and horticulture
700/1359	2	IIa/IIIa/IIIb	Mining, stone cutting and ceramics
1410/1539	3	IIIc	Chemicals and plastic products
1610/1859	4	IIId/IIIe	Paper and wood industries
1910/2459	5	IIIf	Metal processing and metal working
2500/3099	6	IIIg	Metal fabrication, technical engineering and related jobs smiths, industry mechanics, tool makers)
3100/3187	7	IIIh	Electrical occupations (electricians, telecommunication,etc)
3211/3239	8	IIIi	Assemblers and metal workers
3310/3789	9	IIIk/IIIl	Textile, garment, leather and fur
3910/4359	10	IIIm	Food careers (cooks, brewers, bakers)
4401/4729	11	IIIn	Civil engineering (scaffolding, road building, brickwork)
4801/4929	12	IIIo	Building finishers and upholsterers (plasterers, roofers, mattress manufacturers)
5010/5069	13	IIIp	Wood and plastic processing (joiners, wood technicians, boat builders, construction of sports equipment)
5101/5149	14	IIIq	Painters, varnishers and related occupations (furniture varnishing, gilding, glass painting)
5210/5233	15	IIIr	Goods inspectors (outgoing goods inspection, sorting of goods and materials, marking of goods)
5311/5319	16	IIIs	Elementary occupations (labourer, assembly line workers)
5400/5509	17	IIIt	Machinists and related occupations (machine setter, crane operator , hydropower plant machinist)
6000/6129	18	IVa	Occupations in engineering, chemical, physical, mathematic science professionals
6200/6529	19	IVb	Technicians and special technical personals (research technology, technical draftsmen, industry foreman)
6600/6899	20	Va	Sale of goods (retail dealers, pharmaceutical consultants, gas station attendants)
6910/7064	21	Vb	Sale of service and related occupations (banking professionals, advertising specialists, ticket clippers)
7110/7449	22	Vc	Traffic (Locomotive engine drivers, bridge guards, post-office employees)
7501/7899	23	Vd	Organization, administration and office clerks (consulting, ministers and delegates, computer scientists and administrative staff)
7910/8142	24	Ve	Law and security (personal security, detectives, soldiers, police, judges)
8211/8399	25	Vf	Creating and ordering of writing and creative or performing artists (journalists, interpreters, librarians, musicians, interior decorators)
8410/8599	26	Vg	Health services (doctors, pharmacists, masseurs, nurses, dieticians)
8610/8944	27	Vh	Social work, education and other natural science and humanities occupations (geriatric nurses, teachers, economists, pastoral care)
9010/9379	28	Vi	Miscellaneous service occupations (body care, hotels and restaurants, waste disposal, domestic economy)
9711/9971	.e	VIa	Miscellaneous workers (helping family members excluding agriculture, workers (yet) without specified job such as interns, workers without specified area of occupation)

Table 4: Descriptive statistics – job groups

	father present		father absent	
job group	N	%	N	%
Ia	341	4.46	27	5.31
IIa/IIIa/IIIb	45	0.59	5	0.98
IIIc	27	0.35	3	0.59
IIId/IIIe	86	1.12	6	1.18
IIIf	85	1.11	11	2.17
IIIg	692	9.04	58	11.42
IIIh	271	3.54	11	2.17
IIIi	37	0.48	5	0.98
IIIk/IIIl	260	3.40	18	3.54
IIIm	222	2.90	19	3.74
IIIn	153	2.00	14	2.76
IIIo	87	1.14	7	1.38
IIIp	120	1.57	7	1.38
IIIq	79	1.03	3	0.59
IIIr	35	0.46	5	0.98
IIIs	76	0.99	11	2.17
IIIt	18	0.24	2	0.39
IVa	234	3.06	10	1.97
IVb	183	2.39	11	2.17
Va	829	10.83	47	9.25
Vb	362	4.73	17	3.35
Vc	173	2.26	14	2.76
Vd	1,369	17.89	70	13.78
Ve	146	1.91	8	1.57
Vf	113	1.48	15	2.95
Vg	539	7.04	24	4.72
Vh	590	7.71	34	6.69
Vi	482	6.30	46	9.06
Total	7,654	100.00	508	100.00

Table 5: Descriptive statistics – father's job

	percentage with fathers job		
job group	whole sample	father present	father absent
Ia	.576	.598	.296
IIa/IIIa/IIIb	.320	.333	.200
IIIc	.033	.037	.000
IIId/IIIe	.076	.070	.167
IIIf	.083	.094	.000
IIIg	.171	.172	.155
IIIh	.082	.085	.000
IIIi	.143	.135	.200
IIIk/IIIl	.076	.077	.056
IIIm	.141	.148	.053
IIIn	.257	.275	.071
IIIo	.138	.149	.000
IIIp	.142	.142	.143
IIIq	.244	.253	.000
IIIr	.025	.029	.000
IIIs	.069	.066	.091
IIIt	.100	.111	.000
IVa	.139	.141	.100
IVb	.077	.077	.091
Va	.066	.068	.043
Vb	.079	.083	.000
Vc	.193	.197	.143
Vd	.195	.196	.171
Ve	.123	.130	.000
Vf	.078	.088	.000
Vg	.064	.061	.125
Vh	.096	.102	.000
Vi	.049	.044	.109
Total	.143	.145	.100

Table 6: Conditional logit: subsample grown up with fathers

		Ia	IIa/IIIa/IIIb	IIIc	IIId/IIIe	IIIf	IIIh	IIIi	IIIk/IIIl	IIIm	IIIn	IIIo	IIIp	IIIq
father's job	0.954***													
	(0.0378)													
female		2.546***	1.427***	2.956***	2.786***	-0.0779	0.603*	2.355***	4.598***	2.121***	-2.261*	-0.581	-0.392	0.450
		(0.203)	(0.413)	(0.431)	(0.276)	(0.492)	(0.272)	(0.376)	(0.248)	(0.219)	(1.017)	(0.612)	(0.487)	(0.431)
years of education		-0.219***	-0.0362	0.224*	0.0683	-0.235**	0.125***	-0.567***	-0.165**	-0.165**	-0.146*	-0.242**	-0.145*	-0.169*
		(0.0491)	(0.0975)	(0.0935)	(0.0661)	(0.0814)	(0.0363)	(0.117)	(0.0564)	(0.0519)	(0.0576)	(0.0780)	(0.0655)	(0.0793)
time trend		-0.0361***	-0.0308**	0.000442	-0.00798	-0.00839	0.0128**	0.0161	-0.0275***	0.00299	0.00550	0.0148*	-0.0101	0.00463
		(0.00456)	(0.0101)	(0.0132)	(0.00754)	(0.00738)	(0.00482)	(0.0109)	(0.00513)	(0.00505)	(0.00587)	(0.00750)	(0.00638)	(0.00771)
northern Germany		0.338*	-0.492	-0.101	-0.107	-0.267	-0.139	0.0132	-0.180	0.245	0.0758	0.275	0.154	0.454^{+}
		(0.161)	(0.449)	(0.506)	(0.295)	(0.308)	(0.183)	(0.433)	(0.202)	(0.184)	(0.217)	(0.265)	(0.236)	(0.266)
constant		0.893	-2.374*	-6.354***	-3.302***	0.654	-2.357***	2.699*	-0.991	0.373	0.175	0.598	-0.0390	-0.339
		(0.546)	(1.112)	(1.184)	(0.783)	(0.891)	(0.433)	(1.215)	(0.648)	(0.580)	(0.642)	(0.855)	(0.731)	(0.880)
	IIIr	IIIs	IIIt	IVa	IVb	Va	Vb	Vc	Vd	Ve	Vf	Vg	Vh	Vi
female	3.549***	3.117***	2.578***	2.135***	3.088***	3.912***	3.682***	1.269***	4.237***	1.940***	4.557***	5.359***	4.978***	4.963***
	(0.403)	(0.290)	(0.506)	(0.269)	(0.232)	(0.184)	(0.204)	(0.264)	(0.181)	(0.290)	(0.279)	(0.215)	(0.206)	(0.224)
years of education	-0.295*	-0.156^{+}	-0.142	0.782***	0.451***	0.167***	0.490***	0.0362	0.440***	0.556***	0.638***	0.569***	0.833***	-0.0988*
	(0.121)	(0.0860)	(0.155)	(0.0382)	(0.0366)	(0.0302)	(0.0313)	(0.0473)	(0.0268)	(0.0381)	(0.0427)	(0.0305)	(0.0311)	(0.0433)
time trend	0.0465***	-0.00567	0.0529**	-0.0225***	-0.0171**	-0.00238	-0.00572	0.0169**	-0.0137***	-0.00840	-0.0116	0.00232	-0.0186***	-0.00139
	(0.0127)	(0.00790)	(0.0184)	(0.00573)	(0.00571)	(0.00371)	(0.00464)	(0.00576)	(0.00350)	(0.00639)	(0.00724)	(0.00443)	(0.00447)	(0.00432)
northern Germany	0.113	-0.595	-1.404	-0.233	-0.249	0.111	0.191	0.369^{+}	-0.0201	0.644**	0.127	0.229	0.0384	0.502**
	(0.437)	(0.370)	(1.035)	(0.214)	(0.224)	(0.137)	(0.165)	(0.196)	(0.130)	(0.206)	(0.252)	(0.155)	(0.160)	(0.154)
constant	-1.079	-1.122	-2.759	-11.82***	-7.331***	-2.923***	-7.559***	-2.102***	-6.011***	-8.956***	-11.24***	-9.460***	-12.81***	-1.468**
	(1.334)	(0.959)	(1.741)	(0.569)	(0.492)	(0.363)	(0.414)	(0.551)	(0.334)	(0.537)	(0.641)	(0.418)	(0.442)	(0.506)
N	214312													
Cases	7654													
χ^2	4385.1***													

Standard errors in parentheses; $+\ p < 0.1$, $*\ p < 0.05$, $**\ p < 0.01$, $***\ p < 0.001$
See table 3 for details on the job classification.

