Families and Careers*

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1 Introduction

Recent research by Kambourov and Manovskii (2008a) has documented substantial returns to occupational tenure: everything else being constant, five years of occupational experience are associated with an increase in wages of at least 12%. This finding is consistent with human capital being specific to the occupation in which an individual works (e.g., truck driver, accountant, chemical engineer). However, despite the apparent costliness of occupational switching, Kambourov and Manovskii (2008b) found a substantial increase in occupational mobility over the 1969-1997 period among male workers in the United States. This finding poses a set of intriguing questions. Why did the occupational mobility of male workers increase? What happened with the occupational mobility of women? Are the two trends connected? That is, is there a relationship between the well-documented increase in the labor force attachment of women and the change in the occupational mobility of men?

In this paper we present new facts that we hope will help guide the search for answers to these questions. In particular, we study changes in the occupational mobility of men and women conditional on their marital status.[1] In addition, one might expect that the increased labor force participation of women affects not only the occupational mobility decisions of

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[1]Following the PSID convention we treat co-habiting couples as being married.

men but also their geographic mobility decisions. Thus, we describe and relate the trends in occupational and geographic mobility in an attempt to better discern the evolving effects of family composition and participation decisions on worker mobility.[2]

The most striking pattern that we identify is that while occupational mobility has increased for virtually all subgroups of male workers, most of the increase was accounted for by a sharp increase in the mobility of singles, with a considerably more muted change among married males. We also find that geographic mobility follows a very similar pattern. The rates of geographic mobility were virtually identical for single and married workers in the early 1970s. From then on they diverged. Geographic mobility of married male workers increased at a more or less constant rate between 1970 and 2000. For single male workers it increased sharply relative to that of married ones between 1970 and 1980, and then continued to increase at the rate of married workers, so that the difference in mobility rates of married and single workers remained fairly constant between 1980 and 2000. In the last section of the paper we will discuss several possible theories of worker mobility in light of these trends and suggest that it is likely that the increased labor force attachment of women might have played a prominent role in driving these changes.

For most of the analysis of occupational mobility, we use data from the 1968-1997 Panel Study of Income Dynamics (PSID), which contains annual descriptions of occupational affiliation for a panel of individuals representative of the U.S. population in each year. We define occupational mobility as the fraction of currently employed individuals who report a current occupation different from their most recent previous report of an occupation. For example, an individual employed in two consecutive years would be considered as switching occupations if she reports a current occupation different from the one she reported in the previous year. If an individual is employed in the current year, but was unemployed in the previous year, a switch in his occupation will be recorded if he reports a current occupation different from the one he reported when he was most recently employed.

For the analysis of geographic mobility we use data from the 1970, 1980, 1990 and 2000

[2]The early contributions to the literature that explored the connection between geographic mobility of couples and female labor force participation are Frank (1978) and Mincer (1978). Gemici (2007) estimates a structural model of family mobility decisions and discusses more recent literature. Coen Pirani (2007) reviews patterns of geographic mobility and related literature focusing on individual-level outcomes.

U.S. decennial censuses of population and from the 2000-2006 American Community Surveys (ACS). We rely on these large data sets because the fraction of people moving geographically is too small to be reliably estimated in the PSID. In census data geographic mobility is defined as the fraction of individuals in a given census year who resided in a different state five years prior. In the ACS we measure mobility across states at the annual frequency.

Our main findings are as follows.

1. Occupational Mobility.

1. The average level of occupational mobility of male workers is around 13% at the one-digit level, 15% at the two-digit level, and 17% at the three-digit level.[3] The corresponding numbers for female workers are 10%, 13%, and 19%.

2. The occupational mobility of male workers has increased from 10% to 15% at the one-digit level, from 12% to 17% at the two-digit level, and from 14% to 18% at the three-digit level. The corresponding numbers for female workers are 7% to 13%, 9% to 16%, and 15% to 22%.

3. Occupational mobility is higher and has increased more for single men than for married men. For example, at the two-digit level, single and married men had similar occupational mobility in 1969 - 12% for singles and 13% for married men. In 1996, on the other hand, the occupational mobility of single men was 25%, compared to 14% for married men.

4. Occupational mobility is higher and has increased slightly more for single women than for married women. At the two-digit level, the occupational mobility of single women has increased from 11% in 1969 to 19% in 1996, while for married women it has increased from 8% to 14% over the same period.

5. Occupational mobility rates of both sexes decline with age.

[3]Appendix I contains the description of the detailed three-digit occupation codes. These codes may be aggregated into two- and one-digit codes as described in Appendices II and III.

6. Occupational mobility has increased for all age-marital subgroups of men and women.

7. The main determinant of the observed increase in the occupational mobility of men and women is the increased occupational mobility within each age-marital status subgroup with compositional changes having a minor impact on the overall trend in occupational mobility.

2. Geographic Mobility.

For rates of five-year mobility across states, our main findings are:

1. The average level of mobility was around 9.8% for men and 8.8% for women.

2. The mobility of men increased from 8.4% to 10.5% between 1970 and 1990 and then decreased to 9.9% in 2000. For women it increased from 6% to 10% from 1970 to 1990 and decreased to 9.4% by 2000.

3. Single men are more geographically mobile than married men after 1970 (in 1970, their mobility levels were the same). The average level of mobility over the 1970-2000 period was 9% for married men and 11.9% for single men. The overall increase for married men was 4% over the period, but it was 43% for singles. For women, the average mobility over the 1970-2000 period was 8% for married and 10% for single. The overall increase for married women was 41% over the period, and 72% for singles.

4. Younger men and women are more mobile than older ones. College-educated men and women are more mobile than those with a high-school diploma. College-educated men and women have experienced a decline in mobility since 1980.

5. Men and women of almost all ages experienced an increase in geographic mobility over the period.

6. Controlling for age and education, single men and women retain their dominance in terms of level and increase in mobility.

7. Most groups of men experienced a slight decline in geographic mobility in the 1980-2000 period. However, aging of the population and an increase in the age of first marriage have contributed to these declines. Controlling for these compositional effects, we find that the declines are reversed into increases.

8. A comparison of one- and five-year mobility rates suggests a significant presence of repeated movers in the samples of both men and women.

9. In 1970, 59.7% of the geographic moves for men and 57.6% of the geographic moves for women were accompanied by occupational switches.

The paper is organized as follows. In Section 2 we use PSID data to study patterns of occupational mobility. The PSID is particularly useful for studying the trends in occupational mobility, since it - unlike any other U.S. data set - provides consistent occupation codes throughout the 1968-1997 period. We use the method developed by Kambourov and Manovskii (2008a,b) to minimize the error in identifying genuine occupation switches. In Section 3 we use decennial census data to study patterns of geographic mobility defined as five-year mobility across states. In Section 4 we use data from the 1970 census that contain information on the current occupation and state of residence as well as the occupation and state of residence in 1965. This allows us to investigate the extent to which geographic and occupational moves are related. Up to that point we study gross mobility, i.e., we characterize the fraction of workers switching occupations and/or states of residence. In Section 5 we use data from the 2000-2006 American Community Surveys to document annual net mobility across occupations and states. Net mobility measures the extent of changes in occupational and state employment shares over time. We informally discuss some implications of our findings for the theories of worker mobility in Section 6.

2 Occupational Mobility

2.1 Data and Methodology

2.1.1 Sample Restrictions

The data we use to study occupational mobility come from the PSID for the 1968-1997 period. After 1997 the PSID switched to interviewing once every two years. To ensure comparability we do not use the post-1997 data. We impose sample restrictions and definitions necessary to obtain comparable measures of mobility for men and women. This is not easy to do because, prior to the late 1970s, the PSID asked different questions of household heads, who are mostly men, than of everyone else. The sample consists of all male and female private-sector workers age 23-61 with valid occupational codes. To separate out public sector workers, we use the government employment indicator variable in the PSID. This indicator, however, is not available for women in earlier years. So in addition to dropping by it, we also drop teachers, police officers, and armed forces personnel. Similarly, employment status variables (e.g., full-time/part-time) are not defined for most women prior to 1976. The only consistently provided variable for them is the number of hours worked in the year prior to the interview. Thus, we restrict the sample to those who worked at least 1000 hours in the year prior to the interview.

2.1.2 Occupation Affiliation Data: Original vs. Retrospective Coding

The PSID has used the 1970 census occupation codes from 1968 on. However, one-digit occupation codes were used in 1968-1975, two-digit occupation codes in 1976-1980, and three-digit occupation codes after 1981. In 1996 the PSID started working on the 1968-1980 Retrospective Occupation-Industry Files. This work originated as part of the Working Lives and Mortality in an Aging National Cohort project. That project required three-digit occupation codes throughout the course of the PSID. As mentioned above, the PSID did not originally code occupations at the three-digit level prior to 1981. To produce the three-digit recode, the PSID pulled out paper materials from its archives containing the written records of the respondents' descriptions of their occupations. These same records were the basis on which the one- and two-digit occupation codes were assigned prior to 1981. Using

these records, the PSID retroactively assigned three-digit 1970 census codes to the reported occupations of household heads and wives for the period 1968-1980. The work was completed in 1999, when the PSID released the Retrospective Occupation-Industry Supplemental Data Files (Retrospective Files hereafter).

Using the Retrospective Files, we create a series of consistent three-digit occupational codes that runs from 1968 to 1997. As discussed in Kambourov and Manovskii (2008a,b), occupational codes contained in the Retrospective Files are considerably more reliable than the originally coded data. When originally coding the occupation data, the PSID coder could not compare the current-year occupation description to the one in the previous year. As a result, for a respondent who is in the same occupation in both years, similar occupational descriptions could end up being coded differently. This was not the case with the constructed Retrospective Files, where, as reported in the PSID (1999), "to save time and increase reliability, the coder coded all occupations and industries for each person across all required years before moving on to the next case." Thus, in constructing the Retrospective Files, the coders had access not only to the respondents' description of their current occupation but also to the description of their past and future occupations. This allowed them to compare these descriptions, decide whether they are similar, and assign the same occupational code where appropriate.

2.1.3 Methodology

We follow the methodology proposed in Kambourov and Manovskii (2008b) and document the levels and trends in occupational mobility using the data from the Retrospective Files for the 1968-1980 period and the originally coded data for the 1981-1997 period. The use of the Retrospective Files allows us to minimize the measurement error in occupational coding. We conduct the analysis separately for men and women. We divide each gender-based sample into 26 age-education categories indexed by j. By age, individuals are divided into 13 three-year age groups, starting with age 23. By education, individuals are divided into those who have 12 years of education or less and those who have more than 12 years of education. We

analyze the data using the following model:

$$P_{it} \equiv Pr(y_{it} = 1|X_{it}) = E(y_{it}|X_{it}) = \Phi(X_{it}\beta), \tag{1}$$

where

$$\begin{aligned} X_{it}\beta &= \beta_0 + \beta_1 Age + \beta_2 Age^2 + \beta_3 Time + \beta_4 Unemp + \beta_5 Break \\ &\quad + \beta_6 Time * Age + \beta_7 Unemp * Age + \beta_8 Break * Age \\ &\quad + \beta_9 Time * Age^2 + \beta_{10} Unemp * Age^2 + \beta_{11} Break * Age^2. \end{aligned} \tag{2}$$

In this specification, y_{it} is a binary variable that assumes the value of one if individual i switches her occupation in period t and is zero otherwise. $\Phi(\cdot)$ represents the cumulative standard normal distribution function. We model an individual's occupational switch to depend on her age, age squared, a time trend, and the current level of unemployment in the county of residence. Because of the change in the coding procedure in 1981, we also include a dummy variable $Break$, which assumes the value of one if the year is in the period 1981-1997. Further, we interact the time trend, the unemployment variable, and the break variable with age and age squared in order to allow different age groups to have different trends in mobility over time and over the business cycle, as well as different changes in mobility as a result of the change in the coding procedure in 1981. Finally, all of the above variables are interacted with an education dummy variable that takes the value of one if the individual has more than 12 years of education and zero otherwise.[4] The model is estimated separately on the full samples of males and females. When we distinguish single and married individuals, we estimate the model separately for each of these subgroups. Kambourov and Manovskii (2008b) provide evidence that justifies modeling the effect of the coding error as resulting only in an affine shift in the argument of Φ. Because of this assumption, all of the data (i.e., the data before and after 1980) identify the time trend.

