

# Geography, Joint Choices, and the Reproduction of Gender Inequality

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## Abstract

We examine the extent to which the gender wage gap stems from dual-earner couples jointly choosing where to live. If couples locate in places better suited for the man's employment than for the woman's, the resulting mismatch of women to employers will depress women's wages. Examining data from Denmark, our analyses indicate that (1) Danish couples choose locations with higher expected wages for the man than for the woman, (2) the better matching of men in couples to local employers could account for up to 36 percent of the gender wage gap, and (3) the greatest asymmetry in the apparent importance of the man's versus the woman's potential earnings occurred among couples with young children and where the male partner accounted for a larger share of household income before the potential move.

## Keywords

gender wage gap, family migration, sex segregation, discrimination, work

Despite a narrowing of the gender wage gap, women still earn less than men (Blau and Kahn 2000). This is true in the United States and in every other country in the world (Hausmann, Tyson, and Zahidi 2010). Although the most overt forms of discrimination have become less common, particularly in Europe and North America, sociologists have identified several subtle mechanisms that contribute to the persistence of this gap.

A central theme is that the sorting of men and women into jobs accounts for much of the ongoing inequality (Petersen, Penner, and Høgenes 2014). Some of this allocative disparity stems from employers: organizations assign men to jobs that carry richer rewards (Bielby and Baron 1986; Fernandez and Sosa 2005); firms also differ in their propensities to hire men, with those hiring more, paying better (England et al. 1988; Petersen 1995). Some of it comes from employees: men and women

pursue divergent professions and, even within occupations, apply for different job titles (Correll 2004; Tam 1997).

We call attention to another allocative process that contributes to the wage gap: the sorting of people to places. Workers earn more when they reside in regions with employers that value their abilities and attributes (Cohen and Huffman 2003; Sørensen and Sorenson 2007). In dual-earner households, however, husbands and wives often match best with employers in different regions. When couples live in places better suited for the husbands'

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than the wives' career prospects, men earn more than women.

Such an effect could reflect differences in the value couples attach to men's versus women's jobs. To the extent that couples consider the husband the economic provider or his career more important, they might emphasize the husband's employment in deciding where to live (Bielby and Bielby 1992). Consistent with this claim, husbands' human capital has more predictive power than wives' on the decision of whether to move (see Cooke 2008; Duncan and Perrucci 1976; Shauman 2010).

But gender differences in this goodness of geographic fit could arise even in the absence of asymmetry in the valuation of men's and women's careers. Income-maximizing couples might rationally relocate to regions that bring gains to men but losses to women if the husbands' gains outweigh the wives' losses (Mincer 1978; Sandell 1977). Consistent with this argument, dual-earner couples move less often than single-earner couples (Shauman 2010). Also, although wives' wages wane after moves, they appear to recover from these losses in time (see Clark and Huang 2006; Cooke 2003; LeClere and McLaughlin 1997).

It is difficult, however, to distinguish between these two accounts. On the one hand, biased beliefs about the value of husbands' versus wives' careers could also engender income gains for men but losses for women when couples move. On the other hand, the fact that husbands' human capital matters more to relocation need not imply gender inequality. Men may, for example, work in occupations that vary more in pay across regions and therefore have more to gain from moving (Benson 2014; Shauman and Noonan 2007).

It is also hard to assess the extent to which these processes might contribute to the gender wage gap. Studies of the decision to move generally do not translate into levels of income. Research that does examine earnings compares movers to stayers, but these groups differ on numerous dimensions.

We address these limitations by using data from Denmark to estimate directly if dual-earner couples—whether legally married or

cohabitating—appear more sensitive to the man's potential income gains relative to the woman's in their choices of residential locations. Earnings of similar others—people with identical attributes and levels of human capital—in other regions provide couple-specific counterfactual earnings measures of what each member of the couple might earn elsewhere (Dahl and Sorenson 2010).

Because this approach assumes a supply of counterfactual jobs in most regions, we restricted our analyses to couples employed in blue-collar and lower-level, white-collar occupations. Our estimates indicate that these Danish couples located in regions more beneficial to the man's than to the woman's expected earnings. We calculated that the resultant geographic mismatch of women to would-be employers could account for as much as 36 percent of the gender wage gap among blue-collar and lower-level, white-collar employees. In other words, if couples split and behaved as singles—independently choosing their places of residence—one would expect the gender wage gap to narrow by roughly one-third.

Although the better matching of couples' locations to men's earnings prospects provides an explanation for the gender wage gap, it is only a proximate one. What accounts for this asymmetry? Several possibilities exist: (1) Structural explanations: Men may work in occupations that vary more in wages across regions or that have steeper wage trajectories (Benson 2014). Couples might then respond to these structural factors in their location choices (Shauman and Noonan 2007). (2) Intra-household bargaining: Men and women may negotiate on different dimensions when deciding on locations. Women, for instance, might place greater emphasis on living near loved ones than do their partners (Mulder 2007), leading them to prefer places that do less to promote their careers. (3) Relative resources: Men, contributing more to household income than women, may use the leverage afforded by these resources to impose their geographic preferences (Blood and Wolfe 1960; Shauman 2010). (4) Motherhood penalty:

Women may reduce their participation in the labor force to provide childcare or may anticipate that employers will penalize them for having a family (Budig and England 2001; Clark and Withers 2009). (5) Traditional gender role beliefs: Men may place greater emphasis on their careers and earnings (Hood 1983; Potuchek 1997). As a consequence, couples may focus on the man's potential earnings when deciding whether to move and where to live (Bielby and Bielby 1992; Cooke 2008).

The fourth and fifth possibilities—the motherhood penalty and traditional gender roles—appear most consistent with our results. Our empirical design rules out most structural explanations. Although the locations of loved ones matter, couples appear to weigh proximity to both the man's and the woman's family and friends equally, which is inconsistent with theories of intra-household bargaining and relative resources. Couples with young children, however, exhibit greater inequality in the implicit weights attached to the man's versus the woman's expected income (a motherhood penalty), as do couples in which the man earned more than the woman prior to a potential move (traditional gender roles).

We offer three contributions to the literature. First, we introduce a method for examining whether couples maximize joint income in their location decisions. We found that blue-collar and lower-level, white-collar Danish couples did not, on average, choose regions that would maximize their household earnings; they placed undue emphasis on the man's potential income in choosing where to live. We thus provide the most direct evidence to date against the neoclassical model of family migration. Second, we determined that these intra-couple decisions contribute importantly to the persistence of gender inequality, calculating that this allocative mechanism might account for up to 36 percent of the gender wage gap. Third, we explored the causes of this allocative asymmetry, tracing it to two potential sources: a motherhood penalty and traditional gender roles.

