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Maternal Employment Considerations in Measuring In Measuring Intergenerational Income Elasticity

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Abstract

This paper adds maternal employment and income to a traditional intergenerational income elasticity model to measure mothers' effects on transmission of economic status from parents to children. Assuming that mothers have a specific role in perpetuating the human capital and income-generating behavior of a family, I examine the intergenerational transmission of economic status using regression analysis in the Panel Study of Income Dynamics on individuals born between 1950 and 1974. My results suggest that while the income of fathers is very important in accounting for sons' and daughters' future outcomes, the amount of time parents stay at home or are unemployed also affects intergenerational transmission of economic status for daughters. Specifically, daughters experience a positive role model effect on their future income if mothers are employed during their childhood while fathers' time spent employed negatively impacts daughter's income. The interaction model testing maternal employment on transmission of income from father to daughter does have tentative positive results. When examining economic mobility for cohorts, I find that there are no significant changes in mobility for sons or daughters.

I. Introduction

Intergenerational income transmission literature largely focuses on the father-to-son income relationship to describe economic mobility due to traditional gender roles and availability of data. These measurements reflect the permanence of economic status through generations and its implications for inequality and mobility. Social scientists view low intergenerational income correlations as an indicator of greater opportunity to move out of the economic situation people were born into.

There is a growing body of intergenerational income elasticity (IIE) literature that examines income correlations between mothers and children by using family income. Between 1975 and 2000, the labor force participation rate of mothers with children under the age of 18 increased from 47 percent to 71 percent (Bureau of Labor Statistics). As women earn an increasing share of family income, it is appropriate to factor their income into intergenerational transfer of economic status but also the role of time spent with children. I approach the role of mothers as an important part of the human capital transmission to children, and thus economic status of parents. In the human capital model of Becker and Tomes (1986) the heritability of endowments from parents and propensity to invest in children's human capital (subject to capital constraints) are key determinants of the intergenerational income coefficient. Thus, the time spent with children by parents should affect the heritability of endowments and other income-generating attributes. Additionally, since mothers are often selected by assortative mating,[1] their relationships with children may have an important time component to transmit the economic

[1] Non-random matching in the marriage market; individuals having more traits in common with their mates than in random mating.

status of the entire family. If the surge in maternal employment has affected the amount of time spent in human capital transmission, there may be effects on IIE between fathers and children.

This paper addresses the role of parental income as well as the amount of time each parent spent employed in determining a child's future economic status. This is a new approach to improve upon the traditional regression of son's long run income on father's long run income to understand IIE.

In this paper, I use data from the Panel Study of Income Dynamics (PSID) from 1968 to 2009. The PSID is the only pertinent longitudinal dataset with consistent measures of income that follows children from the original sample as they establish their households, allowing researchers to link parents to their children as adults.

I average parental incomes over five years from age 30 to 35 to eliminate noisy measures of long-run economic status. I do the same for sons and daughters in order to restrict the effects of income volatility during their 20s and 30s and minimize measurement error in the dependent variable, although this does diminish the sample size. To proxy the amount of time parents spend at work and thus away from children, I create a percentage of years each parent is employed over the years when their child was 1 to 15. An important consideration in using this proxy is that a parent employed for longer periods of time is more likely to have a higher lifetime permanent income. These proxies may capture this effect, making the intergenerational income coefficient hard to interpret as a pure IIE. However, I use this non-exact proxy because I am not interested in the exact process of intergenerational income transmission but rather the elasticity, and using a more direct measure of time spent with children would need many more controls, which would not allow use of the IIE model.

I find that daughters are significantly impacted by the amount of time a parent spent employed during their childhood. Paternal employment time negatively impacts the future income of the daughter but the positive impact that paternal income brings far outweighs that effect, considering that most fathers were employed during the entire childhood. Daughters experience a positive effect of maternal employment during their childhood, which is likely a result of a female working role model.

Next, I consider interaction effects between maternal employment status and paternal income based on the theory that mother's time spent away from home impacts the human capital transmission, which would be reflected through income transmission. I do the same with father's time spent away from home and maternal income for symmetry and do not find significant interaction effects for sons. For daughters, both interaction effects are positive, indicating if one parent is employed during the entirety of daughter's childhood, that daughter has increased IIE with the opposite parent. It does not seem that maternal employment has decreased the intergenerational persistence of income between father and children. Although these results are subject to change due to the variable definition of parental employment, daughters' IIE is impacted by fluctuations in parental time and warrants further research.

I also look for trends in intergenerational income mobility and do not find a robust change in intergenerational income elasticity with fathers for sons or daughters. Though initial results are significant, they are subject to change when changing the cohort definition. This is consistent with other trend studies (Hertz 2007, Lee and Solon 2009). The trends are also not affected by the inclusion of maternal income and parental employment proxies.

II. Literature Review and Mechanism

Early studies found relatively small intergenerational income elasticities - typically less than 0.20 between father and son (Becker & Tomes, 1986; Behrman and Taubman, 1985). Later papers by Solon (1992) and Zimmerman (1992) use more years of income data to more accurately proxy for permanent income and account for sample homogeneity. Estimates increased substantially to around 0.40, suggesting a substantially less mobile society than earlier indicated as 40 percent of son's income is correlated with father's income. Recently, more studies recognizing the lack of maternal contribution include family income and other diverse earnings measurements instead of just father's annual income as alternative measures of economic background. One rare example is from Altonji and Dunn (1991) who find that the mother-offspring family income correlation is just as strong if not stronger than the correlation of father-offspring family income. Little research focuses on the mother's direct income correlation with offspring, even as most mothers with children under the age of 18 are employed.

Daughter intergenerational income elasticity with fathers and mothers is always estimated using family income rather than individual income as the economic status of women still very much depends on their mating choices and husbands' income (Chadwick and Solon 2002, Altonji and Dunn 1991). In the past few decades, however, women were more likely to use their own occupation to improve their economic status (Kearney 2006). This implies that parent-daughter IIE estimates are much more important in the current situation.

Solon (2004) develops a model of intergenerational mobility, which depends on the heritability of income-generating traits, investment in children's human capital, the economic return to human capital, and the amount of public investment in child's human capital. This model builds upon the model developed by Becker and Tomes (1986) that claims the income

correlation between generations is based on heritability of endowments and the propensity of parents to invest in child's human capital. This paper examines whether the increase in working mothers has affected the heritability of income-generating traits or efficacy of human capital investment. Due to the large increase in maternal labor force participation as well as maternal contribution to family income, changes in human capital transmission may have changed the traditional relationship between father and offspring wages.

Women are traditionally the primary childcare providers in the family and therefore potentially function as important transmitters of human capital. Altonji and Dunn (1991) find evidence of assortative mating in the high correlation of income between men and their in-laws, indicating that marriages tend to form based on common socioeconomic background and education levels. Nakosteen and Zimmer (2001) use the PSID to find pre- and post-marriage positive assortative mating through unobserved earnings traits, observed in standardized residuals or individual fixed effects. This shows that women have an important role in promoting the socioeconomic status of the entire family through human capital transmission, especially since there is also increasing educational assortative mating since the 1930s (Mare 1991). In light of the huge increase in maternal employment, mothers have possibly decreased the time spent with children and thereby decreased human capital transmission (if it is positively associated with maternal childcare time) with the use of substitute childcare (Greenstein, 1993). On the other hand, the increase in income brought in by the family allows parents to provide financial resources to increase the human capital acquisition of children through opportunities such as private tutoring and better schooling (Cornelissen et al., 2008; Becker and Tomes, 1986). This paper attempts to clarify the effect of maternal employment on parental transmission of economic status to children.

