Marriage, Assortative Mating and Wealth Inequality*

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Abstract

We use population data on capital income and wealth holdings for Norway to measure asset positions and wealth returns before individuals marry and after the household is formed. These data allow us to establish a number of novel facts. First, individuals sort on personal wealth rather than parents' wealth. Assortative mating on own wealth dominates, and in fact renders assortative mating on parental wealth statistically insignificant. Second, people match also on their personal returns to wealth and assortative mating on returns is as strong as that on wealth. Third, post-marriage returns on family wealth are largely explained by the return of the spouse with the highest pre-marriage return. This suggests that family wealth is largely managed by the spouse with the highest potential to grow it. This is particularly true for households at the top of the wealth distribution at marriage, providing a microfoundation for the scale dependence in wealth returns documented in several empirical papers. Fourth, marriage *lowers* the heterogeneity in returns as well as the degree of wealth inequality relative to the counterfactual case of no marriages. We use a simple analytical example to illustrate how the inequality attenuating role of marriage is affected by assortative mating on wealth and returns and wealth management task allocation between spouses.

Keywords: Wealth inequality, Returns to wealth, Assortative mating.

JEL codes: J12, E21, E24.

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1 Introduction

The upward trend in wealth inequality in the United States and other Westerns countries has revived the debate on the causes of the massive concentration of wealth at the top of the distribution (Saez and Zucman, 2016). Some recent contributions have convincingly argued that heterogeneity in returns to human capital - i.e., labor income - is unlikely to account for the observed inequality in wealth holdings (see De Nardi and Fella 2016 for a review). In contrast, Benhabib et al. (2019) argue that if individuals differ persistently in their ability to generate higher returns to wealth, then it is possible to generate a thick tail in the wealth distribution even if labor income is equally distributed. This theoretical work has been complemented by a series of papers that study empirically the properties of individual returns to wealth and show that indeed individuals differ persistently and significantly in their returns to wealth (Fagereng et al., 2016, Fagereng et al., 2020; Bach et al., 2020).

In microeconomic data where inequality or concentration statistics are computed and analyzed, wealth is always measured at the *household* level. This is because, for legal or practical considerations, after people marry their individual wealth is merged and owned jointly through the life of the marriage. In keeping with this observation, nationally representative surveys and administrative databases collecting information on wealth rarely, if ever, attempt to measure individually-owned assets. Despite this, the debate surrounding trends in wealth inequality and wealth concentration has rarely focused on the marriage market and the extent of assortative mating (which determines inequality in wealth holdings across the newly formed families).

In this paper we fill this gap and study the role of marriage and the extent of assortative mating on wealth and on returns to wealth as potentially important drivers of household wealth inequality and wealth concentration at the top. We first note that marriages, *per* *se*, should act as an equalizing force: the summing of spouses resources and the sharing of investment responsibilities that come with marriages reduce the weight of the tails, lowering inequality in both wealth and returns to wealth among married *households* compared to *single individuals*. Thus, societies where the marriage rate declines, the divorce rate increases, or people spend a larger portion of their life cycle as single will - *ceteris paribus* - experience more household wealth inequality. The composition of marriages also matter. Since people arrive at marriage with very heterogeneous asset levels, the nature of the marital matching process has a key bearing on how much unequal and concentrated the distribution of wealth is in a given marriage cohort. Because wealth is a stock, the role of initial conditions for understanding its dynamics are not negligible. Moreover, wealth evolves over the life cycle of a household at a rate that depends on the return to wealth of the household.[1] The latter, in turn, is affected by the matching process over the pre-marriage returns of the two spouses and by the post-marriage allocation of decision power among the spouses. The extent of heterogeneity in returns to wealth across households is the result of these forces, and affects, together with initial endowments, the degree of wealth inequality in an economy as well as its dynamics. These forces can be very powerful. As an extreme example, in a setting where the individual return distribution for males and females are identical, perfect negative sorting on returns (coupled with an equally shared wealth management rule), may eliminate all heterogeneity in household returns.

Surprisingly, all theoretical models of wealth inequality that focus on returns heterogeneity ignore family formation and hence the assortative mating process.[2] The increasing recognition of the importance of return heterogeneity in explaining wealth concentration warrants an analysis of assortative mating on both wealth and returns to wealth (i.e., on

[1]As well as active saving rates out of wealth. The latter, however, do not seem to vary much across the wealth distribution (see Fagereng et al., 2021).

[2]This also includes very recent contributions (see e.g. Benhabib et al., 2021).

both the level and the growth rate of assets at marriage). This is because the matching process in the marriage market can amplify or attenuate the role of initial wealth conditions and the extent of heterogeneity in returns across households. On the flip side, the vast literature on assortative mating has focused mostly on income and permanent characteristics like education, but has ignored personal wealth and even more returns to wealth (see Eika et al., 2014; Fernandez et al., 2005; Fernandez and Rogerson, 2001; Greenwood et al., 2014). To our knowledge, the only papers that look at the empirical importance of wealth for explaining marriage patterns are Charles et al. (2013), Wagner et al. (2020), and Fremeaux (2009).[3] However, due to data limitations these papers can only study assortative mating on the basis of parental wealth.[4] Whether people sort on parents' or on own wealth at the time of marriage is an open question. The answer may matter for a number of reasons. First, if people sort on own wealth rather than parents' wealth, measuring assortative mating with parental wealth may give a distorted view both of the extent of assortative mating and of its importance for wealth inequality. Second, while spouses' own wealth is pooled right after marriage, parents' wealth is only relevant when it is transferred, typically through bequests and thus at a late stage of the spouses' life cycle. Because heterogeneity in returns among new formed families will start mattering only when assets are accrued to the family, sorting on own wealth or parents' wealth matters for the importance of return heterogeneity for the evolution of wealth inequality. Finally, while intergenerational wealth transfers (*in vivo* or through bequests) can change the amount of wealth people arrive with at marriage, it is still the choices of the children, not those of the parents, that determine observed patterns of assortative mating – assuming away arranged marriages, which are rare institutional features in most developed economics.

[3]Eads and Tach (2016) study how wealth affects marriage stability.

[4]The importance of parental wealth may depend on the importance of bequests in the context studied (i.e., developing vs. developed countries) and on the age of the spouses. With the increase in the age at marriage, personal wealth may be more relevant than parents' wealth for explaining assortative mating patterns, and we indeed find this to be the case in our data.

Unlike assortative mating based on individual-specific characteristics like education or income, which can be observed both before and after marriage, detecting assortative mating by personal wealth and returns to wealth requires observing these variables *before* marriage. After marriage, wealth and capital income are typically observed at the household level, making it hard to identify individual contributions. This poses a formidable data requirement which explains the lack of empirical evidence. In this paper we leverage the large sample size and the long time span of Norwegian administrative data, where people's wealth holdings and returns are observed both *before* and *after* marriage, to study the matching process on pre-marriage wealth and returns and its interplay with post-marriage management of the family assets.[5] This allows as to advance the literature on wealth inequality by documenting the importance of assortative mating in wealth variables. Moreover, we contribute to the literature on assortative mating by studying matching patterns based on personal wealth and returns to wealth. This is in contrast to the existing focus of the literature on assortative mating on personal income, education, or parental wealth.

There is a lively debate in the literature on the determinants of return heterogeneity. Bach et al. (2020) argue that it mostly reflects risk taking behavior; Fagereng et al. (2020), and Fagereng et al. (2020) while acknowledging the importance of risk taking, also stress the role of information and skill differences. The goal of this paper is not to resolve this debate. Instead, we argue that assortative mating on individual returns is potentially an important amplification channel for the role of returns heterogeneity in explaining wealth inequality in the economy, regardless of its source. Marriage can affect the degree

[5]There is another unusual feature of our Norwegian setting: basic tax record information (earned income, net worth, taxes paid) are essentially public information. Between 2001 and 2010 (and hence during almost the entire period covered by our data), anyone with an Internet connection could access the tax information on any taxpayer in Norway in an anonymous way. In 2011 the tax authority restricted the search function to Norwegian taxpayers with a PIN code and a password (see Bo et al., 2015). This means that one could collect information about a potential spouse's income and assets (and, in principle, their dynamics) at a click of a mouse. In 2014 anonymous searches were eliminated: currently, if X searches Y's tax records, Y receives an email informing her that X has requested access to her tax records.

of heterogeneity in returns across families and thus the steady state concentration of wealth for two reasons: *a*) people can match on individual returns (besides sorting on assets, income or education - which can themselves contribute to wealth inequality), and *b*) spouses choose, post-marriage, who will be in charge of the management of the family wealth and thus whose pre-marriage return matters for the subsequent evolution of family wealth. How people match and how they allocate post-marriage wealth management responsibilities, determines how marriage impacts on returns heterogeneity across families.

As an example, assume that the individual return to wealth takes only two values, 1% for half of the individuals and 5% for the other half. Men and women face the same distribution. The average return among singles is 3% with a standard deviation of 2%. Assume all individuals marry and consider two extreme assortative mating scenarios: random mating and perfect (positive) assortative mating (i.e., men with a 1% (5%) return marry women with a 1% (5%) return). Finally, consider two extreme post-marriage wealth management allocations: *a*) both spouses share equally household wealth management responsibilities, so that the household return to wealth is the average of their pre-marriage returns, and *b*) the spouse with the highest pre-marriage return takes full responsibility of the management of the family assets. Since marriage changes the mean as well as the variance of returns, we measure the extent of return heterogeneity with the squared coefficient of variation (Ψ), an index that has the advantage of being decomposable and scale invariant. Among singles, $\Psi = 0.44$. In the table below we report the value of Ψ among married couples in the different scenarios.

	Equal sharing	Highest return
Random mating	0.22	0.18
Perfect assortative mating	0.44	0.44

The heterogeneity in households returns - a key determinant of wealth inequality in society - will reflect assortative mating as well as post-marriage financial decision rules. Random assortative mating tends to reduce return heterogeneity among couples (a simple application of the law of large numbers), but less so when household wealth management responsibilities are shared equally (or less "efficiently"). This is because "specialization" reduces the incidence of the lower tail of the distribution of returns, raising the mean faster than it lowers the variance. In contrast, perfect assortative mating reproduces among couples the same extent of return heterogeneity observed among singles, regardless of who manages household wealth.

The availability of pre- and post-marriage data in the Norwegian records allows us to investigate whether household returns on wealth reflect pre-marriage spouses' returns, thereby allowing us to infer the rules governing wealth management within the household. A valuable aspect of our data is the ability to match spouses to their parents (along with their wealth and returns). This allows us to enrich our analysis and study whether parental wealth is a significant factors that individuals consider when sorting (as argued by Charles et al., 2013), particularly when controlling for individual pre-marriage wealth.

We find significant assortative mating on personal wealth. Importantly, once we control for personal wealth at marriage, there is no evidence of sorting based on parental wealth. Assortative mating on personal wealth is not a reflection of assortative mating on other traits emphasized in the literature, notably income and education - which tend to correlate with wealth. Rather, it emerges and remains quantitatively similar even conditioning on people's matching on these traits. Additionally, we uncover significant assortative mating on *returns* to wealth, a finding previously undocumented. This result remains even after accounting for matching based on wealth, which is crucial given evidence indicating that returns are influenced by the scale of wealth (see Gabaix et al., 2016; Fagereng et al., 2020). Moreover, matching on returns is distinct from matching on education; we find similar levels of sorting on returns within narrowly defined educational groups.[6] We conclude that matching on personal wealth and returns are independent and so far neglected sources of wealth inequality.

To shed light on wealth management responsibility within the family, we study the relationship between post-marriage household returns on wealth and pre-marriage individual spouses' returns. We establish four notable results. First, post-marriage returns depend on pre-marriage spouses returns - implying that spouses not only combine their assets upon marriage, but also their wealth management styles/abilities (as proxied by the average pre-marriage return). Secondly, the spouse with the highest pre-marriage return carries a larger weight on post-marriage returns on household wealth. This suggests that decision power in family wealth management is largely determined by spouses relative wealth management skills. Third, husbands exert a larger influence than their pre-marriage return warrants. This may reflect social norms assigning greater decision power to males even when it would be economically efficient not to do so. Finally, we find that the spouse with the lower pre-marriage return exerts no influence among wealthy households. Because this "efficiency" result generates higher returns among top wealth households, it tends to magnify wealth concentration and it provides a micro-foundation for the documented phenomenon of scale dependence in wealth returns.

The rest of the paper is as follows. In Section 2 we illustrate the data sources and discuss how we measure wealth and returns. In Section 3 we present a simple analytical example designed to illustrate how the main forces at play affect wealth inequality at marriage and over the life of the household. In Section 4 we show basic properties of the distributions of pre- and post-marriage own wealth and returns for males and females,

[6]We also find evidence of intergenerational correlation in wealth and returns. The intergenerational wealth elasticity is in the ballpark of existing estimates in the literature (see Boserup et al., 2014). The intergenerational return elasticity, while very precisely estimated, is quantitatively smaller than the intergenerational wealth elasticity, most likely a reflection of the fact that it is easier to transmit wealth than the ability to grow it larger across generations.

discussing formal tests of equality of these distributions, and test for assortative mating on own wealth and on returns. In Section 5 we discuss evidence on post-marriage wealth management rules. Section 6 concludes. An Online Appendix provides additional details about data construction as well as additional evidence and robustness checks.

2 Data Description

2.1 Data Construction

Our analysis is based on several administrative registries maintained by Statistics Norway, which we link through unique identifiers for individuals and households. In this section, we discuss the broad features of the data; more details are provided in the Appendix, which draws from Fagereng et al. (2020). We start by using a rich longitudinal database that covers every Norwegian resident from 1967 to 2015. For each year, it provides relevant demographic information (gender, age, marital status, educational attainment) and geographical identifiers. For the period 1993-2015 we can link this database with several additional administrative registries: tax records containing detailed information about the individual's sources of income from labor and capital, asset and liabilities holdings, as well as a housing transaction registry. For the shorter 2004-2015 period we also have access to a shareholder registry with detailed information on listed and unlisted shares owned and to balance sheet data for the private businesses owned by the individual. In sum, the data span all components of the household balance sheet. The value of asset holdings and liabilities is measured as of December 31.

The data we assemble have several, noteworthy advantages for the purpose of our study. First, our income and wealth data cover all individuals in the population who are subject to income and wealth tax, including people at the very top of the wealth distribution. This allows us to explore whether assortative mating on wealth variables differs across wealth groups. Because wealth measures are from administrative registries, they do not suffer from recall bias. Moreover, since the data cover the whole population, they are free from attrition, except the (unavoidable) one arising from mortality and emigration. Second, because most components of income and wealth are reported by a third party (e.g., employers, banks, and financial intermediaries) and recorded without any top- or bottom-coding, the data do not suffer from the standard measurement errors that plague household surveys and confidentiality considerations that lead to censorship of asset holdings.[7] Third, unique identifiers allow us to match parents with their children which allows us to study whether people sort on parental or personal wealth. Moreover, "spousal identifiers" allow us to match individuals with their spouse (if married) or with the cohabiting partner (if they share the custody of a child). Finally, the Norwegian data have a long panel dimension, which is crucial to compute reliable pre- and post-marriage average returns to wealth.

Our sample is comprised of all couples that marry (or cohabit with one or more children) between 2005 and 2014. We include both first and subsequent marriages.

2.2 *Variables construction*

Most of our empirical analysis will be based on two definitions of wealth: financial wealth and net worth. These two metrics are useful because they provide summary measures of the amount of liquid wealth and of the net asset position of the individual or household, respectively. Net worth is defined as gross wealth w^g_{it} net of outstanding debt (b_{it}):

[7] Clearly, if some assets are held abroad and not reported to the tax authority there will be an understatement of wealth concentration since it is plausible that these assets are disproportionately held by the wealthy (Zucman, 2014). Using information on Norwegian taxpayers who disclosed assets held offshore following an amnesty in the early 2000's, Alstadsæter et al. (2018) show that the beneficiaries of the amnesty are indeed the very wealthy. Of the 1419 individuals who disclosed assets offshore, essentially none is below the 99th percentile and 50% are among the wealthiest 400. The chances of having assets offshore increases sharply with wealth but is never larger than 12% (Zucman, 2015), suggesting that many wealthy may have no wealth offshore. Alstadsæter et al. (2018) show that accounting for hidden wealth can increase the top 0.1% wealth share by roughly 1 percentage point on average.

$$w_{it} = w^g_{it} - b_{it}$$

Gross wealth is the sum of financial (or liquid) wealth w^l_{it} (the sum of safe and risky liquid financial assets) and non-financial (or real) wealth w^r_{it} (the sum of housing and private business wealth). Debt is the sum of mortgage debt, student debt, and consumer loans.

