**How Marriage Matters for the Intergenerational Mobility of Family Income: Heterogeneity by Gender, Life Course and Birth Cohort**

Seongsoo Choi
Department of Sociology
Yonsei University, South Korea

Inkwan Chung
Department of Information Sociology
Soongsil University, South Korea

Richard Breen
Department of Sociology and Nuffield College
University of Oxford, UK

**Key words**: intergenerational mobility, intergenerational elasticity (IGE), family income, marriage, PSID

**Corresponding Author:**
Seongsoo Choi
Assistant Professor of Sociology
Yonsei University
50 Yonsei-ro Seodaemun-gu
Seoul, South Korea
Phone: +82-2-2123-2434, Fax: +82-2-2123-2420
Email: s.choi@yonsei.ac.kr

**How Marriage Matters for the Intergenerational Mobility of Family Income: Heterogeneity by Gender, Life Course and Birth Cohort**

**Abstract**

Adult children's labor market status and the kind of marriage are major channels through which family advantages are passed from one generation to the next. However, those two routes have seldom been studied together. We develop a theoretical approach to incorporate marriage entry and marital sorting into the intergenerational transmission of family income, accounting for differences between sons and daughters and considering education as a central explanatory factor. Using a novel decomposition method applied to data from the Panel Study of Income Dynamics we find that marriage plays a major role in intergenerational transmission only among daughters and not until they reach their late-30s. This is more salient in the more recent cohort in our data (people born 1963-75). Marital status and marital sorting are comparably important in accounting for the role of marriage, but sorting becomes more important over cohorts. The increasing earnings returns to education over a husband's career and the weakening association between parental income and daughter's own earnings explain why marital sorting, and marriage overall, have been growing more important for intergenerational transmission from parents to their daughters.

In social stratification research, marital sorting and intergenerational mobility have long been used as indicators of societal openness (Glass 1954; Lipset and Bendix 1959). The tendency for people to marry individuals who are close to them in socioeconomic status reflects how society is segregated and stratified (Blossfeld 2009; Kalmijn 1991, 1998; Schwartz 2013), while the association between social origins and destinations has been widely used to gauge the rigidity of the social structure (Björklund and Jäntti 2009; Breen 2004; Erikson and Goldthorpe 1992; Solon 2004). From the perspective of individual families, the labor market position that a child attains and the kind of marriage he or she makes are primary channels through which advantages and disadvantages are passed from one generation to the next. In this process, parents' resources are converted into capital that is valuable in labor markets or marriage markets or both.

Those two key routes in the intergenerational transmission of family resources have been studied extensively but seldom together. Research into intergenerational mobility does not usually take account of marriage when estimating the association between parents and children in measures of status such as class, occupation, or earnings. Research on assortative mating and intermarriage has not situated marriage in the context of intergenerational transmission; it has instead largely focused on how marriage patterns change over time (Kalmijn 1991; Mare 2016; Schwartz and Mare 2005) and how these changes might contribute to increasing inequality (Breen and Salazar 2011; Eika, Mogstad, and Zafar 2019; Gonalons-Pons and Schwartz 2017; Schwartz 2010).

There are several difficulties to overcome if we are to bring together marriage and mobility in the study of intergenerational transmission. Sociological research on intergenerational mobility has traditionally used occupation as a key marker of individual socioeconomic status (SES) (Erikson and Goldthorpe 1992; Weeden and Grusky 2005) but the question of how to measure the status of the family, based on individual members' occupations, remains unanswered (Beller 2009; Torche 2015). Categorical measures of SES, such as social class, are limited in what they can tell us about the role of family formation and intra-family dynamics because the quantitative processes of pooling and sharing are not easily captured. Another challenge stems from the practice, in studies of assortative mating, of ignoring unmarried individuals (Kalmijn 1991; Schwartz 2010; Schwartz and Mare 2005). This leads to an incomplete understanding of the stratifying nature of marriage. Having no spouse and having no additional income sources that can be pooled is an important condition shaping one's well-being and life chances. The inclusion of only married individuals may also lead to an overestimation of the role of assortative mating preferences (Xie, Cheng, and Zhou 2015) at the expense of considerations of marital status (whether people are married or not). This has become increasingly consequential as the socioeconomic foundations of entry into marriage have shifted across birth cohorts (Carbone and Cahn 2015; Goldstein and Kenney 2001; Sweeney 2002). Such shifts imply a growing SES gradient in marital status and, as a result, changes in the meaning of marriage (Cherlin 2004).

Gender should play a central role in our understanding of intergenerational transmission, yet mobility research has overwhelmingly focused on men and has paid little attention to mothers and women. Integrating mobility and marriage promises to rectify this situation. But we cannot adequately capture the processes of intergenerational transmission, and the role played by gender, if we do not take a temporal view. Studies of assortative mating and of intergenerational mobility have largely overlooked change over the life course. Cross-sectional frameworks have assumed that individuals' attained occupational status and mating patterns remain unchanged once their transition to adulthood is complete (Blossfeld 2009; Erikson and Goldthorpe 1992). Yet, more recent evidence suggests that such assumptions are increasingly untenable because of growing instability in individuals' work and family life trajectories (Kalleberg 2009; Tach 2015). Similarly, pooling of the earnings of spouses plays a central role in marriage and family formation but the contribution of men and women to family incomes, and the correlation between their earnings, change over the life of a marriage. Motherhood penalties in labor markets also promote gendered life course heterogeneity (Abendroth, Huffman, and Treas 2014; Correll, Benard, and Paik 2007). Furthermore, gender inequalities and marriage patterns have undergone marked change in recent decades, exemplified by women's rising educational attainment and labor force participation (Buchmann and DiPrete 2006; Diprete and Buchmann 2006; Goldin and Mitchell 2017) and growing diversity in the trajectories and social norms of family formation (Cherlin 2004; Sweeney 2002; Tach 2015). To understand intergenerational transmission, therefore, and the role of gender, we need to

examine change over the life course and historical change.

We capture historical change by comparing two birth cohorts – 1950-62 and 1962-75. Between our first observations of the older cohort (the late 1970s) and the last observations of our younger cohort (2017), the US changed greatly. At the end of the baby boom the male breadwinner model was dominant with intermittent labor force participation among women, and especially mothers. By the second decade of the 20th century the economy had shifted dramatically towards services, women's educational attainment had come to outstrip men's, and many women had a pattern of labor force participation that, if not continuous, was broken only for periods of childbirth and early child rearing. But broad trends mask increasing heterogeneity. Starting in the 1970s incomes and earnings became much more unequal, returns to college increased sharply while, for people without a college degree, employment grew more precarious, and earnings were static at best. Family forms became more diverse and depended more than ever on education, class and race (McLanahan 2004). Among the college educated fertility nowadays occurs mostly within stable partnerships; among the less educated, single parenthood is more common, marriage is less common, and partnerships are less stable.

In this article, we examine the overall role of marriage in the intergenerational transmission of family resources. We seek to answer to the following questions: first, to what extent is the transmission of family (dis)advantages from parents to children attributable to children's marriage, on the one hand, and, on the other, to individual

attainment in the labor market? Second, given that marriage plays a role, how much of this is the result of whether or not someone marries and how much is the result of who someone marries? Third, how does the contribution of marriage to the intergenerational transmission of family (dis)advantages vary over the life course and across birth cohorts and how does it differ between sons and daughters?

To answer these questions, we use data from the Panel Study of Income Dynamics (PSID). We take family income, measured as the sum of the adult child's earnings and the child's spouse's earnings, as an indicator of the life chances of the family members. We infer the role of marriage for family income transmission by comparing the intergenerational elasticity (IGE) of family income (which estimates the association between parents' income and child's family income) with the IGE of child's personal earnings (Torche 2015).[1] We then develop a new decomposition approach to identify and evaluate the various ways through which marriage mediates intergenerational family income transmission. In so doing, we take account of education as a key mediating factor. Lastly, for reasons set out above, we examine variation in how marriage matters by gender, over the life course (comparing people aged 27-34 and 35-42), and across birth cohorts (comparing those born in 1950-62 and 1963-75).

**PREVIOUS STUDIES OF INTERGENERATIONAL MOBILITY OF INCOME AND MARRIAGE**

Because we are interested in the intergenerational transmission of family advantages and

disadvantages, we use family income as a measure of economic well-being and life chances (Torche 2015). Unlike individual earnings, it captures the economic prospects of family members, such as homemakers, young children and retirees, who are never or weakly attached to the labor market (McCall and Percheski 2010; Torche 2015). Unlike categorical measures of class and occupation, family income is responsive to family-level dynamics such as entry into marriage, spousal selection, and joint decisions about the division of labor, all of which shape a family's economic well-being (Torche 2015).

Research by economists on intergenerational income mobility has examined the role of marriage by focusing on how parental income is associated with the earnings of the child's spouse (Lam and Schoeni 1994), with marital sorting by earnings being a key component of this association. Chadwick and Solon (2002), using data from PSID, reported that about three-quarters of the IGE between parents' income and daughter's pooled couple income was due to income similarity between the daughter and her spouse. In a replication using Swedish data, Hirvonen (2008) reached the same conclusion, even though the overall level of mobility was found to be substantially higher. Ermisch and coauthors (2006), using a similar approach, reported that marital sorting by income explained 40-50 percent of the association between parental income and child's family income in the UK and Germany.

Nevertheless, some important questions remain. We do not know the extent to which family economic advantages are passed to children through marital status (being married or not) rather than through marital sorting because previous studies have

considered only married couples. If there is a systematic difference across family origins in entry into marriage, inferences about the role of marriage based on marital sorting alone will be misleading. We also need to know more about the mechanisms through which parental income is linked to child's family income through marital sorting. There is consistent evidence that spousal income similarity substantially explains the association in family income between parents and children, but we know little of how such associations emerge. Education is likely to play a central role, given its importance for individual economic status (Autor 2014; Blau and Duncan 1967; Card 1999; Torche 2011) and assortative mating (Blossfeld 2009; Breen and Salazar 2011; Eika et al. 2019; Schwartz and Mare 2005). In what follows, we develop our theoretical and analytical framework to address these issues.

## HOW MARRIAGE MATTERS IN THE INTERGENERATIONAL TRANSMISSION OF FAMILY INCOME

Marriage matters for intergenerational transmission to the extent that it provides an economic benefit, through the pooling of spouses' earnings, that is not available to unmarried people. But the family income gain from marriage differs among individuals as their spouse's earnings differ and also varies over the life course depending on how a couple's division of labor and earnings evolves. For analytical purposes, then, it is important to distinguish whether or not an adult child is in a marital union (marital status) and, if so, to whom the child is married (marital sorting). Each question reflects an important aspect

of social stratification by family origin.

### *Family Origin and Marital Status*

That family origin influences both the transition to marriage and its timing is well documented. But these influences may operate in different directions. In many advanced economies, including the US, young adults from disadvantaged backgrounds tend to marry early while those from advantaged backgrounds delay (Brons, Liefbroer, and Ganzeboom 2017; Mooyaart and Liefbroer 2016; South 2001; Uecker and Stokes 2008). But at later ages, this negative family origin gradient weakens or even turns positive (Mooyaart and Liefbroer 2016; South 2001).

Education is a crucial factor that links family origin and marital status because higher education affects marriage timing through prolonged enrollment and delay in the transition to adulthood (Mills et al. 2011), and, as a powerful predictor of an individual's economic achievement in labor markets (e.g., earnings), education may enhance one's financial readiness for the transition to marriage (Musick, Brand, and Davis 2012; Oppenheimer 1988). But the family origin gap in marital status is also affected by the education gap in marital stability (Cherlin 2010; Martin 2006). Growing up in a poor neighborhood is associated with higher chances of early childbirth and single parenthood, especially among low-educated and low-income women (Cavanagh 2011; Harding 2003; McLanahan 2004; Uecker and Stokes 2008). Once married, their marriages are more likely

to dissolve, leading to more unstable family trajectories compared with those from high-SES origins (Cherlin 2010; McLanahan 2004). Parents also may influence their child's marriage entry directly through financial support (Mooyaart and Liefbroer 2016). This is more important in recent cohorts as the transition to adulthood is delayed, and young adults experience prolonged uncertainty about their economic prospects.[2]

We therefore expect a systematic difference in marital status by parents' income, but the difference may be contingent on child's age; parents' income is expected to be negatively associated with marriage entry when a child is young (e.g., in the early 20s), positively as children age. We expect the parental income gap in marital status, favoring those from high-income backgrounds, to grow as children age.

### *Family Origin and Marital Sorting*

Figure 1 shows several ways in which parents' income affects the earnings of their child's spouse. How much the child's spouse earns and how strongly this is associated with the income of the child's parents are central issues in the intergenerational reproduction of family income. In Figure 1A, we see two paths linking child's spouse's earnings to parents' income: an indirect path from parents' income to child's earnings and then from child earnings to his or her spouse's earnings and a direct path from parental income to their child-in-law's earnings.

Figure 1 about here

The direct path is the result of all the processes that link family origin and spouse's status net of their own child's earnings. The indirect path captures how the labor market advantages a child gains from their parents' income interact with the economic gain stemming from the marriage market. Clearly, the importance of marriage in intergenerational economic transmission will depend on the strength of the two parts of the indirect path. A strong association between parents' income and child's own earnings will, all else equal, weaken the role of marriage, while a strong association between child's earnings and spouse's earnings will strengthen it.

Education is likely to play a crucial role in explaining the associations described in Figure 1A, given its central roles in the determination of earnings in labor markets and in assortative mating in marriage markets. Figure 1B incorporates education into our model, and the paths shown in Figure 1A are elaborated accordingly. In Figure 1B, the direct path is: parental income → child's education → child's earnings → spouse's earnings, and the indirect path is: parental income → child's education → spouse's education → spouse's earnings. From these two pathways, we identify three major links involving education in the intergenerational transmission of family income among married individuals: parental investment in education (parental income → child's education), educational assortative mating (child's education → spouse's education) and the earnings return to education (child's education → child's earnings, and spouse's education → spouse's earnings).

The first link, parental income → child's education, captures parents' investment in

their child's education. A considerable portion of the total effect of parents' income on child's earnings is through educational attainment, either through better investments or through better parenting (Mayer 1997), often in the form of concerted cultivation (Lareau 2011) and opportunity hoarding (Hamilton, Roksa, and Nielsen 2018). Parents produce human and cultural capital for their children that is valuable in both labor markets (captured in our model through the paths from parents to child's education to child's earnings) and marriage markets (parents to child's education to spouse's education).

The second link, educational assortative mating, is a central mediator in the pathway from parental income to spouse's earnings. In our model, we allow for sorting on both education and earnings, but whereas the former is unlikely to change after the onset of marriage, the latter will. This difference allows us to separate two mechanisms that are confounded in the statistical association of spousal earnings: spousal selection and the remaining variation in spousal association in earnings that arises after marriage (Gonalons-Pons and Schwartz 2017).

