

# Geography, joint choices and the reproduction of gender inequality\*

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May 22, 2013

**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 (i) that Danish couples chose locations with higher expected wages for the man than for the woman, (ii) that the better matching of men in couples to local employers could account for up to 36% of the gender wage gap, and (iii) that the greatest asymmetry in the apparent importance of the man's versus the woman's potential earnings occurred among couples with pre-school age children and where the male partner had parents with unequal earnings (both implicating traditional general roles as a cause).

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\*We thank the Danish Council for Independent Research and Yale University for generous financial support and Isabel Fernandez-Mateo, Marissa King, Cristobal Young, and seminar participants at the University of Chicago and Yale for their comments on earlier versions of this paper. The usual disclaimer applies.

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Despite a narrowing of the gender wage gap, women still earn less than men (Blau and Kahn 2000). That's true in the United States, as well as in every other country in the world (Hausmann et al. 2010). Though 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 has been that the sorting of men and women into jobs accounts for much of the ongoing inequality. 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 (Tam 1997; Correll 2004).

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 (Sørensen 1996; 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' than the wives' career prospects, men earn more than women.

Such an effect could reflect gender roles. To the extent that couples consider the husband the economic provider, one might expect them to emphasize his employment in deciding where to live (Bielby and Bielby 1992). Consistent with this claim, the husband's human capital has more predictive power than the wife's on the decision of whether to move (e.g., Duncan and Perrucci 1976; Shauman 2010).

But gender asymmetry in this goodness of geographic fit could arise even in the absence

of gender roles. Income maximizing couples might rationally relocate to regions that bring gains to men but losses to women if the husbands' gains outweighed the wives' losses (Sandell 1977; Mincer 1978). Consistent with this argument, dual-earner couples move less often than single-earner couples (Cooke 2008), and among dual-earners, husbands' incomes usually increase after moves, while wives' wages wane (LeClere and McLaughlin 1997; Cooke 2003).

It has, however, been difficult to distinguish between these two accounts. On the one hand, biased beliefs due to gender roles 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, for example, may work in occupations that vary more in pay across regions and therefore have more to gain from moving (Shauman and Noonan 2007).

It has also been 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. Meanwhile, those that do examine earnings compare movers to stayers, even though these groups differ on numerous dimensions.

We address these limitations by using data from Denmark to estimate directly whether dual-earner couples – whether legally married or co-habiting – appear more sensitive to the potential income gains to the man relative to the woman in their choices of residential locations. Earnings of similar others – those 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 2010b).

To ensure an adequate number of similar others across regions, we restricted our analyses to couples employed in blue-collar or 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% 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.

Though 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: (i) Structural explanations: Men may work in occupations that vary more in wages across regions or with steeper wage trajectories. Couples might then respond to these structural factors in their location choices (Mincer 1978; Shauman and Noonan 2007). (ii) 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 their partners (Mulder 2007), leading them to prefer places that do less to promote their careers. (iii) 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). (iv) Motherhood penalty: Women may reduce their participation in the labor force to provide childcare or anticipate that employers will penalize them for having a family (Budig and England 2001; Clark and Withers 2009). (v) Gender roles: Couples may see the man as the breadwinner (Hood 1983; Potuchek 1997). As a consequence, they may focus on his career when deciding whether to move and where to live (Bielby and Bielby 1992).

The fourth and fifth possibilities – the motherhood penalty and gender roles – appear most consistent with our results. Our empirical design rules out most structural explanations. Though the locations of loved ones matter, couples appear to weigh proximity to both

the man's and woman's family and friends equally, inconsistent with the 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's father earned more than his mother (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 optimize their household earnings; they placed undue emphasis on the man's potential income in choosing where to live. We therefore provide some of the most direct evidence to date against the neoclassical model of family migration. Second, we determine that these intra-couple decisions contribute importantly to the persistence of gender inequality. In particular, we calculated that this allocative mechanism might account for up to 36% of the gender wage gap. Third, we explore the causes of this allocative asymmetry, tracing it to two potential sources: a motherhood penalty and couple-level beliefs about 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 fit to their abilities and attributes (Quillian 1999; Clark et al. 2007; Dahl and Sorenson 2010b).

But individuals do not have equal access to these opportunities. Immigration policies, for example, often explicitly discriminate against those 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 therefore contributes to inequality.

Here, 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 sociological, 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 their wives’ earnings (Sandell 1977; Mincer 1978). 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  $G_1 + G_2 > 0$ . Obviously, 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 gains from the winner exceed the losses of the spouse, the income-maximizing couple should still 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) referred to the individual who sacrifices his or her 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. Mincer (1978) nevertheless noted 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 that men have more human capital and therefore more to gain from changing employers (and regions). Similarly, to the extent to which demand-side (structural) gender discrimination exists – that is, on the part of employers – household location decisions will exacerbate this inequality because a proportional gain in the husband's income translates into a greater absolute gain for the household than 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), have confirmed that dual-earner couples have lower migration rates than single men and women (for a review, see, Cooke, 2008; for evidence specific to Denmark, see Dahl and Sorenson, 2010b).

