DISCUSSION PAPER SERIES

DP13606

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LABOUR ECONOMICS

ISSN 0265-8003

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Discussion Paper DP13606
Published 21 March 2019
Submitted 17 March 2019

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THE ECONOMICS OF HYPERGAMY

Abstract

Partner selection is a vital feature of human behavior with important consequences for indi-viduals, families, and society. Hypergamy occurs when a husband's earning capacity system-atically exceeds that of his wife. We provide a theoretical framework that rationalizes hy-pergamy even in the absence of gender differences in the distribution of earnings capacity. Using parental earnings rank, a predetermined measure of earnings capacity that solves the simultaneity problem of matching affecting earnings outcomes, we show that hypergamy is an important feature of Norwegian mating patterns. A vignette experiment identifies gender differences in preferences that can explain the observed patterns.

JEL Classification: J12, D10, J22

Keywords: Marriage, gender identity, Labor Supply, Household specialization

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Acknowledgements
This research is funded by the Norwegian Research Council (grants number 236992 and 250415). We thank Alexander Cap-pelen, Serena Cocciolo, Sara Cools, Jo Thori Lind, Peter Nilsson, Fabian Postel-Vinay, Ole Røgeberg, Anna Sandberg, and Hallgeir Sjåstad for valuable comments and discussions. The paper is part of the research activities at the Centre of Equality, Social Organization, and Performance (ESOP) at the Department of Economics at the University of Oslo.

The Economics of Hypergamy

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ABSTRACT

The Economics of Hypergamy*

Partner selection is a vital feature of human behavior with important consequences for individuals, families, and society. *Hypergamy* occurs when a husband's earning capacity systematically exceeds that of his wife. We provide a theoretical framework that rationalizes hypergamy even in the absence of gender differences in the distribution of earnings capacity. Using parental earnings rank, a predetermined measure of earnings capacity that solves the simultaneity problem of matching affecting earnings outcomes, we show that hypergamy is an important feature of Norwegian mating patterns. A vignette experiment identifies gender differences in preferences that can explain the observed patterns.

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* This research is funded by the Norwegian Research Council (grants number 236992 and 250415). We thank Alexander Cappelen, Serena Cocciolo, Sara Cools, Jo Thori Lind, Peter Nilsson, Fabian Postel-Vinay, Ole Røgeberg, Anna Sandberg, and Hallgeir Sjåstad for valuable comments and discussions. The paper is part of the research activities at the Centre of Equality, Social Organization, and Performance (ESOP) at the Department of Economics at the University of Oslo.

1 Introduction

Whom to mate with and marry is one of life's most important choices. This choice affects well-being directly through emotions, joy, and friendship, *and* it affects social and economic outcomes over the life cycle. While the field of biology states that individuals tend to choose mates who are sufficiently genetically dissimilar to themselves to avoid inbreeding (Roberts et al., 2005), the social sciences indicate that humans generally tend to find partners who are similar economically and socially, i.e., we display homogamy/assortative mating (Fernandez et al., 2005; Schwartz and Mare, 2005; Browning et al., 2014; Greenwood et al., 2014; Bratsberg et al., 2018; Eika et al., 2019).

However, experimental studies have also pointed to asymmetries in partnering preferences across gender, and a specific focus has been given to the findings that men give more weight to physical attractiveness and beauty than do women and that women give more weight to IQ and earnings potential (Davis, 1941; Elder, 1969; Buss, 1989; Buss and Schmidt, 2019; Cashdan, 1996; Fisman et al., 2006; Hitsch et al., 2010; Eastwick et al., 2014, Buunk et al., 2002). As a result, women are, on average, likely to mate with men of higher economic and social status than themselves. This phenomenon is sometimes referred to as hypergamy. Hypergamy implies that husbands tend to have higher human capital than wives within couples, even in situations where the unconditional distributions of human capital for men and women are exactly the same. A likely sign of hypergamy is that there is a stronger positive association between human capital and marriage propensity for men than for women.

Existing studies based on observational data have shown that there are indeed important gender asymmetries in actual earnings patterns within couples and that a majority of married women are matched with men who have higher earnings than themselves (Bertrand et al., 2015; Angelov et al., 2016). Furthermore, marital stability and satisfaction are lower when women earn more than their partners (Bertrand et al., 2015) and divorce rates increase when women become promoted (Folke and Rickne, 2018). However, it is unclear whether men generally earn more within couples because they had a higher earnings-potential than their partners in the matching stage (hypergamy) or because of decisions made within the household.[1] As individuals' earnings may both affect and be affected by partnering, there is a fundamental simultaneity problem involved in empirically identifying hypergamy as well as its economic consequences. Moreover, as data from virtually all countries indicate that women have lower wages than men (Ñopo et al., 2012), even random matching will result in patterns where husbands have higher earnings than their wives.

Hypergamy has potentially wide-ranging economic consequences. It may be a decisive determinant of the gender-specific distributions of parenthood and economic wealth, as well as an important contributor to the gender gap in labor earnings. However, there is virtually no research on hypergamy in representative populations, the evidence we have is mainly from sub-populations such as students or participants at web-based matching sites. This paper seeks to fill this gap. Based on administrative registers and survey data from Norway, we provide new empirical evidence on the existence of hypergamy. Norway is arguably of particular interest in this context because the country has for the last 15 years been declared "the most gender equal society in the world" by the United Nations (United Nations, 2017). Hence, using data from Norway facilitates an empirical analysis of hypergamy in an environment of relative gender equality, where labor force participation rates are roughly the same for women and men, and where men are not the undisputed breadwinners of the households.

We start by discussing the theoretical arguments of why hypergamy may prevail even in societies where men and women have exactly the same distribution of earnings potential. We show that hypergamy can arise for biological reasons (i.e., that men are fertile for a longer period than women), as well as for reasons related to asymmetric valuation of partner attributes.

Next, we investigate empirically whether hypergamy exists in Norway. To disentangle the impacts of earnings potential on partner matching from the effects of the match on subsequent earnings, we exploit the well-established intergenerational correlation in earnings ranks; see, e.g., Dahl and DeLeire (2008), Chetty et al. (2014), Corak et al. (2014), Pekkarinen et al. (2017), Bratberg et al. (2017), and Markussen and Røed (2019). More specifically, we

[1] Several recent studies suggest that labor market conditions affect partnering probabilities differently for men and women, particularly with men at the bottom of the skill-distribution being less likely to partner in lean times (Schaller, 2016; Autor et al., 2018; Kearney and Wilson, forthcoming).

rank all men and women separately on the basis of their parents' prime age labor earnings and use this rank as a strictly predetermined proxy for the offspring's own earnings-potential rank. In addition to being a reliable (though admittedly noisy) predictor of the offspring's earnings potential, parental income rank has the advantage that it, by construction, exhibits exactly the same distribution for men and women. Hence, it is an ideal tool for detecting asymmetries that are not due to the more powerful economic position of men per se. Depending on its source, hypergamy is characterized by the following: i) there is a steeper positive relationship between own earnings-potential rank and the probability of finding a partner for men than for women; ii) there are more unmatched men than women, particularly at the bottom of the rank distribution, and men with higher rank tend to mate multiple times; and iii) the man's rank tends to exceed the woman's rank within couples. Based on complete multigenerational data for all offspring born from 1952 through 1975, we present strong evidence in support of these characteristics.

To focus on one of the potential motives behind hypergamy, namely differences in partner preferences between men and women, we administered a survey experiment (a vignette) involving a representative sample of the Norwegian adult population. In the experiment, we controlled the wording of a question about the probability that a hypothetical person would want a long-term relationship with another person of the opposite sex with given characteristics in terms of physical attractiveness and earnings. A question about a hypothetical male was given to male respondents and a question about a hypothetical female was asked of female participants. Random variation in the wording was implemented to uncover whether women give higher priority to a prospective partner's earnings than men do. The responses confirmed that this is indeed the case. Taken together, the register-based evidence on actual behavior and the vignette-based evidence on preferences suggest that hypergamy is an important feature of mating patterns in Norway.

Based on the existing literature on household labor supply, we expect the economic consequences of hypergamy to be considerable. Hypergamy implies that *his* earnings potential will tend to exceed *hers*, and this is likely to have implications for the division of market and household work within the household. According to standard human capital theory, a higher earnings potential for the male partner implies an incentive for household specialization whereby his labor market career is prioritized (Becker, 1991). Through learning-by-doing, the initial difference in human capital may be enlarged over time, yielding even stronger incentives for household specialization (Mincer, 1974; Becker, 1993; Angelov et al., 2016; Schaller, 2016). Hence, hypergamy can give rise to a marital gender earnings gap that widens over the lifecycle, and that continues to prevail (although at a lower level) even if discrimination and other obstacles women face in the labor market cease to exist.

2 The logic of hypergamy

There exists a substantial literature on two-sided matching in the marriage market, as well as in other markets such as the labor market; see, e.g., Browning et al. (2014) and Chade et al. (2017). Within the framework of a standard matching model of the marriage market, we analyze how asymmetries between the genders may lead to asymmetric matching outcomes, in which females tend to marry males with earnings potential that exceeds their own.[2] We discuss two potential mechanisms. The first mechanism is related to the biological fact that men are reproductive for a longer period than women, and hence may stay in the marriage market longer. The second mechanism occurs through gender differences in preferences over potential mating partners. In this section, we present the main insights from the formalization of these two mechanisms. A more detailed exposition is provided in Appendix A. Our purpose is to provide a framework for analyzing the underlying mechanisms of hypergamy, not to derive models that fully account for all choices and constraints in the marriage market.