As in Fagereng et al. (2020), our reference measure of return is the *return on (total) assets* (ROA), defined as:

$$r^n_{it+1} = \frac{\sum_{j=\{l,r\}} \left(y^j_{it+1} + \delta^j_{it+1} \right) - y^b_{it+1}}{w^g_{it} + D^g_{it+1}/2} \tag{1}$$

The numerator is the sum of interests and dividends on financial and real assets (y^l_{it+1} and y^r_{it+1}, respectively), accrued (i.e., realized and *unrealized*) capital gains/losses on the same assets (δ^l_{it+1} and δ^r_{it+1}, respectively), minus the cost of debt (y^b_{it+1}), all measured as flows in year $t+1$. The denominator follows Dietz (1968), and is defined as the sum of beginning-of-period stock of gross wealth (w^g_{it}) and net flows of gross wealth during the year (D^g_{it+1}), assuming they occur on average in mid-year (hence the division by 2). The second term on the denominator accounts for the fact that asset yields are generated not only by beginning-of-period wealth but also by additions/subtractions of assets during the year. The Dietz adjustment avoids overstatement (understatement) of returns due to active saving (dissaving) decisions made during the year.[8]

Note that an alternative measure of return would be the return to net worth, where the numerator of (1) is divided by net worth (plus a Dietz adjustment) instead of gross wealth (plus the Dietz adjustment). We prefer our reference measure for two reasons. First,

[8]The bias is most obvious in the case in which beginning-of-period wealth is "small" but capital income is "large" due to positive net asset flows occurring during the period. Ignoring the adjustment would clearly overstate the return. The opposite problem occurs when assets are sold during the period.

the sign of the return depends only on the sign of the yield (and not on that of net worth), thus avoiding assigning positive returns to individuals with negative net worth and debt cost exceeding asset income plus accrued capital gain. Second, a non-negligible fraction of households have zero or close to zero net worth, which makes the return to net worth undefined or implausibly large.

While we focus our regression analysis on the return on assets because it captures all sources of capital income, we also document returns on liquid financial wealth, defined as:

$$r_{it}^{l} = \frac{y_{it}^{l} + \delta_{it+1}^{l}}{w_{it}^{l} + D_{it}^{l}/2} \tag{2}$$

where D_{it}^{l} are net flows of financial wealth accruing during the year.[9] All return measures are net of inflation (using the 2011 CPI) and gross of taxes/subsidies. We refer the interested reader to the Appendix and to the Data Appendix in Fagereng et al., 2020 for a detailed description of the various asset and capital income components. The Appendix also explains how to use information on asset stocks at the beginning and end of period, together with information on the income that is capitalized into wealth, to obtain estimates of D_{it}^{g} and D_{it}^{l}.

2.3 *Assortative mating variables*

We study assortative mating on wealth and on returns to wealth. Unlike education or income which can be traced to the individual spouses before and after marriage, wealth of the two spouses is typically merged at marriage. This poses the problem of contamination coming from childless cohabitation being classified as single-hood. Call t the year of marriage (or the first year we observe cohabitation with a common child). We define the

[9] In the descriptive tables we also present statistics for gross wealth and its return, which is useful to separate the role of real assets from that of debt when moving from the concept of financial wealth to that of net worth. The return to gross wealth is simply $r_{it+1}^{g} = \frac{\sum_{j=\{l,r\}}\left(y_{it+1}^{j}+\delta_{it+1}^{j}\right)}{w_{it}^{g}+D_{it+1}^{g}/2}$.

pre-marriage average individual return as:

$$\bar{r}_{i,t-\tau}^{j,pre} = \frac{\sum_{s=1}^{t-\tau} r_{is}^{j}}{t-\tau}, \tag{3}$$

where $s = 1$ is the first year in which individual i is observed and $j = \{l, n\}$. Since spouses may start pooling assets (and making joint financial decisions) before we observe them in a formal marital arrangement (marriage or cohabitation) in year t, we compute these averages 4 years before the formal year of marriage (i.e., use $\bar{r}_{i,t-4}^{j,pre}$).[10] As for wealth, we consider the individual stock of wealth 4 years before marriage, i.e., use $w_{i,t-4}^{j,pre}$. As a robustness exercise, we also look at individuals who four years before marriage were living in different counties and hence, by definition, not cohabiting.

Our analysis also requires computation of a post-marriage household return, which we define as:

$$\bar{r}_{h,t}^{j,post} = \frac{\sum_{s=t+1}^{T} r_{hs}^{j}}{T-t}, \tag{4}$$

where T is the last year in which the couple is observed, h is an index for the household, and we omit the year of marriage from the computation of the average since it may reflect choices made when individuals were still single. Finally, we use the same logic to construct wealth stocks and average wealth returns for the parents of the spouses. To avoid extreme leveraged observations (large debt, and hence large interest payments, with minimal gross wealth) creating outliers in our return measures, we drop observations where pre-marriage average returns and post-marriage average returns are below the 5th percentile.

2.4 *Descriptive Statistics*

Table I provides descriptive statistics on the individuals in our sample of couples. Median age at marriage is 29 for women and 32 for men, reproducing the age gap observed in

[10]We also experimented excluding only the two years before marriage, with qualitatively similar results.

many countries (the numbers for the US are 28 and 30, respectively) and the fact that age at marriage has been steadily increasing. Since Norwegians get married in their late 20s/early 30s, they have already accumulated some wealth by the time they make their marital choices. About 85% of individuals in our sample are in their first marriage. Women have essentially the same schooling as men, and they are more likely to have completed an Economics/Business degrees, which one could take as a proxy for financial sophistication/knowledge. Four years before we record them as married or cohabiting, about 10% of them lived in Oslo; moreover, 15% of the men and 12% of the women were classified as homeowner.

Table II shows some descriptive statistics about assets. We present statistics for individual assets four years before marriage (or cohabitation) and household wealth in the year following marriage. We also present statistics about parents' wealth (four years before their children marry). The main feature is that men have more wealth than women (both net worth, gross wealth, and financial wealth). In contrast, there is little difference between average new worth of their parents. Men's financial portfolio is also slightly riskier. Net worth following marriage is higher than the sum of individual net worth measured 4 years before marriage. Some of the increase reflects the time gap, but some reflects an increase in real assets (gross wealth increases by 21% while financial wealth by 7%). This is may be because of housing wealth received as gift from parents or because of an increase in house prices over our sample period.

To gain some insight on the shape of the distribution of returns, Figure I, Panel A, plots the kernel density of the return on assets before marriage for males and females using pre-marriage average returns (excluding the 4 years leading to marriage). Interestingly, the shape of the two distributions looks quite similar; both are unimodal, centered approximately at around zero and both reveal excess kurtosis. The males distribution has less probability mass around the mode and slightly more dispersion. A formal Kolmogorov-

Smirnov test of the equality of male and females returns distribution rejects the null. The figure also shows the distribution of the post marriage returns; it is strikingly clear that, compared to pre-marriage returns it has more probability mass in the center, consistently with marriage shrinking the extent of return heterogeneity. The salient moments for these three distributions are reported at the bottom of Table II.

Panel B of Figure I compares pre-marriage returns on financial wealth (again, excluding the 4 years before marriage) for the two spouses. The distributions are unimodal, with a long right tail and excess kurtosis. The mode is the same for males and females while male returns are somewhat more spread-out with a slightly higher density both on the left and right tails. Also in this case, a formal Kolmogorov-Smirnov test of the equality of male and females pre-marriage returns distribution rejects the null, while heterogeneity falls after marriage.

3 An Illustrative Example

To introduce the role of marriage and isolate the main forces linking assortative mating, wealth management task allocation and wealth inequality, consider the following illustrative example. Husband, m, and wife, f, arrive at marriage with individual wealth w_0^m and w_0^f. Upon marriage, the individual wealth of the spouses is merged, so that household wealth is: $w_0^h = w_0^m + w_0^f$. The degree of assortative mating in wealth can be measured by the correlation coefficient $\rho_w = corr(w_0^m, w_0^f)$. Two extreme cases considered in the literature are random matching, $\rho_w = 0$, and perfect, positive assortative mating, $\rho_w = 1$; negative sorting (hypergamy/"marrying up" or its opposite, hypogamy/"marrying down") is also possible. Following Lam (1997), we measure inequality of variable z (either wealth or returns on wealth) with the square of its coefficient of variation:

$$\Psi_z = \left(\frac{\sigma_z}{\mu_z}\right)^2$$

where σ_z and μ_z are the standard deviation and the mean of z, respectively. We choose this index for its decomposability properties and because it obeys scale invariance (a desirable property also shared by popular concentration measures such as the top shares or the Gini coefficient - see Cowell, 2016).

It's easy to show that societies with greater assortative mating on spouses' own wealth display greater wealth inequality at the point of marriage:

$$\Psi_{w_0^h} = \Psi_{w_0^m}\omega_{w^m}^2 + \Psi_{w_0^f}(1-\omega_{w_m})^2 + 2\rho_w\omega_{w^m}(1-\omega_{w^m})\sqrt{\Psi_{w_0^m}}\sqrt{\Psi_{w_0^f}}, \tag{5}$$

where $\omega_{w^m} = \mu_{w_0^m}/\mu_{w_0^h}$ is the average husband's contribution to household wealth. It can also be noted that – in the simple case in which inequality in the distribution of single men is the same as inequality in the distribution of single women, or $\Psi_{w_0^f} = \Psi_{w_0^m} = \Psi_{w_0^s}$ – inequality in a population of couples is *less* than inequality in a population of singles, $\Psi_{w_0^h} \leq \Psi_{w_0^s}$: marriage *per se* is an equalizing force.[11] Hence, a decline in the marriage rate increases wealth inequality in the population of *households* (which is what is typically measured in the data).

Does wealth inequality increase over the life cycle of a marriage cohort? Leaving aside differences in saving rates out of wealth after marriage (which, as shown by Fagereng et al., 2021, appear unimportant), the answer depends, among other things, on the extent of return heterogeneity. If household wealth grows at a common constant rate $R^h = \bar{R}$, i.e., $w_\tau^h = w_0^h\bar{R}^\tau$, τ years after marriage, then, because of the scale invariance of the inequality

[11]The result is more general. If $\Psi_{w_0^f} \neq \Psi_{w_0^m}$, it is simple to show that inequality in a population of singles is: $\Psi_{w_0^s} = 2\left(\Psi_{w_0^m}\omega_{w^m}^2 + \Psi_{w_0^f}(1-\omega_{w_m})^2\right) + (2\omega_{w^m}-1)^2 \geq \Psi_{w_0^h}$, where $\Psi_{w_0^h}$ is given by (5).

index, $\Psi_{w^h_\tau} = \Psi_{w^h_0}$. Hence, inequality remains constant over the life cycle, reflecting only initial conditions.

Suppose instead that returns are heterogeneous and persistent (as found empirically by Fagereng et al., 2020, Bach et al., 2020, and others) and, for simplicity, that they are distributed independently of wealth. Assume that spouses arrive at marriage with returns given by R^m and R^f, respectively, and that the post-marriage household return is a weighted combination of the highest and lowest return:

$$R^h = q\max\{R^m, R^f\} + (1-q)\min\{R^m, R^f\} \tag{6}$$

where q is the weight placed on the highest-return spouse; in the equal weighting case, $q = 1/2$. Finally, assortative mating on returns can be measured by the correlation coefficient $\rho_R = corr(R^m, R^f)$.

To see clearly the effect on household return heterogeneity of assortative mating on returns, assume for simplicity that the distribution of individual male and female returns are jointly normal with equal mean and variance (so that $\Psi_{R^m} = \Psi_{R^f} = \Psi_{R^s}$). Heterogeneity in households returns is thus (using results from Afonja, 1972, and Nadarajah and Kotz, 2008):

$$\Psi_{R^h} = \frac{\left(1 - 2q(1-q)(1-\rho_R) - \frac{(1-\rho_R)}{\pi}(2q-1)^2\right)}{\left(1 + (2q-1)\left(\sqrt{\frac{(1-\rho_R)\Psi_{R^s}}{\pi}}\right)\right)^2}\Psi_{R^s} \tag{7}$$

Two key forces affect the extent of return heterogeneity in the population of couples: the degree of assortative mating in returns (ρ_R) and how financial responsibilities are allocated among spouses (as measured by the parameter q). To isolate the role of assortative mating in returns, we fix q by considering two special cases: (a) equal sharing of financial responsibilities (in which $q = 1/2$), and (b) specialization, in which $q = 1$ and financial responsibilities are assigned entirely to the spouse with the highest return.[12]

In case (a) R^h is a simple average of the two spouses' returns, and expression (7) collapses to:

$$\Psi_{R^h} = \frac{1}{2}(1+\rho_R)\Psi_{R^s}$$

Hence, marriage *attenuates* return heterogeneity ($\Psi_{R^h} \leq \Psi_{R^s}$) unless there is perfect assortative mating on returns ($\rho_R = 1$). In principle, perfect *negative* assortative mating ($\rho_R = -1$) might even eliminate any heterogeneity in returns among married couples.

In case (b), $R^h = \max\{R^m, R^f\}$. One can show that: $E(R^h) = E(R^s) + \sqrt{\frac{var(R^s)(1-\rho_R)}{\pi}}$ and $var(R^h) = (1 - \frac{1-\rho_R}{\pi})var(R^s)$. Hence:

$$\Psi_{R^h} = (1 - \frac{1-\rho_R}{\pi})\omega^2_{R^s}\Psi_{R^s}$$

where $\omega^2_{R^s} = E(R^s)/E(R^h) \leq 1$. Thus, also in the case of "full specialization" in which the household portfolio is managed by the highest-return spouse, the extent of household return heterogeneity is increasing in the degree of assortative mating in returns (since $\omega^2_{R^s} = 1$ when $\rho_R = 1$, implying $\Psi_{R^h} = \Psi_{R^s}$). Since the extent of persistent return heterogeneity is key for generating growth in wealth inequality as households belonging to a given marriage cohort age, the role of assortative mating in returns becomes relevant precisely because of this channel.

In the left panel of Figure II we use expression (7) to compute how the extent of return heterogeneity changes with the degree of assortative mating in returns ρ_R in the more general case. We trace the relationship under three different assumptions regarding q: $q = 1$ (where all the decision power is in the hands of the spouse with the highest pre-marriage average return), $q = 0.8$ (which is close to the empirical value we estimate in

[12] In expression (7) π= 3.14 is the mathematical constant.

Section 5), and $q = 0.6$. The picture shows that marriages reduce inequality in returns relative to the case where all individuals are single (the dotted lined marked $\Psi_{R(single)}$), and that the less assorted marriages are, the stronger is this equalizing force. The picture also shows that this attenuation effect will be stronger if couples follow a “full specialization” rule in wealth management (where $q = 1$).

For realistic parameter values, one can also show that household portfolio choice specialization (i.e., a move towards portfolio choices dominated by the spouse with the highest potential to grow the existing stock of household wealth) reduces the extent of return heterogeneity in the population of married couples relative to the population of singles, since it “cuts the tails” of the distribution of returns prevailing when all individuals are single. These comparative static results are shown in the right panel of Figure II, where we use expression (7) to compute how return heterogeneity changes with q. We trace the relationship between Ψ_{R^h} and q by fixing the degree of assortative mating in returns to three possible values, $\rho_R = -0.2$, $\rho_R = 0.2$ (the value closest to the one we estimate in the data, see Section 5), and $\rho_R = 0.5$. For realistic values ($q \geq 1/2$), return heterogeneity decreases with marriage, again relative to the case where all individuals are single. This is hence another reason to expect marriages to compress the extent of return heterogeneity and – if return heterogeneity impacts positively wealth concentration – to reduce the extent of wealth inequality in society. Note that the attenuation effect of specialization in portfolio choices is stronger when couples are less assorted in wealth returns.

In the more general case where inequality in household returns is given by (7), one can show that - assuming for the sake of illustration no family dissolution - wealth inequality among households belonging to a marriage cohort evolves dynamically according to the expression:

$$\Psi_{w_1} = \Psi_{w_0} + \Psi_{R^h} + \Psi_{w_0}\Psi_{R^h} \tag{8}$$

and hence, after τ years of marriage, $\Psi_{w_\tau} = (1+\Psi_{w_0})(1+\Psi_{R^h})^\tau - 1$.[13]

From this simple analytical framework a few conclusions follow. All else equal:

1. If marriage induces spouses to aggregate their assets and (weight-)average their returns, both wealth inequality and the extent of return heterogeneity will be lower among couples than among singles;

2. Societies with greater assortative mating on wealth display more wealth inequality at marriage, $\frac{\partial \Psi_{w_0}}{\partial \rho_w} > 0$, and beyond;

3. As in Benhabib et al. (2019), returns heterogeneity increases wealth inequality ($\frac{\partial \Psi_{w_\tau}}{\partial \Psi_{R^h}} > 0$);

4. The extent of return heterogeneity (and hence its contribution to explaining wealth inequality) declines when the degree of assortative mating on returns is lower ($\frac{\partial \Psi_{R^h}}{\partial \rho_R} < 0$) and when household wealth management tasks move from equal responsibility towards specialization in the hands of the spouse with the highest pre-marriage return ($\frac{\partial \Psi_{R^h}}{\partial q} < 0$).

These conclusions highlight that assessing the role of marriage in explaining wealth inequality and concentration requires documenting the importance of assortative mating in both wealth and returns, as well as the degree of specialization in portfolio choice of couples. These are the goals of our empirical analysis below.

In Table III we start by computing the Ψ statistics for singles and couples and for net worth and our preferred return measure. We find that, as expected given the discussion above (point 1), marriages reduce inequality in both wealth and returns to wealth, with the decline in returns heterogeneity being particularly pronounced (64% lower among

[13] If there is scale dependence so that wealth and returns are correlated (with correlation coefficient ρ_{WR}), one can show that equation (8) becomes: $\Psi_{w_1} = \frac{\Psi_{w_0} + \Psi_{R^h} + (1+\rho_{WR}^2)\Psi_{w_0}\Psi_{R^h} + 2\rho_{WR}\sqrt{\Psi_{w_0}}\sqrt{\Psi_{R^h}}}{1+\rho_{WR}^2\Psi_{w_0}\Psi_{R^h} + 2\rho_{WR}\sqrt{\Psi_{w_0}}\sqrt{\Psi_{R^h}}}$.

couples than among singles). Since the Ψ statistics may be influenced by extreme values in the tails, we also report a standardized index of variability (the 90-10 percentile difference normalized by the median) that is robust to that issue, and find qualitatively similar results.

