From Tied Movers to Tied Stayers: Changes in Family Migration Decision-Making, 1989-98 to 2009-18

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Abstract

Past research has found that when a dual-career heterosexual married couple migrates to a new labor market, the woman is more likely to be the "tied mover": the partner whose career suffers as a result of the move. This study investigates possible changes in gendered decision-making related to internal migration among married couples in the United States between the 1990s and the 2010s. Using data from the 1989-98 and 2009-18 Annual Social and Economic Supplements of the Current Population Survey, we examine whether income equality between spouses has become a bigger barrier to migration among married individuals, and we investigate year-to-year changes in income among married migrants compared with their unmarried counterparts. Our findings show a general U-shaped association between wives' share of a married couple's income and that couple's likelihood of moving across state or county lines; in both time periods, couples are least likely to move when their incomes are roughly equal. Among young, well-educated married couples, though, we detect a notable change: Spousal income equality was not a barrier to moving in the 1990s, but it had become one by the 2010s. Among these same couples, however, we find some evidence that a gendered tied-mover effect still remains. If women in dual-career couples are less likely to be tied movers today than they once were, it may be because dual-career couples have become less likely to move for a job opportunity at all, even relative to the broader decline in internal migration across the population.

Contents

1 Introduction 1

2 Literature review 3

2.1 The gender gap among tied movers 3

2.2 Theories of family migration decision-making 4

2.3 Gender shifts in education and marriage 6

2.4 A 'stalled' and asymmetric gender shift? 9

2.5 Differences by class and education 12

2.6 Tied movers vs. tied stayers 14

3 Analytic strategy 16

3.1 Data 16

3.2 Analysis 18

3.2.1 Logistic regressions on probability of migration 18

3.2.2 OLS regressions on income 19

4 Results 21

4.1 Descriptive results 21

4.2 Logistic regressions on probability of migration 24

4.3 OLS regressions on income 28

5 Conclusion 33

A Appendix 42

1 Introduction

When a dual-career, heterosexual couple relocates, odds are that the move will benefit the man's career, to the detriment of the woman's (Bielby and Bielby 1992; McKinnish 2008; Mincer 1978; Sorenson and Dahl 2016). This trend might contribute to the gender wage gap (Sorenson and Dahl 2016), and might influence hiring decisions to the disadvantage of women with male partners (Rivera 2017). Women are more likely to be the "tied mover": the partner whose career suffers as the result of a move. Research has continued to confirm this finding, in the United States and elsewhere, from the late 20th century into the early 21st century (Cooke 2008). Researchers have offered differing explanations for this gender imbalance. One prominent theory, first put forth by economists (Mincer 1978; Sandell 1977) attributes the gender imbalance to differences in human capital between men and women that lead couples to prioritize men's careers in order to maximize utility; the other most common theory, proposed by sociologists (Bielby and Bielby 1992; Shihadeh 1991), focuses instead on gender roles, arguing that couples' migration decisions are shaped by the cultural model of the male breadwinner, even sometimes to the detriment of the family's material well-being.

Several developments during the late 20th and early 21st centuries, though, raise questions about these theories' ability to explain family migration decisions. During the past several decades, the nature of marriage has been transformed. Marriage has been deinstitutionalized, and norms that once governed behavior between husbands and wives have lost their power (Cherlin 2004, 2005). Rigid adherence to the male-breadwinner model has declined, and couples' attitudes about the division of labor between spouses have become more egalitarian (Schwartz and Gonalons-Pons 2016; Schwartz and Han 2014; Sweeney 2002). Because of women's increased educational attainment as well as changes in assortative mating, married couples are now more likely to have similar levels of education (Schwartz and Mare 2005), and the earnings differential between husbands and wives has narrowed, as well (Gonalons-Pons and Schwartz 2017). As women's educational attainment has outpaced men's (Diprete and Buchmann 2006; Goldin et al. 2006), it has become more

common for wives' levels of education to exceed those of their husbands than vice versa (Kim and Sakamoto 2017; Schwartz and Han 2014).

It is not clear, though, whether these changes in marriage dynamics, gender ideology, and the educational attainment of women have had an effect on the gender imbalance among tied movers over time. The literature on family migration has yet to systematically assess how the degree of this imbalance might have changed over the past several decades. In this paper, we ask: To what degree have dual-income couples changed their migration decision-making during the past few decades? Have married women become less likely to be tied movers, or have men and women become more likely to be tied *stayers* – individuals who would have moved somewhere else if they were not married, but instead stayed put? To answer these questions, we analyze whether spousal income equality became a bigger barrier to migration for married couples between the 1990s and the 2010s, and we investigate year-to-year changes in income for married women and men who migrate within the United States, compared with their single counterparts. The answers to these questions can not only help us understand the degree to which the gender imbalance among tied movers remains an impediment to women's careers, but could clarify which theory best explains family migration decisions today and in the past.

Our empirical analyses confirm previous findings of a broad reduction in internal migration across different demographic groups in the U.S. (Cooke 2013b; Molloy et al. 2017). On top of this broader decline, though, we find that income equality between spouses has become a bigger barrier to migration among married couples – particularly among young, well-educated individuals, who are the most likely group to move across state or county lines for a new job opportunity (Geist and McManus 2008). This change in behavior among young, well-educated dual-career couples over time suggests that differences in human capital did not entirely explain gendered patterns of family migration decision-making in the past; a more likely explanation for the change is that increasingly egalitarian gender-role expectations and shifting marriage norms have made more recent cohorts of young couples less willing to uproot women's careers for the benefit of men's. However, we also find little evidence of a shift in the gendered tied-mover phenomenon between the 1990s and

the 2010s. Among young people with advanced degrees, in fact, we find that married women still faced an income penalty following migration compared with their single counterparts in recent years. In short, our findings suggest that if women are less likely to be tied movers today than they once were, it is because dual-career couples have become less likely to move for a job opportunity at all, and not because *men* have become more likely to serve as tied movers themselves.

2 Literature review

2.1 The gender gap among tied movers

When married couples migrate, earnings and the likelihood of employment tend to increase for men, while the same measures tend to decline for women (Mincer 1978). Mincer (1978) coined the term "tied mover" to describe a partner who sustains a personal loss as the result of a family move, and established that these tied movers were more likely to be women, using data from the late 1960s and early 1970s. More recent studies, tackling the issue in a variety of ways, have suggested this imbalance continues. McKinnish (2008) examined 2000 U.S. census data and found that for married couples, the likelihood of migration in the husband's career field carried more weight in relocation decisions than did the likelihood of migration in the wife's career field. Additionally, McKinnish tested for the effect of occupational migration rates on the earnings of one's spouse; among couples in which the husband had a college degree, the rate of migration in the husband's occupation had a negative effect on his wife's earnings. This effect was equally strong regardless of whether the wife had a college degree, and women's occupational migration rates had no corresponding effect on their husbands' earnings.

Geist and McManus (2012) found that women were more likely to experience tied-mover effects following a move if they were secondary wage earners in their families, rather than serving as co-breadwinners with their husbands; for such women, job-related family migration tended to reduce their labor supply. The gendered tied-mover phenomenon is not limited to the United States, either. Using 2004-5 data from Denmark, Sorenson and Dahl (2016) found that couples gave more

weight to men's potential earnings than to women's when making location decisions. Further, they calculated that this imbalance might account for as much as 36 percent of the wage gap between men and women. The perception that men's careers take primacy in location decisions for heterosexual couples might also influence employers' evaluations of female job candidates. Rivera (2017), in a qualitative study of university faculty search committees, observed that committees were less likely to offer positions to female candidates whose male partners were not perceived as "movable." Over the life course, the long-term negative effect of family migration on married women's earnings is similar to the effect of having a child, Cooke (2008) found.

In considering changes in family migration behavior over time, an important piece of context is the overall declining level of internal migration in the Unted States since the 1980s (Cooke 2013b; Hyatt et al. 2018; Kaplan and Schulhofer-Wohl 2012; Molloy et al. 2017). The proportion of the U.S. population moving across state or county lines per year decreased from 6.4 percent in 1984 to 3.5 percent in 2010 (Cooke 2013b). The decline is widespread among the population, affecting all demographic groups (Hyatt et al. 2018; Molloy et al. 2017). Molloy et al. (2017) argue that this decline is most likely due to changes in the labor market, specifically a widespread decline in job changing that has occurred concurrently since the 1980s. However, Hyatt et al. (2018) note that the explanatory power of this theory is limited because most migration is not motivated by job changes (Geist and McManus 2008, 2012). Cooke (2013b) proposed that an increase in dual-earner households could be one reason for the decline; a time-series analysis of U.S. internal migration between 1981 and 2010 found an association between declining migration and increases in the number of dual-worker households. He also argued for two other potential causes: rising levels of household debt (often in the form of home equity) and technology advances that allow people to live far from their physical workplaces.