## GEOGRAPHY AND JOINT CHOICES

Mobility, from one place to another, has long been an important process for increasing individual income and wealth. International migration, for example, has allowed minorities to escape religious and political persecution that has blocked their economic success in their home countries. Migration, both within and across countries, can similarly allow individuals to increase their earnings by escaping impoverished areas or by moving to places with employers better suited to their abilities and attributes (Clark, Hatton, and Williamson 2007; Dahl and Sorenson 2010; Quillian 1999).

But individuals do not have equal access to these opportunities. Immigration policies, for example, often explicitly discriminate against people from certain countries, of particular ethnicities or religions, or with less education. Even in the absence of these legal barriers, the availability of social support and social connections can restrict who can move and where they can consider as destinations (Massey and Espinosa 1997). Given the economic value of migration, differential access to it contributes to inequality.

We examine the potential for one such constraint—the fact that couples generally choose to live in the same place—to contribute to gender-based income inequality. Two types of motivations, one economic, the other not, have been offered as explanations for why such a connection might exist.

### *Household Income Maximization*

The neoclassical economic model of family migration argues that the constraint of choosing a single location could lead couples to favor places that increase husbands' incomes at the expense of wives' earnings (Mincer 1978; Sandell 1977). Following Mincer's (1978) notation, let  $G_i$  denote the net income gain from migration for each member of a household (the returns to moving minus the costs). In a dual-earner household, income-maximizing couples move if  $G_1 + G_2 > 0$ . If both the husband and wife stand to gain from

the move ( $G_1 > 0$  and  $G_2 > 0$ ), the couple will move and, if neither does ( $G_1 < 0$  and  $G_2 < 0$ ), they will not. The interesting action comes from cases in which one would gain but the other would lose ( $G_1 > 0$  and  $G_2 < 0$ ). If the winner's gains exceed the spouse's losses, the income-maximizing couple should move. If the gains do not exceed the losses, then they should stay (even though one of them could have earned more by moving). Depending on the outcome, Mincer (1978) refers to the individuals who sacrifice their own outcome for the joint good as either the "tied mover" or the "tied stayer"; in either case, couples earn less than similar pairs of single—and therefore independent—men and women.

This neoclassical model operates symmetrically with respect to men and women; that is, couples might as easily forgo increases in husbands' earnings to enjoy even greater gains in wives' wages as vice versa. Nevertheless, Mincer (1978) notes that several factors conspire to ensure that women will usually be the ones sacrificing their careers. Most notably, the fact that women often reduce their participation in the labor force when starting a family means men have more human capital, and therefore more to gain, from changing employers (and regions). Also, to the extent that gender discrimination exists on the side of employers, household location decisions will exacerbate these biases, because a proportional gain in the husband's income translates into a greater absolute gain for the household than does the same proportional gain in the wife's income.

Two kinds of evidence have been marshaled to support this model. The first involves geographic mobility. Income-maximizing couples should move less frequently than single men and women. Consistent with this expectation, a number of studies across roughly four decades, perhaps beginning with Long (1974), confirm that dual-earner couples have lower migration rates than single men and women (for evidence specific to Denmark, see Dahl and Sorenson 2010).

The second concerns the effects of migration. Here, the model predicts that moves should increase household earnings despite depressing wives' wages. Sandell (1977)

provided some of the first evidence supporting this expectation. For U.S. families that moved between 1967 and 1971, he found that husbands' incomes increased by an estimated \$832, and wives' incomes declined by only \$372 in the year following a move. Since then, numerous studies have replicated this result using different data sources and in additional countries (for a review, see McKinnish 2008). Moreover, subsequent studies have found that wives' wages appear to recover in a year or two following a move (e.g., Clark and Huang 2006; Cooke 2003; LeClere and McLaughlin 1997).

### *Gender Asymmetry in Joint Choices*

But do these patterns really reflect couples maximizing household earnings? Sociological studies of family migration suggest other possible interpretations. Notably, society tends to have differing expectations of the roles men and women should play. Numerous studies, for example, find that couples usually see the husband as the breadwinner for the family, and the wife as being responsible for the household and childcare (for reviews, see Shelton and John 1996; Thompson and Walker 1989). Because of these beliefs, households give greater support to male earners. Even among dual-earner couples, for instance, women generally do the majority of the housework (Craig and Mullan 2011; Hook 2010; Offer and Schneider 2011).

Bielby and Bielby (1992) argue that these beliefs about gender roles might also influence couples' geographic mobility. If couples view the man as the economic provider, they may emphasize his career when considering potential moves. Returning to the earlier notation, Bielby and Bielby essentially posit that couples implicitly evaluate  $\beta_1 G_1 + \beta_2 G_2 > 0$ , where  $\beta_1$  and  $\beta_2$  represent weightings of the husband's and wife's gains, respectively, and where  $\beta_1 > \beta_2$ —in other words, couples undervalue women's work outside the home. Consistent with this idea, when they asked U.S. men and women a hypothetical question about whether they would move for a better job, women more frequently said they would be reluctant to move

due to family reasons. But men and women with nontraditional beliefs about gender roles differed less in this reluctance, although women still reported a greater reluctance than men (see also Bird and Bird 1985).

The primary line of empirical research supporting this asymmetry, however, comes not from attitudinal questions but from examining the correlates of couples' moving decisions (Shauman and Noonan 2007). In particular, study after study demonstrates that husbands' human capital characteristics—such as their levels of education and work experience—have more explanatory power than those of wives on couples' decisions of whether to move (e.g., Duncan and Perrucci 1976; Shauman 2010; Tenn 2010). Consistent with the expectations of this theory, studies that incorporate information about gender role beliefs find larger asymmetries in the importance of human capital characteristics to migration decisions among couples with the most traditional beliefs (Cooke 2008; Jürges 2006).

Traditional gender ideology also offers an alternative interpretation of most existing evidence offered in support of the neoclassical model. If couples emphasize husbands' careers in their relocation decisions, then that too could lead to increases in husbands' incomes but decreases in wives' earnings following moves. One place where the predictions diverge, however, is cases in which the husband stands to gain less than the wife would lose ( $G_1 > 0$  but  $G_1 + G_2 < 0$ ). In those cases, the neoclassical model predicts the couple will stay, whereas couples who value the husband's career more might move. Following this reasoning, and supporting the idea that traditional gender ideology influences geographic choices, Jacobsen and Levin (1997) report that losses to wives exceed gains to husbands in the United States, and these effects thus do not reflect rational household income maximization.

But the evidence remains largely inconclusive. In most studies, the neoclassical model appears consistent with the differential returns to migration for husbands and wives. The model also offers an alternative interpretation

of the greater influence of husbands' human capital characteristics on migration, the main result forwarded as evidence supporting the influence of gender ideology. For instance, if a couple expects the wife to leave the labor force—even temporarily—they might rationally focus on potential gains to the husband in choosing a place to live (Clark and Withers 2009). The importance of husbands' human capital to migration decisions could therefore also arise from income maximization.

We address these limitations by estimating directly whether prospective gains in the man's versus the woman's income appear more influential to couples' choices of place of residence. In other words, we estimate  $\beta_1$  and  $\beta_2$  above. Our approach therefore does not rely on inferring the implied relative importance of income gains from other evidence (e.g., the predictive power of human capital measures).

