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Disentangling the interaction of migration, mobility, and labor-force participation

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Abstract. The authors examine the impact of mobility on the labor-force status of two-earner households in the United States, in a longitudinal context. There has recently been a resurgence of interest within industry and academia in the impact of family migration on the labor-force status of women, and on dual-earner families in general. Much of the research in this field has documented the disruptive effects of migration on the labor-force status of women, particularly with respect to unemployment, underemployment, and interrupted careers. However, there is another body of research that has challenged the disruption assumption with findings that many women benefit from family migration. The conflicting results persist when the modeling procedures account for the selectivity of migrants. Missing from the literature is a comparison of the impact of mobility on the labor-force status of men as well as women at varying geographical scales. The authors have used a new methodology to extend previous work on the impact of family migration by directly comparing the labor-force status of dual-earner households who migrate long distances, with that of households who move within the same labor market, and with that of households who remain residentially stable. The authors have used data from the Panel Study of Income Dynamics to show conclusively that, although there are disruptive effects, these are relatively short lived for most households. In addition, the results suggest that average changes mask very large variations in what happens to husbands and wives who relocate. This study emphasizes the dynamic nature of wives' labor-force participation relative to their husbands' immediately before and after a move, a finding that has not been established by other work on migration and labor-force participation.

1 Introduction

In the past decade there has been a resurgence of interest within industry and academia in the impact of family migration on the labor-force status of women, and on dual-earner families in general. Job relocation has become more complex as many transferees are married and dual earners, and relocating two earners is much more difficult than relocating a single earner. In addition, spouses, relatives, and children are no longer considered unaffected extensions of the employee (Flynn, 1995). Companies now have to pay close attention to family issues, particularly with dual-earner relocation, and corporations are recognizing the need for greater incentives and support for the spousal job-search process. Perhaps 10% to 15% of all relocations occur in connection with the married woman's job, and there is reason to believe that this figure will continue to rise in the future. In this context it is worthwhile extending our understanding of family migration and mobility to include all couples, and the entrances to and exits from the labor market both of husbands *and* of wives. Thus, in the research reported in this paper, we reexamine, in a longitudinal context, the geographic and economic impacts of migration and mobility on couples in the United States, whether or not both members are working at the time of relocation.

The extensive research literature that has examined how married women fare when households relocate has provided two contrasting views. One stream of research documents that women in dual-worker households in general suffer from household relocation.

The other view is that women gain rather than lose from household migration. There are at least three possible explanations for these contrasting results. First, the work that has documented the disruptive effects of migration is largely from earlier research, mainly from the 1970s (though it is supported by recent analyses too), and it is plausible that the household-migration process is different today than it was thirty years ago. Second, the number of women who relocate both their house and their job has increased as their labor-force participation has increased, and this may have had an averaging effect—in essence making the outcomes for women more like those for all migrants. Third, there is the issue of sample-selection bias, particularly when studies use cross-sectional data sources. Thus, in this paper we reexamine the affects of mobility and migration on earnings and labor-force participation. However, to provide a new take on migration outcomes, we extend the analysis by examining the results both for husbands and for wives. We also contrast local moves with long-distance moves, and we introduce an alternative methodology for our analysis. We believe that the research reported here is a significant enrichment of previous analyses of women's labor-force participation and migration.

2 Background and research context

Traditional family-migration theory, as it extends human-capital theory from the individual to the family, suggests that families migrate when the expected long-term economic returns benefit the family as a collective. Early studies of the impact of migration on women's participation in the labor force indicated that two-earner households are less likely to move than single-earner households, because of their dual labor-force attachment (Mincer, 1978; Sandell, 1977; Shihadeh, 1991; Spitze, 1984). That research also argued that migration is associated with loss of earnings, interrupted careers, unemployment, underemployment, or leaving the labor force on the part of the wife. Women have been considered sacrificial martyrs to marriage, as the husband's employment mattered most. The mainstay of this work has been the human-capital model (Becker, 1964). In this model, migration is an investment decision that increases an individual's productivity. Individuals and, in the extended version of the model, families move to places where their lifetime benefits will be maximized. The migration decision is a continuous evaluation of the trade-off between staying at the current residence and the utility of moving to a new location. The model explicitly recognizes the lifetime evaluation of the benefits of moving and the fact that the benefits to human capital will vary inversely with age.

The extension of the human-capital model from one worker to more than one worker focuses on net family gain as the motivating force for migration, rather than net personal gain (Mincer, 1978). Thus, migration is a family investment in human capital and takes place if family benefits exceed family costs (DaVanzo, 1976). If net family gain determines whether a family moves, and there is more than one worker, then one spouse may experience a loss from migration even though there is a total family gain. Any job-related gain for one spouse must be weighed against the reduced income or market opportunity for the other spouse. The issue is further complicated by the psychological losses of friends and relatives. Mincer (1978) developed the concept of 'migration *ties*' to depict the situation whereby there are overall gains for the family but losses for one member. Such movers are *tied movers*. Conversely, when the advantages for one partner are insufficient to achieve an overall family net gain, these nonmovers are considered *tied stayers*. These concepts are well established, and early empirical analyses by Mincer (1978), Long (1974), Sandell (1977), and Lichter (1980; 1982; 1983) provide evidence that families migrate less than individuals.

Mincer's (1978) conclusion that migration tends to reduce the unemployment of men but increase the unemployment of women (as tied movers) was an important step in examining how migration is negotiated within the family, and brought greater reality to the study of complex decisionmaking in migration and mobility. Women are likely to be tied movers because of their lower earnings, and wives' employment in general is seen as having a dampening effect on migration. Both Mincer and Sandell reported lower earnings for women after migration, both because it reduced employment and because of low wage growth. Tied migration was found to interrupt the continuity of women's work and lead to slower growth of women's wages over time. According to Lichter, "married women appear to be getting the short end of the stick" (1980, page 96). He draws attention to two outcomes for dual-earner families after migration. First, returns on migration are negative for women and there is an underutilization of a significant proportion of female workers. Second, given the continuing differential in male and female earnings, the ability of married women to respond effectively to economic opportunities in other labor markets is limited.

Duncan and Perucci (1976) have also emphasized the complexity of decisionmaking between couples. In their study of interstate migration of dual-earner college graduates, migration appeared to benefit wives who were not employed prior to the move, but not to benefit wives who were employed prior to the move. Recent research has confirmed the reluctance of dual-earner families to move for better employment opportunities, particularly on the part of women (Bielby and Bielby, 1992; Bruegel, 1996; Shaklee, 1989). These findings suggest support for the tied-stayer concept, and are consistent with the results of Shields and Shields (1988) who find that higher levels of education (specifically educational attainment beyond high school) decrease the likelihood of migration, because of an increased ability to adjust to local labor-market opportunities. Similarly, using a model that includes the two-earner decisionmaking process, Mont (1989) has examined the likelihood of two-earner family migration and finds an interesting paradox. Couples do not migrate, although if they were individuals they would be very likely to migrate. This reinforces the concept of the tied stayer.

Theoretically, there are a number of reasons to anticipate that the impacts of family migration will be detrimental for women (Jacobsen and Levin, 1997; Markham, 1987; Maxwell, 1988; Rytina, 1981; Shihadeh, 1991) and that women will continue to bear the costs of family migration disproportionately. These include the differential labor-market attachment of women, the division of labor within dual-earner households (Jarvis, 1999), the segmented labor market, the persistent gender gap in wages (Halfacree, 1995), and women's geographical access to job opportunities within urban labor markets (Fielding and Halford, 1993). Recently, particular attention has been paid to dual-career households (Bonney and Love, 1991; Green, 1995; 1997; Reed and Reed, 1993; Stanfield, 1998). For some, dual-career families represent important broader social changes (Anderson and Spruill, 1993; Green, 1995; Hardill et al, 1997), whereas others assert that dual-career households do not in fact represent a radical departure from the traditional sex roles (Hunt and Hunt, 1986). The costs and benefits of migration, both for husbands and for wives, are not, of course, limited to wages and labor-force status. The financial implications are only one of a number of outcomes anticipated and experienced by migrant families. Nonmaterial ties, such as investment in social and family networks or children's educational stability, are also important costs or benefits of the decision to migrate or to remain residentially fixed. However, in this study we do not take up the nonmaterial issues, and speak solely to a long-running debate in the literature regarding the employment consequences of migration for wives. As such, this paper is focused only on the labor-force participation and wages of wives and their husbands.

