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Intra-Household Female Bargaining Power and Household Portfolios: Evidence from China

Han He (42451)

Abstract: I investigate the impact of intra-household female bargaining power on the investment decisions of Chinese households, particularly in their participation in risky asset investments. Female bargaining power is conceptualized using three primary proxies, considering both the dynamics of income flow and perspectives on non-tradable assets: relative actual earnings, relative earning potential, and relative human capital. To address potential endogeneity concerns, I identify sources of variation in female bargaining power that are exogenous to household portfolio outcomes. Firstly, I employ a shift-share IV, based on varying provincial impacts on women's labor demand. Additionally, I examine the impact of the 2011 Chinese divorce law reform on property division, which disadvantaged women, as an external negative shock to female bargaining power. My findings indicate that an increase in female bargaining power enhances Chinese household's participation in various risky asset markets and increases the risky share within certain markets, conditional on participation.

Keywords: Intrahousehold Bargaining, Female Decision Power, Divorce Law, Risk Preference, Asset Allocation

JEL: D13, D14, G11, J16, J31, K36

Supervisor: Pamela Campa
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1 Introduction

This study investigates the influence of intra-household bargaining dynamics on financial decision-making, focusing on how these dynamics shape joint risk and investment preferences within Chinese households. It specifically explores the impact of female bargaining power, defined in terms of relative actual income, earning potential, and human capital, on the participation in risky assets and the allocation of risky shares[1]. The research is situated within China's rapidly changing economic context, where the intersections of gender dynamics, modern divorce law reforms, and household economic decisions are notably under-examined. Drawing from Olafsson and Thornquist (2018), this analysis constructs an empirical framework to elucidate the causal relationship between female bargaining power and household financial outcomes, addressing a critical gap in the literature on economic decision-making in the evolving socio-economic landscape of China.

Employing a methodologically rigorous approach, this research leverages two extensive dataset–China Household Finance Survey (CHFS) with detailed cross-sectional data on household portfolio characteristics, and the China Family Panel Study (CFPS) with better labor income and demographic data – to analyze the economic effects of female bargaining power within households, incorporating comprehensive household-level controls and fixed effects for province and year to enhance the validity of the findings.

Although actual income may not accurately reflect spouses' bargaining positions regarding household investment decisions, I proxy female bargaining power through relative earning potential and relative human capital. Earning potential is gauged by matching a spouse with "similar" single individuals whose income remains uninfluenced by marital status, while human capital is estimated through an exogenous labor income process. Employing an innovative shift-share instrumental variable (IV) that measures the prevailing local income gap between couples with comparable educational backgrounds[2], this study addresses potential endogeneity concerns, thereby reinforcing the credibility of causal inferences. The first stage of the IV captures shifts in bargaining power driven exclusively by aggregate labor demand; this shift-share IV excludes underlying provincial worker characteristics that may correlate with the risk profiles of household portfolios. The 2011 Chinese divorce law reform is also examined as an exogenous shock to female bargaining power.

Initial evidence based on comparison of unmarried individuals indicates that while Chinese women are more inclined to take risks in conventional financial markets, they appear less inclined toward commercial real estate. Notably, conditional on background characteristics, single women display higher participation in both equity and risky asset markets than single men and hold, on average, a larger equity share, though their over-

[1]Proportion of certain risky assets in the portfolio of all financial assets.
[2]Mainly built upon Bertrand et al. (2015).

all risky portfolios diminish when commercial real estate is included. The study then explores the impact of spousal bargaining power distribution on household portfolios by analyzing household participation in equity and other risky asset markets. Additionally, it investigates how the share of risky assets in financial portfolios is determined. Findings corroborate the results observed in single households: increased female bargaining power leads to higher household participation in equity and risky asset markets and results in a greater share of risky and broadly defined risky assets. These findings remain robust under varying fixed effects, and in analyses focusing on female-headed households and households with substantial female bargaining power. Although the regression results from both IV and OLS align in direction, the results of the difference-in-differences (DID) analysis of the divorce law reform lack statistical significance.

This study makes substantial contributions to the existing literature by moving beyond the traditional focus on gender disparities in the stock market to explore a wider spectrum of risky assets, from including mutual funds and derivatives to including commercial real estates, within the domain of household financial decision-making. Employing innovative methodologies, it constructs proxies for female bargaining power from both stock and flow perspectives, enabling the estimation of earning potential and human capital among Chinese individuals. To address endogeneity and establish causal relationships, the research incorporates a modified shift/share instrumental variable (IV) approach rooted in provincial variations in women's labor demand, alongside an exogenous shock stemming from the 2011 divorce law reform within China's distinctive socio-economic landscape. By leveraging recent Chinese household survey data, this study offers a comprehensive analysis of the influence of increased female bargaining power on investment behaviors, shedding light on the confluence of gender, family economics, and household finance. Ultimately, the research advances our global understanding of gender's role in economic decision-making by synthesizing theoretical insights with empirical data and enriching the literature on household finance in developing countries. It seeks to deepen insights into Chinese household finance while enriching the broader discourse on gender and household economic decision-making, establishing a foundation for future inquiries in this critical area.

The remaining part of the paper is structured as follows. Section 2 offers a comprehensive review of relevant literature and establishes the contextual background of the 2011 Chinese divorce law reform concerning property division. Section 3 presents the data employed in this study, followed by a detailed analysis in Section 4, encompassing the construction of female bargaining power proxies, the derivation of dependent and independent variables, and the formulation of research hypotheses. Section 5 delineates the identification strategy, which includes the primary regression analyses, the shift/share IV approach, and an event study pertaining to the divorce law reform. Section 6 reports the principal findings, while Section 7 provides reflections on the conclusions drawn, acknowledges the study's potential limitations, and identifies promising directions for future

research.

2 Literature Review and Chinese Background

2.1 Risk Aversion and Gender Differences in Investment Decisions

A substantial body of financial literature consistently concludes that men generally invest more than women in risky financial assets (Almenberg and Dreber, 2015; Bannier and Neubert, 2016; Barber and Odean, 2001; Halko et al., 2012). Studies such as those by Halko et al. (2012) and Fey et al. (2020) attribute this disparity primarily to conventional behavioral factors, suggesting that women's relatively higher risk aversion leads to less participation in the stock market. This cautious approach to risky financial assets results in women accumulating less wealth over time, further contributing to the existing wealth inequality between men and women (Fisher and Yao, 2017).

Research in Sweden reveals that women possess lower levels of financial literacy and participate less in stock market activities compared to men (Almenberg and Dreber, 2015). While accounting for financial literacy reduces this gender gap, it does not eliminate it entirely, suggesting that education alone cannot wholly bridge this divide. Empirical studies in developed countries consistently demonstrate that women exhibit higher risk aversion in investment decisions (Sundén and Surette, 1998; Barber and Odean, 2001). Divorce exacerbates these disparities, as each partner's intrinsic investment tendencies emerge without the compromises required by marriage (Love, 2010). Post-divorce, men typically pursue riskier investment strategies, while women reduce their exposure to high-risk assets. Consequently, marital negotiation tempers individual investment preferences, but this restraint vanishes post-divorce, increasing the gender gap in risk tolerance (Addoum et al., 2016).

However, Olafsson and Thornquist (2018) challenge such conclusion by finding that single women, despite their lower participation in stock markets, tend to engage more in other risky asset markets than their male counterparts. Moreover, previous studies also suggest that the gender disparity in asset allocation may not be uniform across different countries (Antzoulatos and Tsoumas, 2010; Booth et al., 2014; Guiso et al., 2008). For instance, Cárdenas et al. (2012) identify a wider gender gap in risk preferences in Colombia compared to Sweden, which boasts a higher gender equality index. However, most empirical research focuses on developed nations, with less known about investment patterns in developing economies due to limited data availability. An exception is Hillesland (2019), which explores Ghana's gender-based asset allocation patterns using extensive micro-data. The study reveals no significant gender differences in risky asset investments.

In China, the situation may be more nuanced. State socialism can significantly influence gender norms (Campa and Serafinelli, 2019; Lippmann et al., 2020). During the post-1949 socialist period, the Chinese state enforced universal employment and created an institutional framework promoting gender equality. This shifted women's traditional familial economic roles[3], fostering gender-equitable beliefs Xue (2021). Investigating the Chinese context, this study aims to provide initial evidence on gender differences in risky investment.

2.2 Intra-household Bargaining and Financial Investments

Most prior empirical studies analyzing household portfolios and financial risk-taking rely on unitary models that treat households as single decision-making units with a unified utility function and pooled income. This framework often overlooks the intra-household dynamics influencing portfolio composition. However, significant empirical evidence (Schultz, 1990; Thomas, 1990; Hoddinott and Haddad, 1995; Lundberg et al., 1997; Browning and Chiappori, 1998) challenges the unitary model's validity, highlighting that household financial decisions often arise from a joint decision-making process reflecting both spouses' preferences. This recognition has led to the development of collective models.

Collective bargaining models provide an alternative to the unitary model by recognizing that spouses have distinct utility functions, enabling them to negotiate toward a Pareto-efficient outcome. This bargaining process is influenced by distribution factors—variables that shape the bargaining power of household members and thus affect intra-household decision-making processes but do not directly influence members' preferences or budget constraints. Couples aim to maximize a weighted sum of each spouse's utilities within a pooled budget constraint, where the weight depends on their relative bargaining power as shaped by distribution factors. The literature identifies various distribution factors, including relative non-labor income, age, local gender ratio, targeted transfers, abortion legality, alimony, child benefits, access to 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).

Bargaining models imply that when spouses differ in preferences for household decisions, distribution factors determine outcomes by influencing each individual's bargaining power. Although the collective model doesn't specify which factors affect decision-making power, bargaining theory posits that expected utility in the event that bargaining fails defines the distribution of power in a marriage. However, models vary in their approach to marital "threat points". Divorce threat models (Manser and Brown, 1980; McElroy and Horney, 1981) consider divorce as the ultimate outcome of negotiation failure, meaning

[3]i.e., more women can be the main breadwinner and household financial head in post-1949 China.

each spouse's bargaining position hinges on their expected utility outside the marriage. In contrast, the separate spheres model (Lundberg and Pollak, 1993) views non-cooperative marriage as a more realistic threat, so bargaining power depends on expected utility in cases of non-cooperation. Regardless of the model, earning potential serves as a standard proxy for bargaining power (Pollak, 2002, 2011b; Aizer, 2010; Cherchye et al., 2012; Majlesi, 2014), with greater external opportunities strengthening intra-marriage negotiations. Pollak (2011b) argues that earning potential is a more accurate measure than actual income, as the latter is inherently affected by the bargaining power of the other spouse.

Given the fragility of marital commitment due to the risk of divorce, couples frequently renegotiate bargaining power as incomes fluctuate (Addoum et al., 2016). When a woman's relative earning potential rises, it improves her outside options and enhances her bargaining power, ultimately shaping financial decisions.

Most studies on intra-household financial decision-making focus on consumption-savings choices, retirement transitions, and developed nations. Browning (2000), Mazzocco (2004), and Lundberg et al. (2003) find that variations in decision power within American households impact consumption-savings choices when spouses differ in preferences, and Addoum (2017) shows that retirement-driven shifts in bargaining power prompt portfolio re-allocations. Other studies concentrate on stock market participation and portfolio risk (Friedberg and Webb, 2006; Yilmazer and Lich, 2015; Addoum et al., 2016; Ke, 2021). Research from Sweden (Olafsson and Thornquist, 2018) indicates that intra-household decision-making power significantly affects investment strategies: when women possess greater bargaining power, households either avoid stock markets or favor safer portfolios but are more likely to invest in other risky assets, though generally adhering to less risky strategies.

This study seeks to investigate whether female bargaining power within Chinese households causally affects household portfolio composition beyond equities. The primary distribution factor is the local labor market opportunities of each spouse, which influence earning potential. Exogenous factors like shifts in labor demand or changes in divorce laws help mitigate endogeneity concerns, clarifying the causal links between bargaining power and financial decisions (Rangel, 2006; Aizer, 2010; Voena, 2015).

2.3 Exogenous Shock: An Overview of 2011 Chinese Divorce Law Reform on property Division

From a theoretical standpoint, the literature suggests that property division rules may influence both the accumulation of assets (Dnes, 1998; Aura, 2003) and marriage formation (Chiappori et al., 2008). Although empirical analyses of reforms to these rules are scarce, such reforms influence the distribution factors in intra-household bargaining and alter

spousal opportunities outside of marriage, thereby serving as an external shock (Chiappori et al., 2002). This allows for the examination of the causal effects of relative spousal decision-making power on household savings and investment behaviors (Rangel, 2006; Voena, 2015).

In the context of China, the regulation of divorce is codified under the divorce law, which was first enacted in 1950 and subsequently amended in 1980 and 2001. The law is complemented by judicial interpretations issued by the national judiciary, which are intended to clarify ambiguous provisions and play a crucial role in guiding the application of the law. Notable interpretations were issued following the 2001 amendment in the years 2003 and 2011.

The 2001 amended divorce law conditionally allows for unilateral divorce, where a divorce may be granted by the People's Court if the marital relationship is irrevocably damaged, significant faults are found in one spouse, or if mediation efforts are unsuccessful (Stevenson and Wolfers, 2006). The rules for property division at the time of divorce, which were initially vague, were significantly revised in August 2011 with the issuance of the Third Judicial Interpretation of the divorce law. The major amendments included:

1. Housing property acquired during the marriage, where only one spouse's parents assist in the purchase and the property is registered solely in that spouse's name, is considered that spouse's personal property.

2. For housing bought before the marriage, the property belongs to the registered owner, even if the initial down payment was made prior to the marriage by the buyer but the mortgage payments are made jointly during the marriage. In this case, the buyer is required to compensate the other spouse (Fang and Tian, 2018).