## THE GENDER WAGE GAP IN DENMARK

Although Denmark historically has had low income inequality and maintains a strong social safety net, its employment system operates similarly to the United States. Reforms in the 1980s gave employers substantial freedom in setting wages (Sørensen and Sorenson 2007). These reforms also made it relatively easy for Danish firms to hire and fire. As a result, Denmark has one of the most flexible labor markets in Europe, on par with the United Kingdom and the United States (Bredgaard, Larsen, and Madsen 2005).

Like every other country in the world, Denmark has a gender wage gap—men earn more than women. Gupta and Rothstein (2005), for example, report that an average full-time female employee in Denmark earned about 80 percent of the average earned by a male employee from the mid-1980s to the mid-1990s. By comparison, the average female employee in the United States during that period would have made 65 (mid-1980s) to 75 (mid-1990s) percent of her male counterpart's earnings (U.S. Department of Labor 2001).

This wage gap persists despite the fact that Denmark enjoys high levels of gender equality overall.<sup>1</sup> Danish women participate in the labor force at 92 percent the rate of men (versus 85 percent for the United States); and they account for 38 percent of the members of parliament (versus 20 percent in the U.S. Congress), the majority of professional and technical workers, and nearly 60 percent of all college and university students (Hausmann et al. 2010). Overall, the World Economic Forum ranked Denmark 7th in the world—the United States ranked 19th—in terms of gender equality (Hausmann et al. 2010).

Although the sources of the gender wage gap have received far less research attention in Denmark than they have in the United States, it seems reasonable to expect that many of the same mechanisms operate in both places. For example, researchers have found that the sorting of individuals to occupations and job titles accounts for much of the gender gap in the United States (Bielby and Baron 1986; England et al. 1988; Groshen 1991). Differences in human capital have also been found to contribute to this gap (Kilbourne et al. 1994). Gupta and Rothstein (2005) similarly find both of these mechanisms at play in Denmark: occupational sex segregation could account for more than half of the gross gender wage gap; human capital differences could explain roughly one-quarter of it; and together they could account for nearly 60 percent of the gap.<sup>2</sup> Although these and other mechanisms deserve further investigation, we focus on the extent to which another allocative mechanism—household decisions about where to live—might account for some portion of the gender wage gap.

## JOINT GEOGRAPHIC CHOICES

We begin by estimating the degree to which expected incomes in a region influence couples' choices of where to live. A standard statistical framework for evaluating these choices considers the actor's preference—in this case, couple  $i$ —for living in a region,  $j$ , as a function of the features available there (i.e., the potential income and other benefits of living there). Our baseline estimation assumes that—net of

differences in potential earnings—couples consider all regions equivalent in their net advantages and disadvantages. One can then represent a couple's preferences  $u_{ij}$  as follows:

$$u_{ij} = \beta_m W_m + \beta_f W_f + \varepsilon_{ij}, \quad (1)$$

where  $\beta_m$  and  $\beta_f$ , respectively, represent the influence of the man's and woman's expected incomes ( $W_m$  and  $W_f$ ) on the couple's joint preference for a region, and  $\varepsilon_{ij}$  allows for error in the couple's projections of these benefits. Whereas the neoclassical model implies that  $\beta_m$  and  $\beta_f$  should have equivalent values, sociological perspectives suggest that  $\beta_m > \beta_f$ —that couples care more about the man's income than the woman's.

If couples choose locations in accordance with their preferences, and if we assume that the errors arise from independent and identically distributed draws from an extreme value distribution, then couple  $i$  chooses region  $j$  with the following probability:

$$P(y_i = j) = \frac{e^{\beta_m W_m + \beta_f W_f}}{\sum e^{\beta_m W_m + \beta_f W_f}}. \quad (2)$$

We can estimate these coefficients using the conditional logit (McFadden 1974).

Note that by including the couple's current location as an option, we need not presume that couples first decide to move and then choose where to go. By contrast, estimation of the propensity to move—the most common outcome in prior research—essentially assumes either that push factors lead couples to migrate without a consideration of where they might go, or conflates differences in the costs of moving with the attractiveness of the options available to them elsewhere. We also avoid the selection bias inherent in focusing only on movers, a subset that prefers another place to their current location. Our setup does assume that couples would at least consider employment in another region. By including an indicator variable for their current place of residence, however, we allow couples to have a preference for staying put.

## Data

We estimated the correlates of location choice using the Integrated Database for Labor Market Research (referred to by its Danish acronym, IDA). This employee–employer database, compiled from public registers, contains detailed, longitudinal information on the characteristics and employment histories of every resident of Denmark. To a large extent, prior research on geographic mobility and the gender wage gap has been limited by the fact that researchers did not know where couples moved or did not have sufficient individual-level data to calculate counterfactual wages (discussed in detail below). The high quality and comprehensiveness of the Danish data allow us to avoid these limitations.

Although IDA includes more than 30 years of data, we restricted the analysis to moves occurring from 2004 to 2005. Limiting the sample to a single year dramatically reduces variation (over time) in the attractiveness of regions and ensures that region fixed effects effectively absorb the remaining differences across regions (e.g., cost of living and road infrastructure).

We define as “couples” mixed-gender pairs of non-related adults (over age 18) cohabitating in both 2004 and 2005, whether legally married or not.<sup>3</sup> We exclude couples in which either member is over age 55 to avoid including location choices that might reflect retirement. A total of 254,948 couples met these screens.

From this population, only the 186,919 couples where both the man and the woman worked full-time in both 2004 and 2005 enter our sampling frame. Our research design requires such an approach, because one cannot estimate the importance of expected earnings for someone intending to leave the labor force. We also restrict our study to Danes employed in blue-collar and lower-level, white-collar occupations (118,235 couples). Although this subset represents only two-thirds of the labor force, it has an important advantage: our estimation of expected income, described below, relies on others with comparable characteristics working in

similar jobs but in different regions. In the more specialized occupations found among mid- to upper-level white-collar workers, many regions have no—or very few—similar others.

From this sampling frame, we extracted a stratified random sample; we oversampled movers because these couples contribute more statistical power to our estimates. To recover population-level estimates of the parameters of interest, our analyses include inverse probability-of-sampling weights. In total, our sample for estimation includes 2,995 movers and 6,952 stayers. Because we estimate a conditional logit, our dataset contains one observation per couple per region. We chose the 268 unique and mutually exclusive administrative townships (*kommune* in Danish) as our areal units. Our dataset for estimation comprises 2,665,796 couple-region observations.

*Place of residence.* Our dependent variable captures whether a couple chose to reside in a particular township in 2005. Alternatively, one might consider the choice of work location as the dependent variable (Dahl and Sorenson 2010). But with couples, this alternative poses a problem as a dependent variable. Partners could commute to different regions; if so, the couple would have different values on the dependent variable and one could not connect their location choices to the spouse’s earnings.