Table 7: Conditional logit: subsample grown up without fathers

		Ia	IIa/IIIa/IIIb	IIIc	IIId/IIIe	IIIf	IIIh	IIIi	IIIk/IIIl	IIIm	IIIn	IIIo	IIIp	IIIq
father's job	0.512**													
	(0.167)													
female		2.324**	-14.78	3.469*	2.299*	1.274	-14.32	2.493*	4.762***	2.003**	-14.45	1.122	0.977	-14.26
		(0.727)	(2438.7)	(1.373)	(1.073)	(0.985)	(1652.2)	(1.104)	(0.965)	(0.777)	(1509.8)	(1.252)	(1.240)	(2792.9)
years of education		-0.446*	-0.854*	-0.710	0.0662	-0.246	0.151	0.0129	-0.465*	-0.517**	-0.221	-0.134	-0.0865	-0.709
		(0.174)	(0.352)	(0.468)	(0.202)	(0.211)	(0.136)	(0.238)	(0.223)	(0.193)	(0.179)	(0.235)	(0.217)	(0.451)
time trend		-0.0384*	-0.0786^{+}	0.0356	-0.0439	0.00323	0.00848	-0.0193	-0.0212	0.0201	-0.00588	-0.0624^{+}	0.0389	0.00983
		(0.0177)	(0.0407)	(0.0378)	(0.0324)	(0.0219)	(0.0228)	(0.0319)	(0.0199)	(0.0174)	(0.0204)	(0.0331)	(0.0272)	(0.0401)
northern Germany		0.442	-0.259	-17.09	-0.319	-0.980	-1.151	-16.97	-17.14	0.106	0.359	0.958	0.355	-16.18
		(0.551)	(1.205)	(6672.3)	(1.146)	(1.099)	(1.099)	(4144.5)	(2704.4)	(0.661)	(0.676)	(0.838)	(0.906)	(3654.9)
constant		3.418^{+}	6.215^{+}	3.689	-3.467	1.168	-3.204^{+}	-2.772	2.071	4.183*	1.076	-1.314	-1.425	4.982
		(1.899)	(3.544)	(4.748)	(2.521)	(2.345)	(1.714)	(2.866)	(2.482)	(2.058)	(2.015)	(2.760)	(2.515)	(4.600)

	IIIr	IIIs	IIIt	IVa	IVb	Va	Vb	Vc	Vd	Ve	Vf	Vg	Vh	Vi
female	2.810*	3.845***	2.379	1.906^{+}	2.848***	3.842***	3.735***	2.700***	4.106***	1.471	3.943***	4.933***	5.081***	4.851***
	(1.128)	(0.906)	(1.626)	(1.045)	(0.865)	(0.681)	(0.803)	(0.807)	(0.666)	(1.260)	(0.867)	(0.849)	(0.797)	(0.763)
years of education	-0.0149	-0.0611	-0.434	0.584***	0.192	-0.0663	0.130	-0.145	0.286**	0.474**	0.684***	0.465***	0.540***	-0.878***
	(0.263)	(0.197)	(0.532)	(0.141)	(0.140)	(0.115)	(0.134)	(0.181)	(0.0875)	(0.146)	(0.129)	(0.109)	(0.102)	(0.172)
time trend	0.0981*	0.0178	0.143	0.0157	0.00817	-0.000842	-0.00936	0.0445*	-0.0189	0.0118	-0.0134	0.0150	-0.00269	0.0161
	(0.0437)	(0.0219)	(0.0904)	(0.0253)	(0.0219)	(0.0141)	(0.0194)	(0.0206)	(0.0135)	(0.0274)	(0.0227)	(0.0180)	(0.0167)	(0.0148)
northern Germany	-17.11	0.465	-17.15	-1.179	0.289	0.289	1.709**	-0.372	-0.243	1.023	0.237	0.559	0.688	1.305*
	(4734.2)	(0.774)	(7900.3)	(1.137)	(0.761)	(0.499)	(0.614)	(0.842)	(0.490)	(0.808)	(0.730)	(0.610)	(0.559)	(0.522)
constant	-3.810	-2.326	-0.928	-9.699***	-4.608*	-0.705	-4.469*	-0.522	-4.593***	-8.729***	-11.80***	-8.940***	-9.715***	6.592***
	(3.155)	(2.332)	(5.796)	(2.142)	(1.831)	(1.362)	(1.746)	(2.062)	(1.141)	(2.175)	(2.051)	(1.623)	(1.524)	(1.765)
N	14224													
Cases	508													
χ^2	300.5***													

Standard errors in parentheses; $+\ p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
See table 3 for details on the job classification.

Table 8: Marginal effects of conditional logit models

	marginal effect	
	grown up	
job group	with father	without father
Ia	.042***	.030
	(.005)	(.020)
IIa/IIIa/IIIb	.008***	.000
	(.002)	(.001)
IIIc	.009***	.000
	(.002)	(.078)
IIId/IIIe	.0248***	.012
	(.003)	(.010)
IIIf	.007***	.015
	(.002)	(.012)
IIIg	.066***	.052
	(.006)	(.033)
IIIh	.042***	.000
	(.005)	(.005729)
IIIi	.003477**	.000
	(.001)	(.247)
IIIk/IIIl	.033***	.000
	(.004)	(.211)
IIIm	.042***	.023
	(.005)	(.017)
IIIn	.005^{+}	.000
	(.002)	(.006)
IIIo	.005**	.007
	(.002)	(.007)
IIIp	.010***	.010
	(.002)	(.009)
IIIq	.009***	.000
	(.002)	(.000)
IIIr	.005**	.000
	(.0015)	(.095)
IIIs	.0149***	.023
	(.003)	(.016)
IIIt	.003*	.000
	(.001)	(.016)
IVa	.023***	.008
	(.003)	(.007)
IVb	.053***	.027
	(.005)	(.018)
Va	.167***	.082^{+}
	(.009)	(.044)
Vb	.096***	.0317
	(.007)	(.022)
Vc	.029***	.024
	(.004)	(.017)
Vd	.209***	.10**
	(.009)	(.048)
Ve	.027***	.008
	(.004)	(.007)
Vf	.0264***	.013
	(.004)	(.010)
Vg	.0932***	.029
	(.007)	(.020)
Vh	.068***	.035
	(.006)	(.023)
Vi	.066***	.020
	(.006)	(.015)

Standard errors in parentheses

+ p ¡ 0.15, * p ¡ 0.10, ** p ¡ 0.05, *** p ¡ 0.01

See the table 3 for details on the job classification.

Table 9: Nested logit: subsample grown up with fathers

		Ia	IIa/IIIa/IIIb	IIIc	IIId/IIIe	IIIf	IIIh	IIIi	IIIk/IIIl	IIIm	IIIn	IIIo	IIIp	IIIq
father's job	1.235***													
	(0.0848)													
female		-0.482*	0.476	0.289	-2.644***	-2.591***	-1.949***	-0.134	2.159***	-0.398*	-4.884***	-3.158***	-2.970***	-2.098***
		(0.189)	(0.438)	(0.266)	(0.518)	(0.266)	(0.275)	(0.366)	(0.322)	(0.186)	(1.099)	(0.652)	(0.525)	(0.442)
years of education		0.0404	0.445***	0.271***	-0.0574	0.199***	0.334***	-0.418**	0.000121	0.0119	0.0458	-0.0662	0.0414	0.0140
		(0.0386)	(0.108)	(0.0790)	(0.0957)	(0.0487)	(0.0534)	(0.137)	(0.0708)	(0.0675)	(0.0723)	(0.0926)	(0.0794)	(0.0928)
time trend		0.00140	0.0342*	0.0262**	0.0267***	0.0346***	0.0475***	0.0518***	0.00693	0.0382***	0.0406***	0.0503***	0.0250***	0.0399***
		(0.00470)	(0.0138)	(0.00811)	(0.00808)	(0.00451)	(0.00573)	(0.0116)	(0.00585)	(0.00573)	(0.00665)	(0.00827)	(0.00714)	(0.00836)
northern Germany		-0.151	-0.380	-0.389	-0.536	-0.280+	-0.418*	-0.245	-0.458*	-0.0212	-0.196	0.0148	-0.105	0.195
		(0.203)	(0.523)	(0.310)	(0.327)	(0.161)	(0.206)	(0.450)	(0.212)	(0.204)	(0.240)	(0.287)	(0.256)	(0.288)
constant		-0.945*	-7.440***	-4.145***	0.0921	-0.776	-3.246***	2.403+	-1.450+	-0.168	-0.561	0.0507	-0.694	-0.962
		(0.469)	(1.466)	(0.981)	(1.012)	(0.543)	(0.650)	(1.316)	(0.767)	(0.717)	(0.777)	(0.977)	(0.862)	(1.007)
	IIIr	IIIs	IIIt	IVa	IVb	Va	Vb	Vc	Vd	Ve	Vf	Vg	Vh	Vi
female	1.065*	0.635*	0.0722	-0.256	0.650**	1.303***	0.793**	-3.431***	1.827***	-2.356***	2.346***	3.804***	3.047***	3.208***
	(0.423)	(0.289)	(0.507)	(0.260)	(0.242)	(0.173)	(0.247)	(0.595)	(0.159)	(0.577)	(0.416)	(0.324)	(0.257)	(0.325)
years of education	-0.143	0.0236	0.0347	1.045***	0.694***	0.216***	0.756***	-0.0289	0.676***	0.882***	1.011***	0.886***	1.365***	-0.205*
	(0.137)	(0.0991)	(0.169)	(0.0820)	(0.0661)	(0.0580)	(0.0591)	(0.0942)	(0.0493)	(0.0758)	(0.0865)	(0.0612)	(0.0922)	(0.0878)
time trend	0.0829***	0.0286***	0.0890***	0.00771	0.0149*	0.0347***	0.0296***	0.0694***	0.0143**	0.0235*	0.0181	0.0436***	0.00534	0.0370***
	(0.0138)	(0.00842)	(0.0196)	(0.00670)	(0.00644)	(0.00530)	(0.00739)	(0.0101)	(0.00507)	(0.0109)	(0.0125)	(0.00687)	(0.00733)	(0.00636)
northern Germany	-0.149	-0.881*	-1.712	-0.522*	-0.540*	-0.215	-0.0867	0.309	-0.467**	0.718*	-0.212	-0.0222	-0.380	0.502*
	(0.453)	(0.387)	(1.071)	(0.235)	(0.241)	(0.188)	(0.254)	(0.315)	(0.175)	(0.347)	(0.428)	(0.228)	(0.240)	(0.223)
constant	-1.413	-1.741	-3.368+	-13.47***	-8.669***	-3.094***	-10.89***	-1.515	-8.167***	-13.52***	-17.39***	-14.17***	-20.16***	-1.140
	(1.452)	(1.084)	(1.907)	(1.260)	(0.984)	(0.607)	(0.913)	(0.947)	(0.651)	(1.260)	(1.608)	(1.103)	(1.592)	(0.811)
agricultureτ	0.396***													
	(0.0644)													
craftsmenτ	1.025***													
	(0.0907)													
tertiaryτ	1.813***													
	(0.168)													
N	214312													
Cases	7654													
χ^2	1463.8													

