Intergenerational Transmission of Spousal Inequality*

Transmisión intergeneracional de desigualdades maritales

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Abstract

This paper studies whether sons and daughters reproduce in their relationships the same intra-household inequalities observed for their parents in terms of some economic statuses (wages, income, work hours, and education). Additionally, we emphasize the relevance of transmission of preference and gender-role attitude in investigating household issues. Utilizing the Panel Study of Income Dynamics' data we find that married sons imitate their parents' household disparities more than married daughters. For parents and their daughter's family, the similarity in household inequalities is insignificant. The paper also examines the differential patterns of the statuses and the dynamics of educational gap patterns across generations.

Key words: *Spousal inequality, income, education, labor supply, intergenerational mobility.*

JEL Classification: *J12, J62, D10.*

Resumen

Este trabajo analiza si los hijos e hijas reproducen en sus relaciones las mismas desigualdades en el hogar que se observan en sus padres en términos de estatus económico (salarios, ingresos, horas trabajadas y educación). También se enfatiza la relevancia de la transmisión de preferencias y actitudes específicas al

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género. Usando un panel de dinámica de ingresos, encontramos que los hijos imitan más las disparidades de los padres que las hijas. El trabajo también examina la dinámica de los patrones de brechas educacionales entre generaciones.

Palabras clave: *Desigualdad marital, ingreso, educación, oferta laboral, movilidad intergeneracional.*

Clasificación JEL: *J12, J62, D10.*

1. Introduction

Economic literature has recognized the crucial role of intra-household (or spousal) inequality in theories of intra-household resource allocation, social income distribution, as well as intergenerational mobility for decades. Chiappori & Meghir (2014) stated that inequality relates to poverty and investment in children, which implies the intergenerational transmission of poverty. They insisted that it is necessary to pay more attention to intra-household inequality from theoretical and empirical perspectives. Understanding intra-household inequality, and more broadly intra-household allocations, is necessary to estimate the impact of policies and programs on poverty alleviation, expanding the question from those who benefit directly from the policies and programs to child poverty and child development more generally.

What are the factors responsible for the inequality of economic status between spouses? Besides individual and household characteristics and social environment, the parental disparity in economic status emerges as a potential determinant of the inequality. How does the parental income gap influence that gap of their offspring's family? And how does a "marrying-down" father affect his son's decision to marry a less educated woman? Psychoanalytic theory, based on Freud's work, has, for a long time, argued that people tend to marry a person who is similar to their opposite-sex parent. Sociological literature provides evidence that gender-role attitude and experiences play a determining role in shaping the attitude of their children, affecting their family formation and marital lives in adulthood (Platt & Polavieja, 2016). Economic studies recently also paid attention to the dynamics of preferences over generations. They recognized that preference-based explanations might offer both theoretical and empirical insights into human behavior.

This paper provides the first evidence on intergenerational transmission of within-household inequality. Concretely, it examines whether children reproduce in their own family the same intra-household inequalities observed for their parents regarding income, wages, work hours, and education. Although numerous past works investigated the transmission of economic statuses, none of them focused on transmitting the statuses' inequality, to our knowledge. These statuses are chosen because they are commonly used economic indicators. Non-unitary models concur that intra-household resource allocation is affected differently

by the husband's and wife's bargaining power. For example, wives with more negotiating power may distribute more significant resources to their children than their husbands. Spousal relative earnings, education, and labor supply can be used as proxies for their power (Chiappori, 1992; Lundberg & Pollak, 1996; Jensen, 2012). The spousal gaps in these economic statuses are good predictors of the household resource allocation between partners. Therefore our findings could imply that there is an intergenerational transmission of intra-household behaviors. There are several ways to estimate spousal earnings inequality (and also inequalities in other economic statuses) in a household: (i) the ratio of a wife's earnings to the combined earnings of both spouses; (ii) the ratio of the average earnings of females to that of males in a household; and (iii) the ratio of the difference between two spouses' earnings to their combined earnings. The first approach is not a direct measure of spousal disparity because when two spouses' earnings are equal, the inequality is not zero. The second method's advantage is its easy comparison between two sexes' earnings, but female benefits from the inequality may cancel out those of males (Woolley & Marshall, 1994; Bertrand *et al.*, 2015).

This paper uses the last method to calculate income inequality. It directly measures the magnitude of inequality within the household. The spousal income inequality is calculated by the ratio of the difference between spousal incomes to the combination of their incomes. We do not use the numerator's absolute value as we are interested in the gender aspect of the inequality: the inequality may be considered a measurement of a woman's power in the household. Inequalities in the other three statuses are defined similarly. Utilizing data from the United States' Panel Study of Income Dynamics, we point out significant relationships between parent's and son's family for those inequalities. In contrast, those between parents and their daughter's family are insignificant. Estimating the inequality transmission of educational and work hours is consistent with those for wage and income. An explanation for the consistency is the high correlation between education, labor supply, and earnings: the higher degree an individual gets, the more money she will earn. Also, the more she works, the more she earns. The paper also emphasizes the relevance of transmission of preference and gender-role view in the study of household problems.

2. Intra-household inequality and intergenerational mobility

Household inequalities play a crucial role in theories of intra-household resource allocation, social income distribution, as well as intergenerational persistence. Neglecting intra-household inequality may cause a serious understatement of social inequality and poverty estimation (Haddad & Kanbur, 1990). Woolley & Marshall (1994) argued that a measurement of intra-household inequalities is compelling because: (i) It is ubiquitous in both developed and developing nations; (ii) Many policy issues related to this kind of inequality. For example, an estimation of an individual's demands on household products and leisure

should be usually based on an assumption of a rule governing the sharing of household resources; and (iii) It may also influence tax policy. For instance, the US taxes the combined incomes of married couples while many other countries calculate income tax based on individual incomes. Improved information about intra-household inequality could help policymakers to design a better income tax system. Sociologists are interested in intra-household inequalities as they are important determinants of the division of power within families and causes of troubles and family dissolutions and can help explain gender-roles and gender inequality.

This study analyzes the extent of the intergenerational transmission of earnings, labor supply, and educational inequalities within households. One remarkable phenomenon in many western countries recently is the surge in the number of families where the wives out-earn their husbands. In the US, this kind of family is supposed to be less happy, suffer greater strife, and be more prone to divorce. The spousal inequality of earnings is also linked to domestic violence and marital instability (Aizer, 2010; Browning & Gortz, 2012; Zhang *et al.*; 2015; Bertrand *et al.*, 2015*).* Winkler (1998) highlighted the idea that the distribution of earnings between spouses may affect household decisions as well as labor market decisions. Theoretical works on bargaining within marriage (e.g., Lundberg & Pollack, 1996; Bergstrom, 1996) emphasized that the wives' relative earnings affect the "threat point"- the level of utility the spouses attain if the marriage dissolves - and their bargaining power in the household. The spousal educational differential is also a measure of their relative empowerment. A higher educational level provides women more opportunities to exit the marriage and still survive.