[4]We allow for the interactions between dummy variable $Break$, age, and education because one may expect the coding error to be distributed non-uniformly over age-education groups. This may be particularly true at the three-digit level, since, at this level, occupations are very disaggregated and while it is virtually impossible to misclassify a medical doctor, it is possible to misclassify a machine operator, and the distribution of doctors and machine operators is not uniform across the age-education groups. On the one- and two-digit level occupational classifications, however, one has less reason to expect the coding error to vary across the age-education groups.

The estimated coefficients allow us to obtain fitted values for each individual - the predicted probability of an occupation switch - in each of the years that the individual is in the sample. We predict one's mobility in each year after 1980 if there was no structural change in the coding procedure (setting the coefficient on *Break* and all of its interactions to zero). Using these fitted values, we obtain occupational mobility, overall and in each of the age-education groups. The difference between the predicted probability of a switch in each year with and without setting the coefficient on *Break* to zero represents the estimate of mobility due to the coding error. When plotting the aggregate occupational mobility (not the fitted lines) in Figure 1, we subtract the estimate of mobility due to the coding error from the raw data in each year after 1980.

We weight the sample using the PSID sample weights in order to make the sample representative of the U.S. population in each period. A useful additional experiment is to consider mobility trends had the overall age and marital structure of the population remained constant throughout the 1968-1997 period. To this end, we divide the sample into 22 age-marital groups.[5] We then construct 1970 weights and 1990 weights. In constructing, say, the 1990 weights, we calculate the relative size of each group in 1990. Then, in all other years, we scale everyone's weight in each group in order to keep the relative size of each group at its 1990 level. Weighing the sample using, say, the 1990 weights will then be suggestive of the behavior of worker mobility had the age and marital status structure of the population not changed over time. In this sense, fixing the population structure may provide a better picture of the underlying changes in the forces affecting the labor markets. This experiment, however, is based on the strong assumption that changing demographics do not affect the switching behavior of each worker.

2.2 Findings

Figure 1 plots the estimates of occupational mobility for men and women at different levels of occupational classification obtained from estimating Equation 1. There is a striking increase in occupational mobility for both males and females over the 1969-1997 period. While

[5]Specifically, by age, individuals are divided into 11 four-year age groups, starting with age 23. By marital status, individuals are divided into single and married.

occupational mobility of females was substantially lower than the mobility of males early in the period, it catches up by the end of the period.

Figure 2 illustrates that the increase in mobility of single individuals was much more pronounced than the increase for those who are married. This pattern is particularly striking for men; while single and married men exhibited similar occupational mobility in the late 1960s, by the early 1990s, the mobility of single men was substantially higher than that of married men.

We can also use the originally coded data to describe the trends in occupational mobility for single and married individuals over the 1969-1997 period. As we discussed above, original occupational codes are less accurate than the ones in the Retrospective Files, and as a result, the measured level of occupational mobility on the originally coded data is higher. Nevertheless, the trends in occupational mobility from these data are informative. The PSID provides originally coded one-digit occupational affiliation data throughout the entire 1968-1997 period. Unfortunately, occupations of married women were not originally coded before 1980 (they were coded in the Retrospective Files, however). Since most married women before 1980 fell into that category, we do not have enough information to measure their occupational mobility before 1980.[6] Instead, we focus only on the occupational mobility of single and married men. Since there is no longer a break in the coding procedure in 1981, we perform our analysis by estimating Equation 1 without using the *Break* variable and all its interactions. The results, presented in Figure 3, again convey the message that single and married men exhibited different levels and trends of occupational mobility over the period. Even though single and married men had similar levels of occupational mobility in the late 1960s, after that the increase in the mobility of single men was much more pronounced than the increase in the mobility of married men.

Of course, workers who are single are also younger, on average. Thus, the observed pattern in occupational mobility by marital status could be due to the fact that the increase in the mobility of younger workers was larger than the increase for older ones. In Figure 4 we plot occupational mobility by sex, marital status, and age. By age individuals are divided

[6]The originally coded data show a substantial increase in occupational mobility for single women over the period - from 14% to 23%.

Figure 1: Occupational Mobility in the United States, 1969-1997.

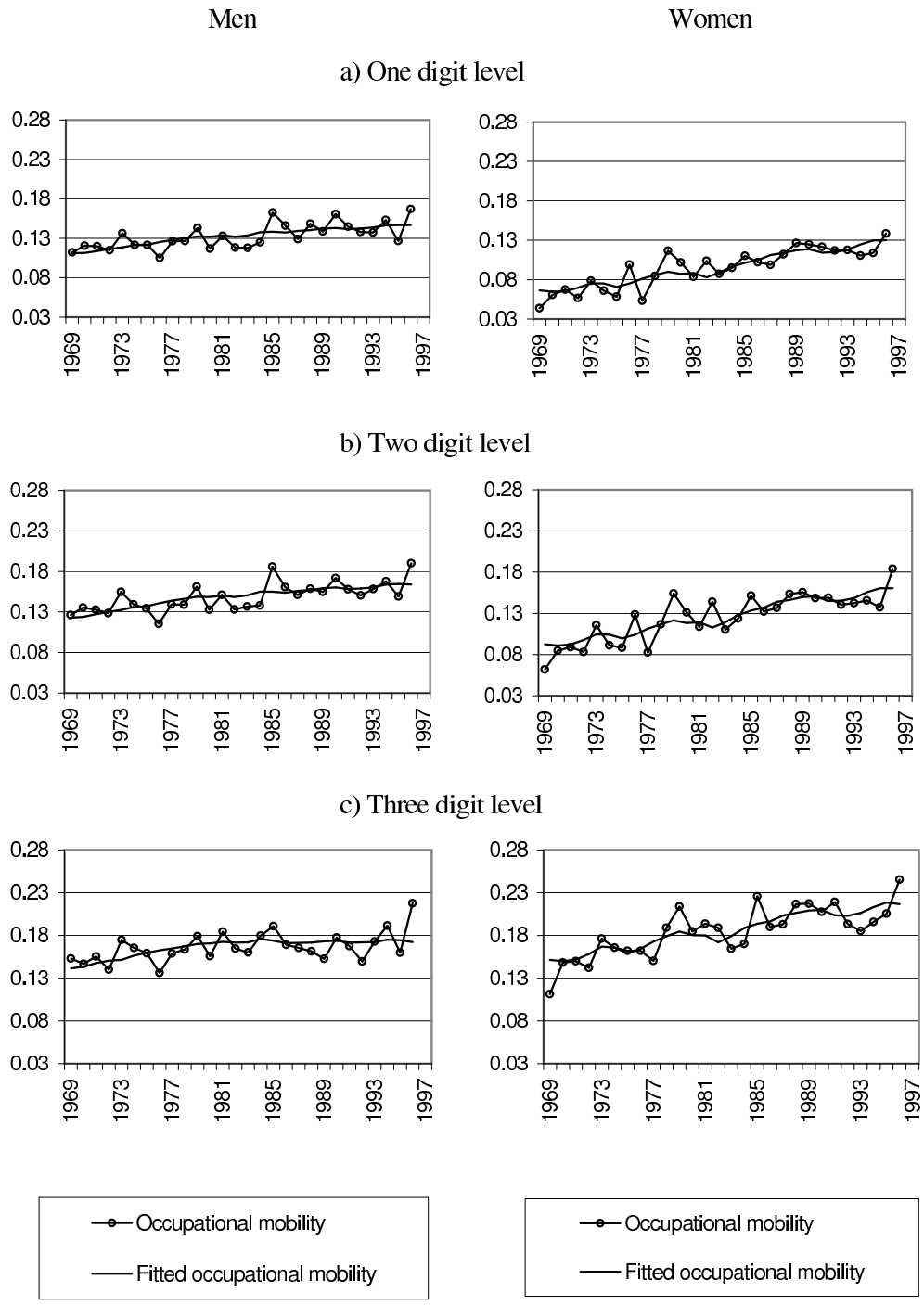
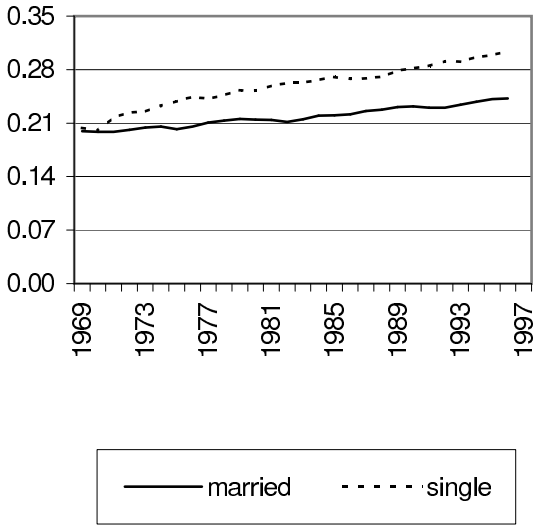


Figure 2: Occupational Mobility, 1969-1997, Two-Digit Level, by Sex and Marital Status.

Figure 3: Occupational Mobility, 1969-1997, Men, One-Digit Level, Originally Coded Data.



into those younger and older than 35. We find that younger workers are more mobile, on average. However, the increase in mobility does not seem to be driven by age. Single young workers became considerably more mobile than married young workers over time. The same is true for the older workers.

To better evaluate the effect of a changing age structure on the observed patterns of occupational mobility, we divide our sample into four groups - single and married men and single and married women. For each group we compute the age structure in 1990 and then reweigh the sample to keep it constant at this level throughout the whole 1968-1997 period. Figure 5 compares the actual occupational mobility to the one obtained under a fixed age structure. For most of these groups a changing age structure had very little impact on the trend in occupational mobility. Single men were the only ones who seem to have been affected slightly by a changing age structure; in the late 1960s the actual occupational mobility is lower than if we were to use the 1990 age structure, indicating that single men in the late 1960s were older than those in 1990.

The overall increase in the occupational mobility for men and women could be attributed to the increase in mobility for single and married people, as seen in Figure 2, as well as an increase in the fractions of single individuals. Indeed, in our sample, the fraction of single men increases from around 5% in the early 1970s to 25% in the early 1990s, while the fraction of single women is more stable - around 35%.[7] [8] Figure 6 shows that a changing marital structure is less important in accounting for the overall increase in occupational mobility than the genuine increase observed within both groups of single and married individuals. In particular, we fix the age-marital structure at its 1990 level and compute the occupational mobility for men and women throughout the 1969-1997 period. As expected, the effect on the occupational mobility of both men and women is minimal.

[7] If we include the individuals who worked less than 1000 hours into the sample, the fraction of single women in our sample increases from around 20% to slightly over 30% over the period.

[8] Data from the census show similar fractions of single women over the period. In the case of men, especially earlier in the period, the census data show slightly higher fractions of single men in the population than observed in the PSID. One possible explanation for this discrepancy between the PSID and the census data could be due to the fact that the PSID does not provide occupational codes for individuals who are not household heads or household wives. As a result, those young males who live with, say, their parents (and are most likely still single) will be part of the census sample but will be dropped from our PSID sample.