2.1 The fertility mechanism

To explore the fertility mechanism, let us assume that all agents in the economy are characterized by a unidimensional characteristic y, which we can think of as earnings potential. Let the earnings potential be distributed according to the cumulative distribution function $F(y)$ on $[0,1]$, which is identical for males and females. If everyone mates with one and only one partner, the average earnings potential of males and females in couples would have to be equal. However, if we allow for divorce and remarriage this is no longer necessarily the case. Because males are fertile for a longer period than females, males are potentially attractive as

[2] Note that we use the terms “marriage,” “mating,” and “matching” interchangeably about partnering.

partners for a longer period than females. Hence, among those who divorce, there are more males than females that are active in the "mating market."

We assume that all males and females are born fertile, and remain fertile until they are hit by a "fertility shock," which occurs at a constant per period probability τ^m for males and $\tau^f > \tau^m$ for females. The per period probability of divorce is an exogenously determined constant $k \in [0,1]$, which is independent of the fertility state of the couple and of earnings. An agent's attractiveness as a mating partner is assumed independent of his/her history in the marriage market until the fertility shock hits.

All agents are born single. In each period, all single, fertile individuals join a fully competitive and frictionless marriage market. As a larger fraction of the divorced males are fertile than the divorced females, there are more males than females in the marriage market. It is well known from the matching literature that if one side of the market is in short supply, they are better matched. Let us study this in some detail. We assume that mating is assortative with respect to earnings potential so that the woman with the highest earnings potential marries the man with the highest earnings potential, and the woman with the second highest earnings potential marries the man with the second highest earnings potential, etc.[3] A married couple is a pair denoted as $\left(y^f, y^m\right)$, and the equilibrium mating distribution of pairs is denoted as $\left(y^f, y^m(y^f)\right)$, $y^f \in [0,1]$. Within this context, we can think of hypergamy as a situation where $E[y^m(y^f) - y^f] > 0$.

Because there are more males than females in the marriage market, all females marry while the males below an earnings threshold y^c never marry. In the appendix, we show that y^c is given by

$$F\left(y^c\right) = \frac{\hat{\tau}^m - \hat{\tau}^f}{1 + \hat{\tau}^m k} k, \tag{1}$$

[3] In the matching literature, conditions are given under which assortative mating is an equilibrium outcome. With a nontransferable utility, a necessary and sufficient condition in our setting is that an agent's utility of marriage is increasing in the partner's type, i.e., his/her earnings potential. This may be rationalized by income spillovers within the couples. With a transferable utility, the requirement is that the match surplus is supermodular in the agents' types.

where $\hat{\tau}^k = \tau^k / (1-\tau^k)$, $k \in \{f, m\}$. Note that $\hat{\tau}^k$ is decreasing in τ^k, the probability that a fertility shock hits for gender *k, k = m, f*. Note also that if $\tau^f = \tau^m$, $F(y^c) = 0$, i.e., all men marry and there is no hypergamy. Note also that if $k = 0$ (no divorce), $F(y^c) = 0$, i.e., all men marry and there is no hypergamy. Otherwise, the males in the lower tail of the distribution do not marry, and there is hypergamy. The degree of hypergamy, measured by y^c, is increasing in k and in the difference between τ^f and τ^m. It follows that the distribution of earnings among married men has support $[y^c, 1]$ and a cumulative distribution function $\tilde{F}(y) = \frac{F(y)-F(y^c)}{1-F(y^c)}$. The types $\left(y^f, y^m(y^f)\right)$ in any couple satisfy $\tilde{F}(y^m(y^f)) = F(y^f)$, or

$$F\left(y^m(y^f)\right) = F\left(y^f\right) + \left(1 - F(y^f)\right) F\left(y^c\right). \tag{2}$$

If F is uniformly distributed on [0,1], the equation becomes $y^m(y^f) = y^f + y^c(1 - y^f)$. The right-hand side of (2) is greater than $F(y^f)$ for all $y^f < 1$. It follows that $y^m(y^f)$ is strictly greater than y^f except at the top, where $y^f = y^m = 1$. Hence, all females except the top ones mate upward. Note that the degree of hypergamy is higher the higher is the separation rate k; i.e., the tendency of hypergamy is stronger the higher is the divorce rate in the society. Because there are the same number of males and females, and mating requires one male and one female, our analysis implies that a larger share of females mate, whereas more males than females mate with more than one partner over the lifecycle. This is consistent with historical patterns as recent research in genetics shows that women to a larger extent than men have passed on their DNA, which again is consistent with a larger fraction of women than men mating in human history (Wilder et al., 2004; Keinan and Clark, 2012; Lippold et al., 2014; Karmin et al., 2015).

2.2 The preference mechanism

Let us then turn to our second mechanism: gender-specific differences in preferences over partner attributes. To simplify the exposition, we assume away the biological differences discussed above, and instead focus on the fact that men and women care about features other than earnings when choosing a partner, such as physical attractiveness and the ability of caring/parenthood, and may weight these attributes differently. This fits well with the literature indicating that men give more weight to physical attractiveness and beauty than do women, and that women give more weight to IQ and earnings potential. For instance, Buunk et al. (2002) find that men prefer mates who rank higher in physical attractiveness than themselves, while women prefer mates who have higher earnings, education, self-confidence, intelligence, dominance, and social position than themselves.

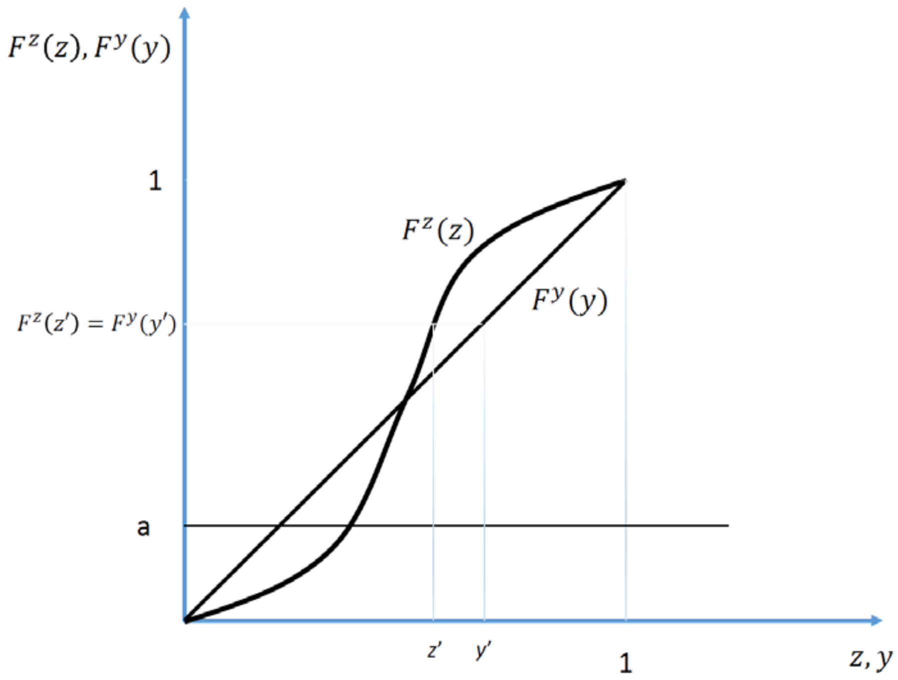

Figure 1. Gender differences in mating preferences and hypergamy
The figure illustrates matching in the mating market in the model where women have preferences for potential partners' earnings potential y only, whereas men have preferences over z= z = (x + y)/2, where x is a factor that comes in addition to income y. The figure illustrates one match between a woman with index z' and a man with index y'. As discussed in the main text, *a* is a fraction of lower-ranked individuals that do not mate.

To explore the effects of asymmetric preferences, suppose individuals have a second attribute (call it x) that males care more about than females do. To simplify the argument, suppose that only males care about the feature x of their partner. Suppose x and y are independent and uniformly distributed on $[0,1]$. We can think of x and y as the individuals' rank in a distribution, which by definition is uniform between 0 and 1. Suppose further that males rank females according to their average score of x and y, i.e., $z = \frac{x+y}{2}$, while females rank males according to y only. It follows that z is a convolution of two uniformly distributed variables, with a cumulative distribution function given by $F(z) = 2z^2$ for $0 \le z < \frac{1}{2}$ and

$F(z)=1-2(1-z)^2$ for $\frac{1}{2}\le z\le 1$. For any z, the expected earnings potential is equal to $E[y\mid z]=z$.[4] The cumulative distribution functions are shown in Figure 1.

Again, we assume assortative matching, so that the most attractive female mates with the most attractive male and so on, and we assume that there are equally many males and females. The equilibrium matching distribution can be written as $(z, y^m(z))$. Assortative matching then implies that for any pair $(z, y^m(z))$, $y^m(z)=F(z)$, i.e., that the rank of the wife (in terms of *z*) and of the husband (in terms of y) is the same. This is illustrated in Figure 1. A female of type *z'* marries a male of type *y'* which satisfies $F^z(z')=y'$. For $z>\frac{1}{2}$, it follows that $y^m(z)=1-2(1-z)^2$. For $z<\frac{1}{2}$, $y^m(z)=2z$. Hence, it follows that $y^m>z$ for $z\in\left[\frac{1}{2},1\right]$ and $y^m<z$ for $z\in\left[0,\frac{1}{2}\right]$; see Figure 1. It follows that, on average, women mate upward for $z>\frac{1}{2}$ and downward for $z<\frac{1}{2}$.

The intuition for why the preference difference generates hypergamy at the top of the distribution is quite clear: The pool of highly ranked females is a “blend” of women with high earnings potential and a high value of x. Because of this, the expected earnings potential in this part of the distribution is lower than what would have been the case if men ranked women according to earnings potential only. By the same logic, females at the lower end of the distribution have, on average, a higher earnings potential than their male counterparts.