2.2 Theories of family migration decision-making

Early theories of family migration were based on economic models of rational choice and utility maximization. Sandell (1977) proposed that family migration decisions could be predicted based

on such a model: The family seeks to maximize its overall benefit, taking into account total earnings, leisure, each partner's desire to work, and the costs of moving. Based on this theory, one can presume that dual-earner families are less likely to move than single-earner families. Mincer (1978) proposed a similar model, arguing that family migration was motivated by "net family gain." Families decide whether and where to move based on a rational calculation of costs versus benefits, according to this model. Mincer derived the term "tied mover" from this model. A family move, he argues, requires some sort of gain for at least one partner; the family will move if one partner's gain outweighs the other partner's loss in magnitude, resulting in a net gain for the family. The partner who sustains the personal loss is the tied mover. This model suggests that wives will be tied movers more often than husbands, he argues, because men have a higher labor market value on average, providing more potential for a pay raise big enough to motivate a move.

The other prominent theory on family migration decision-making focuses on the influence of gender roles. Shihadeh (1991) argued for an explanation of family migration decisions based on gender ideology, proposing that migration decisions by married couples tend to be made with disproportionate influence from the husband because of traditional gender-role ideas. In a study using 1977 U.S. survey data, Bielby and Bielby (1992) found that the willingness of dual-earner couples to relocate for a better job was influenced by their gender ideology. Men with traditional gender-role beliefs did not consider potential harm to their wives' careers when considering new job opportunities requiring relocation. Thus, they also argued for the influence of gender roles, proposing that the economic-choice models applied only to couples with egalitarian gender ideologies, whereas couples with traditional ideologies would make migration decisions without regard for potential losses for women. Based on this, they predicted that the gender gap among tied movers would narrow over time as gender-role beliefs changed.

Recent studies have continued to provide evidence that heterosexual couples do not equally weigh each partner's career in their migration decisions, regardless of their relative earning potential, providing more support for the gender-role theory (McKinnish 2008; Sorenson and Dahl 2016). Studying U.S. data from the late 1980s and early 1990s, Cooke (2003) detected gender

asymmetry in the effects of family migration on spouses' incomes, even accounting for their relative earning potential. This was the first study of family migration to use matched pairs of husbands and wives as its unit of analysis. Cooke found that migration in high-income families where the husband was the primary earner, or where income was split evenly, tended to result in income gains for men; in high-income families where the wife was the primary earner, women did not reap similar income benefits. Shauman and Noonan (2007) also found that human capital characteristics did not influence husbands' and wives' migration outcomes in a gender-neutral way; men in families who migrated were more likely to increase their income or to move from unemployed to employed than women were, even controlling for human capital and occupational characteristics.

2.3 Gender shifts in education and marriage

Since Mincer (1978) first described the tied-mover phenomenon, based on data from about 50 years ago, the dynamics of marriage in the United States have shifted considerably. The gender pay gap was cut nearly in half between 1970 and 2010, declining by about 46 percent, with the most rapid change occurring between 1980 and 2000 (Mandel and Semyonov 2014). In the area of education, the change was more drastic: Not only did the gender gap in education close during this time, but women's educational attainment surpassed that of men (Diprete and Buchmann 2006; Goldin et al. 2006). During the 1960s and 1970s, women began enrolling in and graduating from college at higher rates, as more and more young women began to expect that they would be participating in the labor force as adults; by 1980, as many women as men were enrolling in college (Goldin et al. 2006).

Assortative mating by education also increased during this time. In their analysis of assortative marriage by education in the United States, Schwartz and Mare (2005) found that educational homogamy (common educational attainment between spouses) increased steadily from 1960 to 2003. The percentage of couples who were educationally homogamous rose from about 45 percent in 1960 to about 55 percent in the early 2000s, and log-linear models revealed that the odds of homogamy net of changes in the educational distribution rose steadily during this period, as well.

In particular, since the 1970s, people became less likely to cross barriers at the high and low ends of the education distribution: High-school dropouts became less likely to marry partners with higher levels of education, while college graduates became less likely to marry partners with less education. In addition, educational hypogamy (in which the woman has the educational advantage) became more common than hypergamy (in which the man does) during this time (Schwartz and Mare 2005). Among couples who married during the second half of the 2000s, wives held the education advantage in more than 60 percent of couples with different educational levels (Schwartz and Han 2014). Similar trends have been observed in nearly every country in which women's educational attainment has surpassed that of men in the general population (Esteve et al. 2016).

These increases in homogamy and hypogamy are certainly due, in part, to changes in the educational distribution that result in a pool of available mates containing more highly educated women than highly educated men, rather than a change in mate preferences (Van Bavel et al. 2018). However, the shift toward hypogamy was not inevitable given the reversal of the educational gender gap; if strong preferences for hypergamy remained in effect, this reversal might have led many highly educated women to remain unmarried, rather than leading to an increase in hypogamy. Thus, the global "end of hypergamy" trend indicates a shift in norms related to gender and marriage, as well as shifts in the educational distribution by gender (Esteve et al. 2016). Specifically, increased homogamy and hypogamy might indicate a declining aversion to heterosexual relationships in which the woman has the higher status, though some evidence indicates that men remain wary of such relationships, and women still tend to marry up in terms of income (Van Bavel et al. 2018).

Other findings further support the idea of a shift in gender norms within marriage. As educational homogamy and hypogamy have become more common, the gap between husbands' and wives' average earnings has also narrowed (Gonalons-Pons and Schwartz 2017). Studies of mate preferences and marriage formation offer further support: Men have become more concerned with the financial prospects of a potential future spouse and less concerned with domestic work skills (Buss et al. 2001), and women's earning power has became increasingly important to marriage formation (Sweeney 2002). Studies of marriage dissolution also provide evidence of a gender-related

institutional change. Schwartz and Han (2014) used panel data to examine trends in divorce risks for different educational pairings among marriages formed between 1950 and 2004, finding that hypogamous and homogamous unions have steadily grown more stable over time relative to hypergamous unions. Among marriages formed in the 1950s, hypogamous couples were more likely to divorce than hypergamous couples; by the 1990s, this was no longer the case. Homogamous couples, meanwhile, were equally as stable as hypergamous couples in the 1950s, but by the early 2000s they were at less risk of divorce than hypergamous couples, to a statistically significant extent. Schwartz and Han argue their findings support theories of a change in the institution of marriage, away from rigid expectations of male status dominance and toward expectations for a more egalitarian arrangement. A similar panel study (Schwartz and Gonalons-Pons 2016) examined the relationship between divorce rate and spouses' relative earnings, rather than their education levels. Schwartz and Gonalons-Pons detected a trend parallel to that among educationally hypogamous couples: Among marriages formed during the 1970s, any increase in wives' share of couple income was generally associated with increased risk of divorce. By the 1990s, this was no longer the case for new marriages; the association between relative earnings and divorce risk declined significantly. Female-breadwinner couples were no longer at increased risk of divorce.

Cherlin (2004) has proposed that during the late 20th century marriage was deinstitutionalized: The norms that governed behavior in a marriage faded away. In the middle of the 20th century, marriage had been a near-mandatory stage in one's life; by about 2000, marriage was a personal choice. Marriage now serves as a status marker, an achievement that signifies one has attained stability. Marriage has also been individualized, Cherlin (2004) argues. Within a marriage, people now seek individual fulfillment through emotional intimacy and emotional communication, rather than deriving a sort of sacrificial satisfaction from their role as spouse or parent. Giddens (2000) observed a similar shift toward a "pure relationship" in marriages and families. In heterosexual couples, the "pure relationship" is a move away from the patriarchal dictatorship of the husband and toward a truly democratic partnership that recognizes the wife's voice as equally important (Giddens 2000). Indeed, over the past several decades, married couples have shifted from rigid

expectations of a male breadwinner to a more egalitarian flexibility about the roles of husbands and wives, even if gender gaps in wages and domestic work persist (Schwartz and Gonalons-Pons 2016; Schwartz and Han 2014; Sweeney 2002).

These changes in the nature of marriage during the late 20th and early 21st centuries suggest that the gender gap among tied movers has likely narrowed over the past several decades, as well. As marriage has been deinstitutionalized (Cherlin 2004) and the assumption of a male breadwinner has faded (Sweeney 2002), we would expect that fewer heterosexual couples would favor the husband's career over the wife's in choosing a place to live because of traditional male-breadwinner gender ideologies (Bielby and Bielby 1992). The rational-choice theory of family migration (Mincer 1978) would also predict that this imbalance has declined. As more wives out-earn their husbands (Schwartz and Gonalons-Pons 2016), the rational choice for more couples should be to prioritize the wife's career in migration decisions.