Figure 4: Occupational Mobility, 1969-1997, Two-Digit Level, by Sex, Marital Status, and Age.

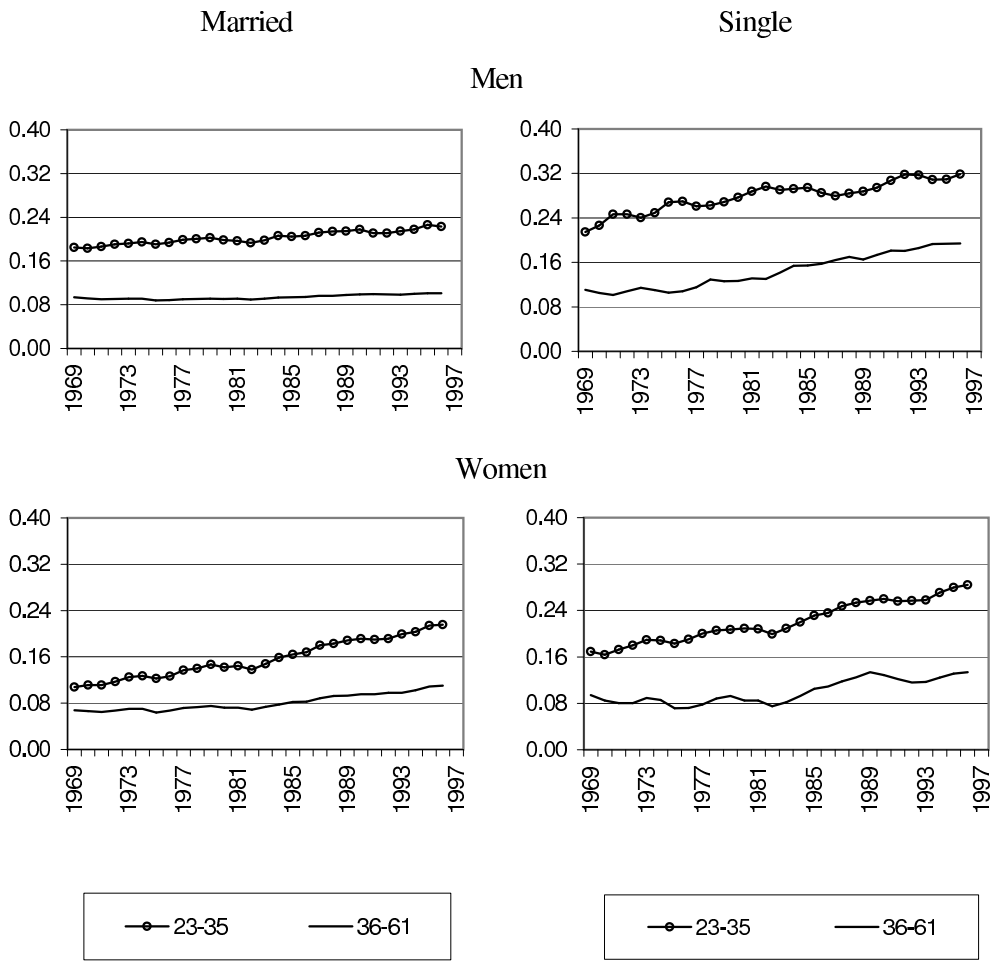


Figure 5: Occupational Mobility, 1969-1997, Two-Digit Level, by Sex and Marital Status: Actual vs. Fixed 1990 Age-Marital Structure.

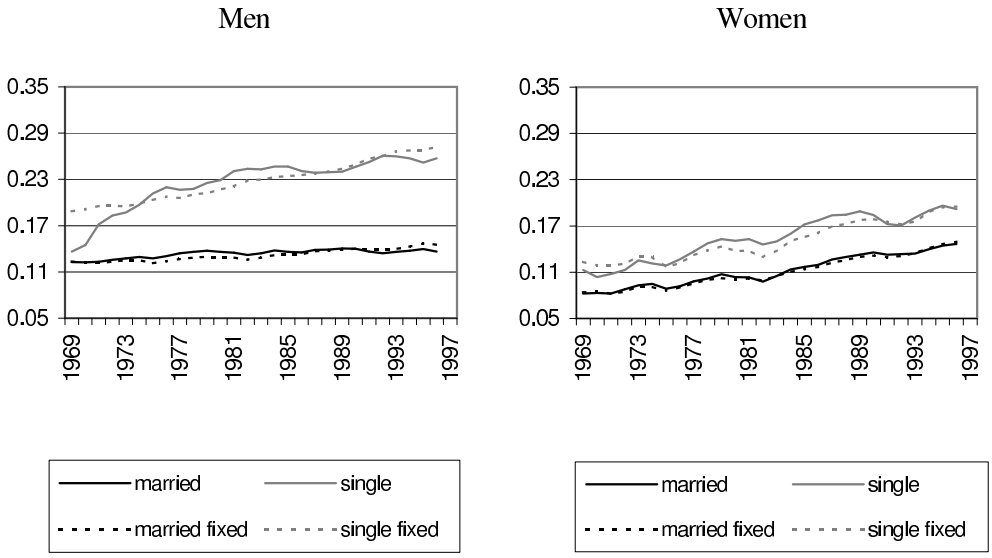
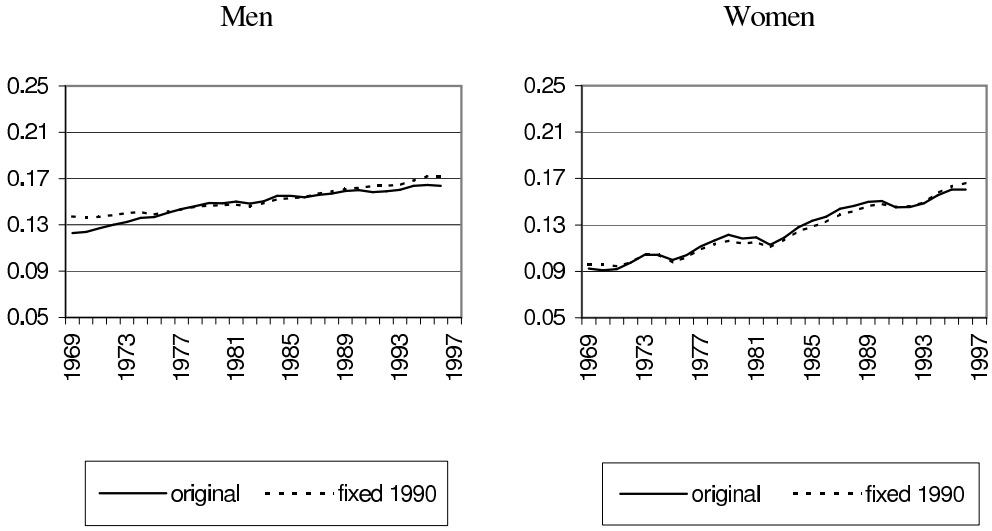


Figure 6: Occupational Mobility, 1969-1997, Two-Digit Level, by Sex: Actual vs. Fixed 1990 Age-Marital Structure.



Kambourov and Manovskii (2008b) evaluate several hypotheses that could account for the increase in mobility among male workers. They show that the fact that the PSID codes occupations using the same 1970 classification implies that the trends in mobility that we report here represent a lower bound on the true increase in mobility. They also investigate the effects of a substantial change in the employment shares of various broad sectors of the economy during the 1968-1997 period. For instance, while the share of manufacturing declined, the share of the service sector increased. They evaluate two hypotheses. First, they ask whether the increase in mobility could be explained by workers moving into sectors that are characterized by higher amounts of coding error. Second, they ask if the increase in mobility was caused by a changing sectoral composition in the economy in favor of sectors with genuinely higher worker mobility. They find that the answer to both questions is no.

2.3 Occupational Mobility and the Distribution of Employment across Broad Occupational Groups

Finally, we analyze the changes in the distribution of male and female workers across occupations and try to take a more detailed look at the nature of the observed occupational switches. We use data from the 1970, 1980, 1990, and 2000 censuses in order to study the change in the distribution of men and women over seven large occupational groups: 1 - managerial occupations; 2 - professional specialty occupations; 3 - technical, sales, and administrative support occupations; 4 - service occupations; 5 - farming, forestry, and fishing occupations; 6 - precision production, craft, and repair occupations; and 7 - operators, fabricators, and laborers. These occupational categories - available in the Integrated Public Use Microdata Series (see Ruggles, Sobek, Alexander, Fitch, Goeken, Kelly Hall, King, and Ronnander (2004)) - are consistently defined across all the years that we study and are based on the 1990 Census Bureau Occupational Classification.

Table 1 reveals interesting differences in the levels and trends of occupational employment shares of men and women. In particular, in 2000, women are over-represented in the Technical, Sales, and Administrative Support occupational group - 42% of all women are employed there, compared to only 20% of men. On the contrary, only 3% of all women are

employed in the Precision Production, Craft, and Repair occupational group as compared to 22% of men. Over time, the occupational distribution of men did not change substantially. In the case of women, however, we observe two significant trends. First, the fraction of women employed in managerial occupations increased from 6% in 1970 to almost 14% in 2000. Second, there was also an increase in the fraction of women employed in professional occupations - from 7% in 1970 to 15% in 2000. This confirms the findings in Knowles (2007).

For the analysis of the patterns of occupational switches of men and women across broad occupational groups, we use one-digit occupational data based on the 1970 census occupational classification from the PSID for the 1985-1995 period. The occupational groups in this classification are: 1 - professional, technical, and kindred workers; 2 - managers, officials, and proprietors; 3 - clerical and sales workers; 4 - craftsmen, foremen, and kindred workers; 5 - operatives and kindred workers; and 6 - laborers and service workers. The procedure, performed separately for men and women, is as follows. We count those employed in a given year in occupation i who will be working the following year in occupation j and divide this by the number of those who are employed today in occupation i and who will report any occupation next year (by doing so we effectively restrict the sample to those employed and reporting occupations in both years). This is done in each year in the specified time period, and the average result weighted by the PSID sample weights is reported in the cell ij of Table 2. For example, 7.24% of men switched, on average per year, from group 1 to group 2. The experiment is based on the originally coded data and thus overstates the true amount of mobility. Under the assumption that the distribution of coding errors is roughly similar for the samples of men and women, the comparison of mobility patterns across them is informative. The results suggest that even though there are slight differences in the patterns of occupational switching between men and women, the overall pattern appears quite similar.

Table 1: Distribution of Employment over One-Digit Occupations, Men and Women, 1970-2000, Census Data.

	Men			
Occupation	1970	1980	1990	2000
1	14.92	14.28	14.11	14.20
2	8.31	9.28	10.08	11.07
3	16.70	18.81	20.91	20.71
4	4.52	4.82	5.75	6.39
5	5.13	4.01	4.21	4.01
6	23.45	24.34	22.43	22.12
7	26.98	24.46	22.50	21.50
	Women			
Occupation	1970	1980	1990	2000
1	6.30	9.51	13.91	13.72
2	6.99	9.17	11.99	15.00
3	45.19	46.86	44.23	42.13
4	17.27	13.95	14.27	16.02
5	0.96	1.04	1.02	0.91
6	2.71	3.03	2.67	2.98
7	20.58	16.44	11.91	9.25

Notes: Authors' calculations from the decennial censuses data, based on the 1990 census Occupational Classification. Occupational groups are defined as: 1. Managerial occupations; 2. Professional Specialty occupations; 3. Technical, Sales, and Administrative Support occupations; 4. Service occupations; 5. Farming, Forestry, and Fishing occupations; 6. Precision Production, Craft, and Repair occupations; and 7. Operators, Fabricators, and Laborers. Weighting the sample produces very similar results.