4 Assortative Mating: Empirical Evidence

In this section we document assortative mating patterns by wealth and returns to wealth. We present various descriptive measures: the Spearman rank correlation coefficient (a simple non-parametric measure of assortative mating), a heat-map showing who marries who in the wealth distribution, and a rank-rank plot. Finally, we consider standard controlled regressions.

4.1 Assortative mating on wealth

As explained above, we consider assortative mating on wealth four years before marriage (or cohabitation with a common child) is firstly recorded. Pulling data for all years, we estimate the Spearman rank correlation coefficient to be 0.19, which implies positive assortative mating.

Figure III shows a heat-map of who marries whom. This is particularly useful because, given that we observe wealth for the whole population, we can study whether assortative mating on wealth varies with the position in the wealth distribution, something that cannot be done with the Spearman index. We allocate individuals to wealth ventiles using values observed four years before marriage (or cohabitation with a common child). These distributions are computed separately by gender and marriage year. The numbers in Figure III are the number of marriages in each of the 400 possible cells. Clearer colors correspond to more marriages; quite evidently, there is more mass along the main diagonal than elsewhere, consistent with a significant degree of assortative mating on wealth.

Interestingly, there are also some non-linearities: people at the top of the distribution are more likely to marry people at the bottom than people in the middle of the distribution.

An alternative analysis of assortative mating is the rank-rank plot (which also paves the way to the more formal regression analysis that follows). In Figure IV we report the average percentile rank of the wife's net worth (the y-axis) for each percentile rank of the husband's net worth (the x-axis). Random matching would give a horizontal line centered at the median; a perfectly positive assortative mating would be a 45 degree line (a slope of 1). The actual slope coefficient is 0.2, consistent with positive but far from perfect assortative mating on average. However, one key property of the data is that there are strong non-linearities in assortative mating on wealth. At the very bottom (bottom quintile), net worth is negative and matching is, if anything, negative (people with debt do not match with people with debt). Above the 20th percentile the relationship is positive and stronger (slope 0.31). In the top decile there is even much more assortative mating (slope 0.73). Figure A.1 in the Appendix shows the rank-rank plot for parental wealth. The assortative mating is still positive, but much more attenuated than that based on personal wealth (a linear regression slope of 0.12). Moreover, the relationship is more stable over the wealth scale because debt is much less of an issue in the sample of parents who, being much older than their kids, may have paid out all (or almost all) of their student or mortgage debt. Rank-rank plots using own and parents' financial wealth reveals similar patterns (see Appendix, Figure A.2).

Does assortative mating on wealth simply reflects assortative mating on other traits the literature has focused on, such as education or income? Below, we present formal controlled regressions; however, it is useful to start with some visual evidence. In Figure V we consider the following exercise. We start by selecting individuals who are perfectly assorted on higher education (i.e., both spouses have college education or more). We then allocate them to wealth ventiles using information on wealth four years before marriage.

The left panel is the heat-map, the right panel is the bin-scatter. Clearly, even in a narrow group of people perfectly assorted on education, we continue to see assortative mating on personal wealth (in fact, even more than in the full sample). In the Appendix (Figure A.3), we repeat the same exercise by selecting individuals who are perfectly assorted on their income at the time of marriage (i.e., both spouses are in the top income quartile). The evidence is similar.

In Tables IV and V we turn to formal regression analysis. In particular, we present results of estimating regressions of the form:

$$P(w^{pre}_{m,t-4}) = \lambda^{w} P(w^{pre}_{f,t-4}) + Z'\theta^{w} + \psi^{w}$$

where $P(w^{pre}_{j,t-4})$ is the net worth percentile occupied by spouse $j = m, f$ (or by the spouse's parents) four years before marriage, Z a vector of controls and ψ^{w} an i.i.d. error component. These percentiles are computed separately by gender and marriage year.[14]

To test whether people sort on parents' wealth, in column (1) of Table IV we replicate Charles et al. (2013), and regress the man's parents' wealth percentile against the woman's parents' wealth percentile (again, using values recorded four years before marriage). This replicates the slope reported in the left panel of Figure IV (0.13). Controlling for a rich set of demographics (age, years of schooling, whether the spouse has an economics or business degree, county fixed effects, and whether it is the first marriage) reduces the slope significantly (to 0.046, s.e. 0.003, column (2)).

Next (Table V), we focus on matching on own wealth, regressing the man's own wealth percentile on woman's own wealth percentile, both measured four years before marriage.

[14] Eika et al. (2014) criticize assortative mating regressions where one spouse's outcome is regressed on the other spouse's outcome because the evolution of the "assortative mating" coefficient over time does not accurately measure the changes in assortative mating, as it confounds changes in the assortativeness of marriage with shifts in the marginal distributions of the outcome variable. This criticism does not apply here, since we are using percentiles of the outcome variables (and are more interested in steady-state assortative mating rather than its evolution over time). Indeed, it is practically irrelevant whether we regress the husband's outcome on the wife's outcome or *vice versa*.

The coefficient on this variable measures the intra-marital wealth elasticity, or the extent of assortative mating on wealth. Column (1) reproduces the unconditional slope reported in the right panel of Figure IV (0.2, s.e. 0.003). The regressions reported in columns (2)-(4) consider richer specifications. In all these conditional regressions we control for the same set of individual demographics mentioned above, as well as year of marriage dummies. Again, demographics reduce the elasticity (slope 0.11, s.e. 0.003). In column (3), we test whether it is the spouse's parents' wealth or the spouse's personal wealth that drives assortative mating, and confirm that it is only the latter: compared to Table IV, parents wealth coefficient drops by a factor of 20 and loses significance. We also control for the man's parents' wealth, which hence allows us to estimate an intergenerational wealth elasticity. The degree of intergenerational persistence is as large as that of assortative mating on own wealth (0.10 vs. 0.11) and in the ballpark of estimates in other papers, such as Boserup et al. (2014). Together, these results show that assortative mating on parental wealth emerges only because the latter tends to proxy for assortative mating on personal wealth. Moreover, since controlling for the man's parents' wealth percentile leaves the degree of assortative mating on own wealth unaffected, one can conclude that intergenerational persistence in wealth and assortative mating on wealth are distinct phenomena. In column (4) we check more formally that assortative mating on wealth does not originate merely from assortative mating on traits (such as education) that correlate with wealth. In particular, we control for all the possible interactions of the wife's and husband's education groups. Remarkably, the results remain economically and statistically similar. Results are similarly unaffected if we replace controls for assortative mating on education with controls for assortative mating on income (interaction of the husband's and wife's income percentiles). This confirms that even among couples that are highly assorted on the basis of education or income, there is additional sorting on wealth similar to that found if no control for assortative mating on education (income) is included. Finally, our results are not driven by people having more wealth when entering second and higher order marriages, since we control for marriage order. The results are similar if we focus on first marriages (column (5)). That relatively young people have any wealth to sort on may seem surprising. However, consider that the vast majority of Norwegians leave parental home when going to college. Hence, by the time they marry (in their early 30s) they have already saved (or been financially active) for about 10-15 years.

A concern is that some of the assortative mating in wealth can be spurious if people cohabit for a long time (i.e., 4 years or more) before marriage and tend to share resources. As further robustness, we select those who, four years before we firstly see them as married, were living in different counties, so are - by definition - not cohabiting. The results are similar, if anything suggesting even more assortative mating than in the whole sample (column (6)). A final concern is that assortative mating on own wealth may reflect assortative mating on parents' wealth for those who have received an inheritance. In column (7) we focus on a sample of individuals who have both parents alive four years before marriage, which thus removes any concern about own wealth partly reflecting bequests. The results are unchanged. Since the intergenerational correlation is unchanged, this suggests that our results do not reflect bequests (although inter-vivos transfers could be a potential factor).

In the Appendix (Table A.1), we conduct additional empirical exercises. First (column 2), we control for assortative mating on income (instead of education), with virtually identical results. Next (column 3), we focus on a sample of individuals with non-negative net worth. The sample is smaller because younger individuals are more likely to have debt (due to student loans, mortgages, and credit card debt). In this sample there is more positive assortative mating because (as visible from Figure IV), individuals with negative net worth are *negatively* assorted. We also look at assortative mating on financial wealth (column 4). We do this to address the concern that assortative mating on net worth is driven by people owning houses with very homogeneous values due to strong geographical components in house prices. However, the degree of assortative mating on financial wealth replicates closely that for net worth. The only notable difference is that the intergenerational component is stronger than for net worth (since parents do not usually transfer debt to their kids). In column (5) we test assortative mating on an extended measure of net worth that includes expected bequests. The latter are constructed by dividing current parental wealth by the number of siblings. This is similar to the way inheritances are allocated when there is no surviving spouse and no specific will.[15] The results should be compared with those in column (2) of Table IV. The intramarital elasticity is slightly smaller but still in the same ballpark (0.098 vs 0.109). Finally, we address the concern that regressions involving percentiles (or ranks) are difficult to interpret, since a 10 percentile increase implies dramatically different wealth changes depending on the initial evaluation point. We hence move to a log-log specification which has the advantage of offering a simple elasticity interpretation (last column). Since the log of a negative quantity is not defined, we look at assortative mating on the log of (one plus) gross wealth. The qualitative aspects of the analysis remain unchanged. The estimated elasticity is 0.21, implying that a 10% increase in the gross wealth of the woman is associated with a 2% increase in the average wealth of the matching partner.

4.2 Assortative mating on returns to wealth

Conditional on marriage, assortative mating on wealth is a potential important amplification mechanism of wealth inequality. However, how much assortative mating on wealth amplifies wealth inequality among couples depends importantly on what happens to wealth after marriage. Wealth grows over time for two reasons: active saving choices and high returns. Since returns are systematically heterogeneous across individuals as

[15] Even with a will, children are entitled to 2/3 of the parent's wealth.

documented in Section 3, how people sort on pre-marriage returns to wealth and who manages the family assets after marriage are key for assessing the importance of assortative mating as a mechanisms for perpetuating wealth inequality after marriage.

In this section we study assortative mating on returns to wealth. Our variable of interest is the return on total assets (ROA) defined in equation 3. Assortative mating on returns, as measured by the Spearman rank correlation coefficient is 0.18, statistically significant, and of the same order of magnitude as that on net worth: on this metric, sorting on returns is hence as strong as sorting on wealth. The heat-map (Figure VI) shows again more mass along the main diagonal, consistent with assortative mating on returns. The rank-rank plot in Figure VII shows a fairly linear relationship between percentiles except for the very top, where men with extremely high realizations of wealth returns tend to experience a form of "mean reversion", i.e., marry with women much lower in the distribution of returns (and *vice versa*).

One important concern is that scale dependence (i.e., a positive correlation between wealth and returns) may create spurious evidence for assortative mating on returns simply reflecting assortative mating on wealth. Before looking at this issue more formally through controlled regressions, we start by presenting some simple visual evidence (similar to that reported above for assortative mating on wealth). We start by selecting individuals who are highly positively assorted on wealth (namely, where both spouses are in the top quartile of the net worth distribution four years before marriage or cohabitation is recorded). We then allocate them to ventiles using their average return on assets (again, excluding the four years leading to marriage). The left panel of Figure VIII plots a heatmap, the right panel a bin-scatter. Strikingly, even in a narrow group of people strongly assorted on wealth, assortative mating on return on assets continues to hold (in fact, even more so than in the full sample).[16]

[16]In the Appendix, Figure A.4, we show that this is true even conditioning on assortative mating on

In Table VI we report formal regressions. In particular, we estimate the following model:

$$P(r^{pre}_{m,t-4}) = \lambda^r P(r^{pre}_{f,t-4}) + Z'\mu^r + \psi^r \quad (9)$$

where $P(r^{pre}_{m,t-4})$ is the pre-marriage return percentile occupied by spouse; return $r^{pre}_{j,t-4}$ is the average return on assets for spouse $j = \{m, f\}$ measured in the years before marriage or shared custody of a child (excluding the four years before we first observe the individuals sharing a tax ID). Z is a vector of controls (age, years of schooling, whether the spouse has an economics or business degree, county fixed effects, whether it is the first marriage, separately for husband and wife, and year of marriage dummies) and ψ^r an i.i.d. error term.

In column (1) we reproduce the unconditional relationship plotted in Figure VIII. Controlling for observable characteristics (column (2)) lowers the intramarital wealth return elasticity from 0.18 to 0.14 but does not affect its significance (s.e.: 0.003). A comparison with the estimates in Table V, shows that there is as much assortative mating on returns as on wealth itself. In columns (3) and (4) we address more formally the issue of whether it is assortative mating on wealth that drives assortative mating on returns to wealth. In column (3) we control for all the possible interactions between the woman's and men's position in the wealth distribution (as measured by its deciles); in column (4) we consider even more granular controls, adding 10,000 dummies for percentile interactions. The intramarital wealth return elasticity is slightly reduced, but remains in a similar ballpark (to 0.13) and is highly statistically significant (s.e.: 0.003). This implies that even within a narrow wealth pairing (say, husband and wife both in the top percentile), the husband's pre-marriage return to wealth is positively associated with the wife's pre-marriage return. In column (4) we add two additional controls: the woman's parents'

education.

return percentile - which plays no statistically or economically significant role - and the man's parents' return percentile, which allows us to estimate an intergenerational wealth return elasticity. Interestingly, while this elasticity is positive and significant, it is rather small (0.017, se: 0.003)), and clearly smaller than the intergenerational wealth elasticity (which we estimated to be 0.10, see Table IV). This suggests that it is much easier for parents to transfer wealth than to transfer the ability to grow it faster.

In column (5) we consider an additional exercise, which can be used to answer the important question of how much of the assortative mating on returns is explained by assortative mating on similar preference traits, such as tolerance for risk. To measure the latter, we use as a proxy for the pre-marriage individual risk tolerance the share of financial wealth held in risky assets four years before marriage. Since the distribution is highly skewed towards zero, we construct six categories for the share held in risky assets: 0, (0-0.05], (0.05,0.1], (0.1-0.25], (0.25,0.5] and (0.5,1]. We then add as a control the interaction of the share groupings (corresponding to 36 dummies). The results remain basically unchanged.[17]

Ideally, the pre-marriage average return should capture the permanent component of the return and hence be based on a long panel to average out transitory deviations from the mean. Unfortunately, our sample period covers only 11 years of data; moreover, we drop the four years leading to marriage to avoid contamination coming from sharing resources while cohabiting. In column (6) we present a final robustness exercise, dropping those that have less than four years of pre-marriage data to compute the average return. The sample shrinks to about one-third of the one in column (1), but the findings remain remarkably similar.

[17] An alternative strategy is to test whether there is assortative mating on risk-adjusted returns. To do so, we use pre-marriage data and compute individual Sharpe ratios (the ratio of the average of pre-marriage returns and the standard deviation of the pre-marriage returns). In the Appendix (Table A.2) we show that the results of sorting on risk-adjusted returns are qualitatively similar to those for the baseline specification.

5 Post-marriage wealth management choices

While assortative mating on own wealth is not surprising (although it has not been documented before), assortative mating on returns to wealth is a totally novel finding and raises some important conceptual issues.

A first consideration is that, absent active saving or dissaving, the return to wealth can be interpreted as the rate at which wealth grows over time. Matching on levels *and* growth rates is not unusual in other contexts. For example, in labor markets a worker may match with a firm not only because of the initial wage it pays, but also because of the advancement/career opportunities it offers.

Second, the return to wealth can also be seen as a proxy for individual preferences for risk or for abilities to generate fast asset accumulation in general. There is work in sociology and economics arguing and documenting assortative mating on the basis of preference traits (Arrondel and Fremeaux, 2016) and skills (van Leeuwen et al., 2008). In the Appendix, Figure A.5, we show that there is indeed evidence of assortative mating on risk tolerance (as proxied by the share of financial wealth held in risky assets four years before marriage).

Finally, post-marriage heterogeneity in household returns on wealth may be related to how wealth management tasks are allocated within the household and the latter may interact with assortative mating on returns. In the illustrative example of Section 3, this role was played by the parameter q, the weight on the highest pre-marriage return of the two spouses. Spouses arrive at marriage with their own preferences for risk and ability to manage assets that are reflected in their pre-marriage average return: more skilled individuals and those with higher tolerance for risk have higher returns on average. Post-marriage, the financial choices of the household will reflect the wealth management styles and capabilities of the two spouses - proxied by their pre-marriage return - and the role (or weight) of each spouse in the management of the family wealth.[18] One way of capturing this idea is to assume that the post-marriage return can be written as:

$$r_h^{post} = \beta d(r_m^{pre}, r_f^{pre}) + Z'_{h,t}\theta + \nu_{h,t} \tag{10}$$

where $r_{h,t}^{post}$ denotes the post-marriage household h return, Z is a vector of controls (such as scale effects, etc.), ν an error term, and $d(.)$ a function of how financial management tasks are allocated within the household. We assume that this allocation depends on the pre-marriage returns of the two spouses, $r_{m,t}^{pre}$ and $r_{f,t}^{pre}$. A simple version of function $d(.)$ is a weighted average of the return of the spouses:

$$d(r_m^{pre}, r_f^{pre}) = qr_m^{pre} + (1-q)r_f^{pre}$$

What determines the weight q? In principle, it may depend on efficiency considerations (in the sense of expected wealth maximization). Consider for simplicity the case of perfectly positive assortative mating on wealth. A wealthy individual with a high return, matched with another wealthy individual, can choose between matching also on returns (and hence marry a high-return individual) or disregarding that form of matching, and hence facing the prospect of marring a low return individual. Suppose that the objective is maximization of expected household future wealth. Would assortative mating on returns matter?