2.4 A 'stalled' and asymmetric gender shift?

Other scholars, however, have argued that the "gender revolution" of the late 20th century has "stalled," especially within heterosexual relationships and families (England 2010; Goldscheider et al. 2015; Hochschild 2003). Further, many scholars have argued that shifts in gender norms during recent decades have been asymmetrical: Though women have moved into previously male-dominated spheres, men have not reciprocated by moving into traditionally female domains (England 2010), and the "male breadwinner" cultural model may retain more cultural salience and power in the 21st century than the "female homemaker" ideal (Killewald 2016). Women's employment rose rapidly during the 1970s and 1980s but leveled off around 1990, and there has been no corresponding decline in men's employment (England 2010). Meanwhile, despite women's increasing educational attainment and their widespread entry into the labor force, women still perform the bulk of housework and childcare (Bianchi et al. 2012). Some evidence suggests that female breadwinners in heterosexual couples might try to compensate for their non-gender-normative arrangement by "doing gender" (West and Zimmerman 1987) in other ways. They might assume

the bulk of housework and childcare duties (Brines 1994) or defer to their husbands on decision-making about major purchases or other household matters (Tichenor 2005).

Killewald (2016) studied changes over time in the gendered determinants of divorce in the U.S., comparing marriages formed before 1975 to those formed that year or later. Among couples who married before 1975, divorce likelihood appeared related to the female-homemaker ideal as well as the male-breadwinner ideal: The risk of divorce was lower for couples in which the husband worked full-time and in which the wife performed a larger share of the housework. However, in marriages formed in 1975 or later, only the male-breadwinner ideal appeared to retain its power. Among these couples, women's housework was no longer associated with divorce risk, but the association between men's employment and divorce did not decline in effect. Other recent research, meanwhile, suggests that gender norms continue to govern the division of household labor among heterosexual couples. Analyzing detailed time-use logs from 2008-12 in the U.S., Chesley and Flood (2017) compared the behavior of couples featuring a breadwinning mother and a stay-at-home father with the behavior of their more gender-normative counterparts, stay-at-home moms and breadwinner dads. They differentiated their time use on breadwinners' work days and on their days off from paid work. Breadwinner mothers generally seemed to use their days off to make up for the housework and childcare they were unable to do during the workweek: On days when they didn't have to work, they generally behaved similar to stay-at-home moms. Breadwinner fathers, however, did not appear to make the same effort: Even on days when they were free from time constraints, they did less housework and childcare than their stay-at-home partners (or their female-breadwinner counterparts). Even if heterosexual couples have become comfortable with female status dominance within their relationships (Schwartz and Gonalons-Pons 2016; Schwartz and Han 2014), this does not mean that gendered cultural expectations have lost their influence.

These persistent gendered expectations might place even career-focused married women on a different footing relative to their male partners in the arena of family decision-making. Professional- and managerial-class women, especially, find themselves under the influence of conflicting cultural imperatives that Blair-Loy (2003) calls "schemas of devotion." One such schema, traditionally ap-

plied only to women, calls upon them to single-mindedly commit their whole lives to their family; the other, traditionally specific to professional-class men, calls on workers to commit to their careers and their employers with the same single-minded intensity. As it is impossible to give one's whole self over to two things at once, these two morally and emotionally charged cultural imperatives are self-evidently contradictory. The degree to which the family-devotion schema maintains its hold over women is somewhat contested, but the career-devotion schema appears as strong as ever among professional- and managerial-class workers, as evidenced by the increasing practice of overwork – the act of working 50 or more hours per week in paid labor. During the 1980s and 90s, the prevalence of overwork increased sharply, as did the wage premium earned by workers who worked long hours (Cha and Weeden 2014). These trends were especially dramatic among professionals and managers. Men are more likely than women to overwork, and as overwork became more engrained in organizational cultures during the 80s and 90s, the gender gap in overwork did not narrow at all (Cha and Weeden 2014).

Professional- and managerial-class women, especially mothers, are doubly affected by these norms of overwork. They are penalized when they are unable to work as long as their male colleagues, who likely have fewer demands on their time outside of the workplace; and, given that they are likely to be married to professional- and managerial-class men, their husbands are likely to work long hours themselves, intensifying the time crunch at home (Cha 2010). Cha (2010) argues that the norm of overwork in professional workplaces combines with cultural expectations of motherhood to push families toward the traditional separate-spheres arrangement. Studying U.S. panel data from 1995-2000, she found that women were significantly more likely to drop out of the labor force when their spouse worked at least 60 hours per week; for men, having an overworking spouse made them no more likely to quit their jobs. This effect occurred primarily for women with children, and it was strongest for mothers working in professional and managerial occupations. Cha argues that these mothers face compounded cultural pressures: They themselves are subject to organizational norms of overwork, and by virtue of their class position they are likely to be influenced by norms of intensive parenting, as well (Lareau 2011). The work demands placed

upon professional mothers by organizational cultures – as well as the same demands placed upon their husbands – constrain their available choices, serving as a "countervailing force" against the progress that has been made toward gender equality (Cha 2010:325). This is an example of how organizations outside of the family can sustain the insitution of gender through structures, practices, and hierarchies that are formally gender-neutral (Acker 1990). The "countervailing force" of the culture of overwork might serve as a constraint on progress toward gender equality in family migration decision-making, as well. If the norm of overwork pushes families toward a traditionally gendered division of labor, it might also lead them to favor men's careers in their migration decisions. This might be especially true among those couples most likely to migrate for a new job opportunity: highly educated, professional-class couples.

2.5 Differences by class and education

Economic imperatives and gender ideologies interact to shape the division of labor differently in working-class and professional-class heterosexual couples, and thus any analysis of gendered family migration decision-making should consider possible differences related to class. For instance: Though they also found a general decline in divorce risk for female-breadwinner couples, Schwartz and Gonalons-Pons (2016) found that the biggest decline in the association between divorce risk and wives' earnings share was among couples in which husbands' earnings fell in the middle third of the income distribution. For these couples, the authors argue, egalitarianism might have become financially necessary, as the economic squeeze faced by the middle and working classes from in the 1970s and later led them to depend on dual incomes. Among higher-earning couples, and among college-educated couples, the decline in association between relative income and divorce was less evident. The same pressures that lead some women to reduce their labor supply (Cha 2010) might put other professional-class couples at increased risk of divorce, Schwartz and Gonalons-Pons argue.

Further evidence of class differences in the gender and marriage shift comes from studies of the division of household labor. Sullivan (2011) has found that, in both the U.S. and the U.K.,

less-educated men have increased their share of housework to a much greater extent than highly educated men have in recent decades. In the 1970s and 80s, well-educated men contributed more housework than lesser-educated men did; by the 2000s, this was no longer the case. Lyonette and Crompton (2015) identified in working-class couples a "lived egalitarianism": Their economic circumstances made it necessary for both partners to work, and they were unable to afford paid domestic help, and so men contributed substantially to domestic work, even if they professed traditional gender beliefs. In professional-class couples, however, the authors observed a "spoken egalitarianism": Men would voice a belief in gender equality, but they were also under the sway of a professional work culture that demanded long and inflexible hours, and their use of paid domestic help seemed to excuse them from sharing the domestic workload in practice.

If the shift toward educational homogamy and hypogamy has hit a roadblock in effecting a corresponding shift toward egalitarian behavior and norms within marriages, the chief obstacle might be the gendered and organizational norms that continue to exercise power over professional-class men, leading them to work long hours and leave their spouses to resolve the resulting time crunch (Killewald 2016; Lyonette and Crompton 2015; Schwartz and Gonalons-Pons 2016). A truly egalitarian shift requires not just women's movement into the public sphere of paid labor, but also men's corresponding movement into the private sphere of unpaid domestic labor and childcare, and research from different countries and groups reveals that beliefs about these two "halves of the gender revolution" do not always move in lockstep (Goldscheider, Bernhardt, and Lappegård 2015:227). An additional issue is that men have not entered traditionally female domains of *paid* labor in the same way that women have entered into historically male-dominated fields (England 2010). Goldscheider et al. (2015) do note some findings from Europe showing that, more recently than Killewald's (2016) cutoff of 1975, men's participation in housework and childcare – as well as egalitarian gender attitudes – are associated with higher relationship quality and lower likelihood of union dissolution. Though they note that effects can be shaped by state support for childcare, Goldscheider et al. theorize that men will continue to increase their share of housework and childcare, given indications of a continued egalitarian shift, and that a result will be more stable unions

in general. Although it is clear that heterosexual married couples have yet to attain widespread egalitarianism in both ideology and practice, the sum of the evidence does suggest that gender and marriage norms have undergone a shift in recent decades.