The model as such does not give rise to hypergamy on average. However, simple plausible extensions of the model do. For instance, if a fraction *a* of the lower-ranked individuals do not mate, females, on average, mate upward, because the low-ranked females, on average, have higher earnings potential than the low-ranked males. Another extension that may fit the data even better (see next section) is to assume that females only agree to marry if the productivity of the best available male is at least a fraction $\kappa\in(\frac{1}{2},1)$ of their own; i.e., if $y^m\ge\kappa y^f$. We assume that males always accept the best match available to them (if any); however, this can easily be modified. Then, at the top, $y^m=y^f=1$; all females at this point strictly prefer to marry. Furthermore, all females of type z in an interval $[\bar{z},1]$ marry. Over this interval, the

[4] Because of symmetry, *E[y|z] = E[x|z]*. Furthermore, *E[(x + y)/2|z] = z*. It follows that *E[y|z] = z*.

marriage pattern $y^m(z)$ is as described above. At the threshold $\overline{z}$, a woman with top productivity (and lowest possible appearance given that the rank is $\overline{z}$) is indifferent between marrying and not marrying a man of productivity κ; hence $1-F\left(\overline{z}\right)=1-\kappa$ or $\overline{z}=1-\sqrt{(1-\kappa)/2}$.

At an interval below $\overline{z}$, the most productive females do not marry. The fraction that does not marry is equal to $P\left[y^f \leq \kappa y^m(z) \mid z\right]$, where *P* is the probability operator. As there are equally many males and females, there are also some single males: males below a threshold y^c never marry. All females below $z^c = y^c\kappa / 2$ marry. Therefore, all women at the top and at the bottom of the z-distribution marry, whereas there is an interval in the middle where the most productive women do not. The patterns described give rise to hypergamy on average, and a tighter relationship between earnings and marriage propensity for males than for females.

3 Data and identification strategy

The main part of our empirical analysis builds on the administrative register data from Norway covering the complete native-born population. These data provide information on family linkages and annual labor earnings since 1967.

To examine the empirical evidence for the existence of hypergamy, we need to address a fundamental identification problem, namely that individual earnings both *affect* and *are affected by* marital sorting. Our way of addressing this extends the idea that each individual has a predetermined *earnings potential*. Viewed from the researcher's point of view, it is a latent variable. However, we assume that it is (at least partly) observable to prospective partners and that it, therefore, plays a role in the mating process.

To isolate the effect of earnings potential on mating patterns, we need an observable that is informative about individuals' latent earnings potential, but at the same time not influenced by mating decisions. One alternative is to use the earnings level observed prior to the time of matching as a proxy. However, this is problematic for at least two reasons. First, the matching of partners often takes place long before individual earnings potential has been revealed in the labor market, and sometimes even before labor market entry. Hence, earnings recorded prior to the matches may be highly unrepresentative of the true permanent earnings potential. Second, observed earnings prior to the matches may have already been influenced by marital aspirations or by planned unions unobserved to the researcher. For example, a woman expecting to marry a man with a high earnings potential may lower her own earnings ambitions long before the union actually takes place. Indeed, there exists empirical evidence indicating that marital and childbearing aspirations affect women's human capital investments long before a spouse has been found (Chevalier, 2007; Bursztyn et al., 2017).

A more promising alternative is to exploit the intergenerational correlation in earnings. The earnings of parents are predetermined with respect to an offspring's mating behavior, yet it is likely to be informative about his/her earnings potential. Existing empirical evidence has revealed a considerable intergenerational correlation in earnings, although the association is weaker in Norway than in many other countries, see, e.g., Bratberg et al. (2005), Hansen (2010), Pekkarinen et al. (2017), and Markussen and Røed (2019). A key element in our empirical strategy is to use parental earnings as a proxy for the offspring's earnings potential. More specifically, we use observed parental earnings to *rank* all men and women in Norway into different socioeconomic groups, as suggested by, e.g., Dahl and DeLeire (2008), Chetty et al. (2014), Corak et al. (2014), Markussen and Røed (2019), and Bratberg et al. (2017). Following Markussen and Røed (2019), we calculate the mother's and the father's average earnings during their respective age range of 52–58 years, and use the maximum of the two (controlled for calendar years) to rank the offspring.[5]

Table 1. Overview of the datasets and descriptive statistics

	I Total sample		II Partner sample	
	Men	Women	Men	Women
Number of observations	757,868	723,317	533,711	524,981
Average own earnings rank (age 28-40)	50.6	50.6	54.6	50.9
Average parental earnings rank (age 52-58)	50.6	50.6	51.6	51.2
Correlation between parental and own earnings rank	0.19	0.15	0.19	0.16

Based on this strategy, we are able to rank all offspring born between 1952 and 1975 into parental earnings percentiles. Partners are identified as a man and a woman who either

[5] Markussen and Røed (2019) show that the seven-year period from age 52 to 58 years is the period for which annual earnings are most highly correlated to lifetime earnings. As we show in Appendix B, the results presented below are robust to using the average of the parents' incomes, or the fathers' incomes only, instead of the maximum.

are married to each other and/or who have a child together. We use different data at different stages of our empirical analysis; see Table 1. The "full sample" includes all individuals born in Norway over the period 1952–1975, conditional on them residing in Norway at age 40 years and that we are able to identify at least one of their parents. This sample is used to examine the likelihood of finding a partner, and a reduced version of it (those born before 1960) is used to examine the occurrence of repeated partnering. The "partner sample" includes those in the full sample that found a partner. We use this sample to examine the characteristics of partner matches.

4 The empirical evidence for hypergamy

To examine the empirical evidence for hypergamy in Norway, we study the relationship between earnings potential and partner match. As described in the introduction, hypergamy is characterized by:

1. Being partnered at all: there is a stronger positive association between gender-specific earnings rank and propensity to mate for men than for women.
2. Multiple partners: a larger fraction of women than men match with a partner (which means that men are more likely to mate with multiple partners). The gender gap in the probability of having multiple partners is larger the higher is the earnings-potential rank.
3. Partner rank: within couples, men tend to have higher earnings potential than women.[6]

In this section, we test for the existence of these characteristics in our data. To avoid influence from the gender gap in average earnings, we always characterize men and women in terms of their rank in their own *gender-specific* earnings distributions. We use parental earnings rank as a proxy for earnings potential, and in addition, we examine evidence based on own actual earnings rank.

[6] 1 and 3 are always implied, 2 is guaranteed if biological constraints are the source of hypergamy.

4.1 The probability of being partnered at all

Figure 2 shows the relationship between own and parental earnings rank, and the probability of having mated by the age of 40 years (or higher for early birth cohorts).[7] In this and subsequent panels/graphs, we have grouped individuals into vigintiles (i.e., five percent groups) rather than percentiles, to reduce noise. Starting with the ranking based on own prime-age earnings (ages 28–40 years) in the upper left panel, we note a steep social gradient in the matching probability for men; i.e., a positive relationship between own earnings rank and the probability of being partnered. For women, there is no such gradient, except at the very bottom. To the contrary, for women in the upper part of the rank distribution, the probability of having been matched by mature age declines with own earnings rank. While a man at the top of the earnings distribution has more than a 90 percent chance of having found a partner, the chance of a man at the bottom is less than 40 percent. By contrast, women have similar chances of finding a partner across the earnings distribution, and except at the extreme bottom, there appears to be a negative relationship between own earnings rank and partnering propensity. As the earnings ranks are based on own prime-age earnings, they are subject to simultaneity with respect to partnering and household specialization. To avoid this, we move on to the upper right panel, which uses parents' earnings. Again, we find a steep social gradient for men. The probability of having found a partner is 7–8 percentage points higher for a man born into the richest parental earnings vigintile than for a man born into the poorest parental earnings vigintile. For women, there is hardly a visible social gradient at all, and the probability of having found a partner appears to be almost unrelated to the parental background.

[7] Note that we examine the event of having found at least one partner by 2015. As our analysis covers cohorts born between 1952 and 1975, this implies that we capture all partnerships established up to ages 40–63 years, depending on the cohort.

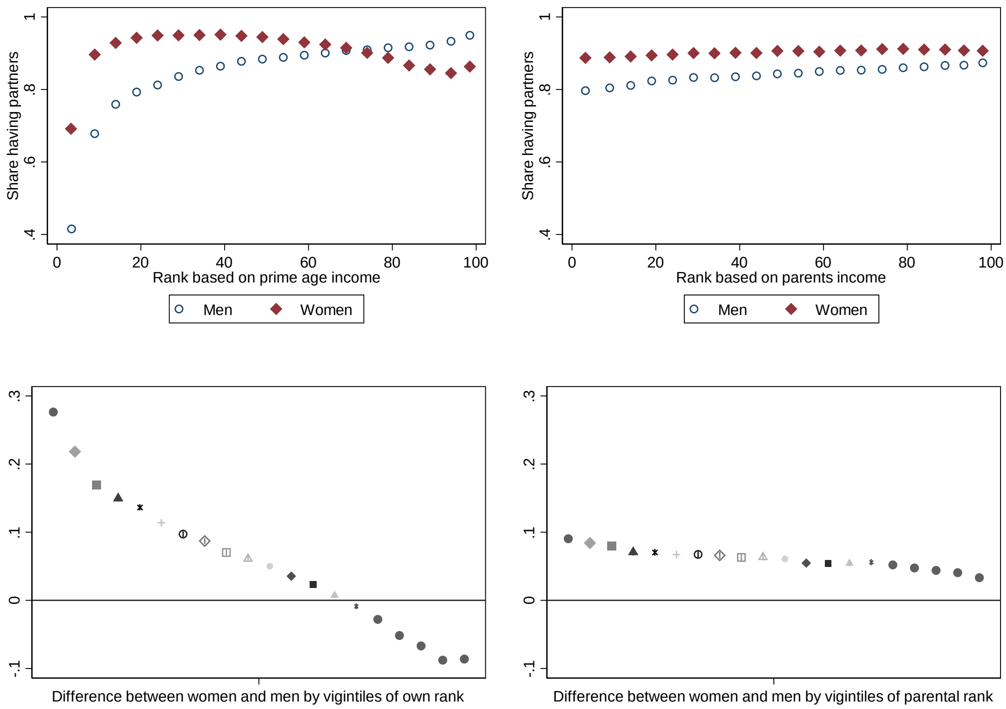

Figure 2. Probability of having found a partner by 2015. By own or parental earnings rank
Note: The graphs cover the 1952-1975 birth cohorts, and show the fractions who have been married and/or had at least one child by 2015. The two lower panels include 95 percent confidence intervals.