Standard errors in parentheses; + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
See table 3 for details on the job classification.

Table 10: Nested logit: subsample grown up without fathers

		Ia	IIa/IIIa/IIIb	IIIc	IIId/IIIe	IIIf	IIIh	IIIi	IIIk/IIIl	IIIm	IIIn	IIIo	IIIp	IIIq
father's job	1.052**													
	(0.372)													
female		-23.97	7.189	0.750	-6.168	-13.24*	-100.5	0.889	14.41	-2.214	-103.4	-7.471	-8.144	-96.94
		(15.26)	(8.338)	(5.647)	(5.193)	(6.473)	(11593.4)	(5.731)	(9.281)	(3.156)	(11840.4)	(7.770)	(7.311)	(7729.9)
years of education		-25.89+	-7.237	-0.686	-2.723	-1.121	-0.466	-1.065	-3.566*	-4.737+	-3.131	-2.885	-1.286	-8.798*
		(14.97)	(4.656)	(1.168)	(1.864)	(0.752)	(0.847)	(1.338)	(1.740)	(2.811)	(2.231)	(2.834)	(1.295)	(4.408)
time trend		-1.055+	0.112	-0.249	-0.0558	-0.0357	-0.00400	-0.164	-0.114+	-0.00525	-0.101	-0.270+	0.136	-0.224
		(0.568)	(0.153)	(0.165)	(0.106)	(0.0559)	(0.119)	(0.166)	(0.0687)	(0.0786)	(0.104)	(0.152)	(0.153)	(0.183)
northern Germany		-7.695	-117.9	-2.901	-6.325	-0.806	-6.743	-102.0	-97.53	0.488	1.227	4.490	2.343	-204.6
		(10.91)	(139065.1)	(6.908)	(6.873)	(1.733)	(6.736)	(25875.1)	(11759.9)	(3.470)	(3.615)	(5.746)	(5.045)	(348863628.2)
constant		119.0+	57.52	-4.358	25.02	16.72	0.227	0.341	25.71	47.39+	30.69	20.80	4.112	83.05*
		(61.48)	(39.68)	(18.90)	(20.88)	(12.55)	(14.23)	(19.54)	(17.30)	(28.41)	(23.82)	(29.31)	(18.02)	(39.84)

	IIIr	IIIs	IIIt	IVa	IVb	Va	Vb	Vc	Vd	Ve	Vf	Vg	Vh	Vi
female	3.133	11.19	1.594	-1.410	4.740	-0.618	-1.298	-3.867	0.338	-7.531	-0.767	2.408	2.803	1.907
	(5.862)	(8.063)	(8.775)	(3.399)	(4.710)	(1.639)	(2.180)	(2.871)	(1.365)	(5.584)	(2.182)	(2.166)	(2.076)	(2.233)
years of education	-0.419	-0.882	-2.928	1.776	0.0162	-1.916	-1.223	-2.271	-0.728	-0.0577	0.560	-0.145	0.0757	-4.626+
	(1.231)	(0.994)	(3.709)	(1.114)	(0.786)	(1.189)	(0.924)	(1.428)	(0.680)	(0.685)	(0.733)	(0.572)	(0.563)	(2.459)
time trend (starting 1950)	0.400	-0.0554	0.462	-0.0133	-0.0587	-0.0612	-0.0937	0.0946	-0.106+	-0.0123	-0.0679	0.00584	-0.0458	-0.0190
	(0.262)	(0.0808)	(0.425)	(0.0961)	(0.0931)	(0.0523)	(0.0716)	(0.106)	(0.0550)	(0.0851)	(0.0666)	(0.0663)	(0.0517)	(0.0536)
northern Germany	-95.19	5.051	-130.4	-2.175	3.142	-1.028	3.219	-3.008	-2.339	1.222	-1.433	-0.194	0.107	1.375
	(13896.9)	(4.443)	(468334.9)	(3.664)	(3.938)	(1.479)	(2.794)	(2.754)	(1.650)	(2.405)	(2.160)	(1.592)	(1.429)	(1.788)
constant	-14.32	-5.349	7.391	-33.93	-11.59	26.37	14.22	28.06	13.01	-0.662	-9.407	-0.257	-2.561	51.86+
	(23.63)	(16.21)	(41.15)	(22.90)	(15.54)	(16.31)	(12.90)	(17.63)	(11.78)	(12.91)	(14.40)	(11.33)	(11.54)	(26.80)
agricultureτ	72.21													
	(52.77)													
craftsmenτ	5.961*													
	(2.938)													
tertiaryτ	2.917+													
	(1.641)													
N	14224													
Cases	508													
χ^2	46.50													

Standard errors in parentheses; + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
See table 3 for details on the job classification.

Table 11: Robustness check 1a: boys grown up with fathers

		Ia	IIa/IIIa/IIIb	IIIc	IIId/IIIe	IIIf	IIIh	IIIi	IIIk/IIIl	IIIm	IIIn	IIIo	IIIp	IIIq
father's job	1.148***													
	(0.0479)													
years of education		-0.0812	-0.107	0.275*	-0.0691	-0.189*	0.140***	-0.495**	-0.135	-0.131*	-0.129*	-0.234**	-0.146*	-0.166*
		(0.0544)	(0.117)	(0.107)	(0.0948)	(0.0816)	(0.0372)	(0.152)	(0.120)	(0.0583)	(0.0574)	(0.0788)	(0.0671)	(0.0822)
time trend (starting 1950)		-0.0278***	-0.0354**	0.0440*	-0.00971	-0.00931	0.0147**	0.0177	-0.0314**	0.00546	0.00672	0.0163*	-0.00936	0.00572
		(0.00564)	(0.0115)	(0.0211)	(0.00992)	(0.00765)	(0.00506)	(0.0146)	(0.0115)	(0.00598)	(0.00596)	(0.00767)	(0.00655)	(0.00808)
Northern Germany		0.314	-0.225	-14.34	-0.0835	-0.205	-0.0992	-0.0372	-0.0598	0.156	0.0803	0.319	0.210	0.509+
		(0.197)	(0.459)	(659.6)	(0.386)	(0.311)	(0.188)	(0.567)	(0.435)	(0.220)	(0.219)	(0.268)	(0.239)	(0.275)
Constant		-0.599	-1.672	-7.081***	-1.716	0.152	-2.525***	1.969	-1.370	0.0256	-0.0313	0.506	-0.0384	-0.371
		(0.612)	(1.306)	(1.405)	(1.069)	(0.898)	(0.443)	(1.579)	(1.329)	(0.652)	(0.640)	(0.862)	(0.746)	(0.909)

	IIIr	IIIs	IIIt	IVa	IVb	Va	Vb	Vc	Vd	Ve	Vf	Vg	Vh	Vi
years of education	0.0849	-0.000218	0.0592	0.760***	0.388***	0.192***	0.471***	0.0217	0.433***	0.543***	0.487***	0.822***	0.976***	0.0372
	(0.148)	(0.102)	(0.160)	(0.0407)	(0.0424)	(0.0362)	(0.0369)	(0.0511)	(0.0301)	(0.0405)	(0.0640)	(0.0600)	(0.0547)	(0.0766)
time trend (starting 1950)	0.0559*	0.0142	0.0637*	-0.0279***	-0.0181*	-0.00245	-0.00889	0.0170**	-0.0119**	-0.0102	0.00707	-0.00720	-0.0260***	0.0423***
	(0.0239)	(0.0123)	(0.0263)	(0.00628)	(0.00714)	(0.00506)	(0.00615)	(0.00623)	(0.00451)	(0.00696)	(0.0123)	(0.00904)	(0.00682)	(0.0108)
Northern Germany	0.331	-0.906	-0.908	-0.377	-0.391	0.0594	0.0335	0.480*	-0.0856	0.543*	0.335	0.400	-0.102	0.814**
	(0.686)	(0.616)	(1.060)	(0.238)	(0.286)	(0.185)	(0.219)	(0.208)	(0.166)	(0.225)	(0.391)	(0.284)	(0.238)	(0.309)
Constant	-5.462**	-2.886*	-5.196**	-11.35***	-6.382***	-3.195***	-7.190***	-1.972***	-5.898***	-8.692***	-9.044***	-13.44***	-15.13***	-3.401***
	(1.792)	(1.170)	(1.925)	(0.600)	(0.556)	(0.438)	(0.492)	(0.590)	(0.380)	(0.565)	(0.915)	(0.960)	(0.882)	(0.904)
N	102816													
Cases	3672													
χ^2	1735.5													

Standard errors in parentheses; + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
See table 3 for details on the job classification.