Previous research has identified some mechanisms through which the association of education between spouses arises during partner selection. The educational system shapes the opportunity to meet potential partners (Blossfeld 2009; Schwartz and Mare 2005) and, in the search for a partner, people rely on education as a signal for traits, such as cultural tastes and socioeconomic prospects (Blossfeld 2009; Kalmijn 1998). The remaining earnings association between spouses, after accounting for educational assortative mating

(i.e., child's earnings → spouse's earnings in Figure 1B), can be attributed to matching on earnings that is not explained by educational matching, or to variation in the earnings association that arises after marriage, both of which are related to gender-based role specialization and the division of labor between spouses (Becker 1991; Blossfeld 2009; Gonalons-Pons and Schwartz 2017; Oppenheimer 1988; Schwartz 2010).

Educational assortative mating also provides an explanation for the direct path from parental income to spouse's earnings in Figure 1A. Educational assortative mating mediates parental income and child's spouse's earnings (parental income → child's education → spouse's education → spouse's earnings). This pathway suggests that parents' economic status can be related to child-in-law's level of education and earnings through assortative mating, net of their child's labor market performance. This is an important channel of intergenerational transmission that goes unaddressed when only income associations are examined without taking into account the role of educational assortative mating.

Accounting for educational assortative mating in the direct path from parents' income to child-in-law's earnings also allows us to consider more direct ways in which parental origin is associated with child's family income through marriage. In Figure 1B, the direct dashed arrow from parental income to spouse's earnings captures all the remaining intergenerational processes in marital sorting after controlling for child's and spouse's education and child's earnings. Research suggests sorting on family origins as the leading

candidate accounting for this path. Despite its waning importance in contemporary societies, particularly compared with education (Kalmijn 1991, 1998; Schwartz 2013), family background has been found to be influential in spousal selection in different social contexts (Charles, Hurst, and Killewald 2013; Henz and Mills 2018; Hu 2016; Kalmijn 1991; Mäenpää 2015; Uunk, Ganzeboom, and Róbert 1996). Assortative mating by family origins, net of child's own status, may emerge when people are attracted to a partner with similar values, lifestyles, cultural tastes and experiences, financial conditions and common social networks (Blossfeld 2009; Charles et al. 2013; Kalmijn 1991). Neighborhood may also function to promote homogamy on family background when marriage markets are socially and geographically segregated (Hu 2016; Kalmijn 1991). In Figure 1B, all these pathways are captured in the dashed arrow directly linking parental income and spouse's earnings.

In Figure 1B, the third mechanism involving education links it to individual labor earnings (child's education → child's earnings and spouse's education → spouse's earnings). In order for parents' investment in their children's education to affect the intergenerational transmission of material circumstances, education must be translated into child's family income, both directly and indirectly. In labor and marriage markets, education signals earnings potential (Bills, Stasio, and Gërxhani 2017; Carbone and Cahn 2015; Oppenheimer 1988) and, consistent with such expectations, educational gaps in earnings tend to widen as people age, reflecting cumulative advantages over the life course (Card 1999; Elman and O'Rand 2004). We also consider the returns to education among

spouses. In Figure 1B, the link between spouse's education and spouse's earnings mediates both pathways representing the direct path and the indirect path in Figure 1A. This suggests that spouses' earnings returns to education and how they evolve over the life course may be an important factor explaining the intergenerational transmission of family income.

**GENDER AS A CRITICAL FACTOR OF HETEROGENEITY**

From the onset of marriage, men and women's labor market and family careers begin to diverge and such life course heterogeneity has implications for how parental socioeconomic advantages are passed differently to sons and daughters. But these different trajectories themselves are not stable, given women's rising education and employment (Buchmann and DiPrete 2006; Diprete and Buchmann 2006; Goldin and Mitchell 2017) and changing norms and patterns of family formation (Cherlin 2004, 2010; McLanahan 2004; Tach 2015) that have occurred with growing job insecurity and career instability (Kalleberg 2009) and increasing earnings inequality (Autor 2014). This will lead to gender differences in the life course that change across birth cohorts.

Prior research suggests that the intergenerational pathways involving marital status and marital sorting, some of which are illustrated in Figure 1B, reveal a gendered pattern. Men and women may differ in the pattern of parental income stratification in marital status, with family origin affecting women's chances of marriage more than men's. Socioeconomically advantaged parents, for example, can encourage their daughters to be

career-oriented and to marry late, allowing them to avoid the labor market disadvantages that accompany childcare responsibilities (Mooyaart and Liefbroer 2016). This generates differences between women, depending on their social origins – a difference not found among men. Gender has become more significant in recent birth cohorts. Socioeconomically advantaged women are increasingly more likely to marry than disadvantaged women, which is a trend that has not occurred among men (Carbone and Cahn 2015; Goldstein and Kenney 2001; Oppenheimer 1988; Sweeney 2002), but advantaged women have also experienced a delay in first marriage (Goldstein and Kenney 2001). From this, we expect that the family origin gap in marital status will be greater for recent cohorts of women, especially when they reach more mature ages.

When it comes to marital sorting, the domestic division of labor is the key source of gender asymmetry. Wives' greater involvement in unpaid domestic work leads to a weaker earnings association between husband and wife (Cheng 2016; Gonalons-Pons and Schwartz 2017) than might be expected on the basis of their education. Gender-discriminating norms and practices in labor markets (Cheng 2016; Correll et al. 2007; Killewald 2013) also contribute to this. Consequently, marital sorting by earnings deviates from educational assortative mating as marriage proceeds. For example, although educational assortative mating is a good predictor of the earnings association among couples in Denmark, where women's careers are largely uninterrupted after marriage and childbirth (Breen and

Andersen 2012), education is a much weaker indicator of women's long-term earnings development in the US.

The gendered life course dynamics of earnings returns to education have two important implications. On the one hand, as daughters reach mature ages (late 30s and early 40s), their earlier indicators of socioeconomic status, such as family origins and education, become increasingly better predictors of their husband's education and earnings. Earnings returns to education among male spouses increase over their life-course (Card 1999) and this contributes to the emergence of a greater role for marriage in intergenerational transmission for women at mature ages. In Figure 1A, for female children, this leads to a strengthening of the direct path between parental income and child's spouse's earnings. On the other hand, daughters' own earnings become a poorer indicator of their own socioeconomic status which also becomes more loosely associated with their own education. This leads to a greater contribution of marital sorting to the intergenerational transmission of family economic advantage among women by suppressing the importance of the indirect path between parental income and child's spouse's earnings via their own earnings shown in Figure 1A.

A series of social changes with gendered impacts suggest that these gender differences, especially those emerging over the life course, changed across birth cohorts. Gendered life course heterogeneity may have declined in recent cohorts of women. Wives and husbands resemble each other in terms of education more than in the past (Schwartz

2013; Schwartz and Mare 2005) and, in younger cohorts, they are also more similar in their earnings after they have married, largely because of the increase in women's bargaining power in negotiating the division of domestic labor (Gonalons-Pons and Schwartz 2017). This gender-equalizing trend is likely to suppress the gender difference in the role of marriage in intergenerational family income mobility.

Conversely, some socioeconomic and demographic changes imply that gender differences in life course heterogeneity linked to marital sorting may have increased. Skill-biased technological changes, de-unionization, and financialization have increased the earnings premium for education since the 1980s (Autor 2014), and, more importantly, their impacts differed by gender; earnings returns to education rose more for men than for women (Diprete and Buchmann 2006). Given steeper earnings growth over the career for the better-educated (Card 1999; Elman and O'Rand 2004), the rising educational premium is likely to strengthen the tendency for husband's earnings to become a better indicator for married women's own economic status as they age. That is, women's own education will match better with their spouse's earnings at older than younger ages, and this is likely to be particularly true for recent cohorts. At the same time, the trend of delayed marriage suggests that women's own earnings at mature ages will be more decoupled from their own earnings potential among recent cohorts than in earlier cohorts. Since women in more recent cohorts enter marriage, give birth and take care of children at older ages (Cherlin 2010; Goldin and Mitchell 2017; Goldstein and Kenney 2001), we now observe a new

pattern of women's labor market careers in these cohorts: attachment to the labor market falls in the mid-30s and early-40s but is expected to recover after that (Goldin and Mitchell 2017). Taken together, these changes suggest that the relative importance of labor earnings and marriage for family income transmission have been growing increasingly different between men and women, with the return to marriage becoming more important for women in recent cohorts (Diprete and Buchmann 2006).

**ANALYTICAL STRATEGY: A NEW DECOMPOSITION APPROACH**

We use the IGE of earnings to capture the transfer of economic status from parents to child. If we write the regression of logged child's individual earnings, $y_i$ on logged parents' income, $y_p$ as

$$\ln(y_i) = \beta_{i0} + \beta_{ip}\ln(y_p) + \varepsilon_i \qquad \text{Eq. 1}$$

then the IGE is given by $\beta_{ip}$. We can also consider the IGE for the child's family income, $y_c$:

$$\ln(y_c) = \beta_{c0} + \beta_{cp}\ln(y_p) + \varepsilon_c \qquad \text{Eq. 2}$$

where $y_c$ is the sum of child's individual earnings and his or her spouse's earnings, $y_s$. That is, $y_c = y_i + y_s$. Child's family income is thus child couple's combined earnings, so we are assuming that there are no other family members whose earnings are pooled.

Not all adult children marry and so $y_c$ can be written differently by marital status, $M$:

$y_c = y_i + y_s$ and $\ln(y_c) = \ln(y_s) - \ln\left(\frac{y_s}{y_i + y_s}\right)$ for the married ($M = 1$),[3]

$y_c = y_i$ and $\ln(y_c) = \ln(y_i)$ for the unmarried ($M = 0$)

The foundational assumption of our approach is that the difference between the IGE of couple income and the IGE of individual earnings, $\beta_{cp} - \beta_{ip}$, captures the contribution of marriage to the intergenerational transmission of family income. A difference between $\beta_{cp}$ and $\beta_{ip}$ suggests that parents' income influences their child's family income in ways additional to its influence on their child's labor earnings.

The estimate of this difference, $\hat{\beta}_{cp} - \hat{\beta}_{ip}$, can be expressed as follows (see Appendix A for the full formal specification and derivation):

$$\hat{\beta}_{cp} - \hat{\beta}_{ip} = \underbrace{f_1\left(y_{p|M=0}, y_{p|M=1}, \Pr(M=1)\right)}_{\textbf{(a)}\text{ Parental income inequality in marital status (+)}} * \underbrace{\left(\overline{\ln(y_i + y_s)} - \overline{\ln(y_i)}\,|M=1\right)}_{\textbf{(b)}\text{ Average benefit of family income from being married}} + \underbrace{f_2\left(y_{p|M=0}, y_{p|M=1}, \Pr(M=1)\right)}_{\textbf{(c)}\text{ Parental income inequality in marital status (-)}} * \underbrace{g\left(\hat{\beta}_{ip}, \hat{b}_{si}, \hat{b}_{sp|i}|M=1\right)}_{\textbf{(d)}\text{ Parental income inequality through marital sorting}} \quad \text{Eq. 3}$$

where $\hat{b}_{si}$ denotes the association between child's own earnings and spouse's earnings and $\hat{b}_{sp|i}$ denotes the association between parents' income and spouse's earnings net of child's own earnings.[4] Both $f_1\left(y_{p|M=0}, y_{p|M=1}, \Pr(M=1)\right)$ and $f_2\left(y_{p|M=0}, y_{p|M=1}, \Pr(M=1)\right)$ (**(a)** and **(c)**, hereafter) show the extent to which two marital status groups, the married and the unmarried, differ from each other in the mean and variance of parents' income. However, **(a)** and **(c)** behave in opposite ways. **(a)** grows larger the greater the difference between the married and unmarried in the distribution of parental income and thus implies stronger family origin stratification in marital status. **(c),** however**,** increases when inequality in parents' income is greater within, rather than between, marital status groups. **(c)** is therefore an indicator of weak family origin stratification between marital status groups because of the variation in parental income within groups.[5]

The second component of the first term in Equation 3, $\left(\overline{\ln(y_i + y_s)} - \overline{\ln(y_i)}\,|M=1\right)$ (**(b)**, hereafter), captures the average family income gain through marriage. It shows how much a spouse brings to the pooled couple income. Jointly with **(a)**, this component reflects how family origin inequality in marital status is linked to child's family income (dis)advantage; where the benefit from pooling spouses' earnings is small, strong family origin stratification cannot be translated into differences in child's family income.

The last component of the second term, $g\left(\hat{\beta}_{ip}, \hat{b}_{si}, \hat{b}_{sp|i}|M=1\right)$ (**(d),** hereafter), consists of a series of parameters each capturing some part of the association between

parents' income and spouse's earnings. As Figure 1A illustrates, parents' income is associated with spouse's earnings via two paths. The first is the indirect path from parents' income to child's own earnings, $\hat{\beta}_{ip}$ and from child's earnings to couple income, $\hat{b}_{si}$. The second is the direct path from parents' income to couple's income net of the child's own earnings, $\hat{b}_{sp|i}$. **(d)** is the sum of these two paths and it captures the role of sorting among married couples in the intergenerational transmission of family income. As equation (3) shows, **(d)** is multiplied by **(c)**, which means that the importance of marital sorting depends on the level of parental income inequality between the married and the non-married. But since **(c)** is inversely related to family origin differences between the married and unmarried, it follows that sorting within marriage is more important when married and unmarried people differ less in their distribution of parental income. To interpret the roles of **(a)** and **(c)** intuitively, it is useful to note that whereas **(a)** $*$**(b)** shows how parents' income differs *between* marital status groups, **(d)** shows how parents' income matters to spouse's earnings *within* the group of married people. Marital sorting contributes more to the overall role of marriage in intergenerational transmission when differences in parental income between the married and unmarried are smaller. In other words, when marriage itself (whether someone marries or not) is less stratified by parental origins, sorting within marriage (who someone marries) plays a bigger role.

Further derivations in Appendix A show that the contribution of marriage to the IGE of family income, $\hat{\beta}_{cp} - \hat{\beta}_{ip}$, is composed of the following components: (1) difference

between married and unmarried people in the mean of their parents' income, (2) difference in the variance of their parents' income, and (3) the proportion who are married (**(a)** and **(c)** in Equation 3), (4) the average gain in pooled couple income (**(b)** in Equation 3), (5) the IGE of child's individual earnings ($\hat{\beta}_{ip}$), (6) the association between spouses' earnings ($\hat{b}_{si}$) and (7) the association between parents' income and spouse's earnings net of child's earnings ($\hat{b}_{sp|i}$) (**(d)** in Equation 3). Our strategy is to estimate these parameters and therefore the four components of Equation 3, **(a)**, **(b)**, **(c)** and **(d)**, and use the results to assess the importance of marital status and marital sorting in intergenerational mobility. We then delve deeper to examine the specific mechanisms through which marriage has its effects and how they account for differences by gender, age and birth cohort.

