Spousal Mobility and Earnings

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Abstract

This paper studies the effect of having a spouse in a more or less mobile occupation on an individual's migration and earnings outcomes, and how these effects differ between men and women. Cross-state migration measures are calculated by occupation and education from the 2000 Census. The effects of these occupational mobility measures are analyzed separately for four groups of couples: both have college degrees ("power couples"), only the husband has a college degree, only the wife has a college degree, and neither has a college degree.

Results indicate that the mobility rates in both the husband's and wife's occupations affect the household migration decision, but mobility in the husband's occupation matters considerably more. Among never-married individuals with college degrees, however, men and women are equally responsive to occupation mobility in their migration behavior.

The earnings analysis uses occupation fixed-effects and average wage in occupation-education class to control for substantial heterogeneity in earnings potential. For couples in which the husband has a college degree, regardless of wife's education, wife's mobility has a *positive* effect on husband's earnings, but husband's mobility has an even larger, significant *negative* effect on wife's earnings. Among couples in which only the wife has a college degree, these effects are considerably dampened.

I. Introduction

In the substantial literature on the relationship between migration and earnings, an important finding has been that the earnings of married women typically decrease with a move while the earnings of married men often increase. This is consistent with the story that married women are more likely to act as the "trailing spouse" or to be a "tied-mover."

This paper considers a related but unexplored question: what is the effect of having an occupation that is associated with frequent migration on the migration decisions of your household and on the earnings of your spouse? How do these effects differ between men and women? There are two reasons to move beyond the previous analysis of household moves to studying the effect of occupational mobility on migration and earnings. First, while the literature has confirmed that wives frequently make moves that are disadvantageous from an earnings standpoint, this is only part of a broader question concerning the extent to which the earnings of husbands and wives are benefited or harmed by the ability to move to or stay in optimal locations. Second, the methods used in the literature do not adequately adjust for occupational differences between men and women, so it is hard to know whether the current findings in the literature are the result of differences in jobs held by men and women or the result of differences in influence on location decisions.

On the first point, for example, spouse's mobility can affect an individual's own earnings even in absence of a move. The lack of mobility of the spouse can limit the ability to move to a more advantageous location (the "tied-stayer" phenomenon). Alternatively, a more mobile partner increases the ability to convincingly threaten to leave the current employer, allowing one to negotiate salary increases. On the second point, one could argue that men are much more likely to work in occupations that require moves, while women are much more likely to work in

occupations, such as nursing, that are flexible and portable. The question is, controlling for an individual's own occupation and the earnings potential in that occupation, how does the migration rate in their spouse's occupation affect their own labor market outcomes?

This paper uses the Public Use Microdata Sample (PUMS) from the 2000 Decennial Census to calculate mobility measures by occupation and education class, where mobility is measured by the fraction of workers in that occupation and education class who have moved across state lines in the past 5 years. Using the sample of white non-Hispanic dual-earner married couples between the ages of 25 and 55 in the 2000 Census, migration and earnings analyses are performed separately for four groups of couples: both have college degrees ("power couples"), only the husband has a college degree, only the wife has a college degree, neither has a college degree.

Results indicate that the mobility rates in both the husband's and wife's occupation affect the household migration decision, but mobility in the husband's occupation matters considerably more. Comparison analysis for never-married individuals indicates that, among low-education couples, this asymmetry reflects baseline differences in behavior between low-education men and women. Among never-married individuals with college degrees, however, men and women are equally responsive to occupation mobility in their migration behavior.

The earnings analysis uses occupation fixed-effects and average wage in occupation-education class to control for substantial heterogeneity in earnings potential. For couples in which the husband has a college degree, regardless of wife's education, wife's mobility has a *positive* effect on husband's earnings, but husband's mobility has an even larger, significant *negative* effect on wife's earnings. Among couples in which only the wife has a college degree, these effects are considerably dampened.

II. Literature Review

Early work on household migration theorized that a household migrates if the total increase in household income exceeds the total costs of migration. As such, it is possible for a move to reduce one partner's earnings if the increase in the other partner's earnings is greater (Sandell, 1977; Mincer, 1978). Because women have traditionally worked in lower-earning occupations that require less human capital investment, they have historically been less likely to realize large earnings gains or losses from moves. As a result, it stands to reason that location decisions are more often made based on the husband's opportunities, with the wife often as a "tied-mover" or "tied-stayer."

A number of empirical papers have studied the differential effect of migration on labor market outcomes of wives and husbands (Sandell, 1977; Spitze, 1984; Morrison and Lichter, 1988; Shihadeh, 1991; Cooke and Bailey, 1996; Boyle et al., 2001; Nivalainen, 2004; Amstrom and Westerlund, 2006). Most have found that migrating wives experience more negative labor market effects than migrating husbands (an exception being Cooke and Bailey, 1996). Several studies have found that the negative effects of migration on wives' employment dissipate within a few years (e.g. Spitze). This is consistent with the argument that women tend to work in jobs with little investment and flat wage profiles, which are therefore relatively insensitive to disruptions in participation.

A number of studies (e.g. Shihadeh, 1991; Bielby and Bielby, 1992) have argued that the symmetry of the neoclassical model of migration, that the household will move for an increase in total income regardless of whether it is accrued to the husband or wife, does not adequately explain the findings of employment and earnings disruptions for migrating wives. They argue instead that decisions based on traditionally accepted gender roles, in which the husband's career

considerations dominate regardless of the net change in household income, are more consistent with the empirical evidence. Alternatively, Rabe (2006) generates estimates of returns to migration for husbands and wives with corrections for selectivity into migration and employment. Using these estimates in a migration model, she finds that the couples put equal weight on each partner's expected wage gains in the migration decision.