The patterns described in the upper panels of Figure 2 imply that more men than women stay permanently unmatched and that the gender gap in the match probability declines rapidly with economic position. The lower panels of Figure 2 show the gender gaps in the overall match probability by own and parental earnings rank, with 95 percent confidence intervals. There is a remarkable regularity in these patterns. Many more men than women stay unmatched. Focusing on the right-side panel based on parental earnings rank, we see that throughout the distribution, there are more men than women that stay unmatched. However, the gender difference declines sharply with parental earnings rank. At the bottom of the parental earnings distribution, the gender difference in the probability of having found a partner is almost 10 percentage points. At the top of the distribution, the difference is only two percentage points.

Table 2. Gender difference in partnering. Instrumental variables (IV) estimates

	Linear model			Quadratic model		
	(1) Men	(2) Women	(3) Gender diff.	(4) Men	(5) Women	(6) Gender diff.
Own rank	0.37***	0.16***	0.21***	0.69***	0.46***	0.22**
	(0.007)	(0.008)	(0.011)	(0.061)	(0.070)	(0.093)
Own rank squared				-0.003***	-0.003***	0.0006
				(0.0006)	(0.0007)	(0.0005))
Mean outcome	0.84	0.90		0.84	0.90	
N	757,868	723,317		757,868	723,317	

Note: Own earnings rank is instrumented with parental earnings rank. Estimates and standard errors are multiplied by 100, such that they are measured in percentage points. The gender differences in columns (3) and (6) are evaluated within a joint model with gender interactions on all variables. Robust standard errors in parentheses. */**/*** indicates statistical significant at the 10/5/1 percent level.

Provided that parental rank affects marital prospects exclusively through its impact on own rank, we can use parental rank as an instrument for own rank.[8] Consider the following linear probability model:

$$\text{Pr(finding a partner)} = a + b \times \text{own rank+birth cohort controls+residual.} \tag{3}$$

As own rank is likely to be affected by partner choice, e.g., through household specialization, we have a simultaneity problem in equation (3). However, we can deal with this problem by estimating the first stage equation

$$\text{own rank=c+d} \times \text{parental rank + residual,} \tag{4}$$

and then substitute the prediction from (4) for own rank in (3). Table2 shows the estimation results from this instrumental variables' (IV) model, together with the corresponding IV estimates from a model allowing for quadratic effects of own rank. Focusing first on the linear model in columns (1)–(3), we note that moving one decile (10 percentiles) up in the earnings distribution implies a 3.7 percentage points higher chance of finding a partner for a man, but only a 1.6 percentage points higher chance for a woman. The difference is substantial and highly statistically significant; see column (3). In the quadratic model, we see that the marginal impacts of moving upward in the earnings distribution are larger the lower is the initial position.

[8] We do not claim that the exclusion restriction holds in this setting, as there could be links between parent income rank and matching probabilities other than through own earnings potential. However, we find it useful to use the IV approach to obtain a more reliable measure of the magnitude of the effect.

4.2 Multiple partners

Given that each match, as defined in this paper, requires both a man and a woman, it may appear puzzling that the overall mating propensity is higher for women than for men. Apart from the fact that there are slightly more men than women in the cohorts studied in this paper, the explanation is that men to a larger extent than women are "recycled"; i.e., they mate more than once. Figure 3 shows that this is the case at all earnings ranks.[9] While there is a *negative* social gradient in the multiple mating propensity with respect to own prime-age earnings rank for both men and women, there is a *positive* gradient for men when earnings potential is measured by parental earnings (except at the very bottom). Hence, there is a positive relationship between earnings potential and multiple match propensity for men but not for women. As a result, the gender gap in the multiple match propensity rises considerably with parental earnings rank; see the lower right panel of Figure 3.

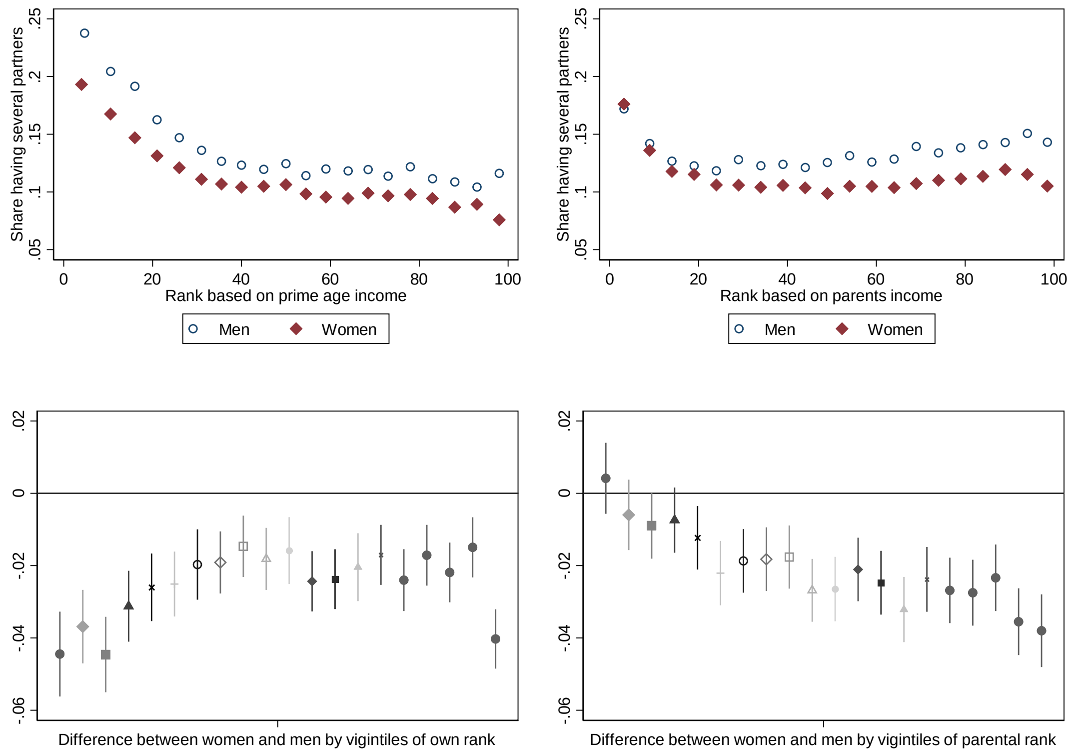

Figure 3. Probability of having had multiple partners by 2015. By own and parental earnings rank

Note: The graphs cover the 1952-1959 birth cohorts, and show the fractions who have been married and/or had a child with at least two different persons by 2015. The two lower panels include 95 percent confidence intervals.

[9] We restrict attention to men and women born before 1960 because a considerable fraction of multiple matches occurs after the age of 40 years. Using this approach, we capture all matches before the age of 56 years.

Table 3 presents IV estimates of the impact of own earnings rank on the probability of mating more than once. Based on the linear estimates in columns (1)–(3), we find that the probability of mating with multiple partners increases with earnings rank for men, whereas it decreases with earnings rank for women. The quadratic estimates in columns (4)–(6) indicate, however, that nonlinearities are important for this outcome. Based on this model, we find a positive marginal effect above the median rank for both men and women.

Table 3. Gender difference in multiple partnerships. Instrumental variables (IV) estimates

	Linear model			Quadratic model		
	(1)	(2)	(3)	(4)	(5)	(6)
	Men	Women	Gender diff.	Men	Women	Gender diff.
Own rank	0.04**	-0.23***	0.27***	-2.4***	-4.0***	1.5***
	(0.017)	(0.022)	(0.028)	(0.21)	(0.31)	(0.37)
Own rank squared				0.022***	0.035***	-0.013***
				(0.002)	(0.003)	(0.004)
Mean outcome	0.13	0.11		0.13	0.11	
N	200,074	202,449		200,074	202,449	

Note: Own earnings rank is instrumented with parental earnings rank. Estimates and standard errors are multiplied by 100, such that they are measured in percentage points. The gender differences in columns (3) and (6) are evaluated within a joint model with gender interactions on all variables. Robust standard errors in parentheses. */**/*** indicates statistical significant at the 10/5/1 percent level.

4.3 Partner rank

The final testable implication of hypergamy is that within couples, men tend to be higher ranked than women. Based on own earnings rank, the upper left panel of Figure 4 shows that there is a strong tendency in this direction. Men are considerably higher ranked at all levels of the earnings rank distribution. On average, the husband is ranked approximately 7–8 percentiles above the wife in their respective gender-specific earnings distributions. These ranking differences may be a sign of household specialization or of hypergamy. However, the gender gap in *average* earnings does not influence the rankings in Figure 4, as the gender-specific ranking ensures that men and women by construction have exactly the same rank distribution.