It remains unclear to what extent the debate in the literature regarding the costs or benefits of migration can be resolved by controlling for sample selection bias in family migration and women's labor-force participation. Nonrandom selection is both a source of bias in empirical research and a fundamental aspect of many social processes. There are currently numerous methods available to control for sample selection bias (for an extensive review of these methods, see Vella, 1998). Heckman (1979) wrote the seminal work addressing sample selection bias with an application to the substantive issue of the determinants of wages and labor-supply behavior of females. Clearly, some determinants of the decision to be in the labor force also determine the wages received in that labor force. Following Heckman (1979; 1980), DaVanzo and Hosek (1981) used a regression-switching model to account for the selectivity of migration in their study of whether migration increases wage rates for men. Ever since, it has become common to control for selection bias in microeconomics in general, and in studies of the wage returns to migration in particular. DaVanzo and Hosek (1981) explain that to estimate wage gains to migration, migrants' postmigration wages should be compared with what the migrants would have earned had they not moved, and not with the wages of apparently similar nonmigrants. Migrants are a select sample and differ from nonmigrants in observable and unobservable ways. Specifically, migrants tend to be those who expect to benefit from moving, and nonmigrants tend to be those who expect to benefit from staying.

Much of the recent literature indeed has attempted to control for sample selection bias. However, even the studies that control for sample selection bias generate conflicting results regarding the benefit or detriment of migration on women's labor-force participation and wages. Using wives' share of family earnings, DaVanzo (1976) measured the extent of the wife's labor-force attachment and showed that holding constant the wife's wage and hours worked, the husband's wage, and the expected family income, families with higher contributions from wives are *more* likely to move. In all of her models, the wife's share of earnings has a positive and significant effect on migration. She suggested that two-worker families are better able to share the risks of migration. Bird and Bird (1985) also consider the significance of the wife's share of family income and suggest that changes in attitudes and increases in the wife's income influence families to consider the wife's employment when making mobility decisions. Cooke and Bailey (1996) have also disputed the disruption thesis, using Heckman's sample-selection correction methods. From the Public Use Micro Sample Census data for 1980 they show that the probability of employment among married women in the economically active population increased by about 9% after migration. Smits (1999; 2001) also uses methods to account for sample selection bias and, conversely, finds that in the Netherlands, married men and women who have migrated a long distance earn significantly less than married men and women who have not moved. He also finds evidence that the negative effects of migration are stronger for women who have children at home. There is evidence in the United States also of women leaving the workforce and starting a family subsequent to migration (Cooke, 2001). Interestingly, both Smits (2001) and LeClere and McLaughlin (1997) use sample correction methods with relatively recent data, and find support for the disruption assumption in the short term only.

Methods for controlling sample selection bias are particularly important when cross-sectional data sources are used because of the vast amount of unobservable data (Bailey, 1993). By comparison, longitudinal data sources have far fewer unobservable measures. Traditional research on the effects of migration on workforce participation and earnings has tended to be cross-sectional, and more recent studies have been extended to cross-national comparisons (Boyle et al, 2001). Even studies that have used longitudinal data sources to assess the impact of migration on the labor-force

status of women, [including the National Longitudinal Survey of Young and Mature Women (Spitze, 1984; 1986), the National Longitudinal Survey of Young Women (Morrison and Lichter, 1988), the National Longitudinal Survey of Youth (Bailey and Cooke, 1998), and The Panel Study of Income Dynamics (LeClere and McLaughlin, 1997; Shields and Shields, 1993)] seldom utilize the longitudinal advantages provided by these sources. Most longitudinal analyses have focused only on the labor-force status of couples at the time of the survey and do not consider the dynamics of labor-force participation that are evident when that participation is examined on a continuous basis. Unobservable variation is never completely avoidable, but knowledge of marital status, wages, and labor-market attachment prior and subsequent to migration are known in a longitudinal data source. Furthermore, the extent to which sample selection can ever be 'controlled' without introducing additional unobservable variation remains the topic of considerable debate.

The few studies that have considered the temporal framework of migration and job change suggest that wives were not only less likely to be employed but also that those who were often stated that their jobs were not as good after the move (Rives and West, 1992; 1993). LeClere and McLaughlin (1997) used a decomposition analysis to examine the source of women's relative-earnings losses after family migration. They considered the impact of labor-force participation, hours of labor supplied, and wages. Exits from the labor market had the most significant effect on reduced earnings. The findings showed that earnings were affected in the short run, but that after two years there were only minor lingering effects. Spitze (1984) found some detrimental effects on employment status, weeks worked, and earnings, yet the differences did not last beyond the first or second year after the move. Marr and Millerd (1988) also found short-term difficulties for wives but long-term improvements in employment rates. These studies suggest that the disruption effect is short lived.

One promising direction that remains unexplored is a true longitudinal study of the dynamics of labor-force participation, particularly with reference to women (Hakim, 1996). In this paper we attempt to fill this gap by examining the intersection of labor-force dynamics, and migration and mobility. However, to provide a larger context than simply the experience of women in dual-career households, and to go beyond previous analyses, we have examined all couple households and segmented the couples by employment status before and after a move. In this way we capture the dynamics of the labor-force participation of all couples, and not just dual-career couples. In addition, the research is designed to examine labor-force participation and wages in the exact 12 months before and after a move, rather than a general calendar year before and after the move.

3 Data, methods, and questions

The central question which guides the research as a whole, is this: in the aggregate, what is the impact of family migration on husbands' and wives' labor-force participation and earnings? Or, alternatively, who is gaining and who is losing from mobility and migration? A subset of questions are:

(a) What is the *mean* change in participation and earnings with migration?

(b) What is the *distribution* of levels of participation and earnings before and after a move?

(c) What is the *timing* of leaving and entering the labor force for employed husbands and wives?

The scope of the questions requires both a longitudinal data source and detailed information on the type of mobility and the nature of employment by month and year. Although we can answer some of the questions with the analysis of mean

differences in participation rates and earnings before and after migration, many of the questions require detailed data on the monthly labor-force status both of husbands and of wives. The complexities involved in measuring such concepts as underemployment or wage increases have been well detailed in the economics literature (see, for example, Clogg, 1979). We are also concerned to address the differences between long-distance movers, local movers, and nonmovers. A long-distance move (migration) is defined as a move between labor markets, whereas a local move is a move within the same labor market (Clark and Withers, 1999). The distinction was measured using geocoded data and census labor-market-area boundaries for 1990.

The Panel Study of Income Dynamics (PSID) is a longitudinal sample of individuals and households within the United States. The survey was first conducted in 1968, and by the 1993 interview the study consisted of over 7000 households, representing an aggregate national overview of family and household experience over time. The main content of the PSID data is derived from questions about the composition of families, income sources from the prior calendar year, detailed employment histories about household heads and, more recently, about both husbands and wives, household expenditures, housing expenditures, and residential mobility. For this study critical elements of the data are the date of the interview and the date of the move or migration. With the aid of these data and monthly employment data, we construct labor-force participation for the 12 months before and after a move. For the residentially stable population we construct labor-force participation for the 12 months before and after the date of the interview.