*Expected income.* The incomes men and women expect in a particular region are the key independent variables. Past studies of location choice usually rely on the average wage in a region as a proxy for the income an individual might expect there. The use of an average wage here, however, would have a number of disadvantages. Most importantly, both members of a couple would appear to expect identical wages in every region; therefore, one could not determine whether the prospective incomes for men and women differed in their influence on where couples chose to live.

**Table 1.** Wage Equation Coefficients

	Men		Women	
	Mean	SE	Mean	SE
Age	-.005	.003	-.002	.002
Experience /100	.002	.002	.002	.001
<i>Gymnasium</i>	.069	.103	.065	.070
College	.109	.092	.038	.043
Firm tenure /100	-.008	.244	.068	.228
Skilled blue-collar	.269	.063	.195	.084
Lower white-collar	.070	.042	.066	.077
Job change	-.017	.042	-.009	.045
Mover	-.110	.059	-.104	.054
Constant	5.525	.160	5.122	.136
$R^2$	.218	.055	.245	.069
$N$	956	1,328	1,072	1,563

Note: Summary of the results of 268 regressions of 2004 wage (267 for women), one per township.

Our approach uses the wages of similar others to create couple-specific counterfactual wages for what each person might earn in another region (Dahl and Sorenson 2010). We calculated this expected income in two stages. First, using information on the full population of Danish blue-collar and lower-level, white-collar employees, we estimated standard wage equations for men and women separately for each township (to allow returns to abilities and attributes to vary across regions), regressing the logged wage of each employee living in the region in 2004 on age, years in the labor force, years in the labor force squared, tenure at the current firm, and indicator variables for education, occupation, moving, and changing employers.<sup>4</sup> Estimating these equations separately for men and women allows differential returns by gender to equivalent human capital (see Benson 2014; Castilla 2008; Fernandez-Mateo 2009).

To attach wages to regions, we use locations of residence rather than locations of employment. Doing so accounts for the possibility of commuting. Because our wage equations predict expected earnings on the basis of where a person lives, they incorporate not just jobs in the focal region but also jobs in all surrounding regions to which residents of the focal region currently commute. Moreover, because we estimate these equations

separately for men and women, they also account for gender differences in commuting distances.<sup>5</sup>

In estimating these wage equations, we include only members of couples for two reasons. One, individuals select into cohabitation and marriage, and therefore the composition of singles, on both observed and unobserved dimensions, may differ in meaningful ways that influence these wage equations. Two, the average married or cohabitating employee has more experience than the average unattached one. Although we include controls for experience, extrapolating the wage equations from singles to couples would require us to adopt stronger assumptions about the functional forms of these factors on wages.

Table 1 reports summary statistics for the coefficients from these 268 regressions (one for each township).<sup>6</sup> Overall, the coefficients appear stable and consistent with prior research. For example, in the average region, having a college degree increased expected income by roughly 10 percent. The returns to higher education nevertheless varied greatly, ranging from roughly zero in some regions to over 30 percent in others.<sup>7</sup>

We then used those coefficients, combined with the actual characteristics of each person, to construct couple-specific *expected wages* for each township.<sup>8</sup> For each couple, we



**Table 2.** Descriptive Statistics for the Choice Models

	Movers				Stayers			
	Chosen		Alternative		Chosen		Alternative	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Expected wage (men) (1,000s)	244.3	52.15	242.3	50.24	224.8	43.74	232.0	46.96
× wage trajectory	297.1	97.54	291.8	115.7	272.3	72.42	279.3	102.2
× children	130.3	127.9	128.7	126.2	165.7	107.1	170.6	110.9
× pre-school children	105.2	127.8	103.4	125.5	77.52	112.7	79.59	116.0
× wage ratio	88.96	54.30	88.30	53.32	91.65	34.03	94.75	36.17
Expected wage (women) (1,000s)	182.1	25.70	176.0	25.84	175.6	23.16	173.8	25.50
× wage trajectory	230.9	49.58	225.3	69.83	224.2	45.22	222.1	65.95
× children	96.83	92.87	93.81	90.08	128.8	80.46	127.5	80.27
× pre-school children	77.42	92.38	74.75	89.25	59.24	84.96	58.78	84.52
× wage ratio	67.06	40.19	64.81	38.57	72.43	26.98	71.65	26.93
Current residence	.000	.000	.004	.061	1.000	.000	.000	.000
Ln (distance to home)	3.270	.827	4.861	.814	.000	.000	4.906	.699
Ln (distance to man's parents)	3.414	1.587	4.377	1.592	2.311	1.855	3.884	2.066
Ln (distance to woman's parents)	3.464	1.584	4.365	1.608	2.469	1.837	3.981	1.995
Ln (distance to man's hometown)	2.870	1.766	4.391	1.637	1.508	1.882	3.741	2.185
Ln (distance to woman's hometown)	3.007	1.672	4.551	1.428	1.867	1.894	4.219	1.833
Ln (distance to man's prior residences)	3.190	.992	4.870	.734	1.183	1.157	4.904	.686
Ln (distance to woman's prior residences)	3.201	.964	4.870	.729	1.242	1.158	4.903	.686
High school friends (men)	.657	.746	.065	.297	.655	.686	.055	.277
High school friends (women)	.723	.807	.066	.304	.746	.713	.065	.302
N	2,995		807,005		6,952		1,870,088	

**Table 3.** Conditional Logit Estimates of Location Choice

	(1)	(2)	(3)	(4)	Job Changers (5)
Expected wage (men)	.003** (.000)		.003** (.000)	.003** (.001)	.002** (.001)
Expected wage (women)		-.004** (.001)	-.004** (.001)	-.004** (.001)	-.003** (.001)
Current residence	1.644** (.063)	1.595** (.062)	1.623** (.063)	1.608** (.063)	1.960** (.109)
Ln (distance to home)	-1.817** (.017)	-1.824** (.016)	-1.825** (.017)	-1.834** (.017)	-1.611** (.028)
Labor-market fixed effects	No	No	No	Yes	Yes
Log-likelihood	-25663	-25675	-25649	-25606	-10893
Observations	9,947	9,947	9,947	9,947	3,217

\* $p < .05$ ; \*\* $p < .01$  (two-tailed  $t$ -tests).

calculated separate expected wages for the man and for the woman. We also assigned this expected income as the amount that couples could anticipate if they remained in their current locations.<sup>9</sup>

Because the predictions concern couples' consideration of *absolute* changes in income rather than percentage changes, we exponentiated the predicted incomes before entering them into the location choice models. One can therefore interpret the coefficients in terms of the implicit weighting of a unit (kroner or dollar) gain in expected income to the man versus a unit gain in expected income to the woman.

The models include two additional controls. *Current residence* is an indicator variable with a value of one for the region in which the couple currently resides. It captures both the financial and social costs of moving. *Distance to home* measures the logged road distance in kilometers between each couple's home address in 2004 and the centroid of each region to which they might move in 2005. Descriptive statistics for these variables appear in Table 2.

### Results

Table 3 reports the results. Positive coefficients indicate factors that increase the odds that a couple chooses a location. The results indicate that (1) couples have a tendency not

to move, (2) conditional on moving, they strongly prefer places closer to their current place of residence, and (3) higher expected income for the male partner attracts couples.

Somewhat surprisingly, women's expected wages have a negative coefficient. Couples appear *less* interested in places that would offer the woman a higher expected income. Note that this result does not stem from collinearity between men's and women's expected wages; entering the expected incomes separately produced roughly identical coefficients (Models 1 and 2). Danish couples therefore do not appear to weigh men's and women's wages equally, as the neoclassical model of family migration expects.

After estimating these baseline models, we relaxed the assumption of the equivalent attractiveness of regions. Places may vary in their attractiveness on other dimensions. Also, places differ in their costs of living, and areas with higher costs of living tend to offer higher wages (see Korpi, Clark, and Malmberg 2011). Failure to account for these differences could therefore bias our estimates of the importance of expected incomes. To address these issues in a conservative and flexible manner, we introduced fixed effects for each labor market (Model 4).<sup>10</sup> These fixed effects allow couples to prefer some regions over others. Although jointly significant, controlling for these region-specific factors had no meaningful effect on the estimated importance of

men's and women's expected wages on location choice.<sup>11</sup>

By including both movers and stayers in our analysis, we essentially assume that many stayers, at least subconsciously, considered moving to other places. If most of these stayers simply did not consider changes, then our estimates might underestimate the importance of expected income to location choice (by treating inertia as an active choice). To determine the extent to which this assumption might influence our results, Model 5 reports the estimates using only couples in which at least one member changed jobs between 2004 and 2005. Even among this restricted set of couples, we observe a similar pattern of preferences.

## CONTRIBUTION TO THE GENDER WAGE GAP

The effects that these asymmetric weights, and the relative mismatching of women to employers that they beget, have on the gender wage gap depends on three additional parameters: (1) the variance in men's potential earnings across regions, (2) the variance in women's potential earnings across regions, and (3) the correlation between men's and women's potential earnings. If regions differ little in the earnings they offer, then asymmetry in the importance assigned to the man's versus the woman's earnings would have little effect on the gender wage gap, because location choices would have little effect on income. Also, even if regions vary substantially, if men and women could generally expect to maximize their individual earnings in the same places, then even an asymmetric weighting of these potential gains would not increase gender inequality.

But moving from the parameters in Table 3 to a calculation of the extent to which these implicit weightings contribute to the gender wage gap would involve a number of complex calculations. Most importantly, to the extent that households attempt to maximize income, and therefore choose extreme values on the distributions, the calculations would

depend sensitively on distributional and functional form assumptions. We therefore turn to an indirect method, estimating the importance of location choices from the observed choices of singles and couples.

To begin, let us decompose the overall gender wage gap along two dimensions. On the one hand, we want to distinguish the portion of the gap due to single men and women from that due to couples. On the other hand, for each group, we want to isolate the effects of the choice of location from systematic differences in earnings across all regions (structural factors). The following equation can help us decompose the overall gender wage gap along these two dimensions:

$$\text{Gap} = p_{sm}(Opt_{sm} \times W_{sm}^{Max}) - p_{sf}(Opt_{sf} \times W_{sf}^{Max}) + \frac{p_c}{2}(Opt_{cm} \times W_{cm}^{Max} - Opt_{cf} \times W_{cf}^{Max}), \quad (3)$$

where  $p_{sm}$ ,  $p_{sf}$ , and  $p_c$ , respectively, refer to the proportions of the labor force represented by male single-earner households, female single-earner households, and dual-earner households;  $W^{Max}$  denotes the expected wage available in the region with the highest average wage for each man or woman; and  $Opt$  represents the degree to which each group effectively optimizes income in their location choice (calculated as the expected wage in the region chosen divided by the highest expected income available in any region).

Thus, the first term in the equation,  $p_{sm}(Opt_{sm} \times W_{sm}^{Max})$ , amounts to the proportion of single-earner male households times their average wage (because  $W^{Max}$  appears in the denominator of  $Opt$ , it cancels out). The second term captures the proportion of single-earner female households times their average wage. The difference between these two terms captures the amount of the overall gender wage gap attributable to single men and women. The final term calculates the proportion of the gender wage gap stemming from the differential earnings of men and women in couples. Some of this differential stems from the

fact that men and women differ systematically in their maximum potential earnings, captured by  $W_{cm}^{Max}$  and  $W_{cf}^{Max}$ ; some of it stems from the fact that men and women in couples also achieve different levels of these maximum potential earnings, captured by  $Opt_{cm}$  and  $Opt_{cf}$ .

Assuming that single and married individuals have hypothetically equivalent maximum earnings in each region, conditional on their human capital, allows us to rearrange the terms in a way that relates them more clearly to the mechanisms they represent. Consider the following algebraic rearrangement:

$$Gap = Opt_{sm} \times (p_{sm}W_m^{Max} - p_{sf}W_f^{Max}) + Opt_{cm} \times \frac{p_c}{2} (W_m^{Max} - W_f^{Max}) \tag{4}$$

$$+ (Opt_{sm} - Opt_{sf}) \times p_{sf}W_f^{Max} + (Opt_{cm} - Opt_{cf}) \times \frac{p_c}{2} W_f^{Max} \tag{5}$$

The top line, Equation 4, represents the portion of the gender wage gap that accrues from processes that limit the earnings of women relative to men across all regions, including blatant discrimination, penalties associated with motherhood, the sorting of women into particular industries and occupations with lower pay, and differentials in the accumulation of human capital. The second line, Equation 5, captures the portion of the gender wage gap that stems from systematic variation in the degree to which men versus women reside in regions where employers value their abilities and attributes.

Table 4 reports the components of this equation and the calculated amount of the gender wage gap that could stem from gender differences in the goodness of geographic fit. The  $p_{sm}$ ,  $p_{sf}$ , and  $p_c$  in this table report the proportions of the blue-collar and lower-white-collar labor force represented, respectively, by single men, single women, and couples. As the maximum wage for each individual, we used the 90th percentile expected wage for a single

**Table 4.** Wage Gap Decomposition

$Opt_{sm}$ (single men)	82.6%	
$Opt_{cm}$ (coupled men)	94.1%	
$Opt_{sf}$ (single women)	83.1%	
$Opt_{cf}$ (coupled women)	84.1%	
$p_{sm}$ (single men)	21.3%	
$p_{sf}$ (single women)	23.8%	
$p_c$ (couples)	54.9%	
$W_m^{Max}$ (all men)	340,488	
$W_f^{Max}$ (all women)	291,217	
Gap (structural)	28,017	64.1%
Gap (location choice)	15,709	35.9%

Note: *Opt* indicates the ratio of the expected income in the region of residence to the 90th percentile expected income in any region ( $W^{Max}$ ). *p* denotes the proportion of the population in each group.

man or woman with equivalent characteristics ( $W_m^{Max}$  and  $W_f^{Max}$  correspond to the average of these “maximums” across all blue-collar and lower-white-collar men and women).<sup>12</sup> The *Opt* values report the average percentage of this theoretical maximum achieved by each segment. Overall, our decomposition indicates that the better matching of men relative to women to places with employers that value their abilities and attributes might account for roughly 36 percent of the gender wage gap among blue-collar and lower-level, white-collar employees.

## PROXIMATE VERSUS ULTIMATE CAUSES

Although the evidence suggests that the undue weight that couples place on the man’s expected earnings in choosing where to live can account for a substantial portion of the gender wage gap, this mechanism is but a proximate cause. Why would couples differ in the value they place on a dollar depending on who earned it? We explore five potential possibilities. (1) Structural explanations: men may have more to gain from a particular location. (2) Intra-household bargaining: men and women care about different dimensions in location decisions. (3) Relative resources: men use their earnings power to dictate

location choices. (4) A motherhood penalty: women allocate more time to childcare or are penalized by employers. (5) Traditional gender roles: women's wages are undervalued due to traditional gender ideology.

### *Structural Explanations*

Our estimation strategy rules out most structural explanations. For example, if men have greater variation in their earnings across regions, then income-maximizing couples might focus on the man's earnings in their location decisions (Benson 2014; Shauman and Noonan 2007). However, our empirical design estimates the implicit weights attached to a unit increase in expected income for the man and the woman. Although couples may face differences in the supply of jobs available to each partner, in our design, those constraints would appear in the wage equations (and hence in the expected incomes) rather than in the implicit weights (coefficients).

One reason income-maximizing couples might not weight men's and women's expected earnings equivalently in our approach would be if the two differed in their income trajectories. Gender inequality increases with age and with job tenure (Blau and Kahn 2000; Esteves-Sorenson and Snyder 2012; Fernandez-Mateo 2009); over time, men accumulate more and larger raises than do their female counterparts. Although economists have suggested that women choose occupations with flatter income trajectories (Polachek 1981), these diverging choices and income trajectories may also reflect various forms of discrimination (Correll 2004). Regardless of the source of these differences, however, income-maximizing couples would respond by placing greater emphasis in their decisions on the man's job prospects, because, over time, the economic benefits of doing so would compound.

To examine whether different income trajectories might account for the greater weights given to men's jobs, we interacted the expected incomes with industry income trajectories. Industries vary in the rates at which

employees receive raises. We essentially examined whether couples in which the man worked in an industry with a steeper wage trajectory weighed the man's wage more heavily. As a measure of the *wage trajectory*, we calculated the five-year earnings increase for all blue-collar and lower-level, white-collar employees in the same two-digit industry as the focal individual—income in 2004 divided by income in 1999. Even within industries, men and women segregate into different jobs (Bielby and Baron 1986; England et al. 1988), so we calculated these trajectories separately for men and women.

Model 6 (Table 5) includes these interaction terms. Note that these models do not include the main effects of industry wage trajectories; the conditioning in the conditional logit acts much like a couple-specific fixed effect, and therefore purges from the estimates any variables that do not vary within couples across regions. Model 6 suggests that differences in expected income trajectories cannot explain the greater weight given to the man's income.

### *Intra-household Bargaining*

Another possible explanation is that men and women differ in the dimensions that attract them to particular places, and therefore also the dimensions on which they choose to bargain in intra-household decisions. Prior research, for example, suggests that women find it more difficult than men to separate their work and social lives; women may thus place greater value on living near family and friends (e.g., Curran and Rivero-Fuentes 2003; Mulder 2007). When choosing a place to live, women may therefore sacrifice moving to the best place for their career to live closer to loved ones.

To assess this possibility, we constructed several variables to capture the draw of family and friends. We began by constructing measures of *distance to man's parents* and *distance to woman's parents*. We located both parents of each member of the couple in 2004 and

**Table 5.** Conditional Logit Estimates of Location Choice

	(6)	(7)	(8)	(9)
Expected wage (man)	.003** (.001)	.007** (.001)	.005** (.001)	.012** (.002)
× wage trajectory	-.000 (.000)			
× pre-school children			.005** (.001)	
× wage ratio				-.012** (.003)
Expected wage (woman)	-.004** (.001)	-.006** (.001)	-.004** (.001)	-.010** (.002)
× wage trajectory	-.001* (.001)			
× pre-school children			-.007** (.002)	
× wage ratio				.009 (.008)
Current residence	1.756** (.076)	2.441** (.075)	2.445** (.075)	2.437** (.075)
Ln (distance to home)	-1.782** (.021)	-1.023** (.027)	-1.026** (.027)	-1.028** (.027)
Ln (distance to man's parents)		-.204** (.027)	-.206** (.027)	-.205** (.027)
Ln (distance to woman's parents)		-.230** (.026)	-.231** (.026)	-.230** (.026)
Ln (distance to man's hometown)		.000 (.023)	-.003 (.023)	-.000 (.023)
Ln (distance to woman's hometown)		-.038 (.023)	-.042 (.023)	-.039* (.023)
Ln (distance to man's prior residences)		-.443** (.038)	-.437** (.038)	-.438** (.038)
Ln (distance to woman's prior residences)		-.335** (.038)	-.330** (.038)	-.334** (.038)
Man's friends		.505** (.031)	.508** (.032)	.506** (.031)
Woman's friends		.534** (.022)	.534** (.022)	.535** (.023)
Labor-market fixed effects	Yes	Yes	Yes	Yes
Log-likelihood	-15,960	-23,408	-23,385	-23,395
Observations	8,534	9,947	9,947	9,947

\* $p < .05$ ; \*\* $p < .01$  (two-tailed  $t$ -tests).

calculated separate logged distances in kilometers from each possible township to these locations.<sup>13</sup> We also developed three pairs of measures to assess the importance of friends. (1) Because people form strong bonds during childhood and maintain preferences for living near their hometowns (Dahl and Sorenson 2010), we constructed measures for the

*distance to man's hometown* and *distance to woman's hometown*.<sup>14</sup> (2) Because people form friendships in and attachments to other places they have lived, we created a second pair of measures: *distance to man's prior residences* and *distance to woman's prior residences*. To do so, we identified every place that each member of the couple had lived from 1980 to

2004, calculated the logged distance between each of these prior locations and every township, and then averaged these distances. (3) We also developed a measure of (probable) high school friends (*man's friends* and *woman's friends*). Following Dahl and Sorenson (2010), we calculated, separately for the man and the woman, the proportion of former classmates from the same graduating year and secondary school living in each township,  $j$ , in 2004, and divided this proportion by the proportion of individuals from the same school in each township that graduated either one year before or one year after the focal individual (to control for other factors that might influence the migration of individuals educated in one township to another township):

$$friends_{ij} = \frac{hs_{j\tau}}{(hs_{j\tau-1} + hs_{j\tau+1})/2},$$

where  $hs_{j\tau}$  denotes the proportion of former students of a high school that graduated in year  $\tau$  currently employed in region  $j$ .

