The Intergenerational Correlation of Employment: Mothers as Role Models*

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Abstract

Linking data from the National Longitudinal Survey of Youth 1979 (NLSY79) and the NLSY79 Children and Young Adults, we document a substantial positive correlation of employment status between mothers and their offspring in the United States. Relative to a never employed mother, one who is employed throughout her working-age life increases the probability of her offspring's employment by 11 percent in each given year, after controlling for ability, education, fertility, and wealth. The intergenerational transmission of maternal employment is stronger to daughters but significant also to sons. Investigating potential mechanisms, we provide suggestive evidence for a role model channel, through which labor force participation is transmitted. Offspring seem to emulate the example of their mother when they observe her working. By contrast, we are able to rule out several alternative candidate explanations such as network effects, occupation-specific human capital and local conditions of the labor market.

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1 Introduction

For several decades, the intergenerational correlation of labor market outcomes has been a subject of interest among both academics and policy-makers. As a key determinant of socio-economic mobility, the correlation of labor earnings between subsequent generations has received particular attention. An extensive literature documents that earnings of individuals are highly correlated with those of their parents (see the comprehensive surveys by Solon, 1999; Bowles and Gintis, 2002; Black and Devereux, 2011; Björklund and Jäntti, 2011). The focus of this literature is on the identification and quantification of channels through which the *potential* to earn is transmitted. Such channels include, among others, the genetic inheritance of cognitive skills, higher investments into children's education by parents with higher income, and parents' social networks, which the offspring can take advantage of.

However, labor earnings do not exclusively depend on the potential to earn but also on exerted work effort. For example, in the standard Neoclassical labor supply model, labor earnings are the product of the wage and some measure of working time. The former can be seen as a sufficient statistic for earnings potential. Interestingly, much less attention has been given to the latter component, labor supply.

In this paper we focus on a particular measure of working time: the fraction of individual's lifetime spent in employment, or the extensive margin of labor supply. Employment is an important labor market outcome not only from the perspective of socio-economic mobility. Also from a macroeconomic point of view, the aggregate employment rate is a key predictor of GDP and, to the extent that the employed pay income taxes while the non-employed receive welfare benefits, it crucially affects governments' public finances.

Using the standard method to measure intergenerational correlations, we document that the fraction of individuals' working-age life spent in employment is highly correlated with their mothers'. This correlation remains significant even after controlling for the main determinants of the intergenerational correlation of earnings. Importantly, also the employment transmission from mothers to sons, while lower than to daughters, is significantly positive. This – to our knowledge novel – fact cannot be explained by the transmission of gender roles with which previous studies explained the documented positive correlation between mothers' and daughters' labor supply. In this paper we argue that another, complementary, mechanism is at work: Offspring emulate the example of

their mother when they observe her working, a role model effect that works across both genders.

We obtain our results by linking data from the National Longitudinal Survey of Youth 1979 (NLSY79) and the Children and Young Adults (CNLSY79) cohort. These data are designed to link mothers from a representative sample born in the US between 1957 and 1964 with their offspring. Since more mothers than fathers are at the margin between labor force participation and non-participation, we believe the focus on mother-offspring pairs is reasonable given our goal. Exploiting the longitudinal structure of the data, we first estimate the permanent component of employment status along the life cycle for both, mothers and offspring. This permanent component measures how much of their active life individuals spend in employment. The information included in this component is different from the permanent component of earnings, which is typically based only on periods of employment, that is periods within which earnings are observed.

We find a robust, statistically significant and positive correlation of employment status. The unconditional correlation is 0.19, implying that, relative to a never employed mother, one who is employed all her active life increases her offspring's probability of employment by 19 percent in each given year. After netting out the influence of ability (measured by standard test scores), education, wealth, and some other relevant covariates, the incremental employment probability of the offspring remains at 11 percent. This is what we call *residual* correlation of employment.

Exploring gender differences, we find a residual employment correlation between mothers and daughters of 0.17. Importantly, we find that also the intergenerational employment correlation between mothers and sons, while lower, is significantly positive with a point estimate of 0.07. This implies that the transmission of mothers' employment status cannot exclusively be explained by the transmission of gender roles, which several papers argue to be a crucial determinant for the labor supply transmission from mothers to daughters (Farré and Vella, 2013; Johnston et al., 2014; McGinn et al., 2019; Olivetti et al., 2020; Binder, 2021).[1]

Recently, Kleven et al. (2019) document a big child penalty for women in terms of several labor market outcomes. Specifically, upon arrival of the first child, a woman's

[1]In the introduction we focus on the difference of the present paper to this literature. In Sections 4.4 and 6.2 we refer to the small literature that documents a positive correlation between fathers' and sons' labor supply (Altonji and Dunn, 1991; Toledo, 2010; Macmillan, 2014).

labor market participation significantly drops relative to her male peers'. One may hence be tempted to attribute the difference between the employment correlation of mother-daughter and mother-son pairs to the combination of this child penalty and correlated fertility choices between mothers and their daughters. However, we find only an insignificantly lower correlation between mothers and childless daughters relative to mothers and daughters with children. Furthermore, the gender difference in the employment correlation is about the same, irrespective of whether one considers mother-offspring pairs in which the offspring has children her/himself or not.

The positive and strong intergenerational correlation of employment has important implications not only for the analysis of social mobility but, potentially, also for the optimal design of tax-transfer policies. It is particularly important in light of several existing policies, such as the Earned Income Tax Credit (EITC) in the United States, which aim to encourage labor force participation. This is especially the case since we find the correlation to be high for low-educated and low-income mothers, the target group of the these policies. Our results suggest that there may be a, perhaps unintended, dynamic fiscal benefit of such policies through increased labor market participation of future generations.

However, before such conclusions can be drawn, an understanding of the channels determining this correlation is needed. If the intergenerational transmission of employment was not affected by mothers' behavior but rather the result of a direct transmission of preferences for work,[2] none of the government's costs of a policy encouraging parental employment will be recovered through higher participation of their offspring. In such a situation, the offspring will have the same attitude towards work independent of the existence of such a policy. However, the very opposite is true if the offspring emulate the *behavior* of their mothers. Then a policy that increases maternal employment, even if it is currently costly, may amortize through increased participation of future generations. We transparently trace out the distinction between these channels by means of a simple two-generation model.

Using a correlational study to argue in favor or against a specific channel is always difficult as alternative explanations may be compatible with the observed correlations. Nevertheless, we provide several pieces of evidence suggesting that indeed such a role

[2]By direct preference transmission we refer to a situation in which the mother transmits her preference for work to her offspring independently of her work behavior.

model effect is in place and that therefore, from a public finances' point of view, policies that move mothers into the labor force may result in increased revenues from future generations. Exploiting certain survey questions, we are able to construct a measure for *female* work preferences that represents the disutility of work. While we find that maternal disutility of work has a small direct impact on the offspring's employment, the coefficient on maternal employment remains unaffected. This suggests that actually observing the mother working is important for the offspring to develop a more positive attitude towards work. In another exercise, we disentangle the direct transmission of preferences from the role model channel by controlling for periods in which the mother does not cohabit with her offspring. This measure serves as a proxy for mothers' work preferences. It turns out that the correlation is mainly driven by periods of cohabitation, in which it is arguably easier for the offspring to emulate the behaviour of the mother.

Finally, we study alternative explanations for this residual correlation, such as the effect of networks, occupation-specific human capital, or local conditions of the labor market. Particularly, we analyze the heterogeneity in the intergenerational correlation of employment across mother-offspring pairs that do or do not share industries, occupations, or regional labor markets. The lack of difference across groups shows that these explanations are unlikely to drive the intergenerational correlation of employment status.

Related literature. Our paper contributes to many different branches of the empirical literature studying the transmission of preferences for work across generations. Methodologically, we use tools of the well-established literature on the intergenerational correlations of labor market outcomes (Solon, 1992, 1999; Haider and Solon, 2006; Grawe, 2006; Lee and Solon, 2009; Nybom and Stuhler, 2016, 2017; Mazumder, 2005).

The gender literature has analyzed the transmission of preferences for work from the perspective of gender roles. An important part of this literature uses the so-called epidemiological approach. This approach considers the intergenerational transmission of cultural traits when outcomes of second-generation migrants and those of the parents' country of origin are correlated. Fernandez (2007) and Fernandez and Fogli (2009) interpret such correlation in female labor force participation as cultural transmission of women's roles. Another, more structural, strand of the gender literature also looks at cultural transmission. For instance, Fernandez (2013) explains the S-shape in the female labor force participation during the second half of the 20^{th} century with a model that

introduces learning across generations about the returns to female work. These studies deal with the transmission of society-wide preferences. We instead analyze preference transmission within the family, from mothers to their offspring.

Importantly, our paper does not limit attention to the transmission of gender roles, as we do not only find a significant employment correlation for mother-daughter pairs but also for mother-son pairs. Nevertheless, there is a tight connection between our paper and studies that attribute the positive correlation between mothers and daughters labor supply to their positively correlated views on what a mother's role in the family is (Farré and Vella, 2013; Johnston et al., 2014; McGinn et al., 2019; Olivetti et al., 2020; Binder, 2021). In line with these studies, we find that mothers' and daughters' have highly correlated views on whether or not women's role in the family is at home as caretaker of children. However, we show that daughters' attitude towards work is not entirely driven by their mothers' view on what a women's role in the family is but also by the labor force participation of the mother itself. That is, working mothers with the same preference for work as non-working mothers tend to have daughters with more positive attitudes towards work and hence with a higher probability of being employed, reflecting a role model channel that goes beyond the direct transmission of preferences. Such a role model effect may be the reason why also sons' employment behavior is correlated with the employment decisions of their mothers, a finding that cannot be explained with gender roles.

Another related strand of literature documents that parental welfare benefit reception results in an increased probability of the offspring claiming the benefits themselves. In the context of the Norwegian disability insurance (DI) system, Dahl et al. (2014) exploit variation in the leniency of appeal judges, who are randomly assigned to decide on cases when individuals were originally denied DI. The authors find that when a parent is allowed DI at the appeal stage, their adult offspring's DI participation rate increases by 12 percentage points over the following 10 years. This number is remarkably similar to what we find for employment. Furthermore, their results are consistent with our suggested mechanism. In particular, in both their paper and ours, differential outcomes of the offspring are not explained by differences in what parents want – all parents in their paper apply for DI – but rather by differences in what parents actually do. Two similar recent contributions are Dahl and Gielen (2021), who use a regression discontinuity design

induced by a reform of DI in the Netherlands, which tightened eligibility criteria, and Hartley et al. (2017), who exploit cross-state variation in the timing of welfare and income support program reforms in the US. We see our contribution complementary to these papers. On the one hand, the quasi-experimental design in these three papers allows them to make causal inferences. But, on the other hand, the findings of these papers are very specific to the respective institutional setting and restricted to the receipt of certain kinds of welfare benefit. In contrast, we document the transmission of employment between mothers and their offspring for a representative sample of the US population. The evidence from these papers does not allow for inferences on the transmission of employment, an important labor market outcome.

Outline. The remainder of the paper is structured as follows. In Section 2, we present the data, followed by the empirical strategy in Section 3. Section 4 documents the main results. In Section 5, we present a two-generational model of preference transmission and present evidence in favor of a role model channel driving the results, while in Section 6 we rule out other candidate explanations. Finally, Section 7 concludes.

2 Data

We use the National Longitudinal Survey of Youth 1979 cohort (NLSY79) and the Children and Young Adults cohort (CNLSY79). These data are widely used in the analysis of inequality and labor market research. The NLSY79 surveys a representative sample of individuals born in the US between 1957 and 1964. Respondents are 14 to 22 years old in 1979 and are followed since then. Our last observation is 2018, when they are 56 to 62 years old. The frequency is annual between 1979 and 1994, and biannual thereafter. The offspring of the women in this cohort are surveyed on a biannual basis since 1986, constituting the CNLSY79. They are linked to the original cohort by a unique identifier provided by the US Bureau of Census.[3]

We restrict the analysis to the cross-sectional sub-sample of the NLSY79 that is designed as a representative sample of the US population in 1979. We exclude other

[3]Although in the NLSY79, only mothers (and not fathers) can be linked to CNLSY79 data, this does not challenge the objective of our paper. As we focus on the extensive margin of the labor supply decision, using maternal employment information is reasonable because female labor force participation is typically lower (through more elastic labor supply) than male labor force participation, particularly during the period of observation of the first cohort.

sub-samples that oversample particular groups of the population to avoid weighting the estimates. We restrict to observations during ages 25 to 45 for both cohorts to keep the representativeness of the lifetime employment experience (the oldest individual in the second cohort is 44 years old in 2018). We obtain a final sub-sample of 1,922 mothers paired to 3,748 offspring.

The data are particularly rich. They provide detailed information on labor market outcomes, education, and further demographic and socio-economic characteristics. Importantly, they contain widely used indicators of ability, which is a key confounder for the estimation of intergenerational transmission of labor market outcomes: the Armed Forces Qualification Test (AFQT) for the mothers and the Peabody Individual Achievement Test (PIAT) for the offspring; we use the Math score of the latest PIAT assessment for the offspring cohort, in line with the literature (Abbott et al., 2019). We use information on wealth (net worth), computed as assets (savings, home and vehicle ownership) minus debts (credit cards, students loans, mortgages, vehicle loans, and others).[4]

Table 1 provides descriptive statistics of the data (additional descriptives are summarized in Table B.12 in the Appendix). For most variables, we report the means across individual averages for those observations over the 25 to 45 years old range in our sample. The last two columns refer to the sample of mothers and their offspring, and the first one shows the characteristics of the total sample of women in the NLSY79 cohort for reference. All monetary values are deflated using the Consumer Price Index (CPI) and expressed in prices of 1980.

