Gender occupational segregation: the role of parents

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Abstract

Gender occupational segregation is one of the most stable phenomena of the labor market. In this study we employ PSID dataset to test whether the fact that women have different professions than men can be, at least partially, explained by their parents occupational history. We find that fathers profession, both first one and the one observed by the son correlate positively with gender intensity of son's occupation. Mother's first occupation is associated with daughter's, but the one that it is performed by mother during daughter's growing up is insignificant. While father's profession is negatively correlated with gender intensity of daughter's profession, mother's occupation does not matter for son's career.

Keywords:
choice of occupation, family, gender occupational segregation

JEL Classification
J16, J13, J24

1 Introduction

Choosing an occupation is probably one of the most complex and, at the same time, essential choice made by oneself in the entire life. Considering it under Roy (1951) concept of simple comparison of future profits and costs bring it to the case of typical everyday choice, while we have already known that this is one of the choices greatly affected by both pecuniary and nonpecuniary motivations (Ham et al., 2009; Treiman, 2013). Among extensive set of circumstances, not related to financial analyses, that can partially explain occupational choices, in this article we are going to exploit the topic of gender identity and parents role in their children occupational choice mechanism.

There are several channels through which parents can affect on their children choice of occupation. First, they can serve as "exact" role models. Individuals often choose the same carrier as their parents (Laband and Lentz, 1983) and this is often economically reasonable. This might by driven by admiration of parents as professionals, but most likely it is because growing up among members of certain occupational group - parents and parents colleagues - make starting professional career much easier. Being raised among lawyers, doctors, cleaners or nurses makes individual aware of all secrets of the profession. Children choosing the same occupation as they parent do not need to adapt to a new social group and overcome entry barriers. This case is especially frequent for entrepreneurs (Lentz and Laband, 1990) - child who has a perspective to inherit firm established by parent, especially with a strong market position - automatically inherit parent occupation. But also parent often prefer to keep company within the family and transferring it to own descendant is the best way to do it. Sharing the same occupation is more often in same-sex parent-child couples (Korupp et al., 2002). Knowing the reality of parental occupation can also prevent from choosing it. Long time spend at work, short time for private live, frustration - observing it in the childhood makes parents counter examples.

Second, parents can be occupational advisors, serving as a support for their adult children. They give more general professional advices, not connected to any specific occupation. Experienced by their own career or followed by their beliefs they may affect occupational choices by directly encouraging or discouraging from specific carrier path. Some parents try to push their kids to some prestigious occupations, like e.g. doctors or lawyers, believing that this will ensure them decent future. Others will strongly dissuade from professions that seems to be unstable or difficult, e.g. from artistic career.

From the perspective of the following study, what seems to be the most interesting is possible indirect process of occupational rules transmission. The most subtle way in which parents can influence their children career is by sharing with them beliefs and attitudes not directly connected with choice of the profession. As it is highlighted by identity theory (Akerlof and Kranton, 2000, 2010), gender identity and related with it concept of rules that men and women should follow in professional life, lead to observable differences in occupational choices between women and men (Akerlof and Kranton, 2010).

Akerlof and Kranton (2000, 2010) highlight the role of other people's behavior (especially

members of the same social group) in the choice of occupation process. In this study we focus on parents - how their own decisions interact with their children choices. Psychology literature claim that identity is in large degree shaped by influence of parents (Samuolis et al., 2001). We follow this thesis and hypothesize that parents beliefs and attitudes toward gender roles in the labor market (recognized by their own choices) match with their children decisions. We test whether persistent gender segregation in the labor market and every year slower changes in this area can be attributed to the transmission of beliefs and attitudes related to traditional gender roles between generations.

Would a daughter of a nurse choose rather career of the HR manager than CEO? Does son of a mechanic have lower chance to become a ballet dancer than the son of an accountant? In principle, we look at the correlation between mother-daughter and father-son occupations, but as gender identity rules may be shaped by counter-examples based on the behavior of the member of the opposite gender group, two alternative dyads are also included.

We provide to strategies to test association between first choices and observation of the parent and child choice. For first choices analyses we find that the correlation is significant in same-gender parent-child pairs. The more dominated by women occupation of mother, the more female dominated daughter's profession. Positive association is found for father and son too. When we analyze link between observed by child parent profession and occupation chosen in adulthood, significance is found only between father's and children profession. For sons correlation is again positive, while for daughters negative. It means that daughters of fathers working in gender neutral occupations are more likely to choose gender neutral occupation or even atypical for women one.

Finally, we additionally exploit the topic of unpaid work and how the division of it between parents affect children's choices. Unpaid work is associated with women's gender role. It is also and important part of family life. We test whether observation of rules related to household chores division can associate with children future choices. We find that choice of occupation of daughter is indeed associated with how mother and father share household duties withing the household.

Our results contribute and expand achievements of research focused on the role of the family for the labor market mechanisms. Focusing not only on relations between female family members, we discover important role of parents for both daughters and sons and their future choices of occupation. Apart form analyses on choices of occupations, we show that also unpaid work and how it is divided between family members can matter for occupational segregation. The results of the study suggest that there is need to more carefully observe family ties in the context of labor market phenomena as these relations might be significant and complex.