2.6 Tied movers vs. tied stayers

However, if changes in marriage and gender norms have altered family migration decision-making during recent decades, the result might not be that more men serve as tied movers, as Bielby and Bielby (1992) predicted. Another result could be that more men are tied *stayers*; that is, whereas dual-career couples with traditional gender ideologies once might have uprooted women's careers for the benefit of men's, more egalitarian couples today might simply opt to stay put rather than uproot *either* partner's career, even if one partner might find a desirable job in another labor market (Cooke 2013a). Studies of tied stayers are rarer than those of tied movers, because they are difficult to identify. Cooke (2013a) used a propensity score method to attempt to identify tied stayers and movers, comparing married people to unmarried people based on other observed characteristics and defining tied stayers and movers as married individuals who stayed or moved when their unmarried counterparts would have done the opposite. Studying 1997-2009 U.S. data, he found that far more couples contained one tied stayer than contained one tied mover, and identified roughly equal numbers of men and women as both tied stayers and tied movers. If changes in family migration decision-making have resulted in a higher rate of tied stayers among dual-career couples, it could be a contributing factor to the overall decline in internal migration in the United States (Cooke 2013b), especially considering increases in educational homogamy (Schwartz and Mare 2005) and the trend toward convergence of married partners' incomes (Schwartz and Gonalons-Pons 2016).

In an attempt to learn more about changes in the extent of tied staying among married individuals, we focus the first part of our analysis on spousal income equality as a barrier to moving for married couples. The human capital theory of family migration would predict that income equality has *not* become a bigger barrier to moving for couples within particular age groups and levels of

educational attainment; perhaps tied staying has become more common because of compositional changes within the population (e.g., women's increased educational attainment), but the theory would not predict that income equality between spouses has made couples less likely to migrate, all else being equal. On the other hand, the gender role theory would predict that couples in which partners earn similar incomes *have* become less likely to migrate. That is, the gender role theory would predict that the relationship between spousal income share and probability of migration has become *increasingly U-shaped*: Migration is most likely when either partner earns 100 percent of the income, and least likely when the partners' incomes are close to equal. This should be especially the case among younger, highly educated married individuals. Given differences in the motivations and likelihood of migration across different stages of the life course (Geist and McManus 2008), and the different forces shaping the marital division of labor among different classes (Schwartz and Gonalons-Pons 2016), we aim to measure these potential changes within particular groups defined by age group and educational attainment (e.g., 25- to 34-year-olds with bachelor's degrees).

In the second portion of our analysis, we use two-year panel data to investigate year-to-year changes in income among people who migrate within the United States and people who do not, in an attempt to gauge whether the gender gap among tied movers has narrowed. Again, though the human capital theory would predict a reduction in the gender gap across the entire population due to compositional changes, given the rising human capital of women over this period, the gender-role theory would predict changes in behavior *within* educational and age groups – especially, perhaps, among well-educated young people, who should be most likely to have egalitarian gender ideologies. To test the explanatory power of these theories as relates to changes between the 1990s and 2010s, we investigate changes in the effects of moving on income broadly as well as within groups defined by age and education.

3 Analytic strategy

3.1 Data

Our data comes from the Annual Social and Economic Supplement (ASEC) of the Current Population Survey (CPS), obtained via the Minnesota Population Center's Integrated Public Use Microdata Series CPS database (Flood et al. 2018). The CPS is a monthly survey of United States households, and the ASEC is a supplement added to the March monthly survey each year that includes items pertaining to migration and income, among other subjects. The ASEC offers information on respondents' migration activity during the past year, specifying whether they moved across county or state lines. Further, the design of the CPS allows for the measuring of respondents' income at two separate points one year apart: Households are surveyed once a month for four months, then again surveyed once a month over the same four months the following year. The migration items and the panel design allow for the estimation of year-to-year changes in income coinciding with migration.

For logistic regressions on the likelihood of moving, we use cross-sectional ASEC samples from 1989 to 1998 and 2009 to 2018. These two time periods allow for the comparison of migration behavior between two decade-long periods of equal length, roughly corresponding with the 1990s and 2010s. These time periods also allow us to avoid using ASEC data from 1999 to 2005. Comparing migration trends in 1999-2005 ASEC data to trends before or after this period is problematic; because of a change in the Census Bureau's data imputation procedure, migration rates are inflated in this data (Kaplan and Schulhofer-Wohl 2012). The 1989-1998 sample excludes data from the 1995 ASEC, because the migration questions in that year's survey were not comparable to those in the years before or after. The logistic regression analyses are limited to individuals who were currently married and living together with their spouse, ages 25-54, who did not migrate from abroad during the year preceding their participation in the survey. The 25-54 age range allows us to capture individuals of working age while allowing for an analysis of changing migration decision-making over the life course. The inclusion of individuals in their early 30s or younger

is important: Migration, especially job-related migration, is considerably more common among this age group than among older people (Geist and McManus 2008). Individuals older than 45, meanwhile, are generally less likely to migrate, and their moves are more likely to be motivated by family considerations than by job opportunities (Geist and McManus 2008). In estimating our logit models, we also limited our analysis to couples in which at least one partner reported a positive income. This was necessary because our chief independent variable of interest was wives' share of couple income, and this variable would have little meaning for couples in which neither partner earned any income.

For OLS regressions on income, our data are slightly different. In order to measure year-to-year changes in income, we linked ASEC correspondents' information across their two years of involvement in the survey, using linking identifiers provided by IPUMS-CPS (Flood et al. 2018). Thus, our two ASEC samples for this analysis include only those respondents whose information we were able to link across their two years of participation, yielding a smaller sample size than that used for the logistic regression analyses. Theoretically, 50 percent of each ASEC sample should also be part of the following year's sample; our match rates were typically around 35 percent. Because of the panel design, the time periods for our OLS datasets are slightly different. The 1990s dataset includes respondents whose first year of participation was 1989-1998 (second year of participation 1990-1999), and the 2010s dataset includes respondents whose first year was 2009-2017 (second year 2010-2018). As in our logistic regressions, we limit our OLS analyses to individuals ages 25-54 who did not migrate from abroad during the year preceding the survey. However, the OLS datasets include both married and unmarried individuals, though married individuals living apart from their spouses were excluded. Because the dependent variable is log income, we excluded individuals who reported negative or zero income during either their first or second year in the survey.

3.2 Analysis

3.2.1 Logistic regressions on probability of migration

To test for changes in the propensity of dual-income couples to migrate within the United States between the 1990s and 2010s, we estimate the following logistic regression model for each decade dataset:

$$ln\left(\frac{P(Mover_i = 1)}{P(Mover_i = 0)}\right) = \alpha + \beta_1 WifeShare_i + \beta_2 WifeShare_i^2 + \sum_{j=1} \gamma_j AgeGroup_{ij} + \sum_{j=1} \delta_j Education_{ij} + \sum_{k=1}\sum_{j=1} \theta_{jk} Z_{ijk} \quad (1)$$

for each individual i, where $Mover$ is a dummy variable indicating whether an individual moved to a new county or state during the 12 months preceding the survey; $WifeShare$ is a continuous variable indicating the wife's share of the total income earned by the individual and their spouse ($\frac{WifeIncome}{CoupleIncome}$); $AgeGroup$ is a categorical measure of the individual's age (25-34, 35-44, or 45-54); $Education$ is a categorical measure of the individual's educational attainment (less than high school, high school graduate, some college, college graduate, or advanced degree). Z is a matrix of additional control variables, including: $ln(CoupleIncome)$, the natural log of the total income earned by the individual and their spouse; $Female$ and $Child$, dummy variables indicating whether the individual is female and whether the individual has a child under the age 18 at home, respectively, as well as an interaction term $Female \times Child$; and $Region$, a categorical measure for geographical region. For all income variables, income consists of earnings from wages, businesses, or farms.

In this model, the coefficients for the linear and quadratic $WifeShare$ terms are of chief interest. If the anticipated U-shaped relationship between wife's share of income and likelihood of migration is present, the linear term will be negative, and the quadratic term will be positive. After estimating the basic logit model shown in Equation 1, we estimate an additional logit model that incorporates interaction terms between $WifeShare$, $WifeShare^2$, and each of the age group

and educational categories, as well as three-way interactions with both age and education. Given that motivations for moving vary based on individuals' life-course stage and socioeconomic status (Geist and McManus 2008), we anticipate that this interactional model will better capture any changes in how couples weigh both partners' careers in their migration decisions. Because this more complex logit model includes more than 30 interaction terms, and the coefficients are difficult to interpret on their own, we rely on plotted estimated probabilities for our analysis of changes in migration rates by age and education. The estimates from the interactional logit model are included in the appendix for reference.

3.2.2 OLS regressions on income

To analyze year-to-year changes in income among different groups of movers and stayers, we conduct ordinary least squares (OLS) regressions on income. We vertically reshaped the ASEC panel datasets described above so that each respondent's income information from their first year in the survey, year t, and their income in their second year, year $t+1$, are split into separate observations. We use a dummy variable, *YearTwo*, to indicate each respondent's observation for year $t+1$. For those respondents who migrated during the year preceding their first year in the survey, *YearTwo* indicates their post-move income information.