**DATA AND MEASURES**

We use data from the PSID. The first wave of the PSID in 1968 included both a nationally representative sample and an oversample of low-income families (McGonagle et al. 2012). Data were collected annually until 1997, after which they were collected every other year. PSID's genealogical design makes it ideal for intergenerational study (Pfeffer and Killewald 2018) and it has been widely used to estimate the intergenerational association of economic resources (i.e., income and wealth) by economists and sociologists (Chadwick and Solon 2002; Charles et al. 2013; Pfeffer and Killewald 2018; Torche 2011). In our analyses, we only use the nationally representative sample up to and including the 2015

wave. We dropped the oversample of poor families and also excluded the immigrant samples, which were added in 1997 and 1999, because their short history does not allow us to estimate our models for them.[6] Although panel attrition is a concern, several studies have found little or no evidence that this biases estimates of the intergenerational association of income (McGonagle et al. 2012).

We analyze the intergenerational transmission of annual labor incomes between household heads and their adult children born between 1950 and 1975. We compare two birth cohorts: children born between 1950 and 1962 and between 1963 and 1975. The majority of children in our sample are the children of the household heads in the initial 1968 survey, but, in order to secure sufficient observations for the younger cohort, we also include children born between 1968 and 1975 whose parents were children in the initial wave. Our sample only includes adult children who were either a household head or spouse of the head because the PSID does not provide the annual labor incomes of other respondents. The PSID consistently treats a male as the household head, but female breadwinners are assumed to be the household head when no adult male is present at the survey.

We restrict our sample to respondents with information on both their own labor income and the income of their parents for at least one year for both. When there are multi-year income records, we use their average. For parents' income, we use the average of total annual family incomes that were collected over child's ages 14 to 22. It is well known that,

because of transitory fluctuations in income, a short-run measure of parental income yields a downwardly biased estimate of the IGE (Björklund and Jäntti 2009). As robustness checks, we examined how the results of our analyses vary by the numbers of observations of parents' income and of child's income. They did not yield substantively different results from the main analysis (see the online supplement C for the details).

For the incomes of adult children, we consider income observations between ages 27 and 34 and between 35 and 42.[7] For these age intervals, we calculated average annual income using all available income records. Our measure of child's labor income is the 'total money income from labor' variable, which includes labor income from a business, wages, bonuses, overtime, commissions, and income from professional practices. We exclude top-coded incomes. We adjusted all income values to 1999 USD using the Consumer Price Index (CPI). We include all individual observations (for adult children and their spouses) with zero annual income by adding a very small positive value to avoid them being lost when income is logged.

For convenience, we refer to married couples and cohabiting couples as married. Our measure of marital status indicates whether a person is ever-married or never-married within each age window (27 to 34 and 35 to 42), regardless of possible changes in current marital status due to marital dissolution, re-marriage or the death of a spouse. The group of married individuals at ages 35-42, therefore, is made up of people who were ever married between 35 and 42. Likewise, unmarried individuals within the same age range are those

who were never married between 35 and 42. This includes some individuals who may have been married and then divorced or widowed before age 35 and remained unmarried.[8] For married people, the average annual labor income of their spouse is constructed in the same way as child's labor earnings. The measure of spouse's income is the average of all observations that are available during the ages 27-34 and 35-42 respectively, regardless of whether the spouse is the same person throughout.

We use a five-category variable for the educational attainment of children and spouses: less than high school, high school degree or equivalent, some college (including two-year college and dropout from four-year degree), bachelor's degree holders, and college graduates with some postgraduate education. Children's education is measured at age 27 or over. Spouse's level of education can differ between the two age groups (i.e., children aged 27-34 and 35-42) if the child was married more than once.

Table 1 about here

Table 1 provides descriptive statistics by gender, age group, and birth cohort. Our final samples include 1,462 and 1,331 men and 1,523 and 1,426 women, depending on age group. Among men and women and in both age groups, the proportion of married individuals is lower among those born in 1963-75 than 1950-62, suggesting a declining trend of marriage over time. More men than women are married. For both birth cohorts of women, the proportion of married individuals is higher when they are 27 to 34 years old

(0.84 and 0.82) than when they are 35 to 42 years old (0.83 and 0.78). Women are more likely than men to remain single after marriage dissolution, and this slightly lowers their rate of being married or cohabiting in the older age group.[9]

When it comes to child's personal earnings and spouse's earnings, men and women mirror each other. Men in our sample earn approximately twice as much as their female spouses, while women earn about half as much as their male spouses. Even with the increases in women's paid work activity and wages in recent cohorts, their labor market engagement is still weaker than men's. Men show a notable growth in earnings as they age but no evident growth across cohorts. Women show the opposite: earnings do not increase over the life cycle (and may even decline) while the average is higher in the later-born cohort. This gendered pattern appears to be consistent, regardless of whether observations are respondents' own earnings or spouses' earnings. Panel B reports the educational distribution of children and spouses. Educational attainment increased over cohorts, but this was more pronounced among women.[10]

## RESULTS

### *The Overall Role of Marriage in the Intergenerational Mobility of Family Income*

Table 2 shows the estimates of couple income IGE, $\hat{\beta}_{cp}$, personal earnings IGE, $\hat{\beta}_{ip}$ and the difference between them, $\hat{\beta}_{cp} - \hat{\beta}_{ip}$, by gender, age and birth cohort. For sons, the IGE of couple income in their late 20s and early 30s is 0.68 for the 1950-62 cohort and 0.56 for the

1963-75 cohort. In their late 30s and early 40s, it is 0.59 and 0.42, respectively. So, for men, the influence of parents' income weakens as they age, and it is also weaker for the more recent cohort, suggesting a modestly declining cohort trend. The IGEs for men's individual earnings follow the same pattern and, thus, all the estimates of the differences between the two IGEs, $\hat{\beta}_{cp} - \hat{\beta}_{ip}$, are very small and statistically indistinguishable from zero, implying a negligible role of marriage in the intergenerational transmission of family income for male children.

Table 2 about here

For women, the picture is different. First, the two IGEs (of couple income and individual earnings) show a diverging pattern by age. As women age, the IGE of couple income rises from 0.58 to 0.68 for the 1950-62 cohort and from 0.53 to 0.83 for the 1963-75 cohort. Conversely, the IGE of daughter's own earnings falls from 0.57 to 0.45 for the 1950-62 cohort and from 0.55 to 0.40 for the 1963-75 cohort. Together, these testify to the growing importance of marriage as a channel for the intergenerational transmission of economic status from parents to daughters. The pooling of two spouses' earnings through marriage does not influence the intergenerational association of family income when daughters are relatively young (aged 27 to 34), but, when women are in their mid-30s to early-40s, the difference between the two IGEs grows to 0.23 and 0.43 respectively for the two cohorts. In other words, advantage in family economic origin among women is manifested in their own earnings when young but shifts largely to their spouse's earnings

and, ultimately, pooled couple income, as they grow older. The pooling of earnings through marriage explains 33% (=0.225/0.678) for the 1950-62 cohort and 52% (=0.432/0.830) for the 1962-75 cohort, of the intergenerational association between parents' income and couple income among daughters aged 35 to 42.

Similarity in intergenerational income mobility for sons and daughters when they are in their 20s and early 30s is replaced by a gendered pattern when they are in their late 30s and early 40s, due largely to the emerging role of marriage as a central channel for the intergenerational association of family income among female children. This pattern is stronger in the more recent birth cohort. The finding of an emerging gendered pattern in older ages is largely consistent with our theoretical reasoning. In what follows, we seek to explain these results by decomposing the estimated difference between the IGEs of family income and individual earnings.

*The Decomposition of the Role of Marriage into Marital Status and Marital Sorting*

In Table 3, we present estimates of the four components constituting $\hat{\beta}_{cp} - \hat{\beta}_{ip}$, which we derived in equation (3).

Table 3 about here

In the upper part of Table 3, we show the estimates of the two components explaining the role of marital status, (a) parental income inequality in marital status and

(b) the average benefit of family income from being married, and the product of them, (a)*(b).[11] There are substantial gender differences. The distribution of parents' income varies more between the unmarried and the married among women than men. The estimate of (a) is smaller at ages 27-34 than at ages 35-42 for both men and women, but the overall size is substantially greater for women: 0.02 versus 0.03~0.06 when aged 27-34 and 0.04~0.05 versus 0.10~0.12 when aged 35-42. For men, differences in both the mean and variance of parents' income between the married and non-married are small, and so, overall, the dispersion of parents' income is unrelated to their sons' marital status. For women, however, parents' income is strongly stratified by marital status. Married daughters tend, on average, to come from higher income families and the variance of parents' income is also smaller for them than for non-married daughters. The distributional difference in parental income between the married and the non-married is larger at 35-42 years old than at younger ages, suggesting that marital relationships dissolve more frequently among women from low-income family origins.

Our finding also indicates that the impact of the greater parental income inequality among women at older ages is amplified because, as (b) in Table 3 shows, the mean gap (in logarithmic terms) between couple income and child's own earnings is much smaller for men (0.39~0.53) than for women (1.66~2.02), especially at older ages in the recent birth cohort (0.49~0.53 for men versus 1.90~2.02 for women). Taken together, the product of (a) and (b) is generally very small for sons (0.01~0.02) but, for daughters, it ranges from

0.07~0.09 (at ages 27-34) to 0.20~0.25 (ages 35-42). All in all, this finding suggests a substantially greater role for marital status in intergenerational income transfer for women, especially when they are 35-42 years old.

Another source of the impact of parental income stratification in marital status, (c), which operates as a weight for the component representing marital sorting, (d), also shows a notable gender difference. As we explained earlier, a greater value of (c) implies a weaker role of parental income between the married and the unmarried and a proportionally greater role of marital sorting within the group of married individuals. Consistently with the patterns of (a) and (b), (c) is smaller for daughters than for sons (0.83~0.87 for sons and 0.68~0.82 for daughters) and particularly for the recent-born daughters at ages 35-42 (0.68).

Lastly, (d) in Table 3 shows the elasticities capturing the direct and indirect paths of intergenerational transmission through marital sorting, conditional on being married (also see Figure 1A). Again, there are striking gender differences especially at ages 35 to 42. Beginning with the indirect path, both genders have negative estimates, regardless of age and cohort. This suggests that the indirect path through earnings similarity between spouses potentially reduces the intergenerational transmission of family income rather than boosts it.[12] The direct path estimates, however, show a clearly gendered pattern, being greater for daughters (0.29~0.47) than for sons (0.11~0.33). The gap is particularly large at age 35-42 for the younger birth cohort (0.11 for sons, 0.47 for daughters). The

importance of the indirect path increases as daughters age, regardless of birth cohort, but, for sons, we find no consistent pattern. This finding of the gendered life course heterogeneity supports the prediction we made earlier.

It is among daughters aged 35 to 42 that marriage plays a statistically significant and substantial role, and, in Table 4, we summarize the proportional contributions to this result of the four major components we have discussed. Some consistent patterns are noteworthy. First, we found a modestly negative contribution of (c): -20% for the later-born cohort, and -4% for the earlier-born cohort. Second, we found a substantially large positive role of the product of (a) and (b): 57% for the later-born cohort, and 88% for the earlier-born cohort. Lastly, we found a sizable negative contribution of the indirect path; this was more than offset by a large and positive contribution of the direct path. Overall, marital status and martial sorting are of comparable importance. There is a notable cohort variation, however. Marital status matters more in the older cohort (84%) than in the younger (37%). In the following section we explore why such a cohort difference emerged. For now, it should be noted that our analysis reveals new findings that have not hitherto been documented: the importance of marital status as a channel of the intergenerational transmission of family income and the importance of the direct path of marital sorting that trumps the indirect path.

Table 4 about here

*Changes by Age and Birth Cohort: Sequential Decomposition*

Why does marriage become more important for female children as they get older, and why is this pattern stronger in the later cohort? To address this question we conducted two decomposition analyses examining two observed changes among women in the role of marriage for intergenerational transmission (see the last column of Table 2): (1) the growth from ages 27-34 to ages 35-42 (+0.217=0.225-0.008 for the 1950-62 cohort, +0.454=0.432-(-0.023) for the 1963-75 cohort) and (2) the growth across birth cohorts for 35-42 year old women (+0.206=0.432-0.225, 62%). We adopt a sequential decomposition approach, following DiNardo, Fortin and Lemieux (1996) (see Appendix B for the detailed description about the method).

Table 5 shows the results. For women born between 1950 and 1962, the increased role of marriage over the life course (an increase of 2.2% of their couple income for every 10% increase in parental income) is attributable to marital status (60 ~ 61%) and marital sorting (39~40%). Among the parameters constituting the marital status component, the contribution of the gap in parents' mean income between the married and the non-married dominates, with all the other components playing a minimal role. For marital sorting, the largest contribution comes from the direct path from parental income to husband's earnings (29~30%). Women born between 1963 and 1975 show a similar pattern. The growing gap in parents' average income between the married and the unmarried was an important source of the growing role of marriage as daughters age (20~21%) while other

components in marital status played only limited roles. The direct path estimate turns out to be as important as in the earlier-born cohort (27~30%), but, in the later-born cohort, change in the association between parental income and daughter's own earnings, $\hat{\beta}_{ip}$, from ages 27-34 to 35-42 contributes considerably to the growing role of marriage in intergenerational economic transmission (37~41%). Taken together, the direct and indirect paths point to a situation in which, as married women grow older, their family income is increasingly driven by their husband's earnings. Husbands becomes the primary earners because of the gendered division of childcare and gendered opportunity structures in labor markets. As a consequence, women become more equal among themselves while their husbands become more unequal.

Table 5 about here

The greater role of $\hat{\beta}_{ip}$ in the later-born cohort implies that a declining IGE in daughters' individual earnings over the life course was an important reason why marital sorting increased in importance across cohorts, from 39~40% to 63~71%, and ultimately contributed to the growth in the overall role of marriage. These interpretations are confirmed in Table 6, where we decompose the cohort difference in the role of marriage for women's income at ages 35 to 42 (0.206). The increase in the role of marriage in the later-born cohorts is mostly driven by changes in the components constituting marital sorting (78~89%), particularly, changes in $\hat{\beta}_{ip}$ (51~57%) and the direct path (31~34%). This

finding implies that the cohort trend of an increasing role of marriage among daughters at ages 35-42 is largely due to marital sorting, especially because women's earnings become less strongly associated with their parents' income as they age.

Table 6 about here

*The Role of Education*

We conducted a set of mediation analyses to examine the roles of daughter's and her husband's education in accounting for the main patterns uncovered in our earlier analyses. We present the results in Table 7, in which we show the estimates before ("Total") and after conditioning on education ("Net of education") and the difference between them as an indicator of the mediating effect of education ("Through education").