To disentangle hypergamy from specialization, we turn to the parental earnings ranks (right-hand side of Figure 4). We see the same pattern; the gender gap is statistically significant at all ranks. However, the difference is much smaller than that based on own income, which may be because of specialization or because parental earnings rank is a noisy indicator of own earnings potential. On average, *his* parental earnings rank is about 0.75 percentile higher than *hers*. To assess the implications of such a difference in parental earnings rank for the corresponding difference in *own* earnings rank potential, we created a dataset consisting of new (artificial) couples created by random partner assignment, and then regressed the difference in own earnings rank (within these randomly matched "couples") on the corresponding difference in parental earnings rank. We then obtained a regression coefficient equal to 0.17, which is also the average of the male and female intergenerational rank–rank regression coefficients in our data. Using the inverse of this number $(\frac{1}{0.17} \approx 6)$ to inflate the observed gender gap in parental earnings rank within genuine couples, we infer that the husband's *actual* potential-earnings rank is on average about $0.75 \times 6 = 4.5$ percentiles higher than the wife's. Hence, it is definitely the case that within couples the man's rank is higher than the woman's. The difference is significant both from statistical and substantive viewpoints.

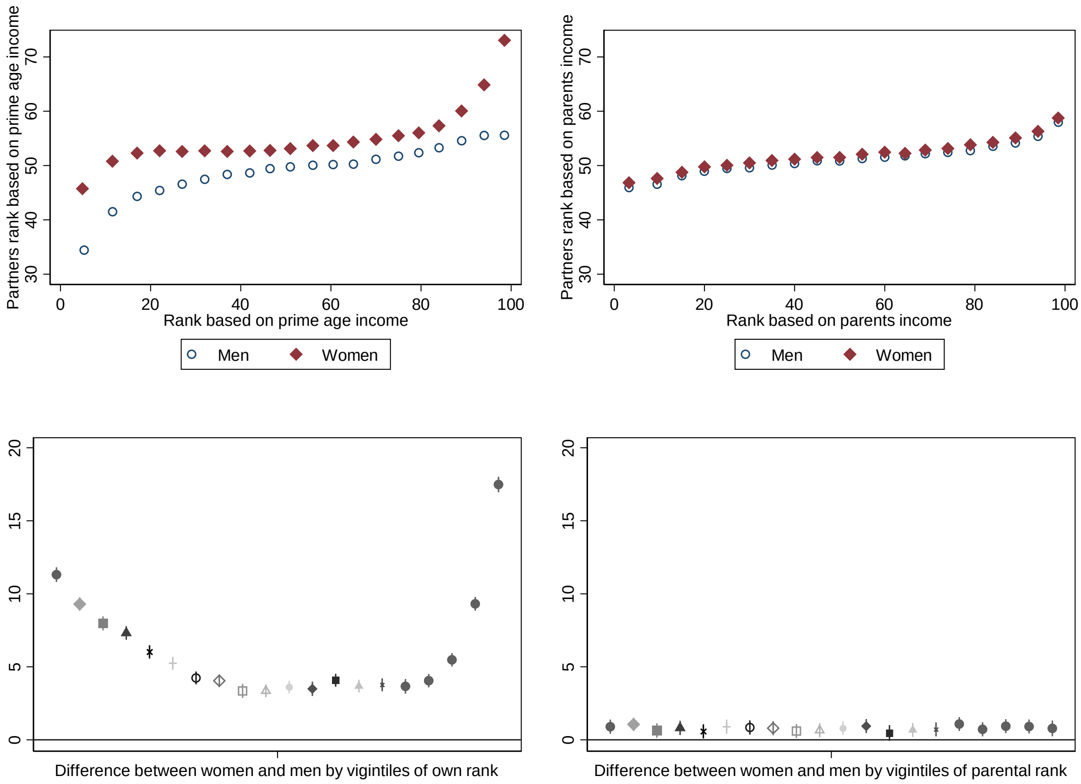

Figure 4. Average partner rank by own rank. Basd on offspring's own or parental earnings.
Note: The graphs cover all copules formed between men and women in the 1952-1975 birth cohorts and show the average perentile rank of the partner in own and parental earnings distributions, respectively. The two lower panels include 95 percent confidence intervals.

Another way of assessing the magnitude of hypergamy is to compare it with the influence of *homogamy* (assortative mating)*;* i.e., the degree to which people tend to mate with others of similar rank. Figure 4 also displays a clear pattern of homogamy, as the expected parental rank of the partner rises monotonically with own parental rank. To facilitate a comparison of the two forces of hypergamy and homogamy, in Table 4, columns (1) and (3) report results from linear regressions where the partner's rank is regressed on own rank. Focusing on parental ranks (column (3)), we note that while being a woman rather than a man raises the expected rank of the partner by 0.74, moving one percentile up in the own gender's rank distribution raises the expected rank of a partner by approximately 0.09 percentiles for both men and women. Hence, the gender difference in expected partner rank corresponds to an eight percentile change in the own earnings rank (0.74/0.09).

Table 4. Gender difference in partner's parental ranks. Ordinary least squares (OLS) estimates.

	Ranks based on own earnings		Ranks based on parental earnings	
	(1)	(2)	(3)	(4)
	Partner rank	Partner with higher rank	Partner rank	Partner with higher rank
Own rank	0.16***	-0.50***	0.092***	-0.74***
	(0.001)	(0.002)	(0.001)	(0.002)
Female (lowest rank)	6.18***	25.0***	0.74***	9.40***
	(0.120)	(0.17)	(0.11)	(0.16)
Female × own rank	-0.006***	-0.31***	-0.000	-0.09***
	(0.002)	(0.003)	(0.002)	(0.002)
N	1,065,534	1,242,148	1,058,692	1,237,577

Note: For the dichotomous outcome in columns (2) and (4), the estimates and standard errors are multiplied by 100, such that they are measured in percentage points. The regressions are based on the 1952-1975 birth cohorts All regressions control for year of birth fixed effects. Robust standard errors in parentheses. */**/*** indicates statistical significant at the 10/5/1 percent level.

Finally, Table 4 also examines the association between gender and parental earnings rank, on the one hand, and the unconditional probability of partnering with someone with a higher rank on the other; see columns (2) and (4). In this exercise, we classify all people not having a partner as not having a higher ranked partner. This investigation has the advantage of not conditioning on an endogenous variable (having a partner) because it includes the whole sample. Evaluated in the middle of the own parental earnings rank distribution, we find that women have a 5.1 percentage point higher probability of mating up with a higher ranked partner than men have. Moreover, this gender gap declines significantly with rank, which is consistent with our theoretical arguments.

4.4 Additional evidence

The previous three subsections provide overwhelming evidence for the prevalence of hypergamy in Norway. All the testable implications of hypergamy are convincingly confirmed by the data. To guide our interpretation of the revealed empirical patterns, we have also administered a survey experiment, a *vignette*, on a representative sample of Norwegian men and women, eliciting the influence of earnings potential on the preferences for a long-term partnership. The sample consists of 1,586 respondents recruited via Gallup Norway. The respondents are representative of the Norwegian adult population on observables. We used a between-subject design where participants were randomly assigned to a "control group" or a "treatment group." We controlled the wording of a question about the probability that a named hypothetical person would want a long-term relationship with another hypothetical person of the opposite sex with given characteristics. The reasons why we chose a hypothetical situation were both to limit the so-called experimenter-demand effect, i.e., that the responders answer in line with what is believed to be expected of them (Davis and Holt, 1993), and to reach a representative sample of the population—a sample in which a large fraction is already engaged in long-term relationships. To use vignettes such as ours is quite standard in such situations and in line with standard methodologies, we used different versions of the questions for women and men, where women responded to a question about a hypothetical woman and men responded to a question about a hypothetical man. Here is the exact wording used on the male sample (the words are in bold here to mark the treatment, these were not emphasized in the survey):

- <u>Control group</u>: Imagine that Markus is single and looking for a long-term relationship. He meets a woman that is kind and considerate, **does not earn a lot of money**, but that he finds good looking and attractive. How likely do you believe it is that he is interested in a long-term relationship with this woman? [Answer on a scale from 1 to 10].[10]
- <u>Treatment group</u>: Imagine that Markus is single and looking for a long-term relationship. He meets a woman that is kind and considerate, **earns a lot of money**, and that

[10] The survey alternated in a random way between four men's names: Markus (most popular name for boys born in 2005 in Norway) and Jan, Arne, and Per (three of the most popular names given to boys born between 1900 and 1999). *Source: Statistics Norway.*

he finds good looking and attractive. How likely do you believe it is that he is interested in a long-term relationship with this woman? [Answer on a scale from 1 to 10].

Corresponding questions were asked of women, where the hypothetically named person was given a popular female name and where the gendered words for this person were changed to female, whereas the hypothetical partner, for which the attributes were given, was changed to a male.[11]

Our interest here lies in the "treatment effect"; i.e., the average difference in the assessment of the likelihood that the man/woman is interested in a long-term relationship when the potential partner is described as "earns a lot of money" versus "does not earn a lot of money." The results of this experiment can be summarized as follows. There is a significant positive treatment effect for both men and women. For men, the estimated treatment effect on a normalized scale is 0.173 (p-value = 0.026) whereas for women, it is 0.380 (p-value < 0.000). The coefficient for a difference-in-difference estimator is thus equal to 0.206 (p-value = 0.042). Hence, this experiment confirms that in a representative sample of Norwegians, females give more weight to the earnings of a prospective partner than males do.

5 Concluding remarks

Although the United Nations over the last 15 years has repeatedly declared that Norway is the most gender-equal society in the world, substantial gender differences in pay and employment patterns remain. In this paper, we have offered theoretical explanations as to why gendered employment and earnings patterns may persist even with full gender equality in labor market opportunities; i.e., even in a society where the distributions of earnings-potential are identical and where there is no gender discrimination. The channel is the matching of men and women into households and the subsequent division of market and household work. Hypergamy implies that couples match such that the man has a higher earnings potential than the woman does. Combined with the standard economic theory of household specialization

[11] The survey alternated in a random way between four women's names: Emma (most popular girls' name in 2005), and Anne, Inger, and Anna (three of the most popular girls' names between 1900 and 1999). *Source: Statistics Norway.*

(Becker, 1991; 1993), this provides a rationale for prioritizing *his* labor market career over *hers*.