Table 12: Robustness check 1b: boys grown up without fathers

		Ia	IIa/IIIa/IIIb	IIIc	IIId/IIIe	IIIf	IIIh	IIIi	IIIk/IIIl	IIIm	IIIn	IIIo	IIIp	IIIq
father's job	0.443^{+}													
	(0.238)													
years of education		-0.733**	-0.899*	-0.287	0.186	-0.214	0.157	0.175	-0.124	-0.481*	-0.224	-0.222	-0.0602	-0.747
		(0.241)	(0.368)	(0.662)	(0.201)	(0.226)	(0.138)	(0.233)	(0.420)	(0.233)	(0.186)	(0.284)	(0.226)	(0.466)
time trend		-0.0548*	-0.0810^{+}	0.226	-0.0259	0.00435	0.0100	-0.0379	-0.0149	0.0498*	-0.00374	-0.0703^{+}	0.0290	0.0125
		(0.0243)	(0.0423)	(0.165)	(0.0394)	(0.0252)	(0.0233)	(0.0470)	(0.0527)	(0.0228)	(0.0211)	(0.0371)	(0.0295)	(0.0413)
northern Germany		0.324	-0.273	-14.71	0.136	-0.767	-1.082	-14.42	-14.42	-0.251	0.395	0.510	0.590	-14.49
		(0.680)	(1.212)	(2860.8)	(1.204)	(1.113)	(1.102)	(1452.2)	(1794.9)	(0.862)	(0.681)	(0.943)	(0.933)	(1620.0)
constant		6.271*	6.643^{+}	-4.364	-4.939^{+}	0.788	-3.297^{+}	-4.871	-1.627	3.670	1.091	-0.278	-1.712	5.363
		(2.533)	(3.711)	(8.410)	(2.618)	(2.527)	(1.734)	(3.000)	(4.778)	(2.502)	(2.090)	(3.219)	(2.631)	(4.761)
	IIIr	IIIs	IIIt	IVa	IVb	Va	Vb	Vc	Vd	Ve	Vf	Vg	Vh	Vi
years of education	-0.0504	0.132	-1.342	0.482***	0.191	-0.0433	0.175	0.0714	0.244*	0.527***	0.532***	0.867**	0.613***	-0.889*
	(0.384)	(0.248)	(0.893)	(0.146)	(0.172)	(0.157)	(0.172)	(0.187)	(0.106)	(0.158)	(0.159)	(0.321)	(0.181)	(0.346)
time trend	0.120	0.0163	0.109	0.00350	0.0252	-0.00502	-0.0277	0.0645*	-0.0185	-0.00232	-0.00663	0.00622	-0.0243	0.0583^{+}
	(0.0748)	(0.0407)	(0.112)	(0.0286)	(0.0297)	(0.0219)	(0.0332)	(0.0303)	(0.0195)	(0.0312)	(0.0321)	(0.0438)	(0.0361)	(0.0322)
northern Germany	-14.58	1.911	-15.06	-0.845	0.477	-0.462	1.926*	0.291	0.315	0.816	0.801	1.120	-0.413	1.550
	(1873.5)	(1.273)	(3145.4)	(1.152)	(0.937)	(0.837)	(0.931)	(0.923)	(0.602)	(0.883)	(0.888)	(1.147)	(1.201)	(0.977)
constant	-3.777	-5.323^{+}	8.620	-8.128***	-4.701*	-0.821	-5.222*	-3.351	-4.146**	-9.381***	-9.463***	-15.70**	-10.60***	6.295^{+}
	(4.671)	(3.190)	(8.108)	(2.130)	(2.226)	(1.845)	(2.299)	(2.299)	(1.378)	(2.392)	(2.424)	(5.488)	(2.838)	(3.488)
N	6832													
Cases	244													
χ^2	115.0													

Standard errors in parentheses; $+\ p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
See table 3 for details on the job classification.

Table 13: Overview of relevant CL regression coefficients

	conditional logit			
	full sample		only boys	
	plain model	full model	plain model	full model
father's job	1.139***	0.954***	1.389***	1.148***
	(0.035)	(0.038)	(0.046)	(0.048)
father's job x without father	-0.455**	-0.439**	-0.723**	-0.699**
	(0.157)	(0.170)	(0.228)	(0.241)
controls included?	NO	YES	NO	YES
Cases	8162	8162	3916	3916
χ^2	1051.04***	4729.12***	909.97***	1879.43***

Standard errors in parentheses

$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

See tables 15, 16, 17, 18 in the appendix for full estimation results.

Table 14: Overview of relevant NL regression coefficients

	nested logit			
	full sample		only boys	
	plain	full model	plain	full model
father's job	1.932***	1.205***	2.132***	1.339***
	(0.084)	(0.085)	(0.111)	(0.102)
father's job x without father	-0.610**	-0.585**	-1.013**	-0.887***
	(0.233)	(0.195)	(0.312)	(0.245)
controls included?	NO	YES	NO	YES
Cases	8162	8162	3916	3916
χ^2	532.64***	1583.10***	369.26***	509.62***

Standard errors in parentheses

$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

See tables 19, 20, 21, 22 in the appendix for full estimation results.

Table 15: Robustness check 2a: CL plain model, full sample

		Ia	IIa/IIIa/IIIb	IIIc	IIId/IIIe	IIIf	IIIh	IIIi	IIIk/IIIl	IIIm	IIIn	IIIo	IIIp	IIIq
father's job	1.139***													
	(0.0354)													
father's job x fatherless	-0.455**													
	(0.157)													
constant		-0.744***	-2.597***	-3.054***	-1.945***	-1.937***	-0.844***	-2.719***	-0.864***	-1.014***	-1.443***	-1.946***	-1.661***	-2.066***
		(0.0643)	(0.146)	(0.186)	(0.111)	(0.109)	(0.0704)	(0.159)	(0.0707)	(0.0745)	(0.0859)	(0.110)	(0.0963)	(0.117)

	IIIr	IIIs	IIIt	IVa	IVb	Va	Vb	Vc	Vd	Ve	Vf	Vg	Vh	Vi
Constant	-2.761***	-2.046***	-3.476***	-1.032***	-1.239***	0.252***	-0.548***	-1.367***	0.615***	-1.488***	-1.608***	-0.137*	-0.0644	-0.201***
	(0.163)	(0.114)	(0.227)	(0.0741)	(0.0810)	(0.0504)	(0.0636)	(0.0821)	(0.0458)	(0.0888)	(0.0961)	(0.0565)	(0.0548)	(0.0575)
N	228536													
Cases	8162													
χ^2	1051.0***													

Standard errors in parentheses; + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
See table 3 for details on the job classification.

Table 16: Robustness check 2b: CL full model, full sample

		Ia	IIa/IIIa/IIIb	IIIc	IIId/IIIe	IIIf	IIIh	IIIi	IIIk/IIIl	IIIm	IIIn	IIIo	IIIp	IIIq
father's job	0.954***													
	(0.0378)													
father's job x fatherless	-0.439**													
	(0.170)													
female		2.537***	1.369***	2.876***	2.787***	-0.0736	0.601*	2.419***	4.585***	2.105***	-2.264*	-0.569	-0.385	0.437
		(0.202)	(0.412)	(0.425)	(0.276)	(0.491)	(0.272)	(0.376)	(0.247)	(0.219)	(1.017)	(0.611)	(0.487)	(0.431)
female x fatherless		-0.153	-14.70	1.114	-0.578	1.324	-14.59	-0.389	0.256	-0.0156	-14.59	1.492	1.344	-14.19
		(0.742)	(1474.8)	(1.537)	(1.058)	(1.090)	(1359.0)	(1.115)	(0.944)	(0.800)	(5085.0)	(1.374)	(1.321)	(2269.1)
years of education		-0.234***	-0.103	0.173+	0.0663	-0.231**	0.122***	-0.491***	-0.183***	-0.189***	-0.151**	-0.224**	-0.136*	-0.189*
		(0.0468)	(0.0973)	(0.0931)	(0.0628)	(0.0750)	(0.0348)	(0.112)	(0.0544)	(0.0497)	(0.0543)	(0.0738)	(0.0620)	(0.0778)
years of education x fatherless		-0.00484	-0.0365	-0.0534	-0.00945	0.0287	-0.0374	0.0906	-0.0286	-0.00957	0.000115	-0.0595	-0.0648	-0.0494
		(0.0324)	(0.0740)	(0.108)	(0.0511)	(0.0364)	(0.0298)	(0.0573)	(0.0661)	(0.0339)	(0.0327)	(0.0571)	(0.0487)	(0.0604)
time trend		-0.0360***	-0.0297**	0.00123	-0.00804	-0.00844	0.0129**	0.0166	-0.0272***	0.00316	0.00552	0.0148*	-0.0102	0.00471
		(0.00455)	(0.0100)	(0.0131)	(0.00754)	(0.00739)	(0.00483)	(0.0111)	(0.00512)	(0.00504)	(0.00587)	(0.00753)	(0.00639)	(0.00769)
time trend x fatherless		-0.00229	-0.0552	0.0327	-0.0317	0.0122	-0.00625	-0.0306	0.00494	0.0178	-0.0112	-0.0704*	0.0460+	0.0116
		(0.0180)	(0.0428)	(0.0431)	(0.0319)	(0.0228)	(0.0223)	(0.0316)	(0.0201)	(0.0181)	(0.0210)	(0.0321)	(0.0265)	(0.0418)
northern Germany		0.334*	-0.503	-0.120	-0.109	-0.268	-0.140	0.0207	-0.185	0.240	0.0743	0.275	0.154	0.450+
		(0.161)	(0.449)	(0.505)	(0.295)	(0.308)	(0.183)	(0.434)	(0.202)	(0.184)	(0.217)	(0.265)	(0.236)	(0.266)
northern Germany x fatherless		0.154	0.475	-14.47	-0.200	-0.717	-1.002	-14.55	-14.48	-0.124	0.259	0.581	0.174	-14.43
		(0.568)	(1.270)	(1965.2)	(1.177)	(1.139)	(1.107)	(1203.1)	(817.6)	(0.680)	(0.704)	(0.862)	(0.924)	(1225.1)
constant		1.068*	-1.607	-5.709***	-3.282***	0.617	-2.326***	1.888	-0.782	0.645	0.227	0.410	-0.140	-0.114
		(0.520)	(1.092)	(1.154)	(0.744)	(0.822)	(0.416)	(1.175)	(0.623)	(0.554)	(0.605)	(0.812)	(0.694)	(0.861)

