Bargaining over Risk

The Impact of Decision Power on Household Portfolios

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Abstract

Many households are composed of couples whose decisions are the outcome of a joint decision-making process, yet empirical models of portfolio choice typically treat households as single decision-making units. This paper investigates the internal financial decision-making process of households in a panel containing the disaggregated wealth of the Swedish population. We show that the distribution of decision power within households influences the weight of spouses' preferences in financial decision making. Increased decision power of female spouses decreases equity market participation and the risky share, reduces the riskiness of the portfolio, and reduces idiosyncratic risk.

JEL classifications: G11, D13, D14.

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1 Introduction

A large body of research investigates the determinants of households' portfolio choices. Most studies on financial decisions model households as single decision-making units with one utility function and pooled income. However, financial decisions are often made jointly within households, and household members may differ in individual preferences. This study seeks to open the black box regarding how individual preferences on household portfolio composition are aggregated at the household level, which is crucial to understanding how couples choose to invest their financial wealth.[1]

A simple comparison of the financial portfolios of single men, single women, and couples provides prima facie evidence of how financial decisions are made at the household level. On average, single men hold riskier and less diversified portfolios and incur higher costs from underdiversification than single women. This gender difference remains even after controlling for a rich set of observables, including wealth and financial education. Furthermore, previous findings show that marriage affects the financial decisions of heterosexual individuals, whereas individual portfolios remain unaffected by the marital transitions of homosexual investors (Christiansen et al., 2015), which suggests that gender differences in preferences within couples regarding household portfolio composition are driven by gender rather than by other considerations, such as assortative mating. In this study, we go one step further and analyze how the weights on spouses' financial investment preferences are determined.

A collective bargaining model with distribution factors[2] assumes that spouses have individual preferences regarding the composition of the household's financial portfolio that can be represented by individual utility functions and that all differences are resolved through a bargaining process in which each spouse's bargaining position is influenced by various factors that are typically not considered relevant when modeling financial decisions. In this paper, we empirically estimate the effects of distribution factors on the financial behavior of households. The underlying intuition is simple. Whenever the distribution factor under consideration – in this case, labor market conditions – is favorable to one spouse and presumably increases that spouse's bargaining position within the household, the respective weights in the financial decision-making process will be shifted in that spouse's favor.

[1] Studies that examine intra-household financial decision making focus primarily on the consumption-savings choice. Browning (2000), Mazzocco (2004), and Lundberg et al. (2003), for example, find that the distribution of decision power within the household affects the consumption-savings decision when spouses differ in their preferences.

[2] Here and throughout the paper, a distribution factor is a variable that affects the intra-household allocation of resources and does not affect the budget constraint or preferences. Distribution factors, therefore, do not enter demand equations within the unitary framework of the household.

The testable implication from this framework that we bring to the data is that favorable shifts in the labor market conditions of female spouses allow them to exert their preferences to a greater extent, which implies that the household portfolio more closely resembles the portfolio that female spouses would have preferred. A spouse's decision power is determined by her or his threat point, or the levels of utility each spouse might expect to obtain in the event of a separation. This threat point can be proxied by a spouse's fall-back income, which is defined as the earnings of a single individual with the same characteristics. A spouse's decision power is then measured as the share of his or her fall-back income to the total fall-back income of the couple, and we focus on how this measure affects financial decision making in households.

We investigate the questions raised here in a comprehensive, high-quality panel of household finances that provides a unique opportunity to assess how the preferences of spouses enter the financial decision-making process of households. The richness and size of the data allow us to measure the decision power of spouses directly because we can match each spouse with "comparable" individuals who are currently not married and thus observe their outside option, which thereby demonstrates their influence within the household. To account for the potential endogeneity problem associated with our measure of decision power and causally estimate the effect it has on the weight accorded to the preferences of the members of a couple when various portfolio characteristics are determined, we instrument it with a measure of the prevailing local wage gap for a couple with the same education profile.[3] This approach builds on previous work by Bartik (1991), Aizer (2010), and Bertrand et al. (2015). By projecting the decision power measure, presented above, on the instrument, the first stage will capture movements in the distribution of decision power between spouses that are driven solely by aggregate labor demand. Furthermore, this measure does not reflect underlying worker characteristics at the county level, which might be correlated with the risk level of household portfolios.

Our analysis is based on administrative data that are systematically compiled by financial institutions and corporations. We observe detailed information regarding demographic characteristics, income, and, most important, wealth portfolios. The portfolio data are highly disaggregated and provide information on the universe of assets owned by each resident at the end of a tax year. All financial assets held outside of retirement accounts are reported, including bank accounts, mutual funds, and stocks. The data are collected by financial institutions, and they are confirmed by their owners when they

[3]We focus on the gender wage gap by educational profiles because of the documented assortative mating in the marriage market (see, e.g., Eika et al., 2014). Due to assortative mating, the couple wage gap is different from the gender wage gap, implying that mating in the marriage market needs to be taken into account when constructing a measure that captures shifts in the distribution of decision power within households.

file their taxes, where inaccurate reporting is minimized as a result of legal penalties for misreporting.

We first show that the data reveal characteristics that are consistent with the proposition that women are less willing to take risks in financial matters (see, e.g., Dohmen et al., 2011). Specifically, when comparing single men and single women, conditional on background characteristics, single men on average hold riskier portfolios, have lower participation in risky asset markets while they have higher participation rates in equity markets, and are less diversified. We then proceed to our main research question regarding how the distribution of decision power between spouses affects household portfolios. First, we investigate the participation of households in equity and other risky asset markets. Second, we consider how the share of risky assets in the financial portfolios of households is determined. Third, we investigate how the amount of risk in the risky part of household portfolios is determined and how well diversified it is. Fourth, we show how the distribution of decision power within households affects their economic wellbeing.

The main contribution of the current paper is that female decision power has a sizable and significant impact on the composition of household portfolios. Specifically, enhancing the decision power of married women reduces households' propensity to participate in equity markets but increases their participation in other risky asset markets, while it reduces the risky share of those households that do participate and reduces the total risk of the risky part of household portfolios; it is notable that most of this reduction is caused by a reduction in the amount of idiosyncratic risk. Most important, however, the welfare cost of underdiversification is reduced as the decision power of women increases. The results are robust to various sensitivity analyses. Most notably, we show that our main results remain qualitatively unchanged when including household fixed effects and controlling for financial education.

The remainder of the paper is organized as follows. In section 2, we provide some background information on the riskiness of household portfolios and how spouses make decisions concerning the collective financial portfolio of the household. Section 3 describes the dataset. In section 4, we explain the institutional background. In section 5, we explain our identification approach. In section 6, we report our main results, while section 7 presents concluding remarks.

2 Spousal Bargaining and Financial Investments

The previous empirical literature reveals some information regarding household financial behavior. For instance, existing studies show that household portfolios are quite heterogenous in their composition and that this can partly be accounted for by differences

in demographics. Calvet et al. (2007) find that poorer, less educated, retired, and unemployed households are less diversified. Conversely, studies also show that the risky share of household portfolios increases with wealth (see, e.g., Bertaut and Starr-McCluer, 2002; Calvet et al., 2009; Guiso and Sodini, 2013; Calvet and Sodini, 2014). However, although previous studies offer some descriptive analyses of household portfolios and financial risk taking, they remain largely silent on the dynamics within households when determining the composition of household portfolios. To understand these decision processes, intra-household dynamics must be investigated with respect to how they affect household outcomes. The considerable heterogeneity across household portfolios that cannot be accounted for by demographics alone might be explained by gender differences and heterogeneity in the intra-household bargaining distribution.

Collective models of household consumption and labor supply behavior allow the representation of individual behavior inside the household. By contrast, the more widely used unitary models treat the household as a single decision-making unit with one utility function and pooled income. A limitation of this approach is that it cannot be used to analyze the influence that individual household members with different preferences for household decision making have on the decisions made by the household. However, influential empirical evidence casts doubt on the soundness of the unitary model (Schultz, 1990; Thomas, 1990; Hoddinott and Haddad, 1995; Lundberg et al., 1997; Browning and Chiappori, 1998), which has given way to the collective models introduced by Chiappori (1988, 1992).

However, despite the growing number of models of household decision making that have been supported by data in recent years, household financial decision making has not been thoroughly analyzed within this framework. Economic models of portfolio investments typically examine the optimal behavior of a single household and fail to account for the fact that many households are composed of couples whose decisions are the outcome of a joint decision-making process that reflects the preferences of both spouses. A collective bargaining alternative to the unitary model explicitly considers that a husband and wife have separate utility functions that allow the couple to "bargain" their way to a Pareto efficient outcome. The bargaining process is influenced by distribution factors – i.e., variables that affect the bargaining position of household members and thereby intra-household decision-making processes – but not household members' preferences or budget constraints. Couples then maximize a weighted sum of each spouse's utilities, subject to a pooled budget constraint, in which the weighting depends upon the relative decision power of couples as influenced by distribution factors. Distribution factors appearing in the literature include relative non-labor income, relative age, local gender ratio, targeted transfers, abortion legality, alimony, child benefits, the availability of birth

control, and divorce laws (Browning et al., 1994; Lundberg et al., 1997; Chiappori et al., 2002; Angrist, 2002; Chiappori and Oreffice, 2008; Attanasio and Lechene, 2014). The general implication of these bargaining models is that if spouses have different preferences regarding any decision that has to be made within the household, then these distribution factors will affect the outcome under consideration because they determine the bargaining position of individuals within the household. Bargaining models therefore imply that multiple factors that are not typically considered important when financial investments decisions are modeled determine the distribution of decision power within households and thereby the financial decisions made by households.