This reform entirely reversed the prior equal division rule delineated in the 2003 iteration of the divorce law regarding property division. This earlier statute treated a residence acquired during marriage with parental contributions as a mutual gift to both spouses (A., 2013). The Supreme People's Court of China stated that the 2011 reform aimed to address the increasing frequency of property disputes in divorce cases, to clarify the ambiguity in existing laws property division rules to prevent different judgments in similar cases, particularly for cases that were previously ambiguous and controversial, and to protect the interests of the older generation in assisting their young couples with housing purchases. The new division rule based on title and relative contribution is applicable to every household after August 2011, regardless of the timing of the house purchase or marriage. This reform marked a significant shift in the legal framework governing marital property rights in China.

This reform also situates within the broader Chinese tradition of marriage and home purchasing. The proverb "Live a settled life and enjoy the work (An Ju Le Ye)" underscores the traditional Chinese emphasis on homeownership as a foundational aspect

of life. Additionally, it's common for homes to be purchased with parental assistance. This cultural importance is reflected in the purchasing patterns of housing, where the likelihood of acquiring a new home peaks in the year prior to marriage, maintains high levels during the year of marriage, and declines thereafter (Sun and Zhang, 2020). The economic burden of home buying is typically managed through mortgage loans. Before the 2011 reform, it was commonplace for the groom's family to contribute the down payment, while the bride's family often covered expenses for furnishings and appliances, which are not protected under the divorce law; though such allocation ostensibly seems to be gender-neutral, it tends to reinforce men's property rights (Cheng and Zhou, 2022; Fang and Tian, 2018; Wei and Zhang, 2011; Wei et al., 2017).

Overall, the 2011 revision of the divorce law changed the property division rule upon divorce from an equal division to a title-based division under certain circumstances, and had a substantial impact on a wide range of people in China, leading to a loss in intra-household property ownership for some women. Dong (2022) shows that the loss of housing property ownership deteriorates wives' outside options, consequently reducing the likelihood of divorce and increasing the probability of their remaining in low-quality marriages.

2.4 Brief Priori Hypotheses

Even though evidence of gender-specific risk preferences in investment across different countries is heterogeneous, based on the majority of cases, I infer a priori that women in China are likely to be more risk-averse. Consequently, the higher the bargaining power of women within a household, the lower the likelihood that the household will engage in risky investments. Furthermore, based on existing participation, the risky share of household portfolios would also be lower.

3 Data

Due to significant disparities in the characteristics between Chinese rural and urban populations and the inherent challenges in quantifying income, family structure,home ownership and real estate values in rural areas, our study exclusively focuses on the urban population.

3.1 Main Resources

The primary analysis concentrates on three specific waves (2015, 2017, 2019) of the China Household Finance Survey (CHFS) conducted by Southwestern University of Finance and

Economics. This survey gathers detailed household-level data, including demographic characteristics, income specifics, and extensive information on joint asset holdings.

During the data preparation phase, rigorous filters are applied to the initial dataset to ensure reliability and relevance. Only data entries without missing values for essential variables such as labor income, age, gender, education, employment status, retirement status, family size, and number of children are retained–variables identified as key determinants of household portfolio choices (Campbell, 2006; Curcuru et al., 2010; Calvet and Sodini, 2014).

Educational attainment is categorized into two groups: "below high school" and "high school and above" for estimating income process and earning potential. Additionally, a dummy variable is introduced to indicate large family size, defined as households with more than six members, to control for the prevalent multi-generational co-residence patterns in China and reduce heterogeneity (Rosenzweig and Zhang, 2014). Besides, due to cohabitation, my study specifically focuses on the female bargaining power within household head couples.

The CHFS collects labor income data for both spouses in married households. During data cleaning, individuals with "unconventional" labor income sources and personal characteristics are excluded: those currently attending school, retired before the Chinese legal retirement age[4], and married before the Chinese legal marriage age[5]. In this study, the female life cycle is defined from ages 20 to 100, while the male life cycle spans from 22 to 100, in accordance with legal marriage age considerations. Individuals exceeding 100 years old have been excluded from this study[6].

Given the cross-sectional nature of CHFS, the China Family Panel Survey (CFPS), which includes six waves of biennial panel data from 2010 to 2020 conducted by Peking University, is also utilized. Although less detailed regarding household finance, CFPS offers robust panel data on demographic characteristics. The same rigorous criteria are applied to the selection of CFPS samples.

Initial analyses focus on CFPS labor income panel data to estimate the income process among the Chinese population, targeting individuals with non-zero labor income. As in Vissing-Jorgensen (2002) and Angerer and Lam (2009), I also discard observations where income growth for either the husband or wife is less than -70% or exceeds 300% to flitter out extreme income fluctuations.

Subsequently, this study explores the effects of Chinese 2011 divorce law reform on household portfolios using a Difference-in-Differences (DID) approach, utilizing six rounds of CFPS data pre- and post-reform, as CHFS only have 5 waves of cross-sectional data

[4]Chinese legal retirement age: 60 for males, 55 for female cadres, and 50 for female workers

[5]Chinese legal marriage age: 22 for males and 20 for females

[6]Due to the markedly sparse samples within the survey population and constraints posed by the paucity of reliable survival probability data of people over 100 available in China.

after 2011. This specification assesses the reform's impact, considered as an exogenous negative shock to female bargaining power within marriages. The focus is on households where the head couple fully owns the housing property, reflecting China's unique property ownership contexts[7].

I combine two datasets for my study because I need both detailed household portfolio information and panel data on personal income. The China Household Finance Survey (CHFS) serves as the primary source for most of the analysis, while the China Family Panel Studies (CFPS) is used to estimate the income process and conduct Difference-in-Differences (DID) analyses. The CHFS provides detailed asset information but lacks panel data, as it does not track the same households over time. Conversely, the CFPS, while offering panel data, reports asset information vaguely and lacks detailed portfolio composition across different waves.

Moreover, to ensure the representativeness of the Chinese population, I apply survey weights provided in both datasets. All income and absolute asset values from the CHFS and CFPS are adjusted to 2009 RMB using the Consumer Price Index for Urban Consumers (CPI-U).

In this research, the operational definition of a "single woman" refers to a family unit with a female as the head of the household and no spouse present; the definition for "single men" is analogous. "Couples" encompass both legally married partners and cohabiting individuals. Following the data-cleaning process detailed earlier, the China Family Panel Studies (CFPS) sample used to calculate income process consists of 43,683 individual-year observations (35,431 for couples, 3,894 for single men, and 4,358 for single women) that correspond to 2,274 unique single women, 2,255 unique single men and 14,747 individuals who live in couples. The data drawn from the 3 waves of China Household Finance Survey (CHFS) include information on 55,344 couples, 3,962 single men, and 6,563 single women.

3.2 Other Resources

Other data sources for this research, including stock market returns, risk-free rates, inflation rates, and demographic probabilities of survival stratified by sex and age (from the 2010 census), are sourced from the National Bureau of Statistics of China (NBSC). This study adopts the approach of previous researchers such as Bonaparte et al. (2014), utilizing the Shanghai Stock Exchange Composite Index to represent the financial performance of households' investment portfolios, since it's unobservable which specific stocks and funds a household holds. This index, encompassing dividends, serves as a proxy for

[7]Due to China's special national conditions, the forms of real-estate ownership are as follows: (1) State-owned; (2) Collectively owned by the working masses; (3) Privately owned; (4) Dwellings owned by other economic organisations (e.g. Chinese-foreign joint ventures). In DID we keep households whose real-estate ownership within type (3). When calculating real estate value using CHFS or CFPS we only calculate the value of real-estates of type (3).

the annual total returns for risky asset portfolios and the most current data are available. Furthermore, these data are instrumental in assessing the correlation between labor income volatility and the returns of risky assets. For this research, the risk-free rate is defined as the average yield on three-month treasury bills over the study period, which is critical for calculating the excess returns on risky assets.

4 Definitions and Hypotheses

4.1 Definition and Construction of Variables

4.1.1 Outcome Variables

The dependent variables in this study are sourced from the China Household Finance Survey (CHFS) and represent household investment decisions, which are quantified through multiple methodologies. These variables are categorized into two primary groups: the first group uses dummy variables to measure household participation in investments involving risky assets, while the second group evaluates the degree of household's risk exposure, thus reflecting a household's joint relative risk aversion level. This exposure is gauged either through the proportion of stock investments or the ratio of total risky assets to the overall household financial assets. Furthermore, to ensure the relevance of this study to the Chinese context, the adjusted risk participation/risky share calculation includes commercial real estate within the aggregate household financial assets. The valuation of all assets is consistently based on the market value.

Table 1: Overview of Dependent Variables

Variable	Description
Equity Participation	Dummy variable representing if a household directly holds equity, including public and non-public stocks
Equity Share	The proportion of directly held stocks in the portfolio of risk-free and risky financial assets
Risk Participation/ Broadly Defined Risk Participation	Dummy variable representing if a household has invested in equity or risky funds or derivatives
Risky Share/ Broadly Defined Risky Share	The proportion of risky financial assets in the portfolio of risk-free and risky financial assets
Adjusted Risk Participation /Risky Share with Real Estate	The adjusted risk participation/risky share after taking commercial real-estate home equity (the difference between market value of commercial real estate and outstanding mortgage) into consideration

Equity Participation: Equity participation is operationalized as a dummy variable in this analysis. Specifically, if a household possesses either public or private stocks, the

variable for equity participation is assigned a value of 1; if not, it is set to 0. Despite this, research indicates that equity participation remains relatively low in emerging markets and is disproportionately concentrated among affluent households Campbell (2006). Therefore, it is imperative to consider a broader array of assets when assessing the comprehensive risk participation of a household. This approach provides a more holistic evaluation of household engagement in risky asset investments.

Risk Participation/ Broadly Defined Risk Participation: To enhance the comprehension of risk levels, I delineate both risk participation and an expanded risk participation framework that categorizes typically low-risk assets as risky. Risk participation encompasses three categories of risky assets: directly held equities (both public and private), risky funds, and derivatives. Conversely, the broadened risk participation framework not only includes these assets but also encompasses bond funds and, considering the Chinese financial landscape, gold and wealth management products (WMPs).

It is important to note that WMPs, which are mutual funds issued by state-owned commercial banks, are generally regarded as low-risk assets. Approximately 26% of these products explicitly guarantee returns by the issuing banks, while the remainder, although not guaranteed, often see banks choosing to compensate investors should the products underperform relative to the banks' expectations. On average, WMPs yield real returns between 2% and 4%, and due to a required minimum investment, access to these products is somewhat restricted. A comprehensive description of WMPs within the Chinese context is provided by Perry and Weltewitz (2015).

Prior to examining equity or risky share, it is necessary to calculate several key variables: risky assets, broadly defined risky assets, and total financial assets. The China Household Finance Survey (CHFS) provides a detailed examination of each asset category, dividing them into various types based on risk level—risky, risk-free, and low-risk (the latter indicating an intermediary risk level between risky and risk-free). These categorizations are outlined in Table 2. First, I calculate equity by summing up market value of directly held and indirectly held stocks:

$$\text{Equity} = \text{Public Stock} + \text{Non-public Stock}$$

The value of risky assets is the sum of all the risky assets above:

$$\begin{aligned}\text{Risky Assets} = \text{Public Stock} + \text{Non-public Stock} + \text{Equity Fund} + \text{Hybrid Fund} + \\ \text{QDII Fund} + \text{Commodity Fund} + \text{Index Fund or ETF} + \text{All Derivative}\end{aligned}$$

Based on risky assets I calculated above, taking into consideration assets that are with lower but still certain levels of risks, I can likewise calculate risky assets with a broader scope of risks.

Table 2: Relevant Asset Categories in CHFS

Asset Category	Asset Type	Risk Level
Equity	Public Stock	Risky
	Non-public Stock	Risky
Fund	Equity Fund	Risky
	Bond Fund	Low-risk
	Money Market Fund	Risk-free
	Hybrid Fund	Risky
	QDII Fund	Risky
	Commodity Fund	Risky
	Index Fund or ETF	Risky
Derivatives	All Derivatives	Risky
Wealth Management Product	Internet Financial Product	Low-risk
	Other Financial Product	Low-risk
Gold	Gold	Low-risk
Cash	Direct Holding in Cash	Risk-free
	Cash Balance in Third-party Payment Account	Risk-free
Bond	Bond	Risk-free
Current Deposit	Deposit Balance in Current Accounts	Risk-free
	Deposit Balance in Stock Accounts	Risk-free
Fixed-term Deposit	Fixed-term Deposit	Risk-free
Foreign Exchange Assets	Non-RMB Assets	Risk-free

$$\text{Broad Risky Assets} = \text{Risky Assets} + \text{Bond Fund} + \text{Internet Financial Product} + \text{Other Financial Product} + \text{Gold}$$

Risk-free assets consists of cash, bond, current deposit, fixed-term deposit and foreign exchange assets.

$$\text{Risk-free Assets} = \text{Holding in Cash} + \text{Cash Balance in Third-party Payment Account} + \text{Bond} + \text{Deposit Balance in Current Accounts} + \text{Deposit Balance in Stock Accounts} + \text{Fixed-term Deposit} + \text{Non-RMB Asset}$$

Total financial assets is the sum of risk-free assets and broad risky assets.

$$\text{Total Financial Assets} = \text{Risk-free Assets} + \text{Broad Risky Assets}$$

Equity Share: Equity share refers to the proportion of a household's total financial assets allocated to investments in equities.

$$\text{Equity Share} = \frac{\text{Equity}}{\text{Total Financial Assets}}$$

Risky Share/ Broadly Defined Risky Share: Risky share represents the extent to which a household assumes risk within its overall asset portfolio, reflecting the capacity of taking financial risks.

$$\text{Risky Share} = \frac{\text{Risky Assets}}{\text{Total Financial Assets}}$$

Broadly defined risky share takes into consideration the low-risk assets, covering a wider range of asset categories as listed in table 2. Broadly defined risky share is equal to or larger than risky share within the same household.

$$\text{Broad Risky Share} = \frac{\text{Broad Risky Assets}}{\text{Total Financial Assets}}$$

Adjusted Risky Share with Commercial Real Estate: In emerging markets, evidence shows that participation in real estate market is much higher than participation in other financial assets (Badarinza et al., 2019). Assets in commercial real estate (CRE), if taken into consideration, will largely affect risk share by adding CRE equity to risky assets and total financial assets. In CHFS I first identify if the real estate is commercial or residential, and if it's the former I consider it to be a risky investment of a household. CRE equity is the net value of CRE after taking away the mortgage related to the CRE.

$$\text{Adjusted Risk Share} = \frac{\text{Risky Assets+CRE Equity}}{\text{Total Financial Assets+CRE Equity}}$$

4.1.2 Income Process and Human Capital

To address potential endogeneity, this study considers treating income as exogenous, using the China Family Panel Studies (CFPS) to estimate the income process. Expected income trajectories and potential human capital are calculated for samples from the China Household Finance Survey (CHFS) and used to estimate one proxy for female bargaining power.