We have outlined theoretical foundations for the existence of hypergamy and we have presented overwhelming empirical evidence that hypergamy is an important feature of mating patterns in Norway. Households are systematically formed such that the man on average has the highest rank within the gender-specific distribution of earnings potential, and men with very poor earnings prospects have a high probability of staying unmatched.

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Appendix A: Theory

The fertility model

Time is discrete. In the beginning of each period, a unit measure of males and of females enter the market. The type of each individual (both males and females) is stochastic and drawn from a cumulative distribution $F(y)$. All agents are born fertile. At the end of a period, a fertile agent may be exposed to a fertility shock and loose his/her fertility. The probability of this event is τ^f for females and τ^m for males. We assume that $\tau^f \geq \tau^m$. Infertility is an absorbing state.

All agents are born single. In each period, all single, fertile individuals join a fully competitive and frictionless marriage market. Matching is assortative, all individuals marry the person with the highest y that is willing to marry them. At the end of each period, a married couple may be hit by a divorce shock, which happens with probability k. For simplicity we assume that the divorce shock is independent of the fertility status of the spouses. After divorce, those agents who are still fertile join the matching market, while the infertile agents stay single (or exits).

The model is stationary. Due to the Markov nature of the fertility process, any fertile individual of a particular gender has the same expected future lifetime as fertile (perpetual youth). Since individuals have the same type y over their lifetime, they will end up marrying a spouse of the same type y each time they go to the marriage market.

Since females are always on the "short side" of the market, they will always marry. The stock of fertile females is $1/\tau^f$, and they are all married. Hence at the end of each period, k/τ^f fertile females divorce. A fraction $1-\tau^f$ of these females enter the marriage market next period. Hence the measure of females that enter the marriage market in each period is given by

$$M^f = 1 + k\frac{1-\tau^f}{\tau^f} \tag{A1}$$

The first term is the new entrants (which are all fertile). The second term is the inflow of divorced females which is equal to the stock of fertile females times the divorce rate times the probability that they "survive" the fertility shock in that period.

The least attractive males may stay single. Let y^c be the cut-off point; a male with a type $y < y^c$ never marries, while those above always marry. The stock of fertile males in the economy is $1/\tau^m$. Of these, a fraction $(1 - F(y^c))$ is married. The flow of fertile males that enter the market after divorce is thus $k(1 - F(y^c))(1 - \tau^m)/\tau^m$. The flow of entering males with type above y^c is $(1 - F(y^c))$. Hence the stock of males of type above y^c in the marriage market is

$$M^m(y^c) = (1 - F(y^c))\left(1 + k\frac{1-\tau^m}{\tau^m}\right) \tag{A2}$$

The equilibrium condition is that $M^m(y^c) = M^f$. It is convenient to write $\hat{\tau}^k = \frac{1-\tau^k}{\tau^k}$, $k \in \{m, f\}$. Then we can write

$$F(y^c) = \frac{\hat{\tau}^m - \hat{\tau}^f}{1 + \hat{\tau}^m k}k \tag{A3}$$

which uniquely determines y^c.[1]

The distribution of married men is thus given by $\tilde{F}(y) = \frac{F(y)-F(y^c)}{1-F(y^c)}$ for $y \geq y^c$. A woman of type y^f, with relative position $F(y^f)$, is married to a man of type y^m with the same

[1] Written out, it follows that

$$F(y^c) = k\frac{\tau^f - \tau^m}{\tau^f\tau^m - k(1-\tau^m)\tau^f} \tag{A4}$$

relative position in the $\tilde{F}$-distribution. Hence the types (y^f, y^m) in any couple satisfies $\tilde{F}(y^m) = F(y^f)$, or

$$F(y^m) = F(y^f) + (1 - F(y^f))F(y^c) \tag{A5}$$

Asymmetric preferences

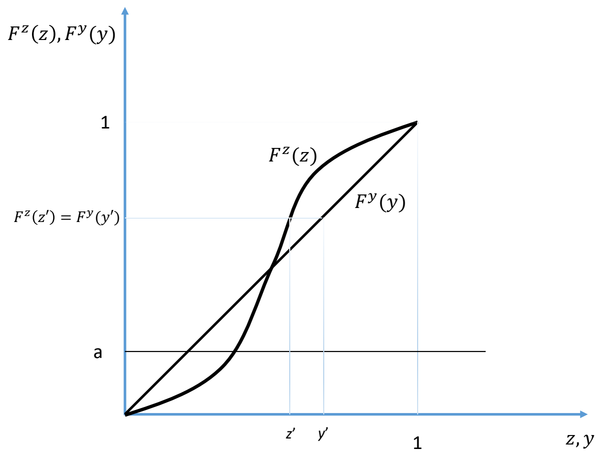
Suppose individuals have two characteristics x (appearance) and y (income) that are independent and uniformly distributed on $[0, 1]$. Suppose males rank females according to their average score of x and y, $z = (x + y)/2$, while females rank males according to y only. The cumulative distribution function is given by $F^z(z) = 2z^2$ for $0 \leq z < 1/2$ and $F^z(z) = 1 - 2(1 - z)^2$ for $1/2 \leq z \leq 1$. For any z, the expected income potential is equal to $E[y|z] = z$.[2] The cumulative distribution function of y is simply $F^y(y) = y$. Note that $F^z < F^y$ for values below $1/2$ while $F^z > F^y$ for values above $1/2$. The cumulative distribution functions are shown in Figure 1.

Matching is assortative, so that the most attractive female mates with the most attractive male and so on. There are equally many males and females. Assortative matching then implies that for any pair (y', z'), $F^y(y') = F^z(z')$. Hence it follows that $z' < y'$ for $y' \in (1/2, 1)$ and that $z' > y'$ for $y' \in (a, 1/2)$, see Figure 2 for an illustration.[3] In the figure, agents of type less than a don't marry. In that case it follows that on average women mates up for $z > 1/2$ and down for $z < 1/2$.

Suppose now that a woman of type y^f never accepts to marry a male if his productivity is below $\kappa y^f \in (1/2, 1)$, where κ is a constant. We assume that $\kappa \in (1/2, 1)$, while a is set to zero. As above, matching is assortative, in the sense that a male marries the female of the highest type z that accepts him. Females marry the male with the highest type y that accepts him, with the additional requirement that his productivity exceeds a fraction κ of

[2]Due to symmetry, $E[y|z] = E[x|z]$. Furthermore, $E[(x + y)/2|z] = z$. It follows that $E[y|z] = z$.
[3]More precisely, for $y' < 1/2$, $z' = \sqrt{y'/2}$. For $y' > 1/2$, $z' = 1 - \sqrt{(1 - y')/2}$.

Figure B1: Gender differences in mating preferences and hypergamy



Note: The figure illustrates the matching in the mating market in the simple model where women have preferences for potential partners' income potential, y, only, whereas men have preferences over z which is a function of potential partners' income potential as well as another factor, x, and $z = (x + y)/2$. The figure illustrates one match between a woman with z' and a man with y'.

her own productivity.

Among those who marry, write the couples as $(z, y^m(z))$. At the top of the distribution, the marriage pattern is as without the constraint. However, at some point $z = \bar{z}$, the participation constraint of females starts to bind. Hence for $z \geq \bar{z}$, the marriage pattern is given by $1 - F(z) = 1 - y^m(z)$, or $2(1 - z)^2 = 1 - y^m(z)$ which gives $y^m(z) = 1 - 2(1 - z)^2$. The first female that rejects a man has productivity $y^f = 1$, and thus rejects a man with productivity κ. It follows that $\bar{z}$ is given by

$$\bar{z} = 1 - \sqrt{(1 - \kappa)/2}$$

On an interval below $\bar{z}$ (stretching at least to $z = 1/2$), the most productive females choose not to marry. For $z \leq \bar{z}$, the probability that a woman does not marry, $\pi(z)$, is equal to

$$\pi(z) = P[y^f \geq \kappa y^m(z) | \frac{x^f + y^f}{2} = z]$$

We have that for $z \geq 1/2$, $y^f|z$ is uniformly distributed on $[2z-1, 1]$. It follows that at this interval,

$$\pi(z) = \frac{1 - \kappa y^m(z)}{2(1-z)}$$

For $z \in \{1/2, \bar{z}\}$, it follows that

$$4(1-z)(1-\pi(z))dz = y^m\prime(z)dz$$

On a small interval dz, the left-hand side shows the number of women in that interval that marry (proportional to the probability density times the propensity to marry at this interval), while the right-hand side shows the number of males that marry in a corresponding interval. Written out, the equation reads

$$y^m\prime(z) = 2 - 2\kappa y^m(z)) \tag{A6}$$

This is an ordinary first order differential equation with a well defined solution. The solution is given by

$$y^m(z) = C_1 e^{-2\kappa z} + 1/\kappa \tag{A7}$$

To find C, we use the initial condition that $y(\bar{z}) = \kappa$, which gives

$$C_1 = -(\frac{1}{\kappa} - \kappa)e^{2\kappa\left(1-\sqrt{\frac{1-\kappa}{2}}\right)} \tag{A8}$$

Consider then the situation with $z < 1/2$. In this case, $y|z$ is uniformly distributed on $[0, 2z]$. Since some females don't marry, there must exist a cut-off y^c below which men don't marry because they don't find a spouse. It follows that for $z < y^c\kappa$, all females marry. Above y^c, $\pi(z) = \frac{2z-\kappa y^m(z)}{2z}$. Recall that $F(z) = 2z^2$ on this interval. It follows that

$$4z(1 - \pi(z))dz = y^m\prime(z)dz$$

Or, written out, at the interval were the lower bound on π does not bind;

$$y^m\prime(z) = 2y^m(z) \tag{A9}$$

Which also has a closed form solution. It follows that

$$y^m(z) = C_2 e^{2\kappa z} \tag{A10}$$

To find C_2, we utilize that $y^m(z)$ is continuous at 1/2. C is determined so that $C_2 e^{\kappa} = C_1 e^{-\kappa} + 1/\kappa$.