Table 2: Mobility Across Broad Occupational Groups, 1985-1995.

A. Men

From	To 1	2	3	4	5	6	Relative Size
1	.8542	.0724	.0233	.0314	.0110	.0076	.2120
	(.0056)	(.0041)	(.0024)	(.0028)	(.0017)	(.0014)	(.0027)
2	.0812	.7517	.0756	.0593	.0180	.0141	.1779
	(.0048)	(.0076)	(.0046)	(.0041)	(.0023)	(.0021)	(.0025)
3	.0493	.1155	.7336	.0304	.0344	.0367	.1201
	(.0042)	(.0063)	(.0087)	(.0034)	(.0036)	(.0037)	(.0021)
4	.0337	.0458	.0203	.7875	.0701	.0426	.2310
	(.0024)	(.0027)	(.0019)	(.0054)	(.0034)	(.0027)	(.0028)
5	.0171	.0212	.0262	.1067	.7639	.0650	.1728
	(.0018)	(.0020)	(.0023)	(.0044)	(.0060)	(.0035)	(.0025)
6	.0251	.0313	.0490	.1150	.1237	.6559	.0862
	(.0030)	(.0034)	(.0042)	(.0061)	(.0063)	(.0092)	(.0018)

B. Women

From	To 1	2	3	4	5	6	Relative Size
1	.8045	.0602	.0771	.0083	.0146	.0352	.1581
	(.0079)	(.0047)	(.0053)	(.0018)	(.0024)	(.0037)	(.0028)
2	.0708	.6834	.1957	.0113	.0033	.0356	.1286
	(.0059)	(.0106)	(.0091)	(.0024)	(.0013)	(.0042)	(.0025)
3	.0319	.0745	.8386	.0078	.0171	.0301	.3753
	(.0022)	(.0033)	(.0046)	(.0011)	(.0016)	(.0022)	(.0037)
4	.0776	.0683	.0944	.5371	.1505	.0720	.0245
	(.0130)	(.0123)	(.0142)	(.0242)	(.0174)	(.0126)	(.0012)
5	.0216	.0077	.0584	.0406	.8000	.0717	.1151
	(.0029)	(.0018)	(.0047)	(.0040)	(.0081)	(.0052)	(.0024)
6	.0412	.0262	.0693	.0056	.0398	.8179	.1984
	(.0032)	(.0026)	(.0041)	(.0012)	(.0032)	(.0063)	(.0030)

Notes: Authors' calculations from the PSID using originally coded occupational data. Cell ij represents the average (over the period) percent of those working in occupation i in a given year who will work in occupation j the following year. Occupational groups are defined as: 1. Professional, technical, and kindred workers; 2. Managers, officials, and proprietors; 3. Clerical and sales workers; 4. Craftsmen, foremen, and kindred workers; 5. Operatives and kindred workers; 6. Laborers and service workers. PSID sample weights are used in the calculation. Standard errors are in parentheses.

3 Geographic Mobility

3.1 Data and Methodology

For this section, we use data from the 1% samples of the 1970, 1980, 1990, and 2000 decennial censuses of population contained in the Integrated Public Use Microdata Series (IPUMS). The advantage of these data is a large sample size ranging from 1.35 million to 2.8 million individual records per year. This allows us to construct robust measures of mobility for even the relatively fine gradations of age, education, and marital groups. The disadvantage is that this data set provides only four observations over time.

Until 2000, the only geographic mobility measure that can be derived from the census data is mobility between states in five-year intervals. That is, in each census year, respondents were asked what state they lived in five years ago, and the current state of residence was also recorded. Thus, we count as state switches all cases in which the state five years ago differed from the current state of residence. We excluded from the calculations those who reported living abroad five years prior to the interview.

Between 2000 and 2006, IPUMS also provides cross-sectional data from the annual American Community Surveys in which retrospective state data were measured with a one-year, rather than a five-year, lag. That is, for these seven years we can trace annual mobility rates. The time span of this survey is too short to analyze time trends in mobility. However, combining the five-year mobility estimates from the 2000 census with the annual mobility rates from the ACS enables us to evaluate the likelihood of moving repeatedly. Moreover, these one-year calculations confirmed our broad conclusions about levels of mobility of singles relative to married people and men relative to women.

We kept the sample we studied in the census closely tailored to the sample we analyzed in the PSID in the previous section. The sample includes all private-sector workers age 23 to 61 who worked at least 1000 hours per year. These restrictions yielded sample counts from about 429,000 cases in 1970 to 810,000 cases in 2000. The change in the sample sizes from 1970 to 2000 is partly due to intentionally differing sample density, which was compensated by weighting the samples accordingly.

Figure 7: Five-Year State Mobility by Sex.

3.2 Five-Year State Mobility: Findings

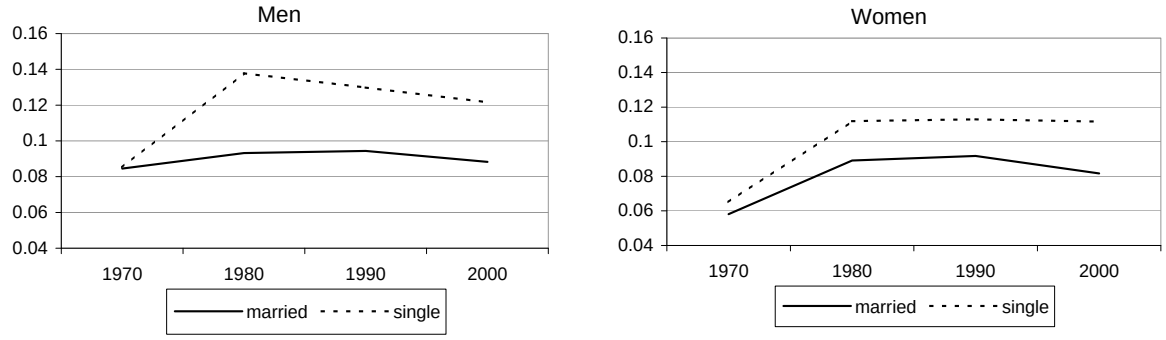
Figure 7 shows five-year state mobility patterns for men and women over the period 1970-2000. For men, the average level of mobility was around 9.8% in this period. For women, the average mobility level was lower, at 8.8%. Women's mobility rates are consistently lower than men's. As is also clear from Figure 7, there was a strong overall increase in state mobility for both men and women between 1970 and 2000, although the bulk of it occurred in the 1970s. The increase was larger for women than for men.

In 1970, there was a noticeable disparity in mobility levels between men and women: men's mobility rate was about 8%, while women's was 6%. Between 1970 and 1980, both men and women experienced a significant increase in state mobility, with the increase for women especially pronounced at 60%, and 22% for men. Thus, by 1980, the disparity between men and women had all but disappeared: the rates were 9.7% for women and 10% for men.

For both men and women, the increase in mobility was much smaller between 1980 and 1990: 2% for men and 2.5% for women. It appears that in the 1990s, there was a decline in five-year state mobility, which amounted to 5% for men (from 10.5 to 9.9%) and to 6% for women (from 10 to 9.3%).

In analyzing mobility patterns by marital status, we find, as with occupational mobility, that single people have much higher mobility rates than married people and that they also

Figure 8: Five-Year State Mobility by Sex and Marital Status.



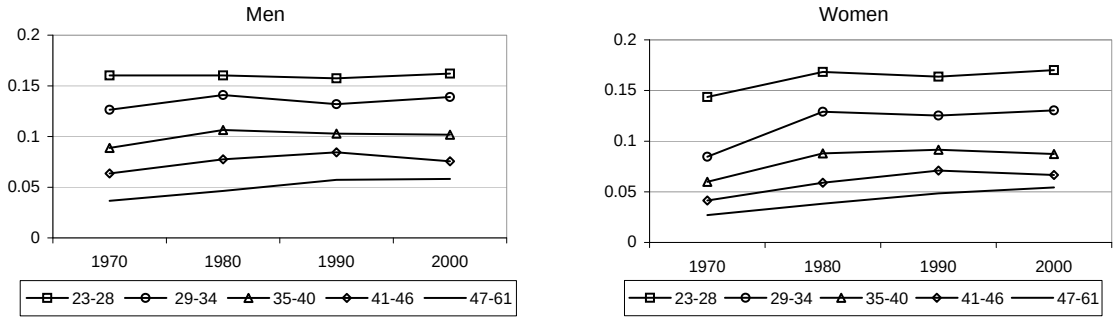
drive the trends in geographic mobility over the period of interest. It should also be noted that following a strong increase in the 1970s, there was a slight decline in geographic mobility for single men starting in the 1980s. We do not find a match for this decline in occupational mobility in the PSID data, but Moscarini and Vella (2003) find evidence of a decline in occupational mobility in the 1990s in the data from the Current Population Survey.

Specifically, as Figure 8 shows, between 1970 and 1980, married men's state mobility rates increased by just 10%, from 8.5 to 9.3%, while for single men, this increase was a staggering 62%, from 8.5% to 13.8%. Interestingly, as with occupational mobility, we find that single and married men started with similar rates of mobility in 1970, only to find a wide disparity by 1980. Between 1980 and 2000, single men saw a steady 5% total decline in mobility. For married men, the pattern was a slight increase in 1990, followed by a slight decline in 2000.

For women, the disparity was less pronounced, but still present. In 1970, single women were slightly more mobile than married women (6.5% versus 5.8%), and by 1980, they had experienced a 72% and 53% increase in five-year state mobility, to levels of 11.2% and 8.9%, respectively. From 1980 to 2000, state mobility rates for single women remained almost constant, while for married women there was a 3% increase by 1990, followed by an 11% drop by 2000.

As with occupational mobility, we find strong evidence of a decline in geographic mobility with age. The breakdown by age is shown in Figure 9. The youngest group of men (23-28)

Figure 9: Five-Year State Mobility by Sex and Age.



had average mobility of 16% over the period 1970-2000, while the oldest (47-61) had only about 5% average mobility. For women, the respective numbers are around 16% and 4%. In Section 3.2.1 below we show that aging of the samples of both single and married men and single and married women accounts for the declines in mobility that we observe from 1980 or 1990 to 2000 for single men and married women.

Almost all age groups experienced an increase in mobility over the 1970-2000 period. The exception is the youngest group of men, 23-28, whose mobility stayed essentially flat at 16%. For all other age groups of men, the increase was on the order of 2 percentage points, while for women, it was at least 3 percentage points, with the 29-34 age group seeing an increase of 5 percentage points (from 8.4% to 13%). The period 1980-2000 was a period of relatively slower mobility growth, with the second and third oldest groups of men experiencing a slight decline in mobility over the period and the same for third oldest group of women.

Figure 10 further shows that, after controlling for age, singles are still more mobile than married people and experience much larger increases in mobility rates over the period. The only age group in which single and married people are quite similar in terms of mobility is the 23-28 group, which is to be expected, since this group has the fewest number of married couples. In general, this breakdown confirms that the strong trends we see among singles relative to married people are not driven by age composition but have more to do with marital status itself.

Figure 11 shows the breakdown by education. College-educated men are far more geo-

Figure 10: Five-Year State Mobility by Sex, Age and Marital Status.