For individuals of working age, labor income is defined to include wages, bonuses, and commissions, all adjusted for taxation. For retired individuals, the analysis categorizes all forms of after-tax pension payments as labor income.

Moreover, the income process estimation categorizes all individuals into four distinct groups. This categorization is based on a 2x2 matrix differentiated by educational attainment (i.e., below high school and high school or above) and gender. Such categorization allows for a nuanced analysis of the income dynamics across different socio-demographic groups.

Following Cocco et al. (2005), consider the following income process:

Before retirement, investor i's age t labor income, Y_{it}, is exogenously given by:

$$log(Y_{it}) = f(t, Z_{it}) + v_{it} + \epsilon_{it}$$

We only focus on $f(t, Z_{it})$, a deterministic function of age (third polynomial of age) and of a vector of other individual characteristics Z_{it} (marital status, employment status and family size) for human capital calculation.

Retirement income (after retirement age K) is modeled as a constant fraction λ (replacement ratio) of permanent labor income in the last working-year:

$$log(Y_{it}) = log(\lambda) + f(t, Z_{iK}) + v_{it} + \epsilon_{it}$$

Assuming that all the personal characteristics apart from age will not change in the future and that women retire at age 50 and men retire at age 60[8], for each *education* × *gender* group, the labor income at age $a + t$ of an individual at age a can be calculated using the income process as follows:

$$Y_{i,a+t} = Y_{i,a} \times \frac{\exp(f(a+t, Z_{it}))}{\exp(f(a, Z_{it}))} \ (not\ retired, a + t < K)$$
$$Y_{i,a+t} = Y_{i,a} \times \lambda_{ge} \frac{\exp(f(K, Z_{it}))}{\exp(f(a, Z_{it}))} \ (retired, a + t \geq K)$$

where $Y_{i,a+t}$ is the individual labor income and λ_{ge} is the replacement ratio[9] in the corresponding *education* × *gender* demographic group.

Considering the bond-like natures of labor income, human capital—defined as the expected present value of future labor income—serves as a measure of an individual's earning potential throughout the life cycle.

Assuming a uniform life expectancy of 100 years for all individuals, I calculate human capital under the assumption of deterministic future labor income[10].Consequently, the human capital for an individual at age a is computed based on the specified income process as follows:

$$HC_{ia} = Y_{i,a} + \sum_{t=1}^{100-a} p(a+t|a) \frac{Y_{i,a+t}}{(1+r)^t}$$

where r is the risk free rate and $p(a + t|a)$ is the probability of being alive at age $a + t$ given the current age a. I assume that the discount rate r = 2%[11] for human capital. Survival probabilities (p) are derived from the Life Tables for the urban population, as documented by the National Bureau of Statistics of China (NBSC) based on the 2010 census data.

[8]Although the legal retirement age in China is 60 for men, 55 for female cadres, and 50 for female workers, in this paper the retirement age of 50 is taken as the "standard" retirement age for women, because the proportion of female cadres is relatively small, and there is little difference in the results of estimated human capital or female bargaining power based on the retirement age of 50 or 55 for women.

[9]The ratio of the average retirement income to the average labor income just before retirement in each *education* × *gender* demographic group.

[10]The detailed methodology for forecasting the deterministic component of the income process and decomposing income uncertainty is discussed in Appendix C.

[11]Modelled after Guiso and Sodini (2013) and approximates the average yields of three-month Chinese treasury bills.

The estimation of human capital, presented in Figure 1, reveals distinct patterns across demographic groups. During the youthful stages of life, human capital is observed to be highest among highly educated males, followed by highly educated females, less educated males, and less educated females. This hierarchy is primarily attributed to the prevailing gender wage gap and the increased earnings typically associated with higher levels of educational attainment. In contrast, during the post-retirement phase, the human capital discrepancy between genders within the same educational level narrows. This convergence is influenced by China's comparatively high pension replacement ratio and the increased survival probability of females, who exhibit greater longevity.

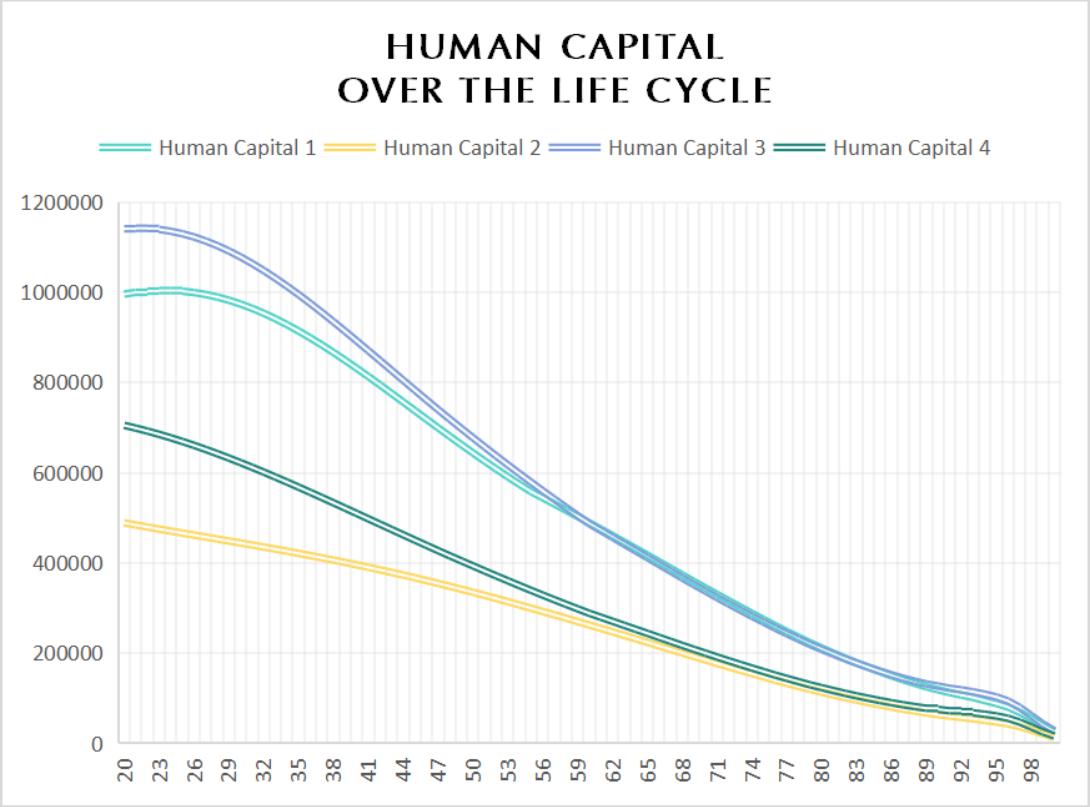


Figure 1: Predicted Human Capital Accumulation of four groups over the Life Cycle. *Notes:*In this graph, Human Capital 1 curve represents the human capital of men with high school education and above, Human Capital 2 curve represents the human capital of women with high school education and above, Human Capital 3 curve represents the human capital of men with less than high school education, and Human Capital 4 curve represents the human capital of women with less than high school education.

4.1.3 Measures of Female bargaining Power

According to the theoretical and empirical studies of the collective bargaining model, the bargaining power of women in the household can be reflected in gender-related economic outcomes such as women's labor force participation, women's hours of work, the proportion of consumption of women-related goods, children's educational outcomes, etc. I need to find a proxy variable for women's bargaining power. The most common proxy is the

share of actual annual income of women in the household, which I use as a measure of female bargaining power, but there are endogeneity issues, such as the fact that a married woman's actual current income does not accurately reflect her earning potential due to the effects of household chores, child rearing, and so on.

To address these limitations, I also incorporates the concepts of earning potential and potential human capital as alternative measures of female bargaining power. These measures aim to provide a more comprehensive assessment by accounting for the theoretical capacity to earn, which may be suppressed or altered by the distribution of household responsibilities.

Simple Method: Relative Actual Income

According to Aizer (2010) and **?**, the share of women's actual labor income among spouses reflects their decision-making power in the household. Although endogeneity issues exist, I still consider wife's actual labor income share as an initial proxy of female bargaining power.

$$BP_h = \frac{AI_{hf}}{AI_{hf} + AI_{hm}}$$

Where AI stands for one's actual labor income within marriage.AI_{hf} and AI_{hm} stands for the actual labor income of wife and husband in household h.

Main Method: Relative Earning Potential

As Pollak (2005, 2011a) has highlighted, the determining factor for bargaining power is earning potential, not the actual current income. If a spouse's earnings are low due to a deliberate choice to allocate more time to household responsibilities rather than market work, it does not diminish their bargaining power. However, a spouse with a low earning potential does experience a reduction in bargaining power.

Marriage market: In order to quantify female bargaining power, I first need to define the marriage market.

I define "Marital Status" as a binary variable—married (1) or unmarried (0). "Married" encompasses both legally married individuals and those in cohabitation. Conversely, "Unmarried" includes individuals who are never married, divorced, widowed, or separated[12].

Following the methodology of Bertrand et al. (2015), marriage markets for males and females are classified based on age, educational attainment, and provincial residence.

[12]Given that same-sex marriage is not yet legal in China, married couple here refers specifically to heterosexual couples. Also, given the small number of cohabiting couples in the survey data, I include cohabiting couples as "married".

Educational classifications are bifurcated into: (i) those with less than a high-school diploma, and (ii) those possessing at least a high-school diploma. Despite the prevalence of three educational tiers in existing literature, this study adopts a dichotomous classification to reflect the educational composition reported in the seventh national population census of mainland China, wherein only 30.55% of the population have attained education equivalent to or above high school. The prevailing education system in China is the nationally unified nine-year compulsory education system. This system mandates that all school-age children and adolescents have the right to receive education, a directive underpinned by the state's commitment to ensure and protect public welfare. The transition to high school education, which follows the nine-year compulsory education, is thus recognized as an essential threshold, defining and directing subsequent educational paths and career opportunities. This demarcation is particularly influential in the evaluation of educational outcomes and occupational potentials, reinforcing the importance of high school education in societal and economic contexts.

Marriage markets are further segmented by age groups aligned with the statutory marital age in mainland China—22 years for men and 20 years for women—and the typical age disparity of 2.19 years between spouses marrying for the first time. I therefore define the eight age groups as (i) 22–31 for women and 24–33 for men; (ii) 32–41 for women and 34–43 for men; (iii) 42–51 for women and 44–53 for men; (iv) 52–61 for women and 54–63 for men; (v) 62–71 for women and 64–73 for men; (vi) 72–81 for women and 74–83 for men; (vii) 82–91 for women and 84–93 for men; (viii) 92–100 for women and 94–100 for men, ceasing at age 100 due to mortality data constraints.

Provincial clustering of marriages acknowledges the 29 provinces surveyed, since marriages tend to form between individuals who live close to each other (Bertrand et al. (2015) clusters marriage market by state in the US). In China, provincial disparities are pronounced in terms of economic development, cultural norms, and marital attitudes. Certain areas are characterized by entrenched traditional perspectives, wherein familial expectations predominantly compel offspring to select partners within their immediate geographical and cultural milieu. Moreover, in specific provinces, a persistent gender bias that privileges males over females exacerbates disparities in the status and roles of men and women within marital unions. Such provincial variations significantly influence the dynamics of marital relationships across different segments of Chinese society.

Earning potential:

To estimate earnings potential, I calculate the average annual earnings of single individuals of the same gender within the same marriage market (defined above), namely single individuals of the same gender, age group, education group, and living in the same province.

EP_{hm} and EP_{hf} are earning potentials for the husband and the wife of household head

couple in household h, respectively.

$$BP_h = \frac{EP_{hf}}{EP_{hf} + EP_{hm}}$$

is therefore our measure of the distribution of bargaining power in household h.

Alternative Method: Relative Human Capital

The financial status of a woman post-divorce, which represents a worst-case scenario in the event of a failed bargaining outcome, serves as an indicator of her bargaining power within the marriage. Initially, I focused on cash flow scenario by looking into actual labor income and earning potential; currently, it extends to examining the wealth scenario.

$$BP_h = \frac{HC_{hf}}{HC_{hf} + HC_{hm}}$$

Where HC stands for potential human capital calculated by the above income process. HC_{hf} and HC_{hm} stands for the potential human capital of wife and husband in household h.

4.1.4 Other Control Variables

Assuming CRRA utility[13], a simplified theoretical foundation (Accordingg to Viceira (2001) and Catherine (2021)) for household's optimal risky share w_t is as follows:

$$w_t = (1 - \frac{PV(X) - HC_t}{W_t})w_t^* - \frac{HC_t}{W_t}\beta_{HC}$$

Where w_t^* is the optimal Merton (1969) risky share dependent solely on the household's joint relative risk aversion and the expected excess return and variance of the risky portfolios[14]; $PV(X)$ stands for the present value of Habit; HC_t stands for the Human Capital of the household; W_t is the household's financial wealth; β_{HC} measures how human capital commoves with risky asset returns. If the optimal risky share $w_t < 0$, then a household won't participate in the risky asset market.