Concerning labor market participation, Chiappori (1992) argued that spousal labor supply partly reflects spouses' leisure time. The sharing rule of leisure time can be used as a proxy for the division of consumption between spouses. Spousal labor supply can be a proxy for their decision-making power. More participation in the labor market raises their likelihood of self-financing and having a good life when they leave the household (Jensen, 2012). Bargaining power may also affect other family members' working behaviors (Nguyen, 2019). From another perspective, Pollak (2005) suggested that spousal earnings affect their bargaining power, not the wage. As work hours determine the earnings, they also affect the power. Nevertheless, higher earnings, thanks to longer hours worked and less time for housework, do not create more power. But higher earnings thanks to high wage rates do. Moeeni (2019) focused on the interaction between education, wage, and labor supply. She argued that higher educational attainment leads to higher potential wages and improves the likelihood of labor force participation. On the other hand, spouses' educational attainment affects their negotiation power as well. Past literature also suggested alternative spousal bargaining power measures such as leisure time, housework, assets, and social status (Beegle *et al.*, 2001; Gupta & Stratton, 2010).

Regarding children's outcomes, previous literature supposed that women's empowerment is related to positive outcomes of their children as they are more

likely to invest in children's nutrition, food, education, and clothing. As primary childcare givers, their empowerment positively affects children's health and development as well (Thomas, 1990; Hoddinott & Haddad, 1995; Quisumbing *et al.*, 2003; Behrman & Hoddinott, 2005; Bobonis, 2009).

Transmission of social norms such as gender-role attitude helps explain the intergenerational transmission of the inequalities. Though there is no work directly dealing with the persistence of the disparities, past literature well documented the link in working behaviors across generations using data from various countries (Bütikofer, 2013). Following Fernandez *et al.* (2004), a series of studies found the connection in working status between mothers-in-law and daughters-in-law. As working mothers play a role model to sons in childhood, the sons' preference toward working women is well established and significantly affects their choice of a future wife. Kawaguchi & Miyazaki (2009) explored a similar topic using Japanese data. Although they did not find a clear relationship in full-time work status between mother and son's wife, they stressed that the son of a working mother does not favor traditional gender-roles.

While an extensive body of literature focused on the role of personal and work characteristics on gender inequality of economic status, few studies scrutinized spousal disparities in status. Non-unitary models considered spousal labor supply as an outcome of spouses' negotiations rather than being determined before the marriage (Kalugina *et al.*, 2009). Some studies confirmed that men's work hours are positively affected by educational attainment, work experience, and tenure but negatively affected by the number of children (Glauber & Gozjolko, 2011). A reduction in the female labor supply due to childbirth seriously influences their earnings (Winslow-Bowe, 2009). Literature also documented the effects of family income, spousal educational gap, race, and conditions shaping spouses' choices, especially those involved in labor division in the household, on the spousal wage gap. It highlights work conditions such as industrial, occupational, workplace discrimination, and household services in eliminating the disparity (Huato & Zeno, 2009). As income is the product of wages and work hours, it may be also determined by the negotiations and individual decisions rather than established before family formation.

Two theories can explain the contribution of relative spousal earnings: (i) gender specialization and (ii) economic independence. The first theory insists that spouses specialize in tasks based on gender to maximize total marital gains. An increase in male earnings reduces their wives' likelihood of joining the labor market since men specializing in the labor market and women specializing in housework make their marriage more efficient. For example, in one-income families, the wife usually is responsible for childcare and housework, while her husband works to earn money. The second theory suggests that both spouses compete to enhance their decision-making power in the family. Higher wives' earnings result in better bargaining power and improves their exit option from marriage. The theory argues that female labor force involvement is determined mainly by their education and work experience. The number of children is a key support to the specialization theory. Married men usually work more to compensate

for the decline of their wives' work hours following childbirth (Nguyen, 2013; Kulkarni, 2015). Other theories suggest that gender norms encourage men to be breadwinners and raise their labor supply availability after being a father. Fathers are also considered better than men without children in terms of commitment, productivity, and responsibility. They are usually offered higher salaries, more overtime work, and more promotion opportunities than their childless counterparts (Glauber & Gozjolko, 2011). Past literature also stressed the role of one spouse's labor supply as insurance against the other spouse's job loss. They documented a surge in non-work spouses' participation in the labor market and the labor supply of currently-participating spouses following their partner's unemployment (Stephens, 2002). Marriage market conditions and marriage laws may affect spousal labor supply by changing the resource allocation between spouses as well (Donni & Ponthieux, 2011; Nguyen *et al.*, 2018). Therefore, the transmission of spousal inequalities can be the consequence of transmission in behavior rather than matching two people with individual characteristics.

3. Literature review

A significant source of empirical literature for our study is those papers dealing with intergenerational mobility. Intergenerational mobility is determined as alterations in socioeconomic status from the parents' to their children's generation. The economic literature usually explores issues on the mobility of well-being (income, earnings, wages, consumption, savings, nutrition, health, etc.), human capital, and labor supply, while sociologists are interested in family and social issues (marital status, marital shocks, children's talents, context, and family culture, etc.). The theoretical literature on parental impact on children is often inspired by the influential works of Becker & Tomes (1979, 1986). Becker and Tome assumed that each family maximizes a utility function over their own and their offspring's generations. The endowment from genes such as race, ability, family reputation, or connections contributes to the outcomes of children when they become adults. Addio (2007) noted that intergenerational mobility gets the attention of social scientists because (i) the allocation of resources across generations influences the overall social welfare of those generations, (ii) mobility supports economic equality, social justice, and equity of allocation of resources, and (iii) mobility helps to attain better economic efficiency. As for Mogstad (2017), three essential ingredients for estimating intergenerational persistence include time in early life, a set of skills, and some types of investments.

An extensive body of previous literature dealt with intergenerational mobility of earnings. For the US, economists usually utilize the Panel Study of Income Dynamics data because it allows them to measure changes in parents' and children's status over time. Solon (1992) showed the biases in estimating intergenerational elasticity due to using short-run incomes or homogeneous samples rather than permanent incomes and random samples. His analyses provided an intergenerational correlation in long-run income for the US of around

0.4. Couch & Dunn (1997) and Osterbacka (2001), estimating for Germany and Finland, respectively, both found an elasticity of 0.1. Francesconi & Ermisch (2002) used the Goldthorpe-Hope score as a status measurement and found a correlation between 0.17 and 0.23 for Britain. Bjorklund *et al.* (2006) used Swedish data to quantify the persistence in income and schooling. They insisted that both pre and post-natal characteristics, such as the childhood environment, affect children's outcomes. Chetty *et al.* (2014) agreed with Lee & Solon (2009) that intergenerational mobility of income has remained stable over the last decades of the 20th century in the US. Concerning hourly wages, Altonji & Dunn (2000) used the US data to point out a similarity in wages between parents and children. Liu & Zeng (2009) insisted on the crucial role of the biological link between parents and children in intergenerational mobility in the US by likewise utilizing the Panel Study of Income Dynamics data. Recently, Neidhöfer *et al.* (2018) investigated 18 Latin American countries' household data and pointed out that intergenerational income mobility surges in this area. Corak (2020) used the Census data in 1986 to indicate that Canada's regional income mobility is determined mostly by the inequality among low-income families. Deutscher & Mazumder (2020), based on Australian administrative data to compare the intergenerational mobility of different regions, concluded that segregation and education are key determinants of mobility.

The second branch of literature is on educational mobility. Educational attainment is considered as more easily calculated than another economic status such as income. Notably, it is a crucial determinant for occupation choice and earnings (Stuhler, 2018). Overall, past literature suggested that the transmission of the attainment and qualifications are significant (Addio, 2007). Using German data on immigration, Frick & Wagner (2000) and Dustmann (2005) provided opposite findings on educational outcome links between two generations. The first confirms a clear link, while the second denies it. Some others investigating the US data, such as Card (2005) and Borjas (2006), tried to compare the persistence of the outcomes between native and immigrant groups and among different ethnic groups. Researchers also focused on the role of genetic inheritance and family characteristics on the transmission (Addio, 2007). For example, Huang (2013) used the US data to quantify the role of household assets on the transmission of educational attainment across generations. He found that assets improve the transmission of years of schooling. Recently, Agüero & Ramachandran (2018) evaluated the impact of educational reforms in 1980 on the transmission of schooling in Zimbabwe and pointed out a significant correlation between parents' and their children's secondary school attainment.

Our study also benefits from studies on the transmission of labor supply. Couch & Dunn (1997) discovered that the connection between fathers and sons in terms of work hours in the US is more robust than in Germany. Del Boca *et al.* (2000) investigated Italian data and detected connections between the labor market involvement of daughters and that of their mother and mother-in-law. Exploring the Survey of Income and Program Participation's data, Morrill and Morrill (2013) suggested robust links between the labor market involvements

of mothers and daughters, and mothers-in-law and daughters-in-law in the US. Notably, they acknowledged that the connection between mother-in-law and daughter-in-law is stronger. Van Putten *et al.* (2008) probed data of the Netherlands and indicated that daughters of working women have longer work duration than those of homemaking mothers. However, the labor force participation status of mothers does not affect that of their daughters. Altonji & Dunn (2012) analyzed the US data of National Longitudinal Surveys of Labor Market Experience and discovered a strong link in the work hours of same-sex family members. The association of weeks worked between same-sex parent and child is also uncovered. Using the March Current Population Survey, Blau *et al.* (2013) also found a correlation in labor supply between US-born women and their immigrant parents. The labor supply of women with foreign-born mothers is affected more strongly than with foreign-born fathers. They supposed that the reason for this phenomenon is the transmission of gender-roles across generations. Studies on the relationship between labor regulations and labor supply bring us useful arguments as well (e.g., Oreffice, 2007; Nguyen *et al.*, 2021a; Nguyen *et al.*, 2021b).

The literature on the in-law relationship also provided us some crucial insights. Fernandez *et al.* (2004), a notable study on this category, pointed out a strong correlation in weeks worked between mother-in-law and daughter-in-law using US data. Based on the work of Fernandez *et al.*, several other works investigated similar problems in different countries. Kawaguchi·& Miyazaki (2009) and Bütikofer (2013) utilized Japanese and Swiss data to revisit Fernandez *et al.*'s problem and ended up with the same conclusion. Kawaguchi·& Miyazaki explained that sons of working women prefer working wives to traditional wives. Papapetrou & Tsalaporta (2018) suggested that in Greece, a wife's labor market participation is impacted by both her mother's and mother-in-law's participation. Li & Liu (2019) tested the correlation between daughter-in-law and mother-in-law by son's gender-role attitude and household productivity based on Chinese data. Campos-Vazquez *et al.* (2014), using the Mexican context, insisted that the correlation is mainly fostered by sons with low educational levels. However, they did not find any link between a mother and her daughter in the labor market participation. Kailaheimo-Lönnqvist *et al.* (2019) examined a different problem: the impact of parents-in-law's resources on women's success in their career. They found that the resources improved the woman's occupational attainment in Finland.

Another branch of literature related to our work is on intra-household inequalities. It covers the disparities in earnings, work hours, education, and time allocation between husband and wife and the factors affecting them. Fuchs (1986) suggested using the ratio of average female earnings to average male earnings in a household as an index for earnings inequality. Figari *et al.* (2007) estimated the effects of public policies on marital income inequality through income and consumption. They supposed that public policies indirectly affect other kinds of inequalities, such as time-use inequality. To calculate spousal inequality, Woolley & Marshall (1994) and Kanbur & Haddad (1994) proposed an income inequality

index as (S1-S2)/(S1+S2), where S1 and S2 are the income of the better off and the worse off spouses, respectively. Bertrand *et al.* (2015) supported a traditional way of calculating wives' relative income: S1/(S1 + S2), where S1 and S2 are the income of a married woman and her husband, respectively.

The last important branch of literature for our reference is on assortative mating. Lam & Shoeni (1993, 1994) provided a model of the relationship between marital sorting and intergenerational transmission of schooling and earnings. Empirically, they found a more considerable impact created by the father-in-law's education than that of fathers on their children's outcomes in Brazil, while a reverse result is found in the US. They explained Brazil's findings as evidence of unobservable worker attributes rather than ones due to nepotistic family connections. Chadwick & Solon (2002) indicated that assortative mating in earnings could partly explain the process of intergenerational income transmission. Within the adult children's family, the man's earnings are just as elastic as those of his wife to the parents' earnings. Besides, Fernández *et al.* (2005) provided a model linking assortative mating, wage inequality, income, and economic growth. Ermisch *et al.* (2006) argued that how much income transmits across generations depends on both spouses' income. Both parents and parents-in-law affect their offspring's outcomes. They estimated the proportion of the covariance between parents' and their child's family income contributed by the parental generation's assortative mating. Recently, Mare (2016) observed a trend in educational assortative mating for decades in the US and found a fall in spousal similarity on educational attainment over time. Mare also documented a correlation in educational homogamy between two generations. As he explained, parents socialize their children to mate with someone like themselves. Greenwood *et al.* (2014) pointed out a rise in positive assortative mating in educational attainment between 1960 and 2005 in the US. However, the rise caused minimal influence on household income inequality. Siow (2015) also confirmed a surge in educational homogamy during the period 1970-2000 in the US. Eika *et al.* (2019) estimated the degree and evolution of educational marital sorting in some European countries and the US. They discovered a special connection between marital sorting and household income inequality in each country, as well.

4. Empirical model

Previous literature suggests that parents are role models for their children concerning household inequality. Our identification strategy provides evidence for this statement in terms of income, hourly wage, hours worked, and educational gaps between two spouses. We investigated the relationship between parents' inequality and their child's family inequality. As mentioned in the first section, this paper uses the ratio of the difference between spousal economic statuses to their combined statuses to measure the inequalities.

4.1. Economic status inequality

Our study evaluated the relationship between parents and their child's family in economic status inequalities (hourly wage, income, work hours, and education). We focused firstly on labor income. Considering a couple and their parents (either the husband's parents or the wife's parents), let Y_{Hi}, Y_{Wi}, Y_{Fi}, Y_{Mi} denote labor incomes of a man, his wife, his/her father and mother in the family i respectively. In a son's family, Y_{Hi} and Y_{wi} are defined as the son and his wife's incomes. In a daughter's family, Y_{Hi} and Y_{wi} represent the incomes of the daughter's husband and herself. Put differently; there are two types of relationship: (i) Parents and their adult son's family (i.e., their incomes are Y_F (father), Y_M (mother), Y_H (son), and Y_W (daughter-in-law)); and (ii) Parents and their adult daughter's family (i.e., their incomes are Y_F (father), Y_M (mother), Y_H (son-in-law), and Y_W (daughter)).

The study used the following formula, basing on Woolley and Marshall (1994) and Bertrand *et al.* (2015):

Child's couple income inequality: $$I_i^C = \frac{Y_{Wi} - Y_{Hi}}{Y_{Wi} + Y_{Hi}}$$

Parental income inequality: $$I_i^P = \frac{Y_{Mi} - Y_{Fi}}{Y_{Mi} + Y_{Fi}}$$

We did not use the numerator's absolute value because we are interested in the gender aspect of inequality and its transmission across generations. Winkler (1998) and Lundberg & Pollack (1996) suggested that earnings distribution between spouses may affect household decisions, labor market decisions, and spousal bargaining powers. Therefore, the above inequality definition can be understood as a measurement of female power in the family. The income inequality transmission equation is determined by:

$$I_i^C = \beta I_i^P + \varepsilon_i^I, \text{ namely,}$$
$$\frac{Y_{Wi} - Y_{Hi}}{Y_{Wi} + Y_{Hi}} = \beta\left(\frac{Y_{Mi} - Y_{Fi}}{Y_{Mi} + Y_{Fi}}\right) + \varepsilon_i^I \quad (1)$$

where ε_i^I is the set of unobservable characteristics in family i. For example, ε_i^I includes social norms and ability. The correlation between these inequalities is given by:

$$\rho(I_i^C, I_i^P) = \frac{Cov(I_i^C, I_i^P)}{\sigma(I_i^C)\sigma(I_i^P)} = \beta\frac{\sigma(I_i^P)}{\sigma(I_i^C)} \quad (2)$$

where $\sigma(I_i^C)$ and $\sigma(I_i^P)$ are the standard deviations of the inequalities. This implies that if the variance of inequality is unchanged over generations, the correlation between the two inequalities is the same as the transmission elasticity β.

If the permanent incomes are not available so that the inequalities have to be based on short-term incomes, a bias problem may arise (a problem similar to that mentioned in the seminal works Solon (1992) and Lee & Solon (2009)). To address this problem, Lee and Solon suggested using the average of incomes during a given period or an instrument variable, e.g., educational attainment, as a proxy for their permanent income. This paper used the first method; namely, the average incomes replaced for these permanent values. The empirical models for income and wage now become:

$$\frac{\overline{Y_{Wi}} - \overline{Y_{Hi}}}{\overline{Y_{Wi}} + \overline{Y_{Hi}}} = \beta\left(\frac{\overline{Y_{Mi}} - \overline{Y_{Fi}}}{\overline{Y_{Mi}} + \overline{Y_{Fi}}}\right) + \gamma X_i^I + \varepsilon_i^I \tag{3}$$

where $\overline{Y_{Zi}}$ denotes the average value of variable Y_{Zi} for n years in the long-term estimation, (Z = H, W, F or M). X_i^I includes personal and work characteristics. Concretely, we use the following formulas: $\overline{Y_{Zi}} = \frac{1}{n}\sum_{k=1}^{n} Y_{Zi}^k$, where Y_{Zi}^k denotes the value of Y_{Zi} in year k. The equations for transmission of wage, hours worked, and educational inequalities can be designed similarly.

4.2. Human capital difference

We were also interested in the transmission of the difference in two spouses' educational attainment as it is useful to investigate assortative mating. When the outcome belongs to a discrete set whose elements have intrinsic meaning (e.g., years of schooling), we can still use OLS to estimate the coefficient. However, when they have non-intrinsic meaning (e.g., overall health status: excellent, good, fair, poor), an OLS regression may be inappropriate. It is better to use an ordered-probit estimation. The equation for intergenerational transmission of educational difference is given by:

$$E_{Wi} - E_{Hi} = \beta(E_{Mi} - E_{Fi}) + \varepsilon_i \tag{4}$$

where E_{Hi}, E_{Wi}, E_{Fi}, E_{Mi} are years of schooling of husband, wife, father, and mother in the family i, respectively.

In addition, we proposed an ordered-probit model. In this model, both the dependent and explanatory variables (i.e., the child's family educational pattern and the parents' educational pattern) have non-intrinsic meaning. We considered three patterns: the man is more educated than his wife (hypergamy), the man is equally educated as his wife (homogamy), and the man is less educated than his wife (hypogamy).

A standard ordered-probit model is as follows:

$$\hat{D} = \beta X + \varepsilon \text{ with } \varepsilon \sim N(0,\sigma^2) \tag{5}$$

where $\hat{D}$ denotes the unobserved dependent variable and X denotes the explanatory variables. (In this equation, there is only one variable: parental family's educational pattern). β is a set of coefficients; ε denotes the error term. The distribution of $\hat{D}$ is therefore also normal: $\hat{D} \mid X \sim N(\beta X,\sigma^2)$. We cannot observe $\hat{D}$, but only observe D (child's family educational pattern). In the following equation, $\alpha 1$, $\alpha 2 \ldots$ αj are parameters to be estimated with β.

$$D = \begin{cases} 1 & (\textit{educ level of husband} > \textit{educ level of wife}) \textit{ if } \hat{D} \le \alpha_1 \\ 2 & (\textit{educ level of husband} = \textit{educ level of wife}) \textit{ if } \alpha_1 < \hat{D} \le \alpha_2 \\ 3 & (\textit{educ level of husband} < \textit{educ level of wife}) \textit{ if } \alpha_2 < \hat{D} \end{cases} \tag{6}$$

5. Main findings

5.1. Inequalities of labor market outcomes

The Panel Study of Income Dynamics (PSID) is our principal source of data. This is a longitudinal database of families and their members, starting in 1968. It is representative of the US population. PSID is one of the two most commonly used datasets in the US for studying intergenerational mobility. (The other is the National Longitudinal Survey of Youth). It has collected data annually since 1968 and biannually since 1997. As of 2017, the dataset included more than 80,000 individuals from around 11,000 families with seven generations. PSID collected self-reported information on the life course of multiple generations of the same family. The principal data is organized into five data files: family, cross-year individual, birth history, marriage history, and parent identification. Information collected covers family demographics, employment, income, consumption, education, health, housework, childbearing and development, and many other topics (PSID, 2020).