Research on the effect of maternal employment on offspring development and well-being has varied results. Reviews of this body of work indicate that there are no clear negative or positive effects (Hoffman, 1989). Greenstein (1993) suggests three mechanisms through which maternal employment may impact offspring development: substitute forms of childcare, amount of time the mother is away from the child, and economic consequences (increase in income). There are no long run studies on the impacts of maternal employment on child economic outcomes, but the studies that describe maternal employment effects on academic outcomes or cognitive development of children may be able to proxy for these results. These studies, including Greenstein (1995), focus mostly on early childhood cognitive skills and maternal employment during infancy.

The amount of time working mothers are able to spend with children may impact children's future outcomes**.** Most of the background theory of human capital transmission through maternal time use is outlined in Michael (1973) and Becker (1975). According to Michael, the amount of childcare time and level of child quality desired increases with parental financial resources. Hill and Stafford (1980) and Leibowitz (1974a) find empirical support for this theory. Becker claims that children will decide on the optimal investment in schooling, based in part on their parents' choices in investment in child quality. Datcher-Loury (1988) and Bianchi and Robinson (1997) find supporting evidence that maternal childcare time does significantly increase the child's years of schooling and cognitive development, respectively.

Obviously, mothers that enter the workforce have less time to personally dedicate to household production. Datcher-Loury (1988) finds that higher wages or opportunity cost of home time reduces maternal childcare time. Some argue that the effect of labor market participation on time with children is overestimated (Bianchi 2000). Bryant and Zick (1996) try

to account for the fact that previous studies of maternal childcare time exclude any shared time that is not used in direct childcare, which only includes activities such as reading with the child or bathing the child. This definition is very limiting when trying to discern human capital transmission; time spent in other household activities such as playing with the child or doing housework with the child can develop mental and physical skills and instill social values that may improve future socioeconomic outcomes. They find that an increase in mother's market work will have a significantly negative impact only on solitary housework and solitary leisure time, while shared time with children stays fairly constant.

Additionally, once mothers enter the labor market, the actual childcare time may not be diminished significantly: according to Bianchi (2000) and Sandberg and Hofferth (2005) there is surprising continuity in children's time with parents. Bianchi attributes this to an increase in father-child interaction time as well as changes in children's lives, which alters the time and investment children need from parents. According to Coverman and Sheley (1986), men's childcare time in fact does not increase as a result of wife's employment. If this is the case, then there is ambiguity in whether actual childcare time is decreasing substantially, thereby impacting human capital transmission.

Time use, however, only plays one part in the role of human capital transmission. The studies that focus on estimating the relationship between various proxies for parental time inputs and child's schooling achievements find mixed results. Leibowitz (1974b) finds more parental instructional activities are correlated with higher sons' IQ scores but not with years of schooling. Etaugh (1984) finds no effects of maternal employment on the educational progress of children, even if maternal childcare time was diminished. In this paper, I do not specifically examine time effects on income-generating ability because I am more interested in how much IIE is changed

by time changes. Thus, I use a proxy for time spent away from children created from parental employment information.

Studies of *time trends* in intergenerational income mobility are largely inconclusive. Using the Panel Study on Income Dynamics (PSID), Mayer and Lopoo (2005) show that elasticity decreased for sons born from 1954 to 1963. Fertig (2003) also finds that father-son elasticity has decreased but mother-son income elasticity has stagnated over time. She finds unclear results for mother-daughter and father-daughter income elasticity over time and concludes no change. Two other studies find no significant changes in intergenerational mobility over time between (Lee and Solon, 2009; Hertz, 2007). Only Fertig (2003) estimates the trend of intergenerational correlation between mothers and offspring, however she uses data from a relatively short time period of parental cohorts from 1968 to 1976. Hansen (2010) analyzes economic mobility among Norwegian birth cohorts based on father's economic position and joint income of the mother and father. She finds that mobility is lower than previously thought when using more appropriate income measurements and only increases over time when the definition of income is limited to father's earnings.

This paper examines how time and income of parents affect child economic outcomes. This may have implications for the trends in intergenerational income mobility if time with child does affect income correlation with child.

III. Data

I use the Panel Study of Income Dynamics (PSID) by the University of Michigan, which includes consistent yearly labor income data since 1968 for almost 5,000 U.S. families until 1997 and biennially since then. As a longitudinal study, it also follows children from the original

sample through their adult lives and even after they form their own households. The income measurement and other observable characteristics of individuals have remained fairly consistent since the beginning of the survey. I adjust the income measurements using the CPI-U-X1 to 2007 dollars.

Each observation in the dataset is a child linked to his or her parents' information. All children are born between 1950 and 1974. The information of adoptive parents is included because I am not interested in genetic endowments but rather the transmission of income-generating traits and the longevity of socioeconomic condition over generations. As discussed in Solon (1992), estimation of IIE needs a heterogeneous random sample and accurate proxies of long-run economic status in order to correct downward biases in estimated correlations. When measuring incomes of parents, I average income over the ages 30 to 34 to eliminate measurement error. I also require up to a five-year average of child earnings (over the same ages) in order to correct for any volatility as in Fertig (2003) due to measurement error in the dependent variable. Left-side measurement error does cause bias in OLS estimation because of heterogeneous income growth rates of individuals over their life cycles. This causes the income gap earlier in the lifecycle to understate the lifetime gap and later in the lifecycle to overstate the gap if individuals have steeper income growth trajectories (Reville 1995, Haider and Solon 2006, Lee and Solon 2009).

I chose this period of years because they are prime-income generating years to proxy present value of lifetime income, although the availability of data diminishes my sample size in comparison to all other studies including Chadwick and Solon (2002) and Mayer and Lopoo (2005), who instead just use child income at age 25 and 30 respectively. According to Haider and Solon (2006), the association between earnings at a certain age and lifetime earnings reaches

1 at about age 32. I chose to average income from age 30 to 34 in order to best approximate this long run economic status while smoothing out any transitory volatility. I believe my income restrictions will produce more realistic proxies for economic status and permanent income, especially for women.

As shown in Tables 1 and 2, the sample includes 474 observations for sons and 464 for daughters. Income averages are calculated without years of unemployment (income of zero) for all individuals consistent with the usual practice in IIE literature of excluding unemployment years. This permits a better understanding of what constitutes long-run economic status and its effects on intergenerational economic transmission. This does raise the question whether the zero incomes imply a certain characteristic for economic status and whether this income characteristic is inherited; thus, I include them as a separate sample for the econometric framework in section VI. Taking the natural log of all incomes in order to generate an elasticity pre-selects daughters that have a positive income between the ages of 30 to 35 and drops all unemployed daughters. This does not allow discussion of daughters' individual economic status if they do not earn income, but these individuals would only add 48 to the sample size for daughters. This specification of examining daughters with their own individual positive income is rarely analyzed, as female income is usually enveloped in a family income variable to examine their economic success after the marriage market.