The second concerns the effects of migration. Here, the model predicts that moves should increase husbands' incomes but decrease wives' wages. Sandell (1977) provided some of the first evidence supporting this expectation. For American families that moved between 1967 and 1971, he found that husbands' incomes increased by an estimated \$832 while wives' incomes *declined* by \$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). Subsequent studies, moreover, have found that migration not only

decreases wives' wages following the move, but also the number of hours they work and their probability of participating in the labor force (e.g., 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 that men and women should play. These gender roles have a number of consequences. Numerous studies, for example, have found that couples usually see the husband as the “breadwinner” for the family and the wife as being responsible for the household and child care (for reviews, see Thompson and Walker 1989; Shelton and John 1996). 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 (Presser 1996; Hook 2010; Offer and Schneider 2011; Craig and Mullan 2011).

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

The primary line of empirical research supporting this asymmetry, however, has come

not from attitudinal questions but from examining the correlates of couples' moving decisions (Shauman and Noonan 2007). In particular, study after study has demonstrated that the human capital characteristics of husbands – such as their levels of education and work experience – have more explanatory power than those of wives on decisions of whether to move (Duncan and Perrucci 1976; Compton and Pollak 2007; Shauman 2010).<sup>1</sup> Indeed, Tenn (2010) reported that the importance of wives' human capital to couples' migration decisions has changed little in the United States from 1960 to 2000, despite a rapid rise in women's participation in the labor force.

These beliefs about gender roles also offer 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, comes from 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 that the couple would stay while couples who valued the husbands' careers more might move. Following this reasoning and supporting the idea that gender roles influence geographic choices, Jacobsen and Levin (1997) reported that the losses to wives exceeded the gains to husbands in the United States and therefore that these effects cannot 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. It 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

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<sup>1</sup>One could also interpret these patterns as consistent with relative resource theory, the idea that men dictate decisions because they have a comparative advantage in earnings (Shauman 2010).

of gender roles: For instance, if a couple expected the wife to leave the labor force – even temporarily – they might rationally focus on the potential gains to the husband in choosing a place to live (Clark and Withers 2009). The importance of husbands’ human capital to migration decisions therefore could arise also 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 the choices of places 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 (such as 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 et al. 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, reported that an average full-time female employee in Denmark earned about 80% 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) of her male counterpart (U.S. Department of Labor 2001).

This wage gap exists despite the fact that Denmark, overall, enjoys high levels of gender

equality.<sup>2</sup> Danish women participate in the labor force at 92% of the rate of men (versus 85% for the United States); and they account for 38% of the members of parliament (versus 20% in the United States), the majority of professional and technical workers, and nearly 60% of all college and university students (Hausmann et al. 2010). Overall, the World Economic Forum ranked Denmark 7<sup>th</sup> in the world – while the United States ranked 19<sup>th</sup> – in terms of gender equality (Hausmann et al. 2010).

Although the sources of this 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 found 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% of the gap.<sup>3</sup>

Though these and other mechanisms deserve further investigation, here we examine the extent to which another allocative mechanism – household decisions about where to live – might account for the remaining gender wage gap.

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<sup>2</sup>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.

<sup>3</sup>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.

## Joint geographic choices

We began by estimating the degree to which expected incomes in a region influenced couples' choices of where to live. A standard statistical framework for evaluating these choices has been to consider the actor's preference – in this case, couple  $i$  – for living in a region,  $j$ , 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 as:

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

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  $\epsilon_{ij}$  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 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. We also avoid the selection

bias inherent in focusing only on movers (Dahl and Sorenson 2010b), 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 nonetheless 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 to 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 allowed us to avoid these limitations.

Although IDA includes 25 years of data, we restricted the analysis to moves occurring from 2004 to 2005. Delimiting 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). We chose the most recent year available to maximize the number of individuals for whom we could observe parents' participation in the labor force (more below).

We defined as “couples” mixed gender pairs of non-related adults (age  $> 18$ ) cohabitating in both 2004 and 2005, whether legally married or not.<sup>4</sup> We excluded couples with either member over age 55 to avoid including location choices that might reflect retirement. A total

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<sup>4</sup>Denmark has relatively high rates of unmarried cohabitation among couples (Soons and Kalmijn 2009). All of the results nevertheless hold if we restrict the estimation to those legally married.

of 254,948 couples met these screens.

From this population, only those 186,919 couples where both the man and the woman worked full-time in both 2004 and 2005 entered our sampling frame. Our research design required such an approach because one cannot estimate the importance of expected earnings for someone intending to leave the labor force. We also restricted our study to Danes employed in blue-collar or lower-level white-collar occupations (118,235 couples). Although this subset represents only about 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, similar others do not always exist in many regions.

From this sampling frame, we extracted a stratified random sample, oversampling movers as these couples contribute more statistical power to our estimates. To recover population-level estimates of the parameters of interest, our analyses included inverse probability-of-sampling weights. We lost some cases ( $< 1\%$ ) because IDA did not have data on one or more variables of interest. In total, our sample for estimation included 2,995 movers and 6,952 stayers. Since we estimated a conditional logit, our data set contained 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 therefore comprised 2,665,796 couple-region observations.

*Place of residence:* Our dependent variable captures whether the couple chose to reside in a particular township in 2005. Alternatively, one might consider the choice of work location as the dependent variable. 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 earnings of the spouse.