Table 7 about here

In Table 5 we saw that the average parental income gap between the married and the non-married contributed to the growing role of marital status over the life course. The top panel of Table 7 shows how education mediates this gap. The figures in the final column show that, for both cohorts, daughter's education plays only a minor role in explaining the emerging parental income advantage for marriage among women as they age. At ages 35-42, relative to ages 27-34, women from disadvantaged backgrounds are less likely than women from advantaged backgrounds to stay married, and this gap emerges mostly among

women with the same level of education (84% and 80% for each cohort) rather than being due to differences in education. This suggests that the advance in education among women with disadvantaged origins (Buchmann and DiPrete 2006) was not rewarded in the marriage market inasmuch as they were more likely to be unmarried than those with advantaged origins (Musick et al. 2012).

The second panel shows how education accounts for the notable increase in the direct path between parental income and daughter's spouse's earnings, $\hat{b}_{sp|i}$, from 0.29~0.30 at ages 27-34 to 0.38~0.47 at ages 35-42 by 0.08 and 0.18 for each cohort (also see Table 5). The direct path is statistically significantly mediated by education across all different sample specifications. More importantly, the increase over the life course in the direct path is largely and statistically significantly "through education" (from 0.13 to 0.25 for the older cohort and from 0.11 to 0.22 for the younger cohort, by about 0.11 for both cohorts), not "net of education" (by -0.03 and 0.07 for each cohort). This suggests that the pathway "parental income → daughter's education → spouse's education → spouse's earnings", which is illustrated in Figure 1B, played a significant role. Since the first two links, parental income → daughter's education and daughter's education → spouse's education, remain largely unchanged once they are determined at an early age, we can reason that the last link, spouse's education → spouse's education, is the primary driver of the increased role of the direct path. This link captures a husband's increasing earnings returns to education as his career advances. This finding is generally consistent with our

theoretical discussion: as they reach mature ages (late 30s and early 40s), daughters' earlier indicators of socioeconomic status, such as family origins and education, become increasingly better aligned with their husband's education and earnings, regardless of her own earnings. If we extend this pathway to husband's family origin, our result also implies that a stronger homogamous pattern by parental income may emerges as spouses enter their late-30s (though we cannot test this speculation).

In the third panel, we show the extent to which education explains the weakening association between parental income and daughter's own earnings as women age, particularly for the later birth cohort (-0.03 for the earlier cohort, -0.28 for the later cohort), as reported in Tables 5 and 6. The analysis suggests that education is a significant mediator both statistically and substantively, but the cohort change in the decrease in the association between parental income and daughter's own earnings, -0.25=-0.28-(-0.03), is disproportionately "net of education" (-0.21=-0.20-0.01) rather than "through education" (-0.05=-0.09-(-0.04)). This suggests that the earnings of the younger cohort of women at 35-42 deviate more from their earnings potential (based on their education and family origin) compared with the older cohort. But this difference is not observed at younger ages. It appears that women become dissimilar to men in terms of the intergenerational transmission of family income, and this is at odds with what we might have expected from the evidence of increasing resemblance between men and women with respect to education and earnings (Gonalons-Pons and Schwartz 2017; Schwartz 2013). The result also suggests

that the weakening of the IGE of daughter's own earnings with respect to parents' income is not a consequence of the educational success of women from disadvantaged backgrounds: rather, it seems to be linked to delayed family formation, particularly among college-educated women born after 1965. These women are more weakly engaged with labor markets during their mid-30s and early-40s because of their delayed entry into marriage and parenthood, a pattern not observed in earlier birth cohorts (Goldin and Mitchell 2017).

The bottom panel of Table 7 reports the role of the association between the spouses' levels of education in the income association. The very small estimates of change (between -0.01 and 0.01) suggest trivial impacts on changes in the spousal correlation of earnings over the life course and across birth cohorts of both educational assortative mating and income dynamics after marriage. This does not mean that the changing role of educational assortative mating over the life course and across cohorts does not deserve attention. Our results suggest that its family income benefit (that is, spouse's earnings return to education) increased and so did the reward from mating with a better-educated partner.

**DISCUSSION**

We have assessed the overall role of marriage in the intergenerational transmission of family income using PSID data and a new decomposition approach. We uncovered several notable findings. Marriage plays a negligible role in the intergenerational transmission of

family income for young men and young women alike but, as they grow older, marriage emerges as a significant channel for transmission to daughters but not sons. Thus, the genders diverge, and this divergence is larger in the more recent cohort. Marriage affects intergenerational transmission to daughters when they are older mostly because of the stratifying role of parental income in marital status and, in marital sorting, the growing importance of the direct path from parental income to husband's earnings net of daughter's own earnings. But the increase over cohorts in the importance of marriage for intergenerational transmission to daughters was driven by the weakening indirect path in marital sorting, especially the weakening association between parental income and daughter's own earnings at older ages. Education explains some of these results. In particular, a major source of the significant role of marriage at ages 35-42, but not earlier, is the increasing returns to husbands' education as their career advances. The growing role of marital sorting in the later-born cohort, which is explained by the weakening association between parental income and daughter's own earnings at ages 35-42, has little to do with educational attainment. Delays in marriage and childbirth among women in the later cohort are a more plausible explanation for this change (Goldin and Mitchell 2017).

What do these empirical findings tell us about the role of marriage in the intergenerational reproduction of inequality in the United States? They suggest that marriage is important only for the transmission from parents to daughters and only in the long, rather than short term. The marriage market return to parents' intentional or

unintentional investments in a daughter develops over the life course. The traditional understanding of how marriage reinforces intergenerational closure emphasizes socioeconomic status homogamy (in education, earnings, or family origin) as a disequalizing, resource-pooling process. Our results lead us to refine this picture. Assortative mating by education and earnings is an important mechanism for intergenerational reproduction but only in conjunction with the income gain from educational assortative mating. Our study thus sheds new light on the role of assortative mating in intergenerational mobility.

Our theoretical contribution is our model of how marriage (entry and sorting) plays a role in the intergenerational transmission of family's economic status (see Figure 1B for the stylistic presentation). A primary feature of our model is that it elaborates how two major sources of marital sorting, educational assortative mating and the division of labor, are affected by parental origin and contribute to family income. A central generic mechanism we highlight is the earnings return to education, which drives both life course changes through the growing educational gap in age-earnings profiles (Card 1999; Elman and O'Rand 2004) and cohort changes (Autor 2014; Cherlin 2010; Goldin and Mitchell 2017). Our model also extends economic theories, in which the earnings return to education is a central factor in explaining the intergenerational mobility of labor earnings (Becker 1991; Solon 2004), by incorporating gender. By taking account of the education and earnings of both spouses in our model of marriage and family income we can see that

seemingly gender-neutral social changes have gendered impacts. Because women continue to have a weaker attachment to the labor market, rising earnings returns to education may suppress the importance of marriage for men but boost it for women. Our empirical findings are in line with this reasoning.

Our study could usefully be extended in several directions. We know that the role of marriage in life course mobility varies across societies depending on their institutional characteristics (DiPrete 2002). In Nordic countries, marriage and childrearing do not necessarily weaken married women's career potential and therefore do not lead to a growing role of marriage as women grow older (Breen and Andersen 2012; DiPrete 2002). This differs from what is observed in the US and may also be unlike what happens in conservative, male-breadwinner countries like Germany. Applying our decomposition approach to other countries, so as to compare them with the US, would be an important and valuable extension of our work. Our study could also be extended to a multigenerational context. Because inequality transmitted from parents to their child's family through marriage is likely to translate into inequality in resources and opportunities for grandchildren (McLanahan 2004), the findings of our research once again show the centrality of marriage as the multigenerational nexus of family (dis)advantages (e.g., Song 2016) and its growing importance in shaping opportunities in successive generations.

Lastly, our analytical approach could be extended to incorporate substantively important mechanisms of family formation, such as childbearing. Currently, our method

takes a two-person model in which spouses pool their personal earnings, assuming no variation in how couples share their income. But sharing differences arise when couples have different numbers of children and this also leads to additional gender differences in the intergenerational transmission of family income across life stages and birth cohorts because of motherhood penalties. Using equivalized family income (e.g., family income divided by the square root of family size), instead of pooled family income, would be a straightforward approach to address this issue. A more ambitious extension of our approach would be to consider counterfactual marriage outcomes (such as marital sorting) for those who remain unmarried. If women select into or out of marriage, based on the prospects of acquiring an acceptable spouse (Edin and Kefalas 2005) or on the prospects of the current marital relationship (Smock, Manning, and Gupta 1999), the contributions of marital status and marital sorting will not be independent. Addressing such non-random selection into marriage would be a first step to developing a causal analysis of the process of intergenerational transmission.

**ENDNOTES**

1. We use earnings to refer to the earnings of individuals and income to refer to the pooled earnings of family members.

2. But parental economic resources may have the opposite effect because young adults from advantaged backgrounds may have a weaker incentive to leave home (Mooyaart and Liefbroer 2016).

3. The log of the sum of both spouse's earnings is not equal to the sum of the logs of their individual earnings. Log couple income can be expressed in various ways, but we follow Chadwick & Solon (2002): log spouse's earnings, $\ln(y_s)$ minus the log of the relative contribution of spouse's earnings to couple income, $\ln\left(\frac{y_s}{y_i+y_s}\right)$.

4. $\hat{b}_{si}$ is $\hat{\beta}_{si} - \hat{\beta}_{S^*i}$, where $S^* = \frac{y_s}{y_i+y_s}$ and $\hat{\beta}_{si}$ and $\hat{\beta}_{S^*i}$ are respectively the regression coefficients between $\ln(y_i)$ and $\ln(y_s)$ and between $\ln(y_i)$ and $\ln(S^*)$. As combined, these individual elasticity estimates represent the overall association between $y_i$ and $y_s$. Likewise, $\hat{b}_{sp|i}$ is $\hat{\beta}_{sp|i} - \hat{\beta}_{S^*p|i}$.

5. In Equation 3, we mark these contrasting properties of **(a)** and **(c)** using (+) and (-) respectively.

6. Excluding the immigrant samples might lead to a bias in estimating the intergenerational

income elasticity because the mobility experiences of immigrant children can be different from their native-born counterparts (Borjas 2006). Our PSID sample includes immigrants living in the US in the late 1960s.

7. It is well known that life cycle variation in offspring's earnings biases the IGE in lifetime earnings. Two major biases are (1) life cycle bias and (2) age-related errors-in-variables (Torche 2015). They imply that the IGE is likely to be underestimated when child's earnings are measured in early adulthood (e.g., 20s). Life cycle bias emerges because of steeper earnings growth for high earners. Age-related errors-in-variables can lead to an underestimation because the random or transitory component of earnings contributes more to the variance of earnings among younger people. We justify our life cycle approach based on two arguments. On the one hand, life cycle bias is not just a bias that should be corrected but a substantive pattern that reflects social processes. Indeed, our discussion about the direct path in marital sorting suggests diverging age trajectories of spousal earnings across individuals with different parental origins. On the other hand, our analysis is less sensitive to age-related errors-in-variables because the comparisons we make across life cycle stages are not in the IGE of earnings but in the difference between two IGE estimates (this is our measure of the role of marriage). Our empirical results also suggest that age-related errors-in-variables are minimal. For instance, we found that the role of marriage hardly changed across age among men in the PSID. The gender difference we discovered in this respect appears, therefore, not to be related to

any age-related errors-in-variables.

8. Our analytical framework incorporates life course dynamics of family status and long-term family status by looking at two different seven-year long life course stages (age 27-34 and 35-42). This allows us to account for time-varying family status dynamics (e.g., transitions between being single, married, divorced, remarried) only partially. But we believe we can still see a meaningful shift in family status between relatively early adulthood and the mature and middle-aged adulthood.

9. We explore this declining trend in marriage by age in more detail in the online supplement A.

10. In the interest of clarity, Panel B of Table 1 uses four educational categories instead of five, combining BA and postgraduate qualifications.

11. We report the more detailed estimates of individual parameters constituting (a), (b), (c) and (d) in the online supplement (Tables B1 and B2).

12. This is not consistent with previous studies which highlighted the role of assortative mating (Chadwick and Solon 2002; Ermisch et al. 2006; Hirvonen 2008). This discrepancy is probably due to our distinguishing the indirect from the direct path which was not done in these earlier studies.

**Appendix A: The Formal Derivation of the Decomposition of $\widehat{\boldsymbol{\beta}}_{\boldsymbol{cp}} - \widehat{\boldsymbol{\beta}}_{\boldsymbol{ip}}$**

The family income IGE is estimated by

$$\hat{\beta}_{cp} = \frac{\mathrm{Cov}(\ln y_p , \ln y_c)}{\mathrm{Var}(\ln y_p)} \tag{1}$$

We can break down the IGE, $\hat{\beta}_{cp}$, into the family income IGEs of two marital-status groups, the married and the non-married, with weights that are made up of parameters measuring characteristics of the two groups and their differences as follows:

$$\begin{aligned}\hat{\beta}_{cp} = {} & \frac{\pi(1-\pi)\Delta_p}{(1-\pi)\mathrm{Var}\left(\ln y_{p|M=0}\right) + \pi\theta\mathrm{Var}\left(\ln y_{p|M=0}\right) + \pi(1-\pi)\Delta_p^2}\Delta_c \\ & + \frac{\mathrm{Var}\left(\ln y_{p|M=0}\right)}{(1-\pi)\mathrm{Var}\left(\ln y_{p|M=0}\right) + \pi\theta\mathrm{Var}\left(\ln y_{p|M=0}\right) + \pi(1-\pi)\Delta_p^2} \\ & \left((1-\pi)\hat{\beta}_{cp|M=0} + \pi\hat{\beta}_{cp|M=1}\right)\end{aligned} \tag{2}$$

where $\pi$ denotes the proportion of married individuals, $\theta$ the ratio of the variance of parental income of the married to that of the non-married, $\frac{\mathrm{Var}(\ln y_{p|M=1})}{\mathrm{Var}(\ln y_{p|M=0})}$, and $\Delta_p$ and $\Delta_c$ respectively denote the differences between the married and the non-married in mean logged parental income and mean logged child's family income. That is, $\Delta_p = \overline{\ln (y_{p|M=1})} - \overline{\ln (y_{p|M=0})}$, and $\Delta_c = \overline{\ln (y_{c|M=1})} - \overline{\ln (y_{c|M=0})}$. For the sake of simplicity, we label the common denominator on the right-hand side of (2) *l*.

Similarly, we can write the individual earnings IGE, $\hat{\beta}_{ip}$ in terms of the IGEs and other

components of the two marital status groups:

$$\hat{\beta}_{ip} = \frac{\pi(1-\pi)\Delta_p}{l}\Delta_i + \frac{\mathrm{Var}(\ln y_{p|M=0})}{l}\left((1-\pi)\hat{\beta}_{ip|M=0} + \pi\hat{\beta}_{ip|M=1}\right) \tag{3}$$

where $\Delta_i = \overline{\ln(y_{i|M=1})} - \overline{\ln(y_{i|M=0})}$.

The estimate of the difference between two IGEs, $\hat{\beta}_{cp} - \hat{\beta}_{ip}$, then, is:

$$\hat{\beta}_{cp} - \hat{\beta}_{ip} = \frac{\pi(1-\pi)\Delta_p}{l}(\Delta_c - \Delta_i) + \frac{\pi\theta\mathrm{Var}(\ln y_{p|M=0})}{l}\left(\hat{\beta}_{cp|M=1} - \hat{\beta}_{ip|M=1}\right) \tag{4}$$

where $\Delta_c - \Delta_i = \overline{\ln(y_{c|M=1})} - \overline{\ln(y_{i|M=1})}$.

Since we can express logged couple income in terms of logged spouse's earnings and the share of spouse's earnings in the combined couple income, $S^*$, such that:

$$\ln(y_c) = \ln(y_i + y_s) = \ln(y_s) - \ln\left(\frac{y_s}{y_i + y_s}\right) = \ln(y_s) - \ln(S^*)$$

we can rewrite (4) as follows:

$$\begin{aligned}\hat{\beta}_{cp} - \hat{\beta}_{ip} = {} & \frac{\pi(1-\pi)\Delta_p}{l}\left(\overline{\ln(y_{c|M=1})} - \overline{\ln(y_{i|M=1})}\right) \\ & + \frac{\pi\theta\mathrm{Var}(\ln y_{p|M=0})}{l}\left(\hat{\beta}_{sp|M=1} - \hat{\beta}_{s^*p|M=1} - \hat{\beta}_{ip|M=1}\right)\end{aligned} \tag{4a}$$

where $\hat{\beta}_{s^*p}$ denotes the estimated coefficient from the regression of log $S^*$ on log parental income.

To incorporate the resemblance of two spouses' earnings in the analysis, we can go further using the following equations:

$$\ln(y_s) = \hat{\beta}_{s0} + \hat{\beta}_{si}\ln(y_i) + \widetilde{\ln(y_s)}_{|\iota}$$

$$\ln(S^*) = \hat{\beta}_{s^*0} + \hat{\beta}_{s^*i}\ln(y_i) + \widetilde{\ln(S^*)}_{|\iota}$$

where $\widetilde{\ln(y_s)}_{|\iota}$ and $\widetilde{\ln(S^*)}_{|\iota}$ are the residual logged spouse earnings and the residual log share of spouse earnings that remain unexplained after regressing them on log child's individual earnings. Then, $\hat{\beta}_{sp}$ and $\hat{\beta}_{s^*p}$ in (4a) respectively can be replaced by $\hat{\beta}_{si}\hat{\beta}_{ip} + \tilde{\beta}_{sp|i}$ and $\hat{\beta}_{s^*i}\hat{\beta}_{ip} + \tilde{\beta}_{s^*p|i}$, where $\tilde{\beta}_{sp|i}$ and $\tilde{\beta}_{s^*p|i}$ are the coefficients capturing the association between log parental income and the residual spouse's earnings and the residual spouse's earnings share, net of log child's own personal earnings. The equation finally ends up as:

$$\begin{aligned}\hat{\beta}_{cp} - \hat{\beta}_{ip} = {} & f_1\left(y_{p|M=0}, y_{p|M=1}, \Pr(M=1)\right)\left(\overline{\ln(y_{c|M=1})} - \overline{\ln(y_{\iota|M=1})}\right) \\ & + f_2\left(y_{p|M=0}, y_{p|M=1}, \Pr(M=1)\right) \\ & \left[\left(\hat{\beta}_{si|M=1} - \hat{\beta}_{s^*i|M=1} - 1\right)\hat{\beta}_{ip|M=1} + \left(\tilde{\beta}_{sp|i,M=1} - \tilde{\beta}_{s^*p|i,M=1}\right)\right]\end{aligned} \tag{4b}$$

Where $f_1\left(y_{p|M=0}, y_{p|M=1}, \Pr(M=1)\right) = \frac{\pi(1-\pi)\left(\overline{\ln(y_{p|M=1})} - \overline{\ln(y_{p|M=0})}\right)}{l}$ and

$f_2\left(y_{p|M=0}, y_{p|M=1}, \Pr(M=1)\right) = \frac{\pi\theta \mathrm{Var}(\ln y_{p|M=0})}{l}$.

In (4b), $f_1\left(y_{p|M=0}, y_{p|M=1}, \Pr(M=1)\right)$ and $f_2\left(y_{p|M=0}, y_{p|M=1}, \Pr(M=1)\right)$ ($f_1$ and $f_2$

hereafter) are respectively the function of the proportion of married individuals, $\Pr(M = 1) = \pi$, and parameters characterizing the distributional differences in parental income between two marital status groups, in terms of the mean, $\Delta_p = \overline{\ln(y_{p|M=1})} - \overline{\ln(y_{p|M=0})}$, and in terms of the variance, $\theta = \frac{\mathrm{Var}(\ln y_{p|M=1})}{\mathrm{Var}(\ln y_{p|M=0})}$ and $\mathrm{Var}\left(\ln y_{p|M=0}\right)$.

**Appendix B: Sequential Decomposition**

We adopt a sequential decomposition approach, following DiNardo, Fortin and Lemieux (1996), to examine relative contributions of the parameter components to the overall role of marriage in the intergenerational transmission of family income. In the sequential decomposition, we express a change in the estimate of $\hat{\beta}_{cp} - \hat{\beta}_{ip}$ between two points in time (either age or cohort), say t={1,2}, as a sequence of differences between two time points capturing the effect of individual parameter components on the change in the entire $\hat{\beta}_{cp} - \hat{\beta}_{ip}$ (which captures the role of marriage in intergenerational transmission) as follows:

$$
\begin{aligned}
&\Delta\left(\hat{\beta}_{cp} - \hat{\beta}_{ip}\right) \\
&= \Delta f\left(\pi, \theta, \Delta_p, \lambda, \hat{\beta}_{si|M=1}, \hat{\beta}_{s^*i|M=1}, \hat{\beta}_{ip|M=1}, \tilde{\beta}_{sp|i,M=1}, \tilde{\beta}_{s^*p|i,M=1}\right) \\
&= f\left(\pi, \theta, \Delta_p, \lambda, \hat{\beta}_{si|M=1}, \hat{\beta}_{s^*i|M=1}, \hat{\beta}_{ip|M=1}, \tilde{\beta}_{sp|i,M=1}, \tilde{\beta}_{s^*p|i,M=1} \middle| t=2\right) \\
&\qquad - f\left(\pi \middle| t=1;\ \theta, \Delta_p, \lambda, \hat{\beta}_{si|M=1}, \hat{\beta}_{s^*i|M=1}, \hat{\beta}_{ip|M=1}, \tilde{\beta}_{sp|i,M=1}, \tilde{\beta}_{s^*p|i,M=1} \middle| t=2\right) \\
&\quad + f\left(\pi \middle| t=1;\ \theta, \Delta_p, \lambda, \hat{\beta}_{si|M=1}, \hat{\beta}_{s^*i|M=1}, \hat{\beta}_{ip|M=1}, \tilde{\beta}_{sp|i,M=1}, \tilde{\beta}_{s^*p|i,M=1} \middle| t=2\right) \\
&\qquad - f\left(\pi, \theta \middle| t=1;\ \Delta_p, \lambda, \hat{\beta}_{si|M=1}, \hat{\beta}_{s^*i|M=1}, \hat{\beta}_{ip|M=1}, \tilde{\beta}_{sp|i,M=1}, \tilde{\beta}_{s^*p|i,M=1} \middle| t=2\right) \\
&\quad + f\left(\pi, \theta \middle| t=1;\ \Delta_p, \lambda, \hat{\beta}_{si|M=1}, \hat{\beta}_{s^*i|M=1}, \hat{\beta}_{ip|M=1}, \tilde{\beta}_{sp|i,M=1}, \tilde{\beta}_{s^*p|i,M=1} \middle| t=2\right) \\
&\qquad - f\left(\pi, \theta, \Delta_p \middle| t=1;\ \lambda, \hat{\beta}_{si|M=1}, \hat{\beta}_{s^*i|M=1}, \hat{\beta}_{ip|M=1}, \tilde{\beta}_{sp|i,M=1}, \tilde{\beta}_{s^*p|i,M=1} \middle| t=2\right) \\
&+ f\left(\pi, \theta, \Delta_p, \lambda, \hat{\beta}_{si|M=1}, \hat{\beta}_{s^*i|M=1}, \hat{\beta}_{ip|M=1}, \tilde{\beta}_{sp|i,M=1} \middle| t=1;\ \tilde{\beta}_{s^*p|i,M=1} \middle| t=2\right) \\
&\qquad - f\left(\pi, \theta, \Delta_p, \lambda, \hat{\beta}_{si|M=1}, \hat{\beta}_{s^*i|M=1}, \hat{\beta}_{ip|M=1}, \tilde{\beta}_{sp|i,M=1}, \tilde{\beta}_{s^*p|i,M=1} \middle| t=1\right)
\end{aligned}
$$

where $f(\cdot)$ indicates $\hat{\beta}_{cp} - \hat{\beta}_{ip}$ as a function of the nine parameters as specified in Appendix A. The first difference on the right-hand side represents the effect of the proportion of married individuals, $\pi$, since the second term shows a counterfactual where the value of $\pi$ is fixed at its value at $t = 1$ while all the other parameters take their $t = 2$ values. Likewise, the second difference represents the effect of the ratio of the variance of parental income among married people to that among the unmarried, $\theta$. By constructing a sequence of counterfactuals in this way, we identify the effect of all components on the change in the role of marriage. One limitation of this approach is its sensitivity to the order of the sequence. To address this concern, we report results based on two alternative orders, but the results are not sensitive to which order we take (see Tables 5 and 6).

## References


Abendroth, Anja-Kristin, Matt L. Huffman, and Judith Treas. 2014. "The Parity Penalty in Life Course Perspective Motherhood and Occupational Status in 13 European Countries." *American Sociological Review* 79(5):993–1014.

Autor, David H. 2014. "Skills, Education, and the Rise of Earnings Inequality among the 'Other 99 Percent.'" *Science* 344(6186):843–51.

Baker, Michael and Gary Solon. 2003. "Earnings Dynamics and Inequality among Canadian Men, 1976–1992: Evidence from Longitudinal Income Tax Records." *Journal of Labor Economics* 21(2):289–321.

Becker, Gary S. 1991. *A Treatise on the Family*. Cambridge, MA: Harvard University Press.

Beller, Emily. 2009. "Bringing Intergenerational Social Mobility Research into the Twenty-First Century: Why Mothers Matter." *American Sociological Review* 74(4):507–28.

Bills, David B., Valentina Di Stasio, and Klarita Gërxhani. 2017. "The Demand Side of Hiring: Employers in the Labor Market." *Annual Review of Sociology* 43(1):291–310.

Björklund, Anders and Markus Jäntti. 2009. "Intergenerational Income Mobility and the Role of Family Background." Pp. 491–521 in *The Oxford Handbook of Economic Inequality*, edited by S. Wiemer, B. Nolan, and T. M. Smeeding. Oxford, UK: Oxford University Press.

Blau, Peter M. and Otis Dudley Duncan. 1967. *The American Occupational Structure*. New York: John Wiley & Sons.

Blossfeld, Hans-Peter. 2009. "Educational Assortative Marriage in Comparative Perspective." *Annual Review of Sociology* 35:513–30.

Borjas, George J. 2006. "Making It in America: Social Mobility in the Immigrant Population." *The Future of Children* 16(2):55–71.

Breen, Richard, ed. 2004. *Social Mobility in Europe*. Oxford: Oxford University Press.

Breen, Richard and Signe Hald Andersen. 2012. "Educational Assortative Mating and Income Inequality in Denmark." *Demography* 49(3):867–87.

Breen, Richard and Leire Salazar. 2011. "Educational Assortative Mating and Earnings Inequality in the United States." *American Journal of Sociology* 117(3):808–43.

Brons, M. D. (Anne), Aart C. Liefbroer, and Harry B. G. Ganzeboom. 2017. "Parental Socio-Economic Status and First Union Formation: Can European Variation Be Explained by the Second

Demographic Transition Theory?" *European Sociological Review* 33(6):809–22.

Buchmann, Claudia and Thomas A. DiPrete. 2006. "The Growing Female Advantage in College Completion: The Role of Family Background and Academic Achievement." *American Sociological Review* 71(4):515–41.

Carbone, June and Naomi Cahn. 2015. *Marriage Markets: How Inequality Is Remaking the American Family*. Reprint edition. Oxford University Press.

Card, David. 1999. "The Causal Effect of Education on Earnings." Pp. 1801–63 in *Handbook of Labor Economics*. Vol. 3, part A, edited by O. C. Ashenfelter and D. Card. Amsterdam: Elsevier.

Cavanagh, Shannon E. 2011. "Early Pubertal Timing and the Union Formation Behaviors of Young Women." *Social Forces* 89(4):1217–38.

Chadwick, Laura and Gary Solon. 2002. "Intergenerational Income Mobility among Daughters." *The American Economic Review* 92(1):335–44.

Charles, Kerwin Kofi, Erik Hurst, and Alexandra Killewald. 2013. "Marital Sorting and Parental Wealth." *Demography* 50(1):51–70.

Cheng, Siwei. 2016. "The Accumulation of (Dis)Advantage: The Intersection of Gender and Race in the Long-Term Wage Effect of Marriage." *American Sociological Review* 81(1):29–56.

Cherlin, Andrew J. 2004. "The Deinstitutionalization of American Marriage." *Journal of Marriage and Family* 66(4):848–61.

Cherlin, Andrew J. 2010. "Demographic Trends in the United States: A Review of Research in the 2000s." *Journal of Marriage and Family* 72(3):403–19.

Correll, Shelley J., Stephen Benard, and In Paik. 2007. "Getting a Job: Is There a Motherhood Penalty?" *American Journal of Sociology* 112(5):1297–1339.

DiNardo, John, Nicole M. Fortin, and Thomas Lemieux. 1996. "Labor Market Institutions and the Distribution of Wages, 1973-1992: A Semiparametric Approach." *Econometrica* 64(5):1001–44.

DiPrete, Thomas A. 2002. "Life Course Risks, Mobility Regimes, and Mobility Consequences: A Comparison of Sweden, Germany, and the United States." *American Journal of Sociology* 108(2):267–309.

Diprete, Thomas A. and Claudia Buchmann. 2006. "Gender-Specific Trends in the Value of Education and the Emerging Gender Gap in College Completion." *Demography* 43(1):1–24.

Edin, Kathryn and Maria J. Kefalas. 2005. *Promises I Can Keep: Why Poor Women Put Motherhood*

*Before Marriage*. University of California Press.

Eika, Lasse, Magne Mogstad, and Basit Zafar. 2019. "Educational Assortative Mating and Household Income Inequality." *Journal of Political Economy* 127(6).

Elman, Cheryl and Angela M. O'Rand. 2004. "The Race Is to the Swift: Socioeconomic Origins, Adult Education, and Wage Attainment." *American Journal of Sociology* 110(1):123–60.

Erikson, Robert and John H. Goldthorpe. 1992. *The Constant Flux: A Study of Class Mobility in Industrial Societies*. Oxford, UK: Oxford University Press.

Ermisch, John, Marco Francesconi, and Thomas Siedler. 2006. "Intergenerational Mobility and Marital Sorting." *The Economic Journal* 116(513):659–79.

Glass, David. 1954. *Social Mobility in Britain*. London: Routledge & Kegan Paul.

Goldin, Claudia and Joshua Mitchell. 2017. "The New Life Cycle of Women's Employment: Disappearing Humps, Sagging Middles, Expanding Tops." *Journal of Economic Perspectives* 31(1):161–82.

Goldstein, Joshua R. and Catherine T. Kenney. 2001. "Marriage Delayed or Marriage Forgone? New Cohort Forecasts of First Marriage for U.S. Women." *American Sociological Review* 66(4):506–19.

Gonalons-Pons, Pilar and Christine R. Schwartz. 2017. "Trends in Economic Homogamy: Changes in Assortative Mating or the Division of Labor in Marriage?" *Demography* 54(3):985–1005.

Haider, Steven and Gary Solon. 2006. "Life-Cycle Variation in the Association between Current and Lifetime Earnings." *The American Economic Review* 96(4):1308–20.

Hamilton, Laura, Josipa Roksa, and Kelly Nielsen. 2018. "Providing a '"Leg Up"': Parental Involvement and Opportunity Hoarding in College." *Sociology of Education* 91(2):111–31.

Harding, David J. 2003. "Counterfactual Models of Neighborhood Effects: The Effect of Neighborhood Poverty on Dropping Out and Teenage Pregnancy." *American Journal of Sociology* 109(3):676–719.

Henz, Ursula and Colin Mills. 2018. "Social Class Origin and Assortative Mating in Britain, 1949–2010." *Sociology* 52(6):1217–36.

Hirvonen, Lalaina H. 2008. "Intergenerational Earnings Mobility Among Daughters and Sons: Evidence from Sweden and a Comparison with the United States." *American Journal of Economics and Sociology* 67(5):777–826.

Hu, Yang. 2016. "Marriage of Matching Doors: Marital Sorting on Parental Background in China."

*Demographic Research* 35(20):557–80.

Kalleberg, Arne L. 2009. "Precarious Work, Insecure Workers: Employment Relations in Transition." *American Sociological Review* 74(1):1–22.

Kalmijn, Matthijs. 1991. "Status Homogamy in the United States." *American Journal of Sociology* 97(2):496–523.

Kalmijn, Matthijs. 1998. "Intermarriage and Homogamy: Causes, Patterns, Trends." *Annual Review of Sociology* 24(1):395–421.

Killewald, Alexandra. 2013. "A Reconsideration of the Fatherhood Premium Marriage, Coresidence, Biology, and Fathers' Wages." *American Sociological Review* 78(1):96–116.

Lam, David and Robert F. Schoeni. 1994. "Family Ties and Labor Markets in the United States and Brazil." *The Journal of Human Resources* 29(4):1235–58.

Lareau, Annette. 2011. *Unequal Childhoods: Class, Race, and Family Life, Second Edition with an Update a Decade Later*. 2nd Revised edition edition. Berkeley: University of California Press.

Lipset, Seymour Martin and Reinhard Bendix. 1959. *Social Mobility in Industrial Society*. Berkeley: University of California Press.

Mäenpää, Elina. 2015. "Homogamy in Educational Level and Parental Social Class in Finland: A Log-Linear Analysis." *European Sociological Review* 31(3):253–67.

Mare, Robert D. 2016. "Educational Homogamy in Two Gilded Ages: Evidence from Inter-Generational Social Mobility Data." *The ANNALS of the American Academy of Political and Social Science* 663(1):117–39.

Martin, Steven P. 2006. "Trends in Marital Dissolution by Women's Education in the United States." *Demographic Research* 15(20):537–60.

Mayer, Susan E. 1997. *What Money Can't Buy: Family Income and Children's Life Chances*. Cambridge, MA: Harvard University Press.

McCall, Leslie and Christine Percheski. 2010. "Income Inequality: New Trends and Research Directions." *Annual Review of Sociology* 36(1):329–47.

McGonagle, Katherine A., Robert F. Schoeni, Narayan Sastry, and Vicki A. Freedman. 2012. "The Panel Study of Income Dynamics: Overview, Recent Innovations, and Potential for Life Course Research." *Longitudinal and Life Course Studies* 3(2):268–84.

McLanahan, Sara. 2004. "Diverging Destinies: How Children Are Faring under the Second Demographic Transition." *Demography* 41(4):607–27.

Mills, Melinda, Ronald R. Rindfuss, Peter McDonald, and Egbert te Velde. 2011. "Why Do People Postpone Parenthood? Reasons and Social Policy Incentives." *Human Reproduction Update* 17(6):848–60.

Mooyaart, Jarl E. and Aart C. Liefbroer. 2016. "The Influence of Parental Education on Timing and Type of Union Formation: Changes Over the Life Course and Over Time in the Netherlands." *Demography* 53(4):885–919.

Musick, Kelly, Jennie E. Brand, and Dwight Davis. 2012. "Variation in the Relationship Between Education and Marriage: Marriage Market Mismatch?" *Journal of Marriage and Family* 74(1):53–69.

Oppenheimer, Valerie Kincade. 1988. "A Theory of Marriage Timing." *American Journal of Sociology* 94(3):563–91.

Pfeffer, Fabian T. and Alexandra Killewald. 2018. "Generations of Advantage. Multigenerational Correlations in Family Wealth." *Social Forces* 96(4):1411–42.

Schwartz, Christine R. 2010. "Earnings Inequality and the Changing Association between Spouses' Earnings." *American Journal of Sociology* 115(5):1524–57.

Schwartz, Christine R. 2013. "Trends and Variation in Assortative Mating: Causes and Consequences." *Annual Review of Sociology* 39(1):451–70.

Schwartz, Christine R. and Robert D. Mare. 2005. "Trends in Educational Assortative Marriage from 1940 to 2003." *Demography* 42(4):621–46.

Smock, Pamela J., Wendy D. Manning, and Sanjiv Gupta. 1999. "The Effect of Marriage and Divorce on Women's Economic Well-Being." *American Sociological Review* 64(6):794–812.

Solon, Gary. 2004. "A Model of Intergenerational Mobility Variation over Time and Place." Pp. 38–47 in *Generational Income Mobility in North America and Europe*, edited by M. Corak. New York: Cambridge University Press.

Song, Xi. 2016. "Diverging Mobility Trajectories: Grandparent Effects on Educational Attainment in One- and Two-Parent Families in the United States." *Demography* 53(6):1905–32.

South, Scott J. 2001. "The Variable Effects of Family Background on the Timing of First Marriage: United States, 1969–1993." *Social Science Research* 30(4):606–26.

Sweeney, Megan M. 2002. "Two Decades of Family Change: The Shifting Economic Foundations of Marriage." *American Sociological Review* 67(1):132–47.

Tach, Laura. 2015. "Social Mobility in an Era of Family Instability and Complexity." *The ANNALS of the American Academy of Political and Social Science* 657(1):83–96.

Torche, Florencia. 2011. "Is a College Degree Still the Great Equalizer? Intergenerational Mobility across Levels of Schooling in the United States." *American Journal of Sociology* 117(3):763–807.

Torche, Florencia. 2015. "Analyses of Intergenerational Mobility: An Interdisciplinary Review." *The ANNALS of the American Academy of Political and Social Science* 657(1):37–62.

Uecker, Jeremy E. and Charles E. Stokes. 2008. "Early Marriage in the United States." *Journal of Marriage and Family* 70(4):835–46.

Uunk, Wilfred J. G., Harry B. G. Ganzeboom, and Péter Róbert. 1996. "Bivariate and Multivariate Scaled Association Models. An Application to Homogamy of Social Origin and Education in Hungary between 1930 and 1979." *Quality and Quantity* 30(3):323–43.

Weeden, Kim A. and David B. Grusky. 2005. "The Case for a New Class Map." *American Journal of Sociology* 111(1):141–212.

Xie, Yu, Siwei Cheng, and Xiang Zhou. 2015. "Assortative Mating without Assortative Preference." *Proceedings of the National Academy of Sciences* 112(19):5974–78.

Table 1. Descriptive Statistics

| | | Men | | | | | | Women | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Aged 27-34 | | | Aged 35-42 | | | Aged 27-34 | | | Aged 35-42 | | |
| *A: Marital status and income* | | Mean | SD | N | Mean | SD | N | Mean | SD | N | Mean | SD | N |
| Born 1950-62 | Own earnings | 37,637 | 24,495 | 771 | 47,230 | 52,108 | 713 | 16,907 | 15,248 | 823 | 22,305 | 23,799 | 775 |
| | Married | 0.86 | | 771 | 0.87 | | 713 | 0.84 | | 823 | 0.83 | | 775 |
| | Spouse earnings | 15,841 | 15,018 | 664 | 20,477 | 21,454 | 625 | 39,922 | 24,109 | 688 | 46,910 | 44,260 | 642 |
| | Parental income, 14-22 | 69,575 | 38,283 | 771 | 70,397 | 37,718 | 713 | 67,303 | 42,673 | 823 | 68,262 | 43,339 | 775 |
| Born 1963-75 | Own earnings | 37,957 | 28,891 | 691 | 53,382 | 86,333 | 618 | 22,197 | 19,488 | 700 | 26,049 | 27,568 | 651 |
| | Married | 0.80 | | 691 | 0.824 | | 618 | 0.82 | | 700 | 0.78 | | 651 |
| | Spouse earnings | 21,158 | 18,000 | 553 | 24,964 | 28,043 | 509 | 40,947 | 29,509 | 575 | 51,196 | 52,931 | 506 |
| | Parental income, 14-22 | 70,952 | 49,265 | 691 | 71,465 | 50,646 | 618 | 72,246 | 61,548 | 700 | 73,135 | 63,155 | 651 |
| *B: Educational attainment* | | LTH | HS | SC | Col+ | LTH | HS | SC | Col+ | LTH | HS | SC | Col+ | LTH | HS | SC | Col+ |
| Born 1950-62 | Own education | 0.11 | 0.36 | 0.25 | 0.29 | 0.10 | 0.37 | 0.23 | 0.31 | 0.10 | 0.35 | 0.29 | 0.26 | 0.10 | 0.34 | 0.29 | 0.27 |
| | Spouse Education | 0.08 | 0.38 | 0.27 | 0.27 | 0.09 | 0.36 | 0.25 | 0.30 | 0.11 | 0.35 | 0.24 | 0.29 | 0.12 | 0.33 | 0.24 | 0.31 |
| Born 1963-75 | Own education | 0.11 | 0.29 | 0.26 | 0.35 | 0.09 | 0.27 | 0.28 | 0.36 | 0.07 | 0.22 | 0.31 | 0.40 | 0.07 | 0.22 | 0.31 | 0.41 |
| | Spouse Education | 0.08 | 0.28 | 0.34 | 0.29 | 0.05 | 0.24 | 0.30 | 0.41 | 0.09 | 0.31 | 0.31 | 0.29 | 0.09 | 0.28 | 0.28 | 0.36 |

Note: LTH: Less than high school; HS: High school graduates or equivalent; SC: Some college; Col+: 4-yrs college graduates plus at least some postgraduate education

Table 2: The Estimates of IGEs and the Contribution of Marriage

| | | Sons | | | Daughters | | |
|---|---|---|---|---|---|---|---|
| | | (1) Family income ($\hat{\beta}_{cp}$) | (2) Individual earnings ($\hat{\beta}_{ip}$) | Difference between (1) and (2) ($\hat{\beta}_{cp} - \hat{\beta}_{cp}$) | (1) Family income ($\hat{\beta}_{cp}$) | (2) Individual earnings ($\hat{\beta}_{ip}$) | Difference between (1) and (2) ($\hat{\beta}_{cp} - \hat{\beta}_{cp}$) |
| Born 1950-62 | Aged 27-34 | 0.676* | 0.717* | -0.041 | 0.576* | 0.568* | 0.008 |
| | | (0.068) | (0.072) | (0.157) | (0.072) | (0.130) | (0.158) |
| | Aged 35-42 | 0.594* | 0.621* | -0.026 | 0.678* | 0.453* | 0.225 |
| | | (0.096) | (0.121) | (0.156) | (0.073) | (0.144) | (0.181) |
| Born 1963-75 | Aged 27-34 | 0.557* | 0.564* | -0.007 | 0.527* | 0.549* | -0.023 |
| | | (0.070) | (0.074) | (0.153) | (0.063) | (0.121) | (0.139) |
| | Aged 35-42 | 0.421* | 0.450* | -0.028 | 0.830* | 0.399* | 0.432* |
| | | (0.095) | (0.103) | (0.136) | (0.093) | (0.168) | (0.194) |

*Notes*: Numbers in the parentheses are standard errors. For the estimates of $\hat{\beta}_{cp} - \hat{\beta}_{ip}$, we report bootstrapping standard errors. *: $p$<0.05

Table 3: Estimates of Components Explaining the Contribution of Marriage to the IGE of Family Income

| | Sons | | | | Daughters | | | |
|---|---|---|---|---|---|---|---|---|
| | Born 1950-62 | | Born 1963-75 | | Born 1950-62 | | Born 1963-75 | |
| | Ages 27-34 | Ages 35-42 | Ages 27-34 | Ages 35-42 | Ages 27-34 | Ages 35-42 | Ages 27-34 | Ages 35-42 |
| **(a)** Parental income inequality in marital status (+) | 0.017 | 0.045 | 0.018 | 0.038 | 0.034 | 0.104 | 0.056 | 0.123 |
| **(b)** Average benefit of family income from being married | 0.385 | 0.529 | 0.485 | 0.492 | 1.987 | 1.901 | 1.664 | 2.015 |
| **(a)×(b)** | 0.007 | 0.024 | 0.009 | 0.019 | 0.067 | 0.197 | 0.093 | 0.247 |
| **(c)** Parental income inequality in marital status (-) | 0.851 | 0.869 | 0.832 | 0.844 | 0.815 | 0.776 | 0.757 | 0.675 |
| Indirect path: parents' income ($y_p$) → child's earnings ($y_i$) → spouse's earnings ($y_s$) | -0.171 | -0.392 | -0.166 | -0.163 | -0.369 | -0.342 | -0.443 | -0.198 |
| Direct path: parents' income ($y_p$) → spouse's earnings ($y_s$) | 0.115 | 0.334 | 0.147 | 0.107 | 0.296 | 0.377 | 0.290 | 0.469 |
| **(d)** Parental income inequality through marital sorting (=indirect path + direct path) | -0.056 | -0.058 | -0.019 | -0.056 | -0.073 | 0.035 | -0.154 | 0.271 |
| **(c)×(d)** | -0.048 | -0.050 | -0.016 | -0.047 | -0.059 | 0.027 | -0.116 | 0.183 |
| **(a)×(b)** + **(c)×(d)** | -0.041 | -0.026 | -0.007 | -0.028 | 0.008 | 0.225 | -0.023 | 0.430* |
| N | 771 | 713 | 691 | 618 | 823 | 775 | 700 | 651 |

*Notes*: See Equation 3 for the formal specifications of (a), (b), (c) and (d). *: p<0.05.

Table 4: Decomposition of the Role of Marriage among Daughters at Ages 35 to 42

| | Born 1950-62 | Born 1963-75 |
|---|---|---|
| The total contribution of marriage in the IGE of family income | 0.225 | 0.432* |
| Marital status | **84** | **37** |
| % **(a)**×**(b)** | 88 | 57 |
| Parental income inequality in marital status (+) × Average benefit of family income from being married | | |
| % **(c)** | -4 | -20 |
| Marital sorting **(d)** | **16** | **63** |
| % Indirect path: parental income → daughter's earnings → husband's earnings | -152 | -46 |
| % Direct path: parental income → husband's earnings | 168 | 109 |
| Total | **100** | **100** |

Note: For this decomposition, we first divide the overall role of marriage, $\hat{\beta}_{cp} - \hat{\beta}_{ip}$, into two additive components, (a)*(b) and (c)*(d) and calculate their relative contributions as percentage. To gauge the contribution of marital sorting, (d), separately from (c), we consider the relative magnitude of the marital sorting estimate as a percentage of the overall marriage estimate and figure out how much (c) as a weight deflates the marital sorting estimate.

Table 5: Result from the Sequential Decomposition of Changes in the Role of Marriage in Intergenerational Mobility of Family Income over Daughters' Life Course

| | Born 1950-62 | | Born 1963-75 | |
|---|---|---|---|---|
| | Order 1 | Order 2 (Reverse) | Order 1 | Order 2 (Reverse) |
| Total change in the contribution of marriage | **0.217** **(100)** | **0.217** **(100)** | **0.454*** **(100)** | **0.454*** **(100)** |
| Marital status: **(a)**×**(b)** and **(c)** | **0.129** **(60)** | **0.133** **(61)** | **0.133** **(29)** | **0.166** **(37)** |
| Proportion of the married | 0.007 (3) | 0.003 (1) | 0.018 (4) | 0.023 (5) |
| Ratio in the variance of parental income between the ever-married and the never-married | 0.005 (2) | 0.003 (1) | 0.005 (1) | 0.005 (1) |
| Difference in average parental income between the married and the non-married | 0.121 (56) | 0.136 (63) | 0.090 (20) | 0.095 (21) |
| Average benefit of family income from being married: **(b)** | -0.003 (-1) | -0.009 (-4) | 0.020 (4) | 0.043 (9) |
| Marital sorting: **(d)** | **0.088** **(40)** | **0.084** **(39)** | **0.321** **(71)** | **0.288** **(63)** |
| $\hat{\beta}_{ip}$: parental income → daughter's earnings | 0.020 (9) | 0.019 (9) | 0.188 (41) | 0.170 (37) |
| $\hat{b}_{si}$: daughter's earnings → husband's earnings | 0.002 (1) | 0.002 (1) | -0.002 (0) | -0.004 (-1) |
| $\hat{b}_{sp\|i}$: parental income → husband's earnings net of daughter's earnings | 0.066 (30) | 0.063 (29) | 0.136 (30) | 0.122 (27) |

*Notes*: The numbers in the parentheses show the percentage explained by each component out of total change. *: $p<0.05$

Table 6: Result from the Sequential Decomposition of Change in the Role of Marriage in Intergenerational Mobility of Family Income across Birth Cohorts (Daughters, Aged 35-42)

| | Order 1 | (%) | Order 2 (Reverse) | (%) |
|---|---|---|---|---|
| Total change in the contribution of marriage | **0.206** | **(100)** | **0.206** | **(100)** |
| Marital status: **(a)**×**(b)** and **(c)** | **0.024** | **(11)** | **0.046** | **(22)** |
| Proportion of the married | 0.022 | (10) | 0.036 | (18) |
| Ratio in the variance of parental income between the ever-married and the never-married | -0.041 | (-20) | -0.036 | (-17) |
| Difference in average parental income between the ever-married and the never-married | 0.031 | (15) | 0.031 | (15) |
| Average benefit of family income from being married: **(b)** | 0.012 | (6) | 0.014 | (7) |
| Marital sorting: **(d)** | **0.183** | **(89)** | **0.160** | **(78)** |
| $\hat{\beta}_{ip}$: parental income → daughter's earnings | 0.117 | (57) | 0.105 | (51) |
| $\hat{b}_{si}$: daughter's earnings → husband's earnings | -0.005 | (-3) | -0.008 | (-4) |
| $\hat{b}_{sp\|i}$: parental income → husband's earnings net of daughter's earnings | 0.071 | (34) | 0.063 | (31) |

*Notes*: The numbers in the parentheses show the percentage explained by each component out of total change.

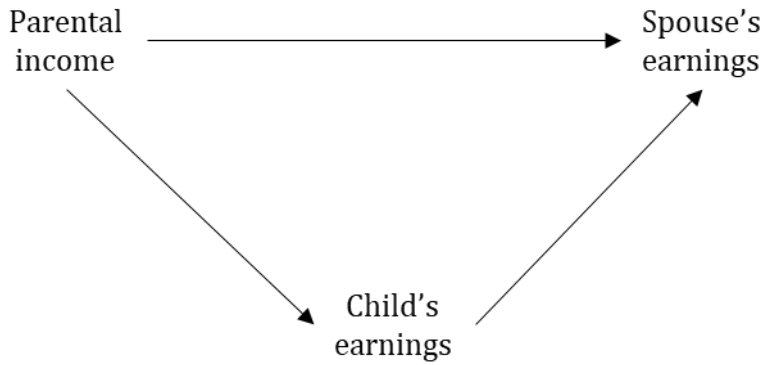
Table 7: The Role of Education in Marital Status and Marital Sorting among Daughters

| | | Ages 27-34 (*A*) | | | Ages 35-42 (*B*) | | | Change between ages 27-34 and ages 35-42 (*B*-*A*) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Total | Net of education | Through education | Total | Net of education | Through education | Total | Net of education | Through education |
| Mean parental income of the married relative to the non-married | 1950-62 cohort | 0.088 (100) | 0.059 (67) | 0.029 (33) | 0.260*** (100) | 0.203*** (78) | 0.057* (22) | 0.172• (100) | 0.144• (84) | 0.028 (16) |
| | 1963-75 cohort | 0.162** (100) | 0.060 (37) | 0.102*** (63) | 0.304*** (100) | 0.174** (57) | 0.130*** (43) | 0.142• (100) | 0.114 (80) | 0.028 (20) |
| Parental income → husband's earnings net of daughter's earnings ($\hat{b}_{sp\|i}$) | 1950-62 cohort | 0.296** (100) | 0.163 (55) | 0.133** (45) | 0.377** (100) | 0.132 (35) | 0.245** (65) | 0.081 (100) | -0.032 (-39) | 0.113• (139) |
| | 1963-75 cohort | 0.290** (100) | 0.177 (61) | 0.112* (39) | 0.469*** (100) | 0.248 (53) | 0.221** (47) | 0.180 (100) | 0.071 (39) | 0.109• (61) |
| Parental income → daughter's earnings ($\hat{\beta}_{ip}$) | 1950-62 cohort | 0.424** (100) | 0.098 (23) | 0.326*** (77) | 0.395* (100) | 0.108 (27) | 0.286*** (73) | -0.029 (100) | 0.010 (-36) | -0.039 (139) |
| | 1963-75 cohort | 0.501*** (100) | 0.129 (26) | 0.372*** (74) | 0.220 (100) | -0.067 (-30) | 0.287*** (130) | -0.280• (100) | -0.196 (70) | -0.085 (30) |
| Daughter's earnings → husband's earnings ($\hat{b}_{si}$) | 1950-62 cohort | 0.130*** (100) | 0.108*** (83) | 0.022* (17) | 0.135*** (100) | 0.116*** (86) | 0.019 (14) | 0.005 (100) | 0.008 (144) | -0.002 (-44) |
| | 1963-75 cohort | 0.116*** (100) | 0.088** (76) | 0.027* (24) | 0.103*** (100) | 0.087** (85) | 0.016 (15) | -0.012 (100) | -0.001 (6) | -0.012 (94) |

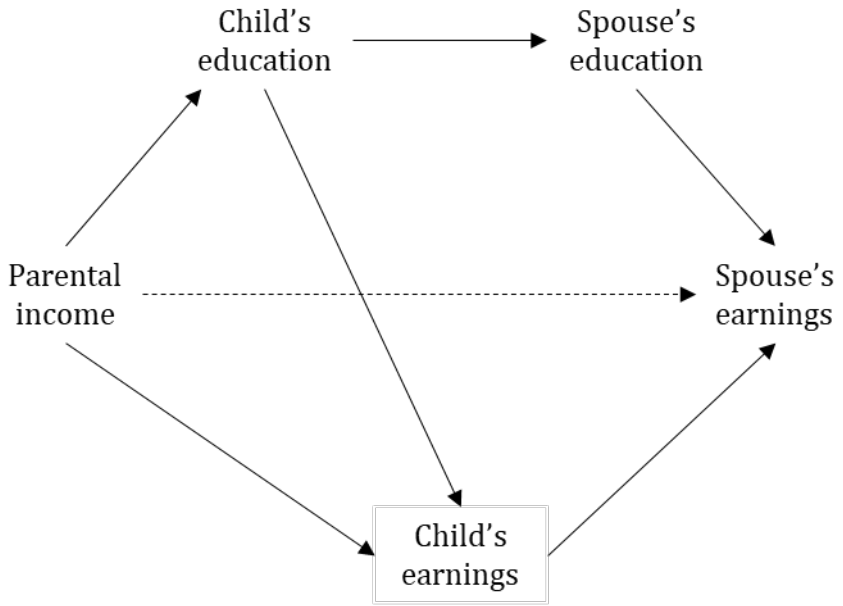
*Note*: Education variables include daughter's own education and, for marital sorting outcomes, her spouse's education. Education variables are measured by the categories of high level of education completed. Standard errors are omitted. Numbers in the parentheses show the percentage of the estimate out of the total association. ***: p<0.001, **: p<0.01, *: p<0.05. • indicates that the coefficient at ages 27-34 (column A) is statistically different from the coefficient at ages 35-42 (column B) at the 0.05 significance level.

Figure 1: Intergenerational Pathways Linking Parental Income to Child's Spouse's Earnings

A: Associational Pathways of Income




B: Associational Pathways of Income and Education




Note: The uni-directional arrows represent associational rather than causal relationships. Unlike the directed acyclic graph (DAG) (Elwert and Winship 2014), these figures do not consider unobserved factors that may be confounding or colliding with observed factors.

# How Marriage Matters for the Intergenerational Mobility of Family Income: Heterogeneity by Gender, Life Course and Birth Cohort

## Online Supplement

**Appendix A: Change in Marital Status by Age**

| | Marital Status | | Men | Women |
|---|---|---|---|---|
| | Ages 27-34 | Ages 35-42 | | |
| Born 1950-62 | Married | Married | 84.2 | 77.2 |
| | Non-married | Married | 4.8 | 6.1 |
| | Married | Non-married | 4.2 | 6.5 |
| | Non-married | Non-married | 6.9 | 10.3 |
| | Total | | 100 | 100 |
| Born 1963-75 | Married | Married | 76.4 | 73.4 |
| | Non-married | Married | 6.4 | 4.3 |
| | Married | Non-married | 6.9 | 9.4 |
| | Non-married | Non-married | 10.3 | 12.9 |
| | Total | | 100 | 100 |

The table of Appendix A suggests that the decrease in the proportion of women who are married is largely due to a larger share of women who become single after marriage dissolution compared with women who newly enter marriage. This is common for both birth cohorts (6.5% versus 6.1% for the older cohort, 9.4% versus 4.3% for the younger cohort). The same pattern is not found among men.

## Appendix B: Detailed Results of the Estimation of Parameters Explaining the Role of Marriage in the IGE of Family Income

Table B1: Estimates for Sons

| | All | | Born 1950-62 | | Born 1963-75 | |
|---|---|---|---|---|---|---|
| | Age 27-34 | Age 35-42 | Age 27-34 | Age 35-42 | Age 27-34 | Age 35-42 |
| Marital status | | | | | | |
| $\pi$ : proportion of the married | 0.832 | 0.852 | 0.861 | 0.877 | 0.800 | 0.824 |
| $\theta = \frac{\mathrm{Var}(\ln y_{p\|M=1})}{\mathrm{Var}(\ln y_{p\|M=0})}$: the ratio of variances in parental income | 1.078 | 1.077 | 0.923 | 0.974 | 1.243 | 1.186 |
| $\mathrm{Var}(\ln y_{p\|M=0})$: the baseline variance (the non-married) | 0.291 | 0.290 | 0.318 | 0.301 | 0.273 | 0.283 |
| $\Delta_p = \overline{\ln(y_{p\|M=1})} - \overline{\ln(y_{p\|M=0})}$ : the mean gap in parental income | 0.040 | 0.104 | 0.043 | 0.123 | 0.037 | 0.087 |
| (a) $f_1(y_{p\|M=0}, y_{p\|M=1}, \pi)$ | 0.018 | 0.042 | 0.017 | 0.045 | 0.018 | 0.038 |
| (c) $f_2(y_{p\|M=0}, y_{p\|M=1}, \pi)$ | 0.842 | 0.857 | 0.851 | 0.869 | 0.832 | 0.844 |
| (b) $\overline{\ln(y_{c\|M=1})} - \overline{\ln(y_{i\|M=1})}$ | 0.430 | 0.512 | 0.385 | 0.529 | 0.485 | 0.492 |
| (a)*(b) $f_1(y_{p\|M=0}, y_{p\|M=1}, \pi) * \left(\overline{\ln(y_{c\|M=1})} - \overline{\ln(y_{i\|M=1})}\right)$ | 0.008 | 0.022 | 0.007 | 0.024 | 0.009 | 0.019 |
| Marital sorting: indirect path + direct path | -0.038 | -0.056 | -0.056 | -0.058 | -0.019 | -0.056 |
| $\hat{\beta}_{si\|M=1} - \hat{\beta}_{s^*i\|M=1}$ | 0.676 | 0.485 | 0.700 | 0.394 | 0.647 | 0.649 |
| $\hat{\beta}_{ip\|M=1}$ | 0.522 | 0.556 | 0.571 | 0.646 | 0.470 | 0.464 |
| Indirect path: $(\hat{\beta}_{si\|M=1} - \hat{\beta}_{s^*i\|M=1} - 1)\hat{\beta}_{ip\|M=1}$ | -0.169 | -0.286 | -0.171 | -0.392 | -0.166 | -0.163 |
| Direct path: $\hat{\beta}_{sp\|i,M=1} - \hat{\beta}_{s^*p\|i,M=1}$ | 0.131 | 0.230 | 0.115 | 0.334 | 0.147 | 0.107 |

| | | | | | | |
|---|---|---|---|---|---|---|
| (c)*(d): $f_2\left(y_{p\|M=0}, y_{p\|M=1}, \pi\right)$ *marital sorting | -0.032 | -0.048 | -0.048 | -0.050 | -0.016 | -0.047 |
| N | 1,462 | 1,331 | 771 | 713 | 691 | 618 |

Table B2: Estimates for Daughters

| | All | | Born 1950-62 | | Born 1963-75 | |
|---|---|---|---|---|---|---|
| | Age 27-34 | Age 35-42 | Age 27-34 | Age 35-42 | Age 27-34 | Age 35-42 |
| Marital status | | | | | | |
| $\pi$ : proportion of the married | 0.829 | 0.805 | 0.836 | 0.828 | 0.821 | 0.777 |
| $\theta = \frac{\mathrm{Var}(\ln y_{p\|M=1})}{\mathrm{Var}(\ln y_{p\|M=0})}$: the ratio of variances in parental income | 0.779 | 0.727 | 0.876 | 0.817 | 0.702 | 0.671 |
| $\mathrm{Var}(\ln y_{p\|M=0})$: the baseline variance (the non-married) | 0.472 | 0.483 | 0.397 | 0.408 | 0.556 | 0.554 |
| $\Delta_p = \overline{\ln(y_{p\|M=1})} - \overline{\ln(y_{p\|M=0})}$ : the mean gap in parental income | 0.122 | 0.279 | 0.088 | 0.260 | 0.162 | 0.304 |
| (a) $f_1(y_{p\|M=0}, y_{p\|M=1}, \pi)$ | 0.045 | 0.113 | 0.034 | 0.104 | 0.056 | 0.123 |
| (c) $f_2(y_{p\|M=0}, y_{p\|M=1}, \pi)$ | 0.787 | 0.726 | 0.815 | 0.776 | 0.757 | 0.675 |
| (b) $\overline{\ln(y_{c\|M=1})} - \overline{\ln(y_{i\|M=1})}$ | 1.840 | 1.951 | 1.987 | 1.901 | 1.664 | 2.015 |
| (a)*(b) $f_1(y_{p\|M=0}, y_{p\|M=1}, \pi) * \left(\overline{\ln(y_{c\|M=1})} - \overline{\ln(y_{i\|M=1})}\right)$ | 0.082 | 0.220 | 0.067 | 0.197 | 0.093 | 0.247 |
| Marital sorting: indirect path + direct path | -0.121 | 0.149 | -0.073 | 0.035 | -0.154 | 0.271 |
| $\hat{\beta}_{si\|M=1} - \hat{\beta}_{s^*i\|M=1}$ | 0.125 | 0.118 | 0.130 | 0.135 | 0.116 | 0.103 |
| $\hat{\beta}_{ip\|M=1}$ | 0.473 | 0.312 | 0.424 | 0.395 | 0.501 | 0.220 |
| Indirect path: $(\hat{\beta}_{si\|M=1} - \hat{\beta}_{s^*i\|M=1} - 1)\hat{\beta}_{ip\|M=1}$ | -0.414 | -0.275 | -0.369 | -0.342 | -0.443 | -0.198 |
| Direct path: $\hat{\beta}_{sp\|i,M=1} - \hat{\beta}_{s^*p\|i,M=1}$ | 0.293 | 0.424 | 0.296 | 0.377 | 0.290 | 0.469 |
| (c)*(d): $f_2(y_{p\|M=0}, y_{p\|M=1}, \pi)$ *marital sorting | -0.095 | 0.108 | -0.059 | 0.027 | -0.116 | 0.183 |

| | | | | | | |
|---|---|---|---|---|---|---|
| N | 1,523 | 1,426 | 823 | 775 | 700 | 651 |

## Appendix C. Robustness checks

We perform a series of robustness analyses to check whether our findings are sensitive to different sample restrictions. As mentioned, our income variables are constructed by averaging multi-year observations of individuals' annual earnings for children and total family incomes for their parents. We did not impose any restrictions on the minimum number of income observations for respondents to be included in our sample so as to maximize our sample and secure reliability of our decomposition, but this means that we include respondents with only one or two observations of income. To examine whether this choice is responsible for our findings, given the established concern about underestimation of elasticity estimates when short-run measures are used, we check on three additional restrictions on our PSID sample.

First, we restrict the minimum number of parents' income observations and see how varying this threshold changes our results. Although the maximum number is nine (i.e. when a child was 14-22), the oldest people in our earlier cohort (born in 1950) can only have six observations at most since they were already 17 when their parental income was reported in the first wave. We consider the possibility that this also may yield a bias with respect to cohort differences. Second, we examine the possibility that our estimates are influenced by different restrictions on the minimum number of observations of the child's own income. Children could report their income a maximum of eight times in each age window (i.e. ages 27-34 and ages 35-42) although some respondents have less due to PSID's change from an annual survey to a biennial one in 1997. Lastly, we also consider the possibility that the inclusion of zero income earners biases our results. Note that our aim is not to identify the most influential source of bias but to verify the robustness of our main findings. In this vein, rather than focusing on the influence of each source separately, we add the restrictions additively so see if, and how, the varying restrictions substantively change our results.

The results from our robustness analyses are shown in the tables of Appendix C. First,

we vary the minimum number of parental income observations by including only those who have at least four observations and then by including only those with five or more. The second of our restrictions considers child's own income and we exclude those who have less than three observations in each period. Lastly, we exclude zero income earners from our sample. Combining these three restrictions together, we show the result from the sample of individuals with four or more observations of parents' income, at least three observations of child's own income, and non-zero positive average income.

As the tables of Appendix C1 show, the overall patterns of our major findings are similar, while the magnitude of the coefficients changes moderately with varying degrees of sample restrictions. The difference between the two IGE estimates is similar across the tables. More importantly, the results for women aged 35 to 42 are mostly robust, and they do not deviate from those we reported in the main manuscript. We also report the decomposition result for this group with the same sample restrictions as defined above in the table of Appendix C2. They show very similar results. It is noteworthy that the decomposition result for the most restricted version is mostly similar to our original findings. All in all, our sensitivity analyses show that major patterns we identified in the manuscript are generally consistent and robust to possible bias linked to measuring income.

## Table C1: The Estimates of Intergenerational Elasticity

### Parental Income 4/+

| | | Sons | | | | Daughters | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | $\hat{\beta}_{cp}$ | $\hat{\beta}_{ip}$ | $\widehat{\boldsymbol{\beta}}_{\boldsymbol{cp}} - \widehat{\boldsymbol{\beta}}_{\boldsymbol{ip}}$ | N | $\hat{\beta}_{cp}$ | $\hat{\beta}_{ip}$ | $\widehat{\boldsymbol{\beta}}_{\boldsymbol{cp}} - \widehat{\boldsymbol{\beta}}_{\boldsymbol{ip}}$ | N |
| Born 1950-62 | Aged 27-34 | 0.733 | 0.78 | **-0.047** | 694 | 0.669 | 0.555 | **0.115** | 630 |
| | Aged 35-42 | 0.582 | 0.56 | **0.022** | 642 | 0.638 | 0.383 | **0.255** | 601 |
| Born 1963-75 | Aged 27-34 | 0.622 | 0.601 | **0.020** | 646 | 0.541 | 0.588 | **-0.047** | 618 |
| | Aged 35-42 | 0.472 | 0.463 | **0.008** | 581 | 0.904 | 0.411 | **0.493** | 574 |

### Parental Income 5/+

| | | Sons | | | | Daughters | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | $\hat{\beta}_{cp}$ | $\hat{\beta}_{ip}$ | $\widehat{\boldsymbol{\beta}}_{\boldsymbol{cp}} - \widehat{\boldsymbol{\beta}}_{\boldsymbol{ip}}$ | N | $\hat{\beta}_{cp}$ | $\hat{\beta}_{ip}$ | $\widehat{\boldsymbol{\beta}}_{\boldsymbol{cp}} - \widehat{\boldsymbol{\beta}}_{\boldsymbol{ip}}$ | N |
| Born 1950-62 | Aged 27-34 | 0.752 | 0.802 | **-0.051** | 600 | 0.772 | 0.551 | **0.221** | 489 |
| | Aged 35-42 | 0.565 | 0.57 | **-0.005** | 717 | 0.718 | 0.343 | **0.375** | 780 |
| Born 1963-75 | Aged 27-34 | 0.641 | 0.615 | **0.026** | 604 | 0.608 | 0.619 | **-0.010** | 549 |
| | Aged 35-42 | 0.468 | 0.457 | **0.010** | 638 | 0.977 | 0.484 | **0.493** | 679 |

## Parental income 4/+ and children income 3/+ (each period)

| | | Sons | | | | Daughters | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | $\hat{\beta}_{cp}$ | $\hat{\beta}_{ip}$ | $\widehat{\boldsymbol{\beta}}_{\boldsymbol{cp}} - \widehat{\boldsymbol{\beta}}_{\boldsymbol{ip}}$ | N | $\hat{\beta}_{cp}$ | $\hat{\beta}_{ip}$ | $\widehat{\boldsymbol{\beta}}_{\boldsymbol{cp}} - \widehat{\boldsymbol{\beta}}_{\boldsymbol{ip}}$ | N |
| Born 1950-62 | Aged 27-34 | 0.665 | 0.667 | **-0.002** | 567 | 0.63 | 0.499 | **0.131** | 535 |
| | Aged 35-42 | 0.598 | 0.662 | **-0.064** | 567 | 0.681 | 0.377 | **0.304** | 535 |
| Born 1963-75 | Aged 27-34 | 0.446 | 0.431 | **0.015** | 533 | 0.522 | 0.537 | **-0.015** | 541 |
| | Aged 35-42 | 0.525 | 0.512 | **0.009** | 533 | 0.865 | 0.425 | **0.440** | 541 |

## Zero children income in any of two periods excluded

| | | Sons | | | | Daughters | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | $\hat{\beta}_{cp}$ | $\hat{\beta}_{ip}$ | $\widehat{\boldsymbol{\beta}}_{\boldsymbol{cp}} - \widehat{\boldsymbol{\beta}}_{\boldsymbol{ip}}$ | N | $\hat{\beta}_{cp}$ | $\hat{\beta}_{ip}$ | $\widehat{\boldsymbol{\beta}}_{\boldsymbol{cp}} - \widehat{\boldsymbol{\beta}}_{\boldsymbol{ip}}$ | N |
| Born 1950-62 | Aged 27-34 | 0.47 | 0.473 | **-0.003** | 757 | 0.48 | 0.495 | **-0.015** | 767 |
| | Aged 35-42 | 0.572 | 0.573 | **-0.001** | 700 | 0.558 | 0.35 | **0.208** | 726 |
| Born 1963-75 | Aged 27-34 | 0.424 | 0.411 | **0.013** | 703 | 0.455 | 0.394 | **0.061** | 671 |
| | Aged 35-42 | 0.445 | 0.455 | **-0.010** | 630 | 0.662 | 0.31 | **0.352** | 620 |

**Zero children income excluded and parental income 4/+ and children income 3/+**

| | | Sons | | | | Daughters | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | $\hat{\beta}_{cp}$ | $\hat{\beta}_{ip}$ | $\widehat{\boldsymbol{\beta}}_{\boldsymbol{cp}} - \widehat{\boldsymbol{\beta}}_{\boldsymbol{ip}}$ | N | $\hat{\beta}_{cp}$ | $\hat{\beta}_{ip}$ | $\widehat{\boldsymbol{\beta}}_{\boldsymbol{cp}} - \widehat{\boldsymbol{\beta}}_{\boldsymbol{ip}}$ | N |
| Born 1950-62 | Aged 27-34 | 0.566 | 0.563 | **0.002** | 566 | 0.563 | 0.446 | **0.117** | 531 |
| | Aged 35-42 | 0.496 | 0.447 | **-0.062** | 566 | 0.608 | 0.323 | **0.285** | 531 |
| Born 1963-75 | Aged 27-34 | 0.417 | 0.4 | **0.017** | 531 | 0.504 | 0.489 | **0.015** | 530 |
| | Aged 35-42 | 0.495 | 0.485 | **0.011** | 531 | 0.785 | 0.377 | **0.409** | 530 |

**Table C2: Decomposition of Role of Marriage among Women at Ages 35 to 42**

**Parental income 4/+**

| | Born 1950-62 | Born 1963-75 |
|---|---|---|
| $\hat{\beta}_{cp} - \hat{\beta}_{ip}$ | **0.255** | **0.493** |
| Marital Status | **80** | **38** |
| % **(a)×(b)** | -4 | -19 |
| % **(c)** | 84 | 57 |
| Marital sorting | **20** | **62** |
| % indirect path | -131 | -38 |
| % direct path | 151 | 100 |
| Total | **100** | **100** |
| N | 601 | 574 |

**Parental income 5/+**

| | Born 1950-62 | Born 1963-75 |
|---|---|---|
| $\hat{\beta}_{cp} - \hat{\beta}_{ip}$ | 0.439 | 0.488 |
| Marital Status | **51** | **48** |
| % **(a)×(b)** | -14 | -14 |
| % **(c)** | 65 | 62 |
| Marital sorting | **49** | **52** |
| % indirect path | -66 | -51 |
| % direct path | 115 | 103 |
| Total | **100** | **100** |
| N | 780 | 679 |

**Parental income 4/+ and children income 3/+ (each period)**

| | Born 1950-62 | Born1963-75 |
|---|---|---|
| $\hat{\beta}_{cp} - \hat{\beta}_{ip}$ | 0.349 | 0.44 |
| Marital Status | **70** | **48** |
| % **(a)×(b)** | -7 | -15 |
| % **(c)** | 77 | 63 |
| Marital sorting | **30** | **52** |
| % indirect path | -87 | -59 |
| % direct path | 117 | 111 |
| Total | **100** | **100** |
| N | 535 | 541 |

**Zero income in any of two periods excluded**

| | Born 1950-62 | Born 1963-75 |
|---|---|---|
| $\hat{\beta}_{cp} - \hat{\beta}_{ip}$ | 0.215 | 0.351 |
| Marital Status | **71** | **27** |
| % **(a)×(b)** | 0 | -15 |
| % **(c)** | 71 | 42 |
| Marital sorting | **29** | **73** |
| % indirect path | -121 | -42 |
| % direct path | 150 | 115 |
| Total | **100** | **100** |
| N | 726 | 620 |

**Zero income excluded and parental income 4/+ and children income3/+**

| | Born 1950-62 | Born 1963-75 |
|---|---|---|
| $\hat{\beta}_{cp} - \hat{\beta}_{ip}$ | 0.251 | 0.41 |
| Marital Status | **76** | **35** |
| % **(a)×(b)** | -3 | -8 |
| % **(c)** | 79 | 43 |
| Marital sorting | **24** | **65** |
| % indirect path | -112 | -34 |
| % direct path | 136 | 99 |
| Total | **100** | **100** |
| N | 531 | 530 |