Given this strategy, testing for possible tied-mover effects conceptually requires identifying a four-way interaction effect between marital status, gender, migration, and the *YearTwo* variable. Further, in order to account for differences in migration decision-making by age and education, we would need to test for a *six*-way interaction effect in any full-sample analysis. Such interaction effects would be quite difficult to present and interpret. Thus, for ease of interpretation, we sort all individuals into eight groups based on their marital status, gender, and migration status, assigning a dummy variable to each group. To assess possible differences in trends by age and education, we also conduct separate analyses by age group and educational group, as well as intersections of the two characteristics (e.g., among 25- to 34-year-olds with advanced degrees only). Using this

strategy, we estimate the following regression model:

$$ln(Income_i) = \alpha + \sum_{j=1} \beta_j Group_{ij} + \gamma YearTwo_i + \sum_{j=1} \delta_j \left(Group_{ij} \times YearTwo_i\right) + \sum_{k=1} \sum_{j=1} \zeta_{jk} Z_{ijk} + e_i \quad (2)$$

where $ln(Income)$ signifies the natural log of annual income (from wages, businesses, or farms) for individual i. The vector $Group$ includes seven variables based on marital status, gender, and whether they reported moving across state or county lines during the year preceding year t (hereafter denoted as $SingFemStay$, $MarMaleStay$, $MarFemStay$, $SingMaleMove$, $SingFemMove$, $MarMaleMove$, and $MarFemMove$, with single male stayers serving as the reference group). The coefficient for $YearTwo$, γ, can thus be interpreted as the predicted year-to-year change in income for single male stayers, and coefficients for the $Group \times YearTwo$ interaction terms can be interpreted as the additional year-to-year change for the other seven groups relative to single male stayers. Z signifies a matrix of additional control variables: the presence of at least one child under 18 in the home, an interaction term between gender and the presence of children, age, age squared, and geographic region, as well as a series of year fixed-effects variables intended to control for broader economic trends over time.

As Geist and McManus (2012) note, the structure of the ASEC does limit our ability to precisely measure changes in income surrounding a family's move. The ASEC asks respondents to report their annual income for the preceding calendar year, and it asks them to report whether they have moved to a new household during the 12 months immediately preceding the survey, which is administered annually in March. For any given respondent who migrated during that period, we do not know exactly how much of their reported income in year t was earned before or after their move. Imagine, for example, an individual responding to the ASEC for the first time in March 2017 who reports moving to a new household during the previous year. That move might have occurred at any point between March 2016 and March 2017; the individual's reported annual income, meanwhile, was earned between January and December of 2016. A portion of the respondent's income

Table 1: Rates of migration across state or county lines, ASEC cross-sectional samples

Time period	Married	Single women	Single men	Whole sample	N
1989-98	0.054	0.077	0.091	0.065	552,997
2009-18	0.034	0.053	0.055	0.042	788,196

Notes: Individual weights applied, except to sample size. Individuals ages 25-54 only. Sample excludes individuals married but living separately and individuals who migrated from abroad.

reported in the 2017 survey, then, was probably earned after the respondent's move. Thus, the ASEC data provides an inexact measure of respondents' pre-move income. However, the income movers report during their second ASEC survey does reflect income earned entirely post-move. On the whole, then, this method should *under*estimate the degree to which individuals' income changes after migration, given that first-year income figures for most movers will likely include some post-move earnings.

4 Results

4.1 Descriptive results

Table 1 displays migration rates across the ASEC cross-sectional samples for the two time periods. As it is in the multivariate analyses below, migration is defined as a move across state or county lines in the year preceding a respondent's participation in the survey. Our calculations confirm the ongoing decline in internal migration over the past few decades in the United States. We observe substantial declines in migration among both married and single individuals, reflecting the demographic ubiquity of the internal migration decline (Hyatt et al. 2018; Molloy et al. 2017). Notably, however, the greatest migration rate decline in both relative and absolute terms is among single men. Their migration rate declined by about 40 percent between the two time periods, compared with declines of about 31 percent for single women, 37 percent for married individuals, and 35 percent for the sample as a whole. Whereas in the 1990s single men were more likely to

Table 2: Descriptive statistics, ASEC cross-sectional samples

	1989-98	**2009-18**
	%	%
Education		
Less than high school	13.3	10.2
High school	35.9	27.8
Some college	25.0	27.6
Bachelor's degree	17.8	22.7
Advanced degree	8.0	11.7
Total	100.0	100.0
N	552,997	788,196
Age group		
25-34	37.5	33.5
35-44	36.5	32.0
45-54	26.0	34.5
Total	100.0	100.0
N	552,997	788,196
Wife's share of couple income*		
0%	22.2	24.7
0.01-20%	18.6	12.7
20.01-40%	25.4	22.0
40.01-59.99%	22.9	24.9
60-99.99%	7.5	10.5
100%	3.4	5.2
Total	100.0	100.0
N	364,815	477,918

Notes: Individual weights applied, except to sample sizes. Individuals ages 25-54 only. Sample excludes individuals married but living separately and individuals who migrated from abroad.
*Married individuals only. Excludes individuals if neither they nor their spouse reported a positive income.

migrate than single women, by a degree of 1.4 percentage points, that gap had essentially vanished by the 2010s. Though migration declined by more than a third among married individuals, the decline in internal migration is clearly not specific to this group.

Table 2 shows descriptive statistics for explanatory variables of interest across the two time periods. The education and age category breakdowns (which include both married and unmarried individuals) reflect increasing educational attainment as well as an aging population. These compositional changes have differing implications for internal migration, as migration is more prevalent among better-educated people but rarer among older individuals. We also display trends

Table 3: Probability of moving, married individuals

	1989-99		2009-18	
Wife's income share	-0.985***	(0.091)	-1.450***	(0.109)
Wife's income share^2	0.933***	(0.107)	1.401***	(0.123)
Education (ref = less than high school)				
High school graduate	0.107***	(0.032)	0.172***	(0.046)
Some college	0.329***	(0.033)	0.345***	(0.046)
BA degree	0.579***	(0.035)	0.496***	(0.048)
Advanced degree	0.722***	(0.040)	0.723***	(0.051)
Age group (ref = 35-44)				
25-34	0.657***	(0.020)	0.710***	(0.024)
45-54	-0.522***	(0.027)	-0.578***	(0.030)
ln(Couple Income)	-0.180***	(0.009)	-0.119***	(0.014)
Female	-0.066*	(0.028)	-0.087*	(0.037)
Child	-0.407***	(0.026)	-0.337***	(0.032)
Female × Child	-0.025	(0.036)	-0.068	(0.045)
Constant	-1.212***	(0.103)	-2.166***	(0.162)
Observations	364491		477856	

Standard errors in parentheses

Notes: Other controls not shown: region. Individual weights applied.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

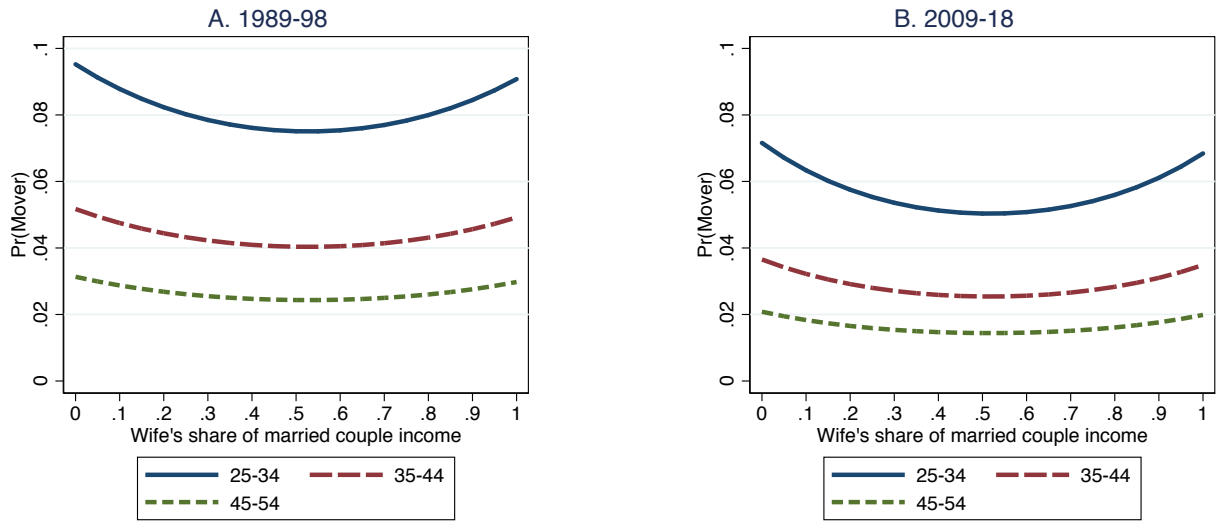
in the division of income for married couples. Here, we observe a general increase in wives' share of married couple income between the 1990s and 2010s. The proportion of married women who earned at least 40 percent of total couple income increased from about 34 percent to about 40 percent. Interestingly, these calculations suggest a slight increase in the proportion of couples in which *either* men or women serve as the sole breadwinner. Though married women became less likely to earn less than 40 percent of couple income, they also became more likely to become entirely dependent on their spouses in terms of income. However, they also became more likely to be sole breadwinners themselves. This could reflect high rates of unemployment related to the Great Recession in the early part of the 2009-18 period.