The average age is 33 for mothers and 28 for the offspring. The sample of mothers is representative of women with children by design. As compared with the total sample of women in the NLSY79, mothers are slightly less educated and live in poorer households. Women are 24 years old on average when they give birth. The offspring's cohort is relatively younger than the mothers' by construction, as reflected in the age and other characteristics associated to the life cycle (for example, the proportion married and cohabiting is lower in the offspring's cohort, and the wealth level as well). The offspring are slightly more educated than mothers. Mothers are observed on average for 14 waves, and offspring for 3.2 waves.[5]

[4]We winsorize the values of total wealth at the 1 percent and 99 percent each year to eliminate extreme values.

[5]The NLSY79 and CNLSY79 have the benefit of allowing intergenerational comparisons until more recently, but the limitation that the offspring cohort is younger and with fewer observations on average.

Table 1: Summary statistics for women and mother-offspring pairs in NLSY79 and CNLSY79

	Women	**Mothers**	**Offspring**
Demographics			
Age	32.9	33.2	28.4
	(1.7)	(1.0)	(2.1)
Female	100%	100%	50%
Married/cohabiting	67%	77%	32%
Number of children	1.9	2.5	1.1
	(1.4)	(1.2)	(1.2)
Maternal age at birth		24.2	
		(4.6)	
Education and Ability			
Years of education	13.7	13.3	14.8
	(2.6)	(2.4)	(2.5)
High-school drop-out	7%	8%	9%
High-school	40%	45%	22%
Some college	25%	26%	26%
College	28%	21%	42%
Percentile in cognitive test	48.8	44.9	51.6
	(28.5)	(28.1)	(28.7)
Age at test	18.0	18.1	11.8
	(4.0)	(4.0)	(4.2)
Labor Market Outcomes			
Employment	79%	76%	85%
Hours/week	37.7	36.5	41.0
	(8.2)	(8.3)	(10.4)
Hourly wage (in USD)	8.1	7.6	8.5
	(8.2)	(9.3)	(11.3)
Annual earnings (in 1,000 USD)	12.8	11.1	15.4
	(9.0)	(7.7)	(10.7)
Wealth and Income			
Net worth (in 1,000 USD)	50.8	47.4	9.9
	(84.3)	(79.5)	(17.7)
Family income (in 1,000 USD)	33.5	31.8	28.2
	(35.4)	(35.1)	(23.2)
Welfare participation	16%	21%	7%
Health limitations for work	7%	7%	5%
Number of interviews	13.2	14.0	3.2
	(3.1)	(2.0)	(1.5)
Individuals	3,040	1,922	3,748

Notes: Averages across individual means (standard deviations in parentheses); for employment, welfare participation and health limitations averages over individual mean proportions across the observation period are reported; proportions of the various education levels refer to individuals' maximum level attained over the observation period; only observations of individuals aged between 25 and 45 are considered; cognitive tests are AFQT for parents and PIAT Math for offspring; monetary variables in 1980 USD; net worth is winsorized at the percentiles 1 and 99 to avoid outliers.

Questions about employment status vary across waves in the survey. As we do not have the same variables for both cohorts our choice of the particular question used in our analysis balances two objectives: (i) we want to have a measure that is as homogeneous as possible between the samples of mothers and offspring; (ii) at the same time, the questions should be consistent along the different waves and minimize the number of non-responses. We consider mothers to be employed if they declare that they worked for 10 or more weeks in the year before the interview. We categorize offspring as employed if their earnings in the year before the interview were equivalent to at least two months of a part-time job at the minimum salary.[6] The employment rate is 76% for mothers and 85% for the offspring cohort.

Employed mothers and offspring work on average 37 and 41 hours a week at an hourly wage rate of $8 and $8.5 (in 1980 USD), respectively. Earnings conditional on employment amount to $11,100 and $15,400 annually. Net worth is higher for the mothers' than for the offspring's cohort ($47,400 vs. $9,900), a difference potentially due to the composition of the offspring's sample explained above, as well as because most offspring had not inherited yet at the time they were surveyed. No such differences are observed in family income across cohorts, though ($31,800 and $28,200, respectively). Higher welfare participation is observed for mothers (21% of the periods) than for the offspring (7%), and health limitations for work affect 7% of mothers' observations and 5% of offspring's. The average percentile of maternal cognitive test scores is 45, while it is 52 for offspring. Mothers take the test when they are 18 years old and offspring when they are 12. Further details on the data can be found in Appendix A.1.

As shown in Figure B.2, about two-thirds of the offspring observations have at least three interviews and only 16% have just one interview. Furthermore, almost 60% of the offspring cohort is observed at least once after their 30th birthday, the age at which the literature suggests stability of labor market outcomes (see, for example, Chetty et al., 2014; Mazumder, 2005; Nybom and Stuhler, 2016, 2017). Restricting the sample to those individuals observed at least three times and at least once after the 30th birthday does not change the estimates (results available upon request).

[6]The lower bound for earnings corresponds to 2 months of work (9 weeks) in a part-time job (20 hours a week) at the minimum salary ($4.25 in the first year of our sample, 1994, deflated). We introduce the lower bounds in order to exclude casual jobs. The results are robust to removing them, as well as to taking alternative measures of employment.

3 Empirical strategy

We follow the literature on intergenerational correlations of labor market outcomes to quantify the persistence in employment status across generations. The unit of observation is the mother-offspring pair i and our main regression specification relates the permanent component of employment – which can be interpreted as the fraction of the lifetime spent in employment – of the mother l_{Mi} to the permanent component of employment of the offspring l_{Ci}. The reduced-form specification is

$$l_{Ci} = \alpha + \beta l_{Mi} + \phi_M X_{Mi} + \phi_C X_{Ci} + \epsilon_i. \tag{1}$$

Our coefficient of interest, β, summarizes the intergenerational persistence of employment. X_{Mi} and X_{Ci} are control variables for mothers and offspring, respectively. We consider different specifications and control for several confounders, including education (maximum level attained), ability,[7] wealth (permanent component of winsorized value, standardized), the number of children of individuals in both generations, and the age of the mother at birth.

Computation of permanent components. Equation (1) relies on measures of lifetime employment status. The literature on intergenerational correlations is quite rich in terms of how to compute these lifetime or long-run measures. Given the nature of our data, we take an approach that allows for the use of information from all periods. Following Zimmerman (1992) and Toledo (2010), we obtain these lifetime or permanent components of employment as the fixed effects in a statistical model for the probability of being employed in each period under observation.[8]

We specify a linear probability model,

$$l_{kit} = l_{ki} + \sum_{n=1}^{2} \pi_{nk} A_{kit}^n + \lambda_{kt} + \upsilon_{kit}, \tag{2}$$

[7] We include the residual of ability after regressing it on a square polynomial of the age at which individuals took the test. This is to correct for differences in age of ability tests within and across cohorts.

[8] Using multiple periods has been shown to reduce measurement error (see, for example, Solon, 1992; Mazumder, 2005; Haider and Solon, 2006). This strategy is simpler than a factor model that explicitly models such error (see, for example, Lochner et al., 2018). Lee and Solon (2009) recommend an efficient approach by using all the offspring's observations in a version of the intergenerational equation (1). Our approach also uses all the information of the offspring, but in a two-step procedure that we deem accurate according to the Frisch-Waugh-Lovell theorem.

which we run for both generations $k \in \{M, C\}$. Specifically, we assume that the probability of individual i to be employed in year t is a function of a second-order polynomial of the individual's age A_{kit}, a year fixed effect λ_{kt}, and an individual fixed effect l_{ki}. This individual fixed effect represents the permanent component of employment status, abstracting from life-cycle fluctuations (absorbed by age effects), and from business-cycle fluctuations (absorbed by year effects). We can interpret the permanent component of employment as the proportion of lifetime each individual is in employment.[9]

Regression versus correlation coefficient. An alternative to the regression coefficient β for measuring persistence in labor market outcomes across generations is the correlation coefficient,[10]

$$\rho = \beta \frac{\sigma_M}{\sigma_C}, \tag{3}$$

where σ_M (σ_C) denotes the standard deviation of mothers' (offspring's) employment. Because the variability of mothers' and offspring's employment is very similar, there is not a big difference between the reported regression coefficients and the correlation coefficients.[11] We hence present only the regression coefficients throughout the main text and refer to the coefficient of interest, β, as the correlation of intergenerational employment status. More details about methodological issues in measuring the intergenerational persistence of labor market outcomes can be found in Appendix A.2.

4 Results

4.1 The Intergenerational Correlation of Employment

In this section, we document the intergenerational correlation of employment status for the United States. Table 2 shows the regression coefficients for maternal employment and covariates estimated using equation (1). Standard errors are clustered at the mother level to account for possible auto-correlation in siblings' error terms.

[9] Our results are robust to conditioning on socio-demographics such as child birth, the presence of offspring below the age of three differentiated by childcare take-up, the presence of older offspring, education, couple formation or dissolution, etc. For details see Appendix A.3.

[10] Note that the correlation coefficient is conditional on covariates X_{Mi} and X_{Ci} if included in the regression.

[11] The standard deviations of the permanent components l_{Mi} and l_{Ci} are $\sigma_M = 0.29$ and $\sigma_C = 0.30$.

The first column (without controls) shows an unconditional correlation of employment of 0.19. Relative to their peers with never employed mothers, offspring of mothers, who are employed throughout their working-age life, are on average employed an additional 19 percent of their own active life.[12]

Table 2: Baseline regression

Dependent variable: Employment - offspring (l_{Ci})

Specification	(1)	(2)	(3)	(4) Baseline
Employment - mother l_{Mi}	0.19***	0.11***	0.11***	0.11***
	(0.022)	(0.020)	(0.020)	(0.020)
Ability - mother		0.01	0.00	-0.00
		(0.021)	(0.022)	(0.022)
Ability - offspring		0.12***	0.12***	0.12***
		(0.020)	(0.020)	(0.021)
High-school - mother		0.07***	0.07***	0.06**
		(0.025)	(0.025)	(0.025)
Some college - mother		0.07***	0.07***	0.07**
		(0.026)	(0.026)	(0.026)
College - mother		0.05*	0.04	0.04
		(0.028)	(0.028)	(0.028)
High-school - offspring		0.06**	0.06**	0.05*
		(0.026)	(0.026)	(0.026)
Some college - offspring		0.13***	0.13***	0.12***
		(0.025)	(0.026)	(0.026)
College - offspring		0.17***	0.16***	0.15***
		(0.025)	(0.025)	(0.025)
Net worth - mother			0.00	0.00
			(0.004)	(0.004)
Net worth - offspring			0.01*	0.01**
			(0.005)	(0.006)
Control mother's age at birth and number of children	NO	NO	NO	YES
Observations	3,748	3,597	3,582	3,582
Adjusted R^2	0.03	0.10	0.10	0.11

Notes: Standard errors clustered at the mother level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Mothers' age at birth and mothers' and offspring's number of children are introduced non-linearly (a set of dummies for each variable).

[12] As a comparison, estimates for the intergenerational elasticity of income for the US have oscillated around 0.4 in early work based on survey data (Solon, 1992; Zimmerman, 1992) to above 0.5 in recent work using administrative data (Chetty et al., 2014). Smaller figures correspond to other outcomes related to employment; for example, Toledo (2010) estimates 0.2 intergenerational correlation in hours, and Macmillan (2014) finds a father-son correlation of 0.1 for non-employment.

In the remaining specifications, we further include covariates that typically influence the outcome variable, i.e. employment. In specification (2) we control for ability and education, of both mother and offspring; in specification (3) we include net worth to control for potential wealth effects on labor supply; and in specification (4) we additionally control for the number of offspring of both generations and the age of the mother at birth using dummies.[13]

Our main result is robust across all three specifications. While, relative to the unconditional correlation, the coefficient on the mother's employment declines from 0.19 to 0.11, it remains statistically significant at the 1% level. This means that, controlling for the factors which the literature on intergenerational transmission found to be important, a large and significant residual intergenerational correlation of employment remains. Specifically, each additional year of maternal employment increases employment of the offspring by almost six weeks, on average.

Across all specifications, the mother's ability does not have an influence on the offspring's employment. By contrast, the mother's education does. The main predictors, however, are ability and education of the offspring. Contrary to the mother's education level we see that the correlation between the offspring's education level and their employment is monotonically increasing. The simple explanation is that wages, and hence the opportunity cost of non-employment, are increasing in both the offspring's ability and education.

In specification (4) we additionally control for the number of children of both generations and the age of the mother at birth using dummies. This is the specification we will use in everything that follows, unless stated otherwise. However, the inclusion of these controls does not have a significant impact on any of the other estimated coefficients. The coefficient on maternal employment is equal to 0.11 across all specifications (2)-(4).