*Expected income:* The incomes that men and women expect in a particular region are the key independent variables. Past studies of location choice have usually relied on the average wage in a region as a proxy for the income that an individual might expect there (Dahl and Sorenson 2010b). 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 and therefore one could not determine whether the prospective incomes for men and women differed in their influence on where couples chose to live.

Our approach uses the wages of similar others to create individual-specific counterfactual wages for what a person might earn in another region (Dahl and Sorenson 2010b). We calculated this expected income in two stages. In the first stage, 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 the 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>5</sup> Estimating these equations separately for men and women allows differential returns by gender to equivalent human capital (e.g., Castilla 2008; Fernandez-Mateo 2009).

To attach wages to regions, we used locations of residence rather than locations of em-

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<sup>5</sup>We coded education into three categories: *Folkeskole* (primary education ending around age 15), *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).

ployment.<sup>6</sup> Doing so accounts for the possibility of commuting. Since our wage equations predict expected earnings on the basis of where a person lives they essentially incorporate not just jobs in the focal region but also those in all surrounding regions to which residents of the focal region currently commute.

In estimating these wage equations, we only included members of couples for two reasons: One, individuals select into cohabitation and marriage and therefore the composition of singles, both on 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. Though we included 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>7</sup> Overall, the coefficients appeared stable and consistent with prior research. For example, in the average region, having a college degree increased expected income by roughly 10%. The returns to higher education nevertheless varied greatly, ranging from roughly zero in some regions to more than 30% in others.<sup>8</sup>

We then used those coefficients, combined with the actual characteristics of each person, to construct individual-specific *expected wages* for each township.<sup>9</sup> In particular, for each

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<sup>6</sup>Despite the fact that Danes rarely commute far – Dahl and Sorenson (2010a), for example, determined that few commuted more than 10 km (6 miles) – nearly half (52%) of the men and women in our sample reside in a different township from the one in which they work. These cases generally represent people living in a suburb and commuting to the neighboring urban center.

<sup>7</sup>Because of insufficient observations in one region, we could only estimate wage equations for women in 267 regions. That region therefore drops out of the choice set.

<sup>8</sup>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 every one of the 268 regions showed a significant return to a college education at the  $p = .05$  level but the returns varied more across regions than within them.

<sup>9</sup>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.

couple, we 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>10</sup>

Since the predictions concern couples' consideration of *absolute* changes in income rather than of 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. This variable captures both the financial and social costs of moving. *Distance to home*, meanwhile, measures the logged road distance in kilometers between each couple's home address in 2004 and the centroid of each labor market 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. So, the results indicate (i) that couples have a tendency not to move, (ii) that, conditional on moving, they strongly prefer places closer to their current place of residence, and (iii) that 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 also

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<sup>10</sup>Alternatively, one might use actual income for what they could expect to earn if they did not move, but actual income incorporates also the returns to unobserved characteristics. Mixing actual income with expected income could therefore bias the comparisons of the current residence to other places (Dahl and Sorenson 2010b). Effectively, however, this choice had no real implications as estimates using actual income for the current location produced statistically-equivalent results.

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 & 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 places with higher costs of living tend to offer higher wages (e.g., Korpi et al. 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>11</sup> These fixed effects allow couples to prefer some regions over others. Though jointly significant, controlling for these fixed region-specific factors had no meaningful effect on the estimated importance of men’s and women’s expected wages on location choice.<sup>12</sup>

By including both movers and stayers in our analysis, we essentially assume that many stayers, at least implicitly, considered moving to other places. If most of these stayers simply did not consider changes then our estimates might understate 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 observed a similar pattern of preferences.

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<sup>11</sup>For labor markets, we use the 21 labor markets that Andersen (2000) defined on the basis of Danish commuting patterns.

<sup>12</sup>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 mean results.

## 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: (i) the variance in men's potential earnings across regions, (ii) the variance in women's potential earnings across regions, and (iii) the correlation between men's and women's potential earnings. If regions differed little in the earnings that they offered, 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 varied substantially, if men and woman 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 optimize, and therefore choose extreme values on the distributions, the calculations would depend sensitivity on distributional and functional form assumptions. We therefore turned 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 of these groups, 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 to decompose the overall gender

wage gap along these two dimensions:

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

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 by 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 therefore captures the amount of the overall gender wage gap attributable to single men and women. The final term, meanwhile, calculates the proportion of the gender wage gap stemming from the differential earnings of men and women. 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 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 that they represent. Consider

the following algebraic rearrangement:

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

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

The top line of this 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 (5), meanwhile, 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, by single women and by couples. We used as the maximum wage for each individual the 90<sup>th</sup> percentile expected wage for a single man or woman with equivalent characteristics ( $W_m^{Max}$  and  $W_f^{Max}$  correspond to the average of these “maximums” for all blue-collar and lower-white-collar men and women). Using the 90<sup>th</sup> percentile reduces the sensitivity of our decomposition to outliers.<sup>13</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 that value as employees their abilities and attributes might account for roughly 36% of the gender wage gap among blue-collar and lower-level white-collar employees.

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<sup>13</sup>Decomposition calculations using the 75<sup>th</sup> or 95<sup>th</sup> percentile as the maximum generated similar results.