Another recent literature has focused on the location decisions of "power couples," couples in which both spouses have a college degree. Costa and Kahn (2000) argue that power couples have increasingly located in urban areas because of the increased prevalence of dual-career households and the resulting co-location problem. Compton and Pollak (2004) perform analysis that strongly suggests that the urban concentration noted by Costa and Kahn results from the attractiveness of urban areas to highly educated individuals and the fact that they match and marry at higher rates in urban areas, rather than joint job search on the part of power couples.

Interestingly, Compton and Pollak find that it is only the education of the husband that matters in the location decision. Irrespective of wife's education, couples in which the husband has a college degree disproportionately locate in larger urban areas. The current paper likewise finds the results for power couples to be very similar to couples in which only the husband has a college degree.

Because this paper performs separately analysis for couples of different levels of education, it is important to note that the literature shows that there is a substantially different relationship between migration and employment for workers, particularly men, with high levels of education than those with low education. Highly educated workers are more likely to move with a job in hand, while low educated workers tend to move to search for a job (Basker, 2003).

This suggests that the relationship between migration and labor market outcomes for married individuals will likely vary by education level.

III. Data

A. Occupation Characteristics

This paper classifies workers into occupation and education classes using the 504 civilian occupation categories in the 2000 Census and 8 education classifications: less than 9th grade, some high school, high school diploma, some college, bachelor's degree, master's degree, professional degree, doctoral degree.

There are two samples used to generate the data. The first sample is that used to calculate the mobility rates and average wages by occupation-education class. These are calculated using the sample of all workers ages 25 to 55, who resided in the U.S. in 1995, and for whom occupation, education and migration status are not allocated. The mobility measure is the fraction of workers in that occupation-education class that has migrated across state lines in the past 5 years. Average wages are only computed among those workers with wages between $3/hr and $300/hr. The second sample used to generate the data for analysis is the regression sample of white non-Hispanic dual earner married couples described in more detail in the next section.

The mobility and wage measures are calculated by occupation and education category using all workers ages 25-55. Table 1 then reports the averages of these occupation-education specific measures for the white dual-earner married couples in the regression sample. The finding in Table 1 that mobility increases with education is consistent with the migration literature. Table 1 also shows that among workers with less than a college degree, women are in more mobile occupations than men, while among workers with at least a college degree, women are disproportionately in occupations with lower rates of cross-state migration.

Table 1 also reports the correlation between the occupation-education specific migration rate and the occupation-education specific wage rate. The results indicate that among workers with less than a high school degree, occupations with higher migration rates tend to have lower wages, while for workers with at least a high school diploma, the correlation is positive. The results for unskilled workers likely reflect differences in migration behavior between high-education and low-education that have been documented in the migration literature. Skilled workers tend to migrate with a job in hand, while unskilled workers tend to migrate from areas with weak labor markets to areas with strong labor markets to search for a job, often after losing one. Therefore, low-skilled occupations with high migration rates tend to be ones utilized by workers that have experienced some sort of job displacement and/or are jobs easy to acquire in the aftermath of a move.

Table 2 provides additional illustration of high mobility and low mobility occupations. For each of three education categories: college degree or more, high school degree, less than high school degree, the table reports the most common occupations with the highest and lowest mobility rates.[1] The first column provides the occupation title; the second column reports the 5-year cross-state migration rate for *all* workers ages 25-55 in that occupation and education class; the third and fourth columns report the number of male and female observations in the regression sample that are in that occupation and education category.

For workers with at least a college degree, the high mobility occupations: pilot, clergy, physician, post-secondary teacher, marketing and sales manager, and network systems analyst, are ones in which migration will generally be important for career advancement. For several of

[1] For the first two categories, the table only reports occupations in which there are at least 1000 observations in the regression sample in that occupation and education class. For the final category, those with less than a high school degree, occupations with at least 800 observations are reported. The lower cut-off reflects the fact that there are fewer observations of members of white non-Hispanic dual-earner married couples with less than a high school degree.

these occupations, such as clergy, physician, post-secondary teacher, there is an important relocation from the place where training is received (divinity degree, residency, doctoral degree) to the first job. The degree of geographic flexibility in that initial location decision can be important to career advancement. In contrast, for many of the low-mobility occupations, such as school teacher, insurance sales agent, police officer, and real estate agent, earnings increase by maintaining tenure in a single location, allowing a person to work their way up a pay scale or to establish a reputation and client base.

For members of the regression sample with just high school degrees, the high mobility occupations are a mix of occupations in which relocation is a means of career advancement (e.g. aircraft mechanic, computer software engineer) and occupations in which it is not (e.g. cook, waitress/waiter, bartender).[2] For this latter set of jobs, it is highly unlikely the worker is migrating with a job in hand. Rather they are jobs that a person without a college degree who has chosen to relocate (due, for example, to poor labor market opportunities in their previous location) can find with relative ease.

Finally, for those in the sample with less than a high school degree, the highest mobility occupations, such as cashier, retail salesperson and construction laborer, are low-skilled, low-investment occupations with substantial employee turnover.[3] In contrast, the low-mobility occupations, such as production line managers, auto mechanics and truck drivers, are relatively high-paying occupations for workers with less than a high school degree.

[2] Mobility rates are calculated by occupation *and* education class, which is why, for example, Network Systems and Data Communications Analysts appears in both the college degree and high school degree categories with different mobility rates.