Based on this equation, I have included many household level controls and I have also

[13]Standard form of CRRA Utility

$$u(C_t) = \frac{C^(1-\gamma)}{1-\gamma}$$

, γ is the coefficient of relative risk aversion.

[14]Merton Risky Share:

$$w_t^* = \frac{E_t(r_{t+1}^e)}{\gamma Var_t(r_{t+1}^e)}$$

included province and wave fixed effects while running regressions. Household-level controls are divided into four different categories, including financial characteristics, human capital and income risk, consumption habit, demographic characteristics.

Financial Characteristics: I select log financial wealth, log residential real estate wealth, log commercial real estate wealth and leverage ratio as controls for financial characteristics[15]. I use log forms because in the Chinese data their distributions are skewed. According to the equation above, financial wealth is expected to reduce the optimal risky share. Residential real estate wealth's effect on optimal risky share can be either positive or negative while commercial real estate wealth will crowd out risky asset investment and has a negative effect; I also include an dummy variable of homeownership[16] and the impact of homeownership on risky asset investments in the literature goes both ways (Yao, 2005; Sinai and Souleles, 2005; Vestman, 2018; Sodini et al., 2023). Moreover, Leverage discourages financial risk taking (Cvitanic and Karatzas, 1992; Grossman and Vila, 1992). I define leverage ratio as total debt[17] divided by the sum of financial and real estate wealth, modelled after Calvet and Sodini (2014).

Human Capital and Income Risk: As is shown in 4.1.2, human capital is the expected present value of future labor income. I controlled for spouse's aggregate human capital[18] and according to the equation above, human capital can have either positive or negative effect on risky asset investment. Labor income risk is reflected by beta of human capital with respect to market excess return[19] and it will have negative effect on household's risky share. I also include a "entrepreneurship"[20] and a "retirement" dummy.

Consumption Habit: The equation above shows that habit discourages risk taking. To evaluate household habit, either disposable income or consumption can be used as proxy variables (Calvet and Sodini, 2014). Since in CHFS, household's annual consumption data is surveyed, I use log annual consumption as a proxy for household habit[21].

Demographic Characteristics: Family size and number of children are the key family characteristics that I consider. A larger family size and having more children[22] can both discourage risk taking (Love, 2010; Calvet and Sodini, 2014; Dimmock et al., 2016). Moreover, Paiella and Guiso (2004) indicates that education works well as a substitute for risk aversion especially because household's risk aversion level is more difficult to acquire. I have selected college dummy and high school dummy as our controls for education

[15] I have shown how to calculate the value of those variables in 4.1.1.

[16] "homeownership" dummy takes value 1 if the household has at least one "privately owned" housing.

[17] In CHFS, household total debts have multi categories, including loans concerning business, real estate, vehicle, other non-financial assets, debts in equity and non-equity financial assets, and other debts from education, medicine and credit card consumption.

[18] $HC_f + HC_m$, and is based on a retirement age of 60 for men and 50 for women.

[19] Captured by ρ, I show how to measure this for 2x2 demographic groups in appendix part C.

[20] Dummy variable equal to one if the household has private equity, and private equity brings in more income risk and therefore discourages risk taking (Heaton and Lucas, 2000).

[21] I use log here since annual consumption data is also skewed.

[22] This refers to minor children, children under 18 in China.

level[23]. I also include household head's age and age ploynomials control variables[24].

4.2 Descriptive Statistics

Table 3 presents succinct statistical summaries of portfolio characteristics (serving as outcome variables) and household characteristics utilized as either independent or control variables in this study, categorized by marital status—married individuals, single men, and single women.

The data highlights that, across all categories of risky assets, encompassing equities and commercial real estate, a maximum of 30.6% of couples are engaged in risky asset investments, a figure comparatively low in contrast to developed countries. Notably, married couples exhibit the highest average participation rate in risky asset investments, followed by single men and single women, with the latter displaying the lowest participation levels.

Average direct equity share and risky share remain notably modest among married individuals, single men, and single women. However, upon restricting the analysis to households participating in risky asset investments, those risky shares increase. Furthermore, the inclusion of a broader range of assets within the risky category tends to elevate the average risky shares.

Interestingly, conditional on participation, among the three household types, equity and risky shares consistently rank highest for couples. Noteworthy gender differences emerge, as single females exhibit higher average equity share, risky share, and broad risky share, conditional upon participation, compared to single males. However, adjusting for commercial real estate holdings reveals lower adjusted risky share and lower adjusted broad risky share for single females, suggesting a preference for equities and mutual funds over commercial real estate among women in China. This evidence may imply distinct gender-based investment preferences, with men displaying a greater inclination towards commercial real estate investments while women favor equities and mutual funds.

For household characteristics, Couples have the most average household wealth and human capital, followed by single men and finally single women. Noting the existence of gender gaps, single women are on average less educated, have larger households and more children, and are less entrepreneurial than single men.

In evaluating proxies for female bargaining power, the average value derived from relative human capital is notably higher compared to other measures. This may be due to factors such as women's longer life expectancy, as indicated by survival probability

[23]High school dummy represents whether the household head has a high school degree or above, and college dummy represents whether the household head has a college/university degree or above.

[24]Fagereng et al. (2017) show that Norwegian and American individuals tend to enter the stock market after age 16 and exit after retirement and household's risky share is not linear with age, so I control for age^2 and age^3 in addition to age.

Table 3: Summary Statistics

	Married Couples		Single Males		Single Females	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Portfolio Characteristics						
Equity Participation	0.094	0.292	0.074	0.263	0.057	0.231
Risk Participation	0.121	0.327	0.099	0.299	0.076	0.266
Broad Risk Participation	0.236	0.424	0.229	0.420	0.174	0.379
Adjusted Risk Participation	0.209	0.407	0.167	0.373	0.118	0.323
Adjusted Broad Risk Participation	0.306	0.461	0.282	0.450	0.208	0.406
Equity Share	0.031	0.123	0.025	0.109	0.020	0.106
(Conditional on Participation)	(0.331)	(0.249)	(0.331)	(0.239)	(0.362)	(0.273)
Risky Share	0.044	0.149	0.037	0.137	0.030	0.126
(Conditional on Participation)	(0.349)	(0.260)	(0.356)	(0.252)	(0.361)	(0.272)
Broad Risky Share	0.100	0.232	0.092	0.220	0.073	0.203
(Conditional on Participation)	(0.481)	(0.279)	(0.474)	(0.270)	(0.498)	(0.277)
Adjusted Risky Share	0.117	2.211	0.096	0.792	0.071	0.348
(Conditional on Participation)	(0.786)	(1.698)	(0.686)	(0.627)	(0.650)	(0.608)
Adjusted Broad Risky Share	0.168	2.124	0.146	0.793	0.114	0.336
(Conditional on Participation)	(0.683)	(1.259)	(0.580)	(0.487)	(0.564)	(0.489)
Financial Characteristics						
Financial wealth (¥)	127552.014	505958.869	114136.402	582097.952	70368.547	290091.330
Homeownership	0.656	0.475	0.544	0.498	0.561	0.496
Residential Real Estate Wealth (¥)	662991.898	1232720.099	448105.999	1029666.910	529267.837	1111174.374
Commercial Real Estate Wealth (¥)	83005.339	624695.170	66807.155	608200.713	38247.113	413513.293
Leverage Ratio	0.694	76.202	0.751	17.823	1.942	84.890
Human Capital and Income Risk						
Human Capital (¥)	820338.621	534291.511	550736.212	421031.349	365570.234	332421.186
Beta of Human Capital (w.r.t. portfolio excess return)	0.295	0.054	0.313	0.056	0.252	0.021
Transitory Income Risk	0.433	0.042	0.409	0.007	0.506	0.006
Permanent Income Risk	-0.027	0.032	-0.012	0.027	-0.062	0.009
Entrepreneur Dummy	0.111	0.314	0.076	0.265	0.036	0.187
Retirement Dummy	0.361	0.480	0.338	0.473	0.602	0.489
Habit						
Internal Habit (¥) (Proxied by Annual Consumption)	83760.355	97674.113	67230.505	112333.784	56334.687	74922.520
Demographic Characteristics						
High-school Dummy	0.489	0.500	0.534	0.499	0.392	0.488
College Dummy	0.125	0.330	0.191	0.393	0.104	0.305
Age (Household Head)	53.662	14.020	50.979	20.708	60.624	17.726
Family Size	4.638	5.619	2.837	4.662	3.021	5.015
Number of Children	0.532	0.735	0.164	0.456	0.207	0.492
Female Bargaining Power						
Relative Actual Income	0.422	0.306	N/A	N/A	N/A	N/A
Relative Earning Potential	0.512	0.223	N/A	N/A	N/A	N/A
Relative Human Capital	0.516	0.135	N/A	N/A	N/A	N/A
Observations	55344		3962		6563	

Notes: The table reports the summary statistics of financial and demographic characteristics of Chinese households listed in section 4.1 from the 2015, 2017, 2019 three waves of CHFS survey. I convert all financial variables into 2009 RMB. The computations are based on all individuals between the ages of 20-100. I consider couples to be a man and a woman who are married or cohabited and singles to be those who are never married, divorced, widowed, or separated.

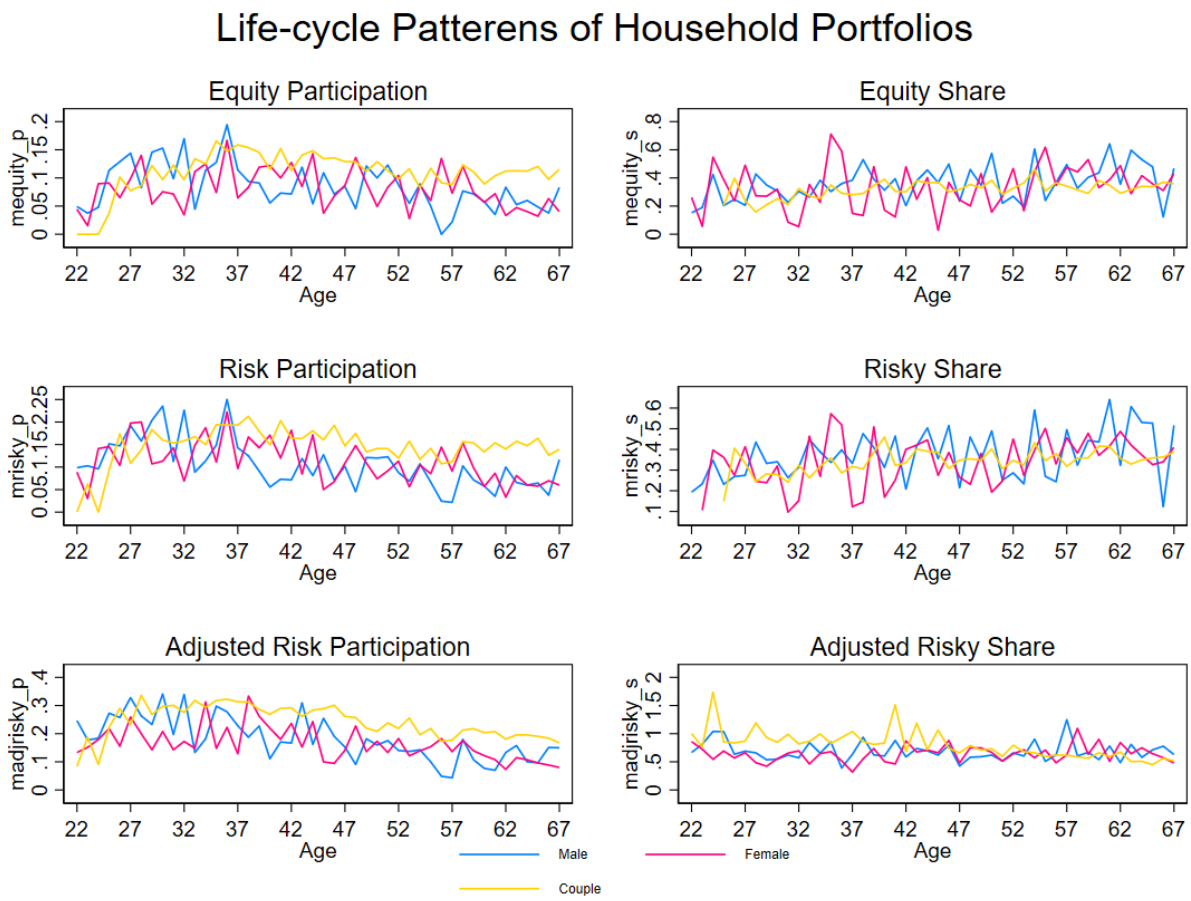


Figure 2: Life-cycle Profile of Risky Share by Age for Each Gender

*Note:*This graph plots the life-cycle profiles of the equity participation, equity share, risky asset investment participation, risky share, adjusted risk participation, and adjusted risky share for couples, single males and single females. All figures display averages of the pooled sample (by age and household type). Data from the waves 2015, 2017, 2019 of the China Household Finance Survey (CHFS).

rates, and a high simulated replacement ratio. Given that human capital estimates are partially influenced by education levels, this observation could also reflect the relatively smaller gender disparities in education compared to those in the labor market. Specifically, despite achieving similar or higher educational levels, women may work less than men.

Figure 2 illustrates the dynamics of household portfolios across age for married couples, single males, and single females. Married couples exhibit the highest participation in risky asset investments, while single women have a slightly higher participation rate than single men, particularly in middle age. Among participants, single men hold a marginally higher share of risky assets than single women, especially in equities and adjusted risky shares (considering commercial real estate). Couples maintain relatively stable risky shares compared to singles, with a significantly higher adjusted risky share before age 45.

Overall, participation rates are high in young adulthood, peaking around age 35 before declining post-middle age. For those participating, equity and risky shares generally increase with age, remaining high after retirement, while the adjusted risky share de-

clines. These trends differ from earlier research[25], and cultural factors may influence this behavior– Middle-aged and older Chinese people tend to wield more financial power within the household and Chinese people tend to invest in real estate early, often before or around marriage.