Finally, define z^0 implicitly by the equation $y^m(z^0) = 2z^0$. At z^0 and below, all females marry. Define $y^0 = y^m(z^0)$. Below z^0, the marriage pattern is defined by the equation

$$F(z^0) - F(z) = y^0 - y \tag{A11}$$

To summarize, the equilibrium marriage pattern $\{z, y^m(z)\}$ has the following properties:

1. For $z \geq \bar{z} = 1 - \sqrt{(1-\kappa)/2}$, all females marry, and $y^m(z) = 1 - 2(1-z)^2$.

2. For $z \in [1/2, \bar{z}]$, $y^m(z)$ is given by (A7) and the end condition that $y(\bar{z}) = \kappa \bar{z}$.

3. For $z \in [z^0, 1/2]$, $y^m(z)$ is given by (A10) and the end condition that $\lim_{z \to 1/2^-} y^m(z) = y^m(1/2)$.

4. For $z \in [0, z^0]$, $y^m(z)$ is given by (A11)

Appendix B: Robustness

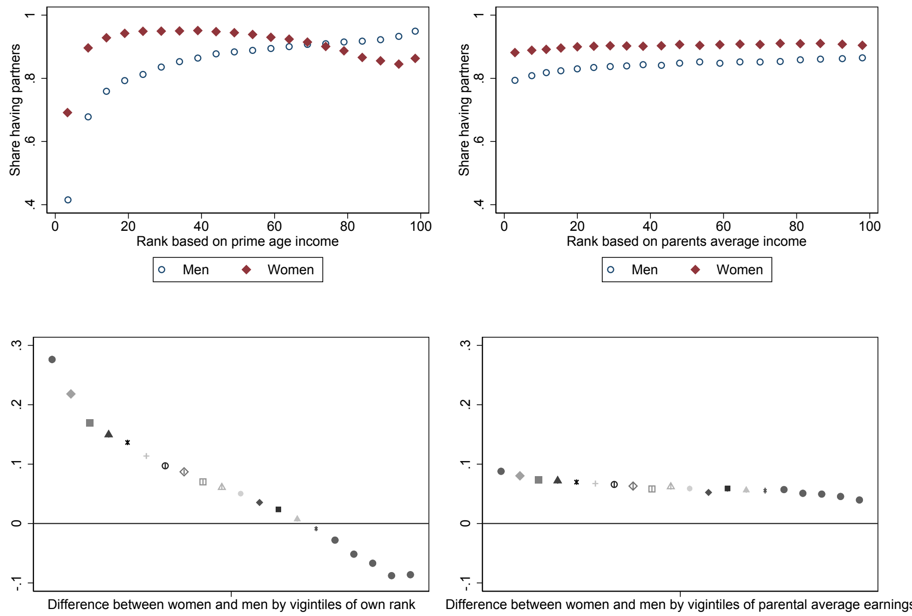


Figure B1: Probability of having found a partner by 2015. By own or parental average earnings

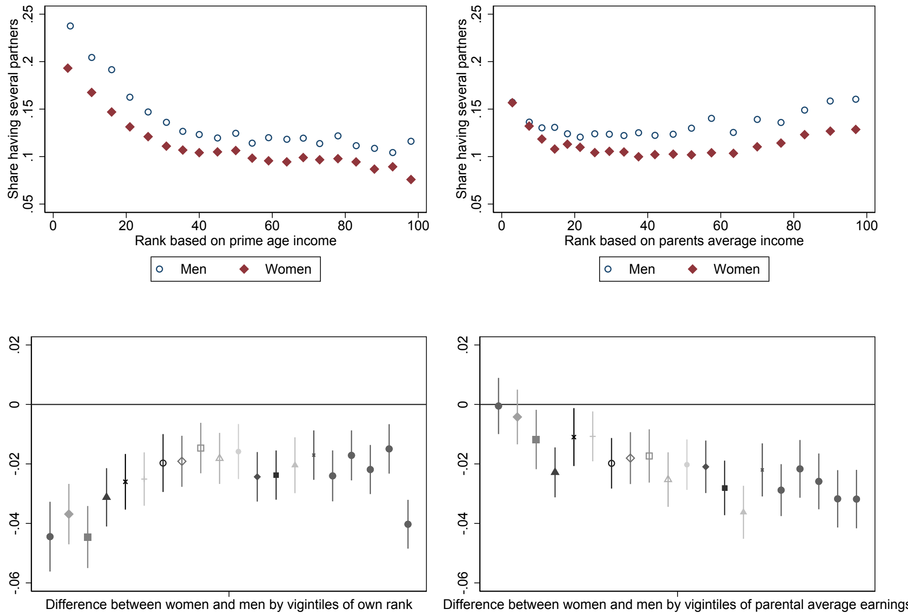


Figure B2: Probability of having had multiple partners by 2015. By own and parental average earnings

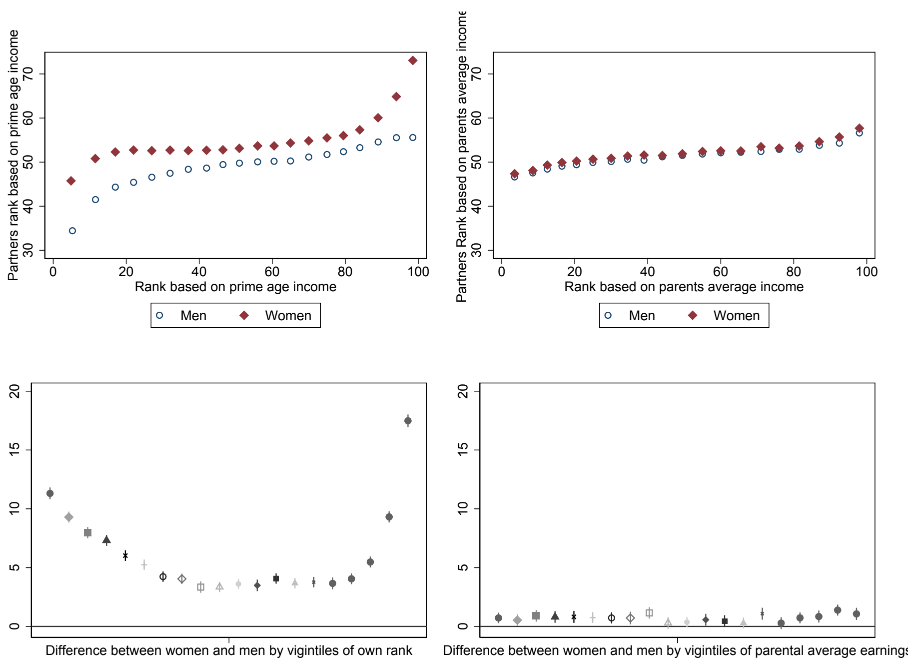


Figure B3: Average partner rank by own rank. By own or parental average earnings

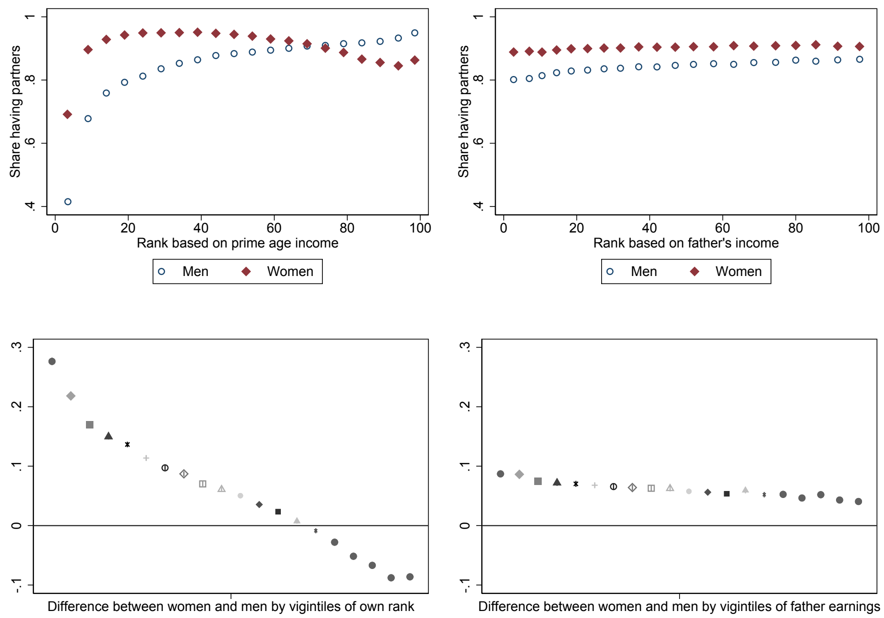


Figure B4: Probability of having found a partner by 2015. By own or father earnings