	IIIr	IIIs	IIIt	IVa	IVb	Va	Vb	Vc	Vd	Ve	Vf	Vg	Vh	Vi
father's job														
father's job x fatherless														
female	3.599***	3.149***	2.574***	2.102***	3.053***	3.894***	3.649***	1.260***	4.217***	1.926***	4.577***	5.349***	4.934***	4.884***
	(0.405)	(0.289)	(0.505)	(0.268)	(0.231)	(0.184)	(0.203)	(0.264)	(0.181)	(0.290)	(0.276)	(0.214)	(0.204)	(0.221)
female x fatherless	-0.813	0.553	-0.229	0.170	0.184	0.125	0.568	1.513+	0.0743	-0.313	-0.562	-0.389	0.817	0.546
	(1.146)	(0.899)	(1.679)	(1.065)	(0.866)	(0.690)	(0.791)	(0.839)	(0.664)	(1.257)	(0.826)	(0.774)	(0.770)	(0.823)
years of education	-0.250*	-0.127	-0.152	0.767***	0.434***	0.152***	0.474***	0.0269	0.427***	0.547***	0.637***	0.558***	0.814***	-0.148***
	(0.113)	(0.0785)	(0.148)	(0.0367)	(0.0351)	(0.0289)	(0.0300)	(0.0453)	(0.0255)	(0.0366)	(0.0404)	(0.0292)	(0.0296)	(0.0420)
years of education x fatherless	0.0572	-0.00498	-0.129	-0.0487	-0.0568	-0.0510+	-0.136**	-0.0462	-0.0414+	-0.0473	0.0413	-0.0409	-0.0991**	-0.0710
	(0.0921)	(0.0564)	(0.209)	(0.0303)	(0.0380)	(0.0289)	(0.0421)	(0.0415)	(0.0229)	(0.0383)	(0.0326)	(0.0356)	(0.0335)	(0.0545)
time trend	0.0469***	-0.00617	0.0530**	-0.0222***	-0.0168**	-0.00218	-0.00544	0.0169**	-0.0135***	-0.00817	-0.0117	0.00249	-0.0183***	-0.000533
	(0.0129)	(0.00794)	(0.0184)	(0.00572)	(0.00570)	(0.00370)	(0.00463)	(0.00576)	(0.00350)	(0.00639)	(0.00726)	(0.00443)	(0.00446)	(0.00431)
time trend x fatherless	0.0422	0.0268	0.0907	0.0400	0.0258	0.00179	-0.00476	0.0279	-0.00335	0.0195	0.00133	0.0142	0.0156	0.0111
	(0.0408)	(0.0223)	(0.0887)	(0.0264)	(0.0232)	(0.0145)	(0.0202)	(0.0212)	(0.0138)	(0.0272)	(0.0226)	(0.0180)	(0.0179)	(0.0153)
northern Germany	0.120	-0.594	-1.407	-0.240	-0.257	0.105	0.183	0.366+	-0.0261	0.641**	0.126	0.223	0.0311	0.491**
	(0.438)	(0.370)	(1.035)	(0.214)	(0.223)	(0.137)	(0.164)	(0.196)	(0.130)	(0.206)	(0.252)	(0.155)	(0.159)	(0.154)
northern Germany x fatherless	-14.60	1.118	-14.73	-0.788	0.698	0.298	1.751**	-0.697	-0.0872	0.441	0.184	0.429	0.938	0.838
	(1267.8)	(0.852)	(4574.9)	(1.166)	(0.802)	(0.519)	(0.640)	(0.863)	(0.509)	(0.812)	(0.756)	(0.618)	(0.593)	(0.540)
constant	-1.606	-1.449+	-2.651	-11.61***	-7.102***	-2.744***	-7.344***	-1.993***	-5.852***	-8.861***	-11.29***	-9.340***	-12.55***	-0.862+
	(1.245)	(0.881)	(1.656)	(0.547)	(0.472)	(0.348)	(0.398)	(0.528)	(0.318)	(0.518)	(0.608)	(0.402)	(0.423)	(0.485)
N	228536													
Cases	8162													
χ^2	4729.1***													

Standard errors in parentheses; + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
See table 3 for details on the job classification.

Table 17: Robustness check 2c: CL plain model, only boys

		Ia	IIa/IIIa/IIIb	IIIc	IIId/IIIe	IIIf	IIIh	IIIi	IIIk/IIIl	IIIm	IIIn	IIIo	IIIp	IIIq
father's job	1.389***													
	(0.0462)													
father's job x fatherless	-0.723**													
	(0.228)													
constant		-1.373***	-2.748***	-3.673***	-2.495***	-1.951***	-0.869***	-3.207***	-2.837***	-1.368***	-1.410***	-1.928***	-1.638***	-2.091***
		(0.0823)	(0.161)	(0.261)	(0.148)	(0.113)	(0.0738)	(0.208)	(0.169)	(0.0889)	(0.0873)	(0.113)	(0.0992)	(0.122)

	IIIr	IIIs	IIIt	IVa	IVb	Va	Vb	Vc	Vd	Ve	Vf	Vg	Vh	Vi
father's job														
father's job x fatherless														
constant	-3.806***	-2.934***	-4.010***	-1.112***	-1.746***	-0.961***	-1.309***	-1.547***	-0.592***	-1.621***	-2.650***	-1.983***	-1.199***	-2.381***
	(0.280)	(0.176)	(0.304)	(0.0794)	(0.103)	(0.0748)	(0.0870)	(0.0909)	(0.0630)	(0.0963)	(0.159)	(0.117)	(0.0827)	(0.139)
N	109648													
Cases	3916													
χ^2	910.0***													

Standard errors in parentheses; + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
See table 3 for details on the job classification.

Table 18: Robustness Check 2d: CL full model, only boys

		Ia	IIa/IIIa/IIIb	IIIc	IIId/IIIe	IIIf	IIIh	IIIi	IIIk/IIIl	IIIm	IIIn	IIIo	IIIp	IIIq
father's job	1.148***													
	(0.0479)													
father's job x fatherless	-0.699**													
	(0.241)													
years of education		-0.120*	-0.182	0.262*	-0.0306	-0.188*	0.137***	-0.363*	-0.134	-0.151**	-0.134*	-0.226**	-0.135*	-0.186*
		(0.0531)	(0.115)	(0.106)	(0.0853)	(0.0757)	(0.0357)	(0.142)	(0.114)	(0.0559)	(0.0542)	(0.0752)	(0.0637)	(0.0806)
years of education x fatherless		-0.0310	-0.0289	-0.357	-0.00206	0.0258	-0.0402	0.0762	-0.0165	-0.0248	-0.000272	-0.0603	-0.0629	-0.0509
		(0.0387)	(0.0756)	(0.338)	(0.0523)	(0.0367)	(0.0299)	(0.0615)	(0.0685)	(0.0383)	(0.0326)	(0.0608)	(0.0487)	(0.0606)
time trend		-0.0273***	-0.0344**	0.0441*	-0.0102	-0.00934	0.0147**	0.0191	-0.0315**	0.00553	0.00674	0.0164*	-0.00949	0.00578
		(0.00562)	(0.0113)	(0.0210)	(0.01000)	(0.00766)	(0.00507)	(0.0149)	(0.0115)	(0.00597)	(0.00596)	(0.00769)	(0.00657)	(0.00807)
time trend x fatherless		-0.0326	-0.0523	0.197	-0.0123	0.0136	-0.00593	-0.0530	0.0164	0.0481*	-0.0102	-0.0835*	0.0362	0.0133
		(0.0255)	(0.0444)	(0.139)	(0.0376)	(0.0261)	(0.0232)	(0.0437)	(0.0529)	(0.0234)	(0.0218)	(0.0370)	(0.0290)	(0.0430)
northern Germany		0.307	-0.233	-14.22	-0.0769	-0.206	-0.0993	-0.0295	-0.0608	0.153	0.0789	0.319	0.210	0.506+
		(0.197)	(0.459)	(621.4)	(0.386)	(0.311)	(0.188)	(0.568)	(0.436)	(0.220)	(0.219)	(0.268)	(0.239)	(0.275)
northern Germany x fatherless		0.214	0.172	-0.260	0.0859	-0.570	-0.982	-14.26	-14.22	-0.463	0.306	0.106	0.345	-14.24
		(0.680)	(1.275)	(2557.0)	(1.238)	(1.152)	(1.112)	(1237.4)	(1656.4)	(0.883)	(0.710)	(0.966)	(0.948)	(1121.7)
constant		-0.157	-0.827	-6.930***	-2.157*	0.153	-2.498***	0.573	-1.375	0.260	0.0317	0.422	-0.148	-0.150
		(0.592)	(1.261)	(1.379)	(0.972)	(0.833)	(0.425)	(1.510)	(1.269)	(0.623)	(0.604)	(0.824)	(0.710)	(0.889)