4.2.1 Evidence from Chinese Single Households

Table 4 and 5 reports the coefficients on the gender dummy for single individuals using OLS estimations, controlling for all observable personal and household level characteristics[26]. Noting that the average age of single women shown in table 2 is almost 10 years older than that of single men, I have controlled for age, age^2 and age^3 in order to fully capture the effect of age on investment behavior. I find there are significant gender differences in market participation and asset allocation.

For risky asset participation, as shown in the table 4, I find that single women are more likely to participate than single men. For direct equity participation, all else being equal, single women are 1.87% more likely to participate than single men. And for risky assets, single women are 2.09% more likely to participate while for more broadly defined risky assets, single women are 4.79% more likely to participate with all else being equal. When taking commercial real estate into consideration together with broadly defined risky assets, single women are 3.14% more likely to participate than men. All those effects are highly significant, while being female's effect on commercial real estate plus risky assets' participation is positive yet insignificant.

Regarding the equity and risky share, for those who participate, gender's effect is not as significant as gender's effect on risky asset participation. But I still find some significant evidence shown in table 5. The equity share (conditional on participation) for single women is 4.99 percentage point higher than that for single men, all else being equal. Single women's risky share and broadly defined risky share are higher than single men's conditional on participation, but those effects are not statistically significant. It's interesting to notice that when taking commercial real estate into consideration and looking at broadly defined risky assets, single women's adjusted broad risky share is 4.28 percentage point lower than single men with all else being equal, this effect is statistically significant. Thus I can say that Chinese single women invest more in equity but hold less risk in their portfolios when considering commercial real estate also as risky asset.

[25]e.g. Catherine (2021) identified optimal equity shares around age 40 in American households.

[26]Including log financial wealth, log residential real estate wealth, log commercial real estate wealth, leverage ratio, log human capital, beta of human capital, log annual consumption, entrepreneurship dummy, retirement dummy, high-school dummy, college dummy, third polynomials in age, family size, number of children.

Table 4: The Effect of Gender on Risky Asset Participation

	(1) Equity	(2) Risk	(3) Broad Risk	(4) Adjusted Risk	(5) Adjusted Broad Risk
Female	0.0187***	0.0209***	0.0479***	0.00560	0.0314***
	(0.00574)	(0.00623)	(0.00795)	(0.00838)	(0.00958)
Household Controls	YES	YES	YES	YES	YES
Province FE	YES	YES	YES	YES	YES
Wave FE	YES	YES	YES	YES	YES
Observations	10525	10525	10525	10525	10525
R^2	0.124	0.154	0.282	0.134	0.258

Notes: I have controlled for all observable characteristics, including province and wave fixed effects, with standard errors clustered by province (errors in parentheses). Each entry represents a distinct regression: (1) focuses on direct equity investment; (2) and (4) classify equity, some mutual funds, and derivatives as risky, with (4) adding commercial real estate; (3) and (5) expand to include all mutual funds, wealth management products, and gold as risky, with (5) also treating commercial real estate as risky. Participation variables are binary, indicating whether a household has invested in specified risky assets (=1) or not (=0). Female is a dummy variable =1 if the single household head is female and =0 if male.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: The Effect of Gender on Risky Share

	(1) Equity	(2) Risk	(3) Broad Risk	(4) Adjusted Risk	(5) Adjusted Broad Risk
Female	0.0499*	-0.00421	0.00244	-0.0324	-0.0428**
	(0.0408)	(0.0373)	(0.0138)	(0.0285)	(0.0184)
Household Controls	YES	YES	YES	YES	YES
Province FE	YES	YES	YES	YES	YES
Wave FE	YES	YES	YES	YES	YES
Observations	667	895	2048	1437	2481
R^2	0.126	0.0927	0.0543	0.109	0.0584

Notes: I have controlled for all observable characteristics, including province and wave fixed effects, with standard errors clustered by province (errors in parentheses). Each entry represents a distinct regression: (1) focuses on direct equity investment; (2) and (4) classify equity, some mutual funds, and derivatives as risky, with (4) adding commercial real estate; (3) and (5) expand to include all mutual funds, wealth management products, and gold as risky, with (5) also treating commercial real estate as risky. The risky share is defined as the proportion of risky assets (varying by definition for each entry as previously described) in total financial wealth. Female is a dummy variable =1 if the single household head is female and =0 if male.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

4.2.2 Survey Evidence for Chinese households' Risk Preferences

CHFS (China Household Finance Survey) also qualitatively surveyed Chinese household heads' risk preferences on investment, with five levels[27] of risk aversion: 1 - Prefer high-risk, high-return assets; 2 - Prefer slightly high-risk, slightly high-return assets; 3 - Prefer average risk, average return assets; 4 - Prefer slightly low-risk, slightly low-return assets; 5 - Unwilling to take any risk.

Table 6 shows the summary statistics of qualitatively surveyed risk preferences of Chinese households in CHFS. On average, both single and married women exhibit slightly more risk aversion than their male counterparts. However, after incorporating control variables (the same as in 4.2.1) in the regression analysis, the impact of gender on the level of risk aversion is not statistically significant[28] in either single or married households.

Table 6: Summary Statistics on Risk Preferences

	Single Females	Single Males	Couple Female Heads	Couple Male Heads
Average Risk Aversion	4.1788	3.7033	4.0627	4.0082
Regression Coefficient	-0.0516	-0.0516	-0.0381	-0.0381
Observations	4317	2764	9850	28299

Notes: Here I present the evidence of household heads' risk preferences qualitatively surveyed in CHFS. Firstly, I show the average risk aversion level of 4 seperate demographic groups - Single Females, Single Males, Female-headed Couples, and Male-headed Couples. And I also run similar regressions as in single households' participations and risky shares sector.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

4.3 Hypotheses

Here I present my post-hoc hypotheses after taking descriptive statistics of Chinese data into consideration:

Hypothesis 1

In China, intra-household female bargaining power has significant positive effect on household's risky asset participation.

For portfolio choices, the married household solves a constrained Pareto problem, in which the wife's Pareto weight is indicated by θ_f, which is the female bargaining power and the husband's Pareto weight is indicated by $1-\theta_f$, those weights are put on spouses' utility functions while doing optimization. The portfolio choice decisions reflect wife's and husband's joint preference depending on the Pareto weight θ_f.

[27] From 1 to 5, the higher the number, the more risk averse one household head is.

[28] Though I run regression on surveyed risk aversion level to being a female and the coefficients are negative, which may show evidence of Chinese women actually prefer risk than their male counterparts after controlling for other necessary characteristics.

The evidence on women and men's risk preference regarding risky asset participation is mixed. Most studies focus only on equity participation and find that women are more risk-averse, resulting in lower participation in the equity market, as supported by substantial empirical and experimental evidence–Powell and Ansic (1997) and Almenberg and Dreber (2015) present experimental findings, Barsky et al. (1997) utilize survey-based evidence, Barber and Odean (2001) demonstrate notable gender-based distinctions in investment preferences, and Mazzocco (2004) offers evidence derived from Euler equation estimates. However, when looking into broader categories of assets, Olafsson and Thornquist (2018) find that increased decision power of wives reduces the propensity to participate in equity markets but increases participation in other risky asset markets for Swedish population. And according to my own empirical findings, Chinese single women are more likely to participate in all kinds of risky asset markets. Thus I assume higher female bargaining power will result in higher likelihood of risky asset participation.

Hypothesis 2

In China, intra-household female bargaining power has positive effect on household's risky share conditional on participation, but may have negative effect on household's adjusted risky share when taking commercial real estate into consideration.

To provide further clarification, consider the Pareto weight statement, if wife's bargaining power within the household rises, the household-level preferences will then reflect her preferences more strongly. Female bargaining power decides household's joint risk preference, and the household's joint preference decides the household's optimal Merton risky share[29]. Other household characteristics also affect the household's optimal risky share, such as household financial wealth, human capital and family size, and I try to control for all observable characteristics. Though most studies document a lower equity share or risky share of women for various countries (Jianakoplos and Bernasek, 1998; Sundén and Surette, 1998; Agnew et al., 2003; Olafsson and Thornquist, 2018), I have found evidence on single Chinese women having higher risky share. Consequently, I assume that higher female bargaining power cause the household to exhibit an increased demand for risky assets.

When taking commercial real estate into consideration, my empirical findings that single Chinese women invest less align with a substantial body of literature indicating that women tend to earn comparatively less in real estate markets (Andersen et al., 2021; Goldsmith-Pinkham and Shue, 2023). Thus I assume rising female bargaining power results in lower adjusted risky share.

[29] Already explained in 4.1.4.

5 How does Intra-household Female Bargaining Power affect Household Portfolios?

5.1 Relative Actual Income

I first consider the simple relative actual income proxy for bargaining power with the following regression:

$$Y_{hpt} = \alpha_0 + \alpha_1 BP_{hpt} + \alpha_2 INC_{hpt} + \alpha_3 X_{hpt} + \gamma_t + \lambda_p + \epsilon_{hpt}$$

where Y_{hpt} is the outcome variable under consideration of household h at province p wave t, BP_{hpt} is our measure of the distribution of female intra-household bargaining power in household h at wave t,measured by the the actual income share of the female in a couple, respectively. INC_{hpt} is the natural log of the household's total actual income, which is included to ensure that the impact of the female bargaining power can be identified separately from the impact of household total actual income (less total actual income reduce household's risk taking and increase household's precautionary savings, while due to gendered labor market, less total actual income implies ambiguous direction of change of female bargaining power).

Province fixed effects are included to control for any unobserved fixed differences across provinces. The wave fixed effects will control for countrywide policy changes. X_{hpt} is a vector of additional control variables which includes log financial wealth, log residential real estate wealth, log commercial real estate wealth, leverage ratio, log total human capital, beta of human capital (income risk), log annual consumption (habit), entrepreneurship dummy, retirement dummy, high-school dummy and college dummy(education attainment), third polynomials in household head's age, family size, number of minor children, which are discussed above in detail at 4.1.4 control variables.

However, women's actual income within marriage is influenced by their bargaining power in the household, which impacts their labor supply and their work/leisure balance. Thus, employing women's actual income share as a proxy for bargaining power is fundamentally flawed due to issues of endogeneity. Furthermore, households in which women actually earn more than their partners are likely to differ significantly from those where women earn less, in ways that may be difficult to control for. For instance, these households may hold more progressive views on gender roles and may also exhibit distinct investment preferences, such as a stronger inclination toward sustainable assets.

5.2 Relative Earning Potential

One way to mitigate endogeneity is to consider a spouse's earning potential rather than actual income, since earning potential is obtained by matching singles with the same characteristics based on the demographic characteristics of the spouse, reflecting the ability of both spouses going for outside options of the marriage, and is not directly driven by a spouse's actual bargaining power.

Consider the following regression:

$$Y_{hpt} = \alpha_0 + \alpha_1 BP_{hpt} + \alpha_2 INC_{hpt} + \alpha_3 X_{hpt} + \gamma_t + \lambda_p + \epsilon_{hpt}$$

where Y_{hpt} is the outcome variable under consideration of household h at province p wave t, BP_{hpt} is our measure of the distribution of female intra-household bargaining power in household h at wave t, respectively. This is quantified based on the earning potential share of the female spouse in the couple. The earning potential of each spouse is estimated using the average earnings of single individuals of the same gender, age cohort, educational level, and province of residence[30]. Consistent with the approach in Section 5.1–the relative actual income scenario, INC_{hpt} now represents the natural logarithm of the household's total earning potential. Other control variables and fixed effects are the same as those used in that section

If the allocation of female bargaining power in marriages were random, Ordinary Least Squares (OLS) estimates from the specified model could be interpreted causally. Yet, the distribution of female bargaining power is not random, it is affected by assortative mating and women's demographic characteristics, raising concerns of potential selection bias, either observable or unobservable. As a result, the coefficient on relative earning potential, α_1, might yield biased estimation of female bargaining power's influence over household portfolios.

5.3 Relative Human Capital

Another way to mitigate endogeneity is to consider a spouse's human capital rather than actual income. Since human capital is obtained by exogenous income process and survival probability based on the demographic characteristics of the spouses, it is also not directly driven by a spouse's actual bargaining power.

Furthermore, prior proxy variables have only taken into account the current incomes of both spouses, neglecting the cumulative lifetime income (which can be captured by human capital[31]) of both partners. Those approaches are insufficient to explain the overall effect of income on investment patterns. Portfolio decisions are not only shaped by present

[30] Detailed calculations are provided in Section 4.1.3.

[31] i.e. the present value of future expected income

income levels but also by expectations of future earnings. Bacher (2021) points out that considering the accumulation of income over the entire life cycle provides a measure of a woman's ability to make choices outside of marriage. Given the bond-like nature of labor income, a higher human capital endowment (i.e. higher expected income in future periods) bolsters the outside option for married women. Human capital, as perhaps the most important asset in households of young couples in particular, is another way to mitigate the endogeneity of real income and more accurately reflect women's bargaining power.

Consider the following regression:

$$Y_{hpt} = \alpha_0 + \alpha_1 BP_{hpt} + \alpha_2 X_{hpt} + \gamma_t + \lambda_p + \epsilon_{hpt}$$

where Y_{hpt} is the outcome variable under consideration of household h at province p wave t, BP_{hpt} is our measure of the distribution of female intra-household bargaining power in household h at wave t,measured by the the human capital share of the female in a couple, respectively. I also include total human capital of the couple, since total human capital affect household's risk taking. Other control variables and fixed effects align with those used in Section 5.1 and Section 5.2.

However, despite employing an exogenous income process to estimate human capital, the issue of assortative mating persists. Human capital is calculated by applying spouses' demographic characteristics to the exogenous process. Since assortative mating influences the correlation of demographic traits between partners, it consequently affects their respective human capital estimations. More specifically, in the context of China, households in which men marry women with higher educational attainment represent a particularly selective sample.