The household decisions of interest to this paper revolve around the composition of the collective financial portfolio of the household. As empirical findings show that spouses have divergent preferences concerning this composition, we can use a test of independence of household portfolio composition from distribution factors to assess whether these differences are resolved through a bargaining process or whether household portfolio decisions can be described with a unitary model. It is important to note though that we are not assuming that the preferences of men and women do not depend on whether they are married, the only assumption we are making is that regardless of marital status, men and women have different preferences, as suggested by Sundén and Surette (1998), Jianakoplos and Bernasek (1998), and Christiansen et al. (2015).

The collective model does not provide information regarding the distribution factors that influence each spouse's decision power. Bargaining theory, however, suggests that the expected utility in the event that bargaining fails determines the distribution of decision power within a marriage. An important way in which bargaining models differ, however, concerns how they characterize these threat points in a marriage. Most researchers adhere to one of two major hypotheses regarding this concept. Divorce threat models (Manser and Brown, 1980; McElroy and Horney, 1981) take divorce as the ultimate threat when spouses do not reach an agreement, and the bargaining position of spouses is therefore determined by their expected utilities outside the marriage. Alternatively, the separate spheres model (Lundberg and Pollak, 1993) hypothesizes that non-cooperative marriage is a more plausible threat to ordinary household matters than resolution in the event of a marital dispute. In this case, the bargaining position of spouses is determined by their expected utility in the event of non-cooperation.

However, regardless of which strategy spouses turn to when negotiating with one another on the composition of the financial portfolio of the household, earnings potential outside of marriage appears to be a good proxy for the decision power of the spouses (Pollak, 2003; Aizer, 2010; Cherchye et al., 2012; Majlesi, 2015). The distribution factor we focus on is the local labor market opportunities of spouses to determine their earnings

potentials, and we hypothesize that better earnings potentials for women will translate into different portfolio compositions for heterosexual couples. Favorable shifts in the labor market conditions of one spouse are presumed to increase that spouse's bargaining position, which is also expected to translate into a greater say in the financial decision-making process of the household and we bring this hypothesis to real data.

3 Data and Background

3.1 Data

Our dataset contains highly disaggregated data on the entire Swedish population for the 2000-2006 period. Statistics Sweden, a government agency, has a mandate to collect extensive data on all individuals that live in Sweden, are Swedish citizens, or own assets in Sweden. As the data were collected by one central agency and because these data are used for tax purposes, we believe that our dataset is of unusually high quality.

The dataset consists of four distinct parts that are used together throughout the paper. The first of these parts is demographic data. These data contain information on age, education, location of residence, family ties, and other information such as income and real estate wealth. The second part includes data on securities holdings that detail the financial portfolios held by individuals. The third part is a dataset that lists all securities sales and the price at which each individual security was sold. Finally, we complement this information with data from third-party vendors, such as Datastream and Morningstar.

The securities in both the portfolio data and the transaction data are identified by their respective International Security Identification Number (ISIN). By merging these datasets with third-party data, we are able to accurately price the assets and determine which category the assets fall into (bonds, derivatives, stocks, funds etc.), and we are able to obtain historical return series for the securities, which we use to calculate measures of volatility. Table 1 provides summary statistics for financial assets and other household characteristics for married individuals, single males, and single females.

Our proxy for a spouse's decision power is obtained by matching spouses with single individuals on six individual characteristics. Specifically, this proxy is constructed as the average annual income for singles conditional on their age, gender, whether they have children, their location of residence, and the field and level of their highest level of completed education.

This definition implies five restrictions on the data that are important to note. First, because fall-back income is undefined for individuals who are too young to enter the la-

bor force or individuals who have retired and because individuals tend to enter the stock market after age 16 and exit after retirement (Fagereng et al., 2015), we consider only those individuals between the ages of 16 and 65. Second, we drop a small number of married individuals who have very unusual profiles because there are no single individuals with matching profiles on which the conditional average income can be calculated. Third, information on education is missing for some individuals, which means that these individuals are dropped. Fourth, we only consider individuals living in Sweden: Swedish citizens living abroad and foreign citizens with asset holdings in Sweden are dropped from our sample. Finally, because we are only interested in married couples in which both spouses have defined fall-back incomes, we drop the spouses of individuals who are excluded due to any of the data restrictions listed above.

Throughout the paper, we refer to married opposite-sex couples as couples and individuals who are living alone or with someone but without a common child as singles. Ideally, we would not want to define those living together but without a common child as singles, but it is impossible to distinguish them from truly single people in the data. We can identify cohabiting people in the data if they have a common child, but because we are not able to identify all cohabiting individuals, we consider couples to be only those who are married. To be clear, henceforth, whenever we refer to couples or spouses, we mean married people.[4]

Between the years 2000 and 2005, banks were required to report their customers' bank account balances only if these accounts had accrued interest payments in excess of 100 SEK. Unfortunately, this means that we do not have bank account information for approximately half of our sample. In 2006, this reporting requirement was changed such that all accounts with balances exceeding 10,000 SEK had to be reported. This increased our bank account coverage somewhat, but we still miss bank account balances for a large part of the sample. Missing bank account data can distort our estimates of the household share of financial wealth held in risky assets, but these missing data do not affect our estimates of risk held in the risky part of portfolios or its diversification. We address this problem by imputing the balances on the accounts missing from the dataset. The Swedish central bank has information on the total sum of all money deposited in bank accounts. By subtracting the deposits that are accounted for in our data from the

[4]One potential concern is that our results would not hold for cohabiting couples because individuals who choose to marry do so because they value the legal changes that marriage entails **?**. Specifically, one might worry that our results would not hold for cohabiting couples because economic position of a divorced individual differs from the economic position of a separated individual because the divorced individual would bring assets with him or her into the divorce. To assuage this concern, we have re-estimated equation equation (1) where we included cohabiting individuals with children and the results (available upon request) show that our remain qualitatively unchanged. These results further support our argument that it is the earnings potential of spouses that determines their decision power.

total sum of all deposits, we arrive at a residual that we allocate equally over all the individuals with missing bank accounts. This method is in line with the method used by Calvet et al. (2007).[5]

The composition of the financial wealth of Swedish households requires clarification before going further. This is important to understanding which part of the financial wealth we are analyzing and how its size compares with pension savings and the entire financial wealth of households. An explanation of how a household's financial portfolio is treated in the event of a divorce is also necessary before detailing the identification strategy.

3.2 Pension system

The Swedish pension system consists of five separate parts. These parts can be classified into three groups depending on whether the funds come from the government through taxes, from the employer or from the individual directly. The public pension system differs depending on whether the retiree was born before or after 1938. The system for people born before 1938 consists only of defined benefits, whereas the system for people born during or after 1938 consists of both defined benefits and defined contribution components. With respect to the latter system, 16% of earnings go to the defined benefit plan, whereas 2.5% go to the defined contribution plan. The defined contribution plan, PPM, allows the individual to decide where he or she wants to invest his or her pension money from a menu of funds with different risk and return characteristics.

Employer-provided pensions are widespread in Sweden, with approximately 90% of employees receiving some sort of pension benefits as part of their employment package, according to the Swedish Pensions Agency. The amount placed in these employer-provided schemes averages to be approximately 4.5% of an employee's earnings.

In addition to the public pension and the employer-provided pension, individuals are allowed and encouraged to engage in private pension savings and investments. The Swedish tax system allows for tax deductions for some forms of pension savings. It also allows the individual to decide whether he or she wants to be taxed 30% on realized profits or whether he or she wants to pay an annual flat tax of approximately 0.75% of the value of his or her investments.

Although we do not observe the value of households' defined contribution pension savings[6], our dataset contains the majority of household financial wealth (approximately

[5] Calvet et al. (2007) employed three different imputation methods to address this problem – one of which was the constant balance method – and found that their results were not sensitive to the method used. Therefore, we only consider the method we find most appealing and do not repeat our calculations using the other methods.

[6] These include assets in private pension plans and in publicly defined contribution accounts.

85%). We refer the reader to Calvet et al. (2007, 2009) for a detailed presentation of the information on the different categories of household financial wealth in the dataset and its coverage.

3.3 Divorce laws

According to Swedish law, a spouse always has the right to obtain a decree for a divorce and is not required to base such a decree on any special grounds. In the absence of a prenuptial agreement, all assets are divided equally between the spouses at the time of divorce. The couple is encouraged to divide their assets privately, but the couple can apply to the district court for the appointment of a marital property administrator in the event of a disagreement. Such an administrator will then make a decision regarding what should be included in the division, how their assets should be valued and how they should be divided. The general principle is one of equal sharing and ignoring who earned the most or brought the most into the relationship.[7] Which spouse is at fault for the dissolution of the marriage is also irrelevant with respect to the division of assets. When the divorce is final, the spouses are responsible for their own provision. According to Statistics Sweden, approximately 50% of all marriages end in divorce, and approximately 12% of all marriages come with a prenuptial agreement (Agell and Brattström, 2011). Cohabiting non-married couples are also subject to a weaker version of the divorce laws unless they signed a contract prior to moving in together. Ending a cohabitation does not affect the financial portfolios of either party.

The fundamental idea behind Swedish divorce law is that all forms of economic relations between spouses are effectively severed. Each spouse is therefore individually responsible for his or her own financial support after the divorce. Therefore, both the equal division of assets and individual responsibility for financial support after divorce make it clear that earnings outside marriage represent a well-suited measure of the earnings potentials of spouses in the context of this paper.