If the management of household wealth is always left to the person best equipped to do it (i.e., the spouse with the highest return), then there would be no incentive to sort *also* on returns to wealth. Allocating all decision power to the spouse that generates the highest return - i.e setting $d(r_m^{pre}, r_f^{pre}) = \max\{r_m^{pre}, r_f^{pre}\}$ - is an "efficient" solution, as it maximizes wealth growth. However, the weight q may also reflect bargaining power (i.e., it could be

[18] In studies of household portfolio choices, the household is typically treated as a unitary decision-maker (e.g., Parker et al., 2024). The benefit of having access to both pre- and post-marriage portfolio choices is that one can enrich the existing framework by modeling how spouses allocate financial management responsibilities within the household, as we do here.

a function of how much wealth is brought into the marriage) or social norms (i.e., assign more weight to men). In this case:

$$d(r_m^{pre}, r_f^{pre}) = q\max\{r_m^{pre}, r_f^{pre}\} + (1-q)\min\{r_m^{pre}, r_f^{pre}\} \tag{11}$$

with $0 \leq q \leq 1$ reflecting the weight dictated by social norms or by the bargaining power of the two spouses. Because under this rule even the spouse with the lowest return affects the pace of family wealth accumulation, we would expect some assortative mating on returns, and increasingly so for people who arrive at marriage with some wealth to preserve (or have the ambition to increment). In the Appendix we set up a simple model of the allocation of wealth management task that trades off efficiency versus bargaining power (or representation) and show that it gives rise to the above allocation rule. It predicts that the weight q assigned to the spouse with the highest pre-marriage return is bounded between 1/2 and 1, may vary with the bargaining power of males and females, and is closer to 1 for households with high assets to manage.

To explore empirically how wealth management power is allocated to spouses **(**and thus whether assortative mating on returns is justified**)**, we regress the post-marriage (household) return against the pre-marriage returns of the husband and wife. In particular, we consider a version of equation (10) where function $d(.)$ is modeled as in (11):

$$\begin{aligned} r_{h,t}^{post} &= \beta_0 + \beta[q\max\{r_{m,t}^{pre}, r_{f,t}^{pre}\} + (1-q)\min\{r_{m,t}^{pre}, r_{f,t}^{pre}\}] + Z_{h,t}^{'}\theta + \nu_{h,t} \\ &= \beta_0 + \beta_1\max\{r_{m,t}^{pre}, r_{f,t}^{pre}\} + \beta_2\min\{r_{m,t}^{pre}, r_{f,t}^{pre}\} + Z_{h,t}^{'}\theta + \nu_{h,t} \end{aligned}$$

Assortative mating on returns to wealth would be justified if $\beta_2 \neq 0$. Results of the estimates of this model are shown in Table VII.

Column (1) is the baseline regression. Our controls include the household's risky share at the beginning of the period, net worth percentile of the two spouses before marriage, the age at marriage, year of marriage dummies, and the same demographics included in the previous regressions. The first key result is that while the post-marriage return on household wealth is more closely related to the pre-marriage highest return of the two spouses, the lowest pre-marriage return also matters, although its relative weight is 21% compared to the 79% weight of the highest return spouse (these weights are computed as $1 - q = \beta_2/(\beta_1 + \beta_2)$ and $q = \beta_1/(\beta_1 + \beta_2)$, respectively). On this basis, assortative mating on returns would be justified by wealth preservation (or growth) strategies.[19]

Columns (2)-(5) test for the presence of heterogeneity in the weight q. In particular we consider two sample splits. In the first, we re-estimate the model separately for households where the man is the highest-return spouse and for households where the woman is. One reason for this heterogeneity would be gender-biased social norms. We find that men receive a higher weight than would be warranted by their pre-marriage return alone. Both when they are the highest-return spouse and when they are the lowest-return spouse, their weight is larger than the average (1.05 vs 0.79 and 0.36 vs. 0.21, respectively). Interestingly, in couples where men have the highest return the wealth management is all in their hands. When women have the highest return their weight is 0.64, significantly below 1. The gender difference in q is statistically significant when we estimate a model where we use the full sample and add an interaction term. This result is consistent with a male-biased gender norm that grants more power to men even when they have lower skills than women (see e.g. Ke, 2021, Guiso and Zaccaria, 2023, Gu et al., 2021). In a second sample split (columns (4)-(5)) we test whether wealthier couples place larger weight on the "efficient" allocation of decision power. We construct a dummy variable equal to 1 if both spouses are

[19] It may be argued that the "ability" to generate higher pre-marriage returns is better assessed when looking at financial wealth, since the return on total assets may be strongly driven by housing, a component that grows in value for reasons largely independent of individual actions, abilities, or risk tolerance. In the Appendix (Table A.3) we replicate the analysis for returns to financial wealth, and find qualitatively similar results (the estimate of q is 0.83).

from the top decile of the wealth distribution at marriage, and 0 otherwise. We find that in the sample where both spouses come to marriage with considerable wealth, the weight of the low-return spouse drops to zero so that wealth management is (statistically) all in the hands of the high-return spouse. The remaining households reproduce what we see in the entire population. This result implies that wealthier households earn on average higher returns to wealth, providing one rationale for the positive correlation between wealth and returns documented empirically by e.g. Fagereng et al. (2020) and Bach et al. (2020), and whose importance for wealth inequality dynamics is emphasized by Gabaix et al. (2016).

6 Conclusions

In this paper we use administrative data from Norway to study how, at marriage, individuals sort on wealth and returns and how they allocate wealth management responsibility in the newly formed household. We show that the interplay between these forces defines how much marriage may contribute to wealth inequality in the population. We document assortative mating on own wealth and on returns to wealth and a greater decision powers granted to the spouse with the highest pre-marriage return. All findings are novel, since previous literature has focused on assortative mating on parental wealth (or on the spouses' income or education) and ignored altogether assortative mating on returns and the allocation of wealth management responsibility in the family. Thus, our paper brings together traditional themes from household finance and from family economics to bear on the debate regarding the determinants of wealth inequality and wealth concentration. We show that sorting on parental wealth is only proxying for assortative mating on own wealth and that the latter plays a key role for understanding how wealth inequality may evolve over the life cycle of couples. Indeed the matching process may preserve or attenuate the extent of return heterogeneity when moving from a cross-section of singles to a cross-section of couples. As shown in recent work, persistent return heterogeneity is very likely to be the driving force behind the extreme concentration of wealth that characterizes our societies (e.g. Benhabib et al. (2019)). Coupled with "scale dependence", persistent heterogeneity in returns to wealth can explain the fast transition in wealth concentration that some countries have experienced over the last few decades.

Our evidence on assortative mating is relevant both for the debate around the causes of the extreme wealth concentration as well as its dynamics. The simple analytical example of Section 3 shows that societies where marriages are assorted on wealth exhibit more wealth concentration at the point of marriage; with return heterogeneity, they also grow more unequal during the life cycle of a marriage, and the dynamic effects are amplified by assortative mating on returns and by allocating *less* decision power to the spouse with the highest return (a more "democratic" and equitable outcome, but not necessarily an "efficient" one). Of course, these predictions come from a simple example that ignores a number of realistic features. First, the dynamics of marriage itself is ignored. Assortative mating may occur over multiple dimensions. Marital dissolution (through divorce, separation, or widowhood) may affect the dynamics of wealth concentration. Since divorce destroys and partitions wealth, the degree of wealth concentration among stable couples is likely to be higher than in a population comprising single households due to family dissolution events. Second, changes in wealth accumulation patterns arising from *in vivos* transfers to children or saving/dissaving decisions are also neglected. Third, the progressivity of the wealth tax may distort optimal accumulation decisions, disincentivizing saving especially at the top of the distribution. Finally, there are no idiosyncratic component to returns. A proper account of these features would require the set up and the calibration of a full fledged life cycle model extended to incorporate household formation based on multidimensional sorting (see Chiappori et al., 2018), family dissolution, as well as the process of allocation of wealth management decisions in the family in a world of heterogeneous individual returns and initial wealth holdings. Our paper provides some of the key moments to conduct this exercise which not only deserves but also requires a completely separate research effort as well as a much longer longitudinal dimension where to follow couples as they go through different stages of their marriages, including dissolution - a feature that even our high quality-data lack.

Regarding the contribution to the debate on the dynamics of wealth concentration, because mating patterns and wealth management arrangements are very likely to evolve over time (e.g. because social norms and relative gender skills change), time variation in assortative mating and wealth management allocation rules can be an independent and so far un-noticed causes of changes in wealth inequality over time. Figure IX documents a significant decline in Norway of assortative mating on wealth over time (from around 0.24 to around 0.16) as well as a decline in the degree of assortative mating on returns to wealth (from 0.23 to 0.15).[20] Finally, Figure IX shows the time evolution of the Gini coefficient for wealth at marriage, and documents that it also has declined. The association between the indexes in the two panels, albeit crude, is suggestive of the potential importance of assortative mating for the time evolution of wealth inequality.

[20]We have computed the Spearman rank correlation for each year in our sample.

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TABLE I. Descriptive statistics: Demographics

	Woman					*Man*				
	Mean	SD	P10	Median	P90	Mean	SD	P10	Median	P90
Age	30.80	8.34	23	29	42	33.92	9.34	25	32	47
First marriage	0.87	0.35	0	1	1	0.83	0.38	0	1	1
Years of schooling	13.88	4.47	10	13	19	13.65	4.10	10	13	19
Econ/business degree	0.14	0.35	0	0	1	0.11	0.31	0	0	1
Oslo resident	0.09	0.29	0	0	0	0.10	0.29	0	0	0
Homeowner	0.12	0.32	0	0	1	0.15	0.36	0	0	1

Notes: The variables "Oslo resident" and "Homeowner" refer to 4 years before marriage (or cohabitation with a common child).

TABLE II. Descriptive statistics: Wealth and Portfolio Composition

	Mean	SD	P10	Median	P90
Net worth, 4 years before marr., w.	95,633	879,087	-54,641	10,633	304,408
Net worth, 4 years before marr., m.	115,738	1,235,038	-100,913	19,916	361,469
Net worth after marriage	250,313	2,221,728	-115,589	98,752	646,183
Fin. wealth, 4 years before marr., w.	16,410	131,469	881	5,894	35,734
Fin. wealth, 4 years before marr., m.	26,911	356,236	970	7,628	53,472
Fin. wealth after marriage	46,162	290,135	1,854	15,703	97,770
Gross wealth, 4 years before marr., w.	189,570	782,152	2,042	80,349	461,328
Gross wealth, 4 years before marr., m.	267,128	1,187,584	2,891	162,106	577,607
Gross wealth after marriage	552,041	2,294,182	10,729	411,441	1,042,027
Net worth, woman's parents	609,117	3,514,354	40,080	418,324	1,115,366
Net worth, man's parents	607,538	3,197,012	48,846	426,116	1,112,434
Risky share FW, 4 years before marr., w.	4.9%	15.3%	0%	0%	14%
Risky share FW, 4 years before marr., m.	6.7%	17.8%	0%	0%	24%
Risky share FW, 1 year after marr.	6.9%	16.1%	0%	0%	25%
Return on total assets, single woman	0.028	0.100	-0.063	0.027	0.114
Return on total assets, single man	0.005	0.130	-0.131	0.021	0.104
Return on total assets couple, post-marr.	0.012	0.053	-0.036	0.018	0.051

TABLE III. Wealth and Return Inequality by Marriage Status

	Net Worth		Return on Assets	
	Singles	Couples	Singles	Couples
Ψ	103.76	78.78	56.71	18.56
$\frac{P90-P10}{P50}$	27.65	7.71	8.71	4.77

TABLE IV. Assortative mating on parental net worth

Dep.var.	Man's parents' wealth percentile	
	(1)	(2)
Woman's parents' wealth perc.	0.125 (0.003)	0.046 (0.003)
Demographics	N	Y
First marriage	N	Y
Year of marriage dummies	N	Y
Adj. R^2	0.0156	0.0931
N	115,814	115,814

Notes: The dependent variable is the man's parents' wealth percentile four years before marriage. Robust SE in parenthesis. Demographics include age, years of schooling, econ/bus. degree, county fixed effects.

TABLE V. Assortative mating on personal net worth

Dep.var.	Man's wealth percentile						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Woman's own wealth perc.	0.200 (0.003)	0.109 (0.003)	0.107 (0.003)	0.104 (0.003)	0.124 (0.004)	0.130 (0.006)	0.108 (0.004)
Woman's parents' wealth perc.			0.001 (0.003)	0.002 (0.003)	−0.002 (0.003)	−0.014 (0.005)	0.000 (0.003)
Man's parents' wealth perc.			0.099 (0.003)	0.098 (0.003)	0.096 (0.003)	0.099 (0.006)	0.101 (0.003)
Demographics	N	Y	Y	Y	Y	Y	Y
First marriage	N	Y	Y	Y	Y	Y	Y
Year of marriage dummies	N	Y	Y	Y	Y	Y	Y
$\text{Schooling}_m \times \text{Schooling}_w$	N	N	N	Y	Y	Y	Y
Adj. R^2	0.0393	0.1122	0.0981	0.1021	0.0742	0.1187	0.0815
N	141,715	141,715	115,814	115,814	84,470	31,988	89,892

Notes: The dependent variable is the man's wealth percentile four years before marriage. In column (5) we restrict the sample to first marriages only. In column (6) we restrict the analysis to couples who were living in different counties four years before marriage. In column (7) the sample includes individuals whose parents are alive four years before marriage. Robust SE in parenthesis. Demographics include age, years of schooling, econ/bus. degree, county fixed effects.

TABLE VI. Assortative mating on return on assets

Dep.var.	Man's return percentile					
	(1)	(2)	(3)	(4)	(5)	(6)
Woman's return percentile	0.185	0.140	0.126	0.129	0.130	0.109
	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.006)
Woman's parents' return percentile				0.005	0.005	−0.003
				(0.003)	(0.003)	(0.006)
Man's parents' return percentile				0.017	0.016	0.008
				(0.003)	(0.003)	(0.006)
Risky share$_m$× Risky share$_f$	N	N	N	N	Y	N
Net worth decile$_m$ ×Net worth decile$_w$	N	N	Y	N	N	N
Net worth pctile$_m$ ×Net worth pctile$_w$	N	N	N	Y	Y	Y
Demographics	N	Y	Y	Y	Y	Y
First marriage	N	Y	Y	Y	Y	Y
Year of marriage dummies	N	Y	Y	Y	Y	Y
Adj. R^2	0.0338	0.1047	0.1874	0.1774	0.1805	0.1787
N	121,435	121,435	121,435	96,704	96,387	42,497

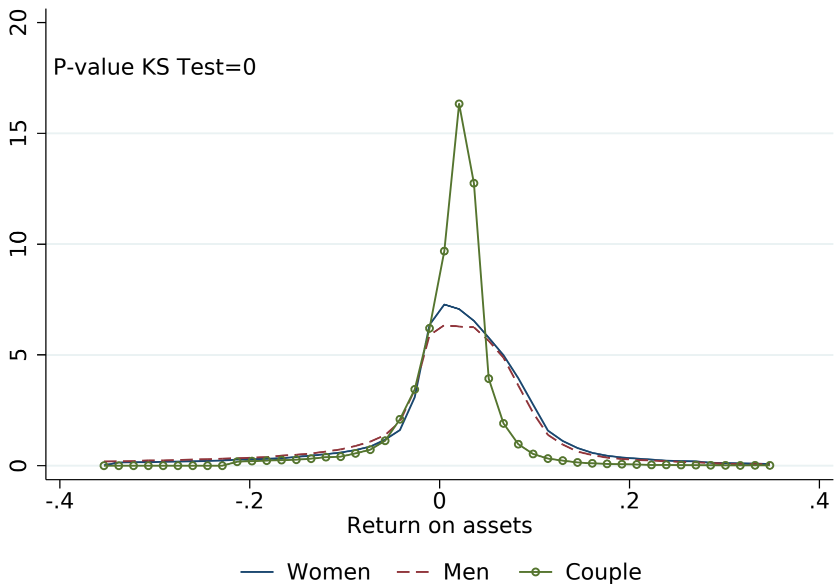
Notes: Robust SE in parenthesis. Demographics include age, years of schooling, econ/bus. degree, county fixed effects. In column (6) we use only couples with at least eight years of pre-marriage data (i.e. with at least four years to compute pre-marriage average return).