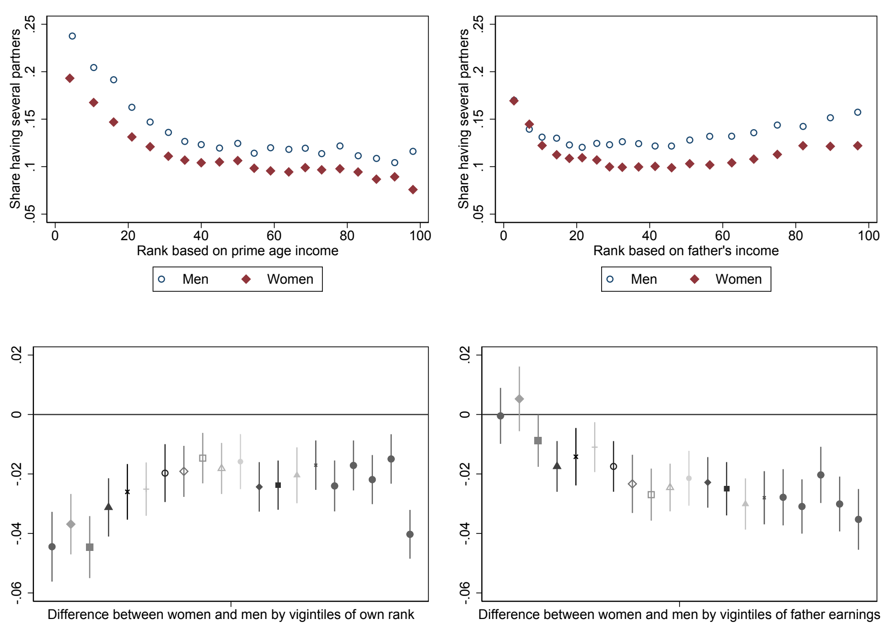


Figure B5: Probability of having had multiple partners by 2015. By own and father earnings

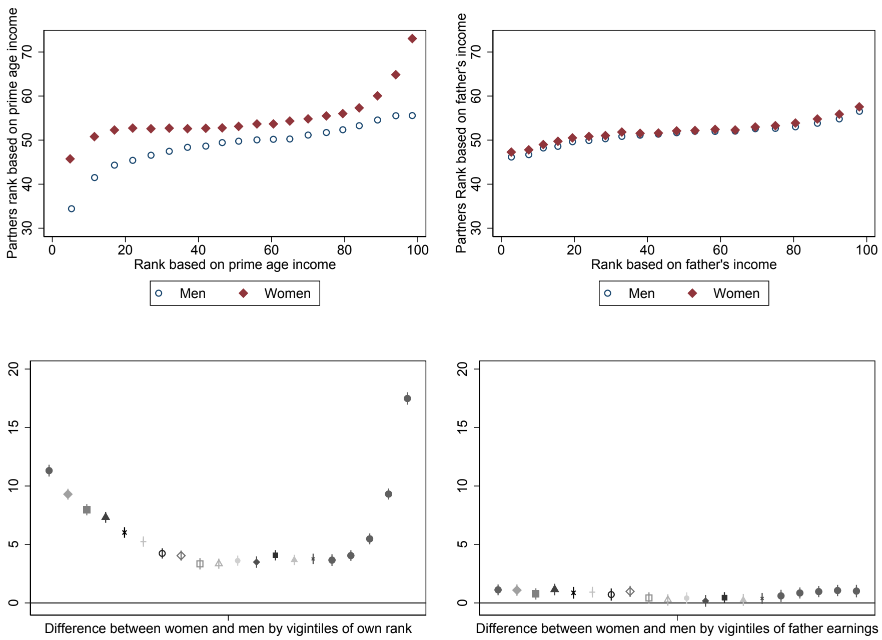


Figure B6: Average partner rank by own rank. By own or father earnings

Table B1: Gender difference in partnering. Instrumental variables (IV) estimates with ranks based on average parental incomes.

	(1) Men	(2) Women	(3) Gender diff.	(4) Men	(5) Women	(6) Gender diff.
Own rank	0.46***	0.23***	0.20***	0.89***	1.00***	-0.087
	(0.0092)	(0.0099)	(0.014)	(0.084)	(0.10)	(0.013)
Own rank squared				-0.0040***	-0.0072***	0.0027**
				(0.00078)	(0.00097)	(0.0013)
Mean of outcome	0.84	0.90	0.87	0.84	0.90	0.87
N	757,868	723,317		757,868	723,317	

*Notes: Own earnings rank is instrumented with average parental earnings rank. Estimates and standard errors are multiplied by 100, such that they are measured in percentage points. The gender differences in columns (3) and (6) are evaluated within a joint model with gender interactions on all variables. Robust standard errors in parentheses. */**/*** indicates statistical significant at the 10/5/1 percent level.*

Table B2: Gender difference in partnering. Instrumental variables (IV) estimates with ranks based on fathers' incomes.

	(1) Men	(2) Women	(3) Gender diff.	(4) Men	(5) Women	(6) Gender diff.
Own rank	0.40***	0.19***	0.21***	0.58***	0.50***	0.077
	(0.010)	(0.013)	(0.016)	(0.095)	(0.13)	(0.16)
Own rank squared				-0.0016*	-0.0028**	0.0012
				(0.00086)	(0.0012)	(0.0014)
Mean of outcome	0.84	0.90	0.87	0.84	0.90	0.87
N	600456	572503		600456	572503	

*Notes: Own earnings rank is instrumented with father earnings rank. Estimates and standard errors are multiplied by 100, such that they are measured in percentage points. The gender differences in columns (3) and (6) are evaluated within a joint model with gender interactions on all variables. Robust standard errors in parentheses. */**/*** indicates statistical significant at the 10/5/1 percent level.*

Table B3: Gender difference in multiple partnerships. Instrumental variables (IV) estimates with ranks based on average parental incomes.

	(1) Men	(2) Women	(3) Gender diff.	(4) Men	(5) Women	(6) Gender diff.
Own rank	0.16***	-0.080***	0.23***	-3.7***	-5.9***	2.3***
	(0.022)	(0.029)	(0.036)	(0.0033)	(0.0059)	(0.68)
Own rank squared				0.034***	0.053***	-0.0020***
				(0.0030)	(0.0055)	(0.0063)
Mean of outcome	0.13	0.11	0.12	0.13	0.11	0.12
N	200,074	202,449		200,074	202,449	

*Notes: Own earnings rank is instrumented with ranks based on average parental incomes, the table is otherwise identical to table 3 in the main paper. Estimates and standard errors are multiplied by 100, such that they are measured in percentage points. The gender differences in columns (3) and (6) are evaluated within a joint model with gender interactions on all variables. Robust standard errors in parentheses. */**/*** indicates statistical significant at the 10/5/1 percent level.*

Table B4: Gender difference in multiple partnerships. Instrumental variables (IV) estimates with ranks based on fathers' incomes.

	(1) Men	(2) Women	(3) Gender diff.	(4) Men	(5) Women	(6) Gender diff.
Own rank	0.066***	-0.12***	0.18***	-3.1***	-5.5***	2.4**
	(0.025)	(0.038)	(0.046)	(0.37)	(0.86)	(0.94)
Own rank squared				0.027***	0.048***	-0.021**
				(0.0033)	(0.0079)	(0.0085)
Mean of outcome	0.14	0.12	0.13	0.14	0.12	0.13
N	116,639	117,127		116,639	117,127	

*Notes: Own earnings rank is instrumented ranks based on fathers' incomes, the table is otherwise identical to table 3 in the main paper. Estimates and standard errors are multiplied by 100, such that they are measured in percentage points. The gender differences in columns (3) and (6) are evaluated within a joint model with gender interactions on all variables. Robust standard errors in parentheses. */**/*** indicates statistical significant at the 10/5/1 percent level.*

Table B5: Gender difference in partner's parental ranks. Ordinary least squares (OLS) estimates with ranks based on average parental incomes.

	(1) Partner rank	(2) Partner with higher rank	(3) Partner rank	(4) Partner with higher rank
Own rank	0.16***	-0.50***	0.079***	-0.54***
	(0.0014)	(0.0019)	(0.0014)	(0.0019)
Female	6.18***	25***	0.66***	7.4***
	(0.12)	(0.17)	(0.11)	(0.16)
Female*Own rank	-0.0061***	-0.31***	0.0014	-0.053***
	(0.0020)	(0.0026)	(0.0019)	(0.0027)
N	1,065,534	1,242,148	1,058,692	1,237,577

*Notes: Columns 3 and 4 use average parental income as basis for the parental ranks, the table is otherwise identical as Table 4 in the main paper. For the dichotomous outcome in columns (2) and (4), the estimates and standard errors are multiplied by 100, such that they are measured in percentage points. The regressions are based on the 1952-1975 birth cohorts. All regressions control for year of birth fixed effects. Robust standard errors in parentheses. */**/*** indicates statistical significant at the 10/5/1 percent level.*

Table B6: Gender difference in partner's parental ranks. Ordinary least squares (OLS) estimates with ranks based on fathers' incomes.

	(1) Partner rank	(2) Partner with higher rank	(3) Partner rank	(4) Partner with higher rank
Own rank	0.16***	-0.50***	0.078***	-0.46***
	(0.0014)	(0.0019)	(0.0015)	(0.0021)
Female	6.18***	25***	0.59***	9.4***
	(0.12)	(0.17)	(0.13)	(0.19)
Female*Own rank	-0.0061***	-0.31***	0.0012	-0.083***
	(0.0020)	(0.0026)	(0.0022)	(0.0031)
N	1,065,534	1,242,148	855,899	996,840

*Notes: Columns 3 and 4 use father income as basis for the parental ranks, the table is otherwise identical as Table 4 in the main paper. For the dichotomous outcome in columns (2) and (4), the estimates and standard errors are multiplied by 100, such that they are measured in percentage points. The regressions are based on the 1952-1975 birth cohorts. All regressions control for year of birth fixed effects. Robust standard errors in parentheses. */**/*** indicates statistical significant at the 10/5/1 percent level.*