	IIIr	IIIs	IIIt	IVa	IVb	Va	Vb	Vc	Vd	Ve	Vf	Vg	Vh	Vi
father's job														
father's job x fatherless														
years of education	0.0694	0.0248	0.00472	0.740***	0.374***	0.177***	0.458***	0.0247	0.419***	0.537***	0.488***	0.817***	0.952***	-0.0235
	(0.138)	(0.0932)	(0.161)	(0.0389)	(0.0408)	(0.0349)	(0.0356)	(0.0488)	(0.0287)	(0.0390)	(0.0594)	(0.0585)	(0.0522)	(0.0761)
years of education x fatherless	0.000151	-0.0551	-0.139	-0.0604+	-0.0651	-0.0396	-0.151**	-0.0600	-0.0561*	-0.0422	0.0357	-0.0632	-0.0765*	-0.0577
	(0.141)	(0.0794)	(0.277)	(0.0314)	(0.0426)	(0.0295)	(0.0571)	(0.0490)	(0.0259)	(0.0371)	(0.0393)	(0.0462)	(0.0374)	(0.0775)
time trend	0.0558*	0.0143	0.0623*	-0.0275***	-0.0178*	-0.00225	-0.00860	0.0171**	-0.0116**	-0.00992	0.00740	-0.00678	-0.0257***	0.0418***
	(0.0238)	(0.0124)	(0.0258)	(0.00625)	(0.00712)	(0.00505)	(0.00613)	(0.00625)	(0.00449)	(0.00697)	(0.0123)	(0.00905)	(0.00678)	(0.0106)
time trend x fatherless	0.0690	0.00324	0.0937	0.0327	0.0446	-0.00245	-0.0222	0.0424	-0.00793	0.00670	-0.0148	0.00996	0.000915	0.0339
	(0.0749)	(0.0402)	(0.128)	(0.0313)	(0.0313)	(0.0230)	(0.0351)	(0.0290)	(0.0208)	(0.0308)	(0.0336)	(0.0426)	(0.0399)	(0.0371)
northern Germany	0.327	-0.901	-0.917	-0.382	-0.396	0.0542	0.0284	0.482*	-0.0910	0.543*	0.340	0.400	-0.107	0.797**
	(0.685)	(0.616)	(1.059)	(0.237)	(0.286)	(0.185)	(0.218)	(0.208)	(0.165)	(0.226)	(0.391)	(0.284)	(0.237)	(0.308)
northern Germany x fatherless	-14.35	2.642*	-14.50	-0.403	0.928	-0.457	2.049*	-0.165	0.479	0.239	0.447	0.671	-0.247	0.848
	(1423.2)	(1.315)	(4384.9)	(1.203)	(0.989)	(0.859)	(0.956)	(0.930)	(0.634)	(0.879)	(0.947)	(1.139)	(1.260)	(1.029)
constant	-5.274**	-3.179**	-4.527*	-11.07***	-6.211***	-3.012***	-7.021***	-2.009***	-5.723***	-8.634***	-9.091***	-13.41***	-14.77***	-2.670**
	(1.660)	(1.077)	(1.904)	(0.575)	(0.535)	(0.421)	(0.475)	(0.565)	(0.363)	(0.546)	(0.851)	(0.941)	(0.841)	(0.881)
N	109648													
Cases	3916													
χ^2	1879.4***													

Standard errors in parentheses; + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
See table 3 for details on the job classification.

Table 19: Robustness check 2e: NL plain model, full sample

		Ia	IIa/IIIa/IIIb	IIIc	IIId/IIIe	IIIf	IIIh	IIIi	IIIk/IIIl	IIIm	IIIn	IIIo	IIIp	IIIq
father's job	1.932***													
	(0.0838)													
father's job x fatherless	-0.610**													
	(0.233)													
constant		-1.042***	-4.908***	-3.116***	-3.093***	-0.0503	-1.333***	-4.359***	-1.363***	-1.608***	-2.292***	-3.102***	-2.662***	-3.300***
		(0.163)	(0.610)	(0.432)	(0.423)	(0.173)	(0.279)	(0.551)	(0.280)	(0.299)	(0.344)	(0.425)	(0.386)	(0.446)
	IIIr	IIIs	IIIt	IVa	IVb	Va	Vb	Vc	Vd	Ve	Vf	Vg	Vh	Vi
father's job														
father's job x fatherless														
constant	-4.434***	-3.283***	-5.597***	-1.680***	-1.984***	-2.187***	-4.597***	-6.903***	-0.989**	-7.343***	-7.810***	-3.411***	-3.124***	-3.611***
	(0.561)	(0.439)	(0.687)	(0.304)	(0.329)	(0.489)	(0.734)	(0.954)	(0.357)	(1.009)	(1.067)	(0.618)	(0.584)	(0.638)
agricultureτ	0.601***													
	(0.0843)													
craftsmenτ	1.626***													
	(0.123)													
tertiaryτ	2.979***													
	(0.290)													
N	228536													
Cases	8162													
χ^2	532.6***													

Standard errors in parentheses; + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
See table 3 for details on the job classification.

Table 20: Robustness check 2f: NL full model, full sample

		Ia	IIa/IIIa/IIIb	IIIc	IIId/IIIe	IIIf	IIIh	IIIi	IIIk/IIIl	IIIm	IIIn	IIIo	IIIp	IIIq
father's job	1.205***													
	(0.0852)													
father's job x fatherless	-0.585**													
	(0.195)													
female		-0.483**	0.380	0.286	-2.575***	-2.527***	-1.903***	-0.0687	2.099***	-0.402*	-4.771***	-3.070***	-2.890***	-2.059***
		(0.186)	(0.419)	(0.261)	(0.507)	(0.262)	(0.270)	(0.359)	(0.317)	(0.182)	(1.076)	(0.638)	(0.514)	(0.433)
female x fatherless		-14.06	1.324	-0.340	1.540	0.246	-14.23	-0.174	0.476	0.205	-11.77	1.768	1.562	-12.92
		(28709526.4)	(1.487)	(0.948)	(0.996)	(0.738)	(1249.6)	(1.013)	(0.824)	(0.661)	(1394.0)	(1.291)	(1.252)	(1323.7)
years of education (YE)		0.0313	0.409***	0.294***	-0.0213	0.225***	0.354***	-0.299*	0.0118	0.0168	0.0705	-0.0149	0.0806	0.0239
		(0.0359)	(0.104)	(0.0740)	(0.0874)	(0.0461)	(0.0511)	(0.128)	(0.0683)	(0.0645)	(0.0675)	(0.0861)	(0.0741)	(0.0894)
YE x fatherless		-0.00153	-0.0541	-0.00997	0.0307	0.00238	-0.0365	0.0917	-0.0284	-0.00885	0.00311	-0.0593	-0.0637	-0.0482
		(0.0308)	(0.112)	(0.0567)	(0.0436)	(0.0307)	(0.0385)	(0.0627)	(0.0709)	(0.0416)	(0.0404)	(0.0621)	(0.0548)	(0.0651)
time trend		0.00163	0.0349**	0.0260**	0.0265***	0.0343***	0.0470***	0.0515***	0.00744	0.0380***	0.0402***	0.0496***	0.0248***	0.0396***
		(0.00459)	(0.0134)	(0.00796)	(0.00793)	(0.00447)	(0.00565)	(0.0115)	(0.00576)	(0.00563)	(0.00653)	(0.00814)	(0.00702)	(0.00818)
time trend x fatherless		-0.0125	0.0411	-0.0234	0.0211	0.00912	0.00324	-0.0222	0.0123	0.0267	-0.00168	-0.0617+	0.0554+	0.0213
		(0.0175)	(0.0450)	(0.0337)	(0.0258)	(0.0177)	(0.0256)	(0.0336)	(0.0225)	(0.0215)	(0.0241)	(0.0341)	(0.0296)	(0.0438)
northern Germany (NG)		-0.156	-0.395	-0.386	-0.529+	-0.278+	-0.412*	-0.238	-0.457*	-0.0295	-0.196	0.0109	-0.107	0.183
		(0.200)	(0.511)	(0.304)	(0.320)	(0.159)	(0.203)	(0.440)	(0.209)	(0.201)	(0.236)	(0.281)	(0.252)	(0.283)
NG x fatherless		0.0352	-15.14	-0.373	-0.911	-0.190	-1.211	-15.87	-16.58	-0.299	0.0703	0.403	-0.0228	-15.69
		(0.543)	(2543.8)	(1.207)	(1.178)	(0.554)	(1.156)	(2112.2)	(2190.1)	(0.738)	(0.764)	(0.900)	(0.978)	(2070.4)
constant		-0.829+	-6.841***	-4.323***	-0.244	-1.053*	-3.433***	1.219	-1.492*	-0.169	-0.782	-0.450	-1.074	-1.001
		(0.431)	(1.383)	(0.929)	(0.922)	(0.514)	(0.626)	(1.244)	(0.725)	(0.675)	(0.725)	(0.913)	(0.809)	(0.963)