In our analysis we pay particular attention to the wife's continuous-employment status. Much of the research that has examined the effects of family migration on women's labor-force status has used census data or other cross-sectional data sources that provide very limited information about the events and attributes prior to the survey date. Other, more sophisticated, studies of migration and employment status have distinguished between the number of workers in a household before the move and the number of workers in a household after a move. This cross-sectional approach essentially asked whether the household was a one-worker household before and after the move, a two-worker household before and after the move, or whether there was a change in the number of workers after a move. Comparing the year before and the year after is a standard approach to measuring the effect of migration on women's participation and earnings in the workforce. However, the results from this classification raise a number of questions that challenge the efficacy of this static approach (table 1). The results in the table for those households who have no change in status are generally consistent with our notions of the effects of migration. Note, households in which nonworking wives accompany their working husbands (households with one worker before and one worker after) have modest incomes and there are only small gains for migrants. In contrast, wives who move and stay employed (households with two workers before and after) have considerable gains in income. These results could be interpreted in favor of the benefits thesis rather than the disruption thesis. However, a closer examination of the results raises questions about these findings and, by extension, about previous findings in the literature that are based on analyses using cross-sectional measures to identify employment status.

It is evident from the longitudinal data that households who were one-worker households at the time of the interview would actually have had an employed spouse at some time in the previous and succeeding years. Although the incomes are modest (table 1), the findings clearly indicate that employment status at the time of the interview provides a distorted measure of labor-force participation. There is the potential for the timing of the interview to correspond poorly with the true labor-force participation experience

Table 1. Mean calendar year wages and annual hours worked—husbands and wives.

Category	Wage (US $000)				Hours			
	husband		wife		husband		wife	
	before[a]	after[b]	before	after	before	after	before	after
One worker before, one worker after								
Nonmovers	29.8	30.2	3.2	3.2	1905	1873***	398	410
Movers	24.7	26.3**	2.6	2.6	2079	1996**	400	397
Migrants	30.5	31.4	2.4	2.7	2329	2305	354	369
One worker before, two workers after								
Nonmovers	27.3	28.4	7.3	9.4***	2122	2213***	979	1232***
Movers	22.2	21.9	8.3	9.9***	2080	2075	1120	1375***
Migrants	26.2	27.5	5.9	9.1***	2120	2288*	809	1192***
Two workers before, one worker after								
Nonmovers	29.0	27.1***	10.3	7.2***	2085	1882***	1173	816***
Movers	21.8	22.0	9.3	6.6***	2062	1962*	1225	820***
Migrants	30.0	29.4	12.7	7.3***	2247	2134	1312	784***
Two workers before, two workers after								
Nonmovers	30.7	31.6***	18.7	18.4***	2271	2234***	1758	1664***
Movers	27.3	28.2**	17.3	16.8***	2281	2244**	1772	1641***
Migrants	28.4	30.1	17.9	18.5	2255	2250	1771	1736

* difference significant at 0.1 level; ** difference significant at 0.05 level; *** difference significant at 0.01 level.
[a] Before—in the year before the interview.
[b] After—in the year after the interview.

of households over the time period. The employment status at the time of the survey is only a reliable measure of labor-force participation for households with two workers. For all other households, this static measure does not represent the dynamics of husbands' and wives' labor-force participation. The disconnect between the timing of the interview and the annual experience of households is evident from the data reported for households that had a nonworking spouse enter the labor market, and for households that had a working spouse leave the labor market. Earnings for spouses in households that had a spouse enter the labor market increased by US $1000 – 2000, but the incomes were already several thousand dollars when they were supposedly a one-worker household (measured at the time of the interview). Likewise, households in which the number of workers decreased had lower incomes for spouses but not even close to zero income.[(1)] These results point to two important findings. First, the labor-market exits and entrances are much more dynamic than is suggested from examining employment at a single moment in time—hardly a surprising finding but, as the majority of previous studies have used cross-sectional measures, it may be a large component of the ambiguity of the substantive findings. Second, and by extension, comparisons between income in previous and subsequent years need to control for the level of labor-force participation. It is therefore very difficult to make a reasoned decision on the levels of benefit or disruption. An alternative approach is necessary.

4 Analysis of mean changes in labor-force participation and earnings

Instead of focusing on employment status at the time of a move, we have constructed a measure that indicates whether husbands and wives worked for the full year (continuously) or for only part of the year (discontinuously) before and after a move.

[(1)] We do not comment on the hours, as they are similar in pattern to earnings.

We identify continuous employment as 10 months or more of employment in each year before and after a move. Less than 10 months of employment we classify as discontinuous.(2) When we use this distinction to examine employment changes for couples before and after a move, we arrive at sixteen possible categories. The sixteen codes range from both husband and wife working continuously before and after a move to both working discontinuously before and after a move. After pooling the observations over the period 1986–93 there were 19 007 couples in the data file. The predominant category has both partners working continuously before and after the interviews or the move (table 2). Four of the sixteen possibilities accounted for 83% of all cases. Note that all four of these categories have the husband working continuously over the interval and, in order of magnitude, wives also working continuously in both time periods, wives in discontinuous employment in both time periods, wives making the transition from discontinuous to continuous employment, and from continuous to discontinuous employment. Another four categories brought the total to nearly 95%. Of course, many of these households, especially those in the largest categories, were neither movers nor migrants, as the table indicates. The table clearly illustrates the dynamics of labor-force participation captured by this method, for we see that 25% of nonmovers had some change in labor-force attachment for at least one partner over the interval, whereas these figures rise to 40% and 44% for local movers and migrants, respectively.

Table 2. Number of cases by move and employment status—continuous (C) employment that is, for $\geqslant 10$ months, or discontinuous (D) employment, that is, employed for < 10 months, in the calendar year.

Employment status				Number of cases			
before[a]		after[b]		nonmovers	movers	migrants	total
husband	wife	husband	wife				
C	C	C	C	8 282	983	131	9 396
C	C	C	D	840	113	42	995
C	C	D	D	227	43	16	286
C	C	D	C	423	64	14	501
C	D	C	C	1 513	269	84	1 866
C	D	C	D	2 834	434	166	3 434
C	D	D	D	251	51	13	315
C	D	D	C	130	48	8	186
D	C	C	C	506	97	19	622
D	C	C	D	42	13	7	62
D	C	D	D	110	9	5	124
D	C	D	C	623	73	16	712
D	D	C	C	81	21	22	124
D	D	C	D	112	25	16	153
D	D	D	D	113	20	8	141
D	D	D	C	67	17	6	90
Total				16 154	2280	573	19 007

[a] Before—the year before the interview.
[b] After—the year after the interview.

(2) The terms 'continuous' and 'discontinuous', rather than 'full-time' and part-time' were selected to represent labor-force attachment, and are used to distinguish between individuals participating in the labor force throughout the year and individuals who move in and out of the labor market during the year, respectively.

We examined the participation rates and earnings for the exact year (12 months) before and after a move for the four largest groups (table 3). The analysis focuses on mean earnings and mean hours worked in the 12 months before and the 12 months after the actual move. In this analysis we use an estimation technique to translate months of employment into earnings and hours worked.(3) Using the 12 months before and after a move yields results that are directly related to the actual intervals of participation. The data are presented for migrants, movers, and nonmovers. In every case, across move status, continuously employed husbands (having no change in participation) in general exhibit gains from migration. Similarly, continuously employed migrant wives, or those who shift from discontinuous to continuous status, also have mean gains. As expected, the earnings of wives who shift from continuous to discontinuous labor-force attachment decline. Migrant wives who are in discontinuous employment also have losses. Interestingly, only a small fraction of all mover and migrant wives shift from continuous to discontinuous employment status. Although the results have some similarities to those in table 1, they are in fact more easily interpretable and are a more precise measure of what is occurring at the intersection of the labor market and migration.

The more nuanced results in table 3 are in direct contrast to the mean differences in the wages and hours worked for husbands and wives (figure 1, over) when employment-status change is not controlled. The mean-difference analysis shows the traditional

Table 3. Mean calendar year wages and annual hours worked—husbands and wives in continuous (C) employment that is, for $\geqslant 10$ months, or discontinuous (D) employment, that is, employed for < 10 months.