4.2 Gender Differences and the Importance of Grandchildren

Next, we study how the intergenerational correlation of lifetime employment differs across mother-daughter and mother-son pairs. These intergenerational correlations could be affected by fertility choices, particularly among mother-daughter pairs. For this reason, we

[13]Results are robust to adding an even richer set of controls including gender, race, occupation, industry, region, and whether individuals live in urban or rural areas. Results are available upon request.

also analyze how the presence of grandchildren (offspring's children) affect these correlations. Formally, we partition the sample in two different ways:

(i) $\mathcal{G}_1 = \{\text{sons, daughters}\}$

(ii) $\mathcal{G}_2 = \{\text{sons w/o child, sons w/ child, daughters w/o child, daughters w/ child}\}$

For partition $k \in \{1, 2\}$ the estimated models follow the specification

$$l_{Ci} = \alpha + \sum_{G \in \tilde{\mathcal{G}}_k} \alpha_G \mathbb{I}_{i \in G} + \beta l_{Mi} + \sum_{G \in \tilde{\mathcal{G}}_k} \beta_G \mathbb{I}_{i \in G} l_{Mi} + \phi_M X_{Mi} + \phi_C X_{Ci} + \epsilon_i, \tag{4}$$

where the first group of each partition is our reference group (for example, sons in partition $\mathcal{G}_1$) and $\tilde{\mathcal{G}}_k$ denotes the partition without this first group (for example, $\tilde{\mathcal{G}}_1 = \{\text{daughters}\}$). The indicator variable $\mathbb{I}_{i \in G}$ takes the value one when offspring i belongs to group G and zero otherwise. In the following we discuss the coefficient β_G and/or the marginal effect $\beta + \beta_G$ of mother's employment on the employment of their offspring in the corresponding group G.

The first column of Table 3 shows the results of estimating equation (4) with $\mathcal{G}_1 = \{\text{daughters, sons}\}$. The coefficient on the interaction between employment of mothers and the daughter dummy is positive and statistically significant. The intergenerational correlation of employment is 0.17 for girls and 0.07 for boys.[14] The stronger link between mothers and daughters in terms of employment is interesting in light of the findings in the literature on intergenerational correlations of earnings that report lower estimates for daughters than for sons (see, for example, Chadwick and Solon, 2002; Olivetti and Paserman, 2015). It is also suggestive of a role model effect, as role models are intuitively more likely to be gender specific. Nevertheless, the correlation between mothers' and sons' employment is still significantly positive, suggesting that the role model effect exceeds a pure transmission of gender roles.

In a recent study, Kleven et al. (2019) find that the presence of children can explain gender inequality in the labor market. In particular, the authors find that while there are no significant differences between males and females as long as they are childless, upon arrival of the first child the labor market participation of women drops relative to their male

[14]Note that the coefficient for boys coincides with the marginal effect, as boys are the reference group in the regression. The numbers are the regression coefficients. The corresponding correlation coefficients (see equation (3)) are 0.15 and 0.07, respectively. The difference across genders increases as a consequence of disparities in standard deviations of lifetime employment.

Table 3: Gender differences

Dependent variable: Employment - offspring (l_{Ci})

	Baseline specification	Marginal effect
Employment - mother	0.07**	0.07**
	(0.026)	(0.026)
Employment - mother × Daughter	0.10***	0.17***
	(0.036)	(0.028)
Controls	YES	
Observations	3,582	
Adjusted R^2	0.13	

Notes: Standard errors clustered at the mother level in parentheses; standard errors calculated using the delta method for the marginal effects. *** p<0.01, ** p<0.05, * p<0.1. In all columns, we use the same covariates as in the baseline specification: ability, education dummies (high-school, some college, college), net worth, dummies for mothers' and offspring's number of children, and mother's age at birth.

peers and remains lower from then on. They argue that women's preferences over family and career are shaped by the gender roles they are exposed to during their childhood. It could hence be the case that the higher employment correlation between mothers' and daughters is due to correlated fertility choices and the fact that only females' labor supply is affected by children. Table 4 hence shows the results for the second decomposition, in which mother-son and mother-daughter pairs are split up further into those with and those without grandchildren (offspring's children). We observe that the mother-offspring correlations are slightly higher when the offspring themselves have children. However, we observe that this is the case for both daughters and sons. Furthermore, the employment correlation between mothers and daughters without children remains significantly positive at 0.14.

In sum, while gender roles may be an important contributor for the high correlation between mothers' and daughters' employment, they cannot account for the whole correlation. If the whole effect was due to gender identity and the associated preferences for work, we would not observe the significantly positive correlation between the employment of mothers and sons. Neither would we observe the significantly positive correlation between mothers and childless daughters.

Table 4: Gender differences

Dependent variable: Employment - offspring (l_{Ci})

	Baseline specification	Marginal effect
Employment - mother	0.06	0.06
	(0.037)	(0.037)
Employment - mother × Son with child	0.03	0.09***
	(0.047)	(0.032)
Employment - mother × Daughter without child	0.08	0.14***
	(0.057)	(0.045)
Employment - mother × Daughter with child	0.12***	0.17***
	(0.052)	(0.037)
Controls	YES	
Observations	3,582	
Adjusted R^2	0.14	

Notes: Standard errors clustered at the mother level in parentheses; standard errors calculated using the delta method for the marginal effects. *** p<0.01, ** p<0.05, * p<0.1. In all columns, we use the same covariates as in the baseline specification: ability, education dummies (high-school, some college, college), net worth, dummies for mothers' and offspring's number of children, and mother's age at birth.

4.3 Heterogeneity with Respect to Socioeconomic Status

In this section, we study the heterogeneity of the intergenerational correlation with respect to socioeconomic status. Specifically, we partition the sample according to the (highest) formal education of the mother and according to the mother's family income quintile:

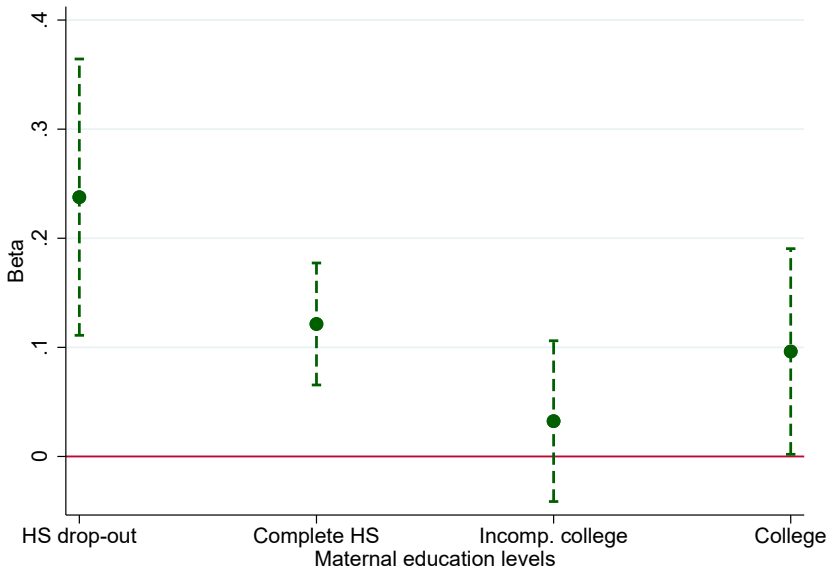
(iii) $\mathcal{G}_3 = \{$some high-school, complete high-school, some college, complete college$\}$

(iv) $\mathcal{G}_4 = \{$income quintile 1,... , income quintile 5$\}$

Using these partitions we again run the regression (4).

Maternal education. The intergenerational correlation of employment status is stronger the more disadvantaged the educational background of the mother. Figure 1 depicts the marginal effects of mothers' employment for each education level in $\mathcal{G}_3$. It is the highest and significantly positive for mothers with no degree (0.24) or a high-school degree (0.12). It is only insignificantly positive for mothers who attended college but did not complete it. Interestingly, if they obtained a college degree, the coefficient of 0.1 is

Figure 1: Intergenerational correlation of employment status by maternal education



Notes: Standard errors clustered at mother level calculated using the delta method. 95% confidence level intervals. The dependent variable is the permanent component of the employment status of the offspring. We use the same covariates as in the baseline specification: ability, education dummies (high-school, some college, college), net worth, dummies for mothers' and offspring's number of children, and mother's age at birth. The maternal education is the maximum attained and observed education level.

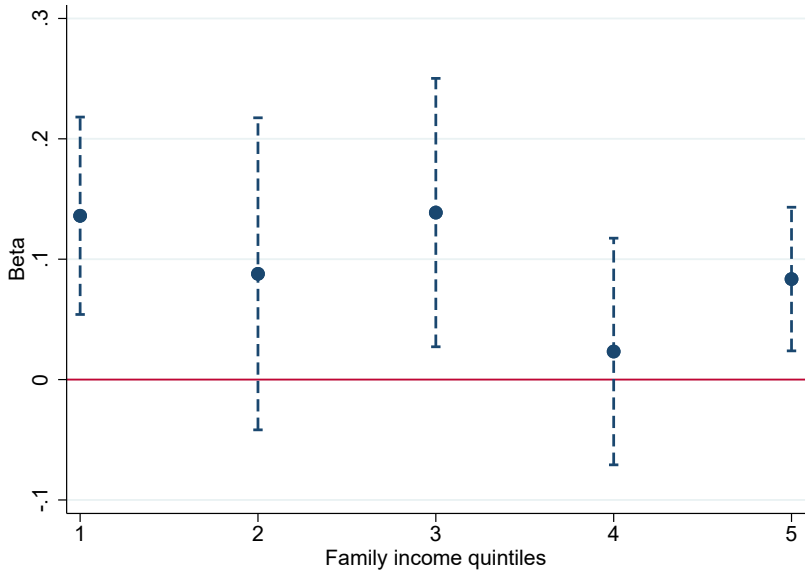
again significantly positive.[15]

Maternal family income. Figure 2 shows the marginal effects of mothers' employment on the offspring for each income quintile. The estimated coefficient is highest for offspring from mothers in the lowest income quintile and third income quintile (0.14) and only insignificantly lower for the second and fifth quintile. Only for the fourth quintile is it close to zero. Overall the positive correlation seems to be present across the whole income distribution, but higher in the lower half.

This pattern – a somewhat higher transmission of employment status at the bottom of the income distribution – is similar for daughters and sons, as Figure B.6 in the Appendix shows. In particular, mothers from low-income families tend to transmit their employment status to their daughters much more than mothers with higher family income. By contrast, Olivetti et al. (2020) find that gender roles are transmitted more at the top of the income distribution. This discrepancy supports our claim that the residual employment correlation we document is not entirely the result of a transmission of gender

[15]The corresponding regression results are reported in Table B.21 in the Appendix.

Figure 2: Intergenerational correlation of employment status by maternal family income quintiles



Notes: Standard errors clustered at mother level calculated using the delta method. 95% confidence level intervals. The dependent variable is the permanent component of the employment status of the offspring. We use the same covariates as in the baseline specification: ability, education dummies (high-school, some college, college), net worth, dummies for mothers' and offspring's number of children, and mother's age at birth. Quintiles of maternal family income correspond to the quintile observed in the majority of the survey years.

roles.

4.4 Extensive versus Intensive Margin

Our focus is on the extensive margin of labor supply, which for public finances is particularly important. To put these results into perspective, we include now a measure of the intensive margin of labor supply: weekly working hours. Specifically, we construct the permanent components of hours in an analogous way as we did for employment. The first two columns in Table 5 repeat the estimates of β for employment status (specification (1) and (4) in Table 2).

The middle two columns show the analogous coefficients of a regression using log hours worked per week instead of employment (we include the periods of non-employment with zero hours worked).[16] Both the unconditional and the conditional correlation are of the same order of magnitude as the ones for employment. However, the positive

[16]Zero hours were treated by adding a very small constant, 0.001, to hours data before taking the logarithm. Results remain unaffected if we use the inverse hyperbolic sine transformation of hours.

Table 5: Margins of labor supply

Dependent variable: Employment - offspring (l_{Ci})

	Employment				Log weekly hours			
Employment - mother	0.19***	0.11***	0.12***	0.08***				
	(0.022)	(0.020)	(0.032)	(0.032)				
Log weekly hours - mother					0.17***	0.09***	0.07*	0.04
					(0.024)	(0.022)	(0.041)	(0.038)
Controls	NO	YES	NO	YES	NO	YES	NO	YES
Sample (quint. emp.-mother)	Q1-Q5		Q2-Q5		Q1-Q5		Q2-Q5	
Observations	3,748	3,582	2,997	2,876	3,849	3,679	3,076	2,952
Adjusted R^2	0.03	0.11	0.00	0.06	0.02	0.13	0.00	0.11

Notes: Standard errors clustered at the mother level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. In columns were the sample is indicated as *Q2-Q5* we restrict the sample to mother-offspring pairs in which the mothers' permanent employment component is in the top 80% (i.e., excluding mothers *marginally attached* to the labor market). In columns with controls we use the same covariates as in the baseline specification: ability, education dummies (high-school, some college, college), net worth, dummies for mothers' and offspring's number of children, and mother's age at birth.

intergenerational correlation in working hours is entirely driven by mothers, who are in the lowest employment quintile. Specifically, in the last two columns we restrict the sample to mother-offspring pairs for whom the mother's permanent employment component is above the twentieth percentile. We observe that when restricting the sample in this way, the intergenerational correlation of working hours becomes insignificant (once controls are added). This is not the case for employment, as the correlations remain highly significant evne after excluding mothers whose permanent employment component is in the first quintile.

It is useful to relate our results to the (very small) literature on the intergenerational correlation of labor supply using hours worked as main variable. Altonji and Dunn (1991) use a similar methodology as we do, but much older data from the National Longitudinal Survey of Labor Market Experience. Specifically, their offspring generation is, on average, about ten years older than our mothers' generation. Contrary to us, the authors find no significant correlation between mothers' working hours and those of their offspring – both daughters and sons – after appropriately controlling. They also do not find a substantial intergenerational correlation in hours between fathers and their daughters. Only the father-son correlation in hours is significantly positive in their data, a result that is also confirmed by Toledo (2010).