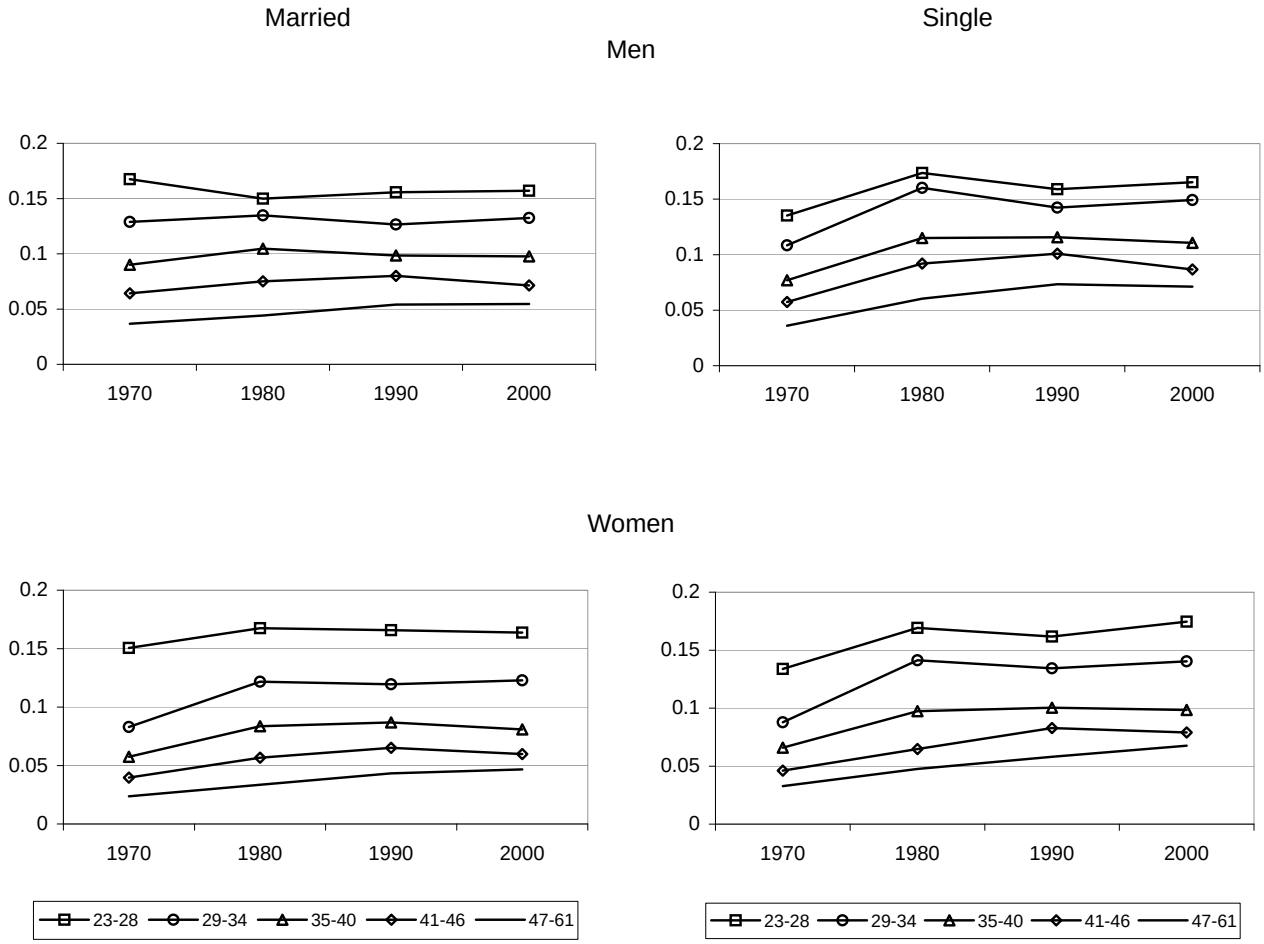


Figure 11: Five-Year State Mobility by Sex and Education.

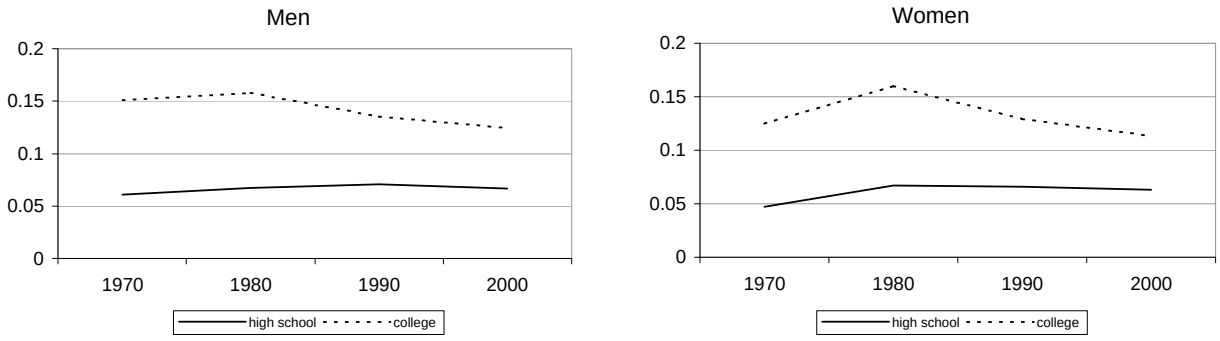
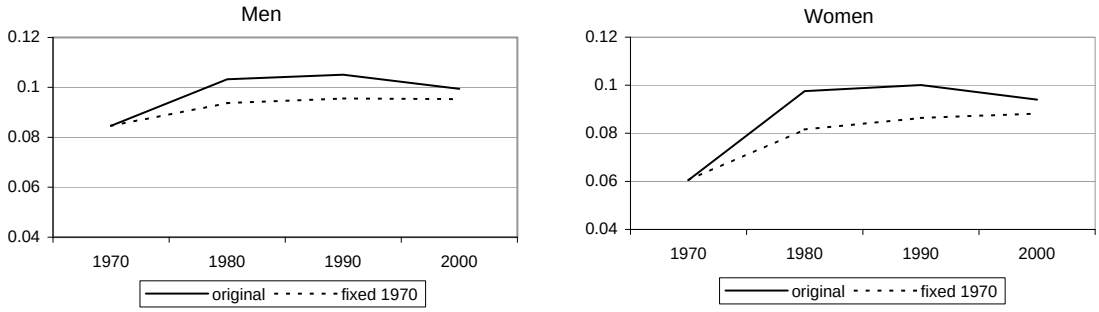


Figure 12: Five-Year State Mobility by Sex, Fixed Population.



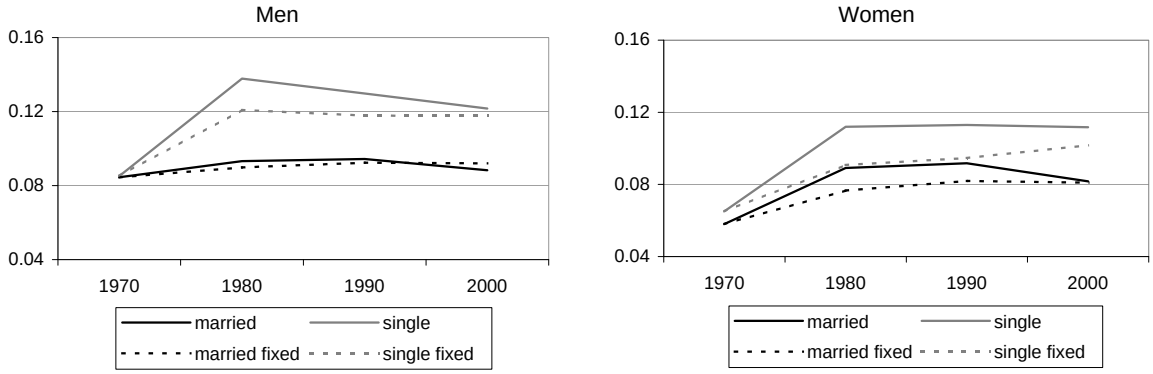
graphically mobile than high-school-educated men, and the same is true for women. This is also true if we break down the population into age groups by education level (not shown here): for each age group, college-educated men are more mobile than those without a college degree.

3.2.1 A Fixed Population Structure Experiment

As noted above, older individuals are less mobile. In addition, single individuals tend to be younger. Thus, it is important to verify that the strong dominance in levels and trends that we see among single people was not simply due to the fact that singles are young. Along the way we investigate how the average aging of the population over time, together with the increasing average age of first marriage, may have affected the aggregate trends we observe.

Motivated by these questions, we re-computed mobility rates after fixing the age-marital population structure in every census year to be the same as in 1970. Figures 12 and 13 show the results of these experiments by sex and by marital status. As we have already suggested, we find that this experiment allows us to account for the declines or flattening of geographic mobility over time overall, if not for all of the subgroups. For example, for men and for women overall (Figure 12), fixing the population in this way reduces the increase experienced in the 1970s but, as a result, reverses the decline that we see for the unadjusted numbers in the 1980s and 1990s, so that the overall pattern is that of an increase. The overall adjusted increase in geographic mobility for men was from 8.4% in 1970 to 9.5% in

Figure 13: Five-Year State Mobility by Sex and Marital Status, Fixed Population.



2000; for women, this increase was from 6% to 8.8%. The picture is even more striking once we separate men and women by marital status (Figure 13). The declines we have seen for single men and married women are now reversed, again by first flattening the increase in the 1970s. Single men's mobility now increases from 8% in 1970 to 12% in 2000, while married men's mobility increases from 8.5% to 9.2%. Married women's mobility increases from 5.8% to 8.1%, while single women's goes from 6.5% to 10.2%. Since in this graph we control for marital status explicitly, we can attribute these patterns to the effects of the aging of the population over time. Other than this, the overall patterns we have suggested before, especially the fact that single people are far more mobile than married people and that they are driving the trends, are robust to this experiment.

3.3 One-Year State Mobility

The data from the American Community Surveys allow us to measure the annual rate of geographic mobility for a large cross-section of workers in every year beginning in 2000. The 2000-2006 period is too short to evaluate trends, but we find that the relative facts that we described above continue to match the recent data well. The average (over 2000-2006 period) rate of annual state mobility was about 2.5% for men and 2.3% for women. For singles, men or women, the average mobility rate was much higher than for married individuals; for example, married men had an average annual mobility rate of 2%, while

single men's rate was 3.5%. The age patterns we observed before continue to hold in these samples: the average annual state mobility rate for the youngest group of men was 4.9%, while for the oldest group it was only 1.3%; for women, the respective numbers were 5% and 1.2%. Finally, as we found before, college-educated individuals move much more than those without a college degree. For college-educated men, the rate was 3.1%, while for those with only a high-school diploma, it was 1.9%; college-educated women moved at an annual rate of 2.8%, while their less educated counterparts had an annual rate of state mobility of 1.6%.

Thus, these data confirm that singles are more mobile than married individuals, the college-educated move more than those who are not, and in recent years, mobility rates are similar between men and women. It is worth noting an additional fact. In 2000, we have two separate data sources (decennial census and ACS), one of which allows us to measure five-year mobility, while the other contains information on annual mobility. Comparing them, we find that those who move in a five-year period are likely to move more than once.

Table 3 presents annual and five-year mobility rates measured in 2000 for for several categories of men and women. The comparison we want to make is the following: if everyone moved exactly once in five years, then the five-year state mobility rate would equal five times the annual mobility rate. For all men, five times the annual mobility rate in 2000 would be 14.47% - 1.45 times higher than the actual five-year mobility rate. For all women, five times the annual rate is 1.4 times higher than the actual five-year rate. This suggests that there are many repeated movers in the sample. Moreover, we observe that single and young workers are more likely to switch repeatedly. We do not observe a pronounced pattern in the prevalence of repeated moving by education level.

4 Joint Geographic and Occupational Mobility

In this section, we describe the joint patterns for geographic and occupational mobility. More precisely, we measure the fraction of those who moved geographically who also switched occupations. We contrast these numbers with the corresponding fraction of those who did not move geographically but did switch their occupations.

Conducting this measurement, however, is not straightforward. In the PSID, the sample

Table 3: Annual and Five-Year State Mobility, 2000.

	Men		Women	
	Annual	Five-Year	Annual	Five-Year
All	2.89	9.94	2.65	9.40
Married	2.21	8.83	2.00	8.17
Single	4.21	12.16	3.52	11.17
High School	2.14	6.69	1.85	6.29
College	3.49	12.45	3.19	11.36
Ages: 23-28	6.07	16.20	5.46	17.02
29-34	4.08	13.89	3.77	13.03
35-40	2.64	10.17	2.18	8.74
41-46	1.75	7.55	1.73	6.67
47-61	1.39	5.82	1.34	5.44

Notes: Authors' calculations from the 2000 decennial census data. Annual state mobility represents the fraction of individuals whose current state of residence differed from the state of residence in 1999. Five-year state mobility represents the fraction of individuals whose current state of residence differed from the state of residence in 1995.

Table 4: Percent of State Moves and Stays Accompanied by Occupational Switches, 1970.

	State Movers		State Stayers	
	Men	Women	Men	Women
All	59.7	57.6	35.4	34.2
Married	59.1	57.9	35.2	34.4
Single	64.8	57.1	36.9	33.8
High School	62.5	60.3	34.7	34.5
College	56.3	52.1	37.6	32.4
Ages: 23-28	76.7	63.6	58.7	47.4
29-34	63.4	56.1	44.5	37.6
35-40	55.2	55.6	35.2	34.6
41-46	51.5	54.0	30.5	32.3
47-61	48.4	53.7	26.9	30.5

Notes: Authors' calculations from the 1970 decennial census data. An individual was recorded as switching states if state of residence in 1970 differed from the state of residence in 1965. An occupational switch (based on 1970 census Occupational Classification) was recorded if current three-digit occupation differed from the occupation five years prior.

of those switching states is too small to be estimated reliably, let alone partitioning that sample into occupational stayers and switchers. The decennial census, on the other hand, does not, in general, measure occupational switches. There is one exception, however, of which we take advantage. In 1970, the census measured both the state and the occupation of each respondent not only currently but also five years before. Note that since this information was collected at one point in time and jointly coded, its reliability in identifying switches is likely to be relatively high. We document the pattern in Table 4.

First of all, out of men and women who moved across states between 1965 and 1970 approximately 60% changed occupations as well. The corresponding fraction of occupational switchers in the sample of geographic stayers is considerably smaller, at approximately 35%. Marital status has only a small impact on these numbers. There is a decline in joint mobility rates with age, although one should read the numbers for the youngest group with caution; a lot of the 23-27-year-old group in 1970 would not have had jobs five years prior, in which case we excluded them from the calculation. This means that the number could be biased upward. Finally, it appears that those with only a high-school diploma were more likely to switch their occupation upon a move than those with a college degree. This difference disappears on the sample of geographic stayers.

On the whole, we find that the share of geographic moves accompanied by occupational switches in 1970 is high and likely high enough to have the trends in geographic mobility and occupational mobility correlated. However, it is also clear that many occupational switches occurred without a corresponding state move. The shares we computed here may have changed in the years since 1970, but it seems likely that these broad conclusions still apply.

5 Net Mobility

So far we have studied the gross reallocation of workers across occupations and across states. In this section we study the behavior of the net reallocation across occupations, states, and occupation-state cells. Net occupational mobility is defined as one-half of the sum of the absolute changes in occupational employment shares; i.e., if $s_{m,t}$ is the fraction of employment in occupation m in year t, net mobility in year t is given by $1/2 \sum_m |s_{m,t} - s_{m,t-1}|$. Net

mobility across states and across occupation-state cells is defined similarly.

While the PSID is large enough to produce reliable estimates of gross mobility, it is too small to produce reliable measures of net mobility. Thus, we base our analysis in this section on the data from the 2000-2006 American Community Surveys (ACS). It must be recognized, however, that net occupational mobility obtained from the ACS data is likely biased downward. The reason is that there is a large amount of coding error in occupational affiliation data. In the ACS occupations are coded independently across individuals and across time so that there is no possibility for correcting for this error. Presence of coding error in general biases measured net mobility down.[9]

5.1 Net Occupational Mobility

The analysis in this section provides some insights into the reasons for the observed high levels of gross occupational mobility. In particular, if mobility is primarily caused by shifting demands for labor in different sectors of the economy (as in Lucas and Prescott (1974)), gross flows of workers should approximately equal net flows. If, however, it turns out that gross flows dwarf net flows, this would point the quest for understanding workers' mobility decisions toward studying the matching process between workers and occupations (as in Jovanovic (1979), Miller (1984), and McCall (1990)).

Table 5 suggests that net three-digit occupational mobility averaged about 3.3% for men over the 2001-2005 period and 3.4% for women. We cannot compute comparable gross mobility rates in the ACS because it is a cross-sectional data set and it does not contain retrospective occupational questions (although it does contain a question about the state of residence a year prior to the interview). However, comparing to gross occupational mobility rates computed from the PSID for the mid-1990s, we find that the net rates account for around 20% of gross rates. That is, annual net occupational mobility rates are quite high in both absolute and relative terms, but gross mobility rates clearly dominate.

[9]Consider an extreme but easily generalizable example. Suppose there are two occupations A and B and the measurement error is such that an individual in either occupation is classified correctly with a 50% probability. Then, regardless of the genuine changes in worker allocation between occupations A and B, the measured mobility would always be equal to zero.

Table 5: Net Mobility Rates Across 3-Digit Occupations and States.

Average for 2001-2005, Percent

	Occupation		State	
	Men	Women	Men	Women
All	3.27	3.40	0.75	0.79
Married	3.58	3.92	0.95	1.16
Single	5.06	4.89	1.46	1.40
High School	4.16	4.54	1.40	1.62
College	3.92	3.93	1.09	1.16
Ages: 23-28	7.50	7.26	2.09	2.33
29-34	6.55	6.73	1.73	1.99
35-40	6.04	6.54	2.00	2.26
41-46	5.95	6.30	1.83	2.28
47-61	4.42	4.71	1.08	1.22

Notes: Authors' calculations from the American Community Surveys, 2000 to 2005. The ACS Occupational Classification was used; certain occupational codes were combined for 2000-2004 to make the classification fully consistent across the years. Net mobility is defined in the text.

As with gross mobility rates, we find that single men and women have significantly higher net occupational mobility than married individuals. For single men, the average net mobility rate for the period was 5.1%, compared with 3.6% for married men; the respective rates for women were 4.9% and 3.9%. College-educated individuals had lower average net mobility rates than those without a college degree (3.9% vs. 4.2% for men; 3.9% vs. 4.5% for women). Finally, there is a monotonic decline in net mobility with age: the net mobility rate for the youngest men was around 7.5%, while that for the oldest men was 4.4%; the numbers were similar for women. Thus, the relative net mobility rates of different subgroups of men and women mimic their relative gross mobility rates. This appears to imply some tendency of mobility decisions to be directed toward particular occupations.

5.2 Net Geographic Mobility

Continuing to analyze Table 5, we find similar results for net mobility across states. First, for men, average net state mobility over the period was 0.75%, while for women it was 0.79%. In this case, we can make a more direct comparison to annual gross state mobility rates (which we can compute in the same data set); for men, the net mobility rate accounts for 31% of the gross state mobility rate, for women, the number is 35%. So although gross mobility rates trump net mobility rates, the net mobility rates are clearly high.

Again, we see evidence that singles have higher net mobility than married people: for single men, average net state mobility was 1.5%, compared to just under 1% for married men; single women's net state mobility was 1.4%, compared to 1.2% for married women. Note that the rates are lower for single women than for single men but higher for married women than for married men.

In a reversal of the gross mobility pattern for state mobility, we find that those without a college degree have a higher net state mobility than those with a college degree. Also, while the youngest groups of men and women have higher net state mobility than the oldest groups, there is no clear pattern in the middle groups: the net mobility rates for four out of five age groups are quite similar for both men and women.

To summarize, we find that net geographic mobility is quite high, and the relative patterns of mobility for subgroups of men and women broadly confirm those for gross mobility rates.

However, there is some reversal of these patterns too, especially when analyzed by educational level.

5.3 Net Mobility across Occupation-State Cells

Finally, we consider net mobility across occupation-state cells. In other words, the unit of observation is the share of employment in a given occupation in a given state. Because there are over $20,000$ of these cells, we need a very large data set to get a reliable estimate of net mobility. Such data are available in the 2005 and 2006 ACS, where the sample contains almost 3 million people a year. The results can be found in Table 6. The table also contains measures of net mobility across occupations and across states between these two years. A comparison with the corresponding numbers in Table 5, which contains average net mobility between 2000 and 2005, implies that net mobility between 2005 and 2006 was substantially below the average. This is likely driven by the fact that 2006 is close to the business cycle peak and net mobility (across occupations) was found to be countercyclical by Kambourov and Manovskii (2008b). Subject to this caveat, net mobility across occupation-state cells is very large when compared to either occupational or state mobility. This suggests a surprisingly large degree of reallocation of occupational employment across states.

6 Discussion

In this section we informally discuss some of the implications of our findings for the theories of worker mobility.

Suppose that an individual labor market is well described by an intersection of an occupation and a geographic location. In addition, let the demand and/or productivity shocks be independent across such markets. Then, faced with a decline in occupational productivity in some location, an individual will weigh the cost of a geographic move to preserve his occupation-specific skills against the cost of staying put geographically and switching occupations. This tradeoff is more complex still for married couples. Compare the decision of a couple where only the husband works to the decision of a couple with both partners working. The cost of a geographic move would presumably be higher when both members

Table 6: Net Mobility Rates Across 3-Digit Occupation and State Cells.
Between 2005 and 2006, Percent

	Occupation		State		Occupation-State Cells	
	Men	Women	Men	Women	Men	Women
All	2.28	2.26	0.67	0.92	9.36	9.54
Married	2.43	2.59	0.84	1.11	10.37	11.22
Single	3.42	3.15	1.33	1.39	14.67	13.61
High School	2.96	3.23	1.17	1.69	12.01	12.89
College	2.51	2.56	0.73	0.96	11.08	10.82
Ages: 23-28	5.14	4.94	2.22	2.36	18.82	18.77
29-34	4.83	4.85	1.60	1.80	17.95	18.23
35-40	4.10	4.23	1.32	1.87	16.60	17.61
41-46	3.94	3.94	1.47	2.11	16.29	16.80
47-61	3.08	3.43	1.13	0.96	12.97	13.04

Notes: Authors' calculations from the ACS 2005 and 2006 data.

of the family work and need to find new jobs in the new location. Thus, it is possible that an increase in the labor force attachment of women over time would result in a decline in geographic mobility for married couples and an increase in mobility across occupations of married men. Of course, as women become more attached to the labor market, they accumulate higher amounts of occupation-specific skills and thus may need to move geographically more often to preserve their human capital. This may partially offset the direct negative effect on geographic mobility for married couples but may provide an additional reason for married males to increase their occupational mobility.