	IIIr	IIIs	IIIt	IVa	IVb	Va	Vb	Vc	Vd	Ve	Vf	Vg	Vh	Vi
father's job														
father's job x fatherless														
female	1.092**	0.652*	0.0698	-0.305	0.590*	1.323***	0.813***	-3.151***	1.813***	-2.145***	2.365***	3.704***	2.932***	3.023***
	(0.419)	(0.284)	(0.495)	(0.254)	(0.236)	(0.167)	(0.236)	(0.559)	(0.155)	(0.545)	(0.392)	(0.308)	(0.242)	(0.298)
female x fatherless	-0.625	0.793	-0.0633	0.403	0.422	0.210	1.005	2.521*	0.201	-0.405	-0.859	-0.535	1.590+	0.910
	(1.076)	(0.781)	(1.641)	(0.977)	(0.741)	(0.629)	(0.911)	(1.035)	(0.551)	(1.912)	(1.013)	(0.889)	(0.882)	(0.951)
years of education (YE)	-0.0590	0.0824	0.0531	1.034***	0.687***	0.243***	0.753***	0.0220	0.682***	0.883***	1.019***	0.886***	1.325***	-0.211*
	(0.125)	(0.0892)	(0.158)	(0.0804)	(0.0639)	(0.0547)	(0.0560)	(0.0870)	(0.0471)	(0.0715)	(0.0809)	(0.0584)	(0.0863)	(0.0846)
YE x fatherless	0.0577	-0.00570	-0.132	-0.0494	-0.0579	-0.0454	-0.195**	-0.0413	-0.0356	-0.0501	0.107+	-0.0351	-0.141*	-0.0763
	(0.0964)	(0.0619)	(0.214)	(0.0397)	(0.0457)	(0.0471)	(0.0721)	(0.0694)	(0.0380)	(0.0654)	(0.0562)	(0.0606)	(0.0576)	(0.0884)
time trend	0.0819***	0.0280***	0.0876***	0.00856	0.0155*	0.0344***	0.0297***	0.0670***	0.0151**	0.0239*	0.0184	0.0429***	0.00701	0.0375***
	(0.0138)	(0.00829)	(0.0192)	(0.00660)	(0.00632)	(0.00515)	(0.00709)	(0.00968)	(0.00495)	(0.0104)	(0.0119)	(0.00662)	(0.00703)	(0.00611)
time trend x fatherless	0.0511	0.0355	0.102	0.0493+	0.0342	0.00715	-0.00743	0.0567	-0.00209	0.0312	0.00400	0.0270	0.0301	0.0229
	(0.0429)	(0.0250)	(0.0914)	(0.0295)	(0.0260)	(0.0213)	(0.0324)	(0.0347)	(0.0198)	(0.0449)	(0.0363)	(0.0282)	(0.0279)	(0.0222)
northern Germany (NG)	-0.146	-0.866*	-1.679	-0.524*	-0.541*	-0.211	-0.0923	0.286	-0.450**	0.678*	-0.201	-0.0266	-0.368	0.461*
	(0.444)	(0.379)	(1.046)	(0.231)	(0.237)	(0.183)	(0.245)	(0.304)	(0.172)	(0.332)	(0.408)	(0.220)	(0.232)	(0.215)
NG x fatherless	-15.62	0.990	-12.84	-1.026	0.516	0.0927	2.536*	-1.583	-0.627	0.340	-0.282	0.157	0.942	1.037
	(1941.9)	(0.900)	(1639.7)	(1.217)	(0.863)	(0.709)	(0.994)	(1.364)	(0.703)	(1.318)	(1.194)	(0.926)	(0.872)	(0.722)
constant	-2.243+	-2.318*	-3.452+	-13.21***	-8.480***	-3.276***	-10.61***	-1.913*	-8.122***	-13.26***	-17.17***	-13.87***	-19.29***	-0.738
	(1.341)	(0.991)	(1.771)	(1.240)	(0.956)	(0.572)	(0.856)	(0.874)	(0.619)	(1.183)	(1.504)	(1.043)	(1.475)	(0.762)
agricultureτ	0.391***													
	(0.0633)													
craftsmenτ	1.001***													
	(0.0902)													
tertiaryτ	1.718***													
	(0.157)													
N	228536													
Cases	8162													
χ^2	1583.1***													

Standard errors in parentheses; + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
See table 3 for details on the job classification.

Table 21: Robustness check 2g: NL plain model, only boys

		Ia	IIa/IIIa/IIIb	IIIc	IIId/IIIe	IIIf	IIIh	IIIi	IIIk/IIIl	IIIm	IIIn	IIIo	IIIp	IIIq
father's job	2.132***													
	(0.111)													
father's job x fatherless	-1.013**													
	(0.312)													
constant		-0.698***	-5.099***	-3.205***	-2.310***	0.785***	-0.580*	-4.342***	-3.746***	-1.371***	-1.432***	-2.273***	-1.811***	-2.539***
		(0.160)	(0.748)	(0.520)	(0.422)	(0.155)	(0.270)	(0.648)	(0.569)	(0.336)	(0.331)	(0.420)	(0.377)	(0.448)

	IIIr	IIIs	IIIt	IVa	IVb	Va	Vb	Vc	Vd	Ve	Vf	Vg	Vh	Vi
father's job														
father's job x fatherless														
constant	-5.314***	-3.898***	-5.638***	-1.006**	-2.000***	-2.053***	-2.924***	-3.502***	-1.021**	-3.644***	-6.338***	-4.656***	-2.610***	-5.647***
	(0.782)	(0.583)	(0.822)	(0.306)	(0.393)	(0.503)	(0.612)	(0.668)	(0.359)	(0.690)	(1.050)	(0.829)	(0.570)	(0.955)
agricultureτ	0.554***													
	(0.103)													
craftsmenτ	1.612***													
	(0.134)													
tertiaryτ	2.488***													
	(0.283)													
N	109648													
Cases	3916													
χ^2	369.3***													

Standard errors in parentheses; + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
See table 3 for details on the job classification.

Table 22: Robustness check 2h: NL full model, only boys

		Ia	IIa/IIIa/IIIb	IIIc	IIId/IIIe	IIIf	IIIh	IIIi	IIIk/IIIl	IIIm	IIIn	IIIo	IIIp	IIIq
father's job	1.339***													
	(0.102)													
father's job x fatherless	-0.887***													
	(0.245)													
years of education (YE)		0.0000580	0.403***	0.0916	-0.0809	0.122*	0.270***	-0.263+	-0.0170	-0.0444	-0.0197	-0.123	-0.0246	-0.0794
		(0.0351)	(0.120)	(0.0988)	(0.0920)	(0.0524)	(0.0567)	(0.156)	(0.127)	(0.0744)	(0.0726)	(0.0922)	(0.0805)	(0.0966)
YE x fatherless		0.00622	-0.369	0.0219	0.0516	0.0264	-0.0166	0.102	0.00916	-0.00163	0.0266	-0.0360	-0.0391	-0.0264
		(0.0260)	(0.354)	(0.0610)	(0.0482)	(0.0363)	(0.0433)	(0.0697)	(0.0756)	(0.0499)	(0.0450)	(0.0684)	(0.0587)	(0.0687)
time trend		-0.00197	0.0702**	0.0165	0.0177*	0.0266***	0.0411***	0.0469**	-0.00450	0.0329***	0.0338***	0.0438***	0.0177*	0.0332***
		(0.00472)	(0.0220)	(0.0109)	(0.00877)	(0.00542)	(0.00655)	(0.0157)	(0.0127)	(0.00719)	(0.00721)	(0.00881)	(0.00781)	(0.00906)
time trend x fatherless		-0.00386	0.257+	0.0272	0.0544	0.0402+	0.0344	-0.0139	0.0564	0.0909**	0.0301	-0.0455	0.0784*	0.0545
		(0.0146)	(0.148)	(0.0428)	(0.0332)	(0.0242)	(0.0311)	(0.0483)	(0.0574)	(0.0322)	(0.0296)	(0.0415)	(0.0363)	(0.0484)
northern Germany (NG)		0.0360	-14.78	-0.323	-0.441	-0.248	-0.347	-0.253	-0.298	-0.0792	-0.158	0.0914	-0.0204	0.275
		(0.180)	(688.7)	(0.411)	(0.340)	(0.192)	(0.233)	(0.588)	(0.457)	(0.258)	(0.258)	(0.303)	(0.275)	(0.311)
NG x fatherless		-0.126	0.560	-0.108	-0.776	-0.194	-1.191	-15.83	-15.33	-0.644	0.113	-0.0997	0.164	-16.09
		(0.460)	(1825.9)	(1.313)	(1.238)	(0.645)	(1.209)	(2291.6)	(2473.0)	(1.008)	(0.828)	(1.036)	(1.057)	(2420.4)
constant		-0.461	-7.099***	-2.106+	0.356	0.0452	-2.563***	0.857	-1.288	0.478	0.150	0.679	0.0225	0.0699
		(0.406)	(1.643)	(1.133)	(0.975)	(0.580)	(0.685)	(1.607)	(1.403)	(0.789)	(0.771)	(0.964)	(0.866)	(1.027)