The article is structured as follows. First, we describe data used in the empirical study. Second, we formulate model of estimated equation and provide details about method. Third, we provide results and comment on them. Fourth, we provide several robustness checks and, finally, we conclude findings from the study.

2 Feminization of the occupation index

Attempt to measure gender character of the occupation requires proposition of the way how to measure this empirically. In our study as a proxy of feminine or masculine character of the occupation is represented by a share of women employed in the occupation - the more dominated by women professional group, the more consistent with gender rules decision on the occupation. As we are aware that the situation of women in the labor market changed dynamically not only in the case of occupational segregation, but also total participation in the labor market, we need to take into account changes in share of women as a paid workers. Including this information in the index we make measure of gender typicality comparable between years. The index of feminization of the occupation is be described by the following equation:

$$FemOcc_{i,y} = \frac{women\,as\,a\,\%\,of\,employed_{i,y}}{women\,as\,a\,\%\,of\,employed_y}, \tag{1}$$

where i - is the narrow occupational group (in empirical studies we use 4 digit coding) and y - is a specific year in which we observe individuals. $FemOcc$ index as a quotient of percent of women in occupation i and year y, and percent of women in the whole labor market in the year y shows how much occupation is dominated by women in comparison to the situation on the whole labor market.

When the index is equal to one, the occupation is relatively equal, i.e. women constitute the same share of workers within occupation as in total labor market. The higher the number, the more typical for female occupation. If the index is closer to zero, the occupation is mostly dominated by male workers.

Construction of the $FemOcc$ index forces excluding from the sample inactive women and men. As this part of the market is also important from the perspective of our study - in the analyses between paid and unpaid work - and being inactive is definitely gender specific and correlated with views on gender roles in the family and in the labor market - we construct measure especially for inactive population as well. For parents who are out of the labor market the $FemOcc$ index is equal to share of inactive women between total inactive divided by total share of women in the population.

3 Data

To test whether parents professions correlate with gender character of their children's occupation we need two sources of data: first, nationally representative sample of workers to obtain measures of how much dominated by women is each occupational group in a given year, and second, social survey including parents and adult children individual and labor market characteristics. The two databases that meet these essential criteria are American Community Survey (ACS) and Panel Study of Income Dynamics (PSID).

The American Community Survey is the largest nationally representative data on labor market and demographic characteristics of USA population. In this study it is used to calculate

feminization of the occupation indexes for both children and parents occupational groups. As we merge two datasets, we need to clarify the occupation classification used in both sources. Although the Panel Study of Income Dynamics survey code occupations using system typical for American Community Survey, only two waves of classification - from 1970 and 2001 - are used, while ACS adjust occupation groups every year. Therefore, first, we recode ACS data to coding systems used in PSID. Additionally, until 2000 ACS datasets are available only once for every 10 years, so we have to use data for 1960, 70, 80 and 90 and merge feminization of the occupation indexes from these samples with PSID datasets for each year in the corresponding decade. For sample between 2001 and 2013 feminization indexes are calculated for each year.
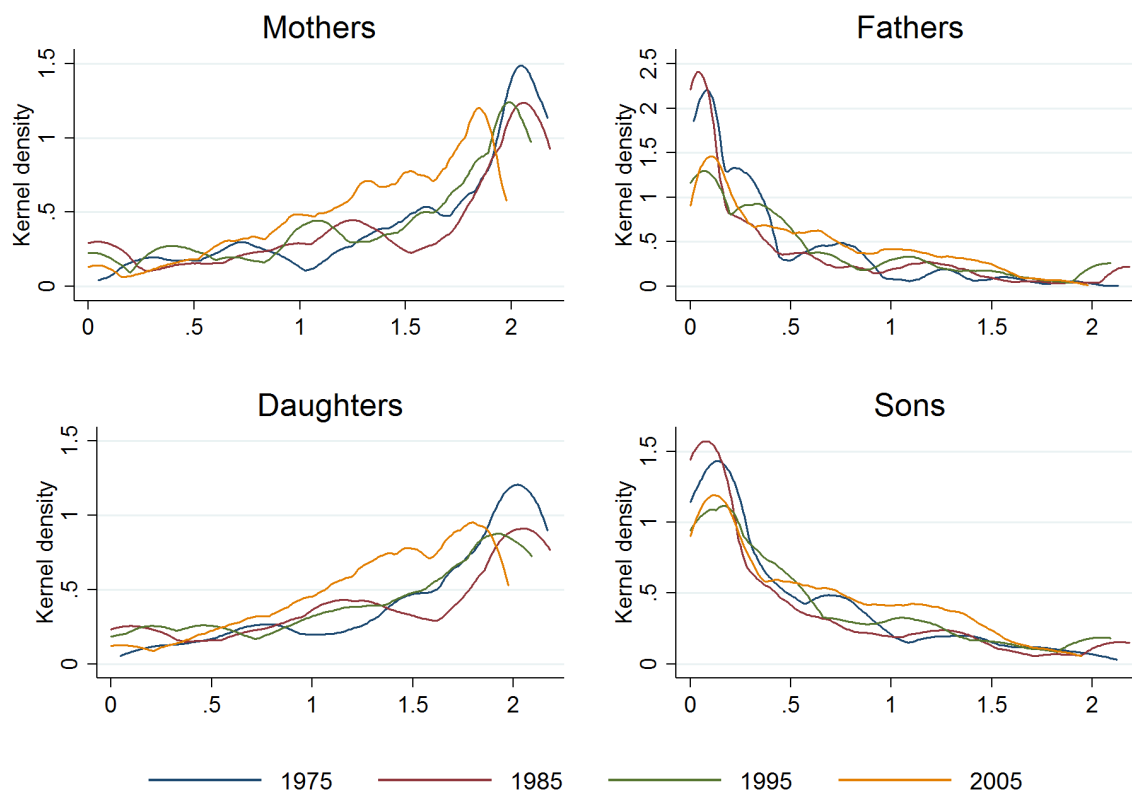
The second source of data, Panel Study of Income Dynamics is the longest existing household panel survey, nationally representative and originally conducted to study dynamics of income and poverty in the United States of America. Since the first wave in 1968 survey expanded both in the sense of sample size and topics included. Until 1996 survey was conducted every year, since 1997 every two years - so, in total, we use 38 waves of the survey. One of the most interesting feature of the study is that children from the families participating in the first survey are followed even after starting own family. Then data are collected also for their partners and children. Therefore, it is possible to track history of even three generations within the same family, including labor market experience, within family changes and much more. We are going to exploit this feature by studying parents and children occupational decisions.