4 Identification

Our identification approach utilizes the segregated nature of the labor market for women versus men in Sweden. Specifically, we exploit the plausibly exogenous variation in gender-specific labor demand across counties. This measure of local gender-specific labor demand is derived by interacting cross-sectional differences in industrial composition with industry-wide wages at the country level. We next use this measure to construct a

[7] However, if the result is unreasonably unfair, due to a short relationship, for example, the court has the ability to modify the division to ensure fairness.

measure of the wage gap for couples. In this section, we begin by explaining how decision power has been measured in the literature and the corresponding problems associated with such measurement. Next, we explain how we circumvent these problems and how we are able to capture the causal effect of decision power on household outcomes. Finally, we discuss our empirical approach in greater detail and the outcome variables under consideration.

4.1 Measures of Decision Power

Several measures of decision power have been used in the literature to show how its distribution affects household decision making.[8] However, endogeneity is a potential problem associated with many of these measures and prevents causal interpretation. In most cases, decision power measures are based on the assumption that the degree to which spouses are able to exert their preferences in household decision making is determined by the respective resources the spouses contribute to the household (Blood and Wolfe, 1960).[9]

Non-labor income is one of the measures of decision power that has been used to study its effect on various household outcomes (e.g. Thomas, 1990; Schultz, 1990). However, non-labor income suffers from potential endogeneity because it is a characteristic of past savings behavior and/or the receipt of funds that are also influenced by spouses' power, such as inheritance, pension or benefits. Many papers use the relative earnings or relative income of the wife as a measure of decision power (e.g., Browning et al., 1994; Lundberg and Ward-Batts, 2000). However, treating earnings or income as an indicator of decision power typically involves the erroneous assumption that earnings observed while married represent a good proxy for earnings potential. Furthermore, income depends on labor force participation and time allocation decisions, which are also influenced by spouses' relative decision power.

There are many examples of other measures used in the literature that might also be subject to endogeneity. The central task of empirical studies of this kind is therefore to identify sources of female power that vary exogenously. Any measure of couples' relative power that does not involve an exogenous shift in their earnings potential must be instrumented properly. In particular, an instrument is required that is strongly correlated with female decision power but not directly correlated with household decision making.

[8] Most papers have used the differences in spousal characteristics as a measure of relative decision power, e.g., differences in education, labor income, non-labor income, age differences, assets brought to the marriage, current assets, etc.

[9] Doss (1996) proposes an alternative view wherein a wife's lack of a wage income may simply reflect her good bargaining position within the household, i.e., she may exert her decision power to choose not to work in the labor market and to let other household members support her.

A spouse's decision power is determined by her or his earnings potential. A favorable shift in a spouse's labor market conditions would thereby also increase her or his relative decision power. As discussed by Pollak (2005, 2011), fall-back income, not actual income, determines wellbeing at the threat point and hence decision power. In other words, earnings are endogenous, while the expected wage rate is exogenous.[10] For example, consider a highly educated married woman in a household in which the household tasks are divided such that she stays at home with the children and takes care of the household. Her earnings are affected by the very fact that she is married; she earns nothing despite that she would have high income if she were to begin working. A spouse whose earnings are low because she or he chooses to allocate working hours to household production instead of market work does not have less decision power. However, a spouse whose fall-back income is low does have less decision power.

Any exogenous shift in a spouse's utility at the threat point can be used to capture the causal effect of relative spousal decision power. Rangel (2006), e.g., uses a regulatory change in alimony rights in Brazil as a proxy for an exogenous increase in the relative decision power of women and finds that this affects the level of investment in the schooling of children. The direct control of monetary resources is another factor that can contribute to a relative increase in intra-household decision power. For example, Lundberg et al. (1997) find that an exogenous change in public transfers to the wife causes a substantial and significant increase in expenditures on children's clothing relative to men's clothing and on women's clothing relative to men's clothing through the increased decision power of women. Preferable characteristics such as higher education can also increase wellbeing at the threat point and decision power within the household. Strauss and Thomas (1991), e.g., find that the education of Brazilian mothers can increase children's height via their mother's access to information as measured by certain indicators, such as newspaper reading, TV watching, and radio listening.

We use the earnings that married individuals could expect to earn relative to the couple's combined expected earnings outside marriage as our proxy for the spouse's relative earnings potential and thus also a determinant of her or his decision power. Decision power of spouses is therefore determined by the distribution of fall-back income within the household. To estimate earnings potential, we calculate the average earnings of sin-

[10] In examining the data we see that the intra-household distribution of actual and fall-back income differ considerably. In approximately 67% of marriages, the man has higher actual income than the woman and more than 70% of the total household income in about 31% of cases, whereas women earn more than 70% of the household income in approximately 14% of cases. When we consider fall-back income, the proportion of marriages in which men have a higher fall-back income than women is similar to the cases that consider actual income. In approximately 12% of cases, men have more than 70% of the total household fall-back income, while women have more than 70% of the household fall-back income in less than 5% of cases.

gle individuals of the same gender and age, with the same education, living in the same region, and that either do or do not have children. $DP_h = \frac{z_{h2}}{z_{h1}+z_{h2}}$ where z_{h1} and z_{h2} are fall-back incomes for the husband and the wife in household h, respectively, is therefore our measure of the distribution of decision power in household h.

Our measure of decision power within households takes into account that household decisions are made jointly by spouses and we therefore consider the relative income potentials of couples, not the relative income of women and men in general in the population. This takes into account how males and females are matched in the marriage market. However, because our decision power measure is based on many choice variables that are likely to be correlated with unobservables relegated to the error term, it is prone to endogeneity. Ordinary least squares estimates based on this measure could thus be biased, and we therefore require an exogenous source of variation to instrument it.

4.2 IV measures

To address the potential endogeneity of our measure of the distribution of decision power within households and establish a causal relationship between the decision power of spouses and the composition of household portfolios, we require exogenous variation in the relative earnings potentials of the spouses to instrument our measure of decision power. This approach considers that fall-back income, not actual income, captures the earnings potentials of spouses and solves the potential endogeneity problem concerning fall-back income. One measure that is correlated with a spouse's decision power is labor demand. Increased demand for an individual's skills enhances labor market options and hence their earnings potentials, independent of whether this person is working. This type of labor demand might manifest through channels such as increasing earnings, decreasing the expected duration of unemployment, and increasing employment stability.

We employ an instrumental variables approach pioneered by Bartik (1991) and Aizer (2010) that considers that variation in wages reflects both demand and supply effects. Specifically, based on the gender segregation among industries, the industry composition of counties and industry-wide wage changes at the country level, we can isolate the gender-specific variation in local wages that is driven solely by aggregate labor demand, which is presumably uncorrelated with worker characteristics in a given county. This allows us to create a measure of prevailing female and male wages that reflects only the exogenous gender-specific labor demand. In contrast to previous uses of the "Bartik instrument,' which focus on changes in average wages, we construct an instrument for the distribution of fall-back income within a household and thus take into account how males and females are matched in the marriage market. The instrument is based on a measure of average annual wages that are calculated by gender and education level in each county as follows:

$$\bar{w}_{gcey} = \sum_j \alpha_{gcej} w_{-ceyj} \tag{1}$$

where α_{gcej} is the proportion of workers of gender g in county c with education e who are working in industry j,[11] and w_{-ceyj} is the average wage of workers with education e in industry j in year y in all counties except for county c. The proportion α_{gcej} is fixed over the entire period such that selective sorting across industries is not reflected in this wage measure. Our data contain 88 different industries, 21 different counties and 3 different education levels.

The reason for excluding the county under consideration when measuring wages over counties is to prevent endogeneity associated with local labor force characteristics, i.e., by doing so, we remove from the measure any changes in wages that might be caused by changes in local labor force characteristics. This addresses the concern that the observed change in countrywide wage growth is driven by the concentration of an industry in the county under consideration.

Our identification approach relies on two assumptions that merit further discussion. First, there is imperfect substitution between gender groups within occupations. Historically, men and women have tended to choose different occupations. Women are, for instance, overrepresented in health care and social services, whereas most workers in construction are men. Second, labor market demand and supply are only partially adjusted in the short run due to mobility costs (Blau et al., 2000; Katz and Murphy, 1992). This assumption allows panel data approaches to exploit short-term fluctuations in labor market conditions to evaluate the effects of shifts in decision power among households, while individuals will be able to adjust to new conditions over the long run by changing either their industry or their geographic location, preventing any causal inference.

If these assumptions hold, countrywide wage growth within industries would influence individuals differently depending on the significance of the occupation under consideration in their county of residence and within their education level and the gender ratios within that industry and education level. This allows a gender-specific measure of the prevailing local wages for individuals to be created based on the occupational structure of the county and the countrywide wage growth in occupations. This measure is independent of underlying worker characteristics in the county, which might be correlated with decisions made within households and would thereby bias the results.

Data for Sweden show that the assumption regarding gender segregation among industries holds in this paper. In 2006, e.g., 77.2% of employers in health care, social services and veterinary services were women, and 92.0% of construction employees were

[11] $\alpha_{gcej} = N_{gcej}/N_{gce}$ and therefore, $\sum_j \alpha_{gcej} = 1$.

men. We exploit this segregated nature of the labor market, increases in demand in some sectors result in exogenous changes in the relative earnings of females and males. We verify the validity of the second assumption by testing whether individuals respond to shifts in decision power by moving. Using the industrial structure of the county under consideration and the countrywide wage growth within industries, we can therefore create gender-specific measures of prevailing local wages.

The construction of the wage measure demonstrates that counties with higher concentrations of female-dominated industries that experience high countrywide wage growth will experience more narrowing in the gender wage gap. For instance, let us assume that there are only two counties, Stockholm and Gotland, and three industries, manufacturing, services and farming. The shares of each industry in Stockholm and Gotland are 0.2, 0.7, 0.1 and 0.3, 0.2, 0.5, respectively. Now, if there is a higher countrywide wage growth in services than in the other industries, Stockholm will experience a decrease in the gender wage gap while Gotland will not, which will cause an upward shift in the relative decision power of women in Stockholm.