TABLE VII. Household return and pre-marriage returns

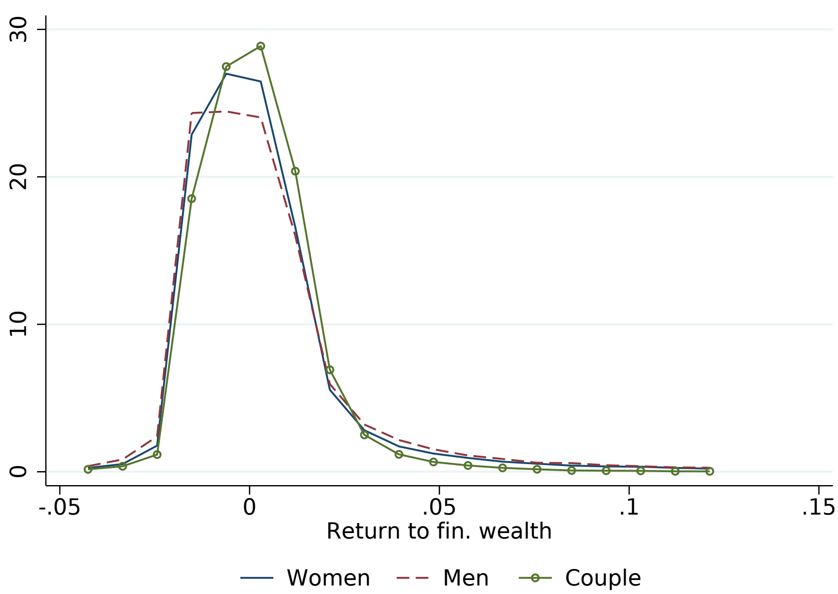
	All	Male=Max	Male=Min	Both spouses at top 10%	No spouses at top 10%
	(1)	(2)	(3)	(4)	(5)
$\min\left\{r_m^{pre}, r_f^{pre}\right\}$	0.005	−0.002	0.007	−0.013	0.006
	(0.001)	(0.002)	(0.001)	(0.009)	(0.001)
$\max\left\{r_m^{pre}, r_f^{pre}\right\}$	0.021	0.032	0.013	0.088	0.019
	(0.002)	(0.002)	(0.002)	(0.013)	(0.002)
"Implied" q	0.79	1.05	0.64	1.18	0.76
	(0.04)	(0.08)	(0.06)	(0.013)	(0.04)
Risky share post-marr.	Y	Y	Y	Y	Y
Avg. risky-shares pre-marr.	Y	Y	Y	Y	Y
Net worth pctl. before marr.	Y	Y	Y	Y	Y
Demographics	Y	Y	Y	Y	Y
Year of marriage dummies	Y	Y	Y	Y	Y
Age at marriage	Y	Y	Y	Y	Y
Adj. R^2	0.1995	0.1938	0.2056	0.1763	0.1953
N	140,172	65,505	74,667	5,261	134,911

Notes: The pre-marriage average returns of the spouses are computed excluding the four years before marriage; the post-marriage average household return excludes the year of marriage.

FIGURE I. Cross sectional distribution of pre- and post-marriage returns



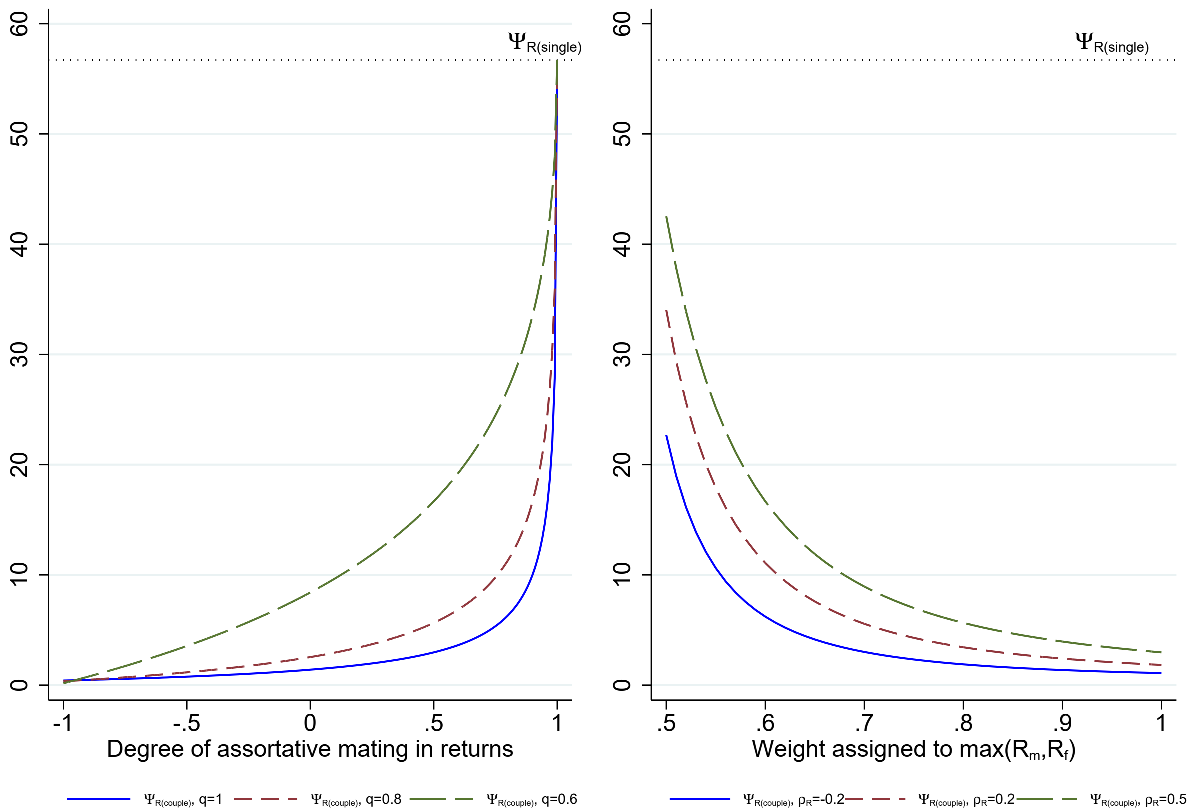
Panel A: Return on Assets



Panel B: Return on Financial wealth

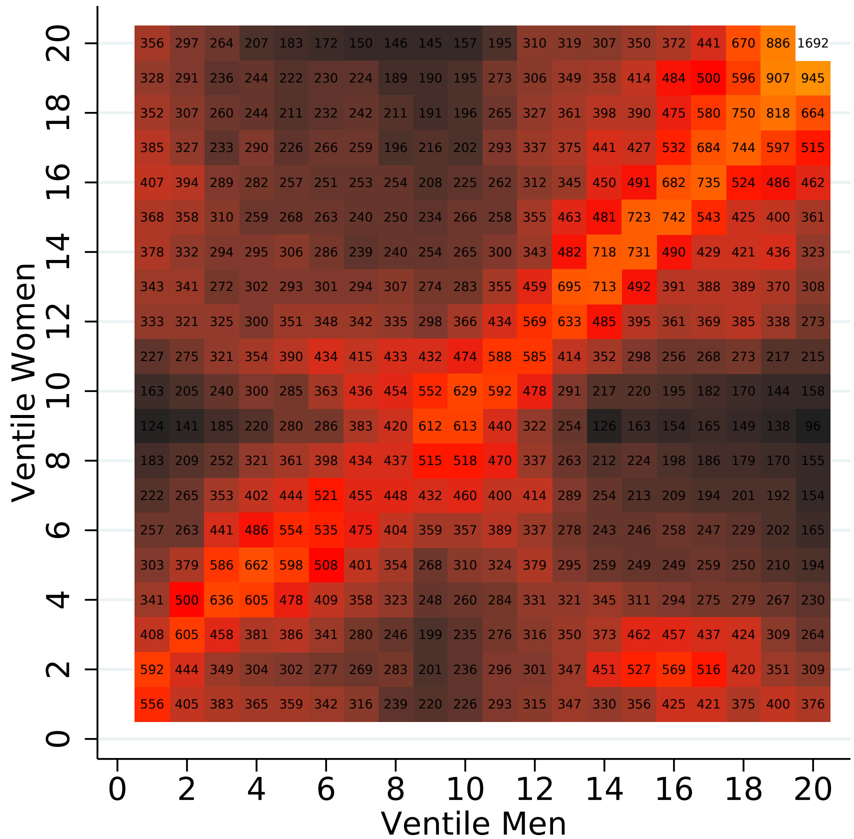
Notes: Panel A plots the cross-sectional distribution of the pre-marriage average return on assets for the two spouses and the post-marriage average return for the couple. Panel B repeats the exercise for the returns to financial wealth. The pre-marriage average returns are computed excluding the four years before marriage; the post-marriage average returns exclude the year of marriage.

FIGURE II. Comparative Static Results



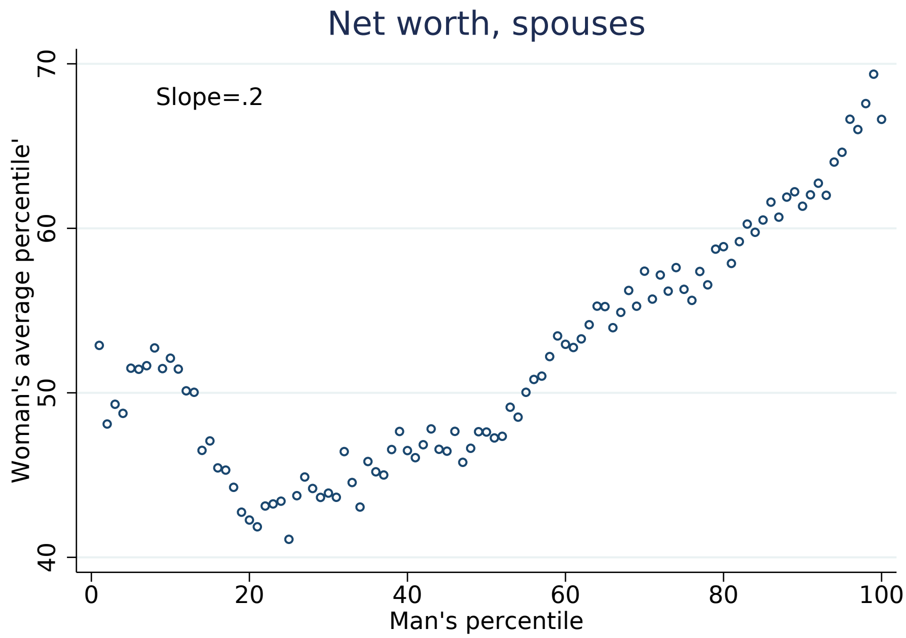
Notes: In Panel A we fix q to three different values (1, 0.8 and 0.6) and use expression (7) to compute how wealth inequality changes with the degree of assortative mating in returns ρ_R. In Panel B we fix ρ_R to three different values (-0.2, 0.2, and 0.5) and use expression (7) to compute how wealth inequality changes with the weight assigned to the highest-return spouse in the post-marriage return (expression (6)).

FIGURE III. Assortative mating on net worth: Heat-map



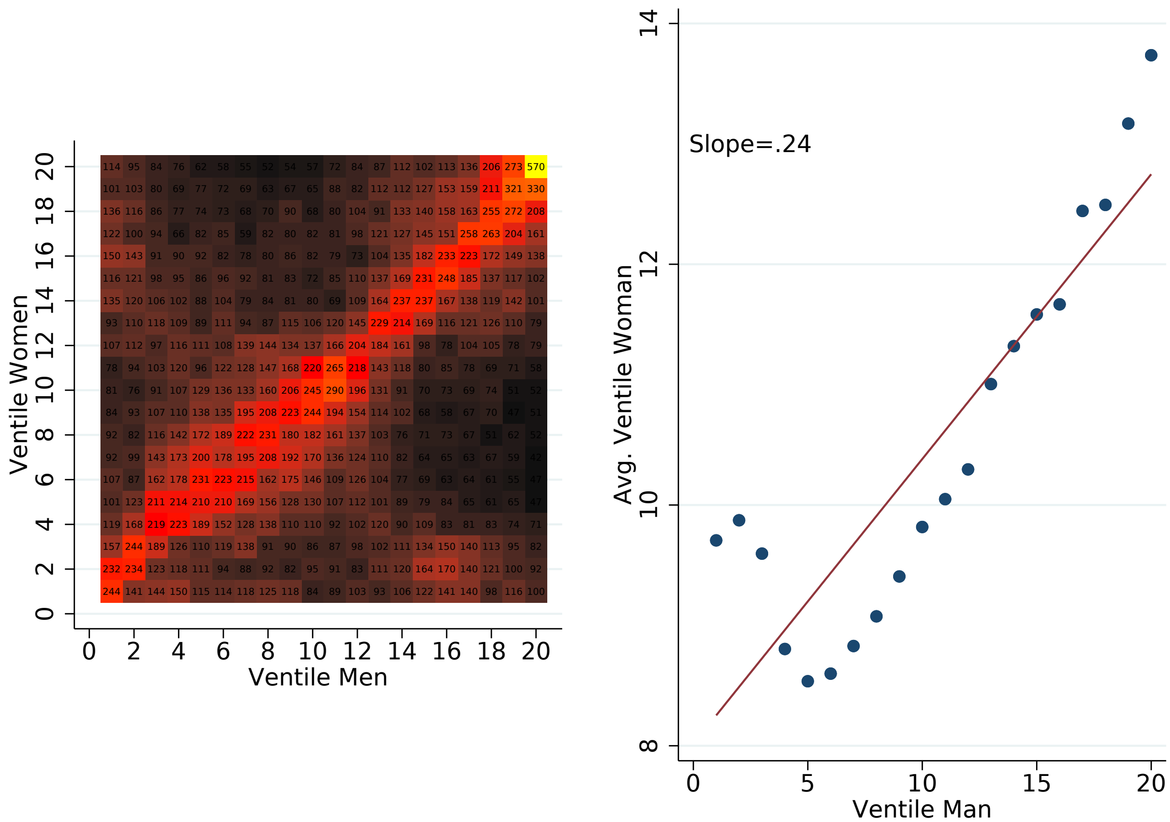
Notes: In each cell we report the number of marriages observed for each combination of the husband's and wife's net worth ventile (computed four years before marriage, by gender).

FIGURE IV. Assortative mating on personal net worth: Bin-scatter



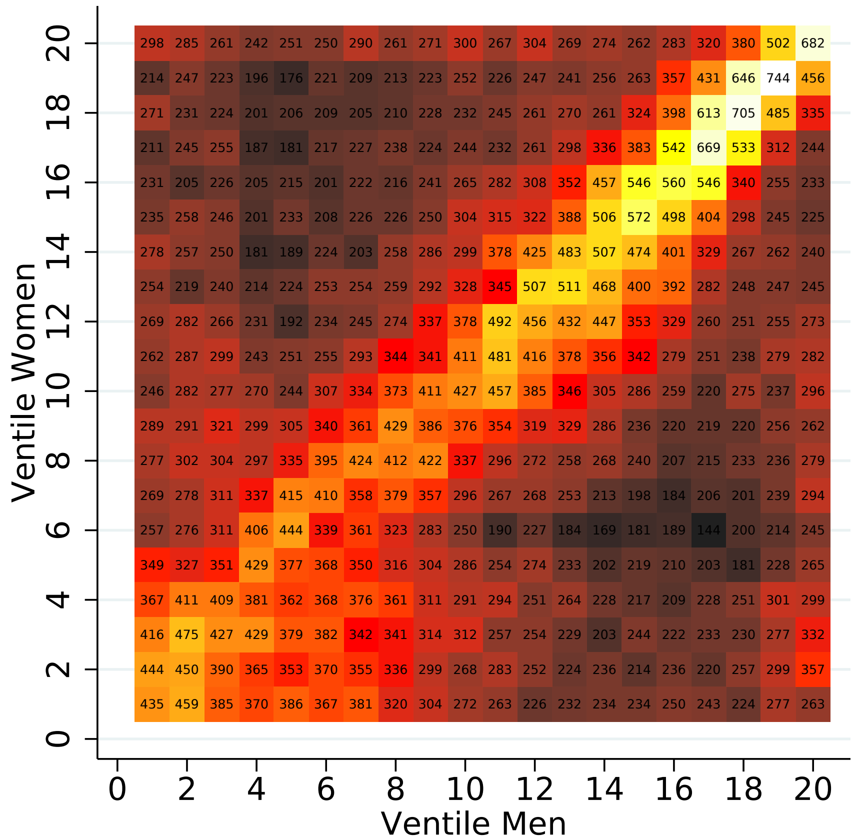
Notes: The figure plots the average percentile of the wife's net worth for each percentile of the husband's net worth (computed four years before marriage).

FIGURE V. Assortative mating on net worth, conditional on assortative mating on education



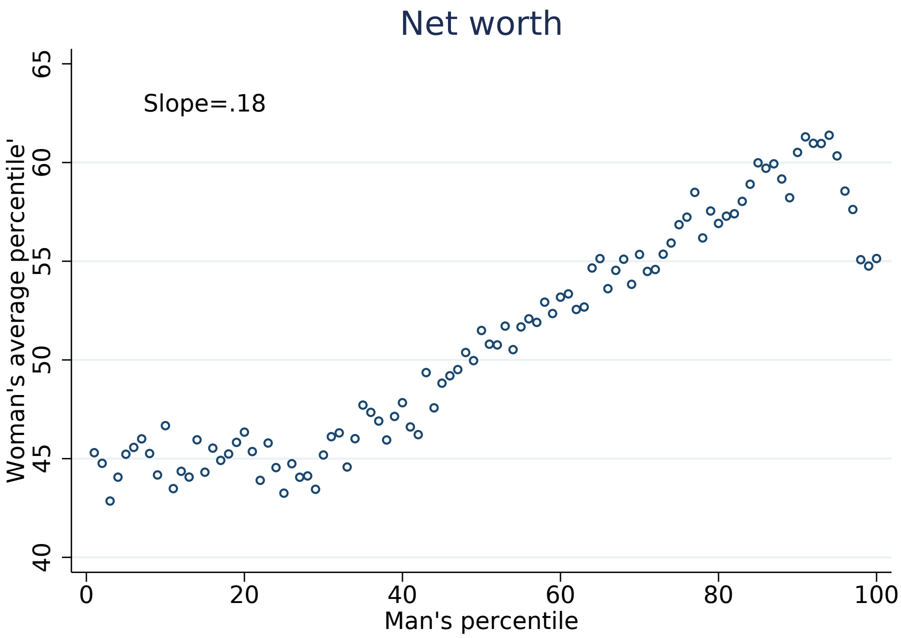
Notes: For both pictures the sample are married couples where both individuals have college education or more. The left panel is the heat-map (how many marriages by his/her wealth ventile, computed four years before marriage); the right panel is the binscatter.