Unfortunately, PSID does not collect information of detailed occupational group for all members of the family - only "Head" and "Wife" in the household report it (and they do it in each wave). The PSID originally defined a male partner in the husband-wife pair in the family unit as "Head", and his wife or female partner as "Wife". In each family unit there is only one "Head", but the "Head" may change between years - e.g. if previous year "Head" dies or become incapacitated. The "Head" must be at least 16 years old and has to be financially responsible for the family. If there is no male member that can fulfill these conditions, a female become a "Head" in the family unit.

It means that we collect information on professional career only of two members of the family, and we have to exclude most of the individuals from our sample. Being precise, the whole sample of PSID data includes over 75 thousands of individuals, from which for only 35% of the sample we have information about at least one occupation. Additionally, we have to exclude "Heads" and "Wives" from the first surveys, i.e. whose parents are not PSID participants (over 15.4 thousands of individuals) and those whose parents occupation is unrecorded (700 mothers and 3 000 fathers). Taking into account all limitations of the survey, our study will be based on the data on around 6 thousands individuals from 75 thousands in the total sample. We have to highlight that this is only driven by lack of information about occupation and it is random (except time dimension, but we control for it).

As it is showed in Figure 1 gender occupational segregation is clear among PSID participants - both parents and children. There is also strong positive time trend towards gender equality in occupational groups, but comparing especially distribution from 1995 and 2005, speed of

Figure 1: Feminization of the occupation index in the sample of mothers, fathers and children.

changes is slowing down. We observe also differences between generations - larger for fathers and sons, and smaller for mothers and daughters.

The feminization of the occupation index by construction ignores individuals in unpaid work. But in the context of gender differences in choices of occupation, being a housewife has its important role and it is gender specific. For years specialization within the household was limited to division between paid and unpaid work. Women worked at home, while men earned money in the labor market. Taking that into account, we treat unpaid work at home of parents as a profession and provide feminization of the occupation index that is equal to share of women among inactive population to share of women in total USA population in a given year. Additional occupation - unpaid work at home - is the largest occupational group in our sample. It is much more typical for women - almost 46% of mothers and less then 16% of fathers do not report any paid work during the time of the survey. These statistics show that it is a substantial part of the occupational reality of families in USA and, therefore it should not be neglected.

Besides information of PSID participants occupation and their parents professions, we collect large set of individual (gender, year of birth, education level, race) and family characteristics (mother and father education levels, number of siblings). Among these characteristics, the most attention attracts educational level of children and their parents. Including education in the analysis of the gender occupational segregation is related to additional question whether movement towards gender equality in the occupational group is driven by well-educated or uneducated workers.

In PSID survey information about education is provided by several questions - we use the most detailed one - number of completed years of schooling. This measure of educational attainment has a long history in economic research, especially in studies by Barro and Lee (2013). Barro and Lee (2013) provide statistics for an average number of years spent at school for large number of countries including USA. In Table 1 we compare measures obtained by Barro and Lee (2013) with average statistics from our sample. We show that both parents and children educational attainment in PSID sample is comparable to Barro and Lee (2013) statistics. Therefore, in the context of education, our sample is nationally representative, thus, the results as well. Also, the educational improvement is visible in increasing average number of years of education among children in comparison to parents.

Finally, as we already mentioned, unpaid work is especially important in the context of choices of the occupation. Within household division of household chores between mother and father provide example for children on which types of tasks are designed for women and men. We check whether this division correspond to children's choices of occupation. Are daughters of mothers involved to the larger extent in household activities more likely to choose occupation more typical for women (with higher *FemOcc* index)? Do sons raised in the household where parents equally share responsibilities is going to decide to work in the profession that is gender neutral?

