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# Women's Relative Earnings and Household Financial Market Participation in China

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# Abstract

This study examines whether the distribution of labour earnings between spouses is associated with household financial market participation in China. Using the 2015, 2017 and 2019 waves of the China Household Finance Survey, we measure women's relative earnings as the wife's share of the couple's labour earnings and examine both the decision to hold investment-oriented financial assets and the share of such assets in the household financial portfolio. The results show that women's relative earnings are positively associated with both dimensions of financial market participation. The relationship remains positive in instrumental-variable estimates and a series of robustness checks. Further analysis shows that women's relative earnings are positively associated with household risk tolerance, while greater risk tolerance is in turn associated with more active financial market participation, providing evidence consistent with a risk-preference channel. The relationship is concentrated among middle- and high-income households and is not statistically significant among low-income households. These findings suggest that household financial behaviour depends not only on the level of household resources, but also on how earned income is distributed between spouses.


# 1. Introduction

Household participation in financial markets has long been a central concern in household finance. Access to financial assets gives households greater scope to diversify risk, smooth consumption and accumulate wealth, yet participation remains uneven even among households with similar levels of income and wealth. Previous research has related these differences to income risk and borrowing constraints, financial literacy, education, health, age and other household characteristics (Guiso, Jappelli, and Terlizzese 1996; Campbell 2006; Cardak and Wilkins 2009; Van Rooij, Lusardi, and Alessie 2011). This literature has established that household portfolio choice is shaped by a wide range of economic constraints and individual characteristics. Much less is known, however, about whether the way income is distributed between spouses also matters.

This question arises because financial decisions made at the household level do not necessarily reflect the preferences of a single representative decision maker. Husbands and wives may differ in their attitudes towards risk, their knowledge of financial products and their willingness to participate in financial markets. The collective approach to household behaviour therefore treats household choices as the outcome of interactions between members whose preferences and influence may differ (Cherchye, De Rock, and Vermeulen 2012). From this perspective, it is not only the level of household income that may matter for financial decisions, but also which spouse earns that income.

Relative earnings provide a useful way to examine this issue. A wife who contributes a larger share of the couple's income occupies a different economic position within the household from one whose contribution is small, even when the two households have similar total resources. Relative earnings may affect the weight attached to her preferences in joint decisions, but they need not be interpreted as a direct measure of bargaining power. Earnings are themselves shaped by employment choices, human

capital and labour-market opportunities. For this reason, the analysis in this study treats the wife's relative earnings more narrowly as an observable feature of the distribution of economic resources within the couple.

This distinction is important for the existing literature on gender and household financial behaviour. Earlier studies have shown that the distribution of resources within households can influence family decisions and that women's economic position is related to their role in household decision-making (Brown 2009; Cheng 2019). More recent work has brought these questions into household finance. Guiso and Zaccaria (2023), for example, show that gender relations within households are relevant to financial decision-making. These findings suggest that household portfolio choices cannot always be understood from the characteristics of the household head alone.

A closely related study by Jia, Lei, and Antonides (2025) examines women's bargaining power and household stock investment in China. Using the 2019 China Household Finance Survey, they measure women's bargaining power primarily by the educational difference between spouses and find a positive relationship with stock ownership and the share of stocks in household financial assets. Their study provides direct evidence that the relative position of women within the household is relevant to financial investment. It also leaves open a related question that is particularly important from an economic perspective: whether the actual distribution of labour earnings between spouses is associated with broader household participation in financial markets.

Related recent research further highlights the importance of intra-household bargaining for financial decisions. Gu, Peng, and Zhang (2026) develop a revealed-preference approach to quantify spousal bargaining weights in portfolio choice and show that income and employment are important determinants of bargaining power. Yang, Zhang, and Ni (2026) also document a positive relationship between women's bargaining power and household financial asset allocation in China. These studies reinforce the importance of intra-household resource distribution, but they do not make women's relative labour earnings the primary object of analysis. The analysis here therefore focuses more narrowly on the distribution of labour earnings between spouses and examines its association with both the extensive and intensive margins of investment-oriented financial market participation across three CHFS waves.

The present study addresses this question using data from the 2015, 2017 and 2019 waves of the China Household Finance Survey. The main explanatory variable is the wife's share of the couple's labour earnings, calculated as her wage and other work-related income divided by the combined corresponding earnings of the wife and husband. Rather than focusing exclusively on stocks, the analysis considers a broader range of investment-oriented financial assets. Household financial behaviour is examined along two dimensions: whether the household holds any investment-oriented financial assets and the share of these assets in total financial assets. The first captures the decision to enter financial markets, while the second reflects the depth of participation once household resources are allocated across financial assets.

The empirical results show a consistent positive relationship between women's relative earnings and household financial market participation. A larger share of earnings contributed by the wife is associated with a higher probability that the household holds investment-oriented financial assets and with a larger share of such assets in the household financial portfolio. The relationship remains statistically significant after controlling for a broad set of household and individual characteristics. Instrumental-variable estimates provide further evidence in the same direction, although they are used here to alleviate rather than eliminate concerns about possible endogeneity.

The results also point to household risk preferences as one possible channel behind this relationship. Women's relative earnings are positively associated with the household measure of risk tolerance, and households with greater risk tolerance are in turn more likely to participate in investment-oriented financial markets and to allocate a larger share of their financial assets to such investments. The evidence does not establish a causal mediation mechanism, but it is consistent with the idea that changes in the distribution of earnings between spouses may be accompanied by changes in the way financial risk is evaluated within the household.