Table 1. Summary Statistics for Sons

Variable	Mean	Stand. Dev.	Minimum	Maximum	Count
Son's Income	$45,326.60	$34,810.91	$245.00	$350,675.00	474
Father's Income	$41,176.67	$18,433.56	$3,860.00	$133,794.00	474
Mother's Income	$12,636.77	$10,886.85	$120.00	$54,590.00	474

Table 2. Summary Statistics for Daughters

Variable	Mean	Stand. Dev.	Minimum	Maximum	Count
Daughter's Income	$28,565.18	$25,560.53	$130.00	$234,460.00	464
Father's Income	$41,097.39	$23,429.18	$965.00	$213,450.00	464
Mother's Income	$12,974.37	$11,240.46	$90.00	$63,080.00	464

In order to measure the amount of time spent with children, I assume that if parents are not working, they are investing time in their children. Thus, I first create a dummy variable for each year representing if the parent was employed that year. The average of these dummy variables over the years when the child was 1 to 15 is effectively a percentage of the time when the parent was employed during the offspring's childhood. I call these variables maternal and paternal employment averages. Precise time use surveys are not available for most of the PSID sample and there are limitations regarding what kind of activities qualify as childcare and human capital transmitting activities. Since I am not detailing the channels through which human capital is transmitted, choosing the more general proxy of percentage of years employed during offspring's childhood will be more appropriate to preserve a pure intergenerational income elasticity. Tables 3 and 4 display the descriptive statistics for these variables across each five-year birth cohort in the sample.

TABLE 3. Paternal Employment Averages when Child Age 1-15

Birth Cohort	**5th Perc.**	**25th Perc.**	**Median**	**75th Perc.**	**95th Perc.**	**Mean**
1950-54	1	1	1	1	1	0.9668508
1955-59	0.75	1	1	1	1	0.9655057
1960-64	0.7	1	1	1	1	0.9548366
1965-69	0.6666667	1	1	1	1	0.9576873
1970-74	0.8666667	1	1	1	1	0.9740888
Total	0.75	1	1	1	1	0.9640929

TABLE 4. Maternal Employment Averages when Child Age 1-15

Birth Cohort	**5th Perc.**	**25th Perc.**	**Median**	**75th Perc.**	**95th Perc.**	**Mean**
1950-54	0	0	0.5	1	1	0.4889503
1955-59	0	0	0.5	1	1	0.4833432
1960-64	0	0.25	0.6	0.9166667	1	0.5653611
1965-69	0	0.3333333	0.6428571	0.8666667	1	0.5980479
1970-74	0.0666667	0.4615385	0.7333333	0.9333333	1	0.6660592
Total	0	0.2583333	0.6666667	0.9333333	1	0.5796715

IV. Methodology

For all regressions, I control for five-year birth cohorts from 1950 to 1974 so that different cohort characteristics do not influence results. I also cluster standard errors by cohort, which allows the error term to be correlated across members of the same cohort.

To establish baseline estimates for intergenerational income elasticity, I will run the standard regression found in most literature for all children born from 1950 to 1974 (the entire sample). This regresses log long-run offspring income (y_i) on log long run father's income (y_{fi}), assuming that the population variance in labor income is the same for both generations:

$$ln(y_i) = \beta_1 ln\,(y_{fi}) + \varepsilon_i \qquad (1)$$

The β measures the extent to which the child's economic outcome is correlated with the parent's economic status. I perform this for father-son pairs and father-daughter pairs. After establishing estimates for traditional intergenerational income elasticity, I adjust this baseline regression equation to include other variables of interest in the model that claims child outcomes depend on a combination of parental income and time spent with children to transmit income-generating traits. This includes maternal income (y_{mi}) and the proxy variables for time spent with children where *patemp* represents father's employment average and *matemp* is mother's employment average. Equation (2) explains the direct effects of maternal employment through direct income effects as well as through the maternal employment average.

$$ln(y_i) = \beta_1 ln\,(y_{fi}) + \beta_2 ln\,(y_{mi}) + \beta_3\, matemp_i + \beta_4\, patemp_i + \varepsilon_i \quad (2)$$

In order to examine the possible effects of maternal employment on traditional income transmission from father to children, I use an interaction model detailed in equation (3), which includes the interaction term between long run father's income and the maternal employment average. Equation (4) includes an interaction term between mother's income and the paternal employment average, while equation (5) includes both interaction terms. These models explain any indirect effects that maternal employment may have on intergenerational income transmission through father's income or conversely, how paternal employment might impact offspring correlation with mother's income.

$$ln(y_i) = \beta_1 ln\,(y_{fi}) + \beta_2 ln\,(y_{mi}) + \beta_3\, matemp_i + \beta_4\, patemp_i + \beta_5 matemp_i * ln\,(y_{fi}) + \varepsilon_i \quad (3)$$

$$ln(y_i) = \beta_1 ln\,(y_{fi}) + \beta_2 ln\,(y_{mi}) + \beta_3\, matemp_i + \beta_4\, patemp_i + \beta_5 patemp_i * ln\,(y_{mi}) + \varepsilon_i \quad (4)$$

$$ln(y_i) = \beta_1 ln\,(y_{fi}) + \beta_2 ln\,(y_{mi}) + \beta_3\, matemp_i + \beta_4\, patemp_i + \beta_4 matemp_i * ln\,(y_{fi}) + \beta_5 patemp_i * ln\,(y_{mi}) + \varepsilon_i \quad (5)$$

So far, the analysis focuses on the whole birth cohort from 1950 to 1974. In order to find consequences for measurements of intergenerational mobility, I construct 5 five-year birth cohorts of children born in 1950-1954, 1955-1959, 1960-1964, 1965-1969 and 1970-1974. First, I create a continuous cohort variable, which labels each cohort as 1 to 5. Interacting this variable with father's income will allow me to fit a trend to this data. I also interact cohort indicator variables with other significant variables in the expanded model to see if these relationships with offspring income change over time.

$$ln(y_i) = \beta_1 ln\,(y_{fi}) + \beta_2 ln\,(y_{mi}) + \beta_3\, matemp_i + \beta_4\, patemp_i + \beta_5\, CohortIndicator_i + \beta_6 ln\,(y_{fi}) * CohortIndicator_i + \varepsilon_i \quad (6)$$

Additionally, I create cohort indicators for each cohort. The significance of these cohort

dummy variables provides an understanding of how the economic outcomes of each cohort fared compared to the other cohorts. By interacting these dummy variables with the paternal income, the effect of cohorts on traditional income correlation with fathers will become apparent.

$$ln(y_i) = \beta_1 ln\,(y_{fi}) + \beta_2 ln\,(y_{mi}) + \beta_3\, matemp_i + \beta_4\, patemp_i + \beta_5\, Cohort2_i + \beta_6\, Cohort3_i + \beta_7\, Cohort4_i + \beta_8\, Cohort5_i + \beta_9 ln\,(y_{fi})^* Cohort2_i + \beta_{10} ln\,(y_{fi})^* Cohort3_i + \beta_{11} ln\,(y_{fi})^* Cohort4_i + \beta_{12} ln\,(y_{fi})^* Cohort5_i + \varepsilon_i \quad (7)$$

V. Results

In section V.i., I present the accepted baseline estimates for intergenerational income elasticity for sons and daughters. I also present results from the expanded model that includes maternal income and parental employment averages detailed in the methodology section. Section V.ii. displays the results from interaction models of equations (3), (4), and (5) for sons and daughters. Section V.iii. presents the regression results for the two trend models I use in order to determine if intergenerational mobility has changed over time for the birth cohorts from 1950 to 1974 and whether controlling for the additional variables affects these trends.

V.i. Baseline and Expanded Model

Figure 1 presents results from equation (1) or the baseline estimates for father-offspring income elasticities, assuming the variance in incomes does not change over the two generations. The results show that about 0.37 of a son's income and 0.26 of a daughter's income will be correlated with that of the father. The estimates for father-son elasticity are slightly lower than the generally accepted 0.40 using the PSID by Solon (1992) however this is attributed to the differing methods of estimating long run income. The estimates for father-daughter elasticity are difficult to compare since the majority of related literature does not use daughter's income as I

do, but rather compares daughter's family income to father's family income as a measure of intergenerational transmission of economic status.