To test whether there is a link between household duties division between mother and father

Table 1: Educational attainment - comparison between Barro and Lee (2013) and the PSID sample.

|	Barro and Lee (2013) Mean	The PSID sample	
		Mean	Standard deviation
Years of school completed:			
	(from 2000)		
Total	13.1	13.7	2.07
Women	13.2	13.9	2.04
	(from 1980)		
Mothers	12.2	12.5	2.70
Fathers	12.3	12.2	3.31

Note: First column present statistics for average number of years of schooling for men and women in 2000 and 1980 from Barro and Lee (2013). Columns 2 and 3 present average number of years of schooling and standard deviation for samples of the PSID participants.

and choice of the occupation of children we collect data from the PSID Time Use Study. The PSID survey participants report how much time they spend on different activities including household duties. Using infomation on weekly hours spent on household duties reported by "Wife" and "Head" within the household we create a measure of the equality of the division of household responsibilities between mothers and fathers of PSID respondents. The measure is calculated as:

$$HDshare_i = \frac{Mother's\,HDhours_i}{Father's\,HDhours_i + Mother's\,HDhours_i} \tag{2}$$

where $Mother's\,HDhours_i$ is a number of hours spent on average during the week by mother of the individual i on household duties, and $Father's\,HDhours_i$ is a number of hours on average during the week by the father.

Figure 2: Distribution of division of household duties between mother and father within the household.
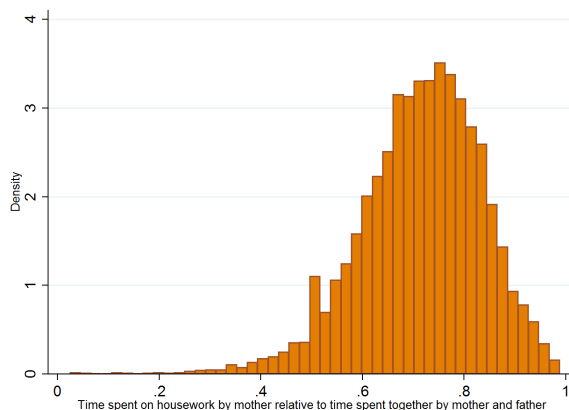
Notes: Figure show the distribution of share of time spend by wife on household activities in the total time spend on household chores by the couple (mother and father). Source of data: Panel Study of Income Dynamics, 1968-2013.

Analysis of the share of household activities done by mothers shows that women on average spend much more time cleaning, cooking, laundering and doing other unpaid work at home than their husbands (Figure 2). Only 30% of total time that household couple dedicate to keep the house in order is devoted to these tasks by fathers. Distribution of the share of time spent on housework by mothers is close to normal distribution with mean shifted to right (around 0.6-0.7), except one anomaly of large number of couples that share household tasks equally.

4 Method

To test whether parents and children follow similar gender patterns when they choose occupation we use a linear model of correlation between parents and children feminization of the occupation indexes. Linear model is based on the theoretical concept of gender identity and its influence on making decision (Akerlof and Kranton, 2000). In this study we estimate a relationship between adult children anf their parents attitudes towards rules on which occupation should be performed by women and by men.

We estimate following equation:

$$
\begin{aligned}
FemOcc_i = \alpha_i + \beta_1 Woman_i + \beta_2 Mother's\ FemOcc_i + \beta_3 Father's\ FemOcc_i + \\
+ \beta_4 Woman_i \# Mother's\ FemOcc_i + \beta_5 Woman_i \# Father's\ FemOcc_i + X_i + \epsilon_i
\end{aligned}
\tag{3}
$$

where $FemOcc$ is a feminization of the occupation index of adult child occupation, $Mother's\ FemOcc_i$ and $Father's\ FemOcc_i$ are mother and father professions feminization of the occupation indexes respectively, and X are individual and family characteristics - race, level of education, year of birth, order among siblings, parents level of education and total number of children in the family.

We assume that direction of the relation between mother's and daughter's occupations is opposite to between father's and daughter's professions. The same assumption is made for sons. Thus, we include interactions between the feminization of occupation index of mother and father occupations and gender of the adult child. Standard errors in all regressions are clustered on family level as we have siblings in the sample. Finally, year of birth of the adult child is included to capture general changes in time of the average feminization of the occupation index.

For the PSID survey participants ("Heads" or "Wives") occupation is recorded in each wave. It means that for each person we have several occupations while he or she was participating in the survey. This feature of the survey allows us to apply two strategies for coding parents occupation. In the first strategy, we identify occupation that is the closest to parents original views on what they want and should do in the labor market. For each parent we record first occupation reported. It is the least influenced by external circumstances (e.g. need to support family) decision of the occupation. This approach is designed to test relationship between parents and children revealed occupational preferences while they are affected mostly by internal, career focused motivations rather than individual circumstances.

The second strategy is created to test correlation between parents occupations that are observed by children (in the late childhood) and their own decision. For mother and father we code occupations that were reported when the child was between 13 and 18 years old - so just before making decision about their professional career. This is to test how observing role models can associate with own decisions. In both strategies occupation of the adult child is recoded from the first occupation reported in the survey.