The relationship is not equally strong across all households. It is evident among middle- and high-income households but is not statistically significant among low-income households. This difference is economically meaningful. Participation in financial markets involves both financial capacity and participation costs. For households facing tighter liquidity constraints, changes in the distribution of earnings within the couple may have limited room to affect portfolio decisions because basic consumption and precautionary needs take priority. Among households with greater disposable resources, differences in the economic position of spouses are more likely to be reflected in the composition of financial assets. This pattern is consistent with the broader household-finance literature showing that income, wealth and participation costs shape access to risky and investment-oriented assets (Campbell 2006; Calvet, Campbell, and Sodini 2007).

Several aspects of the analysis extend the existing evidence. Most studies of household financial participation focus on the characteristics of the household head or on total household resources. The analysis here instead asks whether the distribution of labour earnings within the couple contains additional information about household financial choices. This provides a simple way to bring the internal allocation of economic resources into the study of household portfolios without assuming that one spouse alone represents household preferences. The study also differs from recent research on women's bargaining power and stock investment. The focus is on relative labour earnings rather than relative education, and on a broader set of investment-oriented financial assets rather than stocks alone. In addition, the use of three CHFS waves makes it possible to examine the relationship over a broader sample period than studies based on a single survey wave. The analysis further considers both the decision to participate and the share of financial assets allocated to investment, which helps distinguish market entry from portfolio intensity.

A further contribution comes from examining when this relationship is more likely to appear. The evidence on household risk preferences and income heterogeneity suggests that the association between women's relative earnings and financial participation is not simply a mechanical consequence of higher household income. What appears to matter is the interaction between the distribution of resources within the household and the household's capacity and willingness to take financial risk. In this sense, the results add a household-level dimension to the usual explanation of financial market participation: portfolio choice may depend not only on how much a household earns, but also on how those earnings are distributed between spouses.

The remainder of the paper proceeds as follows. Section 2 develops the theoretical arguments and research hypotheses. Section 3 describes the data, variables and empirical specification. Section 4 presents the baseline results. Section 5 reports the instrumental-variable estimates, evidence on risk preferences, robustness checks and heterogeneity analysis. Section 6 concludes.

## 2. Theoretical Background and Hypotheses

## 2.1 Women's relative earnings and household financial market participation

Standard models of household portfolio choice usually relate financial decisions to the resources and constraints of the household as a whole. Income, wealth, background risk and borrowing constraints all influence whether households enter financial markets and how much they invest once they do so (Guiso, Jappelli, and Terlizzese 1996; Campbell 2006). This approach is useful for understanding differences across households, but it says less about how financial decisions are made within households. For married couples, treating the household as a single decision maker can be restrictive. Spouses may have different preferences and may attach different values to current consumption, precautionary saving and financial investment. Collective models of household behaviour recognise these differences and allow household decisions to reflect the relative position of each spouse rather than the preferences of one representative individual (Cherchye, De Rock, and Vermeulen 2012). Resources controlled or contributed by each spouse can therefore matter even when the overall resources of the household are taken into account.

Labour earnings are particularly relevant in this respect. Unlike jointly held wealth or household-level income, individual earnings can be assigned directly to each spouse and reflect his or her economic contribution to the household. A larger share of the couple's earnings contributed by the wife may strengthen her position in discussions over the use of household resources and give greater weight to her preferences in joint financial decisions. Evidence from China has shown that women's economic resources are related to their influence within the household (Brown 2009), while more recent research suggests that gender relations and the distribution of decision-making power within couples are relevant to household financial choices (Guiso and Zaccaria 2023; Jia, Lei, and Antonides 2025; Gu, Peng, and Zhang 2026; Yang, Zhang, and Ni 2026). This argument does not require relative earnings to be treated

as a direct measure of bargaining power. Earnings are determined by many factors, including education, occupation, labour supply and local employment opportunities. What relative earnings do provide is an observable measure of how earned income is distributed between spouses. If this distribution affects the weight given to each spouse's preferences, two households with similar overall economic circumstances may still make different financial decisions because the contributions of the husband and wife differ. The effect can appear at more than one stage of portfolio choice. Entering financial markets requires a household to move beyond cash and deposits and accept the information costs, uncertainty and potential losses associated with investment-oriented financial assets. Once it has entered the market, the household must also decide how much of its financial wealth to allocate to such assets. The distribution of earnings between spouses may therefore be related both to the decision to participate and to the intensity of participation. On this basis, the following hypotheses are proposed:

**Hypothesis**

**a.** Women's relative earnings are positively associated with the likelihood that a household participates in investment-oriented financial markets.

**Hypothesis**

**b.** Women's relative earnings are positively associated with the share of investment-oriented financial assets in the household's financial portfolio.

# 2.2 Household risk preferences as a potential channel

Financial market participation inevitably involves risk. Households differ in their willingness to accept uncertain returns, and these differences are reflected in portfolio choices. Those with greater tolerance for risk are generally more willing to hold assets whose returns fluctuate and to allocate a larger proportion of their financial wealth to such assets. Risk preferences are therefore an important part of household financial decision-making (Campbell 2006). Within a couple, however, the relevant attitude towards risk need not coincide with the preference of either spouse taken separately. Financial decisions are often made jointly, so the risk tolerance expressed at the household level can reflect both individual attitudes and the relative influence of the two spouses. Changes in the distribution of economic resources within the household may consequently be accompanied by changes in the way financial risk is evaluated.