In sum, using more recent data, we document a significant intergenerational correlation in the labor supply of mothers and of their offspring, both at the extensive and the intensive margin. Furthermore, we show that the correlation in working hours is driven by mother-offspring pairs, where the mother is only marginally attached to the labor market, that is where the mother's lifetime spent in employment is in the lowest quintile. Hence, the transmission in labor force participation from mothers to their offspring is mainly driven through the extensive margin of labor supply.

4.5 Robustness

Different Methodologies. The main result of a positive and significant correlation between maternal and offspring's lifetime employment is robust to several changes in the specification. Variants in the specification are presented in more detail in the Appendix (Section A.3 explains additional details of some exercises, and the tables with results are shown in Section B.1). First, as is usual for the estimation of earnings correlations, we estimate equation (1) with logs of the permanent components (Table B.15). Second, following Chetty et al. (2014), we estimate rank-rank regressions for average employment status of mothers and offspring (Table B.16).[17] Third, we adopt two alternatives in computing the permanent components: (i) simple averages of the employment status as the permanent component (without controlling for life-cycle or business-cycle fluctuations) as in the early literature (for example, Solon, 1992); and (ii) including controls for demographic events into the calculation of the permanent components (Table B.17). When controlling for demographics, we also include birth events and the presence of offspring in the household (below the age of three as well as older). The robustness of our results provides further evidence that the intergenerational correlation of fertility profiles is not a key driving force behind the intergenerational correlation of employment.

Finally, Table B.18 shows that the results are robust to the use of other measures of employment including one without any lower limit to be considered employed. Furthermore, exchanging maternal employment with labor force participation does not significantly change the strong intergenerational correlation. As this exercise includes unemployment periods of mothers (which are unfortunately not available for offspring), it helps to dissipate worries about the correlation being driven by an intergenerational

[17] Rank-rank correlations are more robust to life-cycle bias according to Nybom and Stuhler (2017).

transmission of difficulties to find a job.[18]

Welfare Benefits and Health Limitations. As mentioned in the introduction, there is a growing literature documenting that welfare benefit reception is correlated across generations (Dahl et al., 2014; Dahl and Gielen, 2021; Hartley et al., 2017). In Table B.19 we also document a significantly positive intergenerational correlation of benefit receipt with our data (first column). Yet, controlling for welfare reception does not significantly change the intergenerational employment correlation, though the point estimate is somewhat reduced (second column). Furthermore, the interaction term between employment of the mother and welfare reception is not statistically significant, which rules out that the correlation of employment is mainly driven by welfare reception. Another concern may be the correlation in employment could be coming from healthy mothers and offspring working more and health being passed on from one generation to the next. While we do find a significantly positive intergenerational correlation in health limitations (third column), controlling and interacting for those does again not significantly change the employment correlation (last column).

Quality of Work. One may also wonder whether controlling for measures of work quality affects the intergenerational employment correlation. We do not find an indication of that. While the quality of a job depends also on non-monetary aspects, the hourly wage is arguably the most objective measure to compare different quality of jobs. In Table B.20 we control for the permanent component of the hourly wage of both mothers and offspring (first two columns). We observe that the intergenerational correlation of employment is not significantly different when adding these controls.

Spousal employment. Another concern may be that the unexplained association between employment of mothers and offspring is due to the influence of the father. Unfortunately, the NLSY79 is not designed to match fathers to their offspring. However, the data provide information on the employment status of spouses as reported by mothers, which we use as a proxy for fathers' employment. Specifically, we compute the permanent components for spousal employment analogously as we did for mothers.

The first column of Table B.13 repeats the baseline result for the sub-sample in which we also observe the spousal employment status (specification (4) in Table 2). Column

[18]Further robustness exercises, such as using ability quartile dummies or including interactions of covariates, including a rich set of controls for industry, occupation, location, gender and race, and excluding individuals, who are observed only at ages younger than 30 or at most twice, also confirm the findings of the baseline estimation. They are not included in the paper but are available upon request.

two shows the regression output when we regress offspring employment on the spouse's employment status. While the point estimate is almost the same as the one for mothers, it is not significant because the standard error is three times as high. In the third column, we include both the maternal and spousal employment status and observe that the coefficient on maternal lifetime employment is the same as in the baseline specification, whereas the coefficient on spousal employment remains insignificant. Finally, when we also introduce an interaction term between mothers' and spouses' employment status (fourth column), this coefficient is insignificant, suggesting that there is no complementarity in the transmission of mothers' employment status and the one of their spouses.

Self-employment. It is also interesting to study the intergenerational correlation of self-employment, a particular form of employment. In Table B.14 we repeat our baseline regressions but with the permanent components of mothers' and children's self-employment status instead of employment, where we define the permanent component of self-employment analogously to our definition of the employment measure with the additional restriction that mothers, respectively offspring, report to be self-employed at the date of the interview. The resulting correlation of 0.04, though significant, is lower than the one for employment. Hence, our main result is not driven by self-employment.

4.6 Taking Stock

Our result of a high employment correlation between mothers and offspring, including sons, is extremely robust. The fact that the transmission of employment status is strong for low-income earners is particularly interesting in light of existing income tax credits for low-income families with children, such as the EITC in the United States. Such programs directly encourage labor force participation of eligible recipients. If participation of these recipients is transmitted to their offspring (and hence their offspring's children, etc.), it may indirectly generate higher labor income tax revenues in the following generations. Hence, there may be a dynamic fiscal benefit of such programs. However, before drawing normative conclusions from our – so far positive – analysis, it is necessary to get a better understanding of the precise mechanism through which employment status is transmitted. This is the focus of the remainder of this paper.

5 Transmission of Work Preferences

In this section we discuss in how far the transmission of attitudes toward work could explain the observed results. To fix ideas, we first present a simple two-generations model that transparently traces out the differences between *direct preference transmission* and the role model effect we have in mind. We then present suggestive evidence that indeed a role model effect explains a substantial part of the intergenerational employment correlation.

5.1 Two-Generations Model

The model is a simple two-generations framework based on Solon (1999). The main addition to it is that the offspring's preferences towards work are (potentially) affected by parental labor force participation.

There is a continuum of mother-offspring pairs, where we denote mothers by M and offspring by C (child). Mothers are altruistic but discount their offspring's expected utility by a factor $\alpha \in [0, 1)$. They decide on consumption c_M, labor supply l_M, and human capital investment H for their offspring. The offspring decide on consumption c_C and labor supply l_C. For simplicity, we assume that the offspring do not have any children themselves. Agents are heterogeneous in ability e_k and disutility of labor θ_k.[19] Abilities are correlated across generations, accounting for genetic inheritance.

The mothers' optimization problem is given by

$$\begin{aligned} V_M(\theta_M, e_M, v_M) = \max_{c_M, l_M, H} \frac{c_M^{1-\sigma}}{1-\sigma} - \theta_M \frac{l_M^{1+\chi}}{1+\chi} + \alpha \mathbb{E}\big[V_C(\theta_C, w_C)\big] \\ \text{s.t.} \quad c_M + pH = w_M\, l_M \\ \log(w_M) = \log(e_M) + v_M \\ \log(\theta_C) = \kappa_0 - \kappa_1 \log(l_M) + \kappa_2 \log(\theta_M) + \eta_C. \end{aligned} \tag{5}$$

We assume that utility is additively separable in consumption and labor. The parameter $\sigma > 0$ is the coefficient of relative risk aversion and $\chi > 0$ is the inverse of the Frisch elasticity of labor supply. Mothers finance consumption c_M and investment in their

[19] Whereas differences in productivity among offspring are captured explicitly by both e_C (ability) and H (education), e_M represents for parents a combination of abilities and education, the latter not being modeled.

offspring's human capital H, a unit of which costs p. Their labor earnings are $w_M l_M$. The wage of the mother is determined through ability e_M and a random term v_M, which captures labor market luck.

The last equation (5) is the process of intergenerational transmission of preferences for work, which highlights the channels, which we want to distinguish. Specifically, the mother may directly transmit her preferences (κ_2) or she may affect the offspring's preferences through her employment behavior (κ_1).

The offspring's optimization problem is given by

$$\begin{aligned} V_C(\theta_C, w_C) = & \max_{c_C, l_C} \frac{c_C^{1-\sigma}}{1-\sigma} - \theta_C \frac{l_C^{1+\chi}}{1+\chi} \\ \text{s.t.} \quad & c_C = w_C \, l_C \\ & \log(w_C) = \log(e_C) + \psi \log(H) + v_C \\ & \log(e_C) = \lambda \log(e_M) + u_C. \end{aligned}$$

The offspring finance their consumption with labor earnings. Wages w_C of the offspring depend on their ability, e_C, on the acquired human capital H (which has a return ψ), and on v_C, which captures labor-market luck. The last equation states that ability is partially inherited. To be specific, the parent's and offspring's ability are linked via an AR(1) process with persistence $\lambda \in (0, 1)$.

Note that in the model, l_M and l_C are continuous variables, of which we think as the time share in employment over the whole lifetime. This maps well into our empirical analysis, in which we employ the permanent component of employment status.

The Solution. We focus on the solution of the offspring's problem because it enables us to summarize the relevant model predictions. To be specific, we take maternal decisions and realizations of shocks as given. Then, the first-order condition for labor supply l_C can be written as

$$\log(l_C) = -\frac{1}{\sigma + \chi} \log(\theta_C) + \frac{1-\sigma}{\sigma + \chi} \log(w_C).$$

Using the constraints of the optimization problems this equation is equivalent to

$$\log(l_C) = \alpha + \beta_1 \log(l_M) + \beta_2 \log(\theta_M) + \gamma \log(e_C) + \delta \log(H) + \epsilon, \tag{6}$$

where the coefficients α, β, γ and δ are functions of structural model parameters and the error term ϵ is a convex combination of the error terms v_M, η_C, v_C and u_C.

Importantly, employment decisions conditional on human capital and ability are related across generations through the coefficients

$$\beta_1 = \frac{\kappa_1}{\sigma + \chi} \quad \text{and} \quad \beta_2 = -\frac{\kappa_2}{\sigma + \chi}.$$

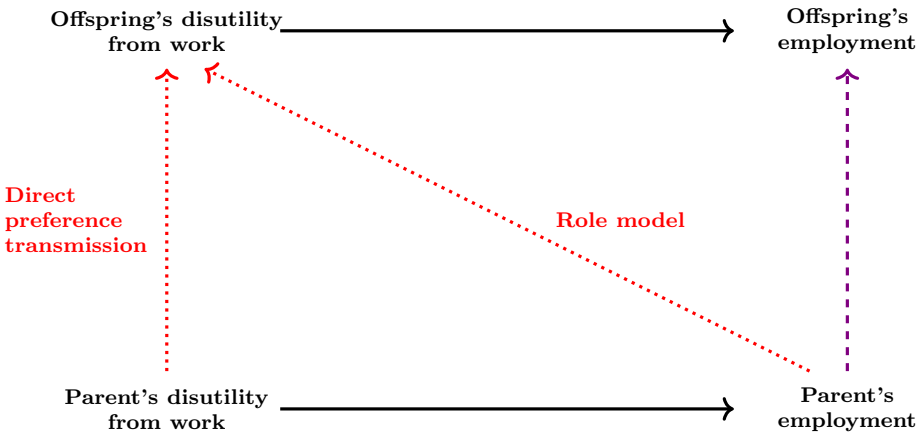
The coefficient β_1 captures the role model effect. It measures to what extent maternal labor supply affects the labor supply of the offspring by generating a more positive attitude towards work. By contrast, the coefficient β_2 determines the role of *direct preference transmission*. It captures the part of the intergenerational correlation in work preferences that is unaffected by mothers' labor supply decisions. This is the main difference of equation (6) to those that we estimated in Section 4.1, where we did not use any measures for work preferences that would account for this channel.[20] Thus β_1 potentially absorbed such direct transmission in the estimations above.

The differentiation between the two channels is important for policy analysis or dynamic scoring. For example, when evaluating the desirability of in-work benefits, only in the presence of a role model channel will such benefits lead to higher income tax revenue raised from future generations. By contrast, if preference transmission does not operate through a role model, for example if the offspring learn from what parents express or if genes play a role, such policies may increase the employment of mothers, but this increase will not spill over to their offspring and hence will have no effect on future income tax revenue.

Figure 3 schematically illustrates the two channels. We observe a link between parents' and offspring's employment choices (dashed purple line), and we infer that, after controlling for relevant observed factors (mainly ability, education, and wealth), there is a relation with preferences for work generating this link (dotted red lines). The relation may arise either through direct preference transmission (relating parents' preferences

[20] Another difference is that while the specification in the model is in logs, we use a linear empirical specification. Using the linear relationship has the advantage of avoiding arbitrary transformations of the data. Not all permanent components are above 0. Hence, to be able to use the log-specification, we need to shift all permanent components to ensure that they are above 0. But these shifts complicate the interpretation of the coefficients because they are not invariant to the size of the shift. Furthermore, the interpretation of results is very intuitive in the linear setup. However, as we discuss in detail in Section 4.5 the results are very robust across a battery of different specifications, including regressions run with variables in logs rather then levels.

Figure 3: Direct preference channel versus role model channel



and offspring's preferences directly) or through a role model (parents' employment choices influence offspring's preferences) or through a combination of both.

5.2 Evidence for a Role Model Effect

5.2.1 Gender Identity and Female Work Preferences

Disentangling the two potential channels is a difficult task because preferences are not directly observable. However, two questions in the NLSY79 are related to work preferences and we will make use of them in the following analysis:[21]

(i) Women's place is in the home, not in the office or shop.