Next, we wish to construct a measure of the couple wage gap that is driven solely by aggregate shocks. The documented assortative mating and selection[12] in the marriage market imply that the average wage gap for couples is not the same as the gender wage gap.[13] We modify the standard Bartik instrument to compute a predicted couple wage gap that corrects for how mating takes place that we intend to use as an instrument for the distribution of decision power in household h, DP_h. We define $CoupleWageGap_h$ as $\frac{w_{h2}}{w_{h1}+w_{h2}}$, where w_{h1} and w_{h2} are the local wages of the husband and the wife, respectively, in household h from equation (1). The instrument is therefore a measure of the average annual couple wage gap that is calculated by the level of educational sorting in each county.

This modification to the standard Bartik approach allows us to construct a measure of the couple wage gap, the variation of which is orthogonal to local labor market conditions. Our hypothesis is that households that live in counties that experience an increase in the relative labor demand for married women will also experience an increase in women's influence within households through an increase in their relative decision power. We expect these women will then renegotiate the composition of the financial portfolio held by their households such that it becomes less risky and better diversified. Panel C in Table 2 reports the results of a regression of the endogenous variable, DP_h, on the

[12]Success in finding a partner is correlated with education. Thus, losers in the competition on the marriage market will be overrepresented if the gender wage gap is used to measure the distribution of decision power within households.

[13]The expectation of a ratio of random variables is only equal to the ratio of the expectations if the random variables are distributed independently.

exogenous instruments in our sample of couples. These results show that the first-stage coefficients are large (0.73-0.84) and highly statistically significant, where female spouses who experience an increase in the couple wage gap also experience an increase in their relative decision power, which validates the first stage of our IV analysis. Furthermore, the F-values obtained from the first stage – which are above $1,000$ for all outcomes – show that the instrument has substantial power.[14]

Are effects running exclusively through intra-household distribution of decision power? A strong first-stage instrument for the distribution of decision power within households is not sufficient for the instrumental variable strategy to be valid. The instrument must also satisfy the exclusion restriction. That is, after accounting for its impact on the distribution of decision power, the couple wage gap in county i must be uncorrelated with the outcome variable of interest for couples in county i. We take several steps to challenge this exclusion restriction, finding suggestive evidence in favor of the assumption.

By construction, the couple wage gap in county i excludes all data from county i. However, this does not preclude the possibility that the couple wage gap for similar counties are correlated. It is possible that, even after accounting for industry-level components, counties with similar industrial compositions could have correlated county-level components in their couple wage gap shifts. In this case, the shifts in the instrument may reflect differences in industrial composition rather than differences in industry performance. We therefore estimate regressions in which we control for industrial composition to determine whether the instrument primarily reflected some correlation between similar counties rather than industry-level labor market earnings. These results can be found in Table A.1 and show that our findings do not change when controlling for the industrial composition of counties, which lends support to the exclusion restriction.

Migration is likewise a potential threat to our exclusion restriction. Households can migrate from one region to another, and people are attracted to booming markets, while they are inclined to leave markets that are declining (see, e.g., Blanchard and Katz, 1992). Moreover, because migration is likely to be selective, it may not be legitimate to draw inferences from our estimated effect of the distribution of decision power within households on the financial decision making of households. If in-migrants moving into counties experiencing a relative improvement in labor market conditions for women were more risk averse than the natives of those counties, this composition effect would be

[14] As Staiger and Stock (1997) show, the weak instruments problem can arise even when the first-stage F-tests (based on R-squared) are significant at conventional levels in a large sample. Bound et al. (1995) and others have promoted the use of the partial R-squared statistic to assess whether a weak instrument problem is present despite a high F-statistic. This statistic is not much lower than R-squared, which alleviates concerns that weak instruments will bias our estimates.

reflected in our estimates. We therefore need to test for population shifts in response to shifts in the wage gap of couples. We can test this directly because we observe whether individuals move between counties. In Table A.2, we display the 2SLS results from a regression of an indicator of whether a couple moved regressed on their relative decision power. This regression is identical to our main specification aside from the dependent variable. The results show that couples do not respond to shifts in relative earnings potential by moving between counties.

The absence of evidence in favor of alternative explanations gives some confidence in the exclusion restriction that shifts in the wage gap among couples affects household portfolio decisions only through the distribution of decision power, and not directly in any other way. Additional support is given by a placebo test presented in Table A.3. To perform this test, we exploit that there is no intra-household bargaining in some households: singles do not have a spouse with whom to bargain. We re-estimate equation (1) on the subsample of singles and control for the potential wage of singles and the couple wage gap of a married individual with the same background characteristics as the individual under consideration. A significant effect of the couple wage gap on this subsample would be a violation of the exclusion restriction. By contrast, we find no evidence of a significant relationship between the couple wage gap and portfolio choices among single males and females, lending support to the exclusion restriction.

4.3 Household Portfolios and Distribution of Decision Power

We explore the determination of several features of household financial portfolios. First, we begin by analyzing the participation of households in equity holdings and other risky assets. Among those households that do participate, we investigate two different measures of how much the household has allocated to risky assets: the direct equity share and the risky share. We proceed by analyzing the amount of idiosyncratic and systematic risk in households' portfolios of risky assets. Finally, we consider the return loss of households, the difference between the mean expected return of households' portfolios and the maximum expected return level attained by the global index[15] at a given level of risk.

Given a global index, G, the capital asset pricing model (CAPM) asserts that the relationship between the excess return of asset i and the excess return of the global index is given by:

$$r_{i,t} = \beta_i r_{G,t} + \epsilon_{i,t} \tag{2}$$

[15]Because Sweden is a small and open economy, we opt for a comparison to a diversified portfolio of global stocks. For this purpose, we follow Calvet et al. (2007) and use the All Country World Index (henceforth the "global index") compiled by Morgan Stanley Capital International (MSCI) in U.S. dollars.

where the residuals measure the idiosyncratic risk of asset i. If we now consider a portfolio of n risky assets, then the volatility matrix of the assets' returns that is due to idiosyncratic risks is given by the covariance matrix of the portfolios' idiosyncratic risks, Σ. Let a_h denote the portfolio allocation vector of household h, where $a_{h,i}$ represents the fraction of financial wealth invested in risky asset i. The idiosyncratic risk of the risky portfolio of household h is then given by $\sigma^2_{\epsilon,h} = a'_h \Sigma a_h$, and the systematic risk of the risky portfolio of household h is given by $\sigma^2_{G,h} = \beta^2_h \sigma^2_G$, where $\beta_h = a'_h \beta$. The total risk of the household portfolio, σ^2_h, therefore consists of systematic risk, $\sigma^2_{G,h}$, and idiosyncratic risk, $\sigma^2_{\epsilon,h}$. These measures capture the contribution of systematic and idiosyncratic risk to the volatility of returns of the risky portfolios of households, respectively.

We have now laid the necessary foundations to examine the outcomes of interest to us: market participation, asset allocation, risk taking and diversification, and return loss. Our measures of participation are equity participation, which takes value one if the household holds equity directly and zero otherwise, and risky participation, which takes value one if the household holds either equity or risky funds and zero otherwise. Our measures of the asset allocation of household h are the equity share (ϕ_h) and the risky share (θ_h), the share of financial wealth invested in equity and equity or risky funds.[16]. The total risk of household h (σ^2_h) is measured as the volatility of the risky part of the portfolio, i.e., the annualized standard deviation of the return of the risky part of the portfolio. The idiosyncratic risk of household h ($\sigma^2_{\epsilon,h}$) is that part of total risk that does not stem from systematic market movements. Specifically, it is the annualized standard deviation of the residuals (ϵ) in the CAPM regression in equation (2). Return loss (RL) is the average return a household loses by choosing the household portfolio rather than a position combining the benchmark portfolio with cash to achieve the same risk level. We consider the following regression:

$$Y_h = \alpha_0 + \alpha_1 DP_h + \alpha_2 INC_h + X_h \alpha_3 + \gamma_t + \mu_c + \varepsilon_h \tag{3}$$

where Y_h is the outcome variable under consideration of household h, DP_h is our measure of the distribution of decision power in household h, i.e., $DP_h = \frac{z_{h2}}{z_{h1}+z_{h2}}$, where z_{h1} and z_{h2} are fall-back incomes for the husband and the wife in household h, respectively. INC_h is the natural log of the household's total fall-back income, which is included to ensure that the impact of the relative decision power of spouses can be identified separately from the impact of household income potentials.[17] County fixed effects are included to

[16] i.e., $\phi_h = \frac{\sum_{j \in E} Q_{h,j} P_j}{\sum_{j \in A} Q_{h,j} P_j}$ and $\theta_h = \frac{\sum_{j \in E \cup F} Q_{h,j} P_j}{\sum_{j \in A} Q_{h,j} P_j}$, where E stands for equity, F for risky funds, A for all financial assets, $Q_{h,j}$ is the number of shares of asset j owned by household h and P_j is the price of asset j. We define equity funds, hedge funds and mixed funds as risky funds.

[17] The main concern here is that households would be expected to respond to declining income po-

control for any unobserved fixed differences across counties. The year fixed effects will control for countrywide policy changes. ε_h is an unobserved component that captures everything else that influences the outcome variable under consideration. X_h is a vector of additional control variables which includes log of total fall-back income of the spouses, log of total household wealth, age of spouses, number of children by age groups, dummy for a long marriage (defined as being married for more than 15 years), number of previous marriages of both spouses, and log of spouses? debt.

If female decision power were randomly assigned across relationships, we could accord OLS estimates of the above specification a causal interpretation. However, female decision power is unlikely to be randomly assigned, and it is possible that we are subject to selection on observables or unobservables. The coefficient on fall-back income, α_1, is therefore likely to give biased estimates of women's decision power regarding household financial portfolios.

To overcome this endogeneity problem, we must isolate a source of variation in female decision power that is exogenous to household portfolio outcomes. We employ our instrument, $CoupleWageGap_h$, which exploits the fact that certain industries have traditionally been dominated by women and others by men to create a measure of prevailing local couple wage gaps that are based on the county's industrial structure, assortative mating, and on the countrywide wage growth in those industries that are dominant in each county.

5 Results

Table 2 reports the coefficients on the gender dummy for single individuals using OLS estimations, the OLS- and IV-estimated coefficients on decision power from equation (1) for the financial decisions of interest, and the first-stage coefficients. The following subsections provide separate discussions of our results for market participation, asset allocation, and risk taking and diversification for single individuals and households.

Comparison of single males and females The conclusions drawn from comparing the risky asset market participation of single males and single females differ depending on which participation measure we use. When we consider direct equity participation, we find that single males participate more than single women. Specifically, single women are 6.9 percentage points less likely to participate in equity markets, all else being equal, which indicates that direct equity participation is 18.7% lower among single women than among

tentials by reducing their financial risk taking. If labor market conditions of men declined during this period while the labor market remained similar, then relative decision power of women would increase while the income potentials of the household would fall, and we cannot distinguish the impacts of these two changes from each other.

single men. When we consider risky asset market participation, however, single females participate more than single males. Risky asset market participation is 1.2 percentage points higher among single females than among single males, implying that risky asset market participation is 2.1% higher for single women than for single men.

The share of financial wealth invested in risky assets is lower among single women than among single men. Of those singles who participate in equity markets, single males place a higher proportion of their financial wealth in equity. Specifically, the direct equity share for single women is 4.7 percentage points lower than that of single males, all else being equal, which indicates that the direct equity share for single women is 14.3% lower than that of single men.

Regarding the risky share, for those who participate, single males have a higher risky share than single women, which indicates that although risky market participation is greater among single women than among single men, single men who do participate invest a higher proportion of their financial wealth in risky assets. The risky share for single women is 1.5 percentage points lower than that for single males, all else being equal, implying that the risky share is 3.2% lower for single females than for single males.

Our comparison of single males and single females also reveals that single females hold less risk in the risky part of their financial portfolios, i.e., the volatility of the return on the risky part of the financial portfolios of single women is 5.2 percentage points (16.7%) lower than among single males. Furthermore, single females also hold less idiosyncratic risk in their financial portfolios, i.e., idiosyncratic risk is 3.7 percentage points (19.1%) lower among single women than among single men. We therefore conclude that single females hold less risk in their portfolios when compared with single males and that single females' portfolios are better diversified.

Previous studies suggest that the gender differences in risky asset market participation might be attributed to gender differences in risk appetite (see, e.g., Halko et al., 2012). However, these studies generally define risky assets as stocks. In this paper, we also consider other types of risky assets (equity funds, hedge funds and mixed funds). This more comprehensive measure of risky asset market participation shows that the gender difference in participation in risky asset markets is much smaller than that implied when measuring stock market participation alone. This suggests that the gender difference in risky asset market participation cannot be fully explained by differences in risk appetite between men and women; it is instead consistent with the notion that men and women have different preferences regarding how to take risk. A comparison of the gender difference in equity shares and the gender difference in risky shares reveals the same finding. The more comprehensive risk measure suggests that there is a much smaller gap between men and women than the equity share suggests.

Financial education is known to be important for stock market participation decisions (Christiansen et al., 2008), which implies that financial education should be given special attention in an analysis such as ours. As economists have acquired knowledge about financial markets and risk-return trade-offs by means of formal education, an indicator of a degree in economics[18] should capture the effect that financial education has on financial decision making. Among single individuals, stock market participation and risky asset market participation are positively influenced by holding a degree in financial fields of study. The same holds for the equity share, the risky share, idiosyncratic risk, and total risk. However, controlling for financial education does not change the significant and sizable gender difference in financial decision making that we find in this study. These results can be found in Table 4.

Couples Concerning market participation, we find that a household's participation in risky asset markets increases as a married woman's decision power increases. Specifically, a one-standard-deviation increase in the relative decision power of a married woman implies that household participation in risky asset markets is increased by 0.09 standard deviations, which implies a 5.9% increase from mean participation. This could be explained by either increased participation in equity holdings or other risky markets. When we consider the decision to participate in equity markets, we find that participation is hardly effected by this shift in decision power; it decreases by 0.01 standard deviations as a result of this, which implies a 1.4% decrease from mean participation in the equity market. Increased participation in risky asset markets by households that experience a favorable shift in the decision power of wives is therefore the result of increased holdings of risky funds but not equity.

Our risky asset market estimate implies that a one-standard-deviation shift in the relative decision power of women would move participation from 0.68 to 0.72, i.e., it would increase participation in risky asset markets by 4 percentage points. With an equity premium of 8% and assuming that households that participate hold the average value of risky assets ($27,601), this would increase the return of those households that, as a result of this shift, are now participating by approximately $2,200.

Among households that participate in equity markets, greater decision power for women implies a lower equity share, meaning that they place a lower proportion of their financial wealth in equity. Specifically, the direct equity share declines by 0.09 standard deviations when the decision power of women increases by one standard deviation. Similarly, an increase in women's decision power in households that participate in either equity or in other risky asset markets results in a lower risky share, meaning that the household places a lower proportion of its financial wealth in equity or other risky assets.

[18] We also include related fields, such as finance and business administration.

A one-standard-deviation increase in the decision power of women in households reduces the risky share by 0.03 standard deviations, which implies an 9.7% and a 1.9% decrease from the mean share of equity and other risky asset markets in the financial wealth of households, respectively.

Finally, we consider the risk taking and diversification decisions of households and find that greater decision power for women reduces the former and increases the latter. Specifically, our results show that a one-standard-deviation increase in the decision power of married women decreases the total risk in the household's financial portfolio, i.e., the volatility of the return of the risky part of the financial portfolio of the household, by 0.10 standard deviations. This also reduces the idiosyncratic risk in the household's financial portfolio by 0.10 standard deviations, which implies a 5.4% and 6.9% reduction from the mean total and idiosyncratic risk held in the financial portfolios of households, respectively.

Idiosyncratic and total risk measure the level of risk in the risky portfolios of households. However, these measures do not capture the risk of the overall financial portfolios. One might be concerned that our findings would not hold if our risk measures were weighted by the shares of financial wealth invested in equity and risky assets, which capture the level of idiosyncratic risk and total risk held in the overall financial portfolios. We therefore estimate regressions using weighted risk measures and find that these results are consistent with our results from the unweighted regressions and that the greater decision power of wives reduces the amount of idiosyncratic and total risk held in the financial portfolios of households. These results are available upon request.

Finally, we find that the relative bargaining position of spouses affects household welfare. A one-standard-deviation increase in the relative decision power of female spouses reduces the return loss of the household by 0.08 standard deviations, which is a 7.8% reduction from the mean return loss of households.

Additional Specifications We present the results of a number of alternative specifications to verify the robustness of our results and hence their causal interpretation.

We use a specification with household fixed effects to address any fixed unobserved determinants of decision-making power at the household level. The empirical analysis of most studies on household financial decision making is mainly conducted across observations (see, e.g., Yilmazer and Lich, 2013), and it might be proposed that our findings are only driven by variation across observations. However, our data allow us to isolate the effect of shifts in decision power within households over time on the financial decision making of the household by re-conducting our analysis using household fixed effects. Our estimates verify that a shift in the decision power from one spouse to another does in fact affect the financial decision making of the household. These results can be found in

Table 3.

Table 4 verifies that our results hold when controlling for financial education. Financial education is known to be important for stock market participation decisions (Christiansen et al., 2008), which implies that financial education should be given special attention in an analysis such as ours. As economists have acquired knowledge about financial markets and risk-return trade-offs by means of formal education, an indicator of a degree in economics[19] should capture the effect that financial education has on financial decision making. Among single individuals, stock market participation and risky asset market participation are positively influenced by holding a degree in financial fields of study. The same holds for the equity share, the risky share, idiosyncratic risk, and total risk. However, controlling for financial education does not change the significant and sizable gender difference in financial decision making that we find in this study. Our results regarding the effects of decision power on the portfolio composition of households are also robust to the inclusion of an indicator for financial education. Thus, this allows us to say something about how the financial education of male and female spouses affects financial decision making in households and about the relative importance of these variables. We find that the financial education of both male and female spouses has a positive effect on all of our outcome variables except that female economists do not affect the equity share and the return loss of their households. Furthermore, the effect of male spouses is much larger than that of female spouses. These results can be found in Table 4.

Next, we show that our results are not sensitive to how the difference in the threat points of spouses is defined. In Table A.4, we use an alternative measure of the fall-back income gap, the linear difference in the fall-back income of the spouses. The coefficient estimates are smaller than those obtained when we define the fall-back income gap to be the proportion of female fall-back income to the total fall-back income of the couple, but this is due to the scale of the gap when defined in this manner. The implied effects, however, are similar to those obtained in our baseline specification.

We also derive an instrument for decision power using countrywide employment growth in the industries in each county as the measure of demand. This instrument is similar to the measure used in our baseline specification, but using this alternative instrument shows that our findings are not limited to the wage growth instrument used in our baseline specification. The results obtained using this instrument can be found in Table A.5. The estimates are similar to those we obtained in our baseline specification.