Women's relative earnings may matter in this process for two related reasons. Greater earnings provide women with more economic independence and may make their views more consequential when financial decisions are discussed. At the same time, women who make a larger economic contribution to the household may differ in employment experience, financial exposure and willingness to accept uncertainty from women whose contribution is smaller. The resulting household risk preference is therefore not simply a fixed consequence of gender. It may change with the economic circumstances of the couple and with the role each spouse plays in household decision-making. This point is important

because conventional descriptions of women as uniformly more risk averse are unlikely to capture the full range of household behaviour. Risk attitudes are shaped by economic circumstances and social environments as well as individual characteristics. Recent evidence on household finance also shows that women's position within the household can be associated with financial investment rather than necessarily with more conservative portfolios (Guiso and Zaccaria 2023; Jia, Lei, and Antonides 2025).

The argument here is consequently narrower than claiming that women's earnings cause changes in risk preferences. Instead, it suggests that household risk tolerance is one plausible link between the distribution of earnings within the couple and observed financial choices. If women's relative earnings are associated with greater household willingness to accept financial risk, and greater risk tolerance is in turn associated with financial participation, part of the relationship between relative earnings and portfolio choice should be reflected in household risk preferences. This leads to the second hypothesis:

**Hypothesis 2**

Household risk preferences constitute a potential channel linking women's relative earnings to financial market participation: higher women's relative earnings are associated with greater household risk tolerance, which is in turn associated with greater participation in investment-oriented financial assets.

# 2.3 Household income and the strength of the relationship

The relationship between women's relative earnings and financial market participation is unlikely to be equally strong across households. Participation in financial markets depends not only on preferences but also on whether households have sufficient resources to act on those preferences. This distinction is especially important when comparing households at different income levels. For low-income households, current consumption and precautionary saving take up a relatively large share of available resources. When future income or expenditure is uncertain, households have an incentive to preserve liquid and relatively safe assets as a buffer against adverse shocks (Leland 1968; Kimball 1990). Borrowing constraints can reinforce this behaviour by making it more costly to hold assets whose values are uncertain or whose liquidation may involve losses (Guiso, Jappelli, and Terlizzese 1996). Under these conditions, even meaningful differences in the economic positions or financial preferences of spouses may have limited effects on actual portfolio allocation. The household simply has less room to adjust. These constraints become less binding as household income rises. After ordinary consumption and precautionary needs have been met, middle- and high-income households generally have more resources available for financial investment and are better able to absorb potential losses. Financial choices can therefore respond more readily to differences in preferences and to changes in the relative economic positions of household members. The distribution of earnings between spouses should matter more when the household has enough financial capacity for that distribution to be reflected in portfolio decisions.

This argument also helps distinguish the role of women's relative earnings from the role of household income itself. The two variables capture different dimensions of the household's economic

circumstances. Total income determines, among other things, the resources available for saving and investment. Relative earnings describe how part of those resources is distributed within the couple. If liquidity constraints dominate the financial choices of low-income households, the second dimension may have little observable effect. Once those constraints become less severe, the distribution of earnings within the household has greater scope to be associated with financial behaviour.

The expected relationship is therefore not necessarily monotonic across every income category. The more defensible prediction is that it should be more visible where households have sufficient resources to participate in financial markets and less visible where basic financial constraints remain binding. Accordingly:

**Hypothesis 3**

The positive association between women's relative earnings and household financial market participation is more pronounced among middle- and high-income households than among low-income households.

## 3. Data and Empirical Strategy

# 3.1 Data and sample

The data are drawn from the China Household Finance Survey (CHFS), conducted by the Survey and Research Center for China Household Finance at Southwestern University of Finance and Economics. The CHFS provides detailed information on household assets and liabilities, income and expenditure, employment, financial knowledge, insurance, demographic characteristics and other aspects of household financial behaviour. Its individual-level records also contain information on gender, age, employment and earnings, while household identifiers make it possible to match spouses within the same household. The analysis uses the 2015, 2017 and 2019 waves of the CHFS. At the time the dataset for this study was assembled, the 2019 wave was the most recent CHFS wave publicly available to external researchers. These three waves provide the information needed to identify married couples, construct individual labour earnings and measure household financial asset holdings on a consistent basis. The sample is restricted to married households for which information on both spouses can be matched. Observations involving unmarried, divorced, widowed or cohabiting respondents are excluded. The sample is further restricted to working-age spouses, and observations for which spouse information or individual labour-income records cannot be reliably matched are removed. After these restrictions, the final sample contains 15,384 household observations. The three survey waves are pooled for the empirical analysis. The unit of observation is the household. This is appropriate because the main outcomes are household-level financial decisions, whereas the explanatory variable of interest is constructed from the earnings of the two spouses within that household.

# 3.2 Variable construction

# 3.2.1 Household financial market participation

Two measures are used to capture household financial market participation. They correspond to the extensive and intensive margins discussed in Section 2.

The first measure, Finance_join, indicates whether a household holds any investment-oriented financial assets. Cash and deposits are classified as relatively safe financial assets, while wealth-management products, stocks, bonds, funds, financial derivatives, foreign-currency assets and gold are classified as investment-oriented financial assets. Finance_join equals one if the household holds at least one of these investment-oriented assets and zero otherwise.

The second measure, Risk_rate, captures the intensity of financial market participation. It is defined as the value of investment-oriented financial assets divided by the household's total financial assets. The variable therefore ranges from zero to one. Whereas Finance_join records whether a household enters investment-oriented financial markets, Risk_rate measures how strongly its financial portfolio is tilted towards such assets. Table 1 summarises the definitions of the variables used in the empirical analysis.