(ii) Women are much happier if they stay at home and take care of the children.

While these survey questions relate foremost to gender roles, they also contain information on women's preferences for work. Specifically, as was shown in the previous literature a woman's attitude towards work is substantially influenced by her view on what a woman's role in the family is. The answers in the survey are given qualitatively. We hence construct a quantitative variable, for which we code the answers of each question such that a higher value represents a higher disutility of work. The same questions do not contain information on men's work preferences.

Table 6 shows the results of the regression of the maternal employment (first column) and the offspring's employment (second column) on the measure of disutility of work.

[21] See Appendix A.4 for details.

Our measure of *disutility of work* for mothers is significantly correlated with maternal employment with a negative sign as expected. Also, the disutility of work for daughters is negatively correlated with the employment of daughters. However, since the questions only relate to female employment, the same measure constructed for sons is uncorrelated with their employment (see the coefficient of the base category in the first line of the second column).

Table 6: Evaluation of work preferences effect on employment

Dependent variable: Employment - mother or offspring (l_{Mi}, l_{Ci})

Specification	Maternal employment	Offspring employment
Disutility of work - Offspring		-0.00
		(0.016)
Disutility of work - Offspring × Daughters		-0.08***
		(0.024)
Disutility of work - Mother	-0.09***	
	(0.017)	
Controls	maternal	offspring
Observations	3,688	3,664
Adjusted R^2	0.22	0.12

Notes: Standard errors clustered at the mother level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. We use the same covariates as in the baseline specification but restrict them for mothers (offspring) to the maternal (offspring's) controls: ability, education dummies (high-school, some college, college), net worth, dummies for mothers' and offspring's number of children respectively, and mother's age at birth. Disutility of work computed from questions on women's roles: (i) Women's place is in the home, not in the office or shop, and (ii) Women are much happier if they stay at home and take care of the offspring. For further details on the measure of disutility of work, see Appendix A.4.

In the upper panel of Table 7 we partition the sample of mothers into terciles of disutility of work, using our measure. The first column shows the average share of years, in which mothers in the respective terciles are employed. Mothers with low disutility of work (first tercile) are employed on average 80% of the time, those with medium disutility (second tercile) are employed 74% of the time and those with high disutility of work (third tercile) are employed only 61% of the time. The second column restricts the computation to mothers with daughters, for whom we do not observe any substantial difference. The third column shows the employment of the daughters in the respective groups. Daughters of mothers with low disutility of work are employed 85% of the time, those of mothers with medium disutility of work 84% of the time, and those of mothers

with high disutility of work only 76% of the time. Hence, mothers' disutility of work seems to affect daughters' employment.

Table 7: Employment (proportion of periods employed) of mothers and offspring by terciles of disutility of work

	Employment		
	Mothers	Mothers with daughters	Daughters
Mothers's disutility of work			
1^{st} Tercile	0.80	0.80	0.85
2^{nd} Tercile	0.74	0.75	0.84
3^{rd} Tercile	0.61	0.62	0.76
Daughter's disutility of work			
1^{st} Tercile		0.76	0.89
2^{nd} Tercile		0.74	0.82
3^{rd} Tercile		0.66	0.72

Notes: Employment of mothers and offspring correspond to the averages across years and individuals. Disutility of work computed from questions on women's roles: (i) Women's place is in the home, not in the office or shop, and (ii) Women are much happier if they stay at home and take care of the offspring. For further details on the measure of disutility of work, see Appendix A.4

The lower panel of Table 7 partitions the mother-daughter pairs by the terciles of daughers' disutility of work. Daughters with low disutility of work are employed 89% of the time, those with medium disutility of work 82% and those with high disutility of work only 72%. We observe the same qualitative intergenerational employment behavior. Specifically, mothers of daughters with lower disutility of work tend to be employed longer.

In sum, the measure we construct seems to capture preferences for work well both for mothers and daughters. Specifically, women with higher disutility of work, tend to be employed less. We now want to understand whether daughters from mothers with high disutility of work, are employed less because of a direct transmission of work preferences, or whether their mothers' employment decisions affect their preference for work. Specifically, using our measure for work preferences, in Table 8 we estimate equation (5) (in levels) and thereby disentangle the two channels that are depicted in Figure 3 above. In the first two columns we observe that the daughters' disutility of work is significantly correlated with both their mothers' employment and their mother's disutility of work.

Regressing the daughters' disutility of work on both simultaneously shows that both correlations remain significant. In particular, when controling for maternal disutility of work, the correlation between the daughters' disutility of work and the mothers' employment remains significantly negative. This suggests that the employment decision of mothers itself affects daughters' attitudes towards work and hence their employment.

Table 8: Direct preference channel versus role model channel

Dependent variable: Disutility of work - daughter (θ_{Ci})			
Employment Mother	-0.23***		-0.14***
	(0.046)		(0.049)
Disutility of work - Mother		0.24***	0.21***
		(0.026)	(0.028)
Observations	1,872	1,872	1,872
Adjusted R^2	0.02	0.06	0.06

Notes: Standard errors clustered at the mother level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The results are unconditional, i.e., no controls are used in this specification. Disutility of work computed from questions on women's roles: (i) Women's place is in the home, not in the office or shop, and (ii) Women are much happier if they stay at home and take care of the offspring. For further details on the measure of disutility of work, see AppendixA.4.

Disutility of work computed from questions on women's roles: (i) Women's place is in the home, not in the office or shop, and (ii) Women are much happier if they stay at home and take care of the offspring. For further details on the measure of disutility of work, see Appendix

Using our constructed measure for disutility of work θ_{Mi} we can control for mothers' work preferences in our main regression, that is we can run the regression[22]

$$l_{Ci} = \alpha + \beta_1 l_{Mi} + \beta_2 \theta_{Mi} + \phi_M X_{Mi} + \phi_C X_{Ci} + \epsilon_i. \tag{7}$$

Table 9 shows the results. The first column repeats the baseline estimation for comparison. The second column introduces our measure of disutility of work of the mother and excludes employment of the mother. The third column shows the results of including the preferences for work of the mother in our baseline specification, i.e. the estimation results of equation (7). While the coefficient on employment of the mother does not change

[22]The equation is more general than the equation (6) as the set of controls is richer. However, estimating equation (6) (without additional controls) does not significantly change our coefficients of interest.

significantly, the coefficient on the disutility of work is close to zero. Finally, column four shows the same estimation but restricts the sample to mother-daughter pairs. The results are qualitatively the same, and the previous finding of a higher coefficient of maternal employment for daughter's employment behavior is confirmed. Again, the coefficient on mother's work preferences is close to zero, this time not even significant.

Importantly, while our measure of maternal disutility of work is significantly negatively correlated with the employment behavior of mothers, it does not affect the employment behavior of their offspring. Furthermore, including this measure in the baseline specification does not affect the coefficient on the mother's employment. These results suggest that the role model channel is an important driver of the intergenerational correlation of employment, while there seems less direct transmission of work preferences.

Table 9: Direct preference transmission vs. role model: Measures of work preferences

Dependent variable: Employment - offspring (l_{Ci})

	Entire sample			Only daughters
Specification	Baseline	Maternal preferences (disutility of work)	Full Model	Full Model
Employment - mother	0.11***		0.12***	0.17***
	(0.020)		(0.021)	(0.030)
Disutility of work - mother		0.02	0.03**	0.01
		(0.012)	(0.012)	(0.017)
Controls	YES	YES	YES	YES
Observations	3,582	3,582	3,582	1,776
Adjusted R^2	0.11	0.10	0.11	0.17

Notes: Standard errors clustered at the mother level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. In all columns, we use the same covariates as in the baseline specification: ability, education dummies (high-school, some college, college), net worth, dummies for mothers' and offspring's number of children, and mother's age at birth. Disutility of work computed from questions on women's roles: (i) Women's place is in the home, not in the office or shop, and (ii) Women are much happier if they stay at home and take care of the offspring. For further details on the measure of disutility of work, see Appendix A.4.

5.2.2 Exploiting Variation in Cohabitation to Measure Work Preferences

The last piece of evidence, supporting the existence of a role model channel, results from controlling for mothers' permanent component of employment based on periods when

they do not live together with the offspring. This measure serves as another proxy for mothers' work preferences that would be transmitted directly. The idea is that a role model channel is at work only when offspring actually observe the behavior of their mothers, which is facilitated during cohabitation.

For each offspring, we split the observations of the mother into those when they are both cohabiting and those when they are not. Non-cohabitation includes periods before the offspring's birth and after the offspring leaves home, independent of whether other children are living in the household.[23] We estimate the permanent component for mothers using only the non-cohabitation period and re-estimate the intergenerational equation introducing this variable to control for mothers' preferences for work. We only use those mother-offspring pairs for which we have periods of both cohabitation and non-cohabitation.[24]

Table 10: Direct preference transmission vs. role model: Periods of non-cohabitation

Dependent variable: Employment - offspring (l_{Ci})

Specification	Baseline	Maternal preferences (periods without cohabitation)	Full
Employment - mother	0.12***		0.11***
	(0.025)		(0.029)
Employment - mother when...		0.06***	0.01
...not cohabiting with offspring		(0.020)	(0.024)
Controls	YES	YES	YES
Observations	2,411	2,411	2,411
Adjusted R^2	0.12	0.11	0.12

Notes: Standard errors clustered at the mother level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. In all columns, we use the same covariates as in the baseline specification: ability, education dummies (high-school, some college, college), net worth, dummies for mothers' and offspring's number of children, and mother's age at birth. Periods of non-cohabitation are specific for each mother-offspring pair. Only pairs with both periods of cohabitation and non-cohabitation are included.

The results are presented in Table 10: when controlling for maternal preferences for

[23]When restricting the cohabitation period to the offspring's age between six and eighteen, results are unaffected.

[24]In an alternative specification, we use the periods of cohabitation and non-cohabitation to compute two distinct permanent components (see Appendix A.5). The results, shown in Table B.24, are perfectly in line with the findings in Table 10: the effect of maternal employment during periods of cohabitation has a positive and significant effect (0.09) on the offspring's lifetime employment, while employment during non-cohabitation periods is not significantly different from zero.

work in the described way, the role of maternal lifetime employment remains relevant and predominant. Furthermore, these periods of non-cohabitation do not seem to add information once lifetime employment is taken into account. This supports the preponderance of the role model channel.[25]

6 Ruling Out Other Potential Mechanisms

While the presented evidence suggests that a role model channel is responsible for the observed intergenerational correlation in employment status, there are other factors that may well explain this correlation. In this section we briefly discuss other candidate mechanisms and provide evidence that neither of them is likely to be the driving force behind the results.

6.1 Networks or Occupation-Specific Human Capital

Parents might help their offspring find a job through their connections, or even transmit occupation-specific human capital or preferences leading to correlations in job-finding probabilities across generations.[26] In order to test whether those mechanisms are plausible explanations for the residual intergenerational correlation of employment, we do the following: we split the sample between mother-offspring pairs who are employed in the same type of business (proxied by industry and sector) or have the same type of job (proxied by industry and occupation). Industry, sector and occupation are assigned to the individuals according to the category observed in most of the survey years.[27] In particular, we estimate equation (4) using the partitions

(v) $\mathcal{G}_5 = \{\text{different industry-sector, same industry-sector}\}$

(vi) $\mathcal{G}_6 = \{\text{different industry-occupation, same industry-occupation}\}$

[25]The results also hold when restricting the offspring's sample to those observed at least once at ages 30 or above, and to those observed for at least three interviews (results available upon request). Hence, the lower correlation of employment in periods when mothers and daughters not cohabiting is not driven by the fact that for the offspring cohort there are more observations during young age.

[26]The role of nepotism and preferences for occupations in the intergenerational correlation of earnings has been documented in the literature. See, for example, Corak and Piraino (2011) and Lo Bello and Morchio (forthcoming).

[27]Industries according to the three-digit Census classifications are grouped in 14 aggregate categories, and a similar aggregation is done for occupations to 18 categories. The sectors considered are private, public, self-employment, and family businesses. We exclude the observations of never employed individuals, who account for only 2% of the mothers' and only 7% of the offspring's cohort.

The first two columns of Table 11 show the results. They suggest that the correlation of employment is not different for mother-offspring pairs who share the same type of business or job. This evidence does not support a story of employment correlations driven by networks or (occupation-)specific human capital transmission.

6.2 Local Conditions of the Labor Market

As a last exercise, we evaluate whether local conditions of the labor market could explain our correlation. So far, our argumentation has revolved around labor supply decisions. However, the estimated correlation could also be driven by market conditions that are determined by labor demand: if mothers and offspring live in the same region, both generations face similar labor market conditions, i.e. similar separation and job-finding probabilities. Macmillan (2014) finds such local labor market conditions to be an important contributor to the observed positive correlation in non-employment between fathers and sons.

Table 11: Intergenerational correlation of employment status by (i) same industry-sector, (ii) same industry-occupation, (iii) same region, and (iv) same region-SMSA-urban/rural

Dependent variable: Employment - offspring (l_{Ci})

	Networks/Occupation		*Regional Labor Markets*	
	Industry-sector	Industry-occupation	Region	Region-SMSA-urban/rural
Employment - mother	0.11***	0.12***	0.16**	0.10***
	(0.023)	(0.021)	(0.066)	(0.023)
Employment - mother × Same	0.02	-0.07	-0.05	0.06
	(0.048)	(0.080)	(0.069)	(0.044)
Controls	YES	YES	YES	YES
Observations	3,582	3,582	3,582	3,582
Adjusted R^2	0.11	0.11	0.11	0.11

Notes: Standard errors clustered at the mother level in parentheses; standard errors calculated using the delta method for the marginal effects. *** p<0.01, ** p<0.05, * p<0.1. In all columns, we use the same covariates as in the baseline specification: ability, education dummies (high-school, some college, college), net worth, dummies for mothers' and offspring's number of children, and mother's age at birth. Industry, sector, occupation, region, SMSA and urban/rural are assigned as the category that is observed in the majority of the survey years.