5.4 Shift/Share IV Strategy

To establish a causal link between female bargaining power and household portfolios, we must navigate the endogeneity of bargaining power distribution. We aim to use the exogenous variation in spouses' relative earning potentials as an instrument for bargaining power. One factor correlated with the bargaining power of a spouse is the labor demand. When there's a higher demand for a person's abilities, it boosts their potential to earn in the labor market, regardless of their current employment status. Such demand for labor can lead to higher wages, reduce the likelihood of being unemployed for long periods, and enhance job security.

We adopt an instrumental variables strategy, inspired by the work of Bartik (1991), Aizer (2010) and Olafsson and Thornquist (2018), which acknowledges that earnings variation captures both labor demand and supply dynamics. By focusing on the gendered

division across industries and the industry-specific economic conditions within provinces, we can isolate the component of local labor earnings variation attributable solely to aggregate labor demand. This approach is based on the assumption that such demand-driven variations are independent of individual worker characteristics within a province. Consequently, we can construct a gender-specific earnings measure based on exogenous labor demand factors, offering a clearer view of the causal impact of female bargaining power on household portfolios.

To construct the shift/share instrumental variable (IV) for bargaining power, the categorization of industries needs to be addressed first. I classify individuals' occupations into 12 industry groups[32] based on the 2019 wave of the China Household Finance Survey (CHFS).

For each wave, the instrument is based on a measure of average annual labor earnings that are calculated by gender and education group in each province as follows:

$$w_{gpe} = \sum_{j} \alpha_{gpej} \omega_{-pej}$$

where α_{gpej} is the proportion of workers of gender g in province p with education e who are working in industry group j, and ω_{-pej} is the average labor earnings of workers with education e in industry j in all provinces except for province p this year. The proportion α_{gpej} is fixed over the entire period (I use 2015 wave proportion data for this) such that selective sorting across industries is not reflected in this earnings measure. As I mentioned above, our data contain 12 different industry groups, 29 different provinces and 2 different education groups[33].

To prevent endogeneity from local labor force characteristics, the province under consideration is excluded when measuring labor earnings. This ensures that changes in earnings are not influenced by shifts in the local labor force. This addresses concerns that nationwide labor earnings growth could be driven by the concentration of a particular industry in the province being examined. Additionally, the instrumental variable (IV) must satisfy the exclusion restriction, meaning that after accounting for its influence on female bargaining power, the IV in province p must not correlate with the outcome of interest for couples in province p. By design, the IV excludes all data from the focal province. Controlling for province and wave fixed effects further ensures that provinces with similar industrial compositions do not have correlated instruments.

[32] The official industrial classification of the National Bureau of Statistics of China (NBSC) comprises 20 major categories. However, the 2019 CHFS survey delineates only 13 industry groups, prompting the adoption of this more limited classification standard. I have excluded the "Agriculture, Forestry, Livestock and Fisheries" group due to the focus of this research on urban residents, resulting in a total of 12 industry groups. Detailed classifications and corresponding descriptive statistics are presented in Appendix D.

[33] "below high school" and "high school or above".

My identification approach relies on two assumptions: (1) imperfect substitution between gender groups within industries and (2) only partial adjustment of labor market supply and demand in the short term due to mobility costs. These assumptions allow for the use of short-term labor market fluctuations to evaluate shifts in household decision power, while long-term adjustments through individuals changing industry or geographic location prevent causal inference.

If these assumptions hold, nationwide industry earnings growth would differentially impact individuals depending on the significance of their working industry in their province, educational level, and the industry gender ratio. This enables the creation of a gender-specific measure of local earnings based on the province's industrial structure and nationwide industrial earnings growth. This measure is independent of provincial worker characteristics that could bias household decision-making.

Historical data confirm gender segregation across industries in China. In 2015, for example, 61.91% of health care, social service, and veterinary employers were women, while 88.68% of construction workers were men. This occupational segregation enables us to use changes in sector demand to identify exogenous shifts in relative earnings between genders.

The measure's construction shows that provinces with high concentrations of female-dominated industries experiencing rapid earnings growth will see a reduction in the gender earnings gap. For instance, assuming that there are only two provinces, Beijing and Shanghai, and three industries, manufacture, services and education. The shares of each industry in Beijing and Shanghai are 0.3, 0.6, 0.1 and 0.2, 0.3, 0.5, respectively. A higher nationwide earnings growth in services would narrow the gender earnings gap in Beijing but not in Shanghai, leading to an increase in female bargaining power in Beijing.

The documented assortative mating and selection in the marriage market imply that the average earnings gap for couples is not the same as the gender earnings gap. Thus the IV of female bargaining power could be measured by "Couple Earnings Gap", We modify the standard shift/share instrument to compute a predicted couple earnings gap that corrects for how mating takes place:

$$GP_{peh} = \frac{w_{fpe_f}}{w_{fpe_f} + w_{mpe_m}}$$

w_{fpe_f} and w_{mpe_m} are the local earnings of the wife and the husband, respectively, in household h in province p, from the instrument I constructed above. GP_{peh} exploits the fact that certain industries have traditionally been dominated by women and others by men to create a measure of prevailing local couple earnings gaps that are based on the province's industrial structure, assortative mating, and on the countrywide earnings growth in those industries that are dominant in each province.

This modification to the conventional shift/share approach enables me to establish

a measure of the couple earnings gap whose variation remains orthogonal to local labor market conditions. A positive nationwide shock in an industry where a significant proportion of women in province p and education level e are employed enhances the earning potential of these women due to shifts in labor demand dynamics. The hypothesis posits that households residing in provinces where the relative labor demand for married women rises will see an increase in women's household influence due to their enhanced bargaining power. Consequently, these women are expected to renegotiate the composition of their household's financial portfolios.

With the IV constructed above, I can now write down the First and Second stage for IV specification:

$$BP_{hpt} = a_0 + \pi_1 GP_{hpt} + a_1 INC_{hpt} + a_2 X_{hpt} + \gamma_t + \lambda_p + \epsilon_{hpt}$$

$$Y_{hpt} = b_0 + \pi_2 \widehat{BP_{hpt}} + b_1 INC_{hpt} + b_2 X_{hpt} + \gamma_t + \lambda_p + \epsilon_{hpt}$$

And the reduced form regression:

$$Y_{hpt} = c_0 + \pi_3 GP_{hpt} + c_1 INC_{hpt} + c_2 X_{hpt} + \gamma_t + \lambda_p + \epsilon_{hpt}$$

where Y_{hpt}, BP_{hpt}, GP_{hpt}, INC_{hpt} and X_{hpt} are explained in detail in the previous parts. Notice that BP_{hpt} here is proxied by relative earning potential and INC_{hpt} denotes the natural logarithm of the household's total earning potential.

5.5 Understanding Exogenous Shock: 2011 Divorce Law Reform

Considering the Chinese context, we have an entirely exogenous policy shock to the female bargaining power within household, namely, the divorce law reform of 2011, which changed the previous practice of dividing the family's property equally between husband and wife at the time of divorce to dividing the family's property according to the ownership on the title deed at the time of divorce. As China has a tradition of the husband buying the house and the wife buying the furniture, and our data show that the largest proportion of household type is that husband has the full ownership of the family property, we can view the 2011 divorce law reform as a negative exogenous shock to female bargaining power within household. At the same time, we have data for the period 2010-2020, which allows us to conduct a DID study on this exogenous policy shock.

Treatment and Control Group: In household property ownership, the decision-making process is typically a collective effort reflecting both the couple's joint choices and their individual characteristics, including personal traits and family backgrounds. These

factors have a considerable influence on the family structure, other household decisions, and the overall outcomes for each family member. Due to this interconnectedness, using the Ordinary Least Squares (OLS) estimator in such situations can lead to biased results. The 2011 Third Judicial Interpretation of the Chinese divorce law, which came as an unforeseen and significant change in the division of property within households, provides a unique opportunity to address this issue of endogeneity. This change is utilized to apply a difference-in-differences (DID) design in the study. The main focus of this research is on wives within these households.

For the purpose of this study, households are categorized based on the property ownership status as recorded in 2010. There are four distinct groups identified: (1) Jointly deeded, where the property is registered in both the husband's and wife's names; (2) Husband-only deeded, where the property is registered solely in the husband's name; (3) Wife-only deeded, where the property is registered solely in the wife's name; and (4) Other deeded, where the property is not registered in either spouse's name.

Prior to the 2011 interpretation, under the previous Chinese divorce law, properties in the "Husband Only Deeded" group were subject to equal division in the event of divorce. However, after the reform, these properties exclusively belonged to the husbands, which potentially diminished wives' bargaining power within households and increased their vulnerability to property loss in the event of divorce post-2011. Conversely, properties in the "Wife Only Deeded" group experienced an opposite shift, granting wives full ownership post-reform, which likely improved their bargaining power. The "Jointly Deeded" group is presumed to have experienced no significant change in female bargaining power after the reform.

In the division of treatment and control groups, this paper excludes Group (4) "Other Deeded," where the names of neither spouse appear on the property deed, because this group could encompass a wide range of situations, such as properties owned by elder family members or by the state/collective. For the remaining three groups, a treatment index is established based on the varying impact of the reform on female bargaining power: Group (2) "Husband Only Deeded" is assigned a value of 3, Group (1) "Jointly Deeded" a value of 2, and Group (3) "Wife Only Deeded" a value of 1. The 2010 data contained 4,311 households, of which 80.91% (3,488) were husband only deeded, 13.22% (570) were wife only deeded and 5.87% (253) were jointly deeded. The study aims to assess the treatment effect by comparing the variations of portfolio characteristics for these three groups before and after the implementation of the 2011 reform.

It is important to highlight that this classification is based on property registration status in 2010, prior to the reform. The amendment to the divorce law was initially drafted and publicly discussed in November 2010, after which it underwent multiple rounds of discussion and amendment. It was finally passed in July and enacted in August 2011. Given this timeline, it is highly unlikely that households could have anticipated or adapted

to the impending changes in property division rules during the 2010 baseline survey.

Then I can consider the following DID specification:

$$Y_{hpt} = \alpha Treated_h \times Post_t + \beta X_{hpt} + \gamma_t + \lambda_p + \epsilon_{hpt}$$

where Y_{hpt} is now broad risk participation/adjusted broad risk participation or broad risky share/adjusted broad risky share[34] of household h at province p wave t. The variable $Treated_{hp}$ represents the treatment index, assigning values of 1, 2, and 3 to the three types of households as previously outlined. The variable $Post_t$ is a binary indicator that takes the value of 1 for all survey years following the 2011 reform and 0 for $t = 2010$.

Province-specific and year-specific trends are controlled through fixed effects to mitigate endogeneity concerns. The vector X_{hpt} encompasses additional control variables such as log financial wealth, log residential real estate wealth, log commercial real estate wealth, leverage ratio, log annual consumption (habit), entrepreneurship dummy, retirement dummy, high school dummy (education attainment), third polynomials for the age of the household head, family size, and the number of minor children. These controls are relatively limited compared to the previously employed CHFS data due to the CFPS's more generalized documentation of household financial characteristics.

Next, I focus on the following extended model to capture the dynamics of the policy effect across time:

$$Y_{hpt} = \sum_{s=2010}^{2020} \alpha^s Treated_{hp} \times D^s_{hpt} + \beta X_{hpt} + \gamma_t + \lambda_p + \epsilon_{hpt}$$

where D^s_{hpt} takes 1 if $t = s$. This identification is based on the fundamental assumption that in the absence of the 2011 marriage law reform, the husband-only deeded group, wife-only deeded group and jointly-deeded group should have experienced parallel trends in the outcome variables over time.

6 Results

6.1 Different Proxies of Female Bargaining Power

Table 7 and 8 shows the OLS estimation results on using relative actual income, relative earning potential and relative human capital as the proxy for female bargaining power

[34]Due to the CFPS's less detailed documentation of household portfolios compared to the CHFS, I am currently only able to classify household investment participation and allocation only into two categories—broad risky assets and adjusted broad risky assets, depending on the inclusion or exclusion of commercial real estate—rather than the previous five categories.

Table 7: The Effect of Bargaining Power on Risky Asset Participation Comparisons

	(1) Equity	(2) Risk	(3) Broad Risk	(4) Adjusted Risk	(5) Adjusted Broad Risk
bp-actual income	0.0266***	0.0310***	0.0475***	0.0245***	0.0391***
	(0.00423)	(0.00465)	(0.00585)	(0.00513)	(0.00605)
bp-earning potential	0.0338***	0.0338***	0.0550***	0.0352***	0.0546***
	(0.00568)	(0.00640)	(0.00817)	(0.00716)	(0.00850)
bp-human capital	0.100***	0.113***	0.182***	0.113***	0.181***
	(0.00955)	(0.0105)	(0.0130)	(0.0116)	(0.0135)
Household Controls	YES	YES	YES	YES	YES
Province FE	YES	YES	YES	YES	YES
Wave FE	YES	YES	YES	YES	YES

Notes: I have controlled for all observable characteristics, including province and wave fixed effects, with standard errors clustered by province (errors in parentheses). Each entry represents a distinct regression: (1) focuses on direct equity investment; (2) and (4) classify equity, some mutual funds, and derivatives as risky, with (4) adding commercial real estate; (3) and (5) expand to include all mutual funds, wealth management products, and gold as risky, with (5) also treating commercial real estate as risky. Participation variables are binary, indicating whether a household has invested in specified risky assets (=1) or not (=0). I compare the coefficients of 3 different proxies of female bargaining power: relative actual income, relative earning potential and relative human capital.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

and their comparisons[35].

From table 7 I can conclude that female bargaining power has significant positive effect on household's participation in risky asset markets, higher female bargaining power results higher possibility of a household investing in risky assets, which is in line with my hypothesis 1.

Table 7 shows that one standard deviation rise of the female bargaining power proxied by relative real income would increase equity participation by 8.66% of the sample mean, increase risky asset markets participation by 7.84% of the mean, increase broadly defined risky asset markets participation also by 6.16% of the sample mean. When taking commercial real estates into consideration, one standard deviation rise of the female bargaining power will increase adjusted risky asset markets participation by 3.59% of the sample mean, and would increase adjusted broadly defined risky asset markets participation by 3.91% of the sample mean.