## Proximate versus ultimate causes

Though the evidence suggests that the undue weight that couples place on the man's expected earnings in choosing of where to live can account for a substantial portion of the gender wage gap, this mechanism is but a proximate cause. It begs the question of why couples would differ in the value that they placed on a dollar depending on who earned it. We explore five potential possibilities: (i) structural explanations: men may have more to gain from a particular location, (ii) intra-household bargaining: men and women care about different dimensions in the location decision, (iii) relative resources: men use their earnings power to dictate the location choice, (iv) a motherhood penalty: the woman allocating time to child care or being penalized by employers, and (v) gender roles: the undervaluing of women's wages resulting from traditional gender roles.

**Structural explanations:** Our estimation strategy rules out most structural explanations. For example, if men had greater variation in their earnings across regions, then one might expect income-maximizing couples to focus on the man's earnings in their location decisions (Mincer 1978; 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. Though couples may face differences in the supplies 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 earning equivalently in our approach would be if the two differed in their income trajectories. Gender inequality has been found to increase with age and with job tenure (Blau and Kahn 2000; Fernandez-Mateo 2009; Esteves-Sorenson and Snyder 2012); over time, men accumulate

more and larger raises than their female counterparts. Though 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 since, over time, the benefits of doing so would compound.

To examine whether differing 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 examine whether couples in which the man works in an industry with a steeper wage trajectory weigh 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-white-collar employees in the same two-digit industry as the focal individual—income in 2004 divided by income in 1999. Since even within industries men and women segregate into different jobs (Bielby and Baron 1986; England et al. 1988), 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 over 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 and that they may place greater value on living near family and friends (e.g., Curran and Rivero-Fuentes 2003; Mulder 2007). When choosing a place to live, they 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 calculated separate logged distances in kilometers from each possible township to these locations.<sup>14</sup> We also developed three pairs of measures to assess the importance of friends. First, since people form strong bonds during childhood and therefore maintain preferences for living near their hometowns (Dahl and Sorenson 2010b), we constructed measures for the *distance to man's hometown* and *distance to woman's hometown*.<sup>15</sup> Second, since people also form friendships in 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. Third, we developed a measure of (probable) high school friends (*Man's friends* and *Woman's friends*). Following Dahl and Sorenson (2010b), we calculated, separately for the husband and the wife, 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

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<sup>14</sup>If the parents lived at different addresses, we averaged their distances.

<sup>15</sup>We do not always have information on where children lived from birth. We therefore used the location of the person's secondary school as a proxy for hometown.

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 decision (Model 7). However, couples appear to place roughly equal weighting on proximity to the husband's and to the wife's family and friends; in none of the pairs of measures, can we reject the null of equal coefficients (weights). Though these factors help to explain the locations that couples choose, they cannot account for and appear to even partially mask asymmetry in couples' weightings of men's and women's prospective wages.

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

Though 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 also to non-economic decisions (Blood and Wolfe 1960). Hence, one would expect the locations of his family and friends to take precedence as well. Danish couples, however, appear to weight these preferences equally suggesting that 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 has often been cited as an important contributor to the gender wage gap (e.g. Light and Ureta 1995; Bertrand et al. 2010). Traditional gender roles place the burden of child care on women and therefore mothers often reduce their participation in the labor force. Even in households that share childrearing responsibilities, if employers expect that mothers will reduce their effort at work, they may pass over them in promotions and pay raises (e.g., Budig and England 2001). In either case, income-maximizing households might then respond by weighting women’s wages less heavily. Consistent with this idea, prior research has found 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 the expected incomes with an indicator variable for the presence of *pre-school children* in the household (i.e. children under the age of six). Once again, these models do not include the “main” effects since the variable does not vary within couples across regions. Couples with pre-school 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 essentially capture the relative importance of expected incomes for couples without pre-school children. Even among this set, the coefficients indicate that couples implicitly place greater emphasis on maximizing men’s incomes.

**Gender roles:** Finally, the greater importance of husband’s potential wage gains to location choice may stem from within-couple beliefs about appropriate gender roles. In particular, couples may consider the role of generating income as more of the man’s role (Hood 1983;

Thompson and Walker 1989; Shelton and John 1996; Potuchek 1997). If so, then they may choose locations primarily for the benefit of the husband’s career (Bielby and Bielby 1992; Shauman and Noonan 2007).

Connecting this possibility to the data, however, is not without difficulty. Most studies have simply assumed that asymmetric weightings of husbands’ and wives’ human capital reflected such gender roles. But, as noted above, the neoclassical economics model, which assumes no such gender roles, could also account for those results. Bielby and Bielby (1992), by contrast, made a connection between self-reported intentions to move and gender roles through the use of survey data that included attitudinal questions. Most registry data, IDA included, however, do not include questions on beliefs about gender roles.

Our approach stems from the idea that children learn about these norms from the interactions of their parents. Psychologists have claimed that children learn gender roles by observing their parents’ behaviors (Bandura 1977). Consistent with this idea, studies have found that the gender roles parents display during the early years of their children’s lives have a profound influence on the gender roles that those children assume as adults (Cunningham 2001; Fernandez et al. 2004; van Putten et al. 2008).

To assess whether the gender roles observed among parents might influence couples decisions, we interacted expected wages with two indicator variables, one for the man’s parents and a second for the woman’s. Each of these variables, *man’s parent inequality* and *woman’s parent inequality* took a value of one if the father earned more, on average, than the mother during the last five years, prior to age 60, in which both participated in the labor force.<sup>16</sup> As one would expect given the gender wage gap, fathers generally earned more than mothers.