Category	Wage (US $000)				Hours			
	husband		wife		husband		wife	
	before[a]	after[b]	before	after	before	after	before	after
Before: husband C, wife C; after: husband C wife C								
Nonmovers	31.4	32.2**	19.3	19.5	1753	1911	1751	1911
Movers	27.9	28.8**	18.7	19.0	1743	1905	1748	1902
Migrants	31.7	34.2**	21.6	22.4	1736	1897	1729	1896
Before: husband C, wife D; after: husband C wife D								
Nonmovers	37.2	37.4	2.8	2.2***	1753	1910	288	478**
Movers	28.2	29.9**	3.7	3.3	1742	1902	353	403
Migrants	36.5	38.1	6.3	4.2**	1759	1907	392	431
Before: husband C, wife D; after: husband C wife C								
Nonmovers	32.2	32.7*	8.4	9.3***	1753	1910	839	1873***
Movers	26.3	27.6	10.0	10.0	1736	1905	952	1859***
Migrants	29.9	30.4	8.0	10.8**	1731	1915	617	1838***
Before: husband C, wife C; after: husband C wife D								
Nonmovers	31.7	33.9***	14.5	12.9***	2330	2320**	1714	976***
Movers	29.2	32.2***	12.6	9.5***	2399	2315	1685	790***
Migrants	35.4	35.4	16.7	11.8***	2554	2456*	1691	754***

* difference significant at 0.1 level; ** difference significant at 0.05 level; *** difference significant at 0.01 level.
[a] Before—in the year before the interview.
[b] After—in the year after the interview.

(3) To calculate the earnings data we used information from the calendar year on hours and earnings to compute an hourly wage, and then applied that to the months of employment before and after a move.

pattern of gains of husbands' wages and declines in wives' wages. Those gains are greatest for husbands who are movers and husbands who are migrants, and the losses are about the same for wives who are movers and those who are migrants (figure 1). There are modest declines in hours worked both for husbands and for wives, though the decline for wives is somewhat larger. The results in table 3 provide a first step in understanding what is happening at the intersection of mobility migration, participation, and earnings. Clearly, as expected, the results are dependent on exits from and entrances to the labor market.

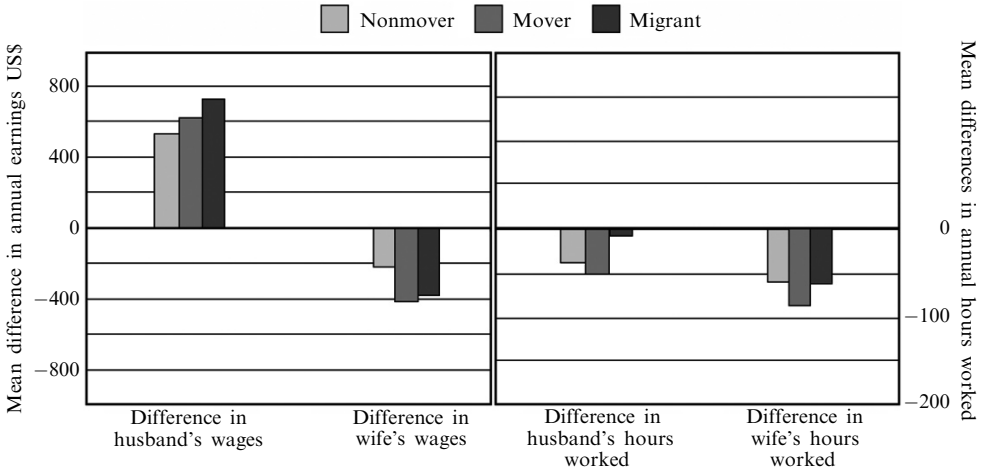

Figure 1. Mean differences in earnings and hours worked by mobility type.

5 Analysis of the distribution of participation and earnings

The previous analyses focused on differences in the mean earnings and mean hours, mean hours being a measure of labor-force participation. Although the analysis of means gives useful results, we argued earlier that the *distribution* of outcomes is even more critical and more revealing of the underlying complexity of the interrelationship of participation and earnings and mobility, and migration. We next examined the distribution of changes in participation and wages for husbands and wives for all couples. Again, we used the interview date for nonmovers to assess their changes in income between preceding and succeeding periods.

Overall, the distributions of participation in the labor force are broadly similar across our analysis categories of nonmovers, movers, and migrants (figure 2). However, as expected, migrants and movers have greater (or lesser) rates of participation following change than do nonmovers. The distribution of differences between participation before and after a move is striking. About one half of all changes are less than the equivalent of a month's difference in participation (160 hours). At the extremes of the distribution, the 10% of all households at the tails, have changes equivalent to at least half a year, and for the most extreme tails (the 1% of the distribution) the changes in participation clearly represent exits from and entrances into the labor market. Gains in participation rates are about the same for mobility and migration, and are still greater (or less) than for nonmovers. Women do as well, or less well, from local moves as from migration.

The distribution of earnings has a similar structure (figure 3, see over). However, the distribution of differences in earnings is flatter than that for hours worked. Although changes in hours were quite sensitive to employment change, those same differences were not translated into large differences in earnings. More than 60% of all

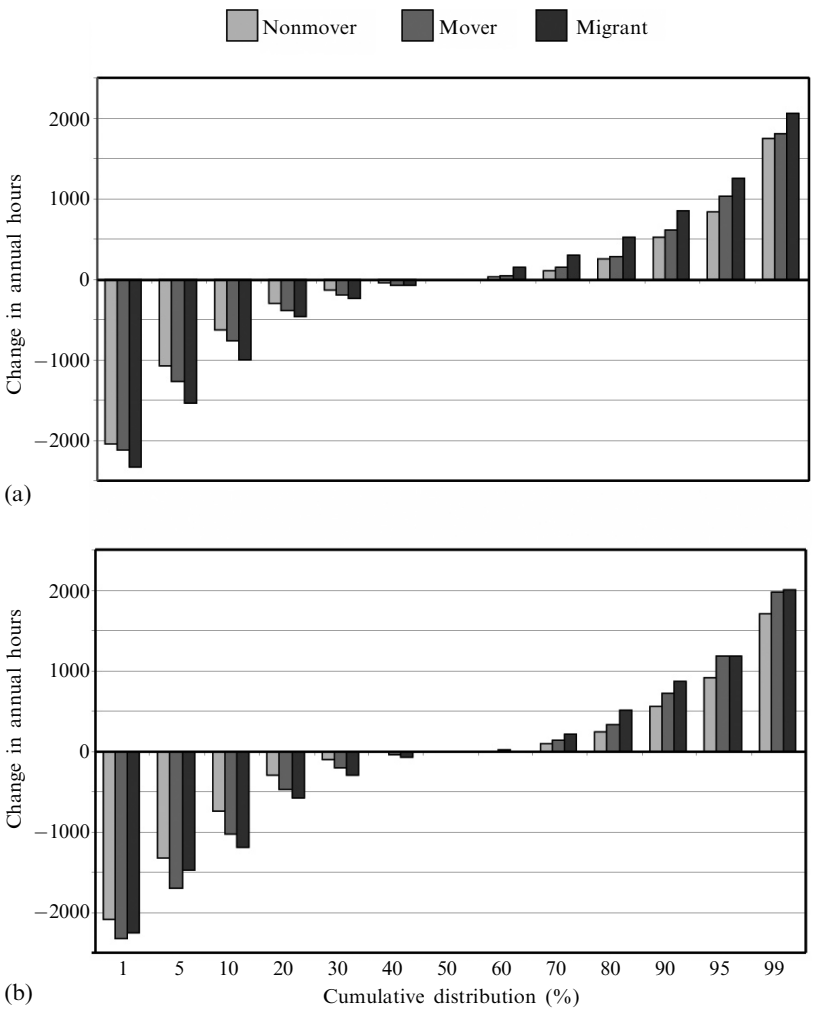

Figure 2. Changes in hours worked (a) by husbands and (b) by wives per year by mobility type.