The table also indicates that an increase of one standard deviation in female bargaining power, as measured by relative earning potential, results in a 8.02% sample mean increase in equity investment, a 6.23% sample mean rise in participation in risky asset markets, and a 5.20% sample mean boost in participation in a broader range of risky assets. Considering commercial real estate, a one standard deviation increase in female bargaining power enhances participation in adjusted risky asset markets by 3.76% of the sample mean and in adjusted broadly defined risky asset markets by 3.98% of the sample mean.

[35]Full regression results with all coefficients are listed in Appendix E. A.27, A.28, A.29, A.30, A.31 and A.32.

Table 8: The Effect of Bargaining Power on Risky Share Comparisons

	(1) Equity	(2) Risk	(3) Broad Risk	(4) Adjusted Risk	(5) Adjusted Broad Risk
bp-actual income	0.0164	0.0269**	0.0251**	0.0219	-0.000367
	(0.0145)	(0.0131)	(0.0106)	(0.0469)	(0.0289)
bp-earning potential	-0.00513	0.0228*	0.0114	-0.0996	-0.0640
	(0.0207)	(0.0188)	(0.0150)	(0.0784)	(0.0491)
bp-human capital	0.0140	0.0140	0.0488**	-0.0739	-0.0276
	(0.0330)	(0.0330)	(0.0239)	(0.128)	(0.0596)
Household Controls	YES	YES	YES	YES	YES
Province FE	YES	YES	YES	YES	YES
Wave FE	YES	YES	YES	YES	YES

Notes: I have controlled for all observable characteristics, including province and wave fixed effects, with standard errors clustered by province (errors in parentheses). Each entry represents a distinct regression: (1) focuses on direct equity investment; (2) and (4) classify equity, some mutual funds, and derivatives as risky, with (4) adding commercial real estate; (3) and (5) expand to include all mutual funds, wealth management products, and gold as risky, with (5) also treating commercial real estate as risky. The risky share is defined as the proportion of risky assets (varying by definition for each entry as previously described) in total financial wealth. I compare the coefficients of 3 different proxies of female bargaining power: relative actual income, relative earning potential and relative human capital.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Moreover, the table demonstrates that a one standard deviation increase in female bargaining power, based on relative human capital, leads to a 14.4% sample mean increase in equity investment, a 12.6% sample mean rise in participation in risky asset markets, and a 10.4% sample mean increase in participation in a broader spectrum of risky assets. When including commercial real estate, a one standard deviation increase in female bargaining power elevates participation in adjusted risky asset markets by 7.30% of the sample mean and in adjusted broadly defined risky asset markets by 7.99% of the sample mean[36].

For households who participate in risky asset markets, as shown in table 8, my evidences are less significant but we still have some evidence that female bargaining power has significant positive effect on household's risky share conditional on participation, which is generally in line with my hypothesis 2.

As indicated in Table 8, conditional upon participation, the analysis reveals that an increase of one standard deviation in female bargaining power, as measured by relative real income, leads to a 2.15% increase in the risky share, relative to the sample mean. In addition, the broadly defined risky share increases by 1.49% of the sample mean. Furthermore, a rise of one standard deviation in female bargaining power, when proxied by relative earning potential, results in a 1.3% increase in the risky share relative to the sample mean. Similarly, a one standard deviation increase in female bargaining power, as proxied by relative human capital, leads to a 1.26% rise in the broadly defined risky share. However, when commercial real estate is factored into the analysis, the coefficients

[36]For above calculations, the sample means of the outcome variables and the standard deviations for the bargaining power variables are from the summary statistics table 3.

associated with female bargaining power can sometimes be negative, although statistically insignificant. This finding aligns with hypothesis 2 and demonstrates that women generally invest less in commercial real estate.

Comparing the results of three different proxies for bargaining power, we can find that the effect size of female bargaining power is very close under the relative actual income and relative earning potential scenario is very similar, while under the human capital scenario the coefficient magnitude is larger. This maybe because of the fact that female bargaining power measured in terms of human capital shows a comparison of the present value of earning potential over the life cycle, with a rise in female bargaining power signalling a rise in the relative earning potential of women over the cycle, and therefore having a larger effect.

Moreover, although the effect of bargaining power on various forms of risky share conditional on participation is relatively small and similar across categories, the impacts on equity, risky, and broadly defined risky asset participation—when commercial real estate is excluded—are more pronounced. This can be attributed to the relatively low average capital market participation rate among Chinese households and may also be related to the tendency of Chinese women to prefer investing in conventional risky assets such as stocks and mutual funds over commercial real estate.

Additionally, I accounted for *province* × *wave* fixed effects[37] and found that the coefficients for bargaining power are not significantly different in magnitude from those obtained when controlling separately for province and wave fixed effects. I also investigated the potential heterogeneity of results for households with female heads[38] and found that the coefficients of bargaining power do not differ substantially from those of the full sample.

Moreover, I divided the sample into two groups based on a threshold of female bargaining power = 0.5[39].

When female bargaining power approaches 0.5, this often indicates a higher correlation in the labor incomes of both partners, creating more background risk that may discourage investment in risky assets. In the group where female bargaining power exceeds 0.5, the impact of rising bargaining power on risky asset investment should be more pronounced. On one hand, an increase in female bargaining power leading spouses' incomes to be less correlated, and are able to provide mutual insurance, thereby reducing background risk and encouraging risky asset investment. On the other hand, households where female bargaining power exceeds 0.5, particularly in China, often differ significantly from those where female bargaining power is below 0.5. Such households may hold more progressive gender views, with women inclined toward high-risk, high-reward investments and career

[37]Results shown in Appendix B table A.13, A.14, A.15, and A.16.
[38]Results shown in Appendix B table A.21 and A.22.
[39]Results shown in Appendix B table A.17, A.18, A.19, and A.20.

choices, and may have higher levels of education and financial literacy, encouraging greater investment in risky assets.

My findings support both arguments. For households where female bargaining power is greater than 0.5, the coefficients of bargaining power are larger compared to the overall sample, whereas results are less significant for households where female bargaining power is below 0.5. For instance, in terms of broad risk participation, a 0.1 increase in bargaining power with female bargaining power already above 0.5, as measured by earning potential, makes such households 1.2% more likely to invest in broadly defined risky assets. In the overall sample, however, a 0.1 increase in earning-potential-based bargaining power results in only a 0.55% increase in the likelihood of investing in broadly defined risky assets. This analysis of samples divided by the 0.5 threshold suggests that the significant positive effect of female bargaining power on risky asset investment in the overall sample is primarily driven by households where female bargaining power exceeds 0.5.

For control variables[40], on risky asset markets participation, I find that more financial wealth, residential real estate wealth and higher aggregate human capital, higher total earning potential encourage risk taking, larger family size, higher education, older household head age and becoming retired encourage risk taking, while having more children, owning a private business, owning real estate, having higher leverage ratio, and higher income shocks' correlation with the risky asset return crowds out risk taking. These effects are all significant and consistent with previous empirical findings in the household finance literature. However, it is interesting to find that for Chinese households, more commercial real estate wealth and higher consumption habit encourage risk taking, which is contrary to the findings of previous empirical studies on other countries. It could be due to the accuracy of our data, or it could be due to the fact that China's population that likes to invest in commercial real estate and has higher consumption habits is inherently less risk-averse and are actually "heterogeneous agents". On risky share conditional on participation, I notice that household financial wealth's effect is still significant but now negative. Owning a private business still crowds out risk taking. Education's effect becomes ambiguous. And becoming older slightly encourage risk taking, this is different from evidences from developed countries, it may be due to the fact that the elderly in China generally have a higher status in the family and tend to have the habit of buying stocks/funds.

6.2 Discussion of Statistical Power

I use G*Power[41] 3.1.9.7 to measure the statistical power of my empirical strategies.

[40]Detailed tables showing coefficients on control variables are listed in Appendix E.

[41]G*Power is a tool to compute statistical power analyses for many different tests. G*Power can also be used to compute effect sizes and to display graphically the results of power analyses.

For the participation regression analyses, given that the sample size substantially exceeds 50,000, the study achieves a power of 1.00, affirming that the regression results are statistically significant at the 0.01 level.

In the case of regressions concerning the risky share, which are conditional upon participation, there is a reduction in sample size. Additionally, the effect size diminishes due to a lower R^2 value, yet the validity of the regressions remains intact. For example, when utilizing relative actual income as a proxy, the power of the risky share regression analysis remains robust at 0.996, ensuring statistical significance at the 0.05 level.

6.3 IV Results and Comparisons to OLS

Table 9: The Effect of Bargaining Power on Risky Asset Participation: OLS vs IV Comparisons

	(1) Equity	(2) Risk	(3) Broad Risk	(4) Adjusted Risk	(5) Adjusted Broad Risk
earning potential-OLS	0.0338***	0.0338***	0.0550***	0.0352***	0.0546***
	(0.00568)	(0.00640)	(0.00817)	(0.00716)	(0.00850)
earning potential-IV	0.496	1.049**	1.175**	1.661***	0.470
	(0.352)	(0.415)	(0.521)	(0.512)	(0.514)
bp-IV(1st stage)	0.455***	0.455***	0.455***	0.455***	0.455***
	(0.0778)	(0.0778)	(0.0778)	(0.0778)	(0.0778)
F-value(IV 1st stage)	34.06	34.06	34.06	34.06	34.06
Household Controls	YES	YES	YES	YES	YES
Province FE	YES	YES	YES	YES	YES
Wave FE	YES	YES	YES	YES	YES

Notes: I have controlled for all observable characteristics, including province and wave fixed effects, with standard errors clustered by province (errors in parentheses). Each entry represents a distinct regression: (1) focuses on direct equity investment; (2) and (4) classify equity, some mutual funds, and derivatives as risky, with (4) adding commercial real estate; (3) and (5) expand to include all mutual funds, wealth management products, and gold as risky, with (5) also treating commercial real estate as risky. Participation variables are binary, indicating whether a household has invested in specified risky assets (=1) or not (=0). I compare the coefficients of OLS and IV regressions. In the IV model, the relative earning potential within the household is instrumented using the prevailing local earnings ratio.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 9 and 10 produce the detailed IV specification results. And from the 1st stage IV regression we can see that the IV is both relevant (1st stage coefficients are positive and statistically significant, ranging from 0.445 to 0.95) and has substantial power (relatively high F-value[42], ranging form 5.14 to 34.06, with most of them > 10).

The IV (Instrumental Variable) estimates show the average incremental change resulting from an increase in the proportion of earning potential among women within the subgroup influenced by the instrumental variable for relative female labor demand . This

[42]Here I report F-value in the first stage of the Two-Stage Least Squares (2SLS) method. According to the rule of thumb established by Stock and Yogo (2005), if the F statistic from this test exceeds 10, the null hypothesis of weak instruments can be rejected.

Table 10: The Effect of Bargaining Power on Risky Share:
OLS vs IV Comparisons

	(1) Equity	(2) Risk	(3) Broad Risk	(4) Adjusted Risk	(5) Adjusted Broad Risk
earning potential-OLS	-0.00513	0.0228*	0.0114	-0.0996	-0.0640
	(0.0207)	(0.0188)	(0.0150)	(0.0784)	(0.0491)
	(0.0214)	(0.0193)	(0.0153)	(0.0789)	(0.0498)
earning potential-IV	1.048	0.122	1.775**	0.726	1.079
	(0.865)	(0.978)	(0.883)	(2.480)	(1.573)
bp-IV(1st stage)	0.950***	0.705**	0.709***	0.660***	0.673***
	(0.345)	(0.311)	(0.219)	(0.189)	(0.166)
F-value(IV 1st stage)	7.58	5.14	10.47	12.16	16.50
Household Controls	YES	YES	YES	YES	YES
Province FE	YES	YES	YES	YES	YES
Wave FE	YES	YES	YES	YES	YES

Notes: I have controlled for all observable characteristics, including province and wave fixed effects, with standard errors clustered by province (errors in parentheses). Each entry represents a distinct regression: (1) focuses on direct equity investment; (2) and (4) classify equity, some mutual funds, and derivatives as risky, with (4) adding commercial real estate; (3) and (5) expand to include all mutual funds, wealth management products, and gold as risky, with (5) also treating commercial real estate as risky. The risky share is defined as the proportion of risky assets (varying by definition for each entry as previously described) in total financial wealth. I compare the coefficients of OLS and IV regressions. In the IV model, the relative earning potential within the household is instrumented using the prevailing local earnings ratio.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

specific subgroup includes couples whose financial choices are impacted by minor variations in the demand for labor based on gender. These findings cannot be extrapolated to the broader population without making further assumptions, such as the notion that the impact on financial decision-making remains uniform across different households following a shift in the distribution of bargaining power within the household.

When we compare the outcomes of the OLS (Ordinary Least Squares) regressions with those of the IV (Instrumental Variables) regressions, as shown in 9 and 10, it is evident that the IV regression coefficients are significantly larger across all variables. However, it's also noted that the standard errors for the IV estimates are substantially larger than those for the OLS estimates, leading to broader confidence intervals. This trade-off is necessary to achieve a consistent estimate of how the distribution of bargaining power within households influences portfolio composition. Some of this observed difference may be attributed to this particular effect. Despite the imprecision of the IV estimates, the range of these estimates remains consistently higher than the OLS estimates for all measured outcomes.