Figure 1. Baseline Estimates

VARIABLES	(1) Son's Income	(2) Daughter's Income
Father's Income	0.366***	0.257**
	(0.0517)	(0.0862)
Cohort 1955-59	0.0785***	0.00538
	(0.0130)	(0.0624)
Cohort 1960-64	0.180***	-0.175*
	(0.0115)	(0.0694)
Cohort 1965-69	0.125***	0.152
	(0.0147)	(0.0720)
Cohort 1970-74	0.213***	0.211**
	(0.0205)	(0.0759)
Observations	474	464
R-squared	0.081	0.061

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Next, I expand the traditional intergenerational income model to a model in which the dependent variable of child's income is a function of parental income and time spent with children, along with other factors that I assume to be captured in the error term. I proxy time spent with children with the parental employment averages which I detail in the data section. Figure 2 presents the effect of paternal income, maternal income, maternal employment during childhood, and paternal employment during childhood on sons and daughters.

Figure 2. Expanded Model

VARIABLES	(1) Son's Income	(2) Daughter's Income
Father's Income	0.358***	0.299**
	(0.056)	(0.0903)
Mother's Income	0.0222	-0.0492
	(0.0314)	(0.0333)
Average Paternal Employment (APE)	0.147	-0.965***
	(0.466)	(0.155)
Average Maternal Employment (AME)	0.0287	0.620**
	(0.107)	(0.139)
Cohort 1955-59	0.0636***	-0.248*
	(0.0132)	(0.11)
Cohort 1960-64	0.153***	-0.454**
	(0.0285)	(0.121)
Cohort 1965-69	0.0972**	-0.104
	(0.0281)	(0.119)
Cohort 1970-74	0.179***	-0.05
	(0.0343)	(0.126)
Observations	474	464
R-squared	0.083	0.089

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results of Figure 2 compared to those of Figure 1 describe the transmission of economic status for sons as one primarily through the channel of father's income, arguing for a large income effect in human capital transmission. This result aligns with previous theoretical support in Becker and Tomes (1986) for equation (1), or the intergenerational elasticity model. The consistent coefficient on father's income from Figure 1 to Figure 2 means that the heritability of endowments and propensity to invest in children is not affected by maternal income nor by the employment status of parents during childhood.

The regression for daughter's income in Figure 2 is much more interesting with significant coefficients on both average parental employment variables. The correlation with

father's income has increased but is still only significant at the 5% level. I attribute this increase to the inclusion of the paternal employment average variable and its dampening effect on the transmission of economic status from father to daughter. To accurately interpret the significant results from parental employment status during offspring's childhood, we must account for the income effect from employment. For example, since average paternal employment is a continuous variable from 0 to 1, if it changes from 0 to 1 then there is a negative ceteris paribus effect on daughter's future income but there will be a large positive effect from the income generated from working for the entire period of daughter's childhood. Figure 3 uses the average incomes of daughter's parents in the sample to calculate the net effect of paternal and maternal employment for daughters with those parental characteristics.

Figure 3. Parental Employment Effects for Daughters

	Paternal Employment
10.46	(Average log(Father's Income))
x 0.299	(Daughter's Income Correlation)
3.127	(Positive effect of father's income in log terms)
-0.965	(Negative effect of Average Paternal Employment in log terms)
+2.12	
	Maternal Employment
8.95	(Average log(Mother's Income)
x -0.05 §	(Daughter's Income Correlation)
-0.45	(Negative/Insignificant effect of mother's income in log terms)
+0.62	(Positive effect of Average Maternal Employment in log terms)
+0.17	
	§ = insignificant

Father's employment during daughter's childhood has a negative effect holding all else constant. However for all daughters in the sample, the net effect of paternal employment is positive due to the large positive effect of father's income. Maternal employment is more difficult to interpret since daughter's income correlation with mothers is insignificant from zero.

Taking the -0.05 correlation from Figure 2, mothers in the sample have a net positive effect on daughters' future economic outcomes if they are employed during daughter's childhood. This positive effect of maternal employment status reflects a positive "role model" effect on daughters. I conclude that for daughters in the future, it is more beneficial if mothers work more and fathers spend more time with daughters during childhood.

V.ii. Interaction Models

This section explores the possibility of an interaction effect between one parent's employment status affecting the income transmission from the other parent to the child. These models are based on the assumption that if one parent is working more the other parent stays at home more or that due to assortative mating, the transmission of family economic status depends on at least one of the parents attending to the child. Thus the child's income correlation with either parent has the potential to be impacted by the other parent's employment status. Mainly what I aim to find is the effect of mother's employment status on the child's future economic outcome indirectly. If maternal employment status affects the intergenerational income correlation between child and father, this means that by working, mothers have changed the process of human capital transmission. To balance this hypothesis, I also test the idea that father's employment status affects mother's income correlation with child. Results from equations (3), (4), and (5) are displayed in Figures 4 and 5 for sons and daughters. These results are compared to the direct effects of employment status from the expanded model to see if indirect effects are significant.

Figure 4. Son's Income: Expanded Model + Interaction Effects

VARIABLES	(1)	(2)	(3)	(4)
Father's Income	0.358***	0.551***	0.352***	0.526***
	(0.0560)	(0.0732)	(0.0586)	(0.102)
Mother's Income	0.0222	0.0232	0.338	0.244
	(0.0314)	(0.0345)	(0.552)	(0.580)
Average Paternal Employment (APE)	0.147	0.112	3.077	2.164
	(0.466)	(0.446)	(5.370)	(5.614)
Average Maternal Employment (AME)	0.0287	2.884	0.0268	2.573
	(0.107)	(1.929)	(0.108)	(2.199)
AME * Father's Income		-0.272		-0.242
		(0.176)		(0.200)
APE * Mother's Income			-0.321	-0.224
			(0.543)	(0.572)
Cohort 1955-59	0.0636***	0.0808***	0.0684**	0.0824***
	(0.0132)	(0.00530)	(0.0159)	(0.00662)
Cohort 1960-64	0.153***	0.152***	0.164***	0.160**
	(0.0285)	(0.0298)	(0.0344)	(0.0367)
Cohort 1965-69	0.0972**	0.0949**	0.107**	0.102**
	(0.0281)	(0.0288)	(0.0348)	(0.0363)
Cohort 1970-74	0.179***	0.177***	0.190***	0.184**
	(0.0343)	(0.0353)	(0.0390)	(0.0407)
Observations	474	474	474	474
R-squared	0.083	0.086	0.084	0.086

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Son's income is still only significantly correlated with father's income. Neither mother's income nor mother's time devoted to the household significantly affects son's future income. The hypothesis that maternal employment could affect son's income through the channel of father's income transmission is not justified.

Figure 5. Daughter's Income: Expanded Model + Interaction Effects

VARIABLES	(1)	(2)	(3)	(4)
Father's Income	0.299**	0.166*	0.313**	0.187*
	(0.0903)	(0.0772)	(0.0938)	(0.0825)
Mother's Income	-0.0492	-0.0512	0.418**	0.345**
	(0.0333)	(0.0347)	(0.108)	(0.121)
Average Paternal Employment (APE)	-0.965***	-0.975***	4.321**	3.642**
	(0.155)	(0.161)	(1.006)	(1.119)
Average Maternal Employment (AME)	0.620**	-1.647*	0.616**	-1.479
	(0.139)	(0.729)	(0.135)	(0.717)
AME * Father's Income		0.219*		0.202*
		(0.0805)		(0.0787)
APE * Mother's Income			0.374**	0.297*
			(0.100)	(0.113)
Cohort 1955-59	-0.248*	-0.263*	-0.258*	-0.271*
	(0.110)	(0.107)	(0.112)	(0.109)
Cohort 1960-64	-0.454**	-0.475**	0.463**	0.481**
	(0.121)	(0.119)	(0.122)	(0.120)
Cohort 1965-69	-0.104	-0.125	-0.115	-0.132
	(0.119)	(0.116)	(0.120)	(0.118)
Cohort 1970-74	-0.0500	-0.0675	-0.0668	-0.0795
	(0.126)	(0.121)	(0.128)	(0.125)
Observations	464	464	464	464
R-squared	0.089	0.091	0.090	0.091

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Again, daughters have far more interesting results. In column (2), after controlling for maternal employment interaction with father's income, the effect of father's income increases to 0.385 from 0.299 if the mother works the entire period of daughter's childhood. If the average maternal employment variable can be taken as a proxy for time spent away from child, then the implication is that mothers working may then increase paternal time with daughter, thereby increasing income correlation with the father. On the other hand, if mothers are not employed at all during daughter's childhood, the income correlation with fathers would fall to 0.166, which in

this case would be explained by the fact that maternal time with daughters is a very strong determinant in their income elasticity with parents. In column (3), daughter's income correlation with mother becomes substantially higher and significant (to 0.792) if the father is employed the duration of daughter's childhood. Column (4) includes both interaction effects, which means that if a parent is employed full-time, the daughter's income correlation with the other parent will increase. Thus, daughters are more sensitive to the time parents spend employed.

One problem with these interaction effects is visible in columns (3) and (4) when after controlling for paternal employment interacted with maternal income, the effect of paternal employment switches signs and increases in magnitude by 5.286 for column (3) and 4.607 for column (4). The large positive effects of paternal employment as well as its positive interaction effect could be a distortion from my choice for the average paternal employment variable. Since the variable picks up an average percent of years employed over the period from when the daughter was 1 to 15, it is highly correlated with the father's lifetime income (since people employed over longer periods of time usually earn more income). Thus the inclusion of this variable may result in capturing the positive income effects of paternal employment in the other years of employment, which are not captured in the five-year long run proxy created for father's income.

I investigate this distortion by changing the parameters of the expanded model by separating the employment average into two variables. The average parental employment variables from when the parent was 30 to 35 will control for the relationship between employment and income at the point in time when I measure income. Then I include newly created average parental employment variables which average parental employment when the daughter was 1 to 5 in order to find the interaction between parental employment when the

daughter was a young age and her future income elasticity with both parents. Figure 6 displays the results in columns 2 to 4.[2]

Figure 6. Modified Expanded Model with Interaction Effects - Daughters

VARIABLES	(1)	(2)	(3)	(4)
Father's Income	0.335	0.286	0.347	0.295
	(0.124)	(0.130)	(0.130)	(0.130)
Mother's Income	-0.00664	-0.00836	-0.670	-0.725
	(0.0623)	(0.0627)	(0.691)	(0.712)
Average Paternal Employment - 30 to 35	-1.516	-1.527	-1.233	-1.222
	(0.856)	(0.849)	(1.002)	(0.977)
Average Maternal Employment - 30 to 35	-0.126	-0.121	-0.122	-0.116
	(0.247)	(0.240)	(0.252)	(0.246)
Average Paternal Employment - child 1 to 5	-0.749	-0.738	-6.708	-7.175
	(0.348)	(0.359)	(5.475)	(5.769)
Average Maternal Employment - child 1 to 5	0.318	-0.839	0.312	-0.934
	(0.112)	(0.689)	(0.110)	(0.443)
Average Maternal Employment - child 1 to 5 * Father's Income		0.111		0.119*
		(0.0614)		(0.0400)
Average Paternal Employment - child 1 to 5 * Mother's Income			0.666	0.720
			(0.635)	(0.658)
Cohort 1965-69	0.328***	0.331***	0.326***	0.330***
	(0.0212)	(0.0190)	(0.0202)	(0.0185)
Cohort 1970-74	0.366***	0.372***	0.361***	0.366***
	(0.0214)	(0.0195)	(0.0160)	(0.0146)
Observations	343	343	343	343
R-squared	0.073	0.074	0.074	0.075

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The only significant interaction effect in this model is on maternal employment when the daughter was 1 to 5 interacted with father's income, compared to Figure 5 when both interaction

[2] The first to cohorts from 1950 to 1959 are dropped because there were no mothers working when their daughter was 1 to 5 in that time period.

effects were positive and significant. The magnitudes change somewhat and all significance drops from the father's income coefficient. All parental employment average direct effects are consistently negative, which means that this specification for parental employment should capture less income effects. This model does not change the signs or interpretation of interaction terms so I attribute the changes in significance due to collinearity.

V.iii. Trends in Intergenerational Income Elasticity

The research on trends in intergenerational transmission of income status is less established than research on simple IIE. Previous literature does not reach a clear consensus on changes in elasticity over the 20th century, and the divergent methods of estimation contribute to this. Mayer and Lopoo (2005) use the PSID to calculate IIE for the son birth cohorts between 1949 and 1965, however they only use one year of income data (when the son was 30 years old) to approximate son's long run family income. This ignores all other years of income data and their results show a large insignificant downward trend in IIE. Mayer and Lopoo (2004) in a trend study for daughters estimate an insignificant but positive trend in IIE for the same cohorts. Corcoran (2001), on the other hand, finds that there has been an increase in family IIE for sons whose incomes were observed between the ages of 25 and 27. Levine and Mazumder (2002), like Mayer and Lopoo, find a large but statistically insignificant decline in IIE. Most of these studies focus on family incomes and use limited years of son's income data. My concern is that since most of these studies focus on family income correlation, the growth or decline in income mobility change if women's income is an increasingly large portion of family income. One possibility is if a son's wife earns a larger portion of family income than his mother's portion in his birth family, then the correlation between father-income could be constant but the mobility

could be observed to be increasing. Fertig (2003) notes this and examines mobility between all distinct parent-child pairs using individual income, as I do. She constructs cohorts of children with a wide variety of ages in each, maintaining a constant mean age. She finds that the income elasticities fell for father-child pairs but remained constant across cohorts for mother-child pairs.

Hertz (2007) and Lee and Solon (2009) both use approximately the same cohort of children that I do but experiment by using all years of income data available for sons. Lee and Solon (2009) aim to use all available years of income data when children are above 25 in age in order to maximize available data and include specific controls for child's age variation. They also use family income rather than individual income and find that there is no significant change in IIE in the United States over the cohorts born in 1952 to 1975. Since they utilize all income over ages ranging from 25 to 48, their income elasticities gain precision over time as more birth cohorts join the sample. Since IIE estimates are lower when son's incomes are measured earlier in life, the earlier years of measuring IIE were biased to include only younger sons' incomes while later years included IIE for all income-generating ages. Hertz (2007) tests his method of using individual fixed effects against that of Lee and Solon (2009) and finds the same result, that there are no significant trends in IIE in this cohort.