Interestingly, we find that this theory is not supported by the data. The theory predicts that the increase in occupational mobility should become more concentrated among married males as their partners become more attached to the labor market. The data, however, imply the exact opposite. In particular, we find that while occupational mobility has increased for virtually all subgroups of male workers, most of the increase was accounted for by a sharp increase in mobility of singles, with a considerably more muted change among married males. Moreover, we find that the change in geographic mobility follows a very similar pattern.

The fact that occupational and geographic mobility exhibit very similar trends, moving largely in the same direction, might be consistent with shocks being local but not independent across occupations, similarly affecting many occupations in a given location. In addition, the distribution of occupational demand and employment shares is quite uneven across locations (e.g. compare the demand for jazz musicians and aircraft engineers in New Orleans and Seattle).[10] An individual in such an economy may need to switch occupations when switching regions and to switch regions when switching occupations, inducing the symmetry of these moves observed in the data.

In an economy with such market structure, an increase in the labor force attachment of women is likely to decrease both the occupational and geographic mobility of their partners, both in absolute terms and relative to single workers. Because we do not see the occupational

[10]More formally, consider the distribution of employment shares of each three-digit occupation by state in the 2000 decennial census data. For each of these distributions, we compute the coefficient of variation (the ratio of the standard deviation to the mean), and then take the average of these coefficients across occupations. This average coefficient of variation is 57%. It suggests that occupational employment shares are distributed quite unevenly across states.

mobility of married couples declining over time, it is likely that there was also an increase, over time, in the volatility of occupational demand or productivity shocks within geographic locations. In this case we might observe relatively flat mobility of married workers and a substantial increase in geographic and occupational mobility of singles.

This, however, cannot be the full story because we find that the annual rate of occupational mobility is about five times higher than the rate of mobility across states. This suggests that there are additional factors that induce workers to switch occupations without changing their geographic locations. We consider two possibilities that tend to reinforce the effect of the stronger attachment of women to the labor force on occupational mobility.

First, suppose that occupations can be classified as having relatively high or relatively low volatility of their productivity, with high-volatility occupations offering higher wages on average. If only males worked in the market, employment of single and married males would be concentrated in the high-volatility occupations because it is relatively easy to escape bad realizations by moving geographically. On the other hand, if men became more attached to their locations because of the increased attachment of women to the labor force, it is possible that married men would shift toward more stable occupations.[11] Coupled with an increase in the volatility of all occupations, this scenario is consistent with an increase in occupational mobility for all men but a sharper increase for singles.

Second, it may also be the case that individuals cannot know how stable different occupations are without first working in them. This may occur for idiosyncratic reasons. It is possible that not all individuals are equally productive in all occupations. Thus, even if individuals knew which occupations are more stable on average, they would still need to find one in which they would have a comparative advantage. In this case, if people expect marriage to reduce their ability to search, they will search harder while they are single by trying out more occupations. In addition, because people understand that getting married will restrict their ability to switch occupations, they may delay marriage until they find the

[11] It must be fun to be a fisherman when fisheries are booming, then work on an oil rig when demand for oil is high. This may even be fun for the wife who does not work and follows her husband wherever life takes him. If, on the other hand, the wife is desperate to further her career as a school teacher, it may be a better decision for the husband to choose the relatively safe occupation of a plumber.

occupation/location that is more likely to be relatively stable.

This discussion is closely related to the question of the extent to which families where both partners work are able to provide better risk-sharing. Married individuals switch occupations less often than single workers. We have interpreted this as evidence suggesting that married individuals are choosing less risky occupations. This would be consistent with individuals reducing their exposure to risk when getting married, indicating a limited ability to share risk within a family (or an offsetting increase in risk due to, say, the higher cost of geographic mobility). Some occupations, e.g., management consulting, are characterized by substantial risks due to the presence of "trial periods" followed by either a promotion and a big bonus or a firing. People who support families may be reluctant to accept such up-or-out contracts. It may also be more difficult for them to allocate a sufficient amount of time to compete with single individuals.

Interestingly, however, the implication may be the opposite. Having two incomes, married individuals can take more risk. In the event of a job loss, this means *not* accepting the first job that comes along in a different occupation, but instead taking more time to look for a job in the same occupation. In this case married people's occupational mobility will be lower than singles', because singles have to provide for themselves and may not be able to borrow to finance a longer period of search.

Evaluating the quantitative ability of these theories to match the facts is beyond the scope of this paper. Instead, we have presented a set of facts on the occupational and geographic mobility of men and women that we hope will help guide future theoretical and quantitative work on worker mobility. We hope that these findings will be useful benchmarks for the theories of the changes occurring in labor markets. It appears likely that the increased labor force attachment of women played a prominent role in driving these changes.

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I Three-Digit Occupation Classification System

PROFESSIONAL, TECHNICAL, AND KINDRED WORKERS[12]

001 Accountants
002 Architects

Computer specialists
003 Computer programmers
004 Computer systems analysts
005 Computer specialists, not elsewhere classified

Engineers
006 Aeronautical and astronautical engineers
010 Chemical engineers
011 Civil engineers
012 Electrical and electronic engineers
013 Industrial engineers
014 Mechanical engineers
015 Metallurgical and materials engineers
020 Mining engineers
021 Petroleum engineers
022 Sales engineers
023 Engineers, not elsewhere classified
024 Farm management advisors
025 Foresters and conservationists
026 Home management advisors Lawyers and judges
030 Judges
031 Lawyers

Librarians, archivists, and curators
032 Librarians
033 Archivists and curators

Mathematical specialists
034 Actuaries
035 Mathematicians
036 Statisticians

Life and physical scientists
042 Agricultural scientists
043 Atmospheric and space scientists
044 Biological scientists
045 Chemists
051 Geologists
052 Marine scientists
053 Physicists and astronomers
054 Life and physical scientists, not elsewhere classified
055 Operations and systems researchers and analysts
056 Personnel and labor relations workers, Physicians, dentists, and related practitioners
061 Chiropractors
062 Dentists
063 Optometrists
064 Pharmacists
065 Physicians, medical and osteopathic
071 Podiatrists
072 Veterinarians
073 Health practitioners, not elsewhere classified

Nurses, dietitians, and therapists
074 Dietitians
075 Registered nurses
076 Therapists

Health technologists and technicians
080 Clinical laboratory technologists and technicians
081 Dental hygienists
082 Health record technologists and technicians
083 Radiologic technologists and technicians
084 Therapy assistants
085 Health technologists and technicians, not elsewhere classified

Religious workers
086 Clergymen
090 Religious workers, not elsewhere classified

Social scientists
091 Economists
092 Political scientists
093 Psychologists
094 Sociologists
095 Urban and regional planners
096 Social scientists, not elsewhere classified

Social and recreation workers
100 Social workers
101 Recreation workers

Teachers, college and university
102 Agriculture teachers
103 Atmospheric, earth, marine, and space teachers
104 Biology teachers
105 Chemistry teachers
110 Physics teachers
111 Engineering teachers
112 Mathematics teachers
113 Health specialties teachers
114 Psychology teachers
115 Business and commerce teachers
116 Economics teachers

[12]Source: PSID wave XIV - 1981 documentation, Appendix 2: Industry and Occupation Codes.

120 History teachers
121 Sociology teachers
122 Social science teachers, not elsewhere classified
123 Art, drama, and music teachers
124 Coaches and physical education teachers
125 Education teachers
126 English teachers
130 Foreign language teachers
131 Home economics teachers
132 Law teachers
133 Theology teachers
134 Trade, industrial, and technical teachers
135 Miscellaneous teachers, college and university
140 Teachers, college and university, subject not specified

Teachers, except college and university
141 Adult education teachers
142 Elementary school teachers
143 Prekindergarten and kindergarten teachers
144 Secondary school teachers
145 Teachers, except college and university, not elsewhere classified

Engineering and science technicians
150 Agriculture and biological technicians, except health
151 Chemical technicians
152 Draftsmen
153 Electrical and electronic engineering technicians
154 Industrial engineering technicians
155 Mechanical engineering technicians
156 Mathematical technicians
161 Surveyors
162 Engineering and science technicians, not elsewhere classified

Technicians, except health, and engineering and science
163 Airplane pilots
164 Air traffic controllers
165 Embalmers
170 Flight engineers
171 Radio operators
172 Tool programmers, numerical control
173 Technicians, not elsewhere classified
174 Vocational and educational counselors

Writers, artists, and entertainers
175 Actors
180 Athletes and kindred workers
181 Authors
182 Dancers
183 Designers
184 Editors and reporters
185 Musicians and composers
190 Painters and sculptors
191 Photographers
192 Public relations men and publicity writers
193 Radio and television announcers
194 Writers, artists, and entertainers, not elsewhere classified
195 Research workers, not specified

MANAGERS AND ADMINISTRATORS, EXCEPT FARM
201 Assessors, controllers, and treasurers; local public administration
202 Bank officers and financial managers
203 Buyers and shippers, farm products
205 Buyers, wholesale and retail trade
210 Credit men
211 Funeral directors
212 Health administrators
213 Construction inspectors, public administration
215 Inspectors, except construction, public administration
216 Managers and superintendents, building
220 Office managers, not elsewhere classified
221 Officers, pilots, and pursers; ship
222 Officials and administrators; public administration, not elsewhere classified
223 Officials of lodges, societies, and unions
224 Postmasters and mail superintendents
225 Purchasing agents and buyers, not elsewhere classified
226 Railroad conductors
230 Restaurant, cafeteria, and bar managers
231 Sales managers and department heads, retail trade
233 Sales managers, except retail trade
235 School administrators, college
240 School administrators, elementary and secondary
245 Managers and administrators, not elsewhere classified

SALES WORKERS
260 Advertising agents and salesmen
261 Auctioneers
262 Demonstrators
264 Hucksters and peddlers
265 Insurance agents, brokers, and underwriters
266 Newsboys
270 Real estate agents and brokers
271 Stock and bond salesmen
280 Salesmen and sales clerks, not elsewhere classified

Salesmen were divided into 5 categories dependent on industry. The industry codes are shown in parentheses.

281 Sales representatives, manufacturing industries (Ind. 107-399)
282 Sales representatives, wholesale trade (Ind. 017-058, 507-599)
283 Sales clerks, retail trade (Ind. 608-699 except 618, 639, 649, 667, 668, 688)
284 Salesmen, retail trade (Ind. 607, 618, 639, 649, 667, 668, 688)
285 Salesmen of services and construction (Ind. 067-078, 407-499, 707-947)

CLERICAL AND KINDRED WORKERS

301 Bank tellers
303 Billing clerks
305 Bookkeepers
310 Cashiers
311 Clerical assistants, social welfare
312 Clerical supervisors, not elsewhere classified
313 Collectors, bill and account
314 Counter clerks, except food
315 Dispatchers and starters, vehicle
320 Enumerators and interviewers
321 Estimators and investigators, not elsewhere classified
323 Expediters and production controllers
325 File clerks
326 Insurance adjusters, examiners, and investigators
330 Library attendants and assistants
331 Mail carriers, post office
332 Mail handlers, except post office
333 Messengers and office boys
334 Meter readers, utilities

Office machine operators

341 Bookkeeping and billing machine operators
342 Calculating machine operators
343 Computer and peripheral equipment operators
344 Duplicating machine operators
345 Key punch operators
350 Tabulating machine operators
355 Office machine operators, not elsewhere classified
360 Payroll and timekeeping clerks
361 Postal clerks
362 Proofreaders
363 Real estate appraisers
364 Receptionists

Secretaries

370 Secretaries, legal
371 Secretaries, medical
372 Secretaries, not elsewhere classified
374 Shipping and receiving clerks
375 Statistical clerks
376 Stenographers
381 Stock clerks and storekeepers
382 Teacher aides, except school monitors
383 Telegraph messengers
384 Telegraph operators
385 Telephone operators
390 Ticket, station, and express agents
391 Typists
392 Weighers
394 Miscellaneous clerical workers
395 Not specified clerical workers