	IIIr	IIIs	IIIt	IVa	IVb	Va	Vb	Vc	Vd	Ve	Vf	Vg	Vh	Vi
father's job														
father's job x fatherless														
years of education	0.187	0.150	0.120	0.924***	0.530***	0.138+	0.630***	-0.145	0.571***	0.777***	0.679***	1.310***	1.575***	-0.242
	(0.151)	(0.106)	(0.174)	(0.0862)	(0.0675)	(0.0747)	(0.0705)	(0.106)	(0.0573)	(0.0810)	(0.115)	(0.145)	(0.159)	(0.156)
years of education x fatherless	0.0174	-0.0314	-0.128	-0.0411	-0.0437	-0.00210	-0.223*	-0.0477	-0.0428	-0.0127	0.146+	-0.0485	-0.0791	-0.0356
	(0.150)	(0.0867)	(0.291)	(0.0454)	(0.0536)	(0.0558)	(0.112)	(0.0948)	(0.0499)	(0.0720)	(0.0790)	(0.0887)	(0.0697)	(0.147)
time trend	0.0832***	0.0408**	0.0897***	-0.00618	0.00634	0.0216*	0.0163	0.0599***	0.00684	0.0121	0.0466+	0.0226	-0.0126	0.109***
	(0.0249)	(0.0132)	(0.0269)	(0.00843)	(0.00855)	(0.00887)	(0.0112)	(0.0116)	(0.00790)	(0.0129)	(0.0238)	(0.0167)	(0.0123)	(0.0219)
time trend x fatherless	0.114	0.0443	0.143	0.0714+	0.0856*	0.0312	-0.0171	0.115*	0.0204	0.0423	0.00150	0.0528	0.0377	0.0997
	(0.0813)	(0.0461)	(0.136)	(0.0387)	(0.0385)	(0.0397)	(0.0595)	(0.0563)	(0.0359)	(0.0561)	(0.0613)	(0.0776)	(0.0699)	(0.0740)
northern Germany	0.0967	-1.147+	-1.161	-0.670*	-0.667*	-0.325	-0.338	0.562	-0.550*	0.643	0.251	0.309	-0.604	1.202*
	(0.706)	(0.642)	(1.082)	(0.285)	(0.321)	(0.321)	(0.394)	(0.369)	(0.280)	(0.413)	(0.749)	(0.520)	(0.416)	(0.581)
Northern Germany x fatherless	-15.36	2.475+	-13.10	-0.588	0.749	-1.462	3.498*	-1.160	0.426	-0.0980	0.307	0.629	-1.278	0.746
	(1999.8)	(1.428)	(1920.5)	(1.319)	(1.109)	(1.552)	(1.743)	(1.669)	(1.049)	(1.608)	(1.747)	(2.105)	(2.343)	(1.824)
constant	-5.181**	-3.188*	-4.427*	-11.85***	-6.569***	-2.425**	-9.561***	-0.601	-7.109***	-12.56***	-13.51***	-21.75***	-24.37***	-1.953
	(1.855)	(1.251)	(2.074)	(1.296)	(0.953)	(0.778)	(1.091)	(1.021)	(0.762)	(1.404)	(1.936)	(2.705)	(2.840)	(1.598)
agricultureτ	0.327***													
	(0.0667)													
craftsmenτ	1.009***													
	(0.0961)													
tertiaryτ	1.959***													
	(0.235)													
N	109648													
Cases	3916													
χ^2	509.6***													

Standard errors in parentheses; + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
See table 3 for details on the job classification.

Table 23: Estimation results of a mixed logit model

	Mean	Std. Dev.
father's job	-0.0527	2.536***
	(0.715)	(0.000)
father's job x without father	-1.672	2.331
	(0.136)	(0.115)
controls included	YES	
interactions of controls and job groups included?	YES	
N	228536	
Cases	8162	
χ^2	6570.7***	

p-values in parentheses

$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

See table 3 for details on the job classification.

References

Anker, R. (1997), Theories of Occupational Segregation by Sex: An Overview, *International Labour Review* 136(3), pp. 315–339.

Antecol, H. and Cobb-Clark, D. (2010), Do Non-Cognitive Skills Help Explain the Occupational Segregation of Young People?, Melbourne Institute Working Paper Series wp2010n13, Melbourne Institute of Applied Economic and Social Research, The University of Melbourne.

Bentolila, S., Michelacci, C., and Suarez, J. (2008), Social Contacts and Occupational Choice, *Economica* 77(305), pp. 20–45.

Björklund, A., Jäntti, M., and Solon, G. (2005), Influences of Nature and Nurture on Earnings Variation: a Report on a Study of various Sibling Types in Sweden, in S. Bowles, H. Gintis, and M. Osborne-Groves (eds.), *Unequal Chances: Family Background and Economic Success*, Princeton: Princeton University Press, pp. 145–164.

Black, S. E. and Devereux, P. J. (2011), Recent Developments in Intergenerational Mobility, in O. C. Ashenfelter and Car (eds.), *Handbook of Labor Economics*, Amsterdam: North Holland, vol. 4B, chap. 16, pp. 1487–1541.

Boehm, T. and Riedel, N. (2012), On Adverse Selection into Public Civil Service, *CESifo Economic Studies* Advance Access. First published online: December 29, 2012.

Bouchard, T. J. (2004), Genetic Influence on Human Psychological Traits – A Survey, *Current Directions in Psychological Science* 13(4), pp. 148–151.

Corak, M. and Piraino, P. (2011), The Intergenerational Transmission of Employers, *Journal of Labor Economics* 29(1), pp. 37–68.

Corneo, G. and Jeanne, O. (2009), A Theory of Tolerance, *Journal of Public Economics* 93(5-6), pp. 691–702.

DeLeire, T. and Levy, H. (2004), Worker Sorting and the Risk of Death on the Job, *Journal of Labor Economics* 22(4), pp. 210–217.

Doepke, M. and Zilibotti, F. (2008), Occupational Choice and the Spirit of Capitalism, *The Quaterly Journal of Economics* 123(2), pp. 747–793.

Drost, A. (2002), The Dynamics of Occupational Choice: Theory and Evidence, *LABOUR: Review of Labour Economics Industrial Relations* 16(2), pp. 201–233.

Fossen, F.M. (2012), Gender Differences in Entrepreneurial Choice and Risk Aversion – A Decomposition based on a Microeconometric Model, *Applied Economics* 44(14), pp. 1795–1812.

Grazier, S. and Sloane, P.J. (2008), Accident Risk, Gender, Family Status and Occupational Choice in the UK, *Labour Economics* 15(5), pp. 938–957.

Harper, B. and Haq, M. (1997), Occupational Attainment of Men in Britain, *Oxford Economic Papers* 49(4), pp. 638–650.

Hellerstein, J. K. and Morrill, M. S. (2011), Dad and Daughters – The Changing Impact of Fathers on Women's Occupational Choices, *Journal of Human Resources* 46(2), pp. 333–372.

Judge, T. A. and Bono, J. E. (2001), Relationship of Core Self-Evaluations Traits–Self-Esteem, generalized Self-Efficacy, Locus of Control, and emotional Stability–with Job Satisfaction and Job Performance: a Meta-Analysis, *Journal of Applied Psychology* 86(1), pp. 80–92.

Kleinjans, K. J. (2010), Family Background and Gender Differences in Educational Expectations, *Economics Letters* 107(2), pp. 125–127.

Krueger, A. B. and Schkade, D. A. (2008), Sorting in the Labor Market: Do Gregarious Workes Flock to Interactive Jobs?, *Journal of Human Resources* 43(4), pp. 859–883.

Laband, D. N. and Lentz, B. F. (1983), Occupational Inheritance in Agriculture, *American Journal of Agricultural Economics* 65(2), pp. 311–314.

Laband, D. N. and Lentz, B. F. (1992), Self-Recruitment in the Legal Profession, *Journal of Labor Economics* 10(2), pp. 182–201.

Lentz, B. F. and Laband, D. N. (1989), Why so many Children of Doctors become Doctors: Nepotism vs. Human Capital Transfers, *Journal of Human Resources* 24(3), pp. 396–413.

Lentz, B. F. and Laband, D. N. (1990), Entrepreneurial Success and Occupational Inheritance among Proprietors, *Canadian Journal of Economics* 23(3), pp. 563–579.

McFadden, D. (1974), Frontiers in Econometrics, in P. Zarembka (ed.), *Conditional Logit Analysis of Qualitative Choice Behaviour*, New York: Academic Press, pp. 105–142.

McFadden, D. (1978), Modelling The Choice of Residential Location, in A. Karlkvist, L. Sundqvist, F. Snickars, and J. W. Weibull (eds.), *Spatial Interaction Theory and Planning Models*, Amsterdam: North Holland, chap. 3, pp. 77–96.

Polachek, S. W. (1981), Occupational Self-Selection: A Human Capital Approach to Sex Differences in Occupational Structure, *The Review of Economics and Statistics* 63(1), pp. 60–69.

Robertson, D. and Symons, J. (1990), The Occupational Choice of British Children, *The Economic Journal* 100(402), pp. 828–841.

Sookram, S. and Strobl, E. (2009), The Role of Educational Choice in Occupational Gender Segregation: Evidence from Trinidad and Tobago Sandra Sookram, *Economics of Education Review* 28(1), pp. 1–10.

Statistisches Bundesamt (1992), *Klassifizierung der Berufe – Systematisches und alphabetisches Verzeichnis der Berufsbenennungen. Ausgabe 1992*, Stuttgart: Metzler-Poeschel.

Wagner, G. G., Frick, J. R., and Schupp, J. (2007), The German Socio-Economic Panel Study (SOEP) - Scope, Evolution and Enhancements, *Schmollers Jahrbuch* 127(1), pp. 139–169.