In order to account for maternal income correlation with children separate from family income, I fit a linear trend by interacting the cohort indicator with the long run income of parents as in Fertig (2003) and Mayer and Lopoo (2005). This is reflected in equation (6). In Hertz (2007), Fertig (2003), and Lee and Solon (2009), there are strict age controls to control for the larger number of years of income they use to maximize data use. In Fertig (2003), although the median age is preserved for each year cohort, the incomes for fathers are taken at an age range of 23 to 68 for fathers and 21 to 40 for sons. Fertig's age controls of age and age squared for parent

and child while estimating IIE are not enough to accurately proxy for lifetime income because of heterogeneity across individuals in income growth rates over lifecycles. According to Lee and Solon (2009), controls for interaction of child's age with parental income is necessary to minimize the measurement error between current income and lifetime income. Lee and Solon (2009) use elaborate age controls that make it difficult to see the underlying patterns in the data driving their results. Their IIE estimates for the first several years using younger birth cohorts' income are far less precise than later estimates, which does not rule out sampling error. Their results are significant for increasing elasticity for daughters whose incomes were measured from 1977 to 1983 however the authors do not conclude this because these earlier years again rely heavily on extrapolating IIE at younger ages to IIE at more stable income-generating ages.

Hertz (2007) objects the allowance for different effects of parental income at each age (Lee and Solon (2009) interaction effects), instead opting for individual fixed effects to allow for different age-income profiles. He also chooses to interact age with other variables such as education and race to capture predictors of the shape of age-income profiles, though he does not include these predictors individually in the regression. This method does not constrain the age-income profile to be the same across cohorts. He also does not find any significant trends in IIE over the birth cohorts from 1952 to 1975.

I choose to account for children's income transmission from mothers separately from that of fathers, and also differ in the proxy variable measurement of child's permanent lifetime income. Thus, I do not use all available years of income data for each child and complicate interpretation by including age controls, fixed effects, or other determinants of child's income since I fix the ages at which I take income data. At the same time, I do not bias all estimates of IIE downward by using a single year of income data for offspring as in Mayer and Lopoo (2005)

or Harding et al (2005). Instead I use the five-year income averages for offspring, which maintains a constant age measurement across cohorts and eliminates the necessity for extensive age controls. Because I use the same age for income measurements across cohorts, I am assuming the lifetime income distribution has remained fairly constant over the birth cohorts from 1950 to 1974. Then, I interact the cohort indicator with father's income to capture the differences in IIE as the cohort indicator increases. These simplifications might not be as precise about trends of IIE as Lee and Solon (2009) and Hertz (2007) but they do allow the inclusion of maternal income and parental employment variables without reconsideration of controls. Figures 7 and 8 show equation (6) for sons and daughters IIE with paternal income.

Figure 7. Trend for Sons

VARIABLES	(1)	(2)
Father's Income	0.717***	0.714***
	(0.0660)	(0.0606)
Mother's Income		0.0229
		(0.0335)
Average Paternal Employment (APE)		0.239
		(0.499)
Average Maternal Employment (AME)		0.0197
		(0.103)
Cohort Indicator	0.979***	1.003***
	(0.202)	(0.212)
Father's Income * Cohort Indicator	-0.0902***	-0.0929**
	(0.0186)	(0.0203)
Observations	474	474
R-squared	0.082	0.085

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Figure 8. Trend for Daughters

VARIABLES	(1)	(2)
Father's Income	0.00230	-0.0356
	(0.225)	(0.214)
Mother's Income		-0.0454
		(0.0370)
Average Paternal Employment (APE)		-1.007***
		(0.105)
Average Maternal Employment (AME)		0.578**
		(0.143)
Cohort Indicator	-0.580	-0.803
	(0.515)	(0.501)
Father's Income * Cohort Indicator	0.0676	0.0888
	(0.0463)	(0.0445)
Observations	464	464
R-squared	0.053	0.079

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results show a significant downward trend in IIE between fathers and sons based on the negative interaction between cohort indicator and paternal income, which is robust after including variables from the expanded model I introduce in column (2). This follows from insignificant results on parental employment variables in Figure 2. Mayer and Lopoo (2005) use the most similar model to mine however the reason why I find significance is most likely due to the income average I use for son's income. Daughter's IIE trend is positive but not significant, which does not align with Lee and Solon (2009) that describe a significant trend. Either way, the trend is not well-established.

Next, I test the significance of changes in intergenerational income elasticity by cohort. Figure 9 displays results from equation (6), which involves interacting each five-year cohort dummy with father's income. Columns 1 and 2 depict results for son's IIE and columns 3 and 4

report daughter's IIE mobility. The first birth cohort of children born from 1950-54 is dropped due to lack of observations. All cohorts are compared to the last cohort of children born from 1970 to 1974.

Figure 9. Cohort Interactions with Father's Income

VARIABLES	(1) Son's Income	(2) Son's Income	(3) Daughter's Income	(4) Daughter's Income
Father's Income	0.234**	0.223*	0.346***	0.424***
	(0.116)	(0.120)	(0.133)	(0.127)
Mother's Income		0.0265		-0.0574
		(0.0385)		(0.0401)
Average Paternal Employment (APE)		0.185		-1.070***
		(0.466)		(0.406)
Average Maternal Employment (AME)		0.0325		0.650***
		(0.129)		(0.222)
Cohort 1955-59	-2.835	-2.789	2.666	3.362**
	(2.919)	(2.889)	(1.754)	(1.705)
Cohort 1960-64	-2.122	-2.149	-2.585	-1.993
	(1.872)	(1.862)	(2.196)	(2.135)
Cohort 1965-69	-1.798	-1.819	1.886	2.198
	(2.903)	(2.954)	(1.759)	(1.687)
Father's Income * Cohort 1955-59	0.256	0.254	-0.276	-0.342**
	(0.277)	(0.275)	(0.172)	(0.168)
Father's Income * Cohort 1960-64	0.198	0.202	0.211	0.153
	(0.178)	(0.178)	(0.210)	(0.205)
Father's Income * Cohort 1965-69	0.162	0.164	-0.185	-0.215
	(0.275)	(0.279)	(0.167)	(0.160)
Observations	472	472	460	460
R-squared	0.084	0.087	0.075	0.106

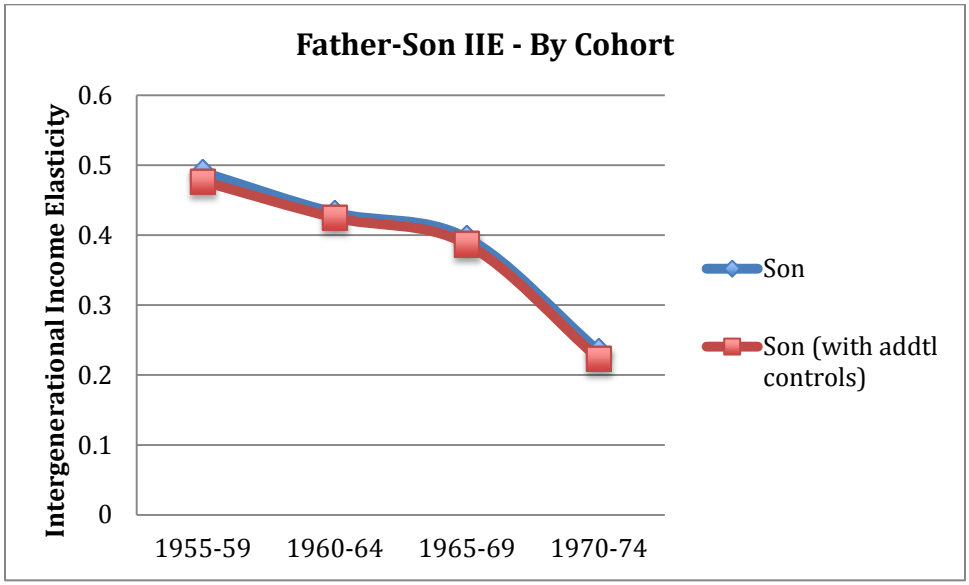
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

For father-son IIE, there are no significant cohorts when the elasticity changed even after maternal income and parental employment averages are included in column (2). Magnitudes for the interaction coefficients between father's income and birth cohort are all positive. The father-

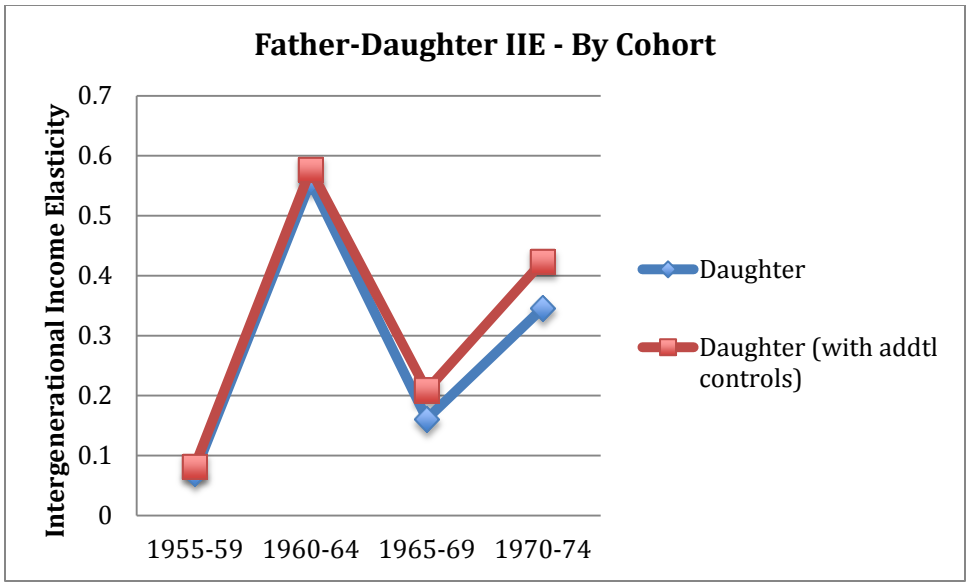
daughter income elasticity relationship, after controlling for maternal income and the parental employment averages, increases significantly from the cohort born in 1955-59 to the last cohort born from 1970-74. This tentative result of increasing father-daughter IIE is also found in Lee and Solon (2009).

In Figure 10, I create two graphs showing the trend in IIE for sons and daughters. The first graph plots intergenerational income elasticities for father-son with and without the additional controls of maternal income and parental employment averages for each five-year birth cohort from 1955 to 1974.[3] The second does the same for father-daughter pairs.

Figure 10.

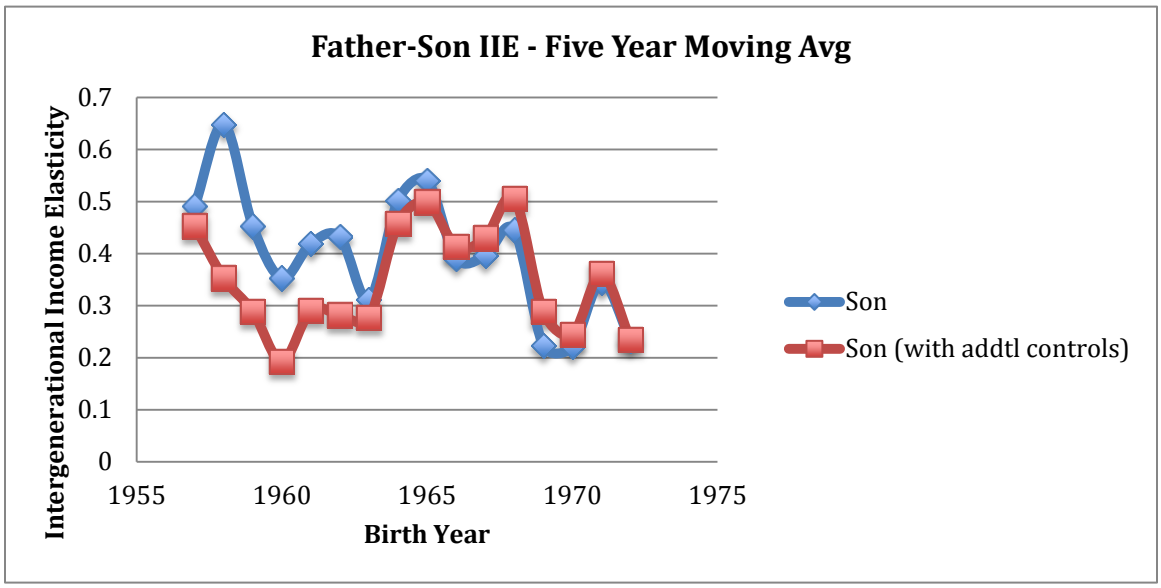


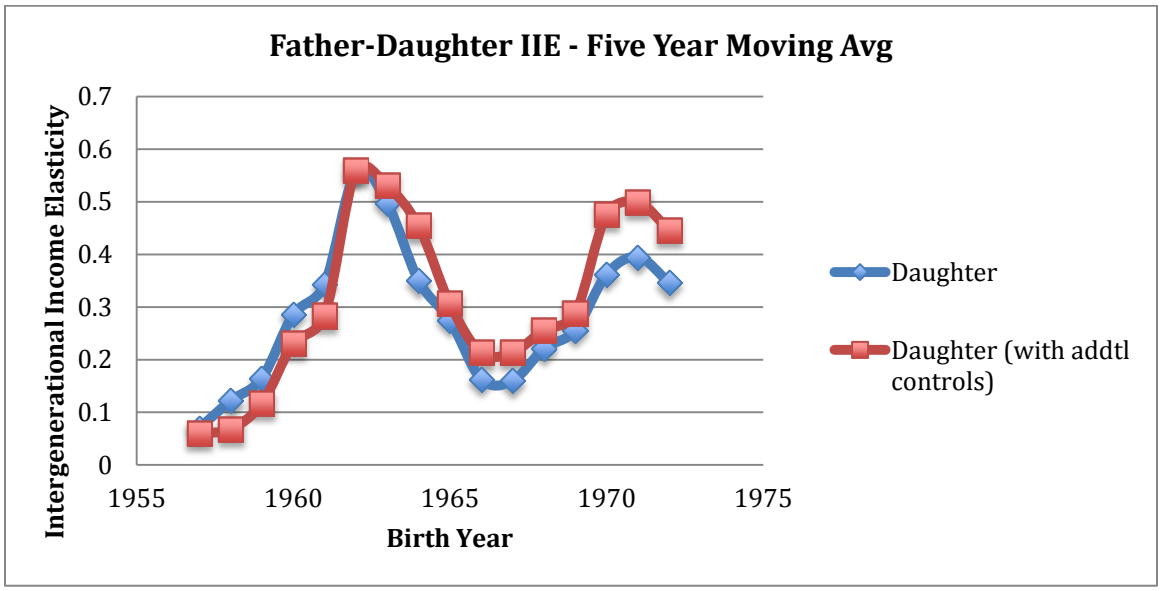
[3] First birth cohort from 1950-54 is dropped because of lack of observations to make an accurate estimate.