One reason for the discrepancy between the IV (Instrumental Variables) model estimates and the OLS (Ordinary Least Squares) results could be the endogeneity related to the measurement of earning potential. As mentioned previously, the earning potentials of spouses might capture unobserved traits, suggesting that our indicator of spouse's bargaining power is affected by endogeneity, leading to biased OLS estimates. For example,

women who are more personable, have stronger social networks, or are more attractive might be more effective in influencing household financial decisions to align with their preferences, compared to those who are less agreeable, have weaker social connections, or are less attractive. If any of these characteristics are correlated with our bargaining power metric, this correlation could lead to downward biased Ordinary Least Squares (OLS) estimates. For instance, research by Mobius and Rosenblat (2006) indicates that education serves as a compensatory factor for women with lesser attractiveness. Given that educational attainment is an important determinant of my measure of earning potential, the presence of lesser attractiveness among women with higher education levels could result in downward biases in the OLS estimates. Additionally, the calculation of earning potential may contain errors, which could introduce another layer of endogeneity.

Another possible explanation for the differences between the IV and OLS estimates might be the existence of heterogeneous treatment effects. It's plausible that many of those impacted by shifts in labor market conditions are households where women are just at the threshold of being able to assert their preferences, thus resulting in larger effect size. Thus, the local average treatment effects highlighted by the IV model might not fully represent the global impact of changes in gender-specific labor demand on household financial portfolios. However, they do illustrate the influence within households where women are on the margin to influence financial decisions.

Furthermore, a small number of individuals may have intentionally relocated to other provinces during the survey period due to variations in industry distribution and levels of economic development across provinces. Our data cannot capture these individuals who moved to other provinces, which may also impact the results.

6.4 Evidence for Divorce Law Reform

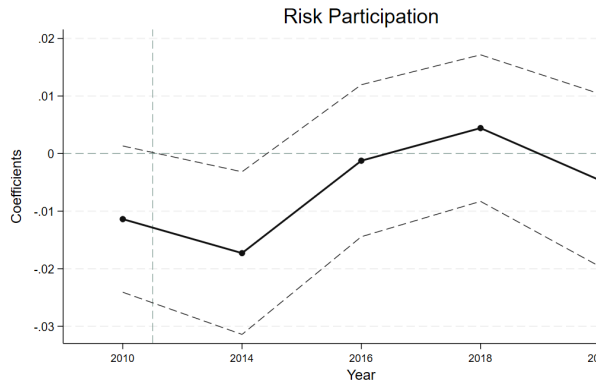
Unfortunately, the DID analysis yielded no significant results. According to Panel A of Table 11, when the treatment index assigns a value of 3 to households with "husband only" deeds, 2 to those with "jointly deeded" homeownership, and 1 to households with "wife only" deeds, the coefficient for the "$treat \times post$" interaction is not significant. In Panel B of Table 11, although the 2014 coefficients for broad risk participation and adjusted risk participation are significantly negative, the pre-reform 2010 coefficient is also significantly below zero, indicating that the parallel trends assumption is not met. Other dynamic DID coefficients are also insignificant.

According to Figure 3, the coefficient for the 2010 pre-reform period is markedly below zero for both participation variables, while the coefficients after the 2011 reform trend closer to zero, suggesting that the parallel trends assumption is not satisfied. Moreover, despite the 2010 pre-reform coefficient being close to zero for both participation variables, the post-2011 coefficients fluctuate around zero, thus not providing strong evidence to

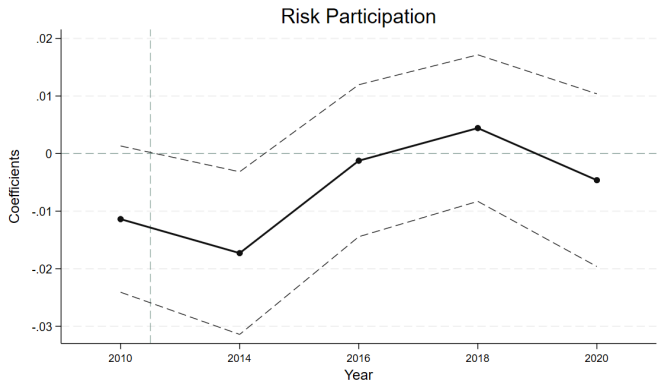
Table 11: DID results

	(1) Broad Participation	(2) Adjusted Participation	(3) Broad Share	(4) Adjusted Share
Panel A: Baseline DID				
treat × *post*	0.000809	0.00660	0.00314	-0.00170
	(0.00731)	(0.00632)	(0.0203)	(0.0107)
Panel B: Dynamic DID				
treat × 2010	-0.0113	-0.0114*	-0.0103	0.000706
	(0.00721)	(0.00648)	(0.0173)	(0.00919)
treat × 2012 (omitted)	0	0	0	0
	(.)	(.)	(.)	(.)
treat × 2014	-0.0150*	-0.0173**	-0.0206	0.00319
	(0.00835)	(0.00721)	(0.0211)	(0.0112)
treat × 2016	-0.00954	-0.00124	-0.0250	-0.00789
	(0.00810)	(0.00673)	(0.0218)	(0.0111)
treat × 2018	-0.00131	0.00443	0.0259	0.00706
	(0.00809)	(0.00649)	(0.0219)	(0.0108)
treat × 2020	-0.0171*	-0.00462	-0.00718	-0.00730
	(0.00953)	(0.00765)	(0.0217)	(0.0116)
Panel C: Alternative Treatment				
*treat*2 × *post*	0.0384**	0.0319*	0.0392	0.00330
	(0.0192)	(0.0167)	(0.0438)	(0.0261)
Household Controls	YES	YES	YES	YES
Province FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	15543	15543	1831	4303
R2	0.228	0.701	0.151	0.424

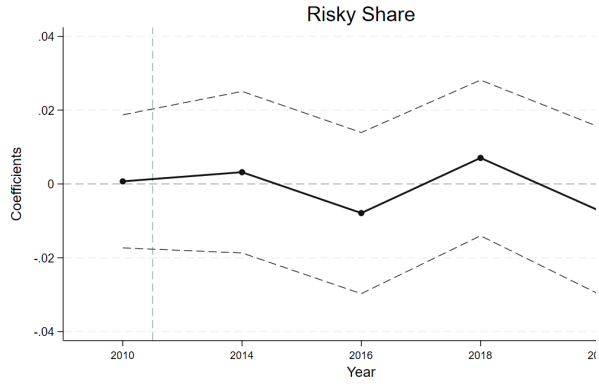
Notes: I have controlled for all observable characteristics, including province and wave fixed effects, with standard errors clustered by province (errors in parentheses). Each entry represents a distinct Difference-in-Differences (DID) analysis. Specification (1) examines market participation in broadly defined risky asset classes, while specification (3) investigates the corresponding share of risky assets. Specifications (2) and (4) incorporate commercial real estate as a risky asset, with (2) focusing on market participation and (4) assessing the conditional share of risky assets. The risky share is defined as the proportion of risky assets (varied by definition in each specification) relative to total financial wealth. In Panels A and B, the treatment variable, "treat", represents the treatment index, which assigns values of 1, 2, and 3 to the three categories of households. In Panel C, an alternative approach is used where the "treat2" variable assigns a value of 1 to households with "husband only" deeded homeownership and 0 to households with "jointly" deeded homeownership, excluding households with "wife only" deeded homeownership.
$^{*}p < 0.1$ $^{**}p < 0.05$ $^{***}p < 0.01$



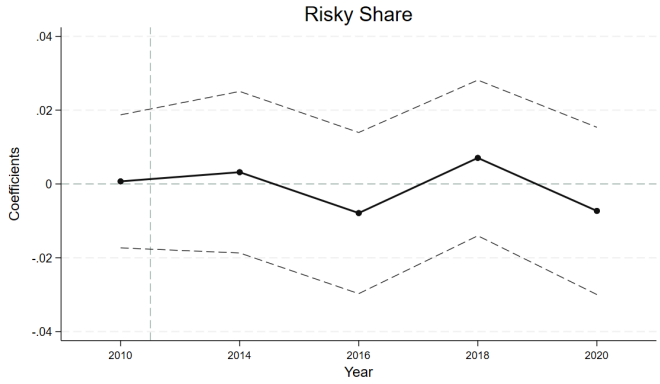
Broad Risk Participation



Adjusted Risk Participation



Broad Risky Share



Adjusted Risky Share

Figure 3: Combined Coefficient Plots

*Note:*This graph plots the dynamic DID coefficients for each year on the broad risky asset investment participation, broad risky share, adjusted risk participation, and adjusted risky share for CFPS households. All figures display averages of the pooled sample (by age and household type). Data from the waves 2010, 2012, 2014, 2016, 2018, 2020 of the China Family Panel Study Survey (CFPS).

support the parallel trends assumption.

In addition, Panel C of Table 11 presents the results of an alternative treatment assignment, where the "treat2" variable assigns a value of 1 to households with "husband only" deeded homeownership and 0 to those with "jointly" deeded homeownership, excluding the "wife only" group. While some coefficients for "$treat2 \times post$" are significantly negative, directly ignoring the "wife only" group does not yield convincing results.

The lack of significant results from the DID analysis may stem from several factors: the availability of only one pre-reform data point in 2010, the coarse categorization of household portfolio characteristics in the CFPS, the limited sample relevant to the reform context, and the gradual rollout of the reform across different regions that may not have immediately translated into household portfolio changes.

7 Conclusion and Limitations

This study pioneers the utilization of both the China Household Finance Survey (CHFS) and China Family Panel Studies (CFPS) datasets to analyze the impact of female bargaining power on household investment portfolios in Chinese households. Leveraging the CHFS dataset, the research constructs two outcome variables related to portfolio characteristics: participation in risky asset investment and the share of risky assets conditional on participation. The analysis carefully considers all potential risk assets to provide a comprehensive assessment.

The primary independent variable, female bargaining power, is inherently unobservable. Thus, a significant contribution of this study is identifying suitable proxies for female bargaining power within the Chinese sociocultural context while mitigating issues of endogeneity. The study first applies the widely recognized "relative actual income" framework and enhances it to "relative earning potential." This framework reflects women's external choices in the event of divorce by incorporating average income data of unmarried individuals in the same marital market as proxies for the earning potential of married individuals. Additionally, the shift-share instrumental variable is considered to further address endogeneity concerns.

Another proxy approach is derived from household economics and finance research, which assumes that individuals' income processes are exogenous. Individuals are grouped by gender and education, and their income processes are estimated to derive human capital within each demographic group as a proxy for the bargaining power of married individuals. The study incorporates divorce property distribution considerations by treating human capital as an indivisible asset for the individual owner in the event of divorce. Consequently, "relative human capital" serves as a proxy for bargaining power.

The study also contributes by addressing the implications of China's social and geo-

graphical heterogeneity. Given the significance of divorce law reforms to collective bargaining theory, the research examines the 2011 reform of China's divorce law concerning property ownership as an exogenous shock to female bargaining power, tracing changes in household portfolios.

The results indicate that couples where women hold relatively high bargaining power tend to exhibit higher-risk portfolios compared to those where women have lower bargaining power. Specifically, increased bargaining power correlates with higher direct equity participation and greater involvement in other risky asset markets. In households participating in risky asset markets, an increase in female bargaining power tends to raise the share of wealth allocated to risky assets in a conventional sense while the risky share may decrease when taking commercial real estate into consideration, although statistical significance may not always be observed. Notably, this trend becomes more pronounced among households with high (> 0.5) female bargaining power. For the exogenous shock of divorce law reform, unfortunately, our data do not bring statistically significant evidence.

This research underscores the distinct preferences between men and women, emphasizing the role of distributional factors in shaping aggregate household preferences.

Despite my efforts to identify reasonable proxies for female bargaining power, minimize endogeneity, and construct comprehensive control variables, this paper still has some limitations that warrant further research. First, due to constraints in the China Household Finance Survey (CHFS) data, I could not access detailed information on each household's investment in individual stocks or mutual funds. As a result, this study could not calculate the Sharpe ratio of each household's portfolio to evaluate portfolio diversification, gender differences in investment returns, and the subsequent implications for wealth accumulation and welfare outcomes. Such metrics are crucial for understanding the interplay of gender in household finance studies.

Moreover, China's relatively low participation rate in financial markets poses additional challenges. While this study incorporated assumptions regarding individual risk aversion, it did not address individuals' elasticity of substitution nor investigate the participation cost, which are promising avenues for future enhancement. Furthermore, the limited scope of the survey, which includes data for tens of thousands of people, restricts the granularity of individual characteristics (e.g., age, education level, and employment industry) to accurately measure earning potential. Additionally, some individuals' employment industries were not available in the data.

Couples with less correlated incomes can often mitigate individual consumption fluctuations and reduce background risks. However, the framework used in this study, which primarily focuses on property division and outside options in the event of divorce, does not account for income correlations between partners, potentially limiting the analysis.

Finally, collective bargaining is a dynamic process, yet this study relied on a cross-

sectional analysis. A life-cycle model could offer more structural insights into how collective bargaining impacts household risk preferences over time. In cases where bargaining fails, divorce becomes the outcome, with the expectation that despite the associated costs, both parties benefit from increased utility post-divorce. There is limited research on this topic in the Chinese context, and future work should consider improving this area.

Furthermore, multi-generational cohabitation is prevalent in China. Consequently, future research should investigate the dynamics of multi-person bargaining in household decision-making, which could provide valuable insights into inter-generational influences on household financial behavior.

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Appendix

A: Definitions of Household Variables

This table A.12 summarizes the main household variables used in the paper.

Table A.12: Definitions of Household Variables

Variable	Description
Portfolio & Financial Characteristics	
Equity Participation	Dummy variable equals to one if the household directly holds public or non-pulic stocks.
Risk Participation	Dummy variable equals to one if the household directly holds stocks, risky mutual funds or derivatives.
Broad Risk Participation	Dummy variable equals to one if the household directly holds stocks, low-risk mutual funds, gold, wealth management products or derivatives.
Adjusted Risk Participation	Dummy variable equals to one if the household directly holds stocks, risky mutual funds, derivatives or commercial real estates.
Adjusted Broad Risk Participation	Dummy variable equals to one if the household directly holds stocks, low-risk mutual funds, derivatives, gold, wealth management products, or commercial real estates.
Financial wealth (¥)	Value of holdings in all financial assets: stocks, low-risk mutual funds, derivatives, gold, wealth management products, cash, bonds, deposits, