Trends in earnings inequality and earnings instability among U.S. couples: How important is assortative matching?☆

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Dmytro Hryshko [a], Chinhui Juhn [b,*], Kristin McCue [c]

[a] *University of Alberta, Canada*
[b] *University of Houston and NBER, United States*
[c] *U.S. Census Bureau, United States*

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ABSTRACT

We examine changes in inequality and instability of the combined earnings of married couples over the 1980–2009 period using Social Security earnings data matched to Survey of Income and Program Participation panels. Relative to male earnings inequality, the inequality of couples' earnings is both lower in levels and rises by a smaller amount. We also find that couples' earnings instability is lower in levels compared to male earnings instability and actually declines in these data. While wives' earnings played an important role in dampening the rise in inequality and year-to-year variation in resources at the family level, we find that marital sorting and coordination of labor supply decisions at the family level played a minor role. Comparing actual couples to randomly paired simulated couples, we find very similar trends in earnings inequality and instability.

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1. Introduction

The U.S. labor market experienced a tremendous rise in male earnings inequality over the past four decades.[1] Not only did cross-sectional earnings inequality increase, over the early part of this period the within-person variability of earnings increased as well.[2] The same period saw a large increase in employment and earnings of women, with particularly dramatic changes for married women. These concurrent trends raise the question of the extent to which changes in wives' earnings contributed to growth in the inequality and instability of family earnings. Positive assortative matching is one reason to think it might, and so a related question is whether positive assortative matching of couples has increased and has contributed to the rise in family earnings inequality.

A number of papers have examined these questions. Cancian et al. (1993), Cancian and Reed (1998), Hyslop (2001), Devereux (2004), and Pencavel (2006) find that wives' earnings have had an equalizing impact on the distribution of family earnings. Pencavel (2006) and Hyslop (2001) additionally consider the role of positive assortative matching, with Pencavel (2006) finding that the covariance of husbands' and wives' earnings did not contribute much to the rise in family earnings inequality while Hyslop (2001) finds it had a somewhat larger role. Recent papers by Eika et al. (2014) and Greenwood et al. (2015), which focus on couples matching on education, also reach the conclusion that positive assortative matching played a minor role in the rise in household income inequality.

In this paper we examine these two questions—the impact of wives' earnings on couples' earnings inequality, and the contribution of positive assortative matching—considering both the level and the rise in couples' earnings inequality. We do so using the Survey of Income and Program Participation linked to Social Security earnings records (SIPP-SSA). Our paper makes two primary contributions. The first is to provide evidence on family earnings dynamics based on administrative earnings records, in keeping with recent papers in the literature on individual earnings inequality that use administrative data sets to reconsider earlier findings based on survey data (Daly et al., 2016; Guvenen et al., 2014; Kopczuk et al., 2010; Sabelhaus and Song, 2010).

[1] See, for example, survey articles Autor and Katz (1999) and Autor et al. (2008). More recent papers documenting inequality trends include Blundell et al. (2008), and Heathcote et al. (2010a).

[2] Gottschalk and Moffitt (1994) first documented the rise in the within-person variability of earnings, referred to in the literature as "earnings instability." Other papers using alternative data sets and methods generally confirmed Gottschalk and Moffitt (1994)'s basic findings: earnings instability increased dramatically during the 1970s and reached a peak during the 1982 recession but since that period stabilized to the level observed prior to 1982—see, for example, Cameron and Tracy (1998), Haider (2001), Kopczuk et al. (2010) and Dahl et al. (2008). However Dynan et al. (2012) and Shin and Solon (2011) find that earnings instability rose in the PSID in the 1990s and the 2000s.

Our second contribution is to bring to bear a simple intuitive method based on resampling to investigate the role of covariance of couples' earnings. Earnings of spouses may be positively correlated because of positive assortative matching on characteristics such as education and age (Mare, 1991; Pencavel, 1988). Earnings of spouses may also co-vary due to coordinated labor supply decisions. For example, an increase in husband's wage may reduce wive's hours if there is a large income effect. Families may also have one spouse specialize in the market and the other in the home when young children are present, if time at home for husband and wife are substitutes at this stage of the life cycle (Lundberg, 1988).

Wives may also increase labor supply temporarily to compensate for husbands' job loss—a pattern known as the "added worker effect"(Lundberg, 1985; Stephens, 2002). Such adjustments imply a negative correlation between husbands' and wives' earnings that may affect both transitory and permanent variances.

To gauge the importance of matching and joint labor supply decisions, we build counterfactual earnings inequality and instability measures by drawing random matches of married men and married women and constructing the same measures using their combined earnings. If earnings inequality and instability measures for the randomly re-matched couples differ substantially from those of actual couples, this would point to an important role for matching and/or joint labor supply decisions.

Our findings are as follows. Inequality in the combined earnings of couples is lower than inequality of husbands' earnings, and grew at a slower rate, indicating that wives' earnings had an equalizing impact on both the level and growth of family earnings inequality. Similarly, earnings instability is lower for couples and actually fell over time in the SIPP-SSA data while husbands' earnings instability rose slightly. We find that coordination of spouses' labor supply decisions and positive assortative matching on net played a minimal role in determining overall earnings inequality and earnings instability among couples. We find similar trends for actual and simulated couples, suggesting that who is married to whom is relatively unimportant for the evolution of couples' inequality and instability in the U.S.

Our findings on the equalizing impact of wives' earnings is similar to Cancian and Reed (1998), Devereux (2004), and Pencavel (2006) who study cross-sectional earnings inequality. Our panel data, however, allow us to examine earnings instability as well as the inequality of permanent earnings. The minor role we attribute to the covariance of couples' earnings in explaining inequality growth is in line with Pencavel (2006). Our conclusion differs somewhat from Hyslop (2001) who finds a larger role of covariance of earnings. One important way in which our analysis differs from Hyslop (2001) is that we base our findings on a more inclusive sample—rather than selecting on couples who are continuously employed, we require that husbands be continuously employed but include couples whether or not wives have positive earnings. When we select on continuously working couples to follow Hyslop (2001), we similarly find that the covariance of couples' earnings plays a larger role. This suggests that an important reason for the low correlation of couples' earnings is wives' entry and exit decisions.

These results refer to the net effect of positive assortative matching and offsetting labor supply. Our paper also attempts to disentangle the two effects. Consistent with Eika et al. (2014) and Greenwood et al. (2015), we find that positive assortative matching based on observable characteristics such as education and age contributed little to couples' earnings inequality growth. While it is difficult to distinguish between the effects of changes in offsetting labor supply and changes in positive assortative matching on unobservable characteristics in our data, some further analysis using wages in the PSID suggests that sorting, even including unobservables, played a relatively minor role for couples' earnings inequality growth.

The rest of the paper is structured as follows. Section 2 discusses the methodology while Section 3 describes our data set and samples used. Section 4 describes earnings inequality and instability trends for indi-viduals and couples. Section 5 compares inequality and instability measures across actual and simulated couples to examine the importance of spousal matching and family labor supply decisions. Section 6 examines the robustness of our results by applying the same methods to an alternative data set, using different inequality measures, altering our sample restrictions, and using additional background variables to check whether there is substantial assortative matching on characteristics other than age and education. Section 7 summarizes our findings.

2. Methodology

To help describe our basic approach, we begin with the following statistical model:

$$\log y_{it} = X'_{it}\beta_t + \epsilon_{it}$$
$$\epsilon_{it} = p_t^\mu \mu_{it} + p_t^v v_{it}, \tag{1}$$

where $\log y_{it}$ denotes individual i's log annual earnings and X_{it} denotes observed characteristics. Residual earnings, ϵ_{it}, are assumed to consist of a permanent component, μ_{it}, and a transitory component, v_{it}, which is assumed to be independent of μ_{it}. The term p_t^μ represents factor-loading on the person-specific permanent component, such as time-varying returns to individual skills or human capital. Similarly, the term p_t^v reflects factor-loading on the person-specific transitory component. The transitory component, v_{it}, may comprise purely transitory i.i.d. shocks and/or a (short-lived) serially correlated transitory process. The permanent component, μ_{it}, may comprise a factor that is completely fixed and/or the cumulated effects of long-lived shocks.[3]

In the data, much of the variation in individual earnings is due to the variation in ϵ_{it}. Understanding the cross-sectional variation of ϵ_{it} is, therefore, important for understanding the cross-sectional variation of earnings, $\log y_{it}$. In the following, we refer to the cross-sectional variance of residual earnings, ϵ_{it}, as "earnings inequality." We run a pooled regression of individual log earnings on year dummies to control for aggregate trends in earnings, and a polynomial in age to control for predictable life-cycle effects. Our measure of inequality, therefore, will reflect earnings inequality due to idiosyncratic individual labor market shocks as well as earnings inequality due to differential returns to observable characteristics among individuals of the same age.

To gauge the importance of permanent versus transitory components of earnings inequality we follow the methodology of Kopczuk et al. (2010). In particular, we average ϵ_{it} over a five-year window and denote that average as $\bar{\epsilon}_{it} = \sum_{j=t-2}^{j=t+2} \epsilon_{ij}$. As in Kopczuk et al. (2010), we refer to the cross-sectional variance of $\bar{\epsilon}_{it}$, $\text{var}^i(\bar{\epsilon}_{it})$, as the "permanent variance" at time t, and the cross-sectional variance of $\epsilon_{it} - \bar{\epsilon}_{it}$ as the "transitory variance" at t. To interpret the measures, consider the case when μ_{it} is a time-invariant person-specific effect μ_i, the factor-loadings p_t^μ and p_t^v are constant, and v_{it} is an i.i.d. shock. The variance of $\bar{\epsilon}_{it}$ will then come close to the variance of the permanent component, μ_i, provided that a five-year average of the transitory shocks v_{it} has negligible variance. In a more general case, when the permanent component is modeled as a random walk or a highly persistent process, the variance of $\epsilon_{it} - \bar{\epsilon}_{it}$ may contain the contribution of both permanent and transitory shocks, as also noted by Kopczuk et al. (2010). However, $\bar{\epsilon}_{it}$ will put a larger weight on shocks to the permanent component, more so if the averaging window is larger.[4] In general, events

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[3] The permanent component captures both idiosyncratic earnings differences due to time-invariant factors such as formal education, and/or time-varying personal attributes that affect individual earnings for an extended period of time (e.g., match effects that may vary due to firm-specific productivity shocks). The permanent component is normally modeled as a person-specific fixed effect (i.e. $\mu_{it} = \mu_i$ for all periods), or, more generally, as a sum of the fixed effect ($\tilde{\mu}_i$) and a highly persistent component (e.g., a random walk: $\mu_{it} = \mu_{it-1} + \xi_{it}$).

[4] Note, however, that there is a tradeoff in selecting a wider window—the wider window will be more informative on the rise of inequality due to permanent or more persistent shocks but it also entails selecting a sample of more stable couples which is likely to be less representative of the overall population of U.S. families.