These two strategies allow us to compare what is more important in the case of intergenerational transmission from parents to children of rules related to choice of the occupation. First strategy is focused on the relation between first choices driven by pure views on what is the best choice of the occupation, second strategy is related to the transmission driven by observation of parents own choices and their consequences.

To add to the second strategy concept - transmission through observation - we test whether choices of occupation of adult children are associated with the division of the household chores between parents. The estimated equation is following:

$$FemOcc_i = \alpha_i + \beta_1 HDshare_i + \beta_2 Woman_i \# HDshare_i + \beta_3 Mother's\, FemOcc \# HDshare_i$$
$$+ \beta_4 Woman \# Mother's\, FemOcc \# HDshare_i + X_i + \epsilon_i$$
$$(4)$$

where $HDshare_i$ is a share of time spent by mother on household duties related to total time reported by parents spent on household duties. X are individual and family characteristics - race, level of education, year of birth, order among siblings, parents level of education and total number of children in the family. As unpaid work is associated with women, we expect that relatively more time spend by mother on household duties is associated positively with daughters feminization of the occupation index, and negatively for sons.

5   Results

Models introduced in the previous section are estimated in four specifications. First, we run regression on total sample without any limitation. Second, to make sure that the effects between parents and children occupations are not driven by the exact inheritance of the occupation, we exclude those individuals who work in the same occupation as at least one of the parents. In third and fourth specifications we test the model only between siblings and only different gender siblings to capture the effect specifically within the family.

First observation from testing relation between parents and children choices of the occupation is that the results differ between strategies in coding parents occupations. This suggests that the parents first choice of occupation that is a proxy of the views on women and men desired proffesions has a different association with children first profession than the effect of the occupation of parent that is observed by the child in the late childhood.

The results for the first strategy (first choice of parents and children) are presented in the Table 2. The correlation between father's and son's feminization of occupation indexes is

positive and robust. The more feminized occupation of the father, the more women working in sons occupation as well. The effect is not large in economic sense. It can be translated in the example of difference between son of electrician ($FemOcc = 0.05$) and son of tailor ($FemOcc = 1.05$). Difference between feminization of the occupation of the sons is than as between machine operator ($FemOcc = 0.62$) and computer programmer ($FemOcc = 0.69$). Correlation between father's and daughter's occupation is insignificant (sum of the parameter for father's occupation and interaction is zero) in the first strategy.

The opposite effect is observed for mother's first choice of occupation. Mother's occupation matters for daughter - the size of the effect is similar as in the case of father's and son's occupations correlation. If mother decide to work as an accountant ($FemOcc = 1.98$) rather than as an office machine operator ($FemOcc = 0.99$), daughter is more likely to be music teacher ($FemOcc =1.52$) than social worker ($FemOcc = 1.46$). For men, effect of mother's occupation is only observed in total sample and between different gender siblings. The first strategy gives us than confirmation of a positive relation between same gender parent and child towards more gender equal choices of occupation.

Additional year of education for men has the same effect as difference of one of $FemOcc$ index of the first occupation of the father. For women education is twice less powerful, but still significant. It suggest that the process of equalization of professional groups are mostly driven by well educated and high-skilled workers of both genders.

Although the estimated parameters of the parents occupations are quite small, compared with the effect of changes in time they became more significant. Difference of one in father's occupation feminization of the occupation index for sons and in mother's occupation feminization of the occupation index for daughters is equal to the difference of being born 10 years later.

Second strategy gives slightly different results (see Table 3). The effect of father's occupation $FemOcc$ index is stronger for sons than in the first strategy. There is also negative and significant correlation of daughter's and father's occupation equal to 0.2. It means that in the case of electrician ($FemOcc = 0.05$) and tailor ($FemOcc = 1.05$) - who work in these professions during their daughters late childhood - it can be translated to the difference in daughters choices of occupation as between psychology teacher ($FemOcc = 1.08$) and elementary school teacher ($FemOcc = 1.14$). Observed by children occupation of mother is insignificant for adult children's decision of the first occupation for both women and men.

Difference between results from first and second strategy show that the effect of parents views and observed by children choices are different. First, choices of men are associated only with fathers views and decisions. Second, for women the result is more complex. Women's choice of occupation is associated with mother's first occupation, so by her views on the ideal profession, but not by her later choices. This may suggest that women are aware of the difference between mother's first choice that and later decision related to circumstances that lead to change in mother's profession. This is consistent with the fact that women more often change character of their profession in the gender context. Correlation between first occupation $FemOcc$ index and observed by children $FemOcc$ index is equal to 0.23 for women and 0.31 for men.

Table 2: Strategy I: First occupation of parents and adult child - correlation between occupations.

	Total sample	Without the same occupation	Only siblings	Only different gender siblings
Fathers' *FemOcc*	0.056***	0.042**	0.048***	0.071***
	(0.017)	(0.017)	(0.018)	(0.022)
Fathers' *FemOcc*#Woman	-0.056**	-0.042*	-0.052**	-0.073***
	(0.023)	(0.023)	(0.024)	(0.028)
Mothers' *FemOcc*	-0.046*	-0.041	-0.040	-0.053*
	(0.025)	(0.025)	(0.027)	(0.032)
Mothers' *FemOcc*#Woman	0.096***	0.064*	0.070*	0.091**
	(0.035)	(0.034)	(0.037)	(0.043)
Woman	22.896***	23.106***	21.830***	21.378***
	(2.043)	(2.032)	(2.204)	(2.623)
Education	0.052***	0.052***	0.053***	0.054***
	(0.005)	(0.005)	(0.005)	(0.006)
Education#Woman	-0.075***	-0.076***	-0.078***	-0.078***
	(0.007)	(0.007)	(0.007)	(0.009)
Birth year	0.005***	0.004***	0.004***	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)
Birth year#Woman	-0.011***	-0.011***	-0.010***	-0.010***
	(0.001)	(0.001)	(0.001)	(0.001)
Fathers' education	0.001	0.002	0.002	0.000
	(0.003)	(0.003)	(0.003)	(0.004)
Mothers' education	-0.006*	-0.007*	-0.007*	-0.009**
	(0.004)	(0.004)	(0.004)	(0.004)
Constant	-8.975***	-8.593***	-7.115***	-8.225***
	(1.579)	(1.598)	(1.745)	(2.048)
Observations	7,868	7,661	6,880	5,038
R − squared	0.365	0.360	0.358	0.363

Notes: OLS regressions with standard errors clustered on family level. First specification includes all individuals from PSID sample for whom we are able to collect all necessary information. In the second column specification, we exclude those children who work in exactly the same occupation as at least one of the parents. Third specification includes only individuals with siblings, and fourth only with opposite sex siblings. Dependent variable is first occupation *FemOcc* index of the individual. Occupations of the parents are also the first recorded. Source of data: Panel Study of Income Dynamics, 1968-2013. *FemOcc* index calculated on American Community Survey, 1970-2013.

Table 3: Strategy II: First occupation of the child and observed occupations of parents - correlation between occupations.

	Total sample	Without the same occupation	Only siblings	Only different gender siblings
Fathers' *FemOcc*	0.076***	0.055***	0.062***	0.083***
	(0.021)	(0.021)	(0.022)	(0.025)
Fathers' *FemOcc*#Woman	-0.093***	-0.071**	-0.076**	-0.100***
	(0.028)	(0.029)	(0.030)	(0.035)
Mothers' *FemOcc*	0.006	0.004	0.006	-0.026
	(0.021)	(0.022)	(0.023)	(0.027)
Mothers' *FemOcc*#Woman	0.042	0.013	0.014	0.059
	(0.030)	(0.030)	(0.032)	(0.037)
Woman	23.432***	23.836***	23.272***	21.465***
	(2.401)	(2.396)	(2.531)	(2.995)
Education	0.056***	0.055***	0.057***	0.059***
	(0.006)	(0.006)	(0.006)	(0.007)
Education#Woman	-0.078***	-0.079***	-0.080***	-0.081***
	(0.008)	(0.008)	(0.008)	(0.010)
Birth year	0.005***	0.005***	0.004***	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)
Birth year#Woman	-0.011***	-0.011***	-0.011***	-0.010***
	(0.001)	(0.001)	(0.001)	(0.002)
Mothers' education	-0.010**	-0.010**	-0.010**	-0.013**
	(0.004)	(0.004)	(0.004)	(0.005)
Fathers' education	0.002	0.003	0.003	0.002
	(0.003)	(0.003)	(0.004)	(0.004)
Constant	-9.518***	-9.105***	-8.254***	-8.678***
	(1.870)	(1.906)	(1.998)	(2.309)
Observations	6,474	6,248	5,773	4,288
R − squared	0.362	0.358	0.354	0.361

Notes: OLS regressions with standard errors clustered on family level. First specification includes all individuals from PSID sample for whom we are able to collect all necessary information. In the second column specification, we exclude those children who work in exactly the same occupation as at least one of the parents. Third specification includes only individuals with siblings, and fourth only with opposite sex siblings. Dependent variable is first occupation *FemOcc* index of the individual. Occupations of the parents are coded based on the occupation reported when the child was between 13-18 years old. Source of data: Panel Study of Income Dynamics, 1968-2013. *FemOcc* index calculated on American Community Survey, 1970-2013.

The effect between daughters and fathers in the strategy with observed occupation of parent may be driven by two channels. First, it is possible that fathers less often share with daughters their beliefs on women's and men's labor market roles. So the only way for girls is to observe their actual choices. Second, fathers who moved from the more typical for men occupation to more gender neutral can change his attitude towards expected for *women's and men's jobs* and transmit to daughters this new view. It may be also explanation of the stronger effect of observed occupation of father than first choice on sons feminization of the occupation index.

There is also possibility that lack of mother-daughter occupations link between daughter first choice of occupation and observed by daughter mother's occupation is driven by lack of consistence between mothers profession and her position in the household. Even if mother work in atypical for women occupation, but keep typical gender division of chores at home, the image for girl of what women should do may be confusing. Investing in atypical for women career can be especially discouraging if based on mother's example, it is associated with more hours of work (Blau and Kahn, 2000), more risk (Hersch, 1998) and more time spent on household duties in comparison to husband. We test this intuition by replacing mother and father feminization of the occupation index by share of time spent by mother on household duties in total time spend by mother and father on household activities. The results of this specification are presented in Table 4.