husbands and wives had a change in earnings of less than US $1000 up or down, whether they moved or not. It is worth reiterating that most previous analyses have included all these changes in the computations for average changes, as we did in table 3. However, it is clear that for many individuals and their households the move or migration has little impact on participation in the workforce and financial outcome. It is only at the margins that there are major effects, and it is at the margins that there are large variations in labor-force participation. Second, excluding the extreme ends of the distribution there were only slight differences between movers and nonmovers for husbands, but wives had consistent gains or losses from local moves. Third, apart from the extremes, the husbands had greater gains than losses from migration than was the case either for staying or for moving locally. It is worth reiterating that migration does not lead only to gains, even for husbands who choose to move. A fourth important finding is the small number of migrants and movers who experienced major changes in participation or earnings. The largest changes were seen in only 46 movers and 11 migrants. Only 56 migrants and 224 movers (less than 10% of the sample) had changes greater than $10 000. And, in total only 446 movers and 112 migrants are at the extremes of the distributions—having a change that is in the top or bottom 10% of

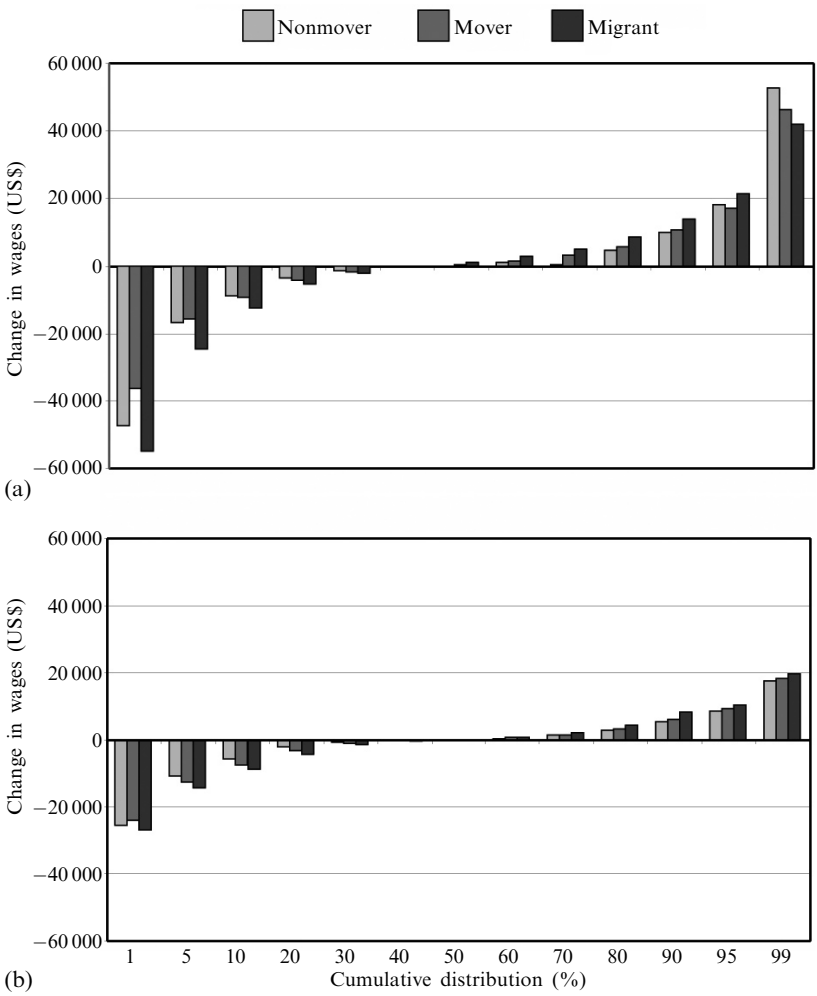

Figure 3. Changes in annual wages (a) of husbands and (b) of wives by mobility type.

the full distribution of changes. Most movers and migrants had relatively small changes in income and participation.

An alternative cumulative plot (figure 4)[4] indicates further distinctions between nonmovers, movers, and migrants—differences that are hidden by the histograms of differences. The migrant curve is consistently above the curves for nonmovers and local movers for husbands' participation gains, and the three curves are not different for participation declines. That is, husbands gain from migration and when they lose from migration they are not worse off than either local movers or nonmovers. For wives the pattern is somewhat different. Wives may either gain or lose from migration, and at the extremes the losses are much larger than the gains. The effects are at the extremes and to average these into an aggregated measure of effect is to mask the impacts of migration and mobility on participation and earnings.

The dramatic finding of this analysis of differences in earnings is that so much mobility has little effect on earnings. Also, it is clear that the average gains and losses mask the distribution of gains and losses, with the mobility or migration decision producing as many winners as losers in earnings. It is not possible to argue that

[4] The graph for earnings is similar, and is not necessary for the argument.

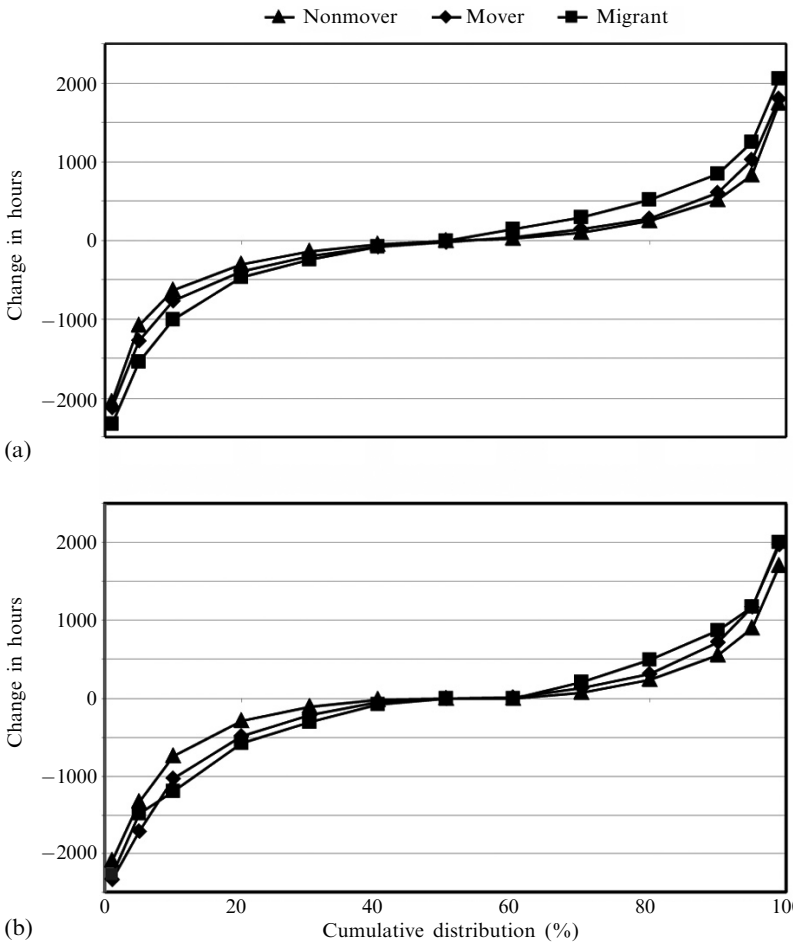

Figure 4. Changes in hours worked (a) by husbands and (b) by wives per year by mobility type.

migration has a positive or a negative effect for either partner based on these distributions. Clearly, a significant number of husbands do make gains from migration (excluding the very largest gains which go to those who do not move), but equally clearly, a large number of husbands have lower earnings after migration. This pattern is also true for wives, but on a smaller scale. However, the losses for those who do have losses with migration are larger than are the gains for those who have gains.

Overall, the findings from the distributional analysis emphasize the wide variation in gains and losses, and it follows that knowing who and where the gainers and losers are is a significant part of understanding the interaction of mobility, migration, and earnings. In the next section we examine how many of these extreme losses arise from dropping out of the labor market coincident with migration.

6 Analysis of the extremes

There is a great deal to be learned about the effects of mobility and migration on earnings and participation when one examines those who are at the extremes of the distribution of outcomes. By examining the top and bottom 10% of the distributions, and computing measures of household characteristics, family composition change, and changes in the level of employment, we can gain a fuller understanding of the impacts of mobility and migration. As in the rest of the analysis, we examine the data for

nonmovers, movers, and migrants and we compare the extremes—the 10% who had decreases in earnings and participation, and the 10% who had increases in earning and participation.