In addition, we utilize changes in the industrial composition of counties over time as an alternative source of identifying variation. For this instrument, we hold industry wages at the county level fixed at the base year (1999) and create a time-varying measure of the

[19] We also include related fields, such as finance and business administration.

share of women working in each industry. Our findings hold when using this instrument and are presented in Table A.5.[20]

Finally, to assuage the concern that construction of our main independent variable of interest, the wife's share of the couple's fall-back income, is driving our findings, we also tested if our main findings hold when using another measure of female decision power that has been used in the literature, the actual income shares of spouses. While earnings observed while married may not represent a good proxy for earnings potential, as discussed earlier, this measure is correlated with our preferred measure of decision power and the instrument should move the two measures of the wife?s relative bargaining position. Table A.6 provides estimates of equation equation (1) where we use the actual earnings shares of spouses to measure their relative decision power. Our estimates show that our findings remain qualitatively unchanged.

Risk Decomposition High idiosyncratic risk in household portfolios can result in welfare loss. Calvet et al. (2007) calculate the cost of under-diversification in Sweden and find that the median investor experienced an annual return loss from underdiversification of 2.9% on a risky portfolio, which equals 0.5% of household disposable income. However, there is substantial heterogeneity in these costs, and for every one in ten investors, it amounts to more than 4.7% of disposable income.

As shown above, a married woman with greater decision power increases the diversification of the household portfolio. However, we have not been able to say anything about the effect of such increased diversification on household welfare. A good way of determining the welfare losses of suboptimal financial portfolios is to consider the return loss of household portfolios, or the average cost of choosing a suboptimal portfolio. Specifically, the return loss measures the loss in the potential return for a given level of risk, and hence it captures the overall efficiency loss in the portfolio. The return loss of household h is calculated as $RL_h = r_m \times \theta_h \times \beta_h \times \frac{RSRL_h}{1-RSRL_h}$, where r_m is the market risk premium (in our case, it is proxied by the historical average excess return of the MSCI World Index), θ_h is the risky share of the portfolio, β_h is the beta of the portfolio, and $RSRL_h$ is the relative Sharpe ratio loss of the portfolio. The relative Sharpe ratio loss measures the diversification loss in the risky asset portion of the portfolio and is defined as $RSRL_h = \frac{S_G - S_h}{S_G}$, where S_G and S_h are the Sharpe ratios of the benchmark and the household portfolio, respectively. A relative Sharpe ratio loss of 20% indicates that the portfolio's Sharpe ratio is 20% below that of the MSCI World Index. To determine the relative importance of the individual constituents of the return loss, we divide the relative

[20] As noted by Angrist and Pischke (2008), standard over-identification tests such as the Sargan test are invalid for instruments with heterogeneous treatment effects. This explains why we do not report over-identification tests despite that our two-stage system is over-identified.

return loss of household h by the average return loss for households and log-linearize the expression. Noting that $\bar{r}_m = r_m$ for all h, we obtain the following:

$$(\ln RL_h - \ln RL) = (\ln \theta_h - \ln \theta) + (\ln \beta_h - \ln \beta) + (\ln \frac{RSRL_h}{1 - RSRL_h} - \ln \frac{RSRL}{1 - RSRL})$$

By estimating a separate identical regression for each term in the expression above, the regression coefficients on the left-hand side of the expression must necessarily equal the sum of the respective regression coefficients on the right-hand side, which will allow us to determine the relative importance of the different components of the return loss.

We begin by decomposing the return loss of single individuals such that we can compare the results for married individuals to those of these single individuals. This allows us to assess how marriage and intra-household bargaining affects household financial decision making. We find that single women have a lower return loss than single men and that this is to a great extent the result of superior diversification. A comparison with couples reveals interesting findings. As the results for single individuals might suggest, the increased decision power of married women indeed reduces the return loss of household portfolios. However, the propagation mechanism is different. The return loss reduction for household portfolios is instead driven by a better diversified risky portfolio, while the return loss difference between single men and single women is mainly due to a lower beta coefficient among women. These results can be found in Table A.7.

Interpretation of Results The IV estimates represent the average marginal change from an increase in women's share of fall-back income (FB_h) for the subgroup affected by the female labor demand share instrument (DP_h). This subgroup consists of couples whose financial decisions are affected by small shifts in gender-specific labor demand. These estimates cannot be generalized to the larger population without additional assumptions, such as a constant marginal change in financial decision making across households as a result of a change in the distribution of household decision power. However, the fact that Sweden is one of the most egalitarian countries in the world (EIGE, 2013) may suggest that the results offer a lower bound for global effects.

Comparing the results from the OLS and IV regressions, we find that the coefficients from the IV regressions are much larger for all outcomes except for participation. However, the standard errors of the IV estimates are also much larger than those of the OLS estimates, and the wider confidence interval is the price we pay to obtain a consistent estimator of the effect that the distribution of decision power within households has on the composition of portfolios. Part of the difference might therefore be due to this effect. However, although the IV estimates are imprecise, the range of the point estimates is well above the corresponding OLS estimates for all outcome variables except for equity

participation.

A potential explanation of the difference between the estimates of the IV model and those from the OLS specifications is the endogeneity of the fall-back income measure. As discussed above, the earnings potentials of the spouses may reflect unobserved characteristics, which would imply that our measure of the relative decision power of couples suffers from endogeneity; therefore, the OLS estimates will be biased. For instance, women with very likable personalities, better social networks or who are physically attractive may be more successful in exerting their preferences such that their household portfolios are more similar to their preferred portfolios than those of women with disagreeable personalities, poor social networks or who are physically unattractive. We will then obtain biased OLS estimates if any of these attributes is also correlated with our measure of decision power.[21] Furthermore, our estimation of the earnings potential is measured with error, which might be another source of endogeneity.

Another explanation for the disparity between the IV and the OLS estimates is heterogenous treatment effects. It is likely that a substantial fraction of those affected by the changes in labor market opportunities may be households in which women are on the margin of being able to exert their preferences. Therefore, the local average treatment effects identified in the IV specifications may not be very informative with regard to the overall effect of a shift in gender-specific labor demand on household portfolios, although it captures the effect for households in which women are on the verge of being able to have an impact on the financial decisions within their households.

6 Conclusion

In this paper, we use a unique dataset to show that the household cannot be treated as one unit when analyzing its financial decisions, and we make several contributions to the literature. First, we show that distribution factors that presumably determine the bargaining position of spouses are an important factor when modeling households' financial decision making. The distribution factor we use to perform this empirical test is the labor market potential of spouses, which we measure directly by matching married individuals with "identical" single individuals. This factor captures the utility of spouses

[21] e.g., Boulier and Rosenzweig (1984) find that less attractive women receive more schooling. This is supported by the findings of French et al. (2009) that physical attractiveness has a negative effect on school performance, after controlling for personality and grooming. If exogenously less attractive women obtain more education (all else being equal) than more attractive women, the estimated effect of the decision power of women on household outcomes where both relative relative earnings potentials and attractiveness affect the outcome under consideration would be biased downwards in a simple OLS analysis. Because educational attainment is among the main determinants of one's earnings potential, less attractiveness among better educated women would bias our OLS estimates downward.

at their threat points. To address endogeneity concerns, we employ a source of exogenous variation as an instrument for this measure. We find that the portfolios of couples in which the decision power of the woman is relatively high exhibit lower levels of risk compared with the portfolios of couples in which the decision power of the woman is relatively low. Specifically, as the decision power of a married woman increases, direct equity participation decreases, while participation in other risky asset markets (i.e., risky funds) increases; given that the household participates in risky asset markets, the share of wealth invested in risky assets decreases; the riskiness of the household portfolio decreases; and the diversification increases. Second, we show that household welfare is affected by the distribution of decision power within couples. Relatively higher decision power of married women reduces the costs associated with underdiversified portfolios. This indicates that women exert their decision power to reduce the costs incurred as a result of holding sub-optimal portfolios.

We have managed to look inside the black box of how couples make financial decisions and are able to determine that the bargaining position of spouses affects the composition of the financial portfolios of households. There may be various reasons why men and women have different preferences concerning financial decisions, and it is not the goal of this paper to investigate the reasons for these gender differences. The important finding in the context of this paper is that men and women have different preferences, regardless of the reasons for them, and that distribution factors determine how these preferences are aggregated at the household level.

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Table 1: Summary Statistics

	Married Individuals			Single Males			Single Females		
	Mean	Median	Standard Deviation	Mean	Median	Standard Deviation	Mean	Median	Standard Deviation
Portfolio characteristics:									
Financial wealth ($)	46,451	10,997	776,312	29,585	3,635	498,440	21,865	3,255	464,817
Direct equity ($)	19,645	0	765,981	8,899	0	467,181	4,839	0	438,555
Direct equity share	0.23	0.13	0.24	0.3	0.2	0.28	0.26	0.16	0.26
Direct equity participation	0.45	0	0.5	0.23	0	0.42	0.17	0	0.37
Risky assets ($)	27,601	1,491	769,109	14,890	0	479,544	9,719	0	441,501
Risky share	0.39	0.36	0.28	0.44	0.42	0.31	0.42	0.4	0.29
Risky participation	0.68	1	0.47	0.44	0	0.5	0.43	0	0.5
Total risk	0.27	0.26	0.15	0.28	0.27	0.16	0.23	0.23	0.14
Idiosyncratic risk	0.16	0.14	0.11	0.17	0.15	0.12	0.13	0.12	0.09
Financial characteristics:									
Disposable income ($)	33,128	29,443	113,016	26,041	24,849	103,504	23,800	23,412	24,419
Salary income ($)	35,005	33,693	27,997	27,127	27,321	28,758	21,989	20,504	21,112
Real estate wealth ($)	287,533	196,836	790,645	76,216	0	375,991	64,561	0	195,420
Total liabilities ($)	63,708	40,993	181,162	39,639	11,859	122,740	32,256	10,325	85,124
Demographic characteristics:									
Unemployment dummy	0.17	0	0.37	0.13	0	0.34	0.15	0	0.36
Entrepreneur dummy	0.2	0	0.4	0.1	0	0.29	0.05	0	0.22
Student dummy	0.04	0	0.2	0.14	0	0.35	0.19	0	0.39
Age	47.69	48.5	10.11	38.15	36	13.66	38.74	38	14.31
Household size	3.2	3	1.19	1.28	1	0.7	1.55	1	0.91
High school dummy	0.92	1	0.27	0.77	1	0.42	0.81	1	0.39
Post-high school dummy	0.46	0	0.5	0.28	0	0.45	0.36	0	0.48
Immigrant dummy	0.22	0	0.41	0.14	0	0.34	0.15	0	0.36

Note: The table reports the summary statistics of the main financial and demographic characteristics of Swedish households at the end of 2006. We convert all financial variables into U.S. dollars using the exchange rate at the end of 2006 (1 SEK = $ 0.1463). The computations are based on all individuals between the ages of 16 and 65 considered throughout the empirical analysis. Missing bank balances are imputed using the constant imputation method discussed in the data section. All logarithms are computed in the natural base. We consider couples to be a man and a woman who are married and singles to be those who are living alone or are living with someone but without a common child. The reported numbers for married individuals are the numbers for them and their spouses divided by two.