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<sup>16</sup>Continuous measures of relative income contribution by mothers produced similar, though slightly weaker, results. Because this variable requires information on labor force participation, we excluded cases in which both parents exited the labor force before 1985.

But substantial variation exists. Even among this earlier generation, the woman earned more than the man in 30% of cases.

Model 9 includes these interaction terms. Interestingly, the only significant coefficients are the interactions between the income differential of the man’s parents with the weightings of the man’s and the woman’s expected wages.<sup>17</sup> Couples where the man had been exposed to more traditional gender roles as a child – those in which his father earned more than his mother – placed greater weights on the man’s income and lesser weights on the woman’s earnings in their location choices. Overall, the motherhood penalty and the exposure to more traditional gender roles can account for roughly two-thirds of the asymmetry in the implicit weighting of men’s and women’s wages.

## 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 (Mincer 1978; Bielby and Bielby 1992). 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 has also been 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 individual-specific counterfactual wages for each region (on the basis of the earnings of others with similar observable characteristics), we could estimate the degree to

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<sup>17</sup>Though one might worry that men and women might match those with similar backgrounds (assortative mating), limiting our ability to distinguish the influence of intergenerational transmission through the man’s versus the woman’s side, gender inequality across the two sets of parents only correlated at  $r = .13$ .

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% 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 pointed to two prime suspects, both related to gender roles. First, we identified a motherhood penalty. Couples with young children placed greater weight on men's and less weight on women's potential earnings. This effect interestingly exists despite the fact that Denmark has some of the most generous policies for providing state assistance in child care (Craig and Mullan 2010). Since 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 had been exposed to more traditional gender roles as a child. Couples in which the man's parents – but not the woman's – had greater gender inequality in terms of their relative earnings had much stronger implicit weights biased toward maximizing the man's income. Asymmetric weighting therefore appeared primarily among couples where the man's parents themselves had had more traditional gender roles. It appears that gender roles – at least in Denmark – may pass from parents to sons. Though research on the intergenerational transmission of gender roles remains at an early stage, our results have interesting parallels with some prior studies. Cunningham (2001), for example, reports that the amount of time that fathers spend on housework at age one positively predicts sons participation in household chores at age 31.

Though 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 less asymmetry in the importance of men's and women's' careers to the choices of the highly educated. For one, those with the most traditional gender roles might not even pursue higher education (Vella 1994). Exposure to alternative ideas through college may also influence the college-educated to adopt more gender-egalitarian attitudes (Funk and Willits 1987). On the other hand, the consequences of locating in the right region matters much more for these individuals. Professionals have typically developed highly specific skills and therefore their expected earnings vary much more from one region to the next (Dahl and Sorenson 2010a). As a consequence, even small asymmetries in the location choices of these power couples 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? Though again an open question, 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 the asymmetry in the relative weightings placed by couples on men's' and women's' wages. On this dimension, we would expect larger differences in other countries, as Denmark – relative to the rest of the world – has relatively 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 the propensity of people to move in general. As populations become more mobile, location choices contribute more strongly to differences across individuals in earnings. Denmark, relative to its small size, has high levels of geographic mobility, on par with the United States (Dahl and Sorenson 2010b). By

contrast, many other countries have lower levels of geographic mobility and therefore these joint choices may have less power for explaining 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.

Though additional research remains to determine the extent to which these joint decisions influence gender inequality in other countries, our research nonetheless contributes to the literature in multiple ways. First, we have introduced a critical test for discriminating between the gender-neutral and gender-biased migration. Crucial to this test has been the introduction of an approach to specifying counter-factual wages for what each member of the couple might earn in another region. Second, we have 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. Petersen

1995; Fernandez and Sosa 2005). Here, the joint decisions of couples, 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. 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 would still persist. That's not to say that public policy could not help to alleviate these disparities. But the policies to do so would need to focus either on education, which appears to move people away from traditional gender roles, or on promoting a more diverse set of employers in all regions, which decreases the likelihood that any individual has difficulty finding a well-matched employer in any particular place (Sørensen and Sorenson 2007).

Table 1: Wage equation coefficients

	Male		Female	
	Mean	SE	Mean	SE
Age	-0.005	0.003	-0.002	0.002
Experience /100	0.002	0.002	0.002	0.001
<i>Gymnasium</i>	0.069	0.103	0.065	0.070
College	0.109	0.092	0.038	0.043
Firm tenure /100	-0.008	0.244	0.068	0.228
Skilled blue collar	0.269	0.063	0.195	0.084
Lower white collar	0.070	0.042	0.066	0.077
Job change	-0.017	0.042	-0.009	0.045
Mover	-0.110	0.059	-0.104	0.054
Constant	5.525	0.160	5.122	0.136
R <sup>2</sup>	0.218	0.055	0.245	0.069
N	956	1,328	1,072	1,563

Summary of the results of 269 regressions of 2004 wage (270 for women), one per township