[3] Carpenters, which would have higher skill investment, would be an exception to this characterization of the list. The Census occupation classification system distinguishes between the more skilled construction occupations, such as cement masons, plasterers, iron and steel workers, and the lower-skilled construction laborers that generally provide basic manual labor. It should also be mentioned that the mobility rates in this paper are calculated using only workers that were in the U.S. 5 years prior to the Census, so the high-mobility occupations for the low-education group do not reflect in-migration of low-skilled immigrants.

B. Regression Sample

The regression analysis in this paper uses the sample from the 2000 Census of married couples in which both the husband and wife are non-Hispanic white and ages 25 to 55. Only couples in which both spouses earned at least $1000 in 1999 are included in the sample.[4] Couples that include a member of the military are excluded from the sample. Couples in which marital status, education, occupation, earnings or migration status are allocated for either partner are also excluded from the sample, as are those who lived outside the U.S. in 1995.

In the regression analysis, couples are divided into four groups: both have a college degree (power couples), only husband has a college degree (husband-only couples), only wife has a college degree (wife-only couples), and neither has a college degree (neither-college couples). Table 3 reports sample means for each of these four categories of couples. There are a few striking patterns in Table 3. One is, of course, the difference in migration rates between high and low-education couples that were also observed in Table 1. Another is that the college-educated men in power couples have higher-earning, higher-mobility occupations than the college-educated men in husband-only couples, and the college-educated women in power couples also have higher-earning, higher-mobility occupations than college-educated women in wife-only couples. This is consistent with positive assortative matching in which men with high earnings potential marry women with high earnings potential. As a result, the husbands in power couples are slightly higher quality on average than those in husband only couples and the same is true for wives in power couples compared to those in wife only couples.

[4] The effect of spouse's mobility on labor force participation is also an interesting topic, but not the focus of this paper.

It might be somewhat surprising that there are just as many wife-only couples as husband-only couples, but researchers have documented that it is now just as common for men to marry women with more education as for them to marry women with less education (Schwartz and Mare, 2005). This is due, in part, to the fact that high school and college completion rates are now higher for women than men. As might be expected, the wife-only couples are, on average, the youngest in the sample, while the husband-only couples are, on average, the oldest in the sample. As a result, the husband-only couples are less likely to still have children under 18 years old in the household.

The empirical specifications in this paper treat spouse's occupation as exogenous. This is, of course, a strong assumption, and there are a number of ways in which it can be violated. One would be that particularly career-oriented individuals strategically chose partners in occupations with fewer career demands, generating negative assortative mating. Alternatively, if there is positive assortative matching, career-oriented individuals will match with individuals who are also in higher-paying, higher-mobility occupations.[5] Finally, individuals could change occupations during marriage in response to their partner's success. For example, an artist with an unsuccessful spouse might take on alternative employment to supplement household income.

The earnings analysis in this paper includes own-occupation fixed-effects, so that the selective matching described in the above paragraph must take place within occupation and education class. Even so, unobserved heterogeneity must be considered when interpreting the results in this paper.

[5] For men with less than a high school degree, correlation of own occupation mobility and spouse's occupation mobility is 0.05. For men with a high school degree and men with a college degree, the correlations are 0.14 and 0.13, respectively. For men with more than a college degree, the correlation is 0.23.

IV. Empirical Analysis

The empirical analysis proceeds in two parts. The first part estimates the effect of the migration rate in occupation-education class on an individual's or couple's own migration behavior. A key component of this analysis is to compare the effect of occupational mobility on migration for married men and women to that for unmarried men and women. The second part of the analysis estimates the effect of the migration rate in spouse's occupation-education class on own earnings.

A. Migration Analysis

This section estimates the effect of migration rates in the husband's and wife's occupations on couple migration activity using the following logit model:

$$(1)\qquad \log\left(\frac{P(M_{chws}=1)}{P(M_{chws}=0)}\right) = \alpha_o + \alpha_1 Husb\_Mob_h + \alpha_2 Wife\_Mob_w + \alpha_3 Husb\_Wage_h + \alpha_4 Wife\_Wage_w + X_c\alpha_5 + State_s\delta + State_s * Urban_c\gamma,$$

where M is an indicator variable for cross-state migration in the past 5 years for couple c with husband's occupation-education class h and wife's occupation-education class w living in state s. *Husb_Mob* is the migration rate in the husband's occupation-education classification; *Wife_Mob* is the migration rate in wife's occupation-education classification; *Husb_Wage* is the logarithm of the average wage in husband's occupation-education classification; *Wife_Wage* is the logarithm of the average wage in wife's occupation-education classification. To be clear, the wage measures are averages over all workers in the individuals' occupation-education group, not the individual's own wage.

X is a vector of demographic controls that includes the husband's age and age squared, the wife's age and age squared, presence of children under 18, presence of children under 6, indicators for husband's and wife's education level (less than high school, some high school,

high school diploma, some college, college degree, master's degree, professional degree, doctoral degree), and interactions of the education indicators with age.[6] *State* is a vector of state fixed-effects and *State*Urban* interacts the state fixed-effects with an indicator for urban residence. These fixed effects control for differences in migration rates across states and between urban and non-urban areas within states.

The first two rows of Table 4 reports average marginal effects for *Husb_Mob* and *Wife_Mob*, for each of the four couples groups, using estimates from equation (1). Standard errors for the marginal effects, clustered at the occupation-education level, are calculated using the delta method. Results are reported for the four different couple groups. In all cases, both the husband's and wife's occupation-specific mobility rates are positively related to the couples own migration propensity. The relationship is stronger, however, for the husband's mobility than the wife's. These results indicate that that the emphasis on husband's opportunities that has been observed in other studies of migration is not just the result of men and women having different occupations with different mobility requirements. An occupation with a higher rate of migration for either member of the household will increase the probability the couple migrates, but will increase it more when it is the husband's occupation than when it is the wife's. Interestingly, the average marginal effects are relatively similar in size across all four couples groups. To illustrate the magnitude of the effect, a one standard deviation (0.056) increase in husband's occupational mobility for a power couple increases, on average, the probability of migration of the power couple by 3.4 percentage points. The baseline migration rate for power couples is 11.7 percent.