Table 2: The Impact of the female's decision power on household financial portfolios

	(1) Direct Equity Participation	(2) Risky Participation	(3) Direct Equity Share	(4) Risky Share	(5) Idiosyncratic Risk	(6) Total Risk	(7) Return Loss
Panel A: Singles							
Female dummy	-0.0685	0.0120	-0.0472	-0.0149	-0.0373	-0.0523	-0.0007
	(0.0024)	(0.0029)	(0.0012)	(0.0012)	(0.0009)	(0.0011)	(0.0000)
Compared to male mean	-18.7%	2.1%	-14.3%	-3.2%	-19.1%	-16.7%	-17.1%
	0.2094	0.2399	0.0279	0.0945	0.0609	0.0635	0.0897
Observations	16,621,352	16,621,352	3,770,588	7,696,315	8,217,888	8,217,888	7,628,162
Individuals	2,425,143	2,425,143	577,476	1,145,492	1,197,370	1,197,370	1,132,664
Panel B: Couples							
DP - OLS	0.0383	0.1366	-0.0507	0.0043	-0.0239	-0.0286	-0.0004
	(0.0035)	(0.0043)	(0.0027)	(0.0023)	(0.0016)	(0.0021)	(0.0000)
DP - IV	-0.0373	0.2456	-0.1352	-0.0459	-0.0676	-0.0893	-0.0013
	(0.0118)	(0.0103)	(0.0062)	(0.0065)	(0.0028)	(0.0039)	(0.0001)
SD*	-0.01	0.09	-0.09	-0.03	-0.11	-0.10	-0.08
Panel C: First Stage							
CoupleWageGap	0.7262	0.7262	0.8383	0.8184	0.8153	0.8153	0.8189
	(0.0009)	(0.0009)	(0.0015)	(0.0012)	(0.0012)	(0.0012)	(0.0012)
F-value (instrument)	2,074	2,074	23,020	23,046	21,356	21,356	23,078
Observations	6,061,153	6,061,153	2,951,707	4,335,198	4,472,023	4,472,023	4,307,594
Households	904,335	904,335	446,018	669,472	663,177	663,177	655,825

Notes: Standard errors are clustered at the municipality level and presented in parentheses. Each entry is a separate regression. In the IV model, the fall-back wage ratio is instrumented using the prevailing local wage ratio. The direct equity share is defined as the value of stocks divided by total financial wealth. The risky share is defined as stocks, equity funds, hedge funds and mixed funds divided by total financial wealth. Direct equity (risky) participation is equal to one for those whose direct equity (risky) share is positive and zero otherwise. Total risk is defined as the volatility of the risky part of the portfolio, measured as the annualized standard deviation of the return of the risky part of the portfolio. Idiosyncratic risk is the part of total risk that does not stem from systematic market movements. SD effect* refers to the effect on the outcome of interest from a 1 sd increase in the decision power ratio of couples, measured in the sd of the outcome variable. For singles, it refers to the effect on the outcome of interest of being female.

Table 3: Impact of the female's decision power on household financial portfolios - couple fixed effects

	(1) Direct Equity Participation	(2) Risky Participation	(3) Direct Equity Share	(4) Risky Share	(5) Idiosyncratic Risk	(6) Total Risk	(7) Return Loss
DP - IV	0.0015	0.3440	-0.1593	-0.2015	-0.0464	-0.0721	-0.0029
	(0.0643)	(0.0634)	(0.0774)	(0.0652)	(0.0204)	(0.0289)	(0.0006)
SD*	0.00	0.12	-0.11	-0.12	-0.07	-0.08	-0.18
Observations	3,694,852	3,694,852	1,543,024	2,442,930	2,459,842	2,459,842	2,386,790
Households	527,836	527,836	220,432	348,990	351,406	351,406	340,970

Notes: These regressions include only couples who are together throughout the sample period (7 years). Standard errors are clustered at the municipality level and presented in parentheses. Each entry is a separate regression. In the IV model, the fall-back wage difference is instrumented using the prevailing local wage difference, i.e., female fall-back income minus male fall-back income. The direct equity share is defined as the value of stocks divided by total financial wealth. The risky share is defined as stocks, equity funds, hedge funds and mixed funds divided by the total financial wealth. Direct equity (risky) participation is equal to one for those whose direct equity (risky) share is positive and zero otherwise. Total risk is defined as the volatility of the risky part of the portfolio, measured as the annualized standard deviation of the return of the risky part of the portfolio. Idiosyncratic risk is the part of total risk that does not stem from systematic market movements. SD effect* refers to the effect on the outcome of interest from a 1 sd increase in the decision power ratio of couples, measured in sd of the outcome variable.

Table 4: Impact of the female's decision power on household financial portfolios controlling for financial education

	(1) Direct Equity Participation	(2) Risky Participation	(3) Direct Equity Share	(4) Risky Share	(5) Idiosyncratic Risk	(6) Total Risk	(7) Return Loss
Panel A: Singles							
Female dummy	-0.0714	0.0095	-0.0483	-0.0157	-0.0379	-0.0532	-0.0007
	(0.0024)	(0.0030)	(0.0012)	(0.0011)	(0.0009)	(0.0011)	(0.0000)
SD effect*	-0.18	0.02	-0.17	-0.05	-0.35	-0.35	-0.22
Economist dummy	0.0804	0.0676	0.0228	0.0210	0.0146	0.0211	0.0004
	(0.0060)	(0.0024)	(0.0010)	(0.0010)	(0.0012)	(0.0016)	(0.0000)
SD effect*	0.40	0.15	0.08	0.05	0.10	0.08	0.12
	0.2123	0.2414	0.0286	0.0950	0.0629	0.0656	0.0911
Observations	16,621,352	16,621,352	3,770,588	7,696,315	8,217,888	8,217,888	7,628,162
Individuals	2,425,143	2,425,143	577,476	1,145,492	1,197,370	1,197,370	1,132,664
Panel B: Couples							
DP - OLS	0.0346	0.1332	-0.0461	0.0061	-0.0234	-0.0281	-0.0004
	(0.0036)	(0.0044)	(0.0026)	(0.0024)	(0.0016)	(0.0021)	(0.0000)
Male economist	0.0342	0.0075	0.0292	0.0134	0.0105	0.0147	0.0002
	(0.0024)	(0.0024)	(0.0020)	(0.0016)	(0.0005)	(0.0008)	(0.0000)
Female economist	0.0288	0.0161	-0.0035	-0.0006	0.0028	0.0047	0.0000
	(0.0012)	(0.0013)	(0.0011)	(0.0011)	(0.0003)	(0.0004)	(0.0000)
DP - IV	-0.0271	0.2491	-0.1278	-0.0425	-0.0645	-0.0848	-0.0012
	(0.0119)	(0.0103)	(0.0061)	(0.0062)	(0.0028)	(0.0040)	(0.0001)
SD effect*	-0.01	0.09	-0.09	-0.02	-0.10	-0.09	-0.07
Observations	6,061,153	6,061,153	2,951,707	4,335,198	4,472,023	4,472,023	4,307,594
Households	904,335	904,335	446,018	669,472	663,177	663,177	655,825

Notes: Standard errors are clustered at the municipality level and presented in parentheses. Each entry is a separate regression. In the IV model, the fall-back wage ratio is instrumented using the prevailing local wage ratio. The direct equity share is defined as the value of stocks divided by total financial wealth. The risky share is defined as stocks, equity funds, hedge funds and mixed funds divided by total financial wealth. Direct equity (risky) participation is equal to one for those whose direct equity (risky) share is positive and zero otherwise. Total risk is defined as the volatility of the risky part of the portfolio, measured as the annualized standard deviation of the return of the risky part of the portfolio. Idiosyncratic risk is the part of total risk that does not stem from systematic market movements. SD effect* refers to the effect on the outcome of interest from a 1 sd increase in the decision power ratio of couples, measured in sd of the outcome variable. For singles, it refers to the effect on the outcome of interest of being female or being an economist.