The general version of the NLSY79 contains three different geographic variables but not a precise regional identifier. We hence undertake the following strategy. First, we condition our analysis on the mother-offspring pair living in the same broadly defined region (Northeast, North Central, South or West). Second, we define a variable that indicates if both the mother and the offspring live in the same region as well as in an urban or rural area and in a Standard Metropolitan Statistical Area (SMSA).[28] We assign residence according to the category observed in the majority of survey years, and we compute the intergenerational correlation of employment distinguishing mother-offspring pairs for which their categories coincide or not. Formally, we again estimate equation (4) using the partitions

(vii) $\mathcal{G}_7 = \{\text{different region, same region}\}$

(viii) $\mathcal{G}_8 = \{\text{different region-SMSA-urban/rural, same region-SMSA-urban/rural}\}$

The last two columns of Table 11 present the estimates. Residence in the same region does not significantly affect the employment correlation. Importantly, the estimates for mother-offspring pairs, who do not share the same region remain significantly positive and are not significantly different from our baseline estimates. Our geographic definitions are coarse, since the data do not allow us to map individuals into very granular localities. However, those mother-offspring pairs which by definition live far apart from each other exhibit the same significantly positive intergenerational correlation of employment as the whole population. We conclude that also local labor markets are unlikely to be the reason behind the positive intergenerational correlation in employment.

7 Conclusion

This paper contributes to the literature on the intergenerational correlation of labor market outcomes. Differently from most of the existing literature, we focus on the extensive margin of labor supply. Using the NLSY79 and the CNLSY79 we document a robust, statistically significant, and positive intergenerational correlation of employment status between mothers and their offspring. The correlation is higher for mother-daughter pairs but significant also for mother-son pairs, implying that correlated gender identity roles

[28] 92% of the mother-offspring pairs share the region of residence. Only 30% of the observations correspond to pairs living in the same combination of geographical variables.

cannot be the sole driving force. The correlation is particularly high for mothers with low socioeconomic status.

While the analysis of this paper is a purely positive one, it has potentially important normative implications. For example, in-work benefits, such as the EITC in the United States, paid to the currently working generation may indirectly increase the employment – and thus income tax revenue – of future generations. This is especially the case if these programs are targeted to low-income families with children. More generally, dynamic scoring of any redistributive policy that affects incentives to work should take this transmission channel into account. This discussion is also relevant when designing policies for the recovery after a prolonged shock such as COVID-19, which has particularly affected women (Alon et al., forthcoming). The policies in response to it may have effects on future generations.

However, a comprehensive policy analysis requires a clear understanding of the mechanism through which employment status is transmitted across generations. We show that the results are consistent with a theory of work culture and provide suggestive evidence that in their employment decisions, mothers act as a role model for their offspring. We are able to rule out network effects, occupation-specific human capital, and local labor markets as driving forces behind the result.

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Appendix

A Details on the empirical analysis

A.1 Details on the data

NLSY79 and CNLSY79. The data is collected and provided freely by the Bureau of Labor Statistics (BLS) in the US. The NLSY79 consists of three sub-samples: (i) the cross-sectional sample (6,111 individuals) is a representative sample of the US population in 1979, (ii) the supplemental sample (5,295 individuals) over-samples disadvantaged groups (Hispanic or Latino, black and poor people), and (iii) the military sample (1,280 individuals) over-samples the population participating in the army. As explained in the main text, we use only the cross-sectional sample and restrict ages to 25 to 45 years old. Figure B.1 provides an example for a mother-offspring pair in the data.

It is worth noting some features of the sample we use for the analysis. Figure B.2 shows the distribution of the number of interviews. The mode for mothers is 14, with around 75% of the mass concentrated between 14 and 17 interviews. For the offspring, the mode is 3, and 66% have 3 or more interviews. The left panel of Figure B.3 shows the distribution of the age of mothers at birth. Of the observations, 75% come from mothers who gave birth between 19 and 29 years old. The right panel of Figure B.3 shows the same distribution, broken down by number of interviews of the offspring. Mothers of offspring with more interviews were younger when their offspring were born. Figure B.4 shows the employment-age profiles of mothers and offspring. Employment rates decline and become more volatile with age because older offspring are fewer and belong to mothers who were younger at birth, something the empirical strategy accounts for when computing the permanent components. Furthermore, the dip in the employment rate at the age of 35 to 36 for offspring reflects the 2008 crisis, which particularly affected younger cohorts.

Ability is measured in the 1979 cohort by the Armed Services Vocational Aptitude Battery (ASVAB), which was collected around 1980 when mothers were between 15 and 23 years old. The scores correspond to the AFQT, which is a composite of test results in arithmetic reasoning, word knowledge, paragraph comprehension, and numerical operations. We use the version of the AFQT revised in 2006 to control for differences in cohorts within the NLSY79. Similar measures of cognitive abilities have been collected

for the offspring cohort since 1986. In particular, we use the latest measurement for each offspring of the Peabody Individual Achievement Test (PIAT) for Math, considered the most appropriate measure of ability among the test scores available in the data for the younger cohort (Abbott et al., 2019). These measures may capture not only genetic ability, but also some components of scholastic skills. This is not a problem for our analysis, as we are interested in accounting for productivity jointly with education.

Another relevant variable in the analysis, wealth, is introduced as net worth, i.e. assets minus debts. The variable is provided by the BLS for the NLSY79 cohort, and we follow the definition in the CNLSY79, where such a computed variable is not provided. In terms of assets, we include savings in liquid accounts and in financial assets, the market value of the main house and other properties, and the market value of own vehicles. The debts comprise credit card balances, outstanding mortgage value and other property debts, debts for vehicles, and other debts. The net worth variable constructed by the BLS uses imputed assets and debts when there is no response, and values are top-coded. No such procedures are followed in the offspring's cohort, and also there are some slight changes in the definitions of assets and debts over time.

Earnings is also a variable used throughout the analysis. We use an annual measure, the most comparable variable across cohorts: wages and salaries received during the last calendar year. Earnings are top-coded for both the parents' and offspring's cohorts. We construct weekly hours of work, dividing total annual hours by total number of weeks worked during the last calendar year for the mothers' cohort. For the offspring's cohort, we use weekly hours worked in all jobs at the time of the interview.

Industries are available according to different versions of the three-digit US Census classification. For the comparison of industries across generations, they are grouped into 14 categories: agriculture, forestry, fisheries; mining; construction; manufacturing of non-durables; manufacturing of durables; transportation, communications, and other public utilities; wholesale trade; retail trade; finance, insurance, and real estate; business and repair services; personal services; entertainment and recreation services; professional and related services; public administration. Similarly, the classification of occupations also corresponds to three-digit US Census classification. They are collapsed into 18 categories: management, business, and financial operations; computer and mathematical; architecture and engineering; life, physical, and social services; community and social services;

legal; education, training, and library; arts, design, entertainment, sports, and media; health-care practitioners and technical and support; protective service; food preparation and serving related; building and grounds cleaning and maintenance; personal care and service; sales and related; office and administrative support; farming, forestry, and fishing; construction and extraction, installation, repair and maintenance, and production; transportation and material moving. The variable accounting for sectors refers to private, public, self-employment, and family businesses.

The geographical information on the publicly available version of the NLSY79 is not very detailed. The variables are limited to region (Northeast, North Central, South, or West), urban or rural, and an indicator of residence in an SMSA, which are highly populated areas. Whenever we need to construct a measure of location, we use a combination of these three variables.

A.2 Methodological challenges in the measurement of intergenerational persistence of labor market outcomes

The data we use feature desirable characteristics for coping with some estimation issues identified in the literature on the intergenerational correlation of earnings. First, Zimmerman (1992) and Solon (1992) show that early estimations based on single-year measures of parents' and offspring's outcomes are subject to substantial measurement error. This is because single-year measures are subject to transitory deviations from the long-run means. This means that single-year measures are not good proxies for lifetime or permanent components, which yields attenuation bias as a consequence. This problem is particularly relevant for parental outcomes, the explanatory variables in the intergenerational equations. Mazumder (2005) estimates the potential reduction in the bias by increasing the number of observations. The longitudinal nature of the NLSY79 allows for the use of several observations for both generations, particularly in the case of mothers, who are observed on average in 14 waves in our sample (only 4% of the sample has fewer than 10 interviews).

Second, the lack of heterogeneity in the samples aggravates the measurement error (Solon, 1992, 1999).[29] We use a representative sample of the US population in 1979,

[29]The interaction between, on the one hand, transitory fluctuations and measurement error, and, on the other hand, the homogeneity in the sample, is discussed in Solon (1989).

namely the cross-sectional sub-sample of the NLSY79, which is several times bigger than cohorts formed from the Survey Research Center (SRC) component, the analogous of the PSID typically employed in empirical studies of intergenerational earnings' correlations (see, for example, Solon, 1992).

Finally, the literature emphasizes a life-cycle bias that arises when parents' and offspring's observations are not representative of their lifetime outcomes due to non-stable trajectories along the life (Haider and Solon, 2006; Grawe, 2006; Nybom and Stuhler, 2016, 2017). Measurement error is not homogenous along the life cycle, with higher noise for early and late years (Mazumder, 2005). To mitigate this problem, the literature recommends using observations for ages between 30 and 50 (Black and Devereux, 2011). Our sample restriction to individuals between 25 and 45 years old and the netting out of age effects from the permanent components are intended to mitigate this bias.

A.3 Details on the robustness exercises

In order to provide scale-invariant estimates of the persistence in employment, we follow the literature by providing a log-log and a rank-rank specification. It is worth noting that for the log-log specification, we take the logarithm of the permanent components, which are the fixed effects backed out in the estimation of (2). As these permanent components include negative values, to take the natural logarithm we add a constant such that the minimum value for each generation is 0.001. For the rank-rank specification, we sort individuals within each generation in ascending order in terms of proportion of periods employed during the 25 to 45 years old window. We assign each individual their position, divided by the total number of individuals (when an employment value is repeated, we average across positions corresponding to that value).

For the robustness exercise, in which we control for demographic events when computing the permanent components, we estimate the following slightly modified model,

$$l_{kit} = l_{ki} + \sum_{n=1}^{2} \pi_{nk} A_{kit}^{n} + \lambda_{kt} + Demo_{kit}'\varsigma + \upsilon_{kit},$$

where $k \in \{M, C\}$ and $Demo_{kit}$ are controls for demographic events, including births, couple formation and dissolution, job loss and finding by partner, presence of offspring 0 to 3 years old in the household with/without child care, and presence of older offspring

in the household. We also include controls for education level, region, urban area, living in own dwelling, conjugal status, and whether the partner works.

The alternative variables used to measure employment status are (i) the baseline employment measure without including the requirement of a minimum time or earnings; (ii) employment status at the time of the interview–recently constructed by the NLSY79 team; and (iii) a measure of labor force participation that includes weeks of unemployment (this information is not available for the offspring's cohort).

A.4 Details on the preferences for work in NLSY79 and CNLSY79

As referred to in the main text, the questions about women's roles that provide information on preferences for work are (i) Women's place is in the home, not in the office or shop, and (ii) Women are much happier if they stay at home and take care of the offspring. The questions are included in survey years 1979, 1982, 1987, and 2004 for mothers and in 1994, 1996, 1998, 2002, 2006, 2010, 2014, 2016, and 2018 for offspring. These are qualitative questions, which we quantify with a range centered at zero. We assign the following values: (a) strongly agree 1.5, (b) agree 0.5, (c) disagree -0.5, and (d) strongly disagree -1.5. We average across the two questions for each year and across the years.[30]

Figure B.7 depicts the distribution of the resulting variable of *maternal disutility of work*. It is slightly skewed to the right, which means that there is an over-representation of mothers with low disutility of work, which is in agreement with a considerably high employment rate (76%). Figure B.8 shows the distribution of *daughters' disutility of work*.

Furthermore, we take terciles of the variable, which gives us three classes that we describe as low, medium, and high preferences for work. Summary statistics for the maternal disutility of work by terciles are shown in Table B.22, respectively for daughters in Table B.23.

[30]If information on a variable is missing in a year, we use only the available information for the other variables for that year. This way, we put equal weight on all years. Alternatives such as averaging only the information on the first or the second question do not change the results.

A.5 Evidence favoring role model: Employment during periods of cohabitation versus non-cohabitation

As mentioned in the main text, we perform an additional exercise whose results support the existence of role models to drive the intergenerational correlation of employment. Differently from the exercise in the last part of Section 5.2, we include the permanent components of mothers' employment both when cohabiting and when not cohabiting with each respective offspring.

The idea behind this exercise is that the role model will only be transmitted when mother and offspring cohabit, but the direct transmission of preferences for work is independent of the status of cohabitation. Then, the permanent component of the mother's employment during non-cohabitation with the offspring will control for maternal preferences for work. Consistent with the results documented in the main text (see Table 10), in Table B.24 we show that the coefficient of employment during cohabitation is significantly different from zero and of similar size as the baseline correlation in Table 2. In contrast, employment during periods of non-cohabitation does not play a crucial role. These results are additional evidence for the empirical relevance of the role model channel.