The final two rows of Table 4 report average marginal effects of *Husb_Wage* and *Wife_Wage*. A higher wage in wife's occupation has a significant negative effect on the couple's

[6] Clearly, some of the education indicators will drop out when the sample is restricted to a particular couple group.

migration probability for all but the wife only couple group. The estimates for the wage in husband's occupation are mixed and small in magnitude.

B. Migration Analysis: Never-Married vs Married

The differential effects of husband's and wife's occupational mobility in Table 4 could reflect differences in weighting of husbands' and wives' careers in location decisions, or they could reflect underlying differences between men and women in responsiveness to migration opportunities in their occupation. To further address this issue, Table 5 provides estimates of the effect of occupational mobility on migration behavior for both never-married and married individuals.

The first row of Table 5 reports results for white non-Hispanic never-married individuals, ages 25-55, who meet the same sample selection requirements as the married couples sample. The table reports results from the following logit model:

$$(2) \qquad \log\left(\frac{P(M_{ios}=1)}{P(M_{ios}=0)}\right) = \alpha_o + \alpha_1 Own\_Mob_o + \alpha_2 Own\_Wage_o + X_i\alpha_3 + State_s\delta + State_s * Urban_i\gamma,$$

where M remains an indicator for cross-state migration in the previous 5 years for person i in occupation o in state s, *Own_Mob* is the migration rate in the individual's occupation-education classification, and *Own_Wage* is the average wage in the individual's occupation-education classification. X contains the same individual controls for education, age and presence of children as described above for equation (1), excluding, of course, the controls for spouse's demographic characteristics.[7]

[7] Because the own children in household variable is only reported for women, the controls for presence of children are omitted in the models for unmarried men. This is unlikely to generate much bias in the results for unmarried men. Further, the results in Table 5 change only modestly when the controls for children are omitted from all of the models.

Average marginal effects of *Own_Mob* are reported in the first row of Table 5 for never-married men and women with and without a college degree. The results indicate that among those with at least a college degree, never-married men and never-married women are equally, and highly, responsive to occupational mobility in their migration behavior. Among never-married individuals with less than a college degree, the migration behavior of women is less responsive to occupational mobility than the migration behavior of women.

The second row of Table 5 reports estimates from equation (2) for the sample of married individuals, again excluding controls for spouse's occupational or demographic characteristics. For all groups, the marginal effects of occupational mobility are lower for married individuals than never-married individuals. It is note-worthy, however, that the drop is by far the most precipitous for college-educated women. The results for married men and women with college degree show, just as they did in Table 4, that married couples are more likely to move in response to mobility in the man's occupation than in the woman's. Comparing the first two rows of Table 5, however, indicate that this asymmetry among the married couples is not due to underlying differences in the migration behavior of college-educated men and women. The same cannot be said for men and women with less than a college education. In that case, the differential effects between married men and women are also observed between never-married men and women.

The results in row 2 are likely biased by the omission of spouse's characteristics. The third row, therefore, reports estimates from equation (2) with spouse's occupational mobility, spouse's occupational wage and spouse's demographic characteristics reincorporated into the

model.[8] The effects decline for all four groups, but the largest drop is again for the married women with college degrees. The final row of Table 5 generates the same findings as those reported in Table 4: a substantially larger effect of husband's mobility on married couple's migration than wife's mobility and very similar effects across education categories. With Table 5, however, we see that there is a fundamental difference in results between the high and low-education women: the results for low-education women reflect a lower baseline mobility that is observed among never-married women, for high-education women the lower mobility is unique to married women. This could reflect an effect of marriage on college-educated women, or it could reflect selection into marriage by less career-oriented women.

C. Earnings Analysis.

This section analyzes the relationship between an individual's own earnings and the occupation-specific migration rate of their spouse using the following regression specification:

$$Earn_{iops} = \beta_o + \beta_1 Own\_Mob_o + \beta_2 Spouse\_Mob_p + \beta_3 Own\_Wage_o + \beta_4 Spouse\_Wage_p + X_i\beta_5 + Occ_o\phi + State_s\rho + State_s * Urban_i\psi + \varepsilon_{iops}, \quad (3)$$

where *Earn* is the logarithm of annual earnings in 1999 for person *i* in occupation-education classification *o* with spouse's occupation-education classification *p* living in state *s*. *Own_Mob* is the migration rate in the individual's own occupation-education classification, and *Spouse_Mob* is the migration rate in his or her spouse's occupation-education classification. Similarly, *Own_Wage* and *Spouse_Wage* are the average wages in the own and spouse occupation-education classifications. To be clear, the wage measures are averages for the group of workers in the same occupation-education classification, not the individual's actual wage. *X* contains the same controls for age, education and children as defined for equation (1) above.

[8] The specification used to produce the results in the third row of Table 5 is identical to those used in Table 4. The primary difference is that in Table 5, the estimates are pooled across spouse's education, while in Table 4 they are estimated separately based on spouse's education.

Occupation is a vector of occupation fixed-effects for the 504 occupation categories. *State* and *State*Urban* are state and state-urban fixed-effects as defined for equation (1) above.

Including occupation fixed-effects and the average wage within the individual's occupation-education classification controls for an enormous amount of heterogeneity in the individual's earnings potential. We are primarily interested in β_2, the effect of the spouse's mobility, rather than β_1, the effect of own mobility. With the occupation fixed effects, β_1 is identified only by the variation in mobility across different education groups within occupation, which makes it difficult to interpret. The coefficient on spouse's mobility, β_2, indicates whether higher occupational mobility for the spouse is associated with earnings that are above or below average for an individual's occupation. Because our main interest is in the relationship between spouse's mobility and own earnings, and how this effect differs by gender, standard errors are clustered by the spouse's occupation-education classification.

The estimates of β_2 from equation (3) are reported for the full sample of married couples in the first column of Table 6.[9] The first coefficient of 0.117 indicates that, among power couples, wife's mobility has a positive, but insignificant, effect on husband's earnings. The second coefficient in the column of –0.869 indicates that, among power couples, husband's mobility has a sizeable and statistically significant negative effect on wife's earnings. The magnitude is such that if husband's occupational mobility is one standard deviation (0.056) higher, this reduces the wife's earnings by 5%. The results for couples in which only the husband has a college degree are similar to those for power couples: a positive effect of wife's mobility on husband's earnings and an even larger and significant negative effect of husband's mobility on wife's earnings.

[9] Due to computing constraints, the estimates in Table 6 obtained using a 90% sample of available observations.

These findings are consistent with the case in which a more mobile husband increases the likelihood that the wife will have to make a disadvantageous move, or refrain from making an advantageous move. The findings likewise suggest that a more mobile wife does not generally generate disadvantageous location decisions for the husband. The positive effects of wife's mobility on husband's earnings, while insignificant, are consistent with the case in which a more mobile wife does mildly facilitate advantageous moves for the husband, or at least increase the credibility with which a husband can threaten to leave their current employer.

Because the variation in spouse's occupation, even within occupation and couple group, is not strictly exogenous, alternative interpretations are also possible. The large negative effect of husband's mobility on wife's earnings could reflect the fact that men who are particularly career oriented and work in highly mobile careers seek out wives with less career ambition and lower earnings. Notice, however, that if this selective matching occurs largely based on occupation, so career-oriented and mobile men seek out wives who are, for example, elementary school teachers, the occupation fixed-effects will control for this effect. The analysis in Table 5 is measuring the effect of husband's mobility on wives within the same occupation and education group. Additionally, the matching on observables suggest positive, rather than negative, assortative matching. For power couples, there is a positive correlation between husband's and wife's occupational mobility (0.22), between husband's and wife's occupational wage (0.205), and between husband's earnings and wife's earnings (0.132). This suggests that, at least based on observables, more career-oriented men tend to marry more career-oriented women.

The results differ dramatically when we consider couples in which only the wife has a college degree. There is no effect of wife's mobility on husband's earnings, and the negative effect of husband's mobility on wife's earnings is much smaller and insignificant compared to

couples in which the husband has a college degree. These results are consistent with the case in which the husband's and wife's job opportunities are more evenly balanced in location decisions when the wife has more education than the husband.

The results for couples in which neither member has a college degree are quite different from the rest of the sample. The coefficient on wife's mobility in the husband's regression is negative and significant, while there is no effect of husband's mobility on wife's earnings. While one interpretation of the negative effect for men could be that in lower-education couples, the wife's job mobility forces the husband to make disadvantageous location decisions, a more plausible interpretation is probably one related to endogenous labor supply and occupation choices. Given that the high mobility jobs for women with less than a college degree tend to be jobs as waitresses, retail salespersons, and cashiers, a reasonable interpretation is that the below-average earnings of the husband cause low-skilled wives to enter these low-skilled occupations, either with or without a relocation, to supplement the household income.

D. Earnings Analysis by Presence of Children

The remaining two columns of Table 6 estimate equation (3) separately for couples with and without children under the age of 18. For all four of the couple groups, the effects of husband's mobility on wife's earnings are more negative in couples with children under the age of 18. For couples in which the husband has a college degree, the differences are particularly sizeable. The pattern of the effects of wife's mobility on husband's earnings is more mixed.

The results by presence of children are particularly interesting for the couples in which only the wife has a college degree. Among the wife-only couples without children, there is a negative, but insignificant, effect of wife's mobility on husband's earnings and no effect of husband's mobility of wife's earnings. It is interesting that we find this result among the

subgroup where it is most plausible that the wife's career might receive relatively more weight in the location decision. Among wife-only couples with children, the pattern of the coefficients is very similar to those in which the husband has a college degree: the effect of wife's mobility is positive, and the effect of husband's mobility is negative. The magnitudes are, however, quite a bit smaller than for power and husband-only couples.

For the couples in which neither member went to college and there are no children, there is a negative effect of wife's mobility on husband's earnings and a positive effect of husband's mobility on wife's earnings. It is tempting to interpret these results as similar to the ones for wife-only couples, and an indication that in neither-college couples, the location decisions are determined by the wife's occupation. Further analysis, however, indicates that that it would be inappropriate to make such a comparison.

The no child group is largely comprised of younger couples that have not had children yet and older couples whose children are already over 18. Unfortunately, because the 2000 Census does not ask women about number of children ever born, we cannot distinguish the childless couples from the "empty nest" couples. As a proxy, in regressions not reported here, the no child group was separated into women 35 and under and women over 35. For the wife-only couples, the effect of husband's mobility on wife's earnings is *positive* for the young childless women, but negative for the older women without children present. This remains consistent with an interpretation that couples in which only the wife has a college degree, and there are no children, the wife's labor force options receive the heavier weight in location decisions. In contrast, for the neither-college couples, the positive coefficient in the wife's equation is due to the older women without children present. The effect is negative for the young childless women.

E. Super Power Couples

An interesting extension of the analysis in Table 6 is to take the power couples sample and further differentiate based on whether one or both of the spouses has an advanced degree. The results are reported in Table 7 for super power couples (both have advanced degree), husband-only with advanced degree, and wife-only with advanced degree. To be clear, only couples in which both spouses have at least a college degree are included in Table 7.

The first-column results for the full sample of power-couples, strongly resemble the Table 6 results. For super power couples, wife's mobility has an insignificant effect on husband's earnings and husband's mobility has a sizeable and significant negative effect on wife's earnings. In super power couples, a one standard deviation (0.0713) increase in husband's occupational mobility reduces wife's earnings by 7%. For couples in which only the husband has an advanced degree, wife's mobility has a significant positive effect on husband's earnings and husband's mobility again has a large negative effect on wife's earnings. In husband-only advanced degree couples, a one standard deviation (0.0668) increase in husband's occupational mobility reduces wife's earnings by 7.5%. For couples in which neither has an advanced degree, wife's mobility has no effect on husband's earnings, and husband's mobility has a negative, but smaller, effect on wife's earnings. Columns 2 and 3 again show that the negative effects of husband's mobility are larger for wives with children under 18.

Interestingly, 35% of wives in super power couples are employed in primary or secondary education. 38% of wives in wife-only advanced degree couples are employed in primary or secondary education. This is result of the high proportion of college-educated women who work in primary or secondary education, and the strong incentives for public school teachers to obtain a master's degree in education to move up on the school district pay schedule.

As a sensitivity test, I re-assigned all observations in Table 7 with an advanced degree and employment in primary or secondary education to an education level of college degree. Re-estimating the analysis in column 1, the coefficient on husband's mobility for super power couples dropped from -0.976 to -0.764, but all other results remained virtually unchanged.

F. Earnings Analysis by Migration Status

Table 8 estimates the specification from equation (3) separately for those that have migrated across state lines in the past 5 years and those that have not. It is important to consider the appropriate interpretation of the regression on the migration sample. Given that a couple has migrated, and given all of the controls for the individual's characteristics and their occupation, higher mobility in their spouse's occupation increases the odds that the move was motivated by job considerations for their spouse. It is therefore not surprising that almost all of the coefficients in the migration sample results in the first column of Table 8 are negative. The one exception is the positive, but insignificant, effect of wife's mobility on husband's earnings for the husband-only couples.

Among the negative effects in column 1, it remains the case that the negative effects for women with husbands with college degrees remain by far the largest in magnitude and the most statistically significant. The non-migration sample results in the second column are similar to those reported in the first column of Table 6.

V. Conclusions

While previous research has studied the migration decisions of households and particularly the change in earnings associated with a move, this paper takes a substantially different approach. This paper considers the rate of migration associated with an individual's

occupation, and how this mobility affects both the migration decisions of the household and the earnings of their spouse.

For all couples, the results show that the migration decisions of the households are influenced by both the husband's and wife's occupational mobility, but that the husband's mobility has a much larger effect. Among never-married college graduates, men and women are equally responsive to occupational mobility in the migration behavior, suggesting that at least among high-education women, this asymmetry is unique to marriage.

Among couples in which the husband has a college degree, regardless of the wife's education, husband's earnings increase when their wives are mobile, but wife's earnings decrease when their husbands are mobile. These effects generally intensify with the presence of children. The results for couples in which the husband has a college degree are quite consistent with the case in which the couple's location decisions are dominated by the husband's career considerations, regardless of the wife's education. The fact that these effects are not present, or at least much smaller in magnitude, in couples in which only the wife has a college degree is further consistent with this interpretation.

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Table 1: Average Occupational Characteristics by Education Level

	Occupation-Education Specific Migration Rate		Average Wage in Occupation-Education Group		Correlation between Migration Rate and Average Wage	
	Men	Women	Men	Women	Men	Women
Less than High School	0.061 (0.019)	0.067 (0.021)	14.21 (2.44)	12.09 (2.25	-0.092	-0.188
High School Diploma	0.072 (0.027)	0.074 (0.024)	17.63 (3.85	14.85 (3.69)	0.206	0.200
College Degree	0.135 (0.041)	0.121 (0.037)	25.96 (7.41	21.77 (5.94)	0.289	0.316
More than College Degree	0.160 (0.069)	0.125 (0.066)	32.88 (11.20)	27.39 (8.64)	0.164	0.362

Notes: Sample is white, non-Hispanic married couples from the 2000 Census with both partners ages 25-55, civilian employees, and both partners earning at least $1000 in 1999. Mobility and wage rates calculated using all workers ages 25-55 in occupation and education group, using the 504 civilian occupation categories in the 2000 Census and 8 education categories: no high school, some high school, high school diploma, some college, college degree, master's degree, professional degree, doctoral degree. Mobility rate is the fraction of workers that have moved across state lines in the past 5 years. Wage rate is the average wage of workers with wages between $3 and $300 per hour.

Table 2: High and Low-Mobility Occupations by Education Level

	Mobility Rate	No. of Male Observations	No. of Female Observations
College Degree or More			
High Mobility:			
Aircraft Pilots/ Flight Engineers	0.286	1175	54
Clergy	0.257	3064	508
Physicians/Surgeons	0.241	3270	1760
Post-Secondary Teachers	0.222	4666	5014
Marketing and Sales Managers	0.213	4904	3423
Network Systems and Data Communications Analysts	0.209	1007	412
Low Mobility:			
Elementary and Middle School Teachers	0.070	10220	38892
Insurance Sales Agents	0.075	1608	584
Secondary School Teachers	0.079	5343	7144
Police Officers	0.083	1985	217
Real Estate Agents	0.089	898	770
Bookkeeping, Accounting and Audit Clerks	0.090	353	2285
High School Degree			
High Mobility:			
Aircraft Mechanics and Service Technicians	0.169	1794	80
Chefs/Head Cooks	0.160	792	289
Network Systems and Data Communications Analysts	0.143	998	355
Waiters and Waitresses	0.131	241	4730
Computer Software Engineers	0.128	1192	544
Bartenders	0.127	298	921
Marketing and Sales Managers	0.127	2639	2228
Low Mobility:			
1st Line/Managers of Police/Detectives	0.020	1166	94
Highway Maintenance Workers	0.022	1111	34
Tool and Die Makers	0.031	1450	30
Firefighters	0.034	2975	61
Postal Service Mail Carriers	0.038	2465	1485
Sewing Machine Operators	0.039	300	1537
Teaching Assistants	0.043	163	9798
Bus Drivers	0.045	1023	2555

Less than a High School Degree			
High Mobility:			
Cashiers	0.092	72	1354
Retail Salespersons	0.083	384	577
Carpenters	0.080	1231	21
Construction Laborers	0.079	952	32
Low Mobility:			
1st Line/Managers of Production and Operations Workers	0.037	989	225
Misc. Construction Equipment Operator	0.047	800	13
Automotive Service Technicians and Mechanics	0.050	1187	14
Truck Drivers and Driver Sales Workers	0.054	4267	189

Notes: Calculations from 2000 PUMS. Mobility rate is fraction of workers ages 25-55 in that occupation and education group that moved across state lines in the past 5 years.

Table 3: Samples Means

	Power Couple	Husband Only College	Wife Only College	Neither College
Cross-State Migration in Past 5 Years	0.117	0.087	0.062	0.049
Husband's Earnings	70,693 (61,887)	62,389 (49,162)	43,800 (32,309)	39,660 (5,736)
Wife's Earnings	40,109 (37,421)	24,810 (22,403)	35,078 (25,193)	21,929 (16,985)
Husband's Occupation-Education Migration Rate	0.147 (0.056)	0.138 (0.050)	0.078 (0.029)	0.070 (0.025)
Wife's Occupation-Education Migration Rate	0.126 (0.051)	0.078 (0.024)	0.116 (0.043)	0.073 (0.024)
Husband's Occupation-Education Average Wage	29.05 (9.82)	27.07 (8.74)	18.30 (4.23)	17.11 (3.76)
Wife's Occupation-Education Average Wage	24.27 (7.89)	15.68 (4.06)	22.45 (6.33)	14.49 (3.56)
Husband's Education	5.59 (0.84)	5.32 (0.64)	3.66 (0.55)	3.29 (0.75)
Wife's Education	5.48 (0.71)	3.74 (0.48)	5.31 (0.58)	3.38 (0.68)
Husband's Age	41.15 (8.35)	43.44 (7.70)	40.21 (7.92)	41.36 (7.73)
Wife's Age	39.62 (8.20)	41.44 (7.67)	38.59 (7.77)	39.58 (7.64)
Any Children Under 18	0.607	0.592	0.623	0.623
Any Children Under 6	0.286	0.198	0.300	0.213
N	134,154	66,934	70,240	321,614

Notes: Sample described in notes of Table 1. The calculation of Migration Rate and Average Wage in Occupation-Education groups is also described in the notes of Table 1. Sample means are provided for four groups of couples: power couples (both have a college degree), only the husband has a college degree, only the wife has a college degree, neither has a college degree.

Table 4: Effects of Mobility in Husband's and Wife's Occupations on Migration in Past 5 Years

	Power Couple	Husband Only College	Wife Only College	Neither College
Husband's Occupation-Education Migration Rate	0.602***	0.585***	0.636***	0.543***
	(0.021)	(0.023)	(0.026)	(0.016)
Wife's Occupation-Education Migration Rate	0.387***	0.459***	0.310***	0.362***
	(0.032)	(0.072)	(0.030)	(0.030)
Husband's Occupation-Education Average Wage	-0.0043	0.0011	-0.0001	0.0045*
	(0.0034)	(0.0037)	(0.0038)	(0.0019)
Wife's Occupation-Education Average Wage	-0.0220***	-0.0294***	0.0003	-0.0100***
	(0.0050)	(0.0050)	(0.0042)	(0.0025)
N	134,151	66,932	70,240	321,614

Notes: Sample, measurement of explanatory variables, and couple groupings described in notes of Tables 1 and 3. Dependent variable is an indicator for cross-state migration in the past 5 years (equals one if both partners have migrated). Table reports average marginal effects from logit models which include controls for the husband's age and age squared, the wife's age and age squared, presence of children under 18, presence of children under 6, indicators for husband's and wife's education level (less than high school, some high school, high school diploma, some college, college degree, master's degree, professional degree, doctoral degree), interactions of the education indicators with age, state fixed-effects and state-urban fixed-effects.

Table 5: Effects of Occupational Mobility on Migration in Past 5 Years, Comparison of Single and Married Individuals

	College-Educated		Less than College-Educated	
	Men	Women	Men	Women
Never-Married	0.943***	0.964***	0.935***	0.727***
	(0.048)	(0.067)	(0.041)	(0.047)
N	81,819	83,078	141,707	88,930
Married	0.703***	0.558***	0.665***	0.514***
(no spousal controls)	(0.032)	(0.036)	(0.030)	(0.034)
Married	0.656***	0.412***	0.630***	0.445***
(with spousal controls)	(0.033)	(0.032)	(0.027)	(0.033)
N	201,083	204,394	391,854	388,548

Notes: Table reports average marginal effects of mobility in occupation-education class from logit models which include controls for average wage in occupation-education class, age and age squared, presence of children under 18, presence of children under 6, education level (less than high school, some high school, high school diploma, some college, college degree, master's degree, professional degree, doctoral degree), interactions of the education indicators with age, state fixed-effects and state-urban fixed-effects. In the last row, controls for spouse's occupational and demographic characteristics are also included.

Table 6: Effect of Spouse's Occupational Mobility on Own Earnings

	Full Sample	No Child<18	Child<18
Power Couple:			
Husband	0.103	0.048	0.145+
	(0.072)	(0.086)	(0.084)
Wife	-0.869***	-0.562***	-1.09***
	(0.156)	(0.104)	(0.204)
N	120,726	47,343	73,383
Husband Only College:			
Husband	0.397	0.680**	0.208
	(0.276)	(0.248)	(0.323)
Wife	-0.795***	-0.569***	-0.943***
	(0.201)	(0.157)	(0.246)
N	60,154	24,550	35,604
Wife Only College:			
Husband	0.026	-0.028	0.094
	(0.073)	(0.105)	(0.083)
Wife	-0.156	0.018	-0.337+
	(0.158)	(0.154)	(0.197)
N	63,117	23,751	39,366
Neither College:			
Husband	-0.491**	-0.376*	-0.544**
	(0.183)	(0.187)	(0.190)
Wife	0.055	0.241	-0.083
	(0.144)	(0.168)	(0.150)
N	289,398	109,231	180,086

Notes: Sample, measurement of explanatory variables, and couple groupings described in notes of Tables 1 and 2. Dependent variable is the logarithm of own earnings in 1999. Table reports coefficient on spouse's mobility rate measured by the migration rate in the spouse's occupation-education group. Regressions include controls for own occupation-education specific migration rate, average wage in own occupation-education group, average wage in spouse's occupation-education group, husband's age and age squared, the wife's age and age squared, presence of children under 18, presence of children under 6, indicators for husband's and wife's education level (less than high school, some high school, high school diploma, some college, college

degree, master's degree, professional degree, doctoral degree), interactions of the education indicators with age, occupation fixed-effects, state fixed-effects and state-urban fixed-effects. Standard errors are clustered by spouse's occupation-education group. Due to computing constraints, the estimates in Table 6 are generated from a 90% sample of available observations.

Table 7: Effect of Spouse's Occupational Mobility on Own Earnings, Super Power Couples

	Full Sample	No Child<18	Child<18
Super Power Couple:			
Husband	-0.149	-0.124	-0.145
	(0.101)	(0.126)	(0.113)
Wife	-0.976***	-0.636***	-1.18***
	(0.161)	(0.133)	(0.209)
N	27,957	11,063	16,894
Husband Only Advanced Degree:			
Husband	0.412**	0.354+	0.469*
	(0.150)	(0.188)	(0.205)
Wife	-1.13***	-0.517**	-1.53***
	(0.212)	(0.166)	(0.261)
N	26,131	9,973	16,158
Wife Only Advanced Degree:			
Husband	0.042	0.065	0.074
	(0.087)	(0.120)	(0.125)
Wife	-0.449**	-0.384*	-0.581**
	(0.174)	(0.189)	(0.213)
N	22,340	9,279	13,061

Notes: Sample and measurement of explanatory variables described in notes of Tables 1 and 2. Sample used in Table 7 only includes power couples (both have a college degree). Super power couples are those in which both members have an advanced degree (master's, professional or doctorate). Dependent variable is the logarithm of own earnings in 1999. Table reports coefficient on spouse's mobility rate measured by the migration rate in the spouse's occupation-education group. Regressions include same controls listed in notes of Table 6. Standard errors are clustered by spouse's occupation-education group.

Table 8: Effect of Spouse's Occupational Mobility on Own Earnings, by Migration Status

	Migrated in Past 5 Years	No Migration in Past 5 Years
Power Couple:		
Husband	-0.194	0.173**
	(0.134)	(0.068)
Wife	-1.12***	-0.711***
	(0.175)	(0.152)
N	15,850	104,876
Husband Only College:		
Husband	0.243	0.416
	(0.481)	(0.261)
Wife	-1.37***	-0.567**
	(0.259)	(0.189)
N	5,822	54,253
Wife Only College:		
Husband	-0.486*	0.127+
	(0.216)	(0.077)
Wife	-0.556+	-0.019
	(0.327)	(0.159)
N	4,587	58,530
Neither College:		
Husband	-0.449+	-0.457*
	(0.237)	(0.184)
Wife	-0.209	0.203+
	(0.300)	(0.137)
N	16,391	273,007

Notes: Sample, measurement of explanatory variables, and couple groupings described in notes of Tables 1 and 2. Dependent variable is the logarithm of own earnings in 1999. Table reports coefficient on spouse's mobility rate measured by the migration rate in the spouse's occupation-education group. Regressions include controls for own occupation-education specific migration rate, average wage in own occupation-education group, average wage in spouse's occupation-education group, husband's age and age squared, the wife's age and age squared, presence of children under 18, presence of children under 6, indicators for husband's and wife's education level (less than high school, some high school, high school diploma, some college, college degree, master's degree, professional degree, doctoral degree), interactions of the education

indicators with age, occupation fixed-effects, state fixed-effects and state-urban fixed-effects. Standard errors are clustered by spouse's occupation-education group.