Table A.1: The Impact of the female's decision power on household financial portfolios - controlling for industrial composition

	(1) Direct Equity Participation	(2) Risky Participation	(3) Direct Equity Share	(4) Risky Share	(5) Idiosyncratic Risk	(6) Total Risk	(7) Return Loss
DP - OLS	0.0382	0.1365	-0.0506	0.0043	-0.0238	-0.0286	-0.0004
	0.0035	0.0043	0.0027	0.0023	0.0016	0.0021	0.0000
DP - IV	-0.0369	0.2461	-0.1355	-0.0456	-0.0676	-0.0891	-0.0013
	(0.0118)	(0.0103)	(0.0061)	(0.0065)	(0.0028)	(0.0039)	(0.0001)
SD*	-0.01	0.09	-0.09	-0.03	-0.11	-0.10	-0.08
Observations	6,061,153	6,061,153	2,951,707	4,335,198	4,472,023	4,472,023	4,307,594
Households	904,335	904,335	446,018	669,472	663,177	663,177	655,825

Notes: Standard errors are clustered at the municipality level and presented in parentheses. Each entry is a separate regression. In the IV model, the fall-back wage ratio is instrumented using the prevailing local wage ratio. The direct equity share is defined as the value of stocks divided by total financial wealth. The risky share is defined as stocks, equity funds, hedge funds and mixed funds divided by total financial wealth. Direct equity (risky) participation is equal to one for those whose direct equity (risky) share is positive and zero otherwise. Total risk is defined as the volatility of the risky part of the portfolio, measured as the annualized standard deviation of the return of the risky part of the portfolio. Idiosyncratic risk is the part of total risk that does not stem from systematic market movements.
SD effect* refers to the effect on the outcome of interest from a 1 sd increase in the decision power ratio of couples, measured in the sd of the outcome variable. For singles, it refers to the effect on the outcome of interest of being female.

Table A.2: The Impact of the female's decision power on migration of couples

	Moves between counties (IV)	Moves between counties (OLS)
DP	-0.0012 (0.0034)	-0.0009 (0.0027)
Observations	6,061,153	6,061,153
Households	904,335	904,335

Notes: Standard errors are clustered at the municipality level and presented in parentheses. Each entry is a separate regression. In the IV model, the fall-back wage ratio is instrumented using the prevailing local wage ratio.

Table A.3: Impact of instrument on single individuals

	(1) Direct Equity Participation	(2) Risky Participation	(3) Direct Equity Share	(4) Risky Share	(5) Idiosyncratic Risk	(6) Total Risk	(7) Return Loss
Males	0.0017 (0.0479)	0.0021 (0.0565)	-0.0008 (0.0472)	-0.0010 (0.0302)	-0.0013 (0.0326)	-0.0016 (0.0441)	0.0000 (0.0009)
Females	0.0026 (0.0467)	0.0013 (0.0447)	-0.0005 (0.0474)	-0.0018 (0.0391)	-0.0014 (0.0319)	-0.0022 (0.0454)	0.0000 (0.0008)
Obs.	16,900,000	16,900,000	3,782,486	7,741,240	8,271,167	8,271,167	7,672,600
Indiv.	2,492,115	2,492,115	579,251	7,741,240	1,204,549	1,204,549	1,139,123

Notes: Standard errors are clustered at the municipality level and presented in parentheses. Each entry is a separate regression. The coefficients show the effect of a 1% increase in the couple wage gap on the outcome under consideration.

Table A.4: Impact of the female's decision power on household financial portfolios - alternative specification

	(1) Direct Equity Participation	(2) Risky Participation	(3) Direct Equity Share	(4) Risky Share	(5) Idiosyncratic Risk	(6) Total Risk	(7) Return Loss
DP measured as linear difference							
DP - OLS	0.0023	0.0151	-0.0054	0.0003	-0.0027	-0.0033	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
DP - IV	-0.0077	0.0240	-0.0160	-0.0075	-0.0075	-0.0101	-0.0002
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
SD*	-0.02	0.06	-0.08	-0.03	-0.09	-0.09	-0.07
Fstatistic	3,460	3,460	2,225	2,457	2,593	2,593	2,454
Observations	6,061,153	6,061,153	2,951,707	4,335,198	4,472,023	4,472,023	4,307,594
Households	904,335	904,335	446,018	669,472	663,177	663,177	655,825

Notes: The coefficients have been multiplied by 100,000. Standard errors are clustered at the municipality level and presented in parentheses. Each entry is a separate regression. In the IV model, the fall-back wage ratio is instrumented using the prevailing local wage ratio. The direct equity share is defined as the value of stocks divided by total financial wealth. The risky share is defined as stocks, equity funds, hedge funds and mixed funds divided by total financial wealth. Direct equity (risky) participation is equal to one for those whose direct equity (risky) share is positive and zero otherwise. Total risk is defined as the volatility of the risky part of the portfolio, measured as the annualized standard deviation of the return of the risky part of the portfolio. Idiosyncratic risk is the part of total risk that does not stem from systematic market movements. SD effect* refers to the effect on the outcome of interest from a 1 sd increase in the decision power ratio of couples, measured in sd of the outcome variable.

Table A.5: Impact of the female's decision power on household financial portfolios - alternative instruments

	(1) Direct Equity Participation	(2) Risky Participation	(3) Direct Equity Share	(4) Risky Share	(5) Idiosyncratic Risk	(6) Total Risk	(7) Return Loss
Panel A: EMPLOYMENT IV							
DP	-0.0054	0.3278	-0.1650	-0.0751	-0.0777	-0.1009	-0.0016
	(0.0133)	(0.0125)	(0.0082)	(0.0071)	(0.0040)	(0.0055)	(0.0001)
SD*	0.00	0.11	-0.11	-0.04	-0.12	-0.11	-0.10
Fstatistic	7,325	7,325	7,568	8,398	8,678	8,678	8,353
Panel B: INDUSTRY IV							
DP	-0.1261	0.2292	-0.1899	-0.1252	-0.0767	-0.1052	-0.0018
	(0.0138)	(0.0142)	(0.0078)	(0.0086)	(0.0026)	(0.0037)	(0.0001)
SD*	-0.04	0.08	-0.13	-0.07	-0.12	-0.12	-0.11
Fstatistic	3,446	3,446	11,691	13,161	13,749	13,749	13,044
Observations	6,061,153	6,061,153	2,951,707	4,335,198	4,472,023	4,472,023	4,307,594
Households	904,335	904,335	446,018	669,472	663,177	663,177	655,825

Notes: Standard errors are clustered at the municipality level and presented in parentheses. Each entry is a separate regression. In panel A, we instrument the fall-back wage ratio using countrywide growth in employment by industry weighted by the county-specific shares in these industries. In panel B, we instrument the fall-back wage ratio using countrywide growth in the male/female share weighted by the county-specific wages in these industries. The direct equity share is defined as the value of stocks divided by total financial wealth. The risky share is defined as stocks, equity funds, hedge funds and mixed funds divided by total financial wealth. Direct equity (risky) participation is equal to one for those whose direct equity (risky) share is positive and zero otherwise. Total risk is defined as the volatility of the risky part of the portfolio, measured as the annualized standard deviation of the return of the risky part of the portfolio. Idiosyncratic risk is the part of total risk that does not stem from systematic market movements. SD effect* refers to the effect on the outcome of interest from a 1 sd increase in the decision power ratio of couples, measured in sd of the outcome variable.

Table A.6: The Impact of the female's earnings share on household financial portfolios

	(1) Direct Equity Participation	(2) Risky Participation	(3) Direct Equity Share	(4) Risky Share	(5) Idiosyncratic Risk	(6) Total Risk	(7) Return Loss
DP measured as female's actual earnings share							
DP - OLS	-0.0072	0.2040	-0.1140	-0.0435	-0.0525	-0.0690	-0.0011
	(0.0088)	(0.0097)	(0.0049)	(0.0045)	(0.0021)	(0.0030)	(0.0000)
DP - IV	-0.0312	0.2539	-0.1347	-0.0476	-0.0671	-0.0885	-0.0013
	(0.0132)	(0.0127)	(0.0061)	(0.0058)	(0.0028)	(0.0040)	(0.0001)
SD*	-0.01	0.09	-0.09	-0.03	-0.11	-0.10	-0.08
Observations	6,045,618	6,045,618	2,950,364	4,333,266	4,469,987	4,469,987	4,305,704
Households	902,401	902,401	445,788	669,151	662,867	662,867	655,528

Notes: Standard errors are clustered at the municipality level and presented in parentheses. Each entry is a separate regression. In the IV model, the fall-back wage ratio is instrumented using the prevailing local wage ratio. The direct equity share is defined as the value of stocks divided by total financial wealth. The risky share is defined as stocks, equity funds, hedge funds and mixed funds divided by total financial wealth. Direct equity (risky) participation is equal to one for those whose direct equity (risky) share is positive and zero otherwise. Total risk is defined as the volatility of the risky part of the portfolio, measured as the annualized standard deviation of the return of the risky part of the portfolio. Idiosyncratic risk is the part of total risk that does not stem from systematic market movements. SD effect* refers to the effect on the outcome of interest from a 1 sd increase in the decision power ratio of couples, measured in the sd of the outcome variable.

Table A.7: Return loss decomposition

	Return Loss	Risky Share	Beta	Relative SR Loss
Panel B: Singles				
Female dummy	-0.1699	0.0202	-0.1171	-0.0730
	(0.0065)	(0.0039)	(0.0016)	(0.0019)
SD effect*	-0.17	-13%	69%	43%
Observations	7,672,612	7,672,612	7,672,612	7,672,612
Panel B: Couples				
DP - IV	-0.3578	0.0161	-0.1925	-0.1814
	(0.2111)	(0.1588)	(0.0371)	(0.0543)
SD effect*	-0.08	-5%	54%	51%
Observations	4,408,150	4,408,150	4,408,150	4,408,150

Note: Each entry is a separate regression. Standard errors are clustered at the municipality level and presented in parentheses. SD effect* refers to the effect on the outcome of interest from a 1 sd increase in the decision power ratio of couples, measured in sd of the outcome variable.