Including housework division between parents makes mother's occupation feminization of the occupation index significant for daughters occupation in the analysis of total sample. Share of total housework done by mother is also positively associated with daughter's choice of occupation in first two specifications, but the interaction between large share of housework done by mother and typical choice of occupation has negative effect on the feminization of the occupation of daughter. Although the result is not stable across all specification, we cannot neglect the observation that unpaid work at home can be important from the perspective of children choice of occupation as well as paid profession.

Table 4: Occupation and household chores division

	All families	Without the same occupation	Only siblings	Only different gender siblings
Mothers' *FemOcc* (observed)	-0.096	-0.097	-0.103	-0.116
	(0.119)	(0.122)	(0.132)	(0.150)
Mothers' *FemOcc* (observed)#Woman	0.395**	0.296*	0.293	0.311
	(0.179)	(0.176)	(0.190)	(0.219)
Housework - mother's share	-0.303	-0.277	-0.311	-0.232
	(0.242)	(0.248)	(0.268)	(0.317)
Housework - mother's share#Woman	0.837**	0.660*	0.675*	0.510
	(0.375)	(0.366)	(0.397)	(0.467)
Housework - mother's share #Mothers' *FemOcc*	0.134	0.132	0.151	0.129
	(0.164)	(0.168)	(0.181)	(0.208)
Housework - mother's share #Mothers' *FemOcc*#Woman	-0.492**	-0.388	-0.390	-0.360
	(0.246)	(0.242)	(0.261)	(0.302)
Woman	25.755***	25.866***	24.400***	23.857***
	(2.368)	(2.368)	(2.508)	(2.955)
Education	0.058***	0.057***	0.059***	0.062***
	(0.006)	(0.006)	(0.006)	(0.007)
Education#Woman	-0.081***	-0.082***	-0.083***	-0.084***
	(0.007)	(0.007)	(0.008)	(0.009)
Birth year	0.006***	0.005***	0.005***	0.005***
	(0.001)	(0.001)	(0.001)	(0.001)
Birth year#Woman	-0.012***	-0.012***	-0.012***	-0.011***
	(0.001)	(0.001)	(0.001)	(0.001)
Mothers' education	-0.006	-0.006	-0.007	-0.011**
	(0.004)	(0.004)	(0.004)	(0.005)
Fathers' education	0.000	0.001	0.002	0.003
	(0.003)	(0.003)	(0.004)	(0.004)
Constant	-11.129***	-10.329***	-9.079***	-10.093***
	(1.837)	(1.882)	(1.986)	(2.284)
Observations	6,671	6,460	5,901	4,351
R-squared	0.359	0.356	0.353	0.363

Notes: OLS regressions with standard errors clustered on family level. First specification includes all individuals from PSID sample for whom we are able to collect all necessary information. In the second column specification, we exclude those children who work in exactly the same occupation as at least one of the parents. Third specification includes only individuals with siblings, and fourth only with opposite sex siblings. Dependent variable is first occupation *FemOcc* index of the individual. Occupations of the mother is coded based on the occupation reported when the child was between 13-18 years old. Source of data: Panel Study of Income Dynamics, 1968-2013. *FemOcc* index calculated on American Community Survey, 1970-2013.

6   Robustness check

The results provided above show that both changes in gender occupational segregation in time and parents occupations matter for adult children choice of occupation. As parents feminization of the occupation indexes are also affected by changes in time we want to make sure that the effect we obtain is driven by parents-children relationship and not by time changes as well. We propose three robustness checks to test that the correlation between parents and children occupations do not come from the random coincident helped by the overall changes in the feminization of the occupations.

For this purpose we make use of the sample of the PSID responders whose parents did not participate in the study and provide for them randomly selected values of parents occupational indexes. This way we provide placebo test with dependent and control variables from the original sample. There are some limitation of this approach. For selected sample of respondents whose parents do not participate in PSID we know almost nothing about their family - parents education, number and order of siblings and race have to be excluded from the regression equation. Because of that, in the Table 5 in first two columns we regressions from the previous section with shorter list of independent variables. The results are the same as in the case of extended list of explenatory variables.

We provide three ways of assigning placebo test parents indexes to individuals. First, we take pairs of parents from regression in first oclumn - first occupations of parents - and assigned them to individuals from placebo sample (without parents participating in PSID) based on the year of birth of the adult child. Second, we apply the same procedure to second strategy of observed by children parents professions. In these two tests we keep original distribution of parents feminization of the occupation indexes, relation between mother and father profession (assignment of both parents - real couples) and changes over time in parents occupations (merging based on year of birth).

Finally, we provide artificial distribution of parents feminization of the occupation indexes based on the exponential distribution. The limits are set on the level of limits in the population in 1980's - between 0 and 2.18. The distribution for mothers is inversed in comparison to the distribution for fathers.

Placebo test do not confuse our results. The effects of control variables remains the same, while randomly assigned occupational feminization of the occupation indexes lost significance. This is a confirmation that the effect is associated with the relationship between parents and children and not only related to changes in time trends.