FIGURE VI. Assortative mating by return on assets: Heat-map



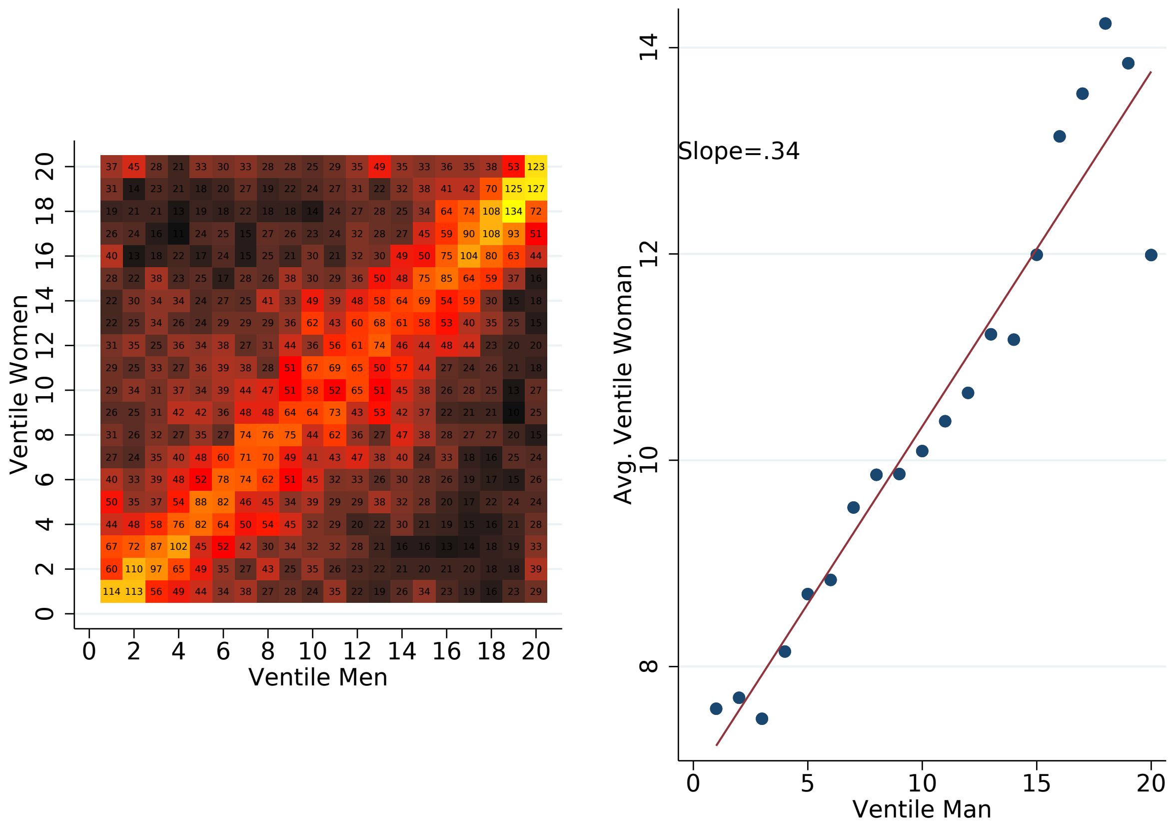
Notes: In each cell we report the number of marriages observed for each combination of the husband's and wife's ventile of the distribution of average return on assets. Average returns are computed excluding the four years before marriage.

FIGURE VII. Assortative mating by return on assets: Bin-scatter



Notes: The figure plots the average percentile of the wife's pre-marriage average return to assets for each decile of the husband's pre-marriage average return on assets. Average returns are computed excluding the four years before marriage.

FIGURE VIII. Assortative mating by return on assets, conditional on assortative mating on wealth



Notes: For both pictures the sample are married couples where both individuals are in the top quartile of the wealth distribution four years before marriage. The left panel is the heat-map (how many marriages by his/her wealth return ventile); the right panel is the binscatter.

FIGURE IX. Assortative mating and inequality during our sample period

Notes: The solid line is the Gini coefficient for household net worth in the year of marriage. The dashed line is the the Spearman rank order correlation coefficient of individual net worth four years before marriage/cohabitation with a child is firstly recorded. The dotted line is the Spearman rank order correlation coefficient of individual average return on assets.

Online Appendix for "Assortative Mating and Wealth Inequality"

by Andreas Fagereng, Luigi Guiso and Luigi Pistaferri

In this Online Appendix we provide supplementary material to the article.

A.1 Data Sources and Variable Definitions

This section draws from Fagereng et al. (2020). Our administrative data contain information on the ownership of several asset classes and on total debt.[21] We consider several concepts of wealth. The first is *financial wealth* w^l_{it}, the sum of safe (w^s_{it}) and risky (w^m_{it}) financial assets:

$$w^l_{it} = w^s_{it} + w^m_{it}$$

The second is *non-financial* (or *real*) *wealth* w^r_{it}, the sum of housing (w^h_{it}) and private business wealth (w^u_{it}):

$$w^r_{it} = w^h_{it} + w^u_{it}$$

Finally, *net worth* is *gross wealth* w^g_{it} (the sum of financial and real wealth) net of outstanding debt (b_{it}):

$$w_{it} = w^g_{it} - b_{it}$$

Safe financial assets are the sum of: (a) cash/bank deposits (in domestic or foreign accounts), (b) money market funds, bond mutual funds, and bonds (government and corporate), and (c) outstanding claims and receivables.[22] Risky financial assets are the sum of: (a) the market value of listed stocks held directly, (b) the market value of listed stocks

[21]We exclude assets that are reported in tax records but have returns that are hard to measure: vehicles, boats, cabins, and real estate abroad. These assets represent roughly 5% of the total assets owned by households.

[22]Outstanding claims and receivables are described by the Norwegian tax authority as: "*loans to friends and family, salary and maintenance payments you are owed and/or advances you have paid for a service you had not yet received as of 31 December.*" They also include secured receivables such as mortgage bonds, debt certificates, etc. which must be valued at their market value. For private business owners, outstanding claims represent loans as well as services rendered to their own company.

held indirectly through mutual funds, and (c) the value of other (non-deposit) financial assets held abroad. All the components of financial wealth, as well as the value of liabilities, are measured at market value.

For components of non-financial wealth, there are potential discrepancies between market value and the value we use. In particular, private business wealth is obtained as the product of the equity share held in the firm (available from the shareholder registry) and the fiscally-relevant "assessed value" of the firm. The latter is the value reported by the private business to the tax authority to comply with the wealth tax requirements. Every year, private business owners are required by law to fill in a special tax form, detailing the balance sheet of the firm's asset and liability components, most of which are required to be evaluated at market value.[23] The assessed value is the net worth of the firm computed from this form and in principle it corresponds to the "market value" of the company, i.e., what the company would realize if it were to be sold in the market. There are, however, some components of the firm's net worth that are missing, such as the value of intangible capital and residual goodwill. In general, the firm may have an incentive to report an assessed value below the true market value. On the other hand, the tax authority has the opposite incentive and uses control routines designed to identify firms that under-report their value.

The stock of housing includes both the value of the principal residence and of secondary homes. To obtain an estimate of these values, we merge official transaction data from the Norwegian Mapping Authority (Kartverket), the land registration, and the population

[23]For example, businesses are required to report: *"Næringseiendom hvor verdi er fastsatt til markedsverdi"* (which translates to "Commercial property where value is determined at market value"). The reported market value comes from another form (RF-1098), which is effectively a calculator determining the potential sale value of the property based on location (430 municipalities), typology (industrial, workshop, warehouse, etc.), and square footage. This leaves little room for manipulation. The balance sheet reported in this form thus differs from the accounting-based balance sheet of the firm (where some assets are valued at historical cost), although in many cases there is extensive overlap between the two. Indeed, the correlation between the (log) tax-assessed value and the (log) book value is 0.88. In more than 50% of the cases, the assessed value exceeds the book value.

Census, which allows us to identify ownership of each single dwelling and its precise location. Following tax authority methodology (described in Fagereng et al., 2018), we estimate a hedonic model for the price per square meter as a function of house characteristics (number of rooms, etc.), time dummies, location dummies and their interactions. The predicted values are then used to impute housing wealth for each year between 2004 and 2015. This measure may differ from its market value because of idiosyncratic components, such as the value of renovations (which we do not observe).

The outstanding level of debt from the tax records is the sum of student debt, consumer debt, and long-term debt (mortgages and personal loans, not observed separately). Note that to measure net worth we only need a measure of *total* household debt and to measure the return on assets we only need total debt payments (both of which we observe).

Our reference measure of return is the *return to (total) assets* (ROA), defined as:

$$r^n_{it+1} = \frac{y^l_{it+1} + y^r_{it+1} + \delta^l_{it+1} + \delta^r_{it+1} - y^b_{it+1}}{w^g_{it} + \lambda D^g_{it+1}}, \tag{A.1}$$

where λ capture the time of the year where net flows are invested. We do not observe the size of net flows of assets nor do we observe when they are added or subtracted to beginning-of-period wealth (i.e., the value of λ). As for the latter issue, we simply assume that flows are, on average, added/subtracted mid-year ($\lambda = 1/2$). As for the former, we observe snapshots of asset stocks at the end of period (12/31) for each asset type k (w^k_{it} and w^k_{it+1}), as well as the income that is capitalized into w^k_{it+1}, $y^{\tilde{k}}_{it+1}$. These variables, together with the assets accumulation equation $w^k_{it+1} = w^k_{it} + \tilde{y}^k_{it+1} + D^k_{it+1}$, allow us to recover an estimate of D^k_{it+1} for each assets k. Hence, we can compute net flows to gross wealth, $D^g_{it+1} = \sum_k D^k_{it+1}$, and replace this estimate in equation (A.1). Note that in the estimate of the flow ($D^k_{it+1} = \Delta w^k_{it+1} - \tilde{y}^k_{it+1}$), the income that is capitalized into end-of-period wealth is specific to the asset type: for listed and unlisted stocks and for housing, it is the capital gain; for safe assets, such as bank deposits, it is the interest earned. Replacing our estimate of D^g_{it+1} into the measure of return (A.1) yields:

$$r^n_{it+1} = \frac{y^l_{it+1} + y^r_{it+1} + \delta^l_{it+1} + \delta^r_{it+1} - y^b_{it+1}}{(w^g_{it} + w^g_{it+1})/2 - \tilde{y}^g_{it+1}/2} r^m, r^f \tag{A.2}$$

The returns from other asset components (financial wealth, gross wealth, etc.) are defined as yields accrued in period $t+1$ over the sum of stocks at the end of period t and an estimate of the net flows during the period $t+1$, which are analogous to (A.1), namely:

$$r^k_{it+1} = \frac{y^k_{it+1} + \delta^k_{it+1}}{(w^k_{it} + w^k_{it+1})/2 - \tilde{y}^k_{it+1}/2}$$

In equation (A.1) we express the dollar yield on net worth as a share of *gross* wealth (or total assets). This way the sign of the return depends only on the sign of the yield (and not on that of net worth), thus avoiding assigning positive returns to individuals with negative net worth and debt cost exceeding asset income, or infinite returns to people with zero net worth. In the accounting literature (A.1) is known as return on assets (ROA): it measures how much net income an investor is capable of generating out of $1 worth of assets.

The yield from financial wealth is the sum of income earned on all safe assets (interest income on domestic and foreign bank deposits, bond yields and outstanding claims),[24] yields from mutual funds, from directly held listed shares (the sum of dividends, available from the Shareholder Registry, and accrued capital gains and losses), and from risky assets held abroad. The yield on housing is estimated as: $y^h_{it} + \delta^h_{it}$, where y^h_{it} is the imputed rent net of ownership and maintenance cost and δ^h_{it} the capital gain/loss on housing. Following Eika et al. (2017), we assume that the imputed rent is a constant fraction of the house value (which they estimate to be 2.88%); finally, we obtain the capital gain on housing as $\delta^h_{it} = \Delta w^h_{it}$. The income from private businesses is the sum of distributed dividends,

[24]Since households rarely report receiving interest payments on outstanding claims and receivables, we impute the return using the rate charged by banks on corporate loans.

available from the Shareholder Registry, and the individual share of the private business' retained profits, which we interpret as a measure of the capital gains on the value of the private business.[25] Lastly, the cost of debt y_{it}^{b} is the sum of interests paid on all outstanding loans.

All return measures are net of inflation (using the 2011 CPI) and gross of taxes/subsidies.

A.1.0.1 Addressing some limitations We now discuss how we address the two shortcoming of our data mentioned in Section 2. First, the tax value of private businesses may differ from their market value. Second, there are some components of wealth that we do not observe.

Consider the first problem. Our measure of the returns to wealth is overstated if private business owners understate the value of the firm relative to what they would get if they were to sell it. Since private equity is heavily concentrated at the top of the wealth distribution, this may also exaggerate the slope of the relationship between wealth and returns to wealth. There is no simple way to correct for this problem. For robustness, we consider alternative measures of the return to private business wealth based on market/book multipliers, following Bach et al. (2020).

Regarding the second potential limitation - some components of wealth are unobserved in our data - an important one, especially for people in the bottom half of the distribution,

[25] In the absence of information on private firms' market prices and assuming corporate tax neutrality (which is the case during our sample period, Alstadsæter and Fjærli, 2009), retained profits can be interpreted as an estimate of the private business' capital gains or losses. Equilibrium in capital markets implies (King, 1974): $\rho V = d + \Delta V$, where V is the value of the firm, ρ the return on a composite investment, d the distributed dividend, and ΔV the capital gain. For equilibrium in the capital market to hold, the yield on investing the money value of the holding at the market interest rate must equal the dividend plus the capital gain. Since $d = \Pi - \Pi^r$ (where Π and Π^r are total and retained profits, respectively), we can rewrite the equilibrium condition above as $\rho V = \Pi - \Pi^r + \Delta V$. We can then use the definition of the value of the firm as the PDV of current and expected future profits: $V = (\Pi/\rho)$ (assuming profits are constant or follow a random walk process). This finally yields: $\Delta V = \Pi^r$. We recover the private business' retained profits from the business' balance sheets. We follow Alstadsæter et al. (2016) and allocate retained profits to each personal shareholder according to his/her total ownership share in the corporation in the year when the corporate profits are reported. Their procedure also accounts for indirect ownership.

is private pension wealth. In Fagereng et al. (2020) we discuss how we can use social security earnings data and employer information to obtain an estimate of the wealth from defined contribution occupational pensions that is consistent with national accounts. We then estimate an "extended" measure of return to wealth that accounts for this additional source of household wealth. The second component of wealth that is missed is assets held abroad not reported to the tax authority. While it is possible to obtain some rough estimates of such wealth (as done, e.g., by Alstadsæter et al., 2018), imputing a return is difficult since there is no information on the portfolio composition of the wealth that is hidden abroad.[26] Finally, we exclude from our analysis of returns a variety of assets for which computing returns is challenging. Some of these components (such as cars and vehicles) are subject to the wealth tax and thus reported to the tax authority, but others (such as "collectibles", art, wine, jewelry, etc.) are not (as long as some conditions are met, i.e., the painting is hanging on the taxpayer's wall).[27]

A.1.1 Some conceptual remarks

Some conceptual remarks are in order regarding return computation.

First, we use *ex-post* realized returns to measure average returns to wealth. An alter-

[26] Alstadsæter et al. (2018) estimate that only people above the 99th percentile have assets offshore. For our purposes, the issue is whether the existence of wealth offshore tends to distort our measure of gross (of tax) returns on wealth. If wealth is held abroad mostly to profit from more rewarding investment opportunities not available at home (as argued by Zucman, 2013), then ours are conservative estimates of the heterogeneity in returns and their correlation with wealth.