Table 1
Variable definitions

| Type | Variable | Definition |
|---|---|---|
| Dependent variable | Finance_join | 1 if the household holds at least one investment-oriented financial asset; 0 otherwise |
| | Risk_rate | Investment-oriented financial assets divided by total household financial assets |
| Main explanatory variable | Women_income | Wife's labour earnings divided by the combined labour earnings of the wife and husband |
| Alternative measure | R_edu | Relative educational attainment between spouses: 1 if the wife has more years of education than the husband, 0 if they have the same years of education, and − 1 if the wife has fewer years of education than the husband |
| Control variable | Age | Age of the household head |
| | Gender | Gender of the household head: male = 1; female = 2 |
| | Happiness | Self-reported happiness of the household head: happy = 1; otherwise = 0 |
| | Health | Self-reported health of the household head: very poor = 1 to very good = 5 |
| | Youth | Share of household members younger than 16 |
| | Elder | Share of household members aged 60 or above |
| | Debt | Total household debt |
| Channel variable | Attitude | Investment risk preference: unwilling to bear risk = 1 to preference for high-risk, high-return projects = 5 |

# 3.2.2 Women’s relative earnings

The main explanatory variable is Women_income, defined as the wife’s labour earnings divided by the combined labour earnings of the wife and husband:

**Women_income =wife’s labour earnings / (wife’s labour earnings + husband’s labour earnings)**

The measure ranges from zero to one. A value of 0.5 indicates that the spouses contribute equally to their combined labour earnings, while values above 0.5 indicate that the wife contributes the larger share. Only earnings that can be attributed to an individual spouse are used in constructing this measure. The CHFS records wage income and other income associated with individual work, and these components are included in the calculation. Business income, transfer income and property income are not used because they are generally recorded at the household level and cannot be assigned unambiguously to either spouse.

This construction is important for the interpretation of the variable. Women_income is not treated as a direct measure of bargaining power. It measures the wife's relative contribution to the couple's earned income and is therefore interpreted as an observable indicator of her relative economic position within the household. This narrower interpretation is consistent with the research question developed in Sections 1 and 2 and avoids attaching behavioural meaning to the variable that is not directly observed in the survey. As an alternative measure used in the robustness analysis, R_edu captures spouses' relative educational attainment. It equals 1 if the wife has more years of education than the husband, 0 if they have the same years of education, and − 1 if the wife has fewer years of education than the husband. This measure provides an alternative indicator of spouses' relative economic position based on human capital rather than current earnings.

### 3.2.3 Risk preferences and control variables

Household risk preference, Attitude, is constructed from the CHFS question asking respondents which type of investment they would choose if they had funds available for investment. Responses are ordered from an unwillingness to bear any investment risk to a preference for high-risk, high-return projects. The variable takes values from one to five, with a higher value indicating greater willingness to accept financial risk.

The empirical specifications also include a set of demographic and household characteristics that may be related to financial asset holdings. These include the age and gender of the household head, self-reported happiness and health status of the household head, the proportion of children in the household, the proportion of elderly household members and household debt. The child share is measured as the proportion of household members younger than 16, while the elderly share is the proportion aged 60 or above. Table 1 summarises the definitions and coding of the variables used in the empirical analysis.

## 3.3 Empirical specification

The empirical analysis distinguishes between the decision to participate in investment-oriented financial markets and the amount allocated to investment-oriented financial assets. Because Finance_join is binary, the probability of financial market participation is estimated using a Probit model. The specification relates household participation to women's relative earnings, the set of household and individual controls described above, and province fixed effects.

$$D_{ip} = 1\left[\alpha + \beta_1 W_{ip} + \varvec{\gamma}' \mathbf{X}_{ip} + \lambda_p + \epsilon_{ip} > 0\right] \tag{3.1}$$

Where $D_{ip}$ is the financial market participation indicator (Finance_join), equal to one if household $i$ in province $p$ holds at least one investment-oriented financial asset and zero otherwise; $W_{ip}$ denotes women's relative earnings (Women_income), measured as the wife's labour earnings divided by the combined labour earnings of the wife and husband; $\mathbf{X}_{ip}$ is the vector of control variables; $\lambda_p$ denotes

province fixed effects; and $\epsilon_{ip}$ is the error term. $\alpha$ is the intercept, $\beta_1$ is the coefficient of interest, and $\varvec{\gamma}$ is the vector of coefficients on the control variables.

The coefficient on Women_income is the parameter of primary interest. A positive coefficient indicates that households in which wives contribute a larger share of the couple's labour earnings are more likely to participate in investment-oriented financial markets, conditional on the included covariates. Because the Probit coefficient is not itself a percentage-point change in participation probability, the estimates are interpreted in terms of their sign and statistical significance rather than mechanically as percentage changes. The intensive-margin outcome, Risk_rate, is a portfolio share bounded between zero and one, with a substantial mass at zero. A Tobit specification is used to model this censored outcome.

$$R_{ip}^{*} = \alpha + \beta_1 W_{ip} + \varvec{\gamma}' \mathbf{X}_{ip} + \lambda_p + \epsilon_{ip}, R_{ip} = \max\left(0, R_{ip}^{*}\right) \tag{3.2}$$

Where $R_{ip}^{*}$ is the latent portfolio share underlying the Tobit specification and $R_{ip}$ is the observed share of investment-oriented financial assets in total household financial assets (Risk_rate). $W_{ip}$ denotes women's relative earnings, $\mathbf{X}_{ip}$ is the vector of control variables, $\lambda_p$ denotes province fixed effects, and $\epsilon_{ip}$ is the error term. $\alpha$, $\beta_1$, and $\varvec{\gamma}$ have the same meanings as in Eq. (3.1). The explanatory variables are the same as in the participation equation. The preferred specifications include the household controls and province fixed effects. As with the Probit estimates, the Tobit coefficients are interpreted as model coefficients rather than direct percentage-point effects on the observed portfolio share.