Table 2: Descriptive statistics for the choice models

	Movers				Stayers			
	Chosen		Alternate		Chosen		Alternate	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Expected wage (male) (1000s)	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
× male's parent inequality <sup>1</sup>	141.7	128.9	139.7	126.5	106.7	117.9	110.0	122.1
× female's parent inequality <sup>1</sup>	143.2	128.4	141.6	126.5	109.5	117.5	113.3	122.0
Expected wage (female) (1000s)	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
× male's parent inequality <sup>1</sup>	104.8	92.62	101.0	89.40	82.41	89.57	81.53	88.92
× female's parent inequality <sup>1</sup>	106.0	92.28	102.3	89.33	85.06	89.68	84.17	89.08
Current residence	0.000	0.000	0.004	0.061	1.000	0.000	0.000	0.000
Ln (Distance to home)	3.270	0.827	4.861	0.814	0.000	0.000	4.906	0.699
Ln (Distance to male's parents)	3.414	1.587	4.377	1.592	2.311	1.855	3.884	2.066
Ln (Distance to female's parents)	3.464	1.584	4.365	1.608	2.469	1.837	3.981	1.995
Ln (Distance to male's hometown)	2.870	1.766	4.391	1.637	1.508	1.882	3.741	2.185
Ln (Distance to female's hometown)	3.007	1.672	4.551	1.428	1.867	1.894	4.219	1.833
Ln (Distance to male's prior residences)	3.190	0.992	4.870	0.734	1.183	1.157	4.904	0.686
Ln (Distance to females prior residences)	3.201	0.964	4.870	0.729	1.242	1.158	4.903	0.686
High school friends (male)	0.657	0.746	0.065	0.297	0.655	0.686	0.055	0.277
High school friends (female)	0.723	0.807	0.066	0.304	0.746	0.713	0.065	0.302
N	2,995		807,005		6,952		1,870,088	

Due to missing data, these variables only exist for XX movers and XX stayers.

Table 3: Conditional logit estimates of location choice

	(1)	(2)	(3)	(4)	(5)
Expected wage (male)	0.003** (0.000)		0.003** (0.000)	0.003** (0.001)	0.002** (0.001)
Expected wage (female)		-0.004** (0.001)	-0.004** (0.001)	-0.004** (0.001)	-0.003** (0.001)
Current residence	1.644** (0.063)	1.595** (0.062)	1.623** (0.063)	1.608** (0.063)	1.960** (0.109)
Ln (Distance to home)	-1.817** (0.017)	-1.824** (0.016)	-1.825** (0.017)	-1.834** (0.017)	-1.611** (0.028)
Labor market fixed effects (21)	NO	NO	NO	YES	YES
Log-likelihood	-25663	-25675	-25649	-25606	-10893
Observations	9,947	9,947	9,947	9,947	3,217

Table 4: Wage gap decomposition

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

$Opt$  indicates the ratio of the expected income in the region of residence to the maximum expected income available in any region ( $W^{Max}$ ).  $p$  denotes the proportion of the population in each group.

Table 5: Conditional logit estimates on location choice

	(6)	(7)	(8)	(9)
Expected wage (husband)	0.003** (0.001)	0.007** (0.001)	0.005** (0.001)	0.003** (0.001)
× wage trajectory	-0.000 (0.000)			
× pre-school children			0.005** (0.001)	0.002* (0.001)
× husband's parent inequality				0.005** (0.001)
× wife's parent inequality				0.001 (0.001)
Expected wage (wife)	-0.004** (0.001)	-0.006** (0.001)	-0.004** (0.001)	-0.001 (0.002)
× wage trajectory	-0.001* (0.001)			
× pre-school children			-0.007** (0.002)	-0.006** (0.002)
× husband's parent inequality				-0.004 <sup>†</sup> (0.002)
× wife's parent inequality				-0.003 (0.002)
Current residence	1.756** (0.076)	2.441** (0.075)	2.445** (0.075)	2.317** (0.084)
Ln (Distance to home)	-1.782** (0.021)	-1.023** (0.027)	-1.026** (0.027)	-1.086** (0.031)
Ln (Distance to husband's parents)		-0.204** (0.027)	-0.206** (0.027)	-0.201** (0.029)
Ln (Distance to wife's parents)		-0.230** (0.026)	-0.231** (0.026)	-0.277** (0.028)
Ln (Distance to husband's hometown)		0.000 (0.023)	-0.003 (0.023)	-0.031 (0.025)
Ln (Distance to wife's hometown)		-0.038 <sup>†</sup> (0.023)	-0.042 <sup>†</sup> (0.023)	-0.080** (0.025)
Ln (Distance to husband's prior residences)		-0.443** (0.038)	-0.437** (0.038)	-0.376** (0.042)
Ln (Distance to wife's prior residences)		-0.335** (0.038)	-0.330** (0.038)	-0.232** (0.044)
Husband's friends		0.505** (0.031)	0.508** (0.032)	0.561** (0.028)
Wife's friends		0.534** (0.022)	0.534** (0.022)	0.549** (0.025)
Labor market fixed effects (21)	YES	YES	YES	YES
Log-likelihood	-15,960	-23,408	-23,385	-19,692
Observations	8,534	9,947	9,947	7,799

## References

- Andersen, Anne Kaag. 2000. *Commuting Areas in Denmark*. AKF Forlaget, Copenhagen.
- Bandura, Albert. 1977. *Social Learning Theory*. Prentice Hall, Englewood Cliffs, NJ.
- Bertrand, Marianne, Claudia Goldin, Lawrence E. Katz. 2010. Dynamics of the gender gap for young professionals in the financial and corporate sectors. *American Economic Journal - Applied Economics* **2**(3) 228–255.
- Bielby, William T., James N. Baron. 1986. Men and women at work: Sex segregation and statistical discrimination. *American Journal of Sociology* **91** 759–799.
- Bielby, William T., Denise D. Bielby. 1992. I will follow him: Family ties, gender-role beliefs, and reluctance to relocate for a better job. *American Journal of Sociology* **97**(5) 1241–1267.
- Blau, Francine D., Lawrence M. Kahn. 2000. Gender differences in pay. *Journal of Economic Perspectives* **14**(4) 75–99.
- Blood, Robert O., Donald M. Wolfe. 1960. *Husbands and wives: The Dynamics of married living*. Free Press, Glencoe, IL.
- Bredgaard, Thomas, Flemming Larsen, Per Kongshøj Madsen. 2005. The flexible Danish labour market – a review. Tech. rep., CARMA.
- Budig, Michelle J., Paula England. 2001. The wage penalty for motherhood. *American Sociological Review* **66**(2) 204–225.
- Castilla, Emilio J. 2008. Gender, race, and meritocracy in organizational careers. *American Journal of Sociology* **113**(6) 1479–1526.
- Clark, William A.V., Suzanne Davies Withers. 2009. Fertility, mobility and labour-force participation: A study of synchronicity. *Population, Space and Place* **15**(305-321).
- Clark, Ximena, Timothy J. Hatton, Jeffrey G. Williamson. 2007. Explaining U.S. immigration, 1971-1998. *Review of Economics and Statistics* **89**(2) 359–373.
- Cohen, Philip N., Matt L. Huffman. 2003. Individuals, jobs, and labor markets: The devaluation of women’s work. *American Sociological Review* **68** 443–463.
- Compton, Janice, Robert A. Pollak. 2007. Why are power couples increasingly concentrated in large metropolitan areas? *Journal of Labor Economics* **25**(3) 475–512.

- Cooke, Thomas J. 2003. Family migration and the relative earnings of husbands and wives. *Annals of the Association of American Geographers* **93**(2) 338–349.
- Cooke, Thomas J. 2008. Migration in a family way. *Population, Space and Place* **14** 255–265.
- Correll, Shelley J. 2004. Constraints into preferences: Gender, status, and emerging career aspirations. *American Sociological Review* **69**(1) 93–113.
- Craig, Lyn, Killian Mullan. 2010. Parenthood, gender and work-family time in the United States, Australia, Italy, France, and Denmark. *Journal of Marriage and Family* **72** 1344–1361.
- Craig, Lyn, Killian Mullan. 2011. How mothers and fathers share childcare. *American Sociological Review* **76**(6) 834–861.
- Cunningham, Mick. 2001. Parental influences on the gendered division of housework. *American Sociological Review* **66**(2) 184–203.
- Curran, Sara R., Estela Rivero-Fuentes. 2003. Engendering migrant networks: The case of Mexican migration. *Demography* **40**(2) 289–307.
- Dahl, Michael S., Olav Sorenson. 2010a. The migration of technical workers. *Journal of Urban Economics* **67** 33–45.
- Dahl, Michael S., Olav Sorenson. 2010b. The social attachment to place. *Social Forces* **89** 633–658.
- Duncan, R. Paul, Carolyn Cummings Perrucci. 1976. Dual occupation families and migration. *American Sociological Review* **41**(2) 242–261.
- England, Paula, George Farkas, Barbara Stanek-Kilbourne, Thomas Dou. 1988. Explaining occupational sex segregation and wages: Findings from a model with fixed effects. *American Sociological Review* **53**(4) 544–558.
- Esteves-Sorenson, Constança, Jason Snyder. 2012. The gender earnings gap for physicians and its increase over time. *Economic Letters* **116** 37–41.
- Fernandez, Raquel, Alessandra Fogil, Claudia Olivetti. 2004. Mothers and sons: Preference formation and female labor force dynamics. *Quarterly Journal of Economics* **119**(4) 1249–1299.
- Fernandez, Roberto M., Lourdes Sosa. 2005. Gendering the job: Networks and recruitment at a call center. *American Journal of Sociology* **111** 859–904.

- Fernandez-Mateo, Isabel. 2009. Cumulative gender disadvantage in contract employment. *American Journal of Sociology* **114**(4) 871–923.
- Funk, Richard B., Fern K. Willits. 1987. College attendance and attitude change: A panel study, 1970–81. *Sociology of Education* **60** 224–231.
- Groshen, Erica L. 1991. The structure of the female/male wage differential: Is it who you are, what you do, or where you work? *Journal of Human Resources* **26**(3) 457–472.
- Gupta, Nabanita Datta, Donna S. Rothstein. 2005. The impact of worker and establishment-level characteristics on male-female wage differentials: Evidence from Danish matched employee-employer data. *Labour* **19**(1) 1–34.
- Hausmann, Ricardo, Laura D. Tyson, Saadia Zahidi. 2010. *The Global Gender Gap Report*. World Economic Forum, Geneva.
- Hood, Jane C. 1983. *Becoming a Two-Job Family*. Praeger, New York.
- Hook, Jennifer L. 2010. Gender inequality in the welfare state: Sex segregation in housework, 1965–2003. *American Journal of Sociology* **115**(5) 1480–1523.
- Jacobsen, Joyce P., Laurence M. Levin. 1997. Marriage and migration: Comparing gains and losses from migration for couples and singles. *Social Science Quarterly* **78**(3) 688–709.
- Kilbourne, Barbara Stanek, George Farkas, Kurt Beron, Dorothea Weir, Paula England. 1994. Returns to skill, compensating differentials, and gender bias: Effects of occupational characteristics on the wages of white women and men. *American Journal of Sociology* **100**(3) 689–719.
- Korpi, Martin, William A.V. Clark, Bo Malmberg. 2011. The urban hierarchy and domestic migration: The interaction of internal migration, disposable income and the cost of living, sweden 1993–2002. *Journal of Economic Geography* **11** 1051–1077.
- LeClere, Felicia B., Diane K. McLaughlin. 1997. Family migration and changes in women’s earnings: A decomposition analysis. *Population Research and Policy Review* **16** 315–335.
- Light, Audrey, Manuelita Ureta. 1995. Early-career work experience and gender wage differentials. *Journal of Labor Economics* **13**(1) 121–154.
- Long, Larry H. 1974. Women’s labor force participation and the residential mobility of families. *Social Forces* **52** 342–348.
- Massey, Douglas S., Kristin E. Espinosa. 1997. What’s driving Mexico-U.S. migration? A theoretical, empirical, and policy analysis. *American Journal of Sociology* **102**(4) 939–999.

- McFadden, Daniel. 1974. Conditional logit analysis of qualitative choice behavior. P. Zarembka, ed., *Frontiers of Econometrics*. Academic Press, New York, 105–142.
- McKinnish, Terra. 2008. Spousal mobility and earnings. *Demography* **45**(4) 829–849.
- Mincer, Jacob. 1978. Family migration decisions. *Journal of Political Economy* **86**(5) 749–773.
- Mulder, Clara H. 2007. The family context and residential choice: A challenge for new research. *Population, Space and Place* **13** 265–278.
- Offer, Shira, Barbara Schneider. 2011. The gender gap in time-use patterns: Parents' multitasking and well-being. *American Sociological Review* **76**(6) 809–833.
- Petersen, Trond. 1995. Separate and unequal: Occupation-establishment sex segregation and the gender wage gap. *American Journal of Sociology* **101**(2) 329–365.
- Polachek, Solomon. 1981. Occupational self selection: A human capital approach to sex differences in occupational structure. *Review of Economics and Statistics* **58** 60–69.
- Potuchek, Jean L. 1997. *Who Supports the Family? Gender and Breadwinning in Dual-Earner Marriages*. Stanford University Press, Stanford, CA.
- Presser, Harriet B. 1996. Employment schedules among dual-earner spouses and the division of household labor by gender. *American Sociological Review* **59**(3) 348–364.
- Quillian, Lincoln. 1999. Migration patterns and the growth of high-poverty neighborhoods, 1970–1990. *American Journal of Sociology* **105**(1) 1–37.
- Sandell, Steven H. 1977. Women and the economics of family migration. *Review of Economics and Statistics* **59** 406–414.
- Shauman, Kimberlee A. 2010. Gender asymmetry in family migration: Occupational inequality or interspousal comparative advantage? *Journal of Marriage and Family* **72** 375–392.
- Shauman, Kimberlee A., Mary C. Noonan. 2007. Family migration and labor force outcomes: Sex differences in occupational context. *Social Forces* **85**(4) 1735–1764.
- Shelton, Beth Anne, Daphne John. 1996. The division of household labor. *Annual Review of Sociology* **22** 299–322.
- Soons, Judith P.M., Matthijs Kalmijn. 2009. Is marriage more than cohabitation? well-being differences in 30 european countries. *Journal of Marriage and Family* **71**(5) 1141–1157.

- Sørensen, Aage B. 1996. The structural basis of social inequality. *American Journal of Sociology* **101** 1333–1365.
- Sørensen, Jesper B., Olav Sorenson. 2007. Corporate demography and income inequality. *American Sociological Review* **72**(5) 766–783.
- Tam, Tony. 1997. Sex segregation and occupational gender inequality in the United States: Devaluation or specialized training? *American Journal of Sociology* **102**(6) 1652–1692.
- Tenn, Steven. 2010. The relative importance of the husband's and wife's characteristics in family migration, 1960-2000. *Journal of Population Economics* **23** 1319–1337.
- Thompson, Linda, Alexis J. Walker. 1989. Gender in families: Women and men in marriage, work, and parenthood. *Journal of Marriage and Family* **51**(4) 845–871.
- Train, Kenneth. 2003. *Discrete Choice Methods with Simulation*. Cambridge University Press.
- U.S. Department of Labor. 2001. Highlights of women's earnings in 2000. Tech. rep., Bureau of Labor Statistics Report 952.
- van Putten, Anne E., Pearl A. Dykstra, Joop J. Schippers. 2008. Just like mom? the intergenerational reproduction of women's paid work. *European Sociological Review* **24**(4) 435–449.
- Vella, Francis. 1994. Gender roles and human capital investment: The relationship between traditional attitudes and female labour market performance. *Economica* **61**(242) 191–211.