There are important differences across nonmovers, movers, and migrants. In general, movers and migrants have more changes in family composition—increases in dependent children—and, as expected, much higher proportions have changes in employment status (table 4). Movers and migrants are somewhat younger, more likely to be in professional occupations—but not dramatically so—and significantly more likely to have employment changes. These last changes clearly play a fundamental part in our understanding of the outcomes of relocation.

Table 4. Analysis of the tails of the income distribution.

Variable	Nonmovers		Movers		Migrants	
	loss[a]	gain[b]	loss	gain	loss	gain
Age of head of household	41.8	40.0	35.2	33.9	32.7	33.5
Family change	15.3	16.6	20.1	26.4	21.4	18.9
Increase in number of children	5.9	8.5	11.8	16.2	14.3	13.5
Occupation of head of household	39.6	44.4	28.4	39.2	52.4	67.6
Wife employment discontinuous then continuous	5.5	15.7	8.8	19.6	8.0	26.3
Wife employment discontinuous then discontinuous	27.5	7.9	20.1	7.4	35.5	7.9

[a] Loss—occurs at the bottom 10%.
[b] Gain—occurs at the top 10%.

It is not surprising that employment changes play such an important role. It is the entry to and exits from the labor market that are the central component of changes in earnings for the household as a whole. The change from discontinuous to continuous employment, or from continuous to discontinuous employment, creates very different outcomes for the households in the top and bottom 10% of the distribution (table 4). Change from continuous to discontinuous employment status leads in general to lower gains; change from discontinuous to continuous employment leads to increases in participation and increased earning. This is hardly a surprising outcome but, in contrast to other studies, this analysis shows that it is the exits from and entrances to the labor market which occur in association with migration that are the *driving force* in creating changes in participation and earnings. However, even these changes are not unproblematic. Men's shifts in employment are not always linked to gains in outcomes. However, for women the results are unproblematic: gains are associated with labor-market entry, and losses are associated with exits from the labor market. Among wives who move and change from discontinuous to continuous employment, there are higher proportions with gains—19.6% for movers, and 26.3% for migrants, as opposed to 15.7% for nonmovers. Among those experiencing the counterchange, from continuous to discontinuous employment, there are very high proportions who have losses, both among migrants and among movers. In sum, whether of gains or losses in earnings and participation, the tails of the distribution have higher proportions of individuals with fundamental changes in the nature of their employment. The tails can be largely explained by changes in labor-market attachment for husbands and wives.

These employment impacts can be illustrated by plotting the distributions for nonmovers, movers, and migrants for those who had major changes in employment.

The distribution of earnings for wives by employment status (figure 5) shows the impact of job change on the distribution. The distributions for wives who changed employment status coincident with moving or migration are quite different. The distribution for wives who changed from discontinuous to continuous employment is shifted to the right; the distribution for wives who changed from continuous to discontinuous employment is shifted to the left. Thus, the cumulative curve reflects the overall changes that occurred among wives who had major changes in employment. It is worth noting that the whole distribution shifts to the left or right: in other words, the effects go beyond the extremes, although it is for the extremes of the distributions that the outcomes are most dramatic.

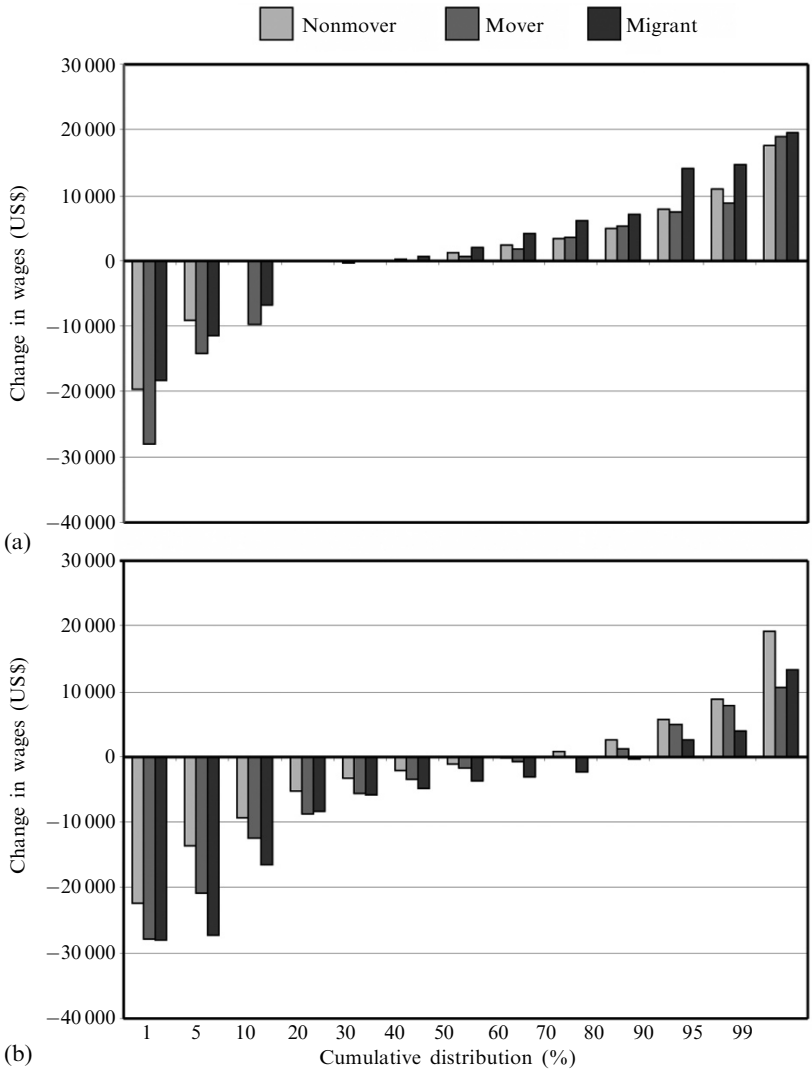

Figure 5. Changes in wives' wages for the case (a) husband in continuous and wife in discontinuous employment before the move and husband and wife both in continuous employment after the move; and the case (b) where the husband and wife are both in continuous employment before the move but after it the husband is in continuous employment but the wife is in discontinuous employment.

To this point we have shown that disruptions to the spouses' participation and earnings are closely associated with their exits from and entrances to the labor force—a predictable finding, yet it emphasizes how misleading it is to focus on average gains and losses. The question that remains is that of whether these disruptions are short term or long term, and whether the effects last beyond a year or more. Thus the issue is one of timing, and this is addressed in the next section.

7 Survivor functions and reentry into the labor force

In this analysis we use simple but effective graphs of participation, and a logit model of the time to reentry into the labor force. The graphical presentation provides detailed data on the timing to reentry, and the logit models provide an explanation for those who do not reenter the labor force.

Again, we separate movers and migrants, and consider the contrasting situations when husband and wife both worked at least one month before the move and when the husband was employed and the wife did not work before the move. Data are not plotted for the month of move. For movers, where both husband and wife worked at least a month before the move, only a very modest impact on participation rates is

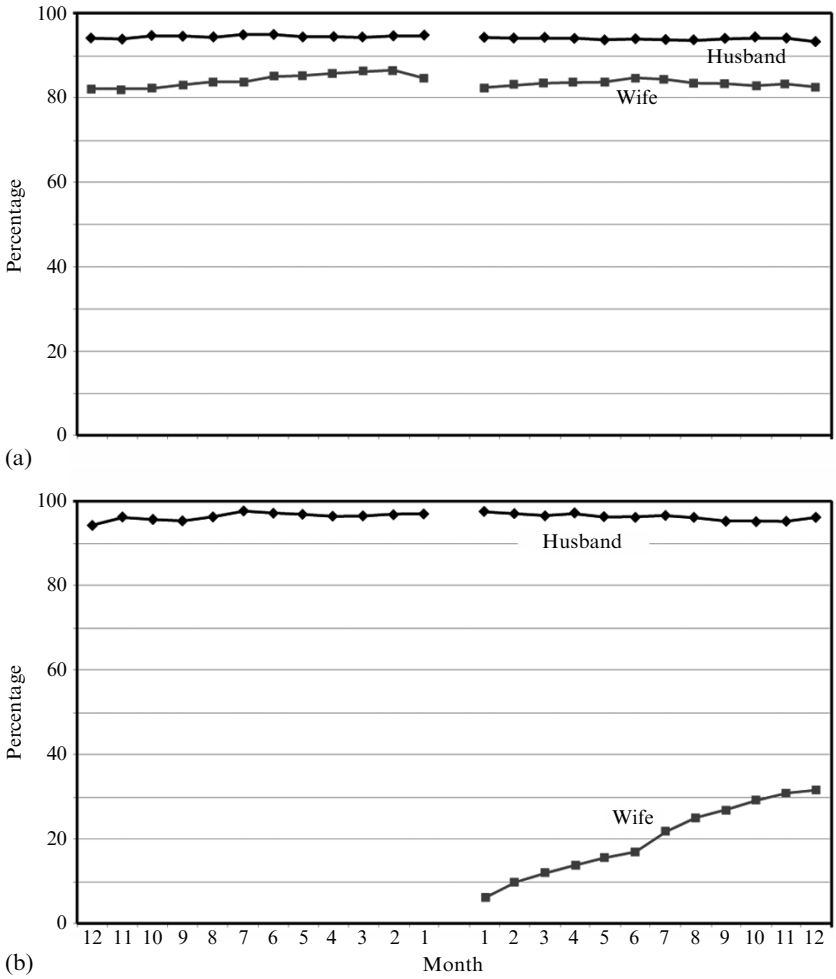

Figure 6. Percentage movers employed by month when (a) husband and wife both worked, and (b) only the husband worked, for at least 1 month before the move.

evident (figure 6). There is a very slight downturn in participation for wives just prior to moving, but virtually no impact for husbands. The participation rates for wives are about 10% lower than those for husbands. These are average participation rates across months. For movers in households where the wife does not work in the interval before moving, again there is no impact for husbands but a slow and steady *entry* into the labor force for wives. Clearly, these results can be interpreted as a positive gain from moving. That is, in terms of employment, women in households who move in the local labor market are not disadvantaged by the move. At the same time, the participation rate for 'entrants' reaches only 30% by 12 months after the move.

The story for migrants is more interesting and shows greater impacts of migration (figure 7). For two-worker households, the participation rate for husbands changes marginally, staying at about 90% before and after the migration. There is a fractional decrease after the change in labor markets. Recall that movers change residences within the same labor market, whereas migrants change labor markets. The evidence for wives who are in two-worker households and who change labor markets is quite different. Beginning 4 months before the move, their participation rate drops from approximately 80% to under 70%. The rate further declines after the move, to 55%.

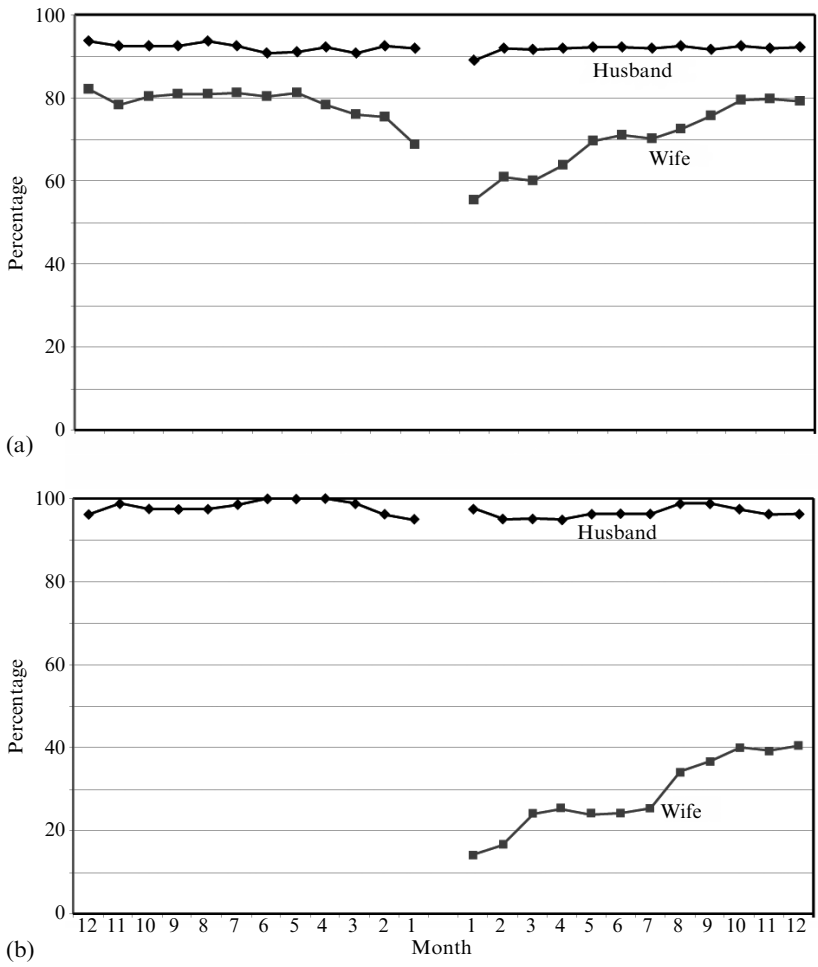

Figure 7. Percentage migrants employed by month when (a) the husband and wife both worked, and (b) only the husband worked, for at least 1 month before the move.

Clearly, a cross-sectional measure of participation and earnings at the moment of the move would show wives to be disadvantaged by the move, and indeed at that point they are disadvantaged. However, within 6 months they have returned to participation rates equal to those prior to the move, and in 10 months the participation rate is the same as before the move. Disadvantage, yes, but the duration of the disadvantage is short-lived. For households which have one worker before the move, the participation rate is higher for husbands, after the move, and does not change with the change in the labor market. For wives, the process of entry to the labor market begins slowly and builds, as for movers, to about a 30% participation rate.

An alternative way to present the participation rates is to plot the curves for labor-market 'reentry' (figure 8). Note that 'reentry' is in quotes to remind us that many husbands do not leave the labor market. Husbands reenter rapidly: even those who are not working at the time of the move are back in the labor market by five months from the time of the move. Wives, even those who were working prior to a move, 'survive' out of the labor market for longer periods than do husbands. Migrants and movers who are not working prior to the move have steady rates of return to the labor market. The graphs complement the participation-rate graphs in figure 6 and 7.

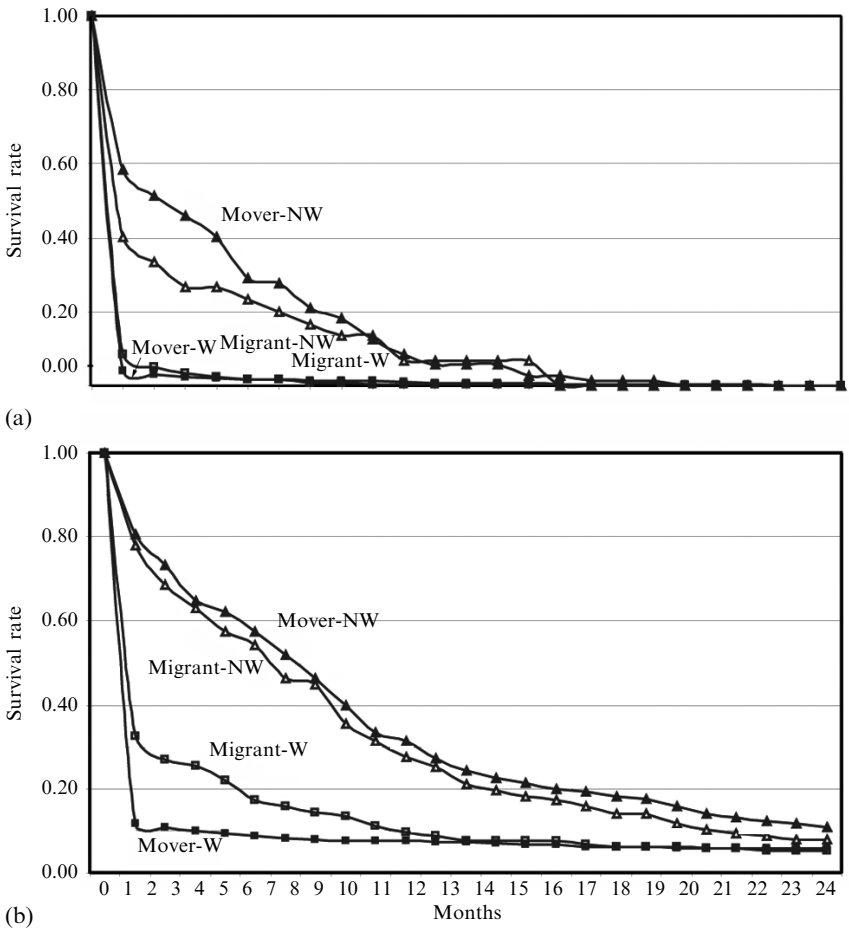

Figure 8. Time to 'reentry' into the labor market for (a) husbands, and (b) wives, by worker status and mobility type. NW—not working; W—working.

Table 5. Logit models of wives returning to work after migration.

Variable	Coding	Model 1 within 3 months of the move			Model 2 within 5 months of the move		
		parameter estimates	χ^2	odds ratios	parameter estimates	χ^2	odds ratios
Intercept		2.3226	0.0027		2.1975	0.0068	
Wife's age	18 – 29 years	0.4036	0.3675	1.497	0.1460	0.7587	1.157
	30 – 39 years	0.1684	0.7109	1.183	0.2450	0.6157	1.278
Wife's education	college degree	0.4338	0.2446	1.543	−0.0021	0.9958	0.998
Wife's previous employment	continuous	1.0259	0.0015**	2.790	1.0283	0.0028**	2.796
Wife's previous occupation	professional or managerial	0.0139	0.9739	1.014	0.1122	0.8062	1.119
	sales and service	−0.1104	0.7413	0.895	0.2579	0.4691	1.294
Wife's previous earnings	% of household income	−0.0066	0.3083	0.993	0.0037	0.6060	1.004
Husband's occupation after move	professional or managerial	−0.9736	0.0215*	0.378	−0.7039	0.1283	0.495
	manual labor	−1.2699	0.0018**	0.281	−1.0789	0.0154*	0.340
Husband's earnings after move	husband's wages	−0.00002	0.0066**	1.000	−0.00002	0.0368*	1.000
Presence of children	children present	−0.6866	0.0386*	0.503	−0.0915	0.7935	0.913
City size (population)	>500 000	−0.0917	0.8256	0.912	−0.0825	0.8506	0.921
	50 000 – 499 999	0.5029	0.1044	1.654	0.5812	0.0892	1.788
Job availability	county unemployment rate	−0.0770	0.2633	0.926	−0.1485	0.0422*	0.862
Race	minorities	−0.2306	0.5309	0.794	−0.1671	0.6733	0.846
−2 log likelihood							
Intercept only		385.451				340.1640	
Intercept and covariates		338.388				298.0530	
Likelihood ratio χ^2		47.0623				42.1108	
Degrees of freedom		15				15	
p		<0.0001				0.0002	
Wald 2		36.1188				34.1049	
p		0.0017				0.0033	

* significant at 0.1 level, ** significant at 0.05 level.

To understand the process of reentry and who is reentering, we constructed logit models of the probability of being in the labor market after 3 and 5 months for all migrants. In each model the explanatory variables capture the measures that have been identified in the literature as having significant effects on women's participation in the labor force. The variables are age, as younger persons move more frequently (baseline is 40 years and older); wife's education; wife's previous employment (baseline is discontinuous labor-market attachment); wife's previous occupation (baseline is primarily clerical employment); wife's earnings as a percentage of household income; husband's occupation after a move (baseline is primarily sales and service employment); and husband's earnings after a move. An additional household variable measures the presence of children, which has been shown by several authors to be an important variable in the decision to reenter the labor force. The contextual variables are city size and the unemployment rate. We hypothesize that entry into the labor market will increase with wife's former continuous employment and being in professional occupations, and will decrease if the husband is in a professional occupation or if the husband has an increase in income with the move (the protective effect of not having to reenter so rapidly). The presence of children will also decrease the probability of reentry.

The results are significant and both models predict 75% of the odds correctly (table 5). It is worth emphasizing that of the 301 households in the analysis, 66.1% of the women had reentered the labor market within three months and 74.8% within five months of the move. There are important contrasts between the model for 3 months and that for 5 months. The model for reentry within 3 months has five significant explanatory variables and is dominated by the positive effect of previous continuous employment: if you were continuously employed you are likely to reenter quickly. The husband's occupation and earnings delay reentry, as does the presence of children. Although the model for 5 months is equally powerful and the wife's previous employment still dominates the results, the county unemployment rate plays a significant and delaying effect on reentry. The results show that for those women who stay out of work longer, this is an effect of the labor market of their new residence. The labor-market opportunities clearly have an effect on how quickly the wife can reenter the market in these situations. The effect of children is still negative, but it is no longer significant.

8 Conclusions and summary

In this paper we set out to examine the disruption assumption of migration impacts on women's employment. Previous work that focused on hours in the workforce and the earnings of women before and after the move, in general concluded that women were disadvantaged when they migrated as part of a two-earner household. The present study has expanded the analysis by examining nonmovers, movers, and migrants, and in particular has focused on the geographical differences for those who did and did not change labor markets—the difference between migrants and movers.

The findings add to what is already known about the effects of migration on women's participation and earnings. We make three important distinctions. We divide the population into nonmovers, local movers, and migrants; we examine discontinuous and continuous employment; and we reconceptualize the intervals around the mobility/migration decision to focus on the actual period before and after the move, rather than on the calendar years before and after the move. The major finding is that for two-earner households who move locally there are in essence no changes in participation or earnings. For couples, in which both husband and wife are working, who migrate, there are significant temporary participation changes associated with the migration. However, within 5 months nearly three quarters of all these women are working again. For households in which the wife was not working prior to the move, the change in

labor markets leads to a slow but steady increase in labor-force participation; this participation reaches 30% after a year.

Given the earlier debate, what does this new information tell us about the effects of migration and mobility on participation? We conclude, first, that it is not possible to provide an informed analysis of effects by means of a simple comparative analysis of two calendar years, or by the use of cross-sectional data. Second, when we use a more precise analysis of timing, the effects are indeed disruptive in terms of women's labor-force participation but they are short lived for most migrants and, arguably, are favorable for those women who were out of the labor market before moving and desire to enter it. Third, it is clear that averages are an inadequate measure of what is happening across the range of couples who move and enter or leave the labor market. Fourth, this work emphasizes the dynamic nature of wives' labor-force attachment relative to their husbands immediately before and after a long-distance move.

Although it is important to emphasize what we believe we have accomplished in this paper, it is also important to indicate where there are gaps in our research and the important issues that remain to be examined. In this paper we have not been able to determine the direction of causal association, that is, whether a transition in household structure stimulates, or results from, migration. Such an investigation can be set within the context of the life course and we believe that the longitudinal data from the PSID can be used at least to suggest the likely causality. We would expect the same 'triggering' effect of additions of children and marital disruption to be played out in migration as they are in residential mobility. In addition, biographical studies will be important in unraveling causality.

The link between housing markets and labor markets is another area that remains unexamined in this study, but it is the central focus of the larger research project within which the current study is situated. Given the results of this study it seems plausible that most local moves, and not a trivial number of long-distance moves, occur for reasons other than labor-market gains. By examining the nature of actual shifts between housing and labor markets with different costs of living it will be possible to place the labor-market changes in the richer context of local housing markets and thereby assess the real gains or losses, rather than simply the financial gains and losses, associated with mobility.

Although this study has examined only changes in hours and wages, it has provided new insights into the manner and extent of disruption which occur with moving and migration. Our findings clearly suggest that previous results based on means and calendar years are deficient; the findings in this paper are a real advance in the understanding of the extent and size of disruption.

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