The above graphs show in detail the results from the trend regressions above. The significant increase from 1955-59 cohort father-daughter IIE from Figure 9 column (4) is primarily from the extremely low value of IIE in the 1955-59 birth cohort. I am reluctant to conclude that the elasticity for daughters has truly increased in this time period, however, due to the small sample size and the obvious volatility that accompanies it. On the other hand, the decrease in IIE for father-son pairs in Figure 7 is consistent with the falling trend in Figure 10. Figure 11 also shows the trend in intergenerational income elasticity for father-son and father-daughter pairs by calculating the IIE for each overlapping five-year cohort (1955-1959, 1956-1970, and so on) to track smaller movements in IIE estimates. This results in large fluctuations but may explain some of the previous trend results in Figures 7-9.

Figure 11.





When dividing the cohorts into 16 overlapping cohorts as in Figure 11, the volatility in father-son IIE is revealed. If I had defined the five-year cohorts differently, then the linear trend of intergenerational income mobility for father-son would not be increasing. When I redefine five-year cohorts to start in 1953, for example, the interaction variable of father's income and cohort indicator as seen in Figure 6 becomes insignificant. I also use birth year in place of

cohort indicator and cluster standard errors by birth year, as in Mayer and Lopoo (2005). This also results in an insignificant trend.

Thus, I conclude that there has been no significant change in intergenerational income mobility for sons or daughters over the 1950-1974 birth cohorts (or the 1980-2009 time period).

VI. Discussion of Results and Possible Errors

The results detail a measure of intergenerational income transmission that does not depend solely on paternal income and disregard maternal contributions. By including both maternal income as well as considering the role of parental time investment in creation of IIE, the results are more difficult to interpret. The aim was to select variables to include that would preserve pure intergenerational income elasticity between parent-child pairs, however due to the nature of including parental employment averages, estimating pure IIE may be compromised. In this study, parental employment averages are intended to be a proxy for time spent at home interacting with children as an alternative to using the more precise time-use component of the PSID. This is due to severe data limitations as well as the need to control for many variables correlated with time spent at work, including education, type of job, etc. Because I wanted to preserve a traditional measure of IIE as much as possible, I decided to use the more general parental employment average, although this measurement is definitely not ideal as it is highly correlated with the lifetime income of parents. With these considerations, my interpretations are not intended to be exact but rather highlight important issues in measuring intergenerational income elasticity.

In the section below, I discuss other problems commonly associated with the PSID and variable definitions along with their potential impact on my results.

VI.i. PSID Sample Attrition and Data Collection

The Panel Study of Income Dynamics has suffered about 50 percent sample loss since 1968, which potentially creates attrition bias. Most IIE literature using the PSID cites Fitzgerald, Gottschalk, and Moffitt (1998a, 1998b) to discuss how attrition might bias results. They report that for the original sample members, attrition bias remains quite low due to random attrition and the fact that transitory components causing sample attrition fade away by regression-to-the-mean effects. There is more attrition of 1968 households with less advantaged backgrounds. Additionally, for the effects of attrition on intergenerational studies, the authors examine the impact on mean characteristics of the second generation along with estimates for intergenerational correlation in education or earnings. Fitzgerald, Gottschalk, and Moffitt (1998b) find that the father-son intergenerational coefficient is larger for the sample that does not leave the PSID but the difference is insignificant. Thus the effects of sample attrition should not influence my results significantly.

The PSID has also undergone several changes to its data collection structure since the original 1968 sample. The maximum reportable income was raised from $99,999 to $999,999 in 1980 and then raised again in 1981 to its current maximum of $9,999,999. The standard deviation for incomes increases for all individuals in those years. As I choose to use offspring incomes when they were 30 to 35, only the first cohort born in 1950 to 1954 would have up to two years of incomes with low top codes. However, since parents were recorded at age 30 to 35 as well and the youngest children in my sample were born in 1979 with parents having an average child-bearing age of 29 and 27 for fathers and mothers respectively, most parents' incomes were recorded before 1980. This predetermines a smaller income range for the parents'

incomes for most of the sample, implying that IIE estimates are artificially smaller for most of the earlier cohorts.

The PSID has also changed to a biennual survey since 1997 due to resource constraints. Since children's incomes are recorded until 2007 at the latest, the cohorts born in 1960-64 until 1970-74 have less income information to average for an accurate long run income proxy. The direction of this bias is unknown, however considering I chose to use the period when children were 30 to 35 years of age to measure income, the data recorded should approximate a stable period of income.

VI.ii. Variable Definitions

The inconsistencies across intergenerational income elasticity and mobility literature stem from the differences in measuring incomes and methodology concerns. One common practice in IIE literature that I also use in this paper is to drop all years of zero incomes. This is standard in order to provide a more accurate measure of permanent income. The inclusion of zero incomes often drops income correlations drastically (Couch and Lillard, 1998). This does raise the question of who would have zero income years and whether this status is inherited. I account for this somewhat in the parental employment averages variables that are a percentage of years of employment. For the purposes of this discussion, I repeat my regressions with zero incomes included in the income averages to examine whether intergenerational income elasticities change using my methodology. All estimates for father-child IIE fall but by less than 0.10, which is far less drastic than in Couch and Lillard (1998). This is probably due to the averaging of several years of income rather than relying on one year.

My other variables of interest, average parental employment, are not included in any of the IIE literature so far. This is probably because of wariness against including any variables that compromise pure intergenerational income elasticity. In this study, although the interaction effects between parental time invested in children and parental income is not very clear, there is an indication that daughters' incomes are more highly correlated with the parent that spends more time with them. Daughters also have interesting direct effects from parental employment averages. It would be valuable to create a variable that explicitly captures a parent's time spent with child or childcare concentration but is not extremely correlated with income. This would mitigate the need to parse out the income benefits on child from employment average effects on child.

VII. Summary and Conclusion

The goal of this paper is to understand changes in intergenerational income transmission due to maternal employment and therefore changes in time spent with children. For sons, it seems that neither the income brought in from maternal employment nor the parental employment averages I construct to approximate time spent with children impact IIE between father and son. The expanded model of IIE that I use in this paper estimates that for daughters, there is a ceteris paribus positive effect of maternal employment on daughter's future income and negative effect of paternal employment. Overall, however, when including the income benefits from employment, the daughter benefits from both working parents but more so from maternal employment.

Next I examined how maternal employment during childhood affected the intergenerational income transmission from father to child. To balance this, I also interacted

paternal employment during childhood with mother's income. These interactions are based in the theory that there is a time component to the transmission of income-generating traits and behaviors and the increase in maternal employment over the past four decades may have changed the amount of time either parent interacted with their children. I find that there are significant interaction effects for daughters that imply if one parent is working full time, the daughter will have a more positive intergenerational income correlation with the other parent. This could be justified by the idea that the child will spend more time with the other parent. Although there are limitations regarding the average parental employment variable that captures more income characteristics, the question of time affecting IIE should be explored further.

I also test the significance of trends in intergenerational income mobility over the birth cohorts from 1950 to 1974. Although there is a significant negative slope for father-son IIE and positive slope for father-daughter IIE, the results were not robust when making small modifications to the variables. I conclude that there are no significant trends in father-son and father-daughter intergenerational income mobility over this period.

This study supports many claims that the intergenerational income elasticity model needs to be reevaluated in order to consolidate methodologies as well as consider the role of women. Further research should be conducted to examine whether income-generating daughters have distinctive effects based on parental time spent with them. Economic mobility needs to be better measured and understood as without a clear picture, there are difficulties creating policy targeting societal socioeconomic problems.

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