Table 5: Placebo test results

	First occupation	Observed occupation	Placebo specifications		
			First occupation	Observed occupation	Exponential distribution
Fathers' *FemOcc*	0.058***	0.079***	-0.018	0.007	0.005
	(0.016)	(0.020)	(0.015)	(0.016)	(0.015)
Fathers' *FemOcc*#Woman	-0.056**	-0.091***	0.009	-0.039	-0.016
	(0.022)	(0.027)	(0.023)	(0.024)	(0.022)
Mothers' *FemOcc*	-0.050**	0.005	-0.018	0.036*	0.018
	(0.024)	(0.021)	(0.021)	(0.019)	(0.015)
Mothers' *FemOcc*#Woman	0.096***	0.041	0.030	-0.053*	0.005
	(0.033)	(0.030)	(0.033)	(0.029)	(0.022)
Woman	23.102***	23.844***	6.434**	5.248**	6.197**
	(2.105)	(2.460)	(2.673)	(2.594)	(2.433)
Education	0.049***	0.052***	0.016***	0.014***	0.016***
	(0.005)	(0.005)	(0.003)	(0.003)	(0.003)
Education#Woman	-0.074***	-0.078***	-0.042***	-0.040***	-0.042***
	(0.006)	(0.007)	(0.005)	(0.005)	(0.005)
Birth year	0.004***	0.005***	0.002**	0.001	0.002**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Birth year#Woman	-0.011***	-0.011***	-0.003*	-0.002	-0.002**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	-8.515***	-9.305***	-3.822**	-2.406	-3.092*
	(1.499)	(1.780)	(1.831)	(1.766)	(1.664)
Observations	7,868	6,474	7,868	6,474	7,868
R-squared	0.362	0.358	0.327	0.327	0.328

Notes: OLS regressions. First two columns include specifications from the Tables 2excluding individuals working in exactly the same occupation as parents. Next columns show the results of placebo tests - first distribution of parents occupations is based on the uniform distribution with parameters (mean and limits) form original distribution, second and third - individuals was randomly matched with parents from the original sample. Source of data: Panel Study of Income Dynamics, 1968-2013.

7   Conclusions

The results of the study presented above show a complex picture of links between parents and children choices of occupation. Based on them, we can claim that gender identity and, more importantly, vision of how it should be realized is not only important for individual but also for its children. Although, we have not showed the causal relationship between parents and children's choices in this study, we highlighted its relevance for gender occupational segregation. We believe that this topic is definitely worth further investigation.

We find that the relation between parents first choice of occupation (that represents their beliefs on the ideal profession) and the occupation observed by the child may have different association with adult child choice. For daughters, only mothers first occupation and observed father occupations matter. For sons, fathers occupation is significant, while mothers profession seems to be irrelevant.

First, we find positive association between father's and son's feminization of the occupation indexes - both in the case of first occupation and the occupation observed by growing up child. This means that if father choose more equal or less typical for men occupation, son has higher chance to choose less dominated by men occupation. The effect of observed occupation seems to be slightly stronger what may suggest that men are more prone to repeat observed patterns than to transmission of views. Mother's occupation does not correlate with son's choices.

Second, we find relation between parents and daughters occupations more complex. Mother's first choice of occupation is associate positively with daughters feminization of the occupation. It means that indeed daughters whose mothers were working in typical for women professions are less likely to choose occupation dominated to the larger extent by men. The effect disappear when we test link between daughter's first occupation and mother's profession from times when daughter was between 13-18 years old. The effect of father's occupation for daughters is significant and negative in the case of observed occupation only. Daughter of fathers who was working in more gender neutral or even typical for women profession are less likely to choose atypical for women career. Significance of only observed father's occupation may be explained either by changes in father's attitudes towards women roles in the labor market after having a daughter or less of sharing gender related views between father and daughter than between mother and daughter.

Third, the effect of parents choice change from dominated by one gender occupation to gender neutral profession is equal to around 10 years of changes in time in feminization of the occupation index. The role of parents in lowing down changes in gender occupational segregation seems to be significant.

Fourth, we find that household duties division between mother and father may associate with daughter's choice of occupation as their occupations. Observing mother who spent much time on household chores can effectively prevent daughter from following profession career similar to mother's one independently on the character of this profession. Whether mothers and fathers tend to follow the same gender rules at home and at work (dominated by women profession - more time spent on household duties or gender neutral choices of occupation - more

equal division of household chores between partners) seem to be then important topic from the perspective of intergenerational transmission of views and choices.

There are several recommendation that can be formulated based on the results of this empirical study. It is important to highlight the role of father - even employed on daily basis and possibly spending less time with children then mother - can be a role model for both daughters and sons. Taking into account that what we observed now is rather convergence than switch of gender roles in the labor market, conclusions for daughters and sons seems to be the same: the more gender equal choices of parents, the more gender equal occupational decision of the kid.

Our study confirms hypothesis that the gender segregation can be connected with the inheritance of the habits related to gender roles of the generation of parents. This means that the awareness of this process should be increased especially among young people who are just about to decide of their future career and their parents who may not be aware of how their attitude and behavior associate with their children's choices.

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