[27] In principle another source of wealth for Norwegians is the Government Pension Fund Global (a sovereign wealth fund investing the surplus revenues of the Norwegian oil sector). As emphatically noted on the GPFG's website, the fund "is owned by the Norwegian people". The current (mid 2019) market value of the fund is 9,500 billion NOK ($1,045 billion). At its face value, this would correspond to 1.7 million NOK per person ($190k). It should be noted, however, that in Norway no-one actually receives direct payments from the GPFG (unlike e.g., what happens with the Alaska Permanent Fund). Instead, every year an amount up to a fixed share of the fund (around 3%, to reflect a long term real return of the fund) may be allocated to the government budget, resulting in lower taxes or more spending, and hence benefiting taxpayers only indirectly. In fact, if the return to the fund is used to reduce taxes, the beneficiaries are mainly at the top of the wealth distribution due to the high progressivity of the tax system; if the return to the fund is used primarily to fund government programs for the poor, the beneficiaries are mainly at the bottom of the wealth distribution.

native would be to rely on an asset pricing model, such as the CAPM, and attribute to an individual holding a given stock (say) the expected return predicted by the model using the time series of the returns of that particular stock (independently of how long the asset has been held in one's portfolio). This is the method used by Bach et al. (2020). Its main advantage is that it increases the precision of the estimated mean returns as one can rely on long time series of market returns. This may be valuable when one has short time series of realized individual returns. However, the method has its drawbacks. First, the higher precision comes at the cost of imposing a pricing model, typically the CAPM and its (not undisputed) underlying assumptions (e.g., ability to borrow at a risk free rate, absence of trading frictions, etc.). Second, because individuals holding a given asset are imputed the same average return independently of the holding period of the asset, differences in returns due to differences in ability to time the market (or other aspects of financial sophistication) are not captured by this method, which is therefore biased towards attributing systematic differences in returns across individuals to differences in exposure to systematic risk. Finally, and perhaps more importantly, what matters for wealth accumulation (and hence to explain concentration and inequality in wealth due to the return heterogeneity channel) are actual, realized returns, not expected returns. The *ex-post* realized returns approach that we use is thus model-free, reflects all sources of heterogeneity across individuals relevant for generating returns to wealth, and is more appropriate for addressing the research question of the link between wealth and returns to wealth.

The last important remark is that ownership of most assets (real or financial) may provide both pecuniary and non-pecuniary benefits. For example, stock-market investors may favor "socially responsible investments" - providing a "consumption" return besides the pecuniary return (Bollen, 2007). Housing may offer "pride of ownership", a non-pecuniary benefit. Similarly, the overall return from holding a safe asset such as a checking account may entail both a pecuniary component and a non-pecuniary one (given by the services provided by the account). In this paper we focus on the pecuniary component of the return. This is for two reasons. First, estimation of the non-pecuniary component of return is challenging, as it often involves subjective considerations. Second, wealth cumulates over time due to pecuniary returns. Given our goal of showing the empirical properties of the returns that are relevant for the relation between inequality and returns to wealth, we believe it is appropriate to focus on pecuniary returns. Nonetheless, conceptually it is important to acknowledge that some of the heterogeneity in pecuniary returns that we document may be due to heterogeneity in preferences for the non-pecuniary components of the return. That is, some investors may accept lower pecuniary returns because they are compensated with higher non-pecuniary ones, while others only care about pecuniary returns. Even if the "total return" is equalized across individuals, we will observe heterogeneity in the pecuniary component of the return in equilibrium.

In the case of bank deposits there could be room for arguing that the services customers obtain on the deposits (i.e., access to ATM facilities, check-writing, etc.) are implicitly paid for with lower interest rates, implying that there is a component of the return that is hidden. To account for this, below we also show results where returns on deposits are adjusted to reflect the value of these services. Following national accounts practice, we assume that for each dollar deposited the value of unpriced banking services equals the differences between the "reference" rate (the rate at which banks borrow, which we take to be the Norwegian interbank offered rate or NIBOR) and the rate on deposits. With this adjustment, returns on deposits become identical for all depositors. Hence, the resulting measure of return to wealth offers a conservative estimate of heterogeneity - in fact, it completely eliminates any heterogeneity coming from deposits. While we perform this exercise as a robustness check, we stress that the assumption that low monetary rates on deposits reflect compensation for unpriced bank services is questionable for at least three reasons.[28] First, from a conceptual point of view it is not clear what is specific of bank services to be priced with a "barter exchange" (see Wang, 2003 for a discussion); furthermore, it is not obvious that the reference rate is the same for all banks or all consumers (given differences in the rates at which the former borrow on the interbank market and the fact that the latter have different outside options for their cash). Second, the services that are more directly linked to the deposit accounts are transaction services (as the liquidity discount of bank deposits is already reflected in the interest rate). Direct evidence we collected for this purpose shows that Norwegian banks price such transaction services explicitly, one by one.[29] If these services are already explicitly priced, the national account correction may introduce severe measurement error. Indeed, since for some individuals we measure deposit returns above the reference rate, the national accounts methodology implies that they would receive *negative* banking services. Third, if banks enjoy some monopoly power, lower rates on deposits relative to banks' borrowing rates do not reflect more services but just appropriation of consumer surplus by the bank. A large literature documents relevant mobility costs of bank customers and thus banks' monopoly power (see Ater and Landsman, 2013, and Bhutta et al., 2018). This is consistent with the fact that banks use teaser rates to attract depositors and once the latter have been captured, they lower the rates paid.

A.2 Allocation of wealth management task among spouses

We set up a streamlined model to capture how spouses choose wealth management task once a couple is formed.

Assume returns are heterogenous across individuals before they marry. Let r_i^g denote the pre-marriage return on wealth of individual i $(i = 1, ..., N)$ of gender $g = (m, f)$.

[28] In Fagereng et al. (2020) we discuss these issues in more detail.

[29] See for example https://www.finansportalen.no/bank/dagligbank/ for an overall view of contractual conditions at all Norwegian banks.

To simplify notation, we assume that i also indexes the future household that will be formed (i.e., the i-th man marries the i-th woman and they form the i-th household). The distribution of individual returns is similar across genders, roughly consistent with the evidence in Figure I. The cumulative distribution of individual returns is $F(r)$. All people marry, matching with a partner from the distribution of returns of the other gender. Let w_i^g denote the wealth of individual i of gender g. Individual wealth follows some distribution $G(w)$, which for simplicity we also assume to be the same across genders. The matching process (which we do not model explicitly) results in a pair of marriage returns (r_i^m, r_i^f) and wealth levels (w_i^m, w_i^f). The return on the wealth of the household will be a function of the two spouses returns: $r_i^h = h(r_i^m, r_i^f)$ and the household wealth the sum of the two spouses' wealth $w_i = w_i^m + w_i^f$. The family return on wealth will depend on the allocation of responsibility of wealth management. If the male spouse is fully in charge of wealth management, the family return is $r_i^h = r_i^m$; if it is the female spouse it is $r_i^h = r_i^f$. In general if they are both in charge it will be $r_i^h = \alpha r_i^m + (1-\alpha) r_i^f$, where $0 \leq \alpha \leq 1$ measures the degree of involvement of the male in wealth management.

A.2.1 Individual utility

A single individual plans over T periods and obtains utility from wealth management. Omitting subscripts from now on, singles manage their own wealth and earn their own return obtaining utility:

$$U^g = U\left(w^g(1+r^g)^T\right)$$

We assume that utility is increasing and concave in wealth , i.e. $U'(x) > 0$, $U''(x) < 0$.

A.2.2 Couples utility

When two individuals marry they pool wealth and utility of the family U^h will depend on the capitalized family wealth $w(1+r^h)^T$:

$$U^h = \gamma^m U^m \left(w(1+r^h)^T\right) + \gamma^f U^f \left(w(1+r^h)^T\right)$$

where $w = w^m + w^f$and γ^m and γ^f denote the bargaining power of the two spouses, respectively. Once married the couple chooses who manages assets. If nothing else matters, utility monotonicity implies that the spouse with the highest return on wealth would be fully devoted to managing assets. To accommodate departures from this extreme solution in our model, we assume that each spouse experiences a utility loss when decision-making power is disproportionately assigned to the other partner. The man suffers a loss $\delta\frac{(1-\alpha)}{\alpha}$ if the woman is allocated $(1-\alpha)$ decision power and the woman suffer a loss $\delta\frac{\alpha}{(1-\alpha)}$ if the man is allocated decision power α. One interpretation of this cost is that the spouse that is allocated wealth management responsibility may take advantage of the family resources; another that he/she would manage over-representing his/her preferences, for example taking "too much" debt or investing "too much" in "unethical" stocks. Accordingly the household chooses α to maximize:

$$U^h = \gamma^m \left(U^m(w(1+r^h)^T) - \delta\frac{(1-\alpha)}{\alpha}\right) + \gamma^f U^F \left((w(1+r^h)^T) - \delta\frac{\alpha}{(1-\alpha)}\right)$$

Letting $z = w(1+r_h)^T$, the first order condition for this problem is

$$\left(\gamma^m \frac{\partial U^m(z)}{\partial z} + \gamma^f \frac{\partial U^f(z)}{\partial z}\right) Tw(1+r^h)^{T-1}\left(r^m - r^f\right) = \delta\left(\frac{\gamma^f}{(1-\alpha)^2} - \frac{\gamma^m}{\alpha^2}\right)$$

We characterize the solution in the following proposition

Proposition A1: Let $\pi = \sqrt{\frac{\gamma^m}{\gamma^f}}$ - a measure of the relative power of men vis-à-vis. women, and let $\hat{\alpha} = \frac{\pi}{1+\pi}$ a reference task allocation (obtained when $r^m = r^f$). Notice that equal bargaining power among genders entails $\hat{\alpha} = \frac{1}{2}$. The solution, illustrated in Figure A.1, has the following properties:

1. There exists a unique internal solution for the optimal α. This follows immediately by noticing that the RHS of the FOC is monotonically increasing in α and has two asymptotes, one at $\alpha = 1$ and one at $\alpha = 0$.[30] On the other hand the left hand side crosses the vertical axes above zero (if $r^m > r^f$) or below zero (if $r^m < r^f$) and is monotonically decreasing, thus crossing the RHS at a unique value of α, labeled α^*.

2. Suppose $r^m \geq r^f$.[31] The optimal value $\alpha^* > \hat{\alpha}$ except when the spouses earn the same return, in which case $\alpha^* = \hat{\alpha}$. This follows from the fact that when $r^m > r^f$ at $\alpha = \hat{\alpha}$ the LHS of the first order condition is positive. Because the LHS is monotonically decreasing in α it crosses thet RHS when $\alpha > \hat{\alpha}$. When $r^m = r^f$ first order condition requires $\delta\left(\frac{\gamma^f}{(1-\alpha)^2} - \frac{\gamma^m}{\alpha^2}\right) = 0$ and thus $\alpha^* = \hat{\alpha}$. Intuitively, when the spouses earn the same return, the allocation of decision power does not depend on efficiency considerations.

3. If $r^m < r^f$, the optimal allocation of asset management power is $\alpha^* < \hat{\alpha}$; that is the partner with the highest pre-marriage return - in this case the woman - is granted more decision power in asset management. The weight assigned to the spouse with the highest pre-marriage return is independent of gender in the symmetric case of

[30]The RHS of the FOC $y(\alpha) = \delta\left(\frac{\gamma^F}{(1-\alpha)^2} - \frac{\gamma^M}{\alpha^2}\right)$ has the following properties. It is monotonically increasing in α; it has a root at $\alpha = \hat{\alpha} = \frac{\pi}{1+\pi}$; it has an asymptote at $\alpha = 1$ and one at $\alpha = 0$. Hence $y(\alpha > \hat{\alpha}) > 0$ and $y(\alpha < \hat{\alpha}) < 0$. It has an inflection point at $\alpha = \hat{\alpha}$.

[31]Male and female returns are drawn from a distribution with the same mean, but of course realizations may differ.

equal preferences and bargaining weights. The larger the gap in the pre-marriage returns of the two spouses the larger the decision power granted to the spouse with the highest return. If $r^m = r^f$, $\alpha^* = \hat{\alpha} = \frac{\pi}{1+\pi}$, and wealth management decisions will be equally shared if genders have the same bargaining power. An increase in the male (female) bargaining power distorts the decision power towards males (females).

4. The weight assigned to the partner with the highest return increases as the wealth under management grows if the average relative risk aversion of the two spouses utility is smaller than 1.[32] When the relative risk aversion is 1, the allocation becomes independent of the scale of wealth. This outcome stems from two effects of wealth increase: firstly, it lowers the marginal utility of wealth thereby reducing sensitivity to earning higher returns by assigning more decision power to the spouse with the highest pre-marriage return. This tends to lower the optimal α. Secondly, higher wealth elevates the potential additional income derived from increasing the family's dollar return on wealth, thus inclining towards an increase in the optimal α. The dominance of one effect over the other hinges on the curvature of the spouses' utility function. Consequently, wealthier individuals, given their potentially higher risk tolerance and management of larger assets, may lean towards choosing a higher α.

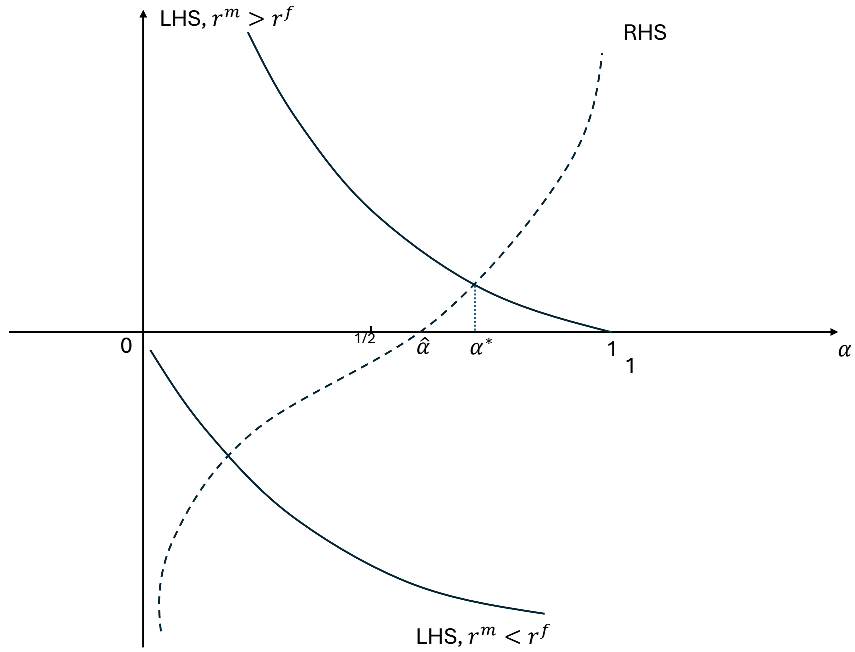
The model solution implies that the allocation of decision power for a couple with pre-marriage returns (r^m, r^f) can empirically be be modelled as

$$r^h = q\max\left\{r^m, r^f\right\} + (1-q)\min\left\{r^m, r^f\right\}$$

with $1/2 \leq q \leq 1$and ignoring the dependence of the weight q from wealth.

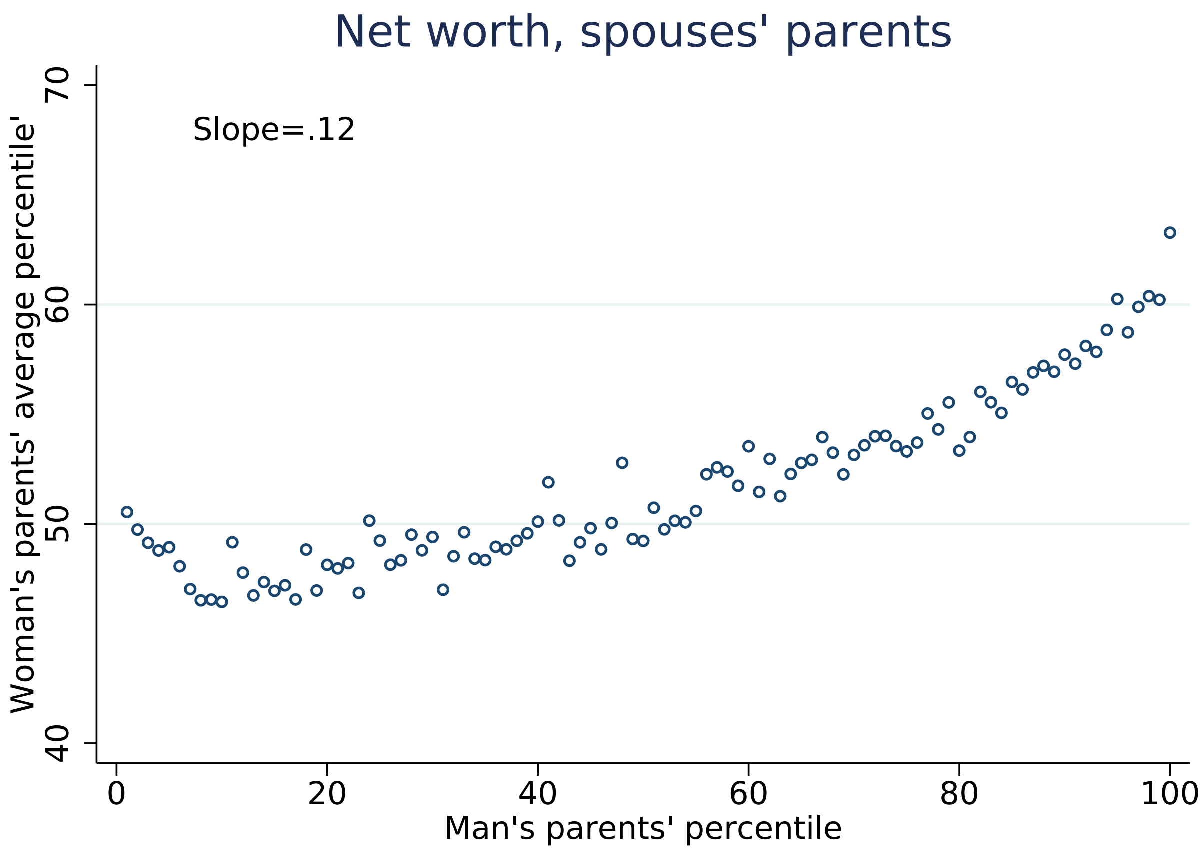
[32]This follows differentiating the RHS of the first order condition and showing that it is positive if $\omega \Upsilon^m(z) + (1-\omega)\Upsilon^f(z)$<1, where $\Upsilon^g(z) = -U''^g(z)z/U'^g(z)$ is the relative risk aversion at z of spouse $g = (m, f)$ and $\omega = \gamma^m U'^m(z)/(\gamma^m U'^m(z) + \gamma^f U'^f(z))$.