4.2 Logistic regressions on probability of migration

We provide the estimates from our simple logit model, displayed in Table 3, to demonstrate the general U-shaped relationship present between couples' division of income and their likelihood of migration. The negative coefficients for wife's income share and positive coefficients for its squared term, both significant during both time periods, suggest that couples generally become less likely to migrate as wives' share of couple income increases from zero, then become *more* likely to migrate as wives' share of income approaches 100 percent, after a certain inflection point. Given the problems with comparing logistic regression coefficients between different groups (Breen et al. 2018; Mustillo et al. 2018), we caution against drawing conclusions about differences between the two time periods based solely on coefficients in any of the logit models estimated here. Instead, we base our analysis on predicted probabilities derived from logit model estimates. Predicted probabilities for each time period based on the simple logit estimates are graphed by age group in Figure 1A and 1B. (Other variables in the model are held at their means, as is the case with all following predicted probabilities plotted below.) These plots clearly confirm the anticipated U-shaped relationship between income share and probability of migration, especially for the youngest age group, the most likely to migrate.

The central difference between these plots is the across-the-board decline in migration; this change is evident in all of the migration probability plots shared in this paper, reflecting the widespread decline in internal migration between these two time periods. Aside from this difference, the degree of the U-shaped trend is similar between the two time periods. For the 25- to 34-year-old age group in the 1989-98 period, the model predicts a migration probability of .095 when the husband is a sole breadwinner, and a probability of .075 when spouses' incomes are equal. For this group in 2009-18, those predicted probabilities are .072 and .050, respectively. This is a slightly larger difference in absolute terms (.022 in 2009-18 compared with .020 in 1989-98) and a somewhat larger difference in relative terms (migration probability for equal-income couples is 30.6 percent less for equal-income couples than for male-breadwinner couples in 2009-18, compared with 21.1 percent in 1989-98).

Figure 1: Predicted probability of moving by age group (simple logit model)



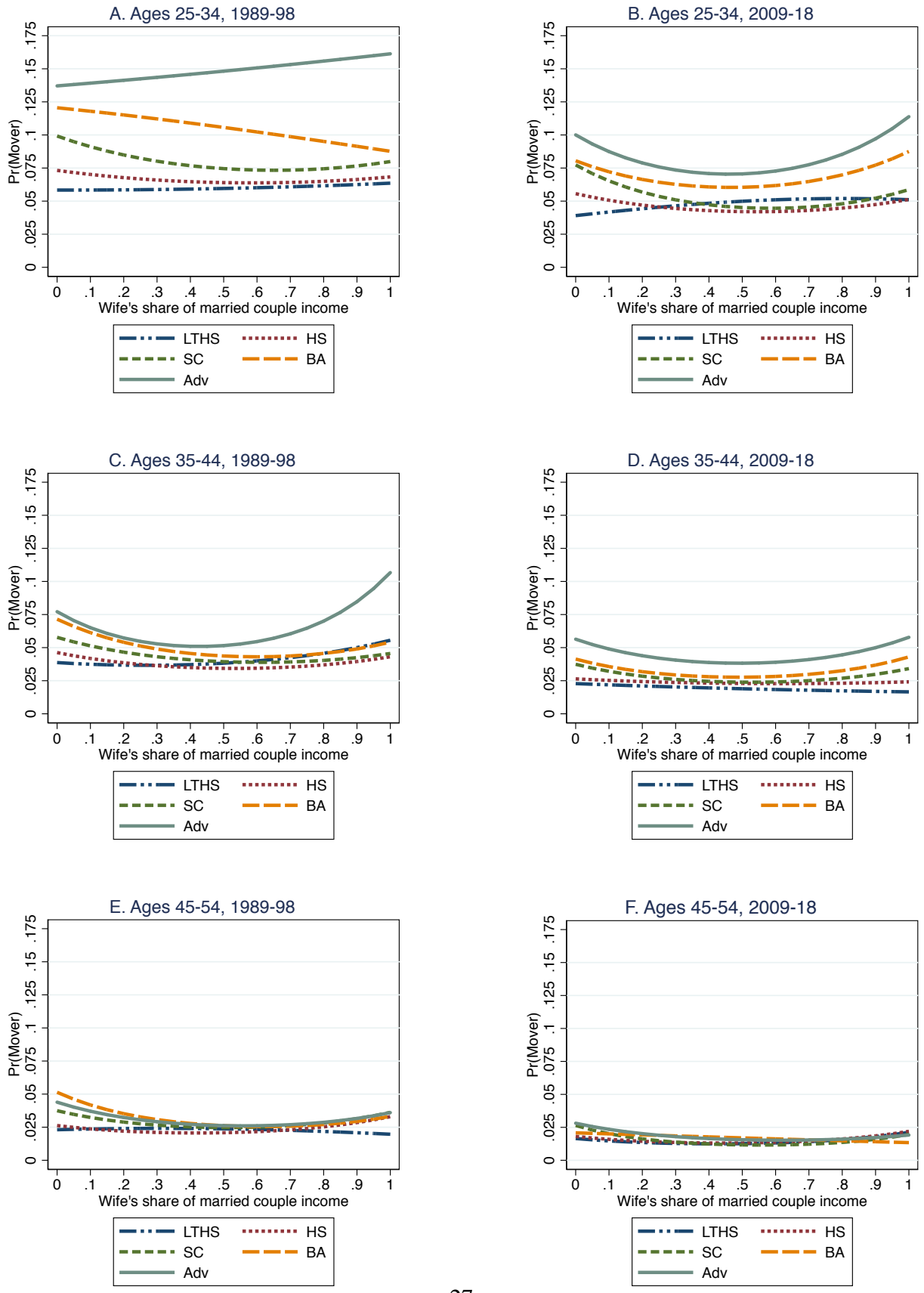
Though the simple logistic regression model (Table 3) effectively demonstrates the general relationship between married couples' division of income and their likelihood of migration, the model cannot reflect the different considerations surrounding migration for individuals across different points in the life course and different socioeconomic strata (Geist and McManus 2008), or the distinct forces shaping the marital division of labor among professional-class individuals (Cha 2010; Schwartz and Gonalons-Pons 2016). We move now to our central analysis of migration probability, which incorporates interactions between income share, age group, and education, accounting for these potential differences across the population of married couples. Coefficient estimates from this interactional logit model (shown in Table A.1 in the appendix) are difficult to interpret, but plots of predicted probabilities suggest that the relationship between income share and migration does vary considerably by education level and age range – and that this relationship changed in distinct ways between the 1990s and 2010s for different groups. Figure 2 displays these plots: Figures 2A and 2B for 25- to 34-year-olds, Figures 2C and 2D for 35- to 44-year-olds, and Figures 2E and 2F for 45- to 54-year-olds. Together, these plots sketch a picture of the changing migration behavior of married couples between the 1990s and 2010s at each intersection of age

and educational attainment. (Education levels refer to individual respondents' education, not their spouses' education.)

The most striking changes between the two time periods are among young, well-educated individuals, who are the people most likely to migrate for a new job opportunity (Geist and McManus 2008). Figure 2A suggests that, in the 1990s, the migration behavior of 25- to 34-year-old married couples did not have the expected U-shaped relationship with income share. Income equality between spouses apparently did not serve as a barrier to migration among these couples, especially among those with advanced degrees. (It is unclear why the lines for individuals with advanced degrees and for those with bachelor's degrees would diverge as they do in this graph, but we note that the confidence intervals for these lines are quite wide on the right end of the graph, likely because of the low number of couples in which women earned all or nearly all of the income. (Plots with confidence intervals included are available by request.) The patterns displayed in Figure 2B, for married individuals in the 2010s, provide a marked contrast. The clear U-shaped trend demonstrated by individuals with bachelor's or advanced degrees suggests that spousal income equality became a barrier to migration for young, well-educated couples by 2009-18. Whereas the U-shaped pattern did not exist among 25- to 34-year-olds with advanced degrees in the 1990s, this pattern is *most pronounced* among this group in the 2010s. For advanced degree holders in the youngest group in the 2010s, the interactive model predicts migration probabilities of .100 for those in male-sole-breadwinner couples, .071 for those in equal-income couples, and .114 for those in female-sole-breadwinner couples. For those with bachelor's degrees in this group, predicted probabilities are .081 for male-sole-breadwinner couples, .060 for equal-income couples, and .086 for female-sole-breadwinner couples.

Less-pronounced U-shaped patterns are also evident for 25- to 34-year-old individuals with some college and those with high school degrees. The pattern among those with less than a high-school education, meanwhile, more closely resembles an inverted U. Past research suggests that residential mobility among low-income people might often be unplanned or involuntary, prompted by unexpected contingent events (Geist and McManus 2008); this could be one reason for this

Figure 2: Predicted probability of moving by educational group (full logit model)



population's unusual migration behavior in this instance. Another possible explanation is that, given their low earning power, lesser-educated young partners with equal incomes might have more ability to move for quality-of-life reasons than lesser-educated young couples in which one partner is earning most of the income.

Changes in the migration behavior in the older age groups between the two time periods are less dramatic, with the exception of the general decline in migration that affected all groups. Among 35- to 44-year-olds (Figures 2C and 2D), the more-educated groups generally maintained the U-shaped pattern; the patterns are more symmetrical across the range of wives' income share in the later time period, suggesting that decision-making may have become more gender-neutral. At the point of spousal income equality, the migration probabilities among the different educational groups are compressed so that there is little difference between them; when college-educated spouses have equal incomes, the model predicts their likelihood of migration to be little different from that of a high-school-educated couple. Among 45- to 54-year-olds (Figures 2E and 2F), little difference between the educational groups is evident, regardless of wives' income share. This is especially true of the 2009-18 time period. This could be because individuals become relatively more likely to move for family-related reasons as they age, and relatively less likely to move for job-related reasons (Geist and McManus 2008). Given this, we would expect spouses' relative income levels to have less bearing on migration decisions for individuals in this age range.

4.3 OLS regressions on income

Overall, estimates from regressions on income, designed to assess potential changes in tied-mover effects over time, demonstrate less of a contrast between the two time periods than the logit estimates. Table 4 presents estimates from this regression model for the entire ASEC panel samples from the two time periods. This model includes controls for education and age, but does not test for potential interactions between those variables and year-to-year changes in income.

The estimates do not provide evidence of a significant change in tied-mover effects between the 1990s and the 2010s among the entire population. Only one group in either time period had a

Table 4: Year-to-year predicted income by gender, marital status, and migration status

	1989-99		2009-18	
Marriage, gender, and migration groups (ref = single male stayers)				
SingFemStay	-0.132***	(0.011)	-0.177***	(0.010)
MarMaleStay	0.364***	(0.009)	0.311***	(0.009)
MarFemStay	-0.271***	(0.010)	-0.175***	(0.010)
SingMaleMove	-0.069*	(0.030)	-0.115**	(0.040)
SingFemMove	-0.235***	(0.033)	-0.266***	(0.036)
MarMaleMove	0.289***	(0.018)	0.191***	(0.031)
MarFemMove	-0.434***	(0.031)	-0.305***	(0.041)
Year 2	0.019	(0.011)	0.026*	(0.011)
Interaction between groups and year 2 (ref = single male stayers)				
SingFemStay × Year 2	0.012	(0.015)	0.014	(0.015)
MarMaleStay × Year 2	-0.016	(0.012)	-0.015	(0.012)
MarFemStay × Year 2	0.009	(0.013)	-0.002	(0.013)
SingMaleMove × Year 2	0.070	(0.043)	0.075	(0.052)
SingFemMove × Year 2	0.087*	(0.044)	0.065	(0.052)
MarMaleMove × Year 2	0.009	(0.026)	0.021	(0.046)
MarFemMove × Year 2	0.051	(0.042)	0.018	(0.058)
Education (ref = less than high school)				
High school graduate	0.425***	(0.008)	0.412***	(0.010)
Some college	0.616***	(0.008)	0.600***	(0.010)
BA degree	0.908***	(0.008)	1.002***	(0.010)
Advanced degree	1.188***	(0.009)	1.283***	(0.011)
Child	0.053***	(0.005)	0.069***	(0.006)
Female × Child	-0.342***	(0.008)	-0.231***	(0.009)
Age	0.078***	(0.002)	0.069***	(0.003)
Age^2	-0.001***	(0.000)	-0.001***	(0.000)
Constant	7.543***	(0.048)	8.208***	(0.055)
Observations	320268		264449	
Adjusted R^2	0.253		0.214	

Notes: Standard errors in parentheses. Individual weights applied.

Other controls not shown: region, year fixed-effects.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

year-to-year income change that was statistically significantly different from that of the reference group, single male stayers: single female movers, in the 1989-99 period. The interaction terms between the married mover groups and *YearTwo* are not statistically significant in either time period, nor are the differences in the coefficients *between* the two time periods significant. When estimated across the entire sample in this way, this model does not provide significant evidence that migration was associated with any additional year-to-year increase in income in the 2009-18 period. This may reflect the variation in migration motivations across different groups, as well as the fact that most migrations are not motivated by job opportunities (Geist and McManus 2012). Another reason for the lack of significant findings using this model might be that ASEC data, as used here, underestimates the degree to which migrants' income changes from pre-move to post-move, as mentioned above.

The estimates presented in Table 4 do show some significant changes in groups' year t income (i.e., income in the first year of survey involvement) between the two time periods. The earnings disadvantage for married female stayers shrunk to a statistically significant extent ($p < .001$). Meanwhile, among married movers, the pre-move earnings gender gap shrunk considerably. The earnings advantage for married male movers shrunk ($p < .01$), as did the *dis*advantage for married female movers ($p < .01$). The total reduction in the pre-move gender gap for married movers was .227 log dollars, equivalent to a 20.3 percent decrease in real dollars ($e^{-.227} = .797$). The gender gap among stayers also shrunk, but by less: .149 log dollars, equivalent to a 13.8 percent decrease ($e^{-.149} = .862$). These decreases are due in large part, of course, to the overall narrowing of the income gap between spouses (Schwartz and Gonalons-Pons 2016). However, this does not on its own explain why the gap would narrow more among movers than among stayers; in the 1989-99 group, the gender gap among married movers was .088 log dollars larger than that among stayers, but in 2009-18 this difference shrunk to .01. Another way to look at this change is to observe that the earnings disadvantage of married male movers relative to married male stayers increased. Thus, one possible interpretation is that, as overall rates of internal migration have fallen, migration has increasingly become an option undertaken only by those couples in which the main breadwin-

ner's earnings lag far behind those of their peers. Because men remain more likely to serve as the main breadwinner, this change would then manifest itself in an increasing pre-move earnings disadvantage for married male movers relative to married male stayers.

After estimating the OLS model across the entire sample, we moved on to estimating the same model separately for different educational and age groups. This also did not yield significant evidence of a change in tied-mover effects between the two time periods (these estimates available by request), with one exception: When estimated among only 25- to 34-year-olds with advanced degrees, the model suggests a possible trend. These estimates, presented in Table 5, suggest that married women with advanced degrees in the 2010s remained likely to be tied movers if they migrated, and raise the possibility that this tendency actually *increased* since the 1990s. The *YearTwo* interaction coefficient for married female movers in the 2009-17 period indicates that their income is predicted to decrease in year *t + 1* by 7.4 percent ($e^{(.06931-.14657)} = .926$), while the corresponding coefficient for *single* female movers indicates their income is predicted to *increase* by 46.3 percent ($e^{(.06931+.31140)} = 1.365$). The difference between these two interaction term coefficients is statistically significant ($p = .009$), but the corresponding difference for the 1989-98 time period is not. No such significant gap exists between the coefficients for single male movers and married male movers. For the 2010s period, the model predicts single female movers to earn 17.3 percent less ($e^{-.19031} = .827$) than married female movers during year *t*, but predicts they will earn 30.7 percent *more* than their married counterparts in the year following their move, *t + 1* ($e^{.26766} = 1.307$).

The interaction coefficients for female movers in the 2010s period are not statistically significantly different from the corresponding coefficients in the 1990s period, so we cannot conclude that young women with advanced degrees are *more* likely to be tied movers than they were two decades ago. However, we can conclude that, in the more recent time period, married women in this group pay a statistically significant income penalty in their year following a move across state or county lines, relative to single women who move. Given that young, well-educated people are the most likely to move for a job opportunity, this finding is noteworthy, and it provides evidence

Table 5: Year-to-year predicted income, ages 25-34 with advanced degrees only

	1989-99		2009-18	
Marriage, gender, and migration groups (ref = single male stayers)				
SingFemStay	-0.095	(0.067)	-0.154**	(0.049)
MarMaleStay	0.289***	(0.053)	0.199***	(0.047)
MarFemStay	-0.045	(0.063)	-0.086*	(0.043)
SingMaleMove	-0.131	(0.106)	-0.065	(0.105)
SingFemMove	-0.262*	(0.110)	-0.267**	(0.100)
MarMaleMove	0.040	(0.076)	-0.011	(0.110)
MarFemMove	-0.116	(0.106)	-0.076	(0.091)
Year 2	0.077	(0.064)	0.069	(0.054)
Interaction between groups and year 2 (ref = single male stayers)				
SingFemStay × Year 2	0.051	(0.088)	-0.043	(0.074)
MarMaleStay × Year 2	-0.017	(0.069)	-0.017	(0.065)
MarFemStay × Year 2	-0.013	(0.085)	-0.038	(0.064)
SingMaleMove × Year 2	0.233	(0.177)	0.199	(0.142)
SingFemMove × Year 2	0.314*	(0.133)	0.311*	(0.128)
MarMaleMove × Year 2	0.162	(0.105)	0.140	(0.143)
MarFemMove × Year 2	0.017	(0.162)	-0.147	(0.145)
Child	0.094**	(0.031)	0.063	(0.037)
Female × Child	-0.502***	(0.057)	-0.197***	(0.047)
Age	0.360**	(0.118)	0.252*	(0.098)
Age^2	-0.005**	(0.002)	-0.004*	(0.002)
Constant	3.950*	(1.776)	6.480***	(1.470)
Observations	6141		8612	
Adjusted R^2	0.145		0.078	

Notes: Standard errors in parentheses. Individual weights applied.

Other controls not shown: region, year fixed-effects.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

that when heterosexual married couples move for the benefit of one partner's career, that partner remains likely to be the man.

5 Conclusion

Through our analyses, we sought to determine whether the human-capital or gender-role theory of family migration would better explain trends in family migration in recent decades. Though the evidence is mixed, our findings provide more support for the gender-role theory. The strongest evidence for the influence of gender-role beliefs is the increasing role of gender income equality as a barrier to migration for young, well-educated people, as evidenced by the interactional logit model (Figures 2A and 2B). The human-capital theory would not predict this change in behavior: If family moves are based on a gender-neutral preference for utility maximization, they should become no more or less likely over time given a certain spousal division of income (and given overall rates of internal migration). Though women have certainly increased their human capital on average since the 1990s, this change does not explain why having a spouse with a similar income has become a bigger barrier to moving among the individuals who are most likely to migrate for job opportunities. A more likely explanation is a cultural shift toward more egalitarian expectations within marriage (Schwartz and Gonalons-Pons 2016; Schwartz and Han 2014). As the male-breadwinner cultural ideal loses its force, couples may be less likely to make decisions that advance men's careers at the expense of women's.

However, our findings provide no evidence that these shifts in gender expectations have not led more couples to move for the sake of women's careers. In fact, we find some evidence that the gendered tied mover pattern might still be in effect for young people with advanced degrees. One explanation for this could be occupational segregation by gender; that is, men might be more likely to choose occupations that tend to offer substantial rewards for relocation, while women might be more likely to choose careers that are geographically dispersed and relatively portable (Benson 2014). Indeed, occupational segregation is one area in which the "gender revolution" has been uneven: While women have moved into predominantly male fields, men have not made a

corresponding move into historically female-dominated occupations (England 2010). Further, individuals with advanced degrees might be likely to encounter professional-class norms of overwork and single-minded career devotion, which may push some heterosexual couples to de-emphasize the woman's career and move closer to a traditional separate-spheres division of labor (Blair-Loy 2003; Cha 2010). Given this tendency, these couples may be willing to move for the benefit of the man's career even if it means a loss in personal earnings for the woman. Given that our logit analyses found spousal earnings equality to be a barrier to moving for young and well-educated individuals, the gender imbalance in tied movers among this group could also be due in part to self-selection on the basis of gender ideology: Those couples who *do* choose to migrate for job opportunity might tend to be those with more traditional gender beliefs. Couples with more egalitarian beliefs, meanwhile, might be hesitant to uproot either partner's career, leading one or both partners to be tied stayers.

The egalitarian change in behavior among young, well-educated couples (combined with a compositional increase in the number of couples with similar incomes) might have contributed to the overall decline in internal migration since the 1980s, but the demographically widespread nature of the migration decline suggests it is primarily driven by something else, or perhaps by a combination of many factors. Our findings do provide further evidence, however, that migration serves varying purposes at different life stages and among different socioeconomic strata (Geist and McManus 2008). For instance, we find little evidence of any relationship between wives' share of income and likelihood of migration among 45- to 54-year-old married individuals in recent years, or among individuals with a high school degree or less education at any age. For these groups, the tied-mover concept as it has historically been defined might not be very relevant. This is an important consideration for future studies of family migration.

If cultural changes related to gender and marriage have made tied staying more common among dual-career couples, this could help to explain why increased educational homogamy among highly educated men and women has not had the effect of increasing income inequality among households. Intuitively, if highly educated individuals have become more likely to marry each other

rather than individuals with lower levels of education, we would expect the result to be increased concentration of income among families. However, scholars have found this not to be the case (Breen and Salazar 2011). Our study suggests one possible reason for this surprising finding. If highly educated couples are staying put rather than moving, out of concern for harming one of the partners' careers, those individuals are not maximizing their personal incomes in the same way they would if they were single. Hence, assortative mating among highly educated men and women might actually reduce the earnings power of individuals who would otherwise fall on the high end of the income distribution by making them more likely to be tied stayers. Thus, the effect could be to reduce earnings inequality rather than to increase it. Future research could investigate other possible ways in which highly educated married individuals might limit their own earnings potential for the benefit of their partners, especially given the aforementioned shifts in gender and marriage norms.

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A Appendix

Table A.1: Probability of moving, married individuals (interactional logit model)

	1989-99		2009-18	
Wife's income share	-0.430	(0.447)	-0.436	(0.630)
Wife's income share^2	0.809	(0.480)	0.110	(0.726)
Age group (ref = 35-44)				
25-34	0.431***	(0.091)	0.554***	(0.128)
45-54	-0.532***	(0.110)	-0.330*	(0.148)
2-way interactions: age group and income share				
25-34 × Wife's income share	0.426	(0.579)	1.181	(0.852)
45-54 × Wife's income share	0.711	(0.673)	-0.915	(0.967)
25-34 × Wife's income share^2	-0.715	(0.647)	-0.573	(0.985)
45-54 × Wife's income share^2	-1.253	(0.714)	1.495	(1.034)
Education (ref = less than high school)				
HS	0.186*	(0.085)	0.149	(0.116)
SC	0.420***	(0.088)	0.509***	(0.112)
BA	0.648***	(0.089)	0.614***	(0.111)
Adv	0.731***	(0.103)	0.940***	(0.116)
2-way interactions: education and income share				
HS × Wife's income share	-0.740	(0.517)	-0.051	(0.725)
SC × Wife's income share	-0.928	(0.533)	-1.316	(0.714)
BA × Wife's income share	-1.361*	(0.553)	-1.271	(0.719)
Adv × Wife's income share	-1.652**	(0.624)	-1.222	(0.731)
HS × Wife's income share^2	0.286	(0.563)	0.286	(0.826)
SC × Wife's income share^2	0.298	(0.586)	1.547	(0.814)
BA × Wife's income share^2	0.685	(0.632)	1.637*	(0.835)
Adv × Wife's income share^2	1.628*	(0.708)	1.575	(0.849)
2-way interactions: age group and education				
25-34 × HS	0.057	(0.107)	0.223	(0.153)
25-34 × SC	0.154	(0.112)	0.215	(0.148)
25-34 × BA	0.146	(0.115)	0.154	(0.149)
25-34 × Adv	0.210	(0.140)	0.067	(0.159)
45-54 × HS	-0.055	(0.132)	-0.054	(0.178)
45-54 × SC	0.078	(0.140)	-0.029	(0.174)
45-54 × BA	0.181	(0.145)	-0.378*	(0.178)
45-54 × Adv	-0.067	(0.166)	-0.396*	(0.187)
3-way interactions: age group, education, income share				
25-34 × HS × Wife's income share	0.239	(0.671)	-1.784	(0.979)
25-34 × SC × Wife's income share	-0.081	(0.695)	-1.423	(0.959)

Table A.1: (continued)

	1989-99		2009-18	
25-34 × BA × Wife's income share	1.127	(0.715)	-0.798	(0.962)
25-34 × Adv × Wife's income share	1.828*	(0.839)	-1.193	(1.000)
45-54 × HS × Wife's income share	-0.720	(0.794)	-0.100	(1.107)
45-54 × SC × Wife's income share	-1.031	(0.834)	-0.363	(1.103)
45-54 × BA × Wife's income share	-1.269	(0.888)	2.241*	(1.131)
45-54 × Adv × Wife's income share	-0.564	(0.986)	0.554	(1.181)
25-34 × HS × Wife's income share^2	0.049	(0.759)	1.181	(1.121)
25-34 × SC × Wife's income share^2	0.382	(0.798)	0.614	(1.101)
25-34 × BA × Wife's income share^2	-0.897	(0.841)	0.241	(1.123)
25-34 × Adv × Wife's income share^2	-1.705	(0.975)	0.703	(1.158)
45-54 × HS × Wife's income share^2	1.571	(0.847)	-0.194	(1.176)
45-54 × SC × Wife's income share^2	1.788*	(0.894)	-0.427	(1.178)
45-54 × BA × Wife's income share^2	1.653	(0.985)	-3.309**	(1.236)
45-54 × Adv × Wife's income share^2	0.544	(1.110)	-1.554	(1.284)
Constant	-1.215***	(0.120)	-2.279***	(0.182)
Observations	364491		477856	

Standard errors in parentheses.

Other controls not shown: couple income, gender, children, region. Individual weights applied.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$