PSID allows us to extract information on the labor income of all four people (father, mother, child, and his/her spouse). We use the parents' data over the waves 1982-1994. The children's family data over the period 2005 - 2017 play the role of dependent variables. The 2017 sample is the most recent sample published by the PSID group when we conducted this study. As monetary values are expressed in current dollar prices, we use the Consumer Price Index measurement of the Bureau of Labor Statistics to standardize all the figures into 2017 dollars. Our analysis considered only adult children who are the family head or head's spouse. Both biological and adopted parents were used as PSID's structure allows us to

identify both types of parents. Children's family and their parents were selected as follows: first, we choose the period 2015-2017 for children's families and the period 1992-1994 for their parents. The average income of each spouse in the child couple was calculated over the first period, while each parent's income was calculated over the second period. Then, we considered the periods 2013-2015 and 1990-1992 for children's families and their parents respectively but ruled out those children, who were already included in the sample, to avoid duplication. The inclusion was repeated until the last periods (2005-2007 and 1982-1984 for two generations). Other dependent variables (hourly wage, work hours, educational attainment) were computed similarly. Importantly, all four people had to be between 30 and 60 years old to be included in the sample. The lowest age was 30 to ensure that their educational attainment was stable, while 60 was the prime age ceiling. All of them had marital status being married at the time used for the calculations.

Table 1 summarizes statistics on the primary sample. The variable description is in the Appendix. The sample consists of 2480 adult children, of which 48.31% were men and 51.69% were women. The average ages of husbands and wives were 43.7 and 42, respectively. Women got a little more education than men (14.47 compared to 14.09 years of schooling). However, men earned nearly double women. Men also worked around 1.5 times more than women. The average number of children was 1.95, i.e., remarkably lower than that of their parents' generation (2.36). 29% of heads of adult children's household had less than 01 years of work experience with their current organization, while 34% had more than ten years of experience. Each child couple had 1.67 workweeks missed annually due to illness of family members (including both self-illness and other-illness). Compared to their parents, child couples in the sample were younger but more educated, worked harder, and earned somewhat more.

We estimated the elasticities of transmission of household inequalities across generations based on the equation (3). Like traditional literature in intergenerational mobility, we first considered the case that exogenous variables were not included in the regressions. In this case, the estimations were significant in terms of income and hourly wage and marginally significant in terms of work duration and education for the pairs of parents and their son's family. The elasticities were 0.057, 0.061, 0.049, and 0.029 for income, hourly wage, hours worked, and years of schooling, respectively. However, the estimations for the pairs of parents and their daughter's family were insignificant.

Table 2 reports the transmission elasticities with the full set of exogenous variables. Panel A and B present results for income and hourly wage, respectively. The coefficients of interest were those of parental income and parental hourly wage inequalities. All columns were controlled for the number of children, number of children squared, number of siblings, number of opposite-sex siblings of the adult child, and variables involving the head of household, including dummies for national origin, Catholic preference, black status, job tenure, and farming sector (i.e., farming, fishery, and forestry sector), and number of weeks worked miss (i.e. weeks miss of both spouses), spousal age difference, and a

TABLE 1
STATISTIC SUMMARY

Child's family	Mean	Std. dev.	Min	Max
Husband's age	43.74	8.34	30	60
Wife's age	42.13	8.15	30	60
Husband's educational level	14.09	2.20	0	17
Wife's educational level	14.47	2.12	5	17
Husband's work hours	2083	832	0	5824
Wife's work hours	1443	939	0	5200
Husband's labor income	73707	93885	0	2120000
Wife's labor income	38323	44637	0	700000
Husband's hourly wage	35.65	114.0	0	5333
Wife's hourly wage	21.22	22.57	0	316
Control variables				
Number of children	1.95	1.31	0	11
Number of sibling	2.36	1.77	0	12
National origin (D)	0.60	0.48	0	1
Catholic preference (D)	0.18	0.39	0	1
Black (D)	0.17	0.38	0	1
Job tenure				
Less than one year (D)	*0.29*	*0.45*	*0*	*1*
From 1 to 5 years (D)	*0.19*	*0.39*	*0*	*1*
From 5 to 10 years (D)	*0.16*	*0.37*	*0*	*1*
10 years or longer (D)	*0.34*	*0.47*	*0*	*1*
Farming, fishing, and forestry sector (D)	*0.007*	*0.08*	*0*	*1*
Total weeks missed of both spouses	1.67	4.23	0	72.4

Parent's family	Mean	Std. dev.	Min	Max
Father's age	47.42	8.46	30	60
Mother's age	44.75	8.17	30	60
Father's educational level	12.92	2.78	0	17
Mother's educational level	12.68	2.28	0	17
Father's work hours	2067	843	0	5616
Mother's work hours	1179	915	0	5640
Father's labor income	65433	88997	0	1369480
Mother's labor income	22395	25122	0	307516
Father's hourly wage	29.84	36.73	0	491
Mother's hourly wage	16.56	41.37	0	932

Source: Calculated by the author.

log of taxable family income. Six regional dummies and time (year) dummies were also included in the regressions. The results revealed that only son families replicated their parental inequality concerning labor earnings and wage. The number of offspring, Catholic preference, and black status were determinants for child family inequalities. Working in the farming sector remarkably affected income inequality but nearly significantly impacted hourly wage inequality.

TABLE 2
TRANSMISSION OF INCOME AND HOURLY WAGE INEQUALITIES

A. DEPENDENT VARIABLE: CHILD'S FAMILY INCOME INEQUALITY
B. DEPENDENT VARIABLE: CHILD'S FAMILY HOURLY WAGE INEQUALITY

A.	*Child family's income inequality*		
	Child's family (both)	Son's family	Daughter's family
Parental income inequality	0.034*	0.075***	0.0001
	(0.020)	(0.028)	(0.028)
No. children	–0.096***	–0.121***	–0.087***
	(0.019)	(0.027)	(0.029)
No. children squared	0.010***	0.017***	0.007
	(0.004)	(0.005)	(0.006)
No. sibling	–0.016	–0.023	–0.012
	(0.010)	(0.014)	(0.014)
No. opposite-sex sibling	0.013	0.026	0.001
	(0.015)	(0.021)	(0.022)
National origin	–0.006	–0.036	0.021
	(0.024)	(0.034)	(0.035)
Catholic preference	0.044	0.089**	0.002
	(0.028)	(0.040)	(0.041)
Black	0.132***	0.100**	0.154***
	(0.033)	(0.045)	(0.048)
Job tenure:			
< 1 year	0.329**	0.280	0.364**
	(0.152)	(0.220)	(0.185)
1-5 years	–0.046	–0.143	0.045
	(0.151)	(0.216)	(0.183)
5-10 years	–0.071	–0.186	0.024
	(0.151)	(0.216)	(0.183)
>= 10 years	–0.151	–0.261	–0.062
	(0.150)	(0.217)	(0.181)
Farming sector	–0.237***	–0.341**	–0.167*
	(0.085)	(0.159)	(0.085)
Weeks of work missed	0.005	0.003	0.005
	(0.003)	(0.005)	(0.004)
Spouses' age difference	x	x	x
Log tax. income	x	x	x
Regional dummies	x	x	x
Time dummies	x	x	x
No. obs.	2307	1112	1195
R squared	0.14	0.17	0.13

B.	*Child family's hourly wage inequality*		
	Child's family (both)	Son's family	Daughter's family
Parental hourly wage inequality	0.028	0.076***	–0.009
	(0.020)	(0.028)	(0.028)
No. children	–0.077***	–0.097***	–0.067**
	(0.019)	(0.027)	(0.028)
No. children squared	0.008**	0.014***	0.005
	(0.004)	(0.005)	(0.006)
No. sibling	–0.014	–0.018	–0.014
	(0.010)	(0.014)	(0.014)
No. opposite-sex sibling	0.003	0.007	–0.001
	(0.015)	(0.020)	(0.021)
National origin	–0.009	–0.031	0.008
	(0.023)	(0.034)	(0.033)
Catholic preference	0.048*	0.089**	0.010
	(0.027)	(0.039)	(0.040)
Black	0.132***	0.107**	0.147***
	(0.032)	(0.045)	(0.047)
Job tenure:			
< 1 year	0.345***	0.146	0.432***
	(0.128)	(0.224)	(0.114)
1-5 years	0.032	–0.197	0.151
	(0.127)	(0.220)	(0.112)
5-10 years	0.007	–0.261	0.147
	(0.126)	(0.220)	(0.111)
>= 10 years	–0.085	–0.344	0.048
	(0.126)	(0.221)	(0.110)
Farming sector	–0.186***	–0.358	–0.064
	(0.119)	(0.222)	(0.112)
Weeks of work missed	0.009**	0.001	0.013***
	(0.004)	(0.006)	(0.003)
Spouses' age difference	x	x	x
Log tax. income	x	x	x
Regional dummies	x	x	x
Time dummies	x	x	x
No. obs.	2304	1110	1194
R squared	0.12	0.15	0.12

Source: Estimated by the author. 1st line: Elasticity. 2nd line, in parentheses: Standard error. Standard errors are clustered by personal identifiers.
*: Significant at P = 10%. **: at P = 5%. ***: at P = 1%.

In contrast, there is no evidence of the transmission of the inequalities to the daughter's family.

Table 3 was designed similarly to Table 2 but reports the transmission of work hours and educational inequalities. The coefficients of interest were those belonging to parental work hours and educational inequalities. All controlling variables were the same as those in Table 2. Again, we found that sons' families imitated their parental gap patterns but not daughters' families. Job tenure affected both inequalities, especially for those working for one year or longer. Meanwhile, Catholic preference and black status influenced the work duration inequality only. Notably, total weeks of work missed of both spouses due to illness of family members (including both self-illness and other-illness) were also a crucial determinant for the disparity.

Our findings are consistent with those of previous works. Bisin & Verdier (2001), for example, stated that parents pass on their preference to their offspring. Hellerstein & Morrill (2011) is among a few papers examining a fathers' role in their daughter's career selection. They found that the probability that women enter their father's occupation is significantly higher than other occupations for those born during the period 1909 and 1977. Powell & Steelman (1982) compared the impact of mothers' work behaviors on gender-roles attitudes of their sons and daughters. They stated that the effect is greater for sons than for daughters. Chadwick & Solon (2002) likewise indicated that the transmission of earnings across generations in the US is stronger for father-son pairs than father-daughter pairs. Fernández *et al.* (2004) more significantly pointed out the similarity in work status between mothers-in-law and their daughters-in-law as evidence for the transmission of gender-role attitudes from mothers to their sons. Also, sons of working mothers are a good partner for a working woman. That is, their household skills and cooperation in marriage are affected by their mothers. Works of other social sciences such as Kulik (2002) also indicated that correlation in gender-role attitudes between father and son is higher than that between father and daughter. Kulik explained this fact as the more liberal attitude of women and a more traditional attitude among men toward gender-role matters. An alternative interpretation for our results is that women may not wish to copy their mother's role within a household while men wish to replicate their father's role.

Some past literature also investigated the determinants of intra-household inequality. For instance, Winslow-Bowe (2009) used data from the US to show that wives' relative earnings are remarkably high among the black community compared to the white community. She interpreted this finding as a consequence of a greater labor supply of black women than their white counterparts and the disadvantage of minority men in the labor market. Huato & Zeno (2009) also examined the US data and documented that black husbands are linked with a notable lower level of intra-household income inequality. The presence of young children probably affected the spousal gap according to the model of gender specialization as it drives greater childcare, which is the mothers' responsibility and thus reduced their labor market involvement (Kulkarni, 2015).

TABLE 3
TRANSMISSION OF WORK HOURS AND EDUCATIONAL INEQUALITIES

C. Dependent variable: Child's family work hours inequality
D. Dependent variable: Child's family educational inequality

C.	*Child family's work hours inequality*			**D.**	*Child family's educational inequality*		
	Child's family (both)	Son's family	Daughter's family		Child's family (both)	Son's family	Daughter's family
Parental work hours inequality	0.030	0.054*	0.015	Parental educ. inequality	0.003	0.043*	–0.017
	(0.021)	(0.030)	(0.029)		(0.015)	(0.025)	(0.021)
No. children	–0.078***	–0.113***	–0.056*	No. children	–0.006**	–0.002	–0.012***
	(0.019)	(0.026)	(0.030)		(0.003)	(0.004)	(0.004)
No. children squared	0.007*	0.016***	0.002	No. children squared	0.0005	0.0004	0.001
	(0.004)	(0.005)	(0.006)		(0.0005)	(0.0007)	(0.0007)
No. sibling	–0.010	–0.019	0.0002	No. sibling	–0.003*	0.001	–0.007***
	(0.009)	(0.013)	(0.012)		(0.001)	(0.002)	(0.002)
No. opposite-sex sibling	0.014	0.033*	–0.007	No. opposite-sex sibling	0.0003	–0.002	0.003
	(0.013)	(0.019)	(0.018)		(0.002)	(0.003)	(0.003)
National origin	–0.003	0.013	–0.012	National origin	–0.004	–0.003	–0.004
	(0.021)	(0.030)	(0.030)		(0.004)	(0.004)	(0.005)
Catholic preference	0.032	0.062*	0.009	Catholic preference	–0.001	0.005	–0.007
	(0.024)	(0.033)	(0.035)		(0.004)	(0.005)	(0.006)
Black	0.091***	0.081*	0.100**	Black	0.014***	0.004	0.023***
	(0.030)	(0.043)	(0.042)		(0.005)	(0.007)	(0.007)
Job tenure:				Job tenure:			
< 1 year	–0.096	–0.165	–0.038	*< 1 year*	–0.025	–0.103	–0.002
	(0.107)	(0.202)	(0.135)		(0.018)	(0.068)	(0.012)
1-5 years	–0.327***	–0.399**	–0.256*	*1-5 years*	–0.036*	–0.113*	–0.013
	(0.106)	(0.202)	(0.133)		(0.019)	(0.068)	(0.012)
5-10 years	–0.311***	–0.354*	–0.266**	*5-10 years*	–0.035	–0.117*	–0.011
	(0.106)	(0.203)	(0.133)		(0.018)	(0.067)	(0.012)
>= 10 years	–0.363***	–0.422**	–0.313**	*>= 10 years*	–0.033	–0.113*	–0.009
	(0.105)	(0.202)	(0.132)		(0.018)	(0.068)	(0.011)
Farming sector	–0.116	–0.119	–0.125	Farming sector	0.016	0.018	0.021
	(0.098)	(0.192)	(0.096)		(0.012)	(0.016)	(0.016)
Weeks of work missed	0.009***	0.015***	0.006	Weeks of work missed	0.0005	–0.0005	0.001**
	(0.003)	(0.003)	(0.004)		(0.0004)	(0.0004)	(0.0004)
Spouses' age difference	x	x	x	Spouses' age difference	x	x	x
Log tax. income	x	x	x	Log tax. income	x	x	x
Regional dummies	x	x	x	Regional dummies	x	x	x
Time dummies	x	x	x	Time dummies	x	x	x
No. obs.	2353	1135	1218	No. obs.	2327	1122	1205
R squared	0.08	0.10	0.09	R squared	0.03	0.03	0.05

Source: Estimated by the author. 1st line: Elasticity. 2nd line, in parentheses: Standard error. Standard errors are clustered by personal identifiers.
*: Significant at P = 10%. **: at P = 5%. ***: at P = 1%.

5.2. Assortative mating

The transmission of educational difference can be a consequence of assortative mating and intergenerational educational attainment transmission. According to Lam and Shoeni (1993, 1994), the equations for the assortative mating of two generations are as follows:

$$E_{Wi} = \alpha_0 + \alpha_1 E_{Hi} + u_i \tag{7}$$

$$E_{Mi} = \gamma_0 + \gamma_1 E_{Fi} + \nu_i \tag{8}$$

where $E_{Hi,}$ $E_{Wi,}$ $E_{Fi,}$ E_{Mi} denote the educational attainment of a man, his wife, father, and mother in the family i respectively; $u_{i,}$ v_i denote error terms including unobservable factors relevant to mating in the family i. In empirical work, the equation (4) can be modified to include exogenous variables, X_i, such as household's specifics. We get:

$$E_{Wi} - E_{Hi} = \beta_1 (E_{Mi} - E_{Fi}) + \beta_2 X_i + \varepsilon_i \tag{9}$$

Assuming that the equation for educational transmission from a father to his son is given by:

$$E_{Hi} = \rho_1 E_{Fi} + \rho_2 X_i + \varsigma_i \tag{10}$$

In fact, we can combine the equations (7), (8), and (10) to get equation (9). Thus, the elasticity of educational inequality transmission depends on the elasticity of educational transmission and the assortative mating coefficients of the two generations.

5.3. Differential pattern of economic status

We investigated whether parents' educational gap affects their child's marital behavior in terms of the educational gap between the spouses. We are also interested in comparing the parents' educational pattern and that of their child's family.

The first panel of Table 4 classifies families into three family educational patterns for both children and parental generations: (i) the man is more educated than his wife, (ii) the man is equally educated as his wife, and (iii) the man is less educated than his wife. The next three panels are designed similarly but using income, wage, and work hours instead of education to calculate the differential patterns. The table indicates that the educational pattern changed remarkably between two generations. In the parents' generation, there were only 27.9% of families being hypogamous while this number in their child generation was nearly 41%. The shares of hypergamous families of the first

TABLE 4
PERCENTAGE OF GENERATIONAL FAMILY PATTERNS

Educational patterns			
Child family's educational pattern		Parental family's educational pattern	
Husband's education > wife's educ.:	25.14%	Father's education > mother's educ.:	37.31%
Husband's education = wife's educ.:	33.89%	Father's education = mother's educ.:	34.79%
Husband's education < wife's educ.:	40.96%	Father's education < mother's educ.:	27.90%
Work hours patterns			
Child family's work hours pattern		Parental family's work hours pattern	
Husband's hours > wife's hours:	69.76%	Father's hours > mother's hours:	77.42%
Husband's hours = wife's hours:	05.64%	Father's hours = mother's hours:	04.43%
Husband's hours < wife's hours:	24.60%	Father's hours < mother's hours:	18.15%
Income patterns			
Child family's income pattern		Parental family's income pattern	
Husband's income > wife's income:	68.39%	Father's income > mother's income:	77.14%
Husband's income = wife's income:	04.56%	Father's income = mother's income:	05.20%
Husband's income < wife's income:	27.05%	Father's income < mother's income:	17.66%
Hourly wage patterns			
Child family's hourly wage pattern		Parental family's hourly wage pattern	
Husband's wage > wife's wage:	63.51%	Father's wage > mother's wage:	71.49%
Husband's wage = wife's wage:	03.35%	Father's wage = mother's wage:	04.52%
Husband's wage < wife's wage:	33.14%	Father's wage < mother's wage:	23.99%

Source: Calculated by the author.

and second generations were 37.3% and 25.1%, respectively. Regarding earnings, the shares of income hypergamy were large for both generations, but that of the first generation were significantly greater than the second generation (77.1% and 68.4% for the first and the second generation, respectively). In contrast, the share of income hypogamy increased from parents' generation to their child generation. Similar phenomena happened for the hourly wage and labor supply.

Previous literature shed some light on our results. Analyzing micro-data of 120 countries in the world (including the US) for the period 1960-2011, Esteve *et al.* (2016) insisted on the termination of educational hypergamy and a surge in educational hypogamy. They found that wives of educational hypogamy families have a higher probability of being the breadwinners. Moreover, although motherhood prevents women from becoming breadwinners in the family, this fact may not be accurate for hypogamous couples. In the US, the contribution of married women's earnings to their family income slightly increased from 27% to 31% during the period 1970-1991. This augmentation occurred mostly in the decade 1980-1990. In general, the share of full-time working women in family income was greater (Hayghe, 1993). The attitude about the "marry-up" couple has also altered over time along with the change in gender disparity in education. The percentage of male college students who did not care about this increased remarkably from 41% to 60% between 1980 and 1990 in the US. The findings also indicated that wives' relative income or education might no longer significantly affect their marital stability (Esteve *et al.*, 2016).

On the other hand, Raley *et al.* (2006) showed a smaller share of earnings of hypogamy couples compared to that of educational hypogamy couples. They suggested that gendered norms on breadwinners have not altered as fast as educational opportunities. Using two waves 1996-1998 from the General Social Survey, they indicated that 40% of men and 35% of women still believed that it is better for both partners if the man specializes in the labor market and his wife specializes in housework. Winkler (1998) reminded us of assortative mating in education and earnings. She investigated the US' Current Population Survey data in 1993 and revealed that among 50% of dual-earner families, two spouses had the same educational level. And among 30% of these families, two spouses share the same quintile of earnings. She considered it as evidence of a correlation between education and earnings. Among the four economic statuses, the highest rate of resemblance is in education. It is probably because two partners meet in school. Winkler also noted that women are usually paid less than men even when they have the same qualifications. Therefore, it is not a surprise that the percentage of educational homogamy is much higher than that of homogamy in earnings. Juhn & Murphy (1997) supposed that women participate in the labor force because their work opportunities increase rather than a reduction of their husbands' opportunities. Moreover, as a consequence of the changing gender-roles between spouses in the family, the time used for housework of wives has fallen, though they still contribute substantially more time than their husbands in this work (Blau, 1998).

5.4. Transmission of educational patterns

Using the ordered-probit model, we can estimate the effect of the parents' pattern on their child's family pattern. Tables 5 and 6, based on equation (6), classify families into three educational patterns for both generations: (i) the man is more educated than his wife, (ii) the man is equally educated as his wife, and (iii) the man is less educated than his wife. The results show a significant connection between parents and their son's family. The effect of parents is more marked for "married up" son families than those for "married down" ones. A negative (-2.3%) marginal effect of parents on the probability of the son's family implies that an increase in the parental educational gap is connected with a decrease in the incidence of son families being of the "married down" type.

TABLE 5
ORDER PROBIT: TRANSMISSION OF FAMILY'S EDUCATIONAL PATTERN

	Child's family educational pattern								
	In child's family (both genders)			In son's family			In daughter's family		
	β	α1	α2	β	α1	α2	β	α1	α2
Parental family's educational pattern	0.028 (0.029)	–0.632 (0.038)	0.275 (0.037)	0.070* (0.042)	–0.522 (0.054)	0.413 (0.054)	–0.002 (0.041)	–0.729 (0.054)	0.158 (0.051)

TABLE 6
ORDER PROBIT: PROBABILITY AND MARGINAL EFFECTS

	Probability of son family's educational patterns		
	Husband's educ > wife's educ	Husband's educ = wife's educ	Husband's educ < wife's educ
Parental educational pattern:			
father > mother	30.1%	35.9%	34.0%
father = mother	27.7%	35.7%	36.6%
father < mother	25.4%	35.4%	39.2%
	Marginal effects on son family's educational pattern		
	Husband's educ > wife's educ.	Husband's educ = wife's educ.	Husband's educ < wife's educ.
Parental educational pattern	-0.023* (0.014)	-0.003 (0.002)	0.026* (0.016)

Source: Estimated by the author. 1st line: Elasticity. 2nd line, in parentheses: Standard error. *: Significant at P = 10%. **: at P = 5%. ***: at P=1%.

Mare (2016) documented a U-shaped curve in educational homogamy during the 20th century in the US. He also showed a notable transmission of homogamy across generations. An explanation for this fact is the socio-economic reproduction at the intra-household level. The transmission also contributed to the trend in spousal resemblance in educational attainment. Homogamy was found much more likely among people who went to the same or nearby university (Nielsen & Svarer, 2009). Gonalons-Pons & Schwartz (2017) investigated the US data for the period 1970-2013 and argued that an increase in earnings homogamy is mainly led by alternations in the allocation of labor market time rather than alternations in assortative mating on earnings. Andrade & Thomsen (2018) investigated Danish population data and insisted on a reduction in educational homogamy between 1984 and 2013. But the odds ratios of having educational resemblance among university graduate couples were still remarkable. Also, returns to education contributed very little in explaining the homogamy patterns of the period.

In summary, the empirical section showed a transmission from parents to sons' family in income, wage, work duration, and educational disparities. The findings are consistent with those of many past works in economics and other social sciences on the transmission of marital preference, gender-role attitude, and marital choices across generations (e.g., Bisin & Verdier, 2001; Charles & Hurst, 2003; Fernandez *et al.*, 2004; Farre & Vella, 2013). Some of the past works indicated that sons mimic their parents more than daughters regarding gender-role attitudes (Powell & Steelman, 1982; Kulik 2002) or earnings (Chadwick & Solon, 2002). This section also emphasized the role of marital sorting in the transmission of the disparities and explores the reproduction of educational patterns across generations.

6. Conclusion

The study provides the first evidence on the transmission of spousal inequalities across generations. It shows a similarity in inequalities of income, wage, work hours, and education between parents' and son's family but those between parents and daughter's family are insignificant. The study most relating ours is Fernandez *et al.* (2004). Fernandez *et al.* suggest that sons use their mother working behavior as a stereotype in selecting a marital partner. That causes evolution in men's attitudes toward women's work and changes their preference for their wives' working behavior. They explain that the transmission of preferences influences women's education and labor choices across generations. In this paper, we also see the link between parents and son's family in inequalities due to the transmission of preferences. The findings of our study may reflect the biological transmission and imitation of attitude among generations as well. Using PSID, we can benefit from the intergenerational and the panel structure. The disadvantages of PSID are the small sample size and the asymmetric structure of income data between a wife and a husband in the same family. Nonetheless, the research results contribute to the theories of intergenerational mobility, income distribution, and intra-household resource allocation.

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Appendix. Variables description

Husband (wife)'s age	Age of husband (wife) when included into the main sample
Husband (wife)'s education	1-16: the actual grade of school the husband (wife) completed, 17: completed at least some postgraduate work
Husband(wife)'s work hours	Total average annual hours worked of husband (wife)
Husband (wife)'s labor income	Husband (wife)'s average labor income, excluding farm and business income
Husband (wife)'s hourly wage	Husband (wife)'s average hourly wage
Number of children	Number of children of the adult child
Number of sibling	Number of sibling of the adult child
Number of opposite-sex sibling	Number of opposite-sex sibling of the adult child
National origin	Dummy variable, = 1 if head of the child household's ethnic group was National origin
Catholic preference	Dummy variable, = 1 if head of the child household's preference was Catholic
Black	Dummy variable, = 1 if head of the child household's race was black
Job tenure	
Less than one year (D)	Dummy variable, = 1 if head of the child household had less than 01 year of working experience with the current organization
From 1 to 5 years (D)	Dummy variable, = 1 if head of the child household had 01-05 years of working experience with the current organization
From 5 to 10 years (D)	Dummy variable, = 1 if head of the child household had 01-05 years of working experience with the current organization
10 years or longer (D)	Dummy variable, = 1 if head of the child household had at least 10 year of working experience with the current organization
Farming, fishing, and forestry sector (D)	Dummy variable, = 1 if occupational sector of head of the child household was farming, fishing or forestry
Weeks of work missed	Total weeks of work missed of both spouses due to illness of members in family
Taxable income	Total annual taxable income of the family
Father (mother)'s age	Age of father (mother) when included into the main sample
Father (mother)'s education	1-16: the actual grade of school father (mother) completed, 17: completed at least some postgraduate work
Father (mother)'s work hours	Total average annual hours working of father (mother)
Father(mother)'s labor income	Father (mother)'s average labor income, excluding farm and business income
Father (mother)'s hourly wage	Father (mother)'s average hourly wage