## 3.4 Endogeneity considerations and risk-preference channel

Women's relative earnings may be correlated with household characteristics that are difficult to observe directly. Employment opportunities, human capital, local labour-market conditions and other family characteristics may influence both the relative earnings of spouses and household financial decisions. Reverse relationships are also possible if household financial circumstances affect labour-supply or employment decisions. The baseline estimates should therefore be interpreted as conditional associations rather than as unrestricted causal effects. To examine whether the main results are sensitive to these concerns, an instrumental-variable strategy is used. Households are grouped according to five characteristics: the age group of the household head, educational attainment, financial knowledge, urban or rural registration, and city. The average value of women's relative earnings within the corresponding group is then used as an instrument for Women_income. The rationale is that the economic position of women tends to share common features among households facing similar demographic and socioeconomic environments, while the relative earnings of women in other comparable households do not directly determine a particular household's financial portfolio.

The instrumental-variable estimates are treated as supplementary evidence designed to alleviate endogeneity concerns rather than as definitive causal identification. This distinction is important because the exclusion restriction cannot be tested directly. The IV results are therefore considered together with the baseline estimates and the subsequent robustness checks rather than used as the sole basis for causal claims. The second part of the extended analysis examines whether household risk preferences are consistent with one possible channel linking women's relative earnings to financial market participation. The channel analysis is implemented through a sequence of three equations: first, the relationship between women's relative earnings and the financial outcome; second, the relationship between women's relative earnings and household risk preference; and third, the financial outcome after risk preference is included in the specification.

$$Y_{ip} = \alpha_0 + cW_{ip} + \varvec{\theta}_1' \mathbf{X}_{ip} + \lambda_p + \epsilon_{1,ip} \tag{3.3}$$

Where $Y_{ip}$ denotes the household financial outcome, represented by either $D_{ip}$ or $R_{ip}$; $W_{ip}$ denotes women's relative earnings; $\mathbf{X}_{ip}$ is the vector of control variables; $\lambda_p$ denotes province fixed effects; and $\epsilon_{1,ip}$ is the error term. $\alpha_0$ is the intercept, $c$ captures the association between women's relative earnings and the financial outcome before household risk preference is introduced, and $\varvec{\theta}_1$ is the vector of coefficients on the control variables.

$$A_{ip} = \alpha_1 + aW_{ip} + \varvec{\theta}_2' \mathbf{X}_{ip} + \lambda_p + \epsilon_{2,ip} \tag{3.4}$$

Where $A_{ip}$ denotes household risk preference (Attitude), with higher values indicating greater willingness to accept investment risk; $W_{ip}$ denotes women's relative earnings; $\mathbf{X}_{ip}$ is the vector of control variables; $\lambda_p$ denotes province fixed effects; and $\epsilon_{2,ip}$ is the error term. $\alpha_1$ is the intercept, $a$ captures the association between women's relative earnings and household risk preference, and $\varvec{\theta}_2$ is the vector of coefficients on the control variables.

$$Y_{ip} = \alpha_2 + c'W_{ip} + bA_{ip} + \varvec{\theta}_3' \mathbf{X}_{ip} + \lambda_p + \epsilon_{3,ip} \tag{3.5}$$

Where $Y_{ip}$ denotes the household financial outcome and $A_{ip}$ denotes household risk preference. $c'$ captures the remaining association between women's relative earnings and the financial outcome after household risk preference is included, while $b$ captures the association between household risk preference and the financial outcome conditional on women's relative earnings and the included controls. $\alpha_2$ is the intercept, $\varvec{\theta}_3$ is the vector of coefficients on the control variables, and $\epsilon_{3,ip}$ is the error term. The remaining notation is as defined above.

These equations are used as a channel analysis rather than as a formal causal mediation design. Evidence that women's relative earnings are associated with household risk preferences, combined with a significant relationship between risk preferences and financial market participation, would be consistent with the mechanism proposed in Hypothesis 2. It would not, by itself, establish that risk preference is an exogenous mediator.

Finally, the empirical analysis examines whether the relationship differs across household income groups. This provides a direct test of Hypothesis 3 and allows the role of women's relative earnings to be considered under different levels of household financial capacity. Additional robustness analyses replace relative earnings with the educational difference between spouses and exclude households containing financial-sector employees. These exercises assess whether the baseline findings depend on the particular measure of women's relative economic position or on unusually high levels of financial knowledge and access within the household.

# 4. Empirical Results

# 4.1 Descriptive statistics

Table 2 reports descriptive statistics for the main variables. About 44.6% of households in the sample hold at least one type of investment-oriented financial asset. Financial market participation is therefore far from uncommon, but the portfolio share of these assets remains relatively modest. Investment-oriented financial assets account for an average of 17.0% of total household financial assets. The difference between the participation rate and the average portfolio share suggests that many households enter financial markets without committing a large proportion of their financial wealth to investment-oriented assets.

The mean value of Women_income is 0.420. On average, wives contribute 42.0% of the couple's combined labour earnings. The variable nevertheless ranges from zero to one, indicating considerable variation across households in the distribution of earnings between spouses. This variation provides the basis for examining whether differences in women's relative earnings are associated with household financial decisions. The remaining variables also show substantial variation across households. Rather than assigning behavioural meaning to these unconditional differences, the multivariate analysis below examines whether the relationship between women's relative earnings and financial market participation remains after observable household characteristics are taken into account.

Table 2
Descriptive statistics

| Variable | Observations | Mean | Std. dev. | Min. | Max. |
|---|---|---|---|---|---|
| Risk_rate | 15,384 | 0.170 | 0.294 | 0 | 1 |
| Finance_join | 15,384 | 0.446 | 0.497 | 0 | 1 |
| Women_income | 15,384 | 0.420 | 0.162 | 0 | 1 |
| Elder | 15,384 | 0.049 | 0.114 | 0 | 0.600 |
| Debt | 15,384 | 4.686 | 5.710 | 0 | 16.210 |
| Age | 15,384 | 44.09 | 9.441 | 19 | 93 |
| Gender | 15,384 | 1.221 | 0.415 | 1 | 2 |
| Happiness | 15,384 | 0.669 | 0.470 | 0 | 1 |
| Health | 15,384 | 3.684 | 0.833 | 1 | 5 |
| Youth | 15,384 | 0.202 | 0.176 | 0 | 0.714 |

# 4.2 Baseline results

Table 3 presents the baseline estimates. Columns (1) and (2) report the Probit results for financial market participation, while columns (3) and (4) report the Tobit estimates for the share of investment-oriented financial assets. The specifications in columns (2) and (4) additionally control for province fixed effects. The results are consistent across the two dimensions of financial market participation. In column (1), the coefficient on Women_income is 0.189 and statistically significant at the 1% level. After province fixed effects are included in column (2), the coefficient falls to 0.156 but remains significant at the 5% level. Women's relative earnings are therefore positively associated with the likelihood that a household holds investment-oriented financial assets. The result is consistent with Hypothesis 1a. A similar pattern appears for the intensive margin. The coefficient on Women_income is 0.167 in column (3) and is significant at the 1% level. With province fixed effects included in column (4), the coefficient is 0.136 and remains significant at the 5% level. Households in which wives contribute a larger share of the couple's labour earnings also tend to allocate a larger share of their financial portfolios to investment-oriented assets. This finding is consistent with Hypothesis 1b.

Table 3
Baseline estimates of women's relative earnings and household financial market participation

| **Variable** | **(1)** | **(2)** | **(3)** | **(4)** |
|---|---|---|---|---|
| | **Finance_join** | **Finance_join** | **Risk_rate** | **Risk_rate** |
| | ***Probit*** | ***Probit*** | ***Tobit*** | ***Tobit*** |
| Women_income | 0.189*** | 0.156** | 0.167*** | 0.136** |
| | (2.983) | (2.438) | (3.013) | (2.466) |
| Youth | 0.157** | 0.162** | 0.147*** | 0.151*** |
| | (2.530) | (2.549) | (2.712) | (2.781) |
| Elder | 0.041 | 0.028 | 0.036 | 0.025 |
| | (0.442) | (0.297) | (0.456) | (0.312) |
| Debt | 0.016*** | 0.017*** | 0.014*** | 0.014*** |
| | (8.926) | (8.974) | (8.787) | (8.771) |
| Age | -0.011*** | -0.011*** | -0.010*** | -0.010*** |
| | (-9.108) | (-9.310) | (-9.099) | (-9.247) |
| Gender | 0.162*** | 0.146*** | 0.139*** | 0.123*** |
| | (6.572) | (5.853) | (6.550) | (5.853) |
| Happiness | 0.112*** | 0.111*** | 0.097*** | 0.095*** |
| | (5.124) | (5.029) | (5.091) | (5.025) |
| Health | 0.049*** | 0.043*** | 0.046*** | 0.040*** |
| | (3.621) | (3.121) | (3.788) | (3.328) |
| Province fixed effects | No | Yes | No | Yes |
| Pseudo $R^2$ | 0.179 | 0.322 | 0.192 | 0.417 |
| Observations | 15,384 | 15,384 | 15,384 | 15,384 |

*Notes: Test statistics based on robust standard errors are reported in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.*

Taken together, the estimates show that the relationship with women's relative earnings is present at both stages of household financial participation. It is observed not only in the decision to hold investment-oriented financial assets but also in the composition of the financial portfolio. The finding remains statistically significant after province fixed effects are introduced, suggesting that it is not explained solely by broad differences in economic and financial conditions across provinces.

# 5. Further Analysis

# 5.1 Instrumental-variable estimates

The baseline estimates may still reflect unobserved factors associated with both spouses' relative earnings and household financial behaviour. To assess the sensitivity of the results to this concern, Table 4 reports the instrumental-variable estimates described in Section 3.4. The coefficient on Women_income remains positive and statistically significant in both specifications. It is 4.734 in the IV-Probit model and 4.301 in the IV-Tobit model, with both estimates significant at the 1% level. The reported Wald $\chi^2$ statistics are 11.18 and 11.86, respectively, with p-values below 0.001.

Table 4
Instrumental-variable estimates

| **Variable** | **(1)** | **(2)** |
|---|---|---|
| | **Finance_join** | **Risk_rate** |
| | ***IV-Probit*** | ***IV-Tobit*** |
| Women_income | 4.734*** | 4.301*** |
| | (3.018) | (3.081) |
| Controls | Yes | Yes |
| Province fixed effects | Yes | Yes |
| Wald $\chi^2$ | 11.18 | 11.86 |
| p-value | 0.000 | 0.000 |
| Observations | 15,384 | 15,384 |
| *Notes: Statistical significance and reporting conventions follow* Table 3. | | |

These results point in the same direction as the baseline estimates. They should nevertheless be interpreted with appropriate caution. The instrument is constructed from the average relative earnings of women in households sharing similar demographic and socioeconomic characteristics, and its exclusion restriction cannot be established directly. The IV estimates therefore provide supporting evidence rather than a stand-alone basis for a causal interpretation. What is relevant for the present analysis is that the positive relationship between women's relative earnings and financial market participation persists under this alternative specification.