FIGURE A.1. Solution to the Management Allocation Problem



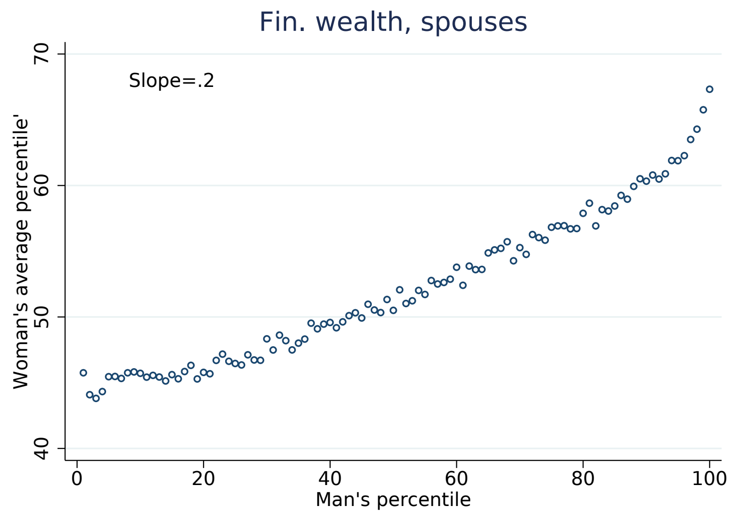
A.3 Additional Figures

FIGURE A.1. Assortative mating on parental net worth: Bin-scatter

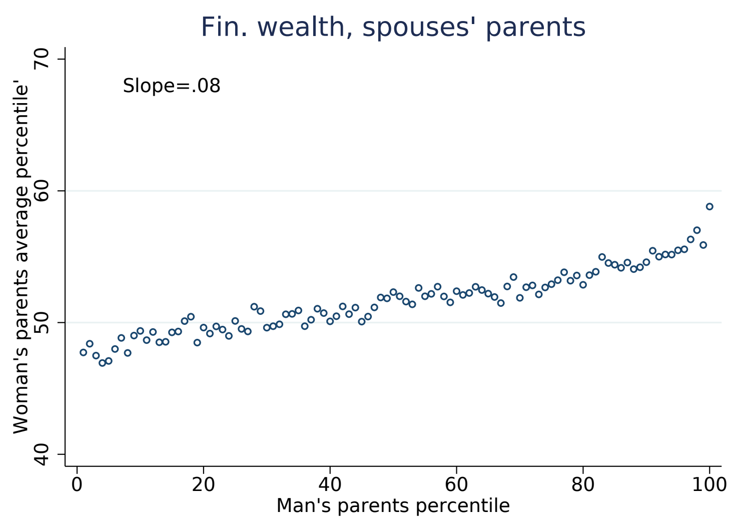


Notes: PThe figure plots the average percentile of the wife's parents' net worth for each percentile of the husband's parents' net worth (computed four years before marriage).

FIGURE A.2. Assortative mating on financial wealth



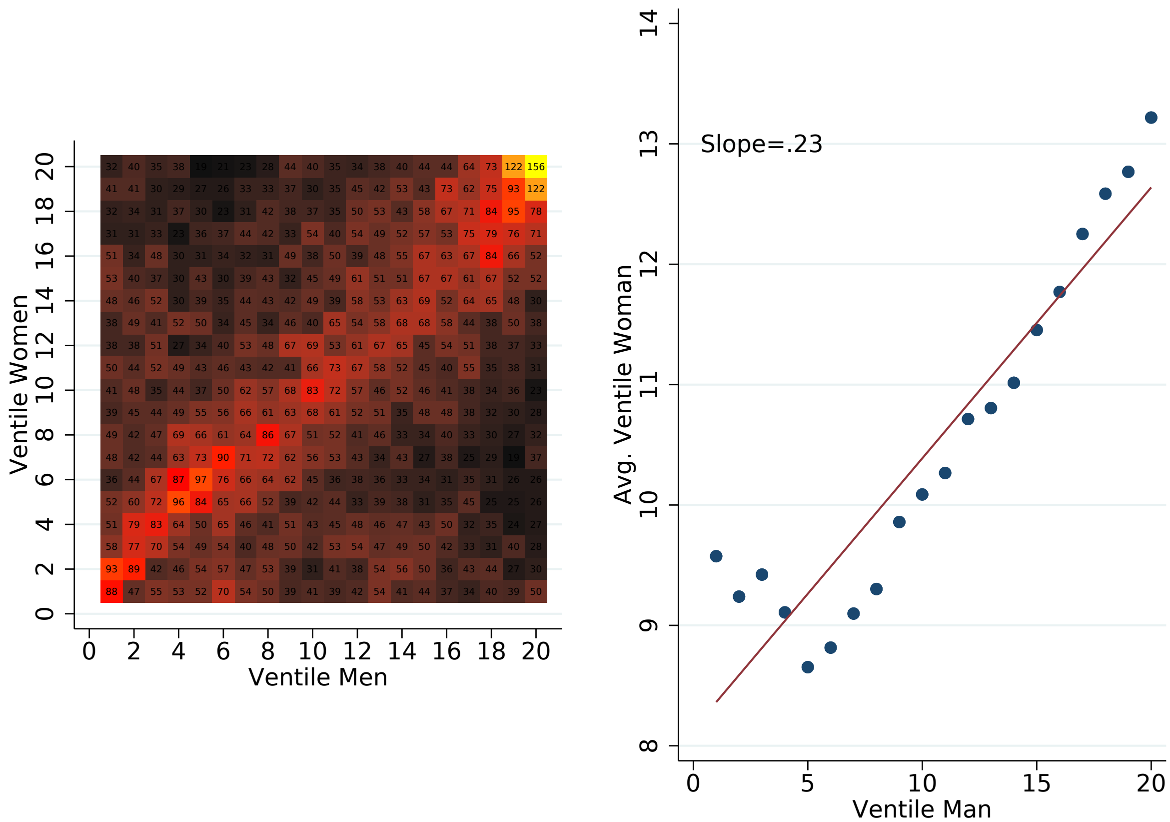
Panel A: Own wealth



Panel B: Parents' wealth

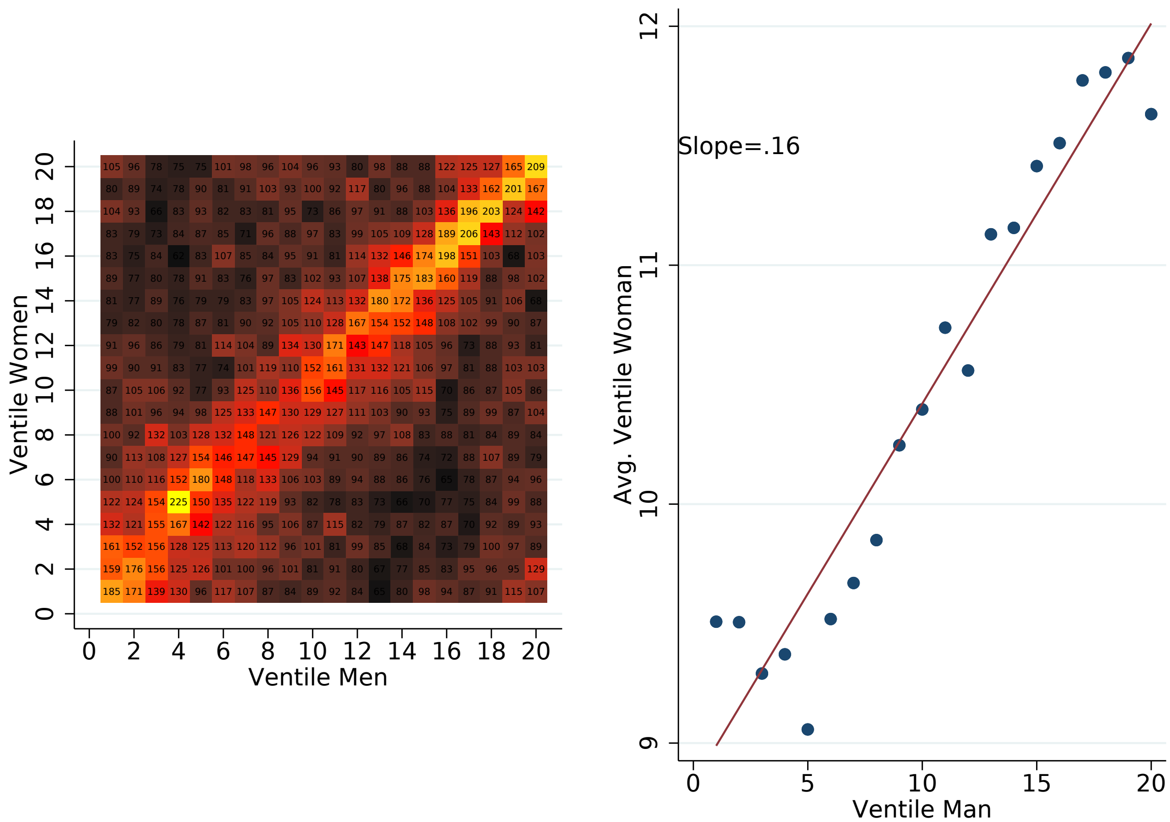
Notes: Panel A plots the average percentile of the wife's financial wealth for each percentile of the husband's financial wealth (computed four years before marriage). Panel B plots the average percentile of the wife's parents' financial wealth for each percentile of the husband's parents' financial wealth (computed four years before marriage).

FIGURE A.3. Assortative mating on net worth, conditional on assortative mating on income



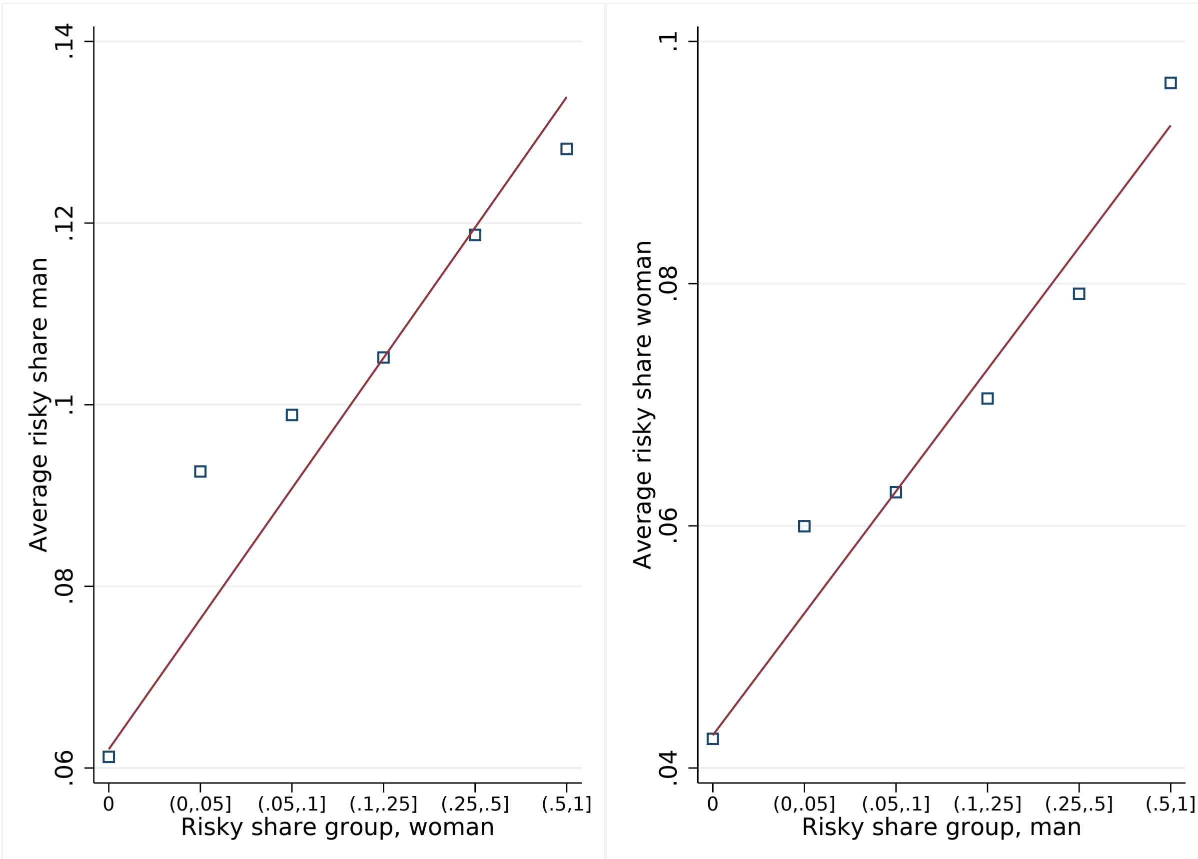
Notes: For both pictures the sample are married couples where both individuals are in the top quartile of the income distribution. The left panel is the heatmap (how many marriages by his/her wealth ventile, computed four years before marriage); the right panel is the binscatter.

FIGURE A.4. Assortative mating on returns on assets, conditional on assortative mating on education



Notes: For both pictures the sample are married couples where both individuals have college education or more. The left panel is the heatmap (how many marriages by his/her average returns on asset ventile, computed four years before marriage); the right panel is the binscatter. Average returns are computed excluding the four years before marriage. We also report the coefficient of a linear regression of the wife's ventile against the husband's ventile.

FIGURE A.5. Assortative mating on risk tolerance



Notes: The left panel plots the husband's average degree of risk tolerance against the wife's average degree of risk tolerance. The degree of risk tolerance is constructed using a categorization based on the average share of financial wealth held in risky assets in the pre-marriage period (excluding the four years before marriage): 0, (0-0.05], (0.05,0.1], (0.1-0.25], (0.25,0.5] and (0.5,1]. The right panel plots the wife's average degree of risk tolerance against the husband's average degree of risk tolerance.

A.4 Additional Tables

TABLE A.1. Assortative Mating on Wealth: Robustness

Dep.var.	Man's wealth percentile				Man's ext. wealth pctl.	log(W^g)
	(1)	(2)	(3)	(4)	(5)	(6)
Woman's own wealth perc.	0.107 (0.003)	0.107 (0.004)	0.193 (0.005)	0.109 (0.003)		
Woman's parents' wealth perc.	0.001 (0.003)	−0.002 (0.003)	−0.000 (0.003)	0.004 (0.003)		
Man's parents' wealth perc.	0.099 (0.003)	0.098 (0.003)	0.053 (0.003)	0.240 (0.003)		
Woman's ext. wealth pctl.					0.098 (0.003)	
Woman's log(W^g)						0.210 (0.003)
Woman's parents' log(W^g)						−0.005 (0.005)
Man's parents' log(W^g)						0.180 (0.006)
Demographics	Y	Y	Y	Y	Y	Y
First marriage	Y	Y	Y	Y	Y	Y
Year of marriage dummies	Y	Y	Y	Y	Y	Y
Sch.$_m \times$Sch.$_w$	Y	N	Y	Y	Y	Y
Inc. decile$_m \times$Inc. decile$_w$	N	Y	N	N	N	N
Adj. R^2	0.0981	0.1019	0.2673	0.1752	0.0647	0.2435
N	115,814	109,089	45,177	115,814	141,715	115,814

Notes: Column (1) is the baseline. In column (2) we control for Income Deciles combination (4 years before marriage). In column (3) we restrict the analysis to couples with non-negative net worth at marriage. In column (4) assortative mating is on financial wealth percentiles. In column (5) assortative mating is on an extended measure of net worth that includes expected bequests. In column (6) assortative mating is on the log of 1+gross wealth. Robust SE in parenthesis. Demographics include age, years of schooling, econ/bus. degree, county fixed effects.

TABLE A.2. Assortative mating on the Sharpe ratio (return on assets)

Dep.var.	Man's Sharpe ratio percentile
	(1)
Woman's Sharpe ratio percentile	0.138 (0.003)
Net worth pctile$_m$ × Net worth pctile$_w$	Y
Demographics	Y
First marriage	Y
Year of marriage dummies	Y
Adj. R^2	0.1966
N	104,167

Notes: Robust SE in parenthesis. Demographics include age, years of schooling, econ/bus. degree, county fixed effects. The Sharpe ratio is computed as the ratio of the average of the pre-marriage returns on assets and the standard deviation of the pre-marriage returns on assets.

TABLE A.3. Household return and pre-marriage returns, financial wealth

	(1)
$\min\left\{r_m^{pre}, r_f^{pre}\right\}$	0.007 (0.003)
$\max\left\{r_m^{pre}, r_f^{pre}\right\}$	0.036 (0.002)
"Implied" q	0.83 (0.07)
Risky share post-marriage	Y
Net worth percentiles before marriage	Y
Demographics	Y
Year of marriage dummies	Y
Age at marriage	Y
N	154,856

Notes: The pre-marriage average returns of the spouses are computed excluding the four years before marriage; the post-marriage average household return excludes the year of marriage.