CRAFTSMEN AND KINDRED WORKERS

401 Automobile accessories installers
402 Bakers
403 Blacksmiths
404 Boilermakers
405 Bookbinders
410 Brickmasons and stonemasons
411 Brickmasons and stonemasons, apprentices
412 Bulldozer operators
413 Cabinetmakers
415 Carpenters
416 Carpenter apprentices
420 Carpet installers
421 Cement and concrete finishers
422 Compositors and typesetters
423 Printing trades apprentices, except pressmen
424 Cranemen, derrickmen, and hoistmen
425 Decorators and window dressers
426 Dental laboratory technicians
430 Electricians
431 Electrician apprentices
433 Electric power linemen and cablemen
434 Electrotypers and stereotypers
435 Engravers, except photoengravers
436 Excavating, grading, and road machine operators, except bulldozer
440 Floor layers, except tile setters
441 Foremen, not elsewhere classified
442 Forgemen and hammermen
443 Furniture and wood finishers
444 Furriers
445 Glaziers
446 Heat treaters, annealers, and temperers
450 Inspectors, scalers, and graders; log and lumber
452 Inspectors, not elsewhere classified
453 Jewelers and watchmakers
454 Job and die setters, metal
455 Locomotive engineers
456 Locomotive firemen

461 Machinists
462 Machinist apprentices

Mechanics and repairmen
470 Air conditioning, heating, and refrigeration
471 Aircraft
472 Automobile body repairmen
473 Automobile mechanics
474 Automobile mechanic apprentices
475 Data processing machine repairmen
480 Farm implement
481 Heavy equipment mechanics, including diesel
482 Household appliance and accessory installers and mechanics
483 Loom fixers
484 Office machine
485 Radio and television
486 Railroad and car shop
491 Mechanic, except auto, apprentices
492 Miscellaneous mechanics and repairmen
495 Not specified mechanics and repairmen
501 Millers; grain, flour, and feed
502 Millwrights
503 Molders, metal
504 Molder apprentices
505 Motion picture protectionists
506 Opticians, and lens grinders and polishers
510 Painters, construction and maintenance
511 Painter apprentices
512 Paperhangers
514 Pattern and model makers, except paper
515 Photoengravers and lithographers
516 Piano and organ tuners and repairmen
520 Plasterers
521 Plasterer apprentices
522 Plumbers and pipe fitters
523 Plumber and pipe fitter apprentices
525 Power station operators
530 Pressmen and plate printers, printing
531 Pressman apprentices
533 Rollers and finishers, metal
534 Roofers and slaters
535 Sheetmetal workers and tinsmiths
536 Sheetmetal apprentices
540 Shipfitters
542 Shoe repairmen
543 Sign painters and letterers
545 Stationary engineers
546 Stone cutters and stone carvers
550 Structural metal craftsmen
551 Tailors
552 Telephone installers and repairmen
554 Telephone linemen and splicers
560 Tile setters
561 Tool and die makers
562 Tool and die maker apprentices
563 Upholsterers
571 Specified craft apprentices, not elsewhere classified
572 Not specified apprentices
575 Craftsmen and kindred workers, not elsewhere classified

ARMED FORCES
600 Members of armed forces

OPERATIVES, EXCEPT TRANSPORT
601 Asbestos and insulation workers
602 Assemblers
603 Blasters and powdermen
604 Bottling and canning operatives
605 Chainmen, rodmen, and axmen; surveying
610 Checkers, examiners, and inspectors; manufacturing
611 Clothing ironers and pressers
612 Cutting operatives, not elsewhere classified
613 Dressmakers and seamstresses, except factory
614 Drillers, earth
615 Dry wall installers and lathers
620 Dyers
621 Filers, polishers, sanders, and buffers
622 Furnacemen, smeltermen, and pourers
623 Garage workers and gas station attendants
624 Graders and sorters, manufacturing
625 Produce graders and packers, except factory and farm
626 Heaters, metal
630 Laundry and dry cleaning operatives, not elsewhere classified
631 Meat cutters and butchers, except manufacturing
633 Meat cutters and butchers, manufacturing
634 Meat wrappers, retail trade
635 Metal platers
636 Milliners
640 Mine operatives, not elsewhere classified
641 Mixing operatives
642 Oilers and greasers, except auto
643 Packers and wrappers,except meat and produce
644 Painters, manufactured articles
645 Photographic process workers

Precision machine operatives
650 Drill press operatives
651 Grinding machine operatives
652 Lathe and milling machine operatives
653 Precision machine operatives, not elsewhere classified

656 Punch and stamping press operatives
660 Riveters and fasteners
661 Sailors and deckhands
662 Sawyers
663 Sewers and stitchers
664 Shoemaking machine operatives
665 Solderers
666 Stationary firemen

Textile operatives
670 Carding, lapping, and combing operatives
671 Knitters, loopers, and toppers
672 Spinners, twisters, and winders
673 Weavers
674 Textile operatives, not elsewhere classified
680 Welders and flame-cutters
681 Winding operatives, not elsewhere classified
690 Machine operatives, miscellaneous specified
692 Machine operatives, not specified
694 Miscellaneous operatives
695 Not specified operatives

TRANSPORT EQUIPMENT OPERATIVES
701 Boatmen and canalmen
703 Bus drivers
704 Conductors and motormen, urban rail transit
705 Deliverymen and routemen
706 Fork lift and tow motor operatives
710 Motormen; mine, factory, logging camp, etc.
711 Parking attendants
712 Railroad brakemen
713 Railroad switchmen
714 Taxicab drivers and chauffeurs
715 Truck drivers

LABORERS, EXCEPT FARM
740 Animal caretakers, except farm
750 Carpenters' helpers
751 Construction laborers, except carpenters' helpers
752 Fishermen and oysterman
753 Freight and material handlers
754 Garbage collectors
755 Gardeners and groundskeepers, except farm
760 Longshoremen and stevedores
761 Lumbermen, raftsmen, and woodchoppers
762 Stock handlers
763 Teamsters
764 Vehicle washers and equipment cleaners
770 Warehousemen, not elsewhere classified
780 Miscellaneous laborers
785 Not specified laborers

FARMERS AND FARM MANAGERS
801 Farmers (owners and tenants)
802 Farm managers

FARM LABORERS AND FARM FOREMEN
821 Farm foremen
822 Farm laborers, wage workers
823 Farm laborers, unpaid family workers
824 Farm service laborers, self-employed

SERVICE WORKERS, EXCEPT PRIVATE HOUSEHOLD
Cleaning service workers
901 Chambermaids and maids, except private household
902 Cleaners and charwomen
903 Janitors and sextons

Food service workers
910 Bartenders
911 Busboys
912 Cooks, except private household
913 Dishwashers
914 Food counter and fountain workers
915 Waiters
916 Food service workers, not elsewhere classified, except private household

Health service workers
921 Dental assistants
922 Health aides, except nursing
923 Health trainees
924 Lay midwives
925 Nursing aides, orderlies, and attendants
926 Practical nurses

Personal service workers
931 Airline stewardesses
932 Attendants, recreation and amusement
933 Attendants, personal service, not elsewhere classified
934 Baggage porters and bellhops
935 Barbers
940 Boarding and lodging house keepers
941 Bootblacks
942 Child care workers, except private household
943 Elevator operators
944 Hairdressers and cosmetologists
945 Personal service apprentices
950 Housekeepers, except private household
952 School monitors
953 Ushers, recreation and amusement
954 Welfare service aides

Protective service workers
960 Crossing guards and bridge tenders
961 Firemen, fire protection
962 Guards and watchmen
963 Marshals and constables
964 Policemen and detectives
965 Sheriffs and bailiffs

PRIVATE HOUSEHOLD WORKERS
980 Child care workers, private household
981 Cooks, private household
982 Housekeepers, private household
983 Laundresses, private household
984 Maids and servants, private household

II Two-Digit Occupation Classification System

PROFESSIONAL, TECHNICAL AND KINDRED WORKERS (001-195)[13]

10. Physicians (medical + osteopathic), Dentists (062,065)
11. Other Medical and Paramedical: chiropractors, optometrists, pharmacists, veterinarians, nurses, therapists, healers, dieticians (except medical and dental technicians, see 16) (061,063,064,071-076)
12. Accountants and Auditors (001)
13. Teachers, Primary and Secondary Schools (including NA type) (141-145)
14. Teachers, College; Social Scientists; Librarians; Archivists (032-036,091-096,102-140)
15. Architects; Chemists; Engineers; Physical and Biological Scientists (002,006-023,042-054)
16. Technicians: Airplane pilots and navigators, designers, draftsmen, foresters and conservationists, embalmers, photographers, radio operators, surveyors, technicians (medical, dental, testing, n.e.c.) (003-005,025,055,080-085,150-173,183,191)
17. Public Advisors: Clergymen, editors and reporters, farm and home management advisors, personnel and labor relations workers, public relations persons, publicity workers, religious, social and welfare workers (024,026,056,086,090,100-101,184,192)
18. Judges; Lawyers (030,031)
19. Professional, technical and kindred workers not listed above (174,175-182,185,190,193-195)

MANAGERS, OFFICIALS AND PROPRIETORS (EXCEPT FARM) (201-245)

20. Not self-employed
31. Self-employed (unincorporated businesses)

CLERICAL AND KINDRED WORKERS

40. Secretaries, stenographers, typists (370-372,376,391)
41. Other Clerical Workers: agents (n.e.c.) library assistants and attendants, bank tellers, cashiers, bill collectors, ticket, station and express agents, etc., receptionists (301-364,374-375,381-390, 392-395)

SALES WORKERS

45. Retail store salesmen and sales clerks, newsboys, hucksters, peddlers, traveling salesmen, advertising agents and sales- men, insurance agents, brokers, and salesmen, etc. (260-285)

CRAFTSMEN, FOREMEN, AND KINDRED WORKERS

50. Foremen, n.e.c. (441)
51. Other craftsmen and kindred workers (401-440,442-580)
52. Government protective service workers: firemen, police, marshals, and constables (960-965)

OPERATIVES AND KINDRED WORKERS

61. Transport equipment operatives (701-715)
62. Operatives, except transport (601-695)

LABORERS

70. Unskilled laborers–nonfarm (740-785)
71. Farm laborers and foremen (821-824)

SERVICE WORKERS

73. Private household workers (980-984)
75. Other service workers: barbers, beauticians, manicurists, bartenders, boarding and lodging housekeepers, counter and fountain workers, housekeepers and stewards, waiters, cooks, midwives, practical nurses, babysitters, attendants in physicians' and dentists' offices (901-965 except 960-965 when work for local, state, or federal government)

FARMERS AND FARM MANAGERS

80. Farmers (owners and tenants) and managers (except code 71) (801-802)

MISCELLANEOUS GROUPS

55. Members of armed forces

[13]Numbers in parentheses represent the three-digit occupation codes from the 1970 Census of Population.

III One-Digit Occupation Classification System

01. Professional, technical, and kindred workers (10-19)[14]
02. Managers, officials, and proprietors (20)
03. Self-employed businessmen (31)
04. Clerical and sales workers (40-45)
05. Craftsmen, foremen, and kindred workers (50-52)
06. Operatives and kindred workers (61-62)
07. Laborers and service workers, farm laborers (70-75)
08. Farmers and farm managers (80)
09. Miscellaneous (armed services, protective workers) (55)

[14]Numbers in parentheses represent two-digit occupation codes, recoded by the authors based on PSID documentation.