Couples clearly factor proximity to family and friends into their location decisions (Model 7). However, they appear to place roughly equal weighting on proximity to the man's and to the woman's family and friends; in none of the pairs of measures can we reject the null of equal coefficients (weights). Although these factors help explain the locations that couples choose, they cannot account for, and appear even to mask, asymmetry in couples' implicit weightings of men's and women's prospective wages.

### Relative Resources

The relative resource hypothesis essentially argues that men can impose their preferences in family decisions because they control, through their income, access to economic resources (Blood and Wolfe 1960). Although it differs from structural explanations and the gender role hypothesis in terms of how it portrays household decision making, it also predicts that the man's expected income will dominate location choices (Shauman 2010).

Although difficult to distinguish in most empirical analyses, the relative weighting of proximity to family and friends gives us some insight into this hypothesis. According to relative resource theory, the husband's bargaining power should extend to noneconomic decisions (Blood and Wolfe 1960). Hence, one would expect the locations of the man's family and friends to take precedence as well. Danish couples, however, appear to weight these preferences equally, suggesting the man does not simply dictate these household decisions.

### Motherhood Penalty

The tendency for mothers to leave the labor force, and therefore to accumulate less human capital, is often cited as an important contributor to the gender wage gap (e.g., Bertrand, Goldin, and Katz 2010; Light and Ureta 1995). Traditional gender roles place the burden of childcare on women, and therefore mothers often reduce their participation in the labor force. Even in households that share childrearing responsibilities, if employers expect mothers might reduce their effort at work, they may pass over them in promotions and pay raises (see Budig and England 2001). In either case, income-maximizing households would respond by weighting women's wages less heavily. Consistent with this idea, prior research finds that geographic mobility increases around the arrival of a child (Clark and Withers 2009).

To assess the extent to which motherhood might influence couples' location choices, we interacted expected incomes with an indicator variable for the presence of *pre-school children* in the household (children under age 6). Once again, these models do not include the main effects, because the variable does not vary within couples across regions. Couples with young children place significantly higher implicit weights on the man's earnings and significantly lower ones on the women's income (Model 8).

But this factor alone cannot fully account for the asymmetry in the importance of men's and women's expected earnings to the

attractiveness of regions. Note that with these interaction effects, the main effects of expected income essentially capture their relative importance for couples without preschool children. Even among this set, however, the coefficients indicate that couples implicitly place greater emphasis on maximizing men's incomes.

### *Gender Ideology*

Finally, the greater importance of husbands' potential wage gains to location choice may stem from within-couple beliefs about appropriate gender roles. A very large literature in sociology documents asymmetry in the expectations couples have for the division of labor within the household. Although societal norms have been shifting toward more egalitarian expectations, the traditional view holds that the man plays the role of the economic provider, or breadwinner, while the woman maintains the household (Hood 1983; Potuchek 1997; Shelton and John 1996; Thompson and Walker 1989). These traditional beliefs have been so ingrained that, even among dual-career couples, women typically account for the vast majority of time spent on both the maintenance of the household and childcare (see Craig and Mullan 2011; Hook 2010).

Bielby and Bielby (1992) note that these beliefs might spill over to location choice. In their survey, women proved far more willing to sacrifice their own careers for those of their spouses, even women with more egalitarian beliefs about the division of labor. To the extent that these beliefs explain the asymmetric weights placed on the husband's versus the wife's prospective income, one would expect couples with more traditional beliefs to exhibit even greater asymmetry.

Connecting this possibility to the data, however, is not without difficulty. Most studies simply assume that asymmetric weightings of husbands' and wives' human capital reflects such gender roles. But, as noted earlier, the neoclassical economics model, which assumes no such gender roles, could also account for those results. Bielby and Bielby (1992) and

Cooke (2008), by contrast, use survey data that includes attitudinal questions. Most registry data, however, the Danish data included, do not include questions on beliefs about appropriate gender roles.

Our approach stems from the idea that one would expect a strong correlation between the degree to which couples hold traditional values and the amount that women contribute to household income. That correlation might emerge either because gender ideology constrains women from earning more (Bertrand, Kamemica, and Pan 2015), or because these relative contributions shift a couple's attitudes (Bolzendahl and Myers 2004; Davis and Greenstein 2009).<sup>15</sup> To assess these differences, we interacted the proportion of household income accounted for by the woman in 2004 (pre-move) with expected wages, to see if couples with greater asymmetry in their current earnings differentially weighted potential gains to men and women.

Model 9 suggests they do. Couples in which the woman accounted for a larger share of household income placed smaller weights on the man's prospective earnings when choosing a location. Recall that these weightings apply to a potential dollar or unit gain in income. Couples with more traditional divisions of labor therefore end up choosing locations even less consistent with income maximization. But we should note that even if the woman accounts for 100 percent of household income, our results suggest the couple would still not weigh her prospective earnings more heavily in their location choices.

## **DISCUSSION**

Social scientists have long suspected that the location decisions of dual-earner couples might contribute to the gender wage gap, with couples giving greater weight to men's careers in their choices (Bielby and Bielby 1992; Mincer 1978). Research has nonetheless been equivocal on whether this asymmetry represents a rational response to structural constraints, a maximization of household income, or results from enacting beliefs about traditional gender



roles. Extant research is also largely silent on the proportion of the gender wage gap that this allocative asymmetry might explain.

We revisited these questions using data registries maintained by Statistics Denmark. By calculating couple-specific counterfactual wages for each region (on the basis of the earnings of others with similar observable characteristics), we could estimate the degree to which couples implicitly valued prospective earnings for men and for women in their location choices. Danish couples placed much greater weight on men's than on women's expected income. A decomposition of these effects determined that the resultant mismatching of women to employers could account for up to 36 percent of the gender wage gap.

Our results therefore suggest that the allocation of people to places contributes importantly to gender inequality. In trying to understand the ultimate sources of these asymmetric allocations, our analyses point to two prime suspects, both related to traditional gender roles. First, we observed a motherhood penalty. Couples with young children placed greater weight on men's and less weight on women's potential earnings. This effect exists despite the fact that Denmark has some of the most generous policies for providing state assistance in childcare (Craig and Mullan 2010). Because our estimations excluded couples in which the mother did not maintain full-time employment, this motherhood penalty does not appear to stem from household income maximization.

Second, we observed an undervaluation of women's wages, particularly among couples where the man already earned more than the woman. But, even among couples in which the wife accounts for the majority of household income, our estimates suggest that couples would still place greater value on a dollar (kroner) increase in the man's potential earnings relative to the same dollar (kroner) increase in the woman's potential earnings. Moreover, because the man's earnings appear to become more important as they account for a larger share of the household earnings, these effects may cumulate. As couples move to

regions that favor the husband, his share of the overall income will increase, meaning that couples may then allocate even more weight to his earnings potential when considering future moves.