# 5.2 Household risk preferences

Table 5 examines whether household risk preferences are consistent with the channel proposed in Hypothesis 2. Women_income is positively associated with Attitude, with a coefficient of 0.302 that is significant at the 1% level. Households in which wives contribute a larger share of the couple's labour

earnings therefore also report a greater willingness to accept investment risk. When Attitude is added to the financial-participation specifications, it is positively related to both outcomes. Its coefficient is 0.174 for Finance_join and 0.147 for Risk_rate, with both estimates significant at the 1% level. At the same time, the coefficients on Women_income remain positive and statistically significant, falling from 0.189 to 0.144 for financial market participation and from 0.167 to 0.123 for the portfolio share of investment-oriented financial assets.

Table 5
Women's relative earnings, household risk preferences and financial market participation

| **Variable** | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** |
|---|---|---|---|---|---|---|
| | **Finance_join** | **Attitude** | **Finance_join** | **Risk_rate** | **Attitude** | **Risk_rate** |
| Women_income | 0.189*** | 0.302*** | 0.144** | 0.167*** | 0.302*** | 0.123** |
| | (2.983) | (4.201) | (2.236) | (3.013) | (4.201) | (2.264) |
| Attitude | | | 0.174*** | | | 0.147*** |
| | | | (24.160) | | | (24.131) |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Province fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 15,384 | 15,384 | 15,384 | 15,384 | 15,384 | 15,384 |

*Notes: Statistical significance and reporting conventions follow* Table 3. *Attitude denotes household risk preference, with higher values indicating greater willingness to accept investment risk.*

The pattern is consistent with household risk preferences being one channel through which women's relative economic position is related to portfolio decisions. Higher relative earnings are associated with greater reported risk tolerance, and greater risk tolerance is in turn associated with more active financial market participation. Women's relative earnings nevertheless remain significant after risk preferences are taken into account, suggesting that this channel does not account for the entire relationship. These estimates are not interpreted as a causal mediation test. Risk preferences and portfolio choices may be jointly shaped by household circumstances that are not fully observed. The results instead provide evidence consistent with the behavioural mechanism proposed in Section 2.2 and therefore support Hypothesis 2 in that more limited sense.

# 5.3 Robustness checks

Two additional exercises examine whether the baseline findings depend on the way women's relative economic position is measured or on households with unusually strong access to financial information.

The first replaces relative earnings with the education-based measure of spouses' relative position. As reported in Table 6, the coefficient on the alternative measure is 0.084 for Finance_join and 0.055 for

Risk_rate. Both estimates are positive and significant at the 1% level.

Table 6
Robustness check using an alternative measure of women's relative economic position

| **Variable** | **(1)** | **(2)** |
|---|---|---|
| | **Finance_join** | **Risk_rate** |
| R_edu | 0.084*** | 0.055*** |
| | (2.637) | (2.732) |
| Controls | Yes | Yes |
| Province fixed effects | Yes | Yes |
| Pseudo $R^2$ | 0.724 | 0.648 |
| Observations | 15,384 | 15,384 |

*Notes: Statistical significance and reporting conventions follow* Table 3. *R_edu equals 1 if the wife has more years of education than the husband, 0 if the spouses have the same years of education, and − 1 if the wife has fewer years of education than the husband.*

The result is useful because education and current earnings capture different aspects of spouses' economic positions. The fact that the relationship remains positive when an education-based measure is used suggests that the baseline findings are not specific to the construction of Women_income.

The second exercise excludes households with members employed in the financial sector. Such households may have better access to financial information, greater familiarity with investment products or lower effective participation costs than otherwise comparable households. Their inclusion could therefore make it difficult to distinguish the relationship of interest from an informational advantage associated with occupation. Table 7 shows that the results remain positive after these households are removed. The coefficient on Women_income is 0.116 for Finance_join and 0.105 for Risk_rate, with both estimates significant at the 10% level.

Table 7
Robustness check excluding households with financial-sector employees

| **Variable** | **(1)** | **(2)** |
|---|---|---|
| | **Finance_join** | **Risk_rate** |
| Women_income | 0.116* | 0.105* |
| | (1.743) | (1.771) |
| Controls | Yes | Yes |
| Province fixed effects | Yes | Yes |
| Pseudo $R^2$ | 0.310 | 0.211 |
| Observations | 14,344 | 14,344 |
| *Notes: Statistical significance and reporting conventions follow* Table 3. | | |

Although statistical significance is weaker in the restricted sample, the direction of the estimates remains unchanged for both outcomes. Together, the two robustness exercises indicate that the baseline relationship is not confined to a particular measure of women's relative position or driven solely by households with direct professional exposure to financial markets.

# 5.4 Heterogeneity by household income

The theoretical discussion in Section 2.3 suggests that the role of women's relative earnings may depend on the household's capacity to participate in financial markets. Table 8 examines this possibility by dividing households into low-, middle- and high-income groups. A clear difference emerges across the three groups. Among low-income households, the coefficient on Women_income is positive but statistically insignificant for both Finance_join and Risk_rate. For middle-income households, the corresponding coefficients are 0.447 and 0.491 and are significant at the 5% level. Among high-income households, the coefficients are 0.566 and 0.375, respectively, with both significant at the 1% level.