B Additional Tables and Figures

B.1 Additional Tables

Table B.12: Additional summary statistics for women and mother-offspring pairs in NLSY79 and CNLSY79

	Women	**Mothers**	**Offspring**
White	80%	78%	75%
Black	13%	15%	16%
Hispanic	7%	8%	8%
Migrant	5%	4%	0%
Public sector employees	11%	10%	4%
Private sector employees	85%	85%	92%
Self-employed	4%	4%	2%
Part-time	18%	21%	14%
Marginal job (incl. self-employed and odd jobs)	20%	23%	14%
Father at home			63%
Living in own dwelling	92%	94%	77%
Partner works	64%	71%	41%
Offspring 0 to 3 y.o. not in child care	19%	24%	24%
Offspring 0 to 3 y.o. in child care	7%	8%	4%
Offspring 4 to 5 y.o.	16%	21%	15%
Offspring 6 to 12 y.o.	40%	54%	25%
Offspring 13 to 15 y.o.	15%	22%	5%
Offspring 16 to 18 y.o.	11%	17%	3%
Births	13%	17%	16%
Couple dissolution	4%	4%	6%
Couple formation	5%	5%	17%
Partner job loss	5%	5%	5%
Partner job finding	6%	5%	8%
Individuals	3,040	1,922	3,748

Notes: Percentages for observations in the 25 to 45 years old range in our sample; the sector of employment corresponds to the category most often observed for each individual; similar criterium applies for the variable regarding the father living at home; the numbers for living in own dwelling, partner works, offspring of different ages, births, couple dissolution and formation, and partner job loss and job finding represent the proportion of observations for which these variables take the value 1 (the event occurs).

Table B.13: Spousal employment status

Dependent variable: Employment - offspring (l_{Ci})

	(1)	(2)	(3)	(4)
Employment - mother	0.11***		0.11***	0.11***
	(0.022)		(0.022)	(0.022)
Employment - spouse		0.09	0.07	0.06
		(0.063)	(0.064)	(0.067)
Emp. - mother × Emp. - spouse				-0.05
				(0.196)
Controls	YES	YES	YES	YES
Observations	3,583	3,583	3,583	3,583
Adjusted R^2	0.10	0.10	0.10	0.10

Notes: Standard errors clustered at the mother level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. In all columns, we use the same covariates as in the baseline specification: ability, education dummies (high-school, some college, college), net worth, dummies for mothers' and offspring's number of children, and mother's age at birth. The regressions correspond to the triplets spouse-mother-offspring for which a spouse is reported. Note that not all mothers report having a spouse in all the waves, nor are their spouses the same across waves.

Table B.14: Self-employment

Dependent variable: Self-employment - offspring (l_{Ci})

	Self-employment	Self-employment
Self-employment Mother	0.04**	0.04*
	(0.019)	(0.019)
Controls	NO	YES
Observations	3,169	3,040
Adjusted R-squared	0.00	0.05

Notes: Standard errors clustered at the mother level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. In all columns, we use the same covariates as in the baseline specification: ability, education dummies (high-school, some college, college), net worth, dummies for mothers' and offspring's number of children, and mother's age at birth.

Table B.15: Robustness: Log-log regressions

Dependent variable: Log-employment - offspring ($\log(l_{Ci})$)

Specification	(1)	(2)	(3)	(4)
Log-employment - mother	0.17***	0.11***	0.11***	0.10***
	(0.030)	(0.028)	(0.028)	(0.028)
Ability - mother		-0.03	-0.03	-0.02
		(0.065)	(0.067)	(0.068)
Ability - offspring		0.37***	0.37***	0.36***
		(0.065)	(0.065)	(0.066)
High-school - mother		0.19**	0.19**	0.19**
		(0.077)	(0.077)	(0.079)
Some college - mother		0.18**	0.18**	0.19**
		(0.081)	(0.081)	(0.083)
College - mother		0.13	0.13	0.17*
		(0.085)	(0.086)	(0.089)
High-school - offspring		0.18**	0.18**	0.15*
		(0.085)	(0.085)	(0.084)
Some college - offspring		0.39***	0.39***	0.36***
		(0.084)	(0.084)	(0.083)
College - offspring		0.47***	0.47***	0.43***
		(0.081)	(0.082)	(0.082)
Net worth - mother			0.01	0.00
			(0.011)	(0.011)
Net worth - offspring			-0.01	0.02
			(0.016)	(0.018)
Control mother's age at birth and number of children	NO	NO	NO	YES
Observations	3,748	3,597	3,582	3,582
Adjusted R^2	0.02	0.08	0.08	0.09

Notes: Standard errors clustered at the mother level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All regressors, apart from employment of the mother, are the same as in Table 2.

Table B.16: Robustness: Rank-rank regressions

Dependent variable: Employment rank - offspring

Specification	(1)	(2)	(3)	(4)
Employment rank - mother	0.12***	0.06***	0.06***	0.06***
	(0.015)	(0.014)	(0.014)	(0.015)
Ability - mother		0.03**	0.02	0.00
		(0.017)	(0.017)	(0.017)
Ability - offspring		0.07***	0.07***	0.08***
		(0.015)	(0.015)	(0.015)
High-school - mother		0.06***	0.06***	0.05***
		(0.017)	(0.016)	(0.016)
Some college - mother		0.07***	0.07***	0.05***
		(0.018)	(0.018)	(0.018)
College - mother		0.05**	0.04**	0.02
		(0.020)	(0.020)	(0.019)
High-school - offspring		0.04**	0.04**	0.03
		(0.017)	(0.017)	(0.017)
Some college - offspring		0.09***	0.09***	0.08***
		(0.017)	(0.017)	(0.017)
College - offspring		0.12***	0.11***	0.09***
		(0.016)	(0.016)	(0.017)
Net worth - mother			0.00	-0.00
			(0.004)	(0.003)
Net worth - offspring			0.02***	0.01***
			(0.004)	(0.004)
Number of children - mother				0.00
				(0.004)
Number of children - offspring				-0.03***
				(0.004)
Control age at birth - mother	NO	NO	NO	YES
Observations	3,748	3,597	3,582	3,582
Adjusted R^2	0.03	0.10	0.11	0.13

Notes: Standard errors clustered at the mother level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All regressors, apart from employment of the mother, are the same as in Table 2.

Table B.17: Robustness: Alternative measures of the permanent components

Dependent variable: Alternative permanent component employment - offspring ($\overline{l_{Ci}}$)

	Simple averages		Demographics	
Employment - mother (averages)	0.19***	0.11***		
	(0.022)	(0.020)		
Employment - mother (demographics)			0.20***	0.14***
			(0.024)	(0.024)
Controls	NO	YES	NO	YES
Observations	3,748	3,582	3,276	3,125
Adjusted R^2	0.04	0.12	0.03	0.08

Notes: Standard errors clustered at the mother level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. We use the same covariates as in the baseline specification: ability, education dummies (high-school, some college, college), net worth, dummies for mothers' and offspring's number of children, and mother's age at birth. In the first and second columns we use simple averages for l_{Ci} and l_{Mi}. In the third and fourth columns we add to the standard estimation of the permanent components demographic events as additional controls.

Table B.18: Robustness: Alternative survey questions for employment status of offspring and mothers

Dependent variable: Alternative data measure of employment - offspring ($\widehat{l_{Ci}}$)

	Alternative measure of offspring employment		
	Alternative 1	Alternative 2	Alternative 3
Employment - mother (different measure)	0.11***	0.08***	0.13***
	(0.020)	(0.020)	(0.024)
Controls	YES	YES	YES
Observations	3,582	3,680	3,582
Adjusted R^2	0.10	0.13	0.11

Notes: Robust standard errors clustered at the mother level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. In all columns, we use the same covariates as in the baseline specification: ability, education dummies (high-school, some college, college), net worth, dummies for mothers' and offspring's number of children, and mother's age at birth. The employment variables in each column are the following: Alternative 1: mothers with a positive number of weeks employed in the last year and offspring with positive earnings in the last year (no minimum time or earnings); Alternative 2: employment status at the day of the interview (constructed by the Bureau of Labor Statistics); Alternative 3: mothers with a positive number of weeks either employed or unemployed in the last year (labor force participation) and the baseline employment measure for the offspring.

Table B.19: Robustness: Welfare recipients and health limitations

Dependent variable: Welfare reception - offspring, Employment - offspring (l_{Ci}) , Health limitation - offspring, Employment - offspring (l_{Ci})

VARIABLES	Welf. rec.	Emp.+Welf.	Health limit.	Emp.+Health
Employment Mother		0.07***		0.12***
		(0.022)		(0.021)
Employment Mother × Welfare recipient		0.06		
		(0.054)		
Welfare reception Mother	0.05***			
	(0.013)			
Health limitations Mother			0.07***	
			(0.019)	
Employment Mother × Health limitations				-0.01
				(0.088)
Observations	3,680	3,582	3,316	3,541
Adjusted R-squared	0.03	0.12	0.04	0.11
Controls	YES	YES	YES	YES

Notes: Robust standard errors clustered at the mother level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. In all columns, we use the same covariates as in the baseline specification: ability, education dummies (high-school, some college, college), net worth, dummies for mothers' and offspring's number of children, and mother's age at birth. Welfare recipients are those who receive welfare during most of the periods observed in the survey. Those with health limitations are those with these conditions during most of the periods observed in the survey. Mothers' and offspring's welfare reception and health limitations are the permanent component of each variable, computed analogously to employment.

Table B.20: Robustness: hourly wages

Dependent variable: Employment - offspring (l_{Ci})

VARIABLES	Cont. hrly. wage	Cont. hrly. wage	Low-wage	Low-wage
Employment - mother	0.14***	0.10***	0.22***	0.13***
	(0.020)	(0.019)	(0.054)	(0.045)
Hourly wage - mother	-0.01**	-0.02***		
	(0.005)	(0.006)		
Hourly wage - offspring	0.04***	0.02***		
	(0.003)	(0.003)		
Employment - mother × low-wage			-0.08	-0.02
			(0.062)	(0.054)
Observations	3,520	3,370	3,748	3,582
Adjusted R-squared	0.06	0.10	0.03	0.11
Controls	NO	YES	NO	YES

Notes: Robust standard errors clustered at the mother level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. We use the same covariates as in the baseline specification: ability, education dummies (high-school, some college, college), net worth, dummies for mothers' and offspring's number of children, and mother's age at birth. Hourly wages in 10 USD. *Low-wage* refers to mothers in the bottom two quintiles of the hourly wage distribution.

Table B.21: Heterogeneity: Intergenerational correlation of employment status by (i) family income (quintiles) and (ii) mother's education level

Dependent variable: Employment - offspring (l_{Ci})

	Baseline	Family income	Maternal education
Employment - mother	0.11***	0.14***	0.24***
	(0.020)	(0.042)	(0.065)
Employment - mother × Quintile 2		-0.05	
		(0.079)	
Employment - mother × Quintile 3		0.00	
		(0.071)	
Employment - mother × Quintile 4		-0.11*	
		(0.063)	
Employment - mother × Quintile 5		-0.05	
		(0.051)	
Employment - mother × High-school			-0.12*
			(0.070)
Employment - mother × Some college			-0.21***
			(0.075)
Employment Mother × College			-0.14*
			(0.079)
Controls	YES	YES	YES
Observations	3,582	3,582	3,582
Adjusted R^2	0.11	0.11	0.11

Notes: Standard errors clustered at the mother level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. In all columns, we use the same covariates as in the baseline specification: ability, education dummies (high-school, some college, college), net worth, dummies for mothers' and offspring's number of children, and mother's age at birth. Quintiles of maternal family income correspond to the quintile of family income observed most often. The maternal education is the maximum attained education level.

Table B.22: Descriptive statistics for mothers' disutility of work by terciles

	min	max	mean	sd	Observations
Low disutility of work	-1.500	-0.750	-0.972	0.195	1425
Medium disutility of work	-0.667	-0.375	-0.520	0.099	1242
High disutility of work	-0.333	1.375	0.030	0.308	1156
All observations	-1.500	1.375	-0.526	0.462	3850

Notes: Disutility of work computed from questions on women's roles: (i) Women's place is in the home, not in the office or shop, and (ii) Women are much happier if they stay at home and take care of the offspring. For further details on the measure of disutility of work, see Appendix A.4.

Table B.23: Descriptive statistics for daughters' disutility of work by terciles

	min	max	mean	sd	Observations
Low disutility of work	-1.500	-1.000	-1.132	0.170	642
Medium disutility of work	-0.900	-0.500	-0.649	0.134	816
High disutility of work	-0.400	1.333	-0.036	0.313	414
All observations	-1.500	1.333	-0.679	0.449	1872

Notes: Disutility of work computed from questions on women's roles: (i) Women's place is in the home, not in the office or shop, and (ii) Women are much happier if they stay at home and take care of the offspring. For further details on the measure of disutility of work, see Appendix A.4.

Table B.24: Direct preference transmission vs. role model: Periods of cohabitation versus periods of non-cohabitation

Dependent variable: Employment - offspring (l_{Ci})

Specification	Baseline	Non-Cohabitation	Cohabitation	Both
Employment - mother	0.12***			
	(0.025)			
Employment - mother when...			0.10***	0.09***
...**cohabiting** with offspring			(0.022)	(0.023)
Employment - mother when...		0.06***		0.03
...**not cohabiting** with offspring		(0.020)		(0.021)
Controls	YES	YES	YES	YES
Observations	2,411	2,411	2,411	2,411
Adjusted R^2	0.12	0.11	0.12	0.12

Notes: Standard errors clustered at the mother level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. In all columns, we use the same covariates as in the baseline specification: ability, education dummies (high-school, some college, college), net worth, dummies for mothers' and offspring's number of children, and mother's age at birth. Periods of non-cohabitation are specific for each mother-offspring pair. Only pairs with both periods of cohabitation and non-cohabitation are included.