Although useful for empirical precision, our focus on a subset of the Danish population raises at least two questions: First, would these joint geographic decisions also account for a similar proportion of income inequality among professionals? On the one hand, one might expect highly educated people to demonstrate less asymmetry in their decisions concerning the importance of men's and women's careers. Whether through selection or exposure to nontraditional ideas about gender roles, people with more education tend to have more egalitarian beliefs about the importance of men's and women's careers (Pampel 2011). On the other hand, the consequences of locating in the right region matter much more for these individuals. Professionals typically develop highly specific skills, and therefore their expected earnings vary much more from one region to the next (Costa and Kahn 2000). As a consequence, even small asymmetries in power couples' location choices could produce large levels of gender inequality in income. It therefore remains an interesting open question.

Second, would one expect larger or smaller effects in other countries? This is again an open question, but we can say something about the factors that should determine the relative importance of these geographic decisions to the gender wage gap. First, one would expect their importance to increase with asymmetry in the relative weightings placed by couples on men's and women's wages. On this dimension, we would anticipate larger differences in other countries, because Denmark—relative to the rest of the world—has low levels of gender segregation and gender inequality (Craig and Mullan 2010; Hausmann et al. 2010). Second, the importance of these decisions should increase with geographic mobility. As populations become more mobile, location choices contribute more strongly to earnings differences across individuals.

Relative to its small size, Denmark has high levels of geographic mobility, on par with the United States (Dahl and Sorenson 2010). In countries with lower levels of geographic mobility, these joint choices may contribute less to gender inequality. Finally, the importance of these choices should also increase with the degree of geographic variation in possible employers. On this dimension, one would expect much larger differences in most other countries. Denmark is relatively small and homogenous, about the size of Massachusetts, Rhode Island, and Connecticut combined. The United States as a whole, or even countries like Italy or the United Kingdom, have much greater geographic scale and variation and therefore much larger opportunities for location to matter.

Although determining the extent to which these joint decisions influence gender inequality in other countries will depend on future research, our study contributes to the literature in multiple ways. First, we introduced a critical test for discriminating between gender-neutral and gender-biased migration. Crucial to this test is the introduction of an approach to specifying counterfactual wages for what each member of a couple might earn in another region. Second, we devised a decomposition that allows researchers to connect these joint choices to the gender wage gap and to estimate the proportion of the gap that stems from the systematic mismatching of married women to regions that would most highly value their abilities and attributes. Finally, our analyses explore the ultimate mechanisms underlying these asymmetric weightings and find that—at least among Danish blue-collar and lower-level, white-collar workers—they appear to stem from the combination of a motherhood penalty and the enactment of traditional gender roles.

Our results call additional attention to the role of allocative processes in the production of gender inequality. They therefore bolster the literature on gender sorting, which demonstrates that men and women pursue different kinds of careers (e.g., Tam 1997) and find

themselves employed by different organizations and in different job titles (e.g., Fernandez and Sosa 2005; Petersen 1995). Here, couples' joint decisions, prioritizing the man's earnings in location choices, creates a matching process that results in men being systematically better fit to potential employers than their female partners.

As with other supply-side mechanisms, our results suggest that public policies for eliminating gender inequality face a fundamental limit if they focus only on the discriminatory actions of employers (Petersen et al. 2014). Even if all organizations operated in a gender-blind manner, if couples decide to locate such that married men sort systematically into labor markets better suited to them than their wives, then gender income inequality will persist. That is not to say that public policy could not help alleviate these disparities. But such policies would need to focus on either education, which appears to move people away from traditional gender roles, or promoting a more diverse set of employers in all regions, which would decrease the likelihood that any individual has difficulty finding a well-matched employer in any particular place (Sørensen and Sorenson 2007).

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## Notes

1. As a member of the European Union, Denmark conforms to the principles of the Treaty of Rome and has enacted an Equal Pay Act (in 1976). Despite these legal protections, women in all European countries still earn less than men. The Act primarily protects women against the most obvious forms of discrimination, such as lower pay than men with the same job title, working for the same employer.
2. Note, however, that Gupta and Rothstein (2005) included location (province) as a measure of human capital. The variance explained by their decomposition therefore overlaps with that explored here.

3. Denmark has relatively high rates of unmarried cohabitation (Soons and Kalmijn 2009). All of the results hold if we restrict the estimation to couples who are legally married.
4. We coded education into three categories: *folkeskole* (primary education), *gymnasium* (three years of secondary schooling), and college. For occupations, the IDA includes two classifications for blue-collar workers, corresponding roughly to skilled and unskilled, and three for white-collar workers (only one of which, lower-level white-collar, occurs in our subsample).
5. Women generally commute shorter distances than men (for a review, see Fernandez and Su 2004). Denmark is no exception, with men commuting an average of 20.7 km (12 miles) and women an average of 14.3 km (9 miles).
6. Because of insufficient observations in one region, we could estimate wage equations for women in only 267 regions. The region with insufficient observations therefore drops out of the choice set.
7. Note that the second and fourth columns report the dispersion of the estimated point estimates for the region-specific wage equations. One cannot use them to assess the significance of a factor overall. For example, nearly all of the 268 regions show a significant return to a college education at the  $p = .05$  level, but the returns vary more across regions than within them.
8. We set firm tenure to zero, and the mover and job change indicators to one, for townships other than the individual's place of residence.
9. Alternatively, one might use actual income for what the couple could expect to earn if they did not move, but actual income also incorporates the returns to unobserved characteristics. Mixing actual income with expected income could therefore bias comparisons of the current residence to other places (Dahl and Sorenson 2010). Estimates using actual income for the current location nevertheless produced statistically equivalent results.
10. For labor markets, we use the 21 labor markets that Andersen (2000) defined on the basis of Danish commuting patterns.
11. The conditional logit still assumes that, net of observables and region fixed effects, couples equally prefer all regions—the independence of irrelevant alternatives (IIA) assumption. As a robustness check, we therefore re-estimated the models using the mixed logit. This approach, which does not assume IIA, allows couples to vary in their weights, estimating random coefficients for each of the variables (Train 2003). The mixed logit produced statistically equivalent results at the mean.
12. Using the 90th percentile reduces the sensitivity of our decomposition to outliers. Calculations using the 75th or 95th percentile as the maximum generated similar results.
13. If the parents lived at different addresses, we averaged their distances.
14. We do not always have information on where people lived from birth. We therefore used the location of the person's secondary school as a proxy for hometown.
15. Consistent with research that suggests beliefs about appropriate gender roles get transmitted across generations (for a review, see Davis and Greenstein 2009), our exploration of this issue found that one could trace these differences in weighting to the husband's and wife's mothers' participation in the labor force.

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