Table 8
Heterogeneity in the relationship between women's relative earnings and financial market participation by household income

| Variable | Finance_join | | | Risk_rate | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Low | Middle | High | Low | Middle | High |
| Women_income | 0.216 | 0.447** | 0.566*** | 0.348 | 0.491** | 0.375*** |
| | (1.008) | (2.044) | (3.009) | (1.003) | (2.036) | (3.056) |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Province fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Pseudo $R^2$ | 0.479 | 0.475 | 0.505 | 0.419 | 0.349 | 0.333 |
| Observations | 5,133 | 5,124 | 5,127 | 5,133 | 5,124 | 5,127 |

*Notes: Statistical significance and reporting conventions follow* Table 3. *Households are divided into terciles of total household income.*

The results do not imply that the magnitude of the relationship rises monotonically with income. Rather, they show that the positive association observed in the full sample is concentrated among middle- and high-income households and is not statistically distinguishable from zero among low-income households. This distinction is consistent with Hypothesis 3. One interpretation is that financial constraints limit the extent to which differences within the household can be translated into portfolio adjustments. Low-income households have fewer resources available after meeting current consumption and precautionary needs, leaving less scope for changes in preferences or intra-household economic positions to affect investment decisions. Once household resources are less constrained, the distribution of earnings between spouses has more room to be reflected in financial choices.

The income heterogeneity therefore complements the baseline results rather than simply dividing the sample into different groups. Women's relative earnings are associated with financial market participation, but that relationship appears to depend on the economic room households have to act on differences in preferences and resource positions.

# 6. Conclusion

This study examines whether the distribution of labour earnings between spouses is related to household financial market participation. Using the 2015, 2017 and 2019 waves of the China Household Finance Survey, the analysis focuses on the wife's share of the couple's labour earnings rather than treating the household as a single economic unit or assigning financial decisions to the household head alone.

The results show a consistent positive relationship between women's relative earnings and household financial market participation. When wives contribute a larger share of the couple's earnings, households are more likely to hold investment-oriented financial assets and tend to allocate a larger share of their financial portfolios to those assets. The relationship remains positive in the instrumental-variable analysis and in the two robustness checks based on an alternative measure of women's relative economic position and the exclusion of households with financial-sector employees. The evidence on risk preferences helps clarify why the distribution of earnings within the couple may matter. Women's relative earnings are positively associated with reported household risk tolerance, and greater risk tolerance is in turn associated with more active participation in investment-oriented financial assets. These results are consistent with risk preferences forming part of the link between spouses' relative economic positions and household portfolio decisions. They do not, however, imply that changes in women's earnings mechanically cause households to become more risk tolerant. The income-group results provide an additional qualification. The positive relationship is evident among middle- and high-income households but not among low-income households. This suggests that the distribution of economic resources within a couple matters most when the household has sufficient financial capacity to translate differences in preferences or economic positions into portfolio decisions. Where liquidity constraints and precautionary needs are more binding, changes in relative earnings may have less scope to affect participation in financial markets.

Taken together, the findings add a simple but important dimension to the study of household finance. Household financial behaviour is related not only to the amount of income available to the household, but also to how earned income is distributed between spouses. This does not mean that relative earnings should be regarded as a complete measure of bargaining power. Rather, they provide observable information about the internal distribution of economic resources that is usually lost when household income is treated only as an aggregate.

The results also have practical implications. Policies that improve women's access to employment and earnings opportunities may have consequences that extend beyond individual labour-market outcomes and into household financial decision-making. For financial institutions, the findings offer little support for treating women as a uniformly conservative group of investors. Financial preferences appear to depend on economic circumstances and the position women occupy within the household. At the same time, the weak relationship among low-income households indicates that broader financial constraints remain important. Greater participation in financial markets is unlikely to follow from changes in intra-household economic positions alone when households have limited resources available for investment.

Several limitations should be kept in mind. Relative earnings capture only one dimension of spouses' economic positions and do not directly observe bargaining, decision-making authority or control over financial assets. The empirical analysis pools three CHFS waves, and the estimates should therefore be interpreted as pooled-sample associations rather than as evidence isolating survey-wave-specific macroeconomic shocks. The instrumental-variable estimates reduce some endogeneity concerns but do not provide definitive causal identification, since the exclusion restriction cannot be verified directly.

Similarly, the analysis of risk preferences identifies a pattern consistent with a behavioural channel rather than a causal mediation mechanism. Future research with richer longitudinal information or plausibly exogenous changes in spouses' relative economic resources could provide a stronger basis for identifying how shifts within the household translate into financial decisions. Even with these qualifications, the evidence points to a broader implication for household-finance research. Looking only at household-level resources can conceal economically meaningful differences within families. Bringing the distribution of those resources into the analysis offers a fuller account of why households facing otherwise similar financial circumstances may make different portfolio choices.

# Declarations


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### Disclosure statement

No competing interest was reported by the authors.

### Data availability statement

The raw data used in this study are drawn from the 2015, 2017 and 2019 waves of the China Household Finance Survey (CHFS), conducted by the Survey and Research Center for China Household Finance at Southwestern University of Finance and Economics. The raw CHFS data are publicly available upon application to the CHFS project (https://chfs.swufe.edu.cn/). Under the CHFS data use agreement, the raw data cannot be redistributed by the authors. The cleaned analysis dataset, the variable definitions and coding schemes used in the analysis, and the full Stata code used for data processing and statistical analysis are provided as supplementary files submitted together with this manuscript, and are also available from the corresponding author upon reasonable request.

### Ethical Approval

This article does not contain any studies with human participants performed by any of the authors. The study uses fully anonymised secondary data from the China Household Finance Survey (CHFS); ethical review of the original CHFS data collection was conducted by the survey institution.

### Informed Consent

This article does not contain any studies with human participants performed by any of the authors. Informed consent was obtained from all participants by the CHFS survey team at the time of data collection.

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