B.2 Additional Figures

Figure B.1: Visual example of a mother-offspring pair

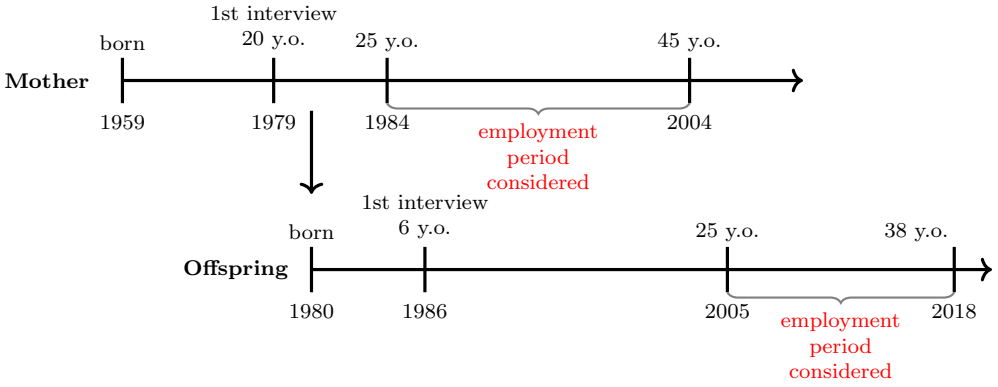


Figure B.2: Number of interviews of mothers (left) and offspring (right)

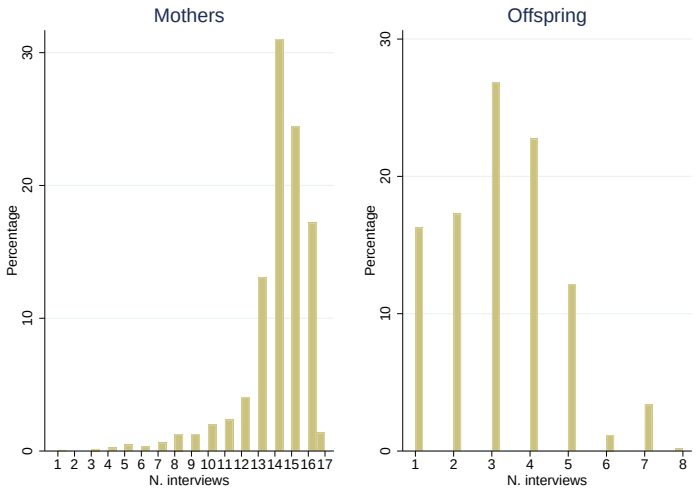


Figure B.3: Age of mothers at birth of offspring

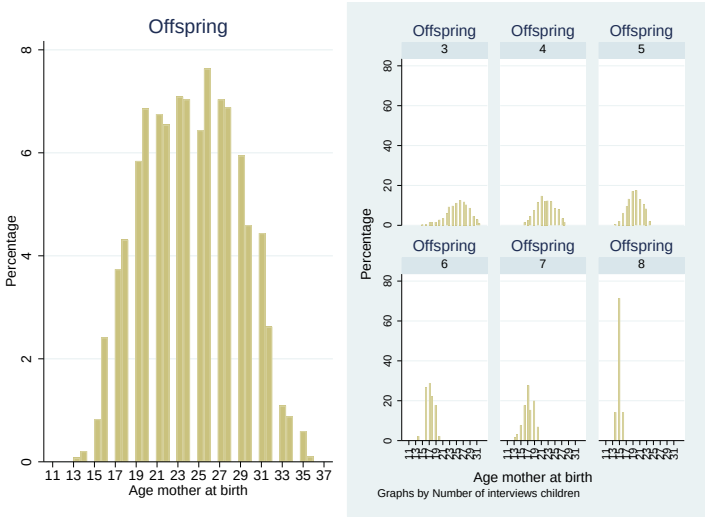


Figure B.4: Employment-age profiles of mothers (left) and offspring (right)

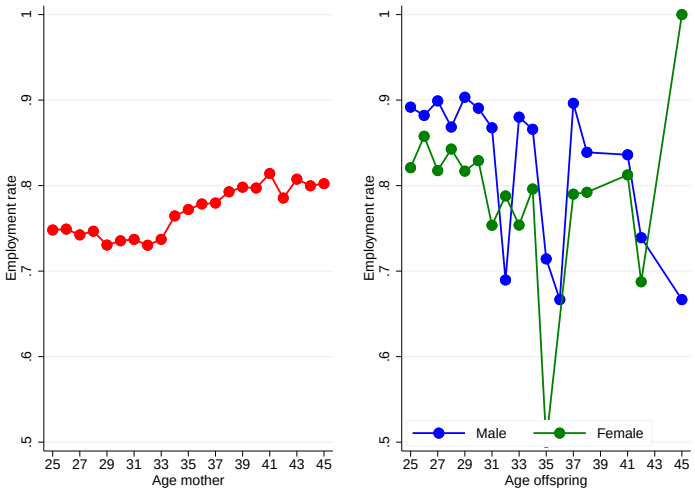


Figure B.5: Permanent component of employment of mothers (left) and offspring (right)

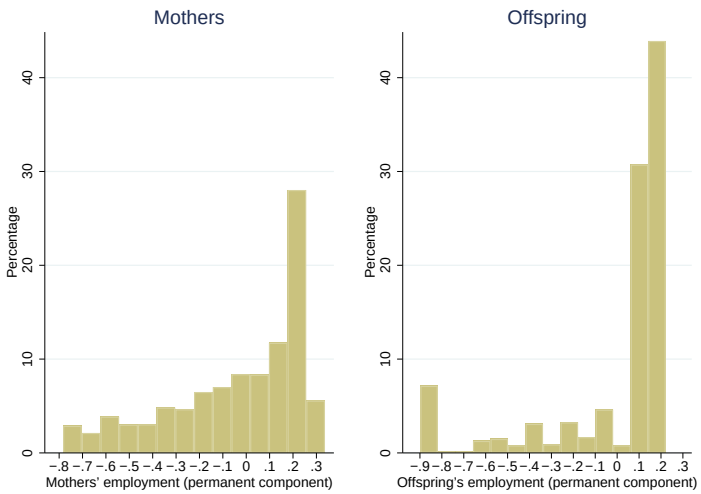
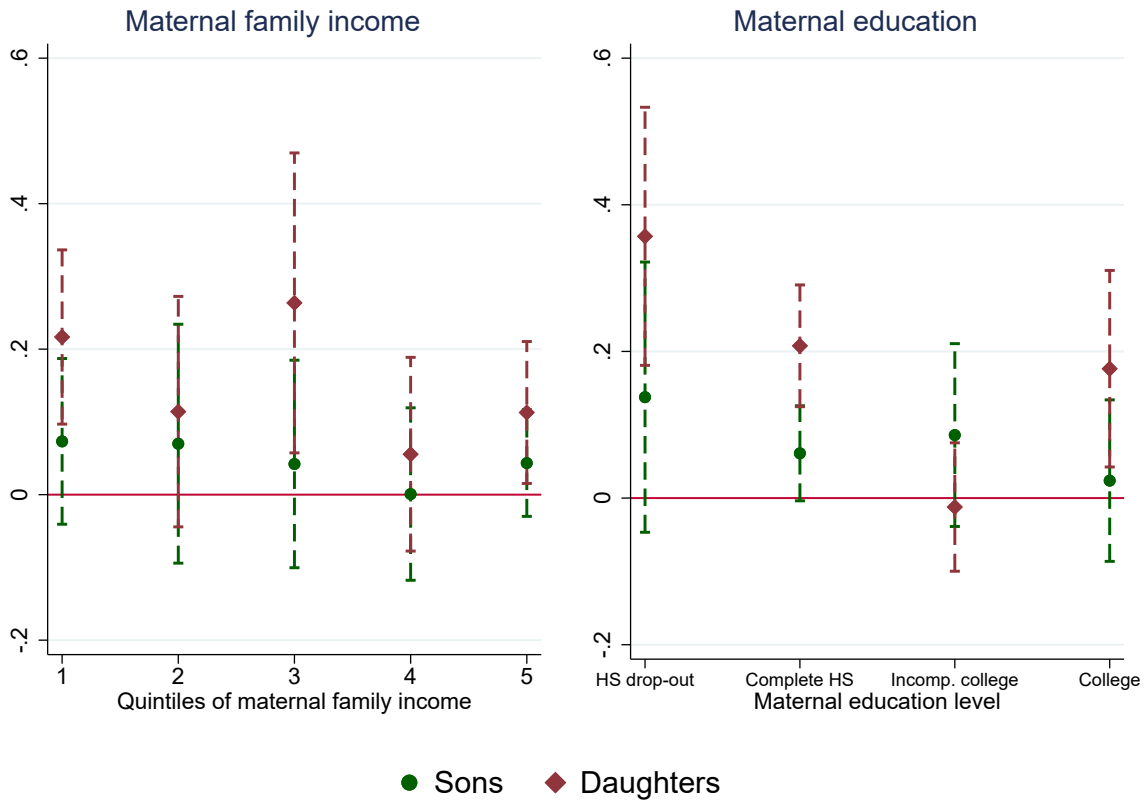
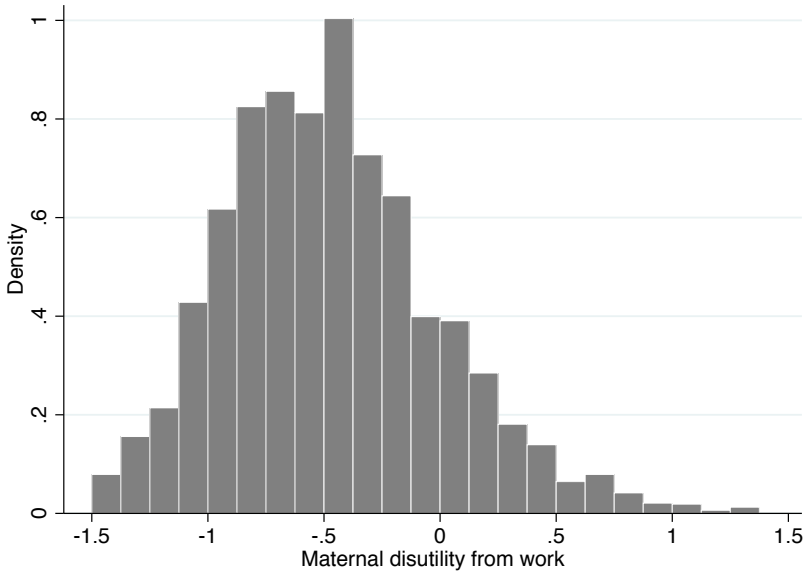


Figure B.6: Intergenerational correlation of employment status by maternal family income (left) and maternal education (right) for sons and daughters



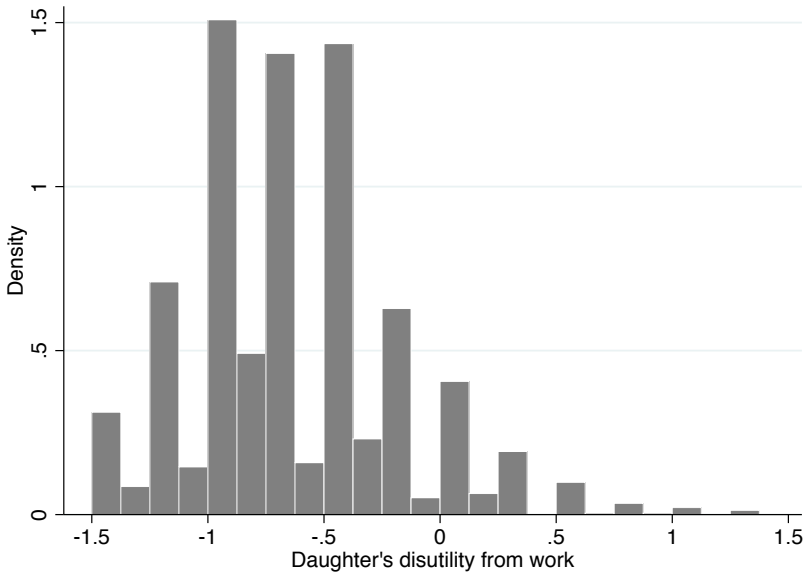
Notes: Standard errors clustered at mother level calculated using the delta method. 95% confidence level intervals. The dependent variable is the permanent component of the employment status of the offspring. We use the same covariates as in the baseline specification: ability, education dummies (high-school, some college, college), net worth, dummies for mothers' and offspring's number of children, and mother's age at birth. Quintiles of maternal family income correspond to the quintile observed in the majority of the survey years. The maternal education is the maximum attained and observed education level.

Figure B.7: Distribution of maternal disutility of work



Notes: Disutility of work computed from questions on women's roles: (i) Women's place is in the home, not in the office or shop, and (ii) Women are much happier if they stay at home and take care of the offspring. For further details on the measure of disutility of work, see Appendix A.4. We plot the distribution of the individual averages (over questions and years).

Figure B.8: Distribution of daughters' disutility of work



Notes: Disutility of work computed from questions on women's roles: (i) Women's place is in the home, not in the office or shop, and (ii) Women are much happier if they stay at home and take care of the offspring. For further details on the measure of disutility of work, see Appendix A.4. We plot the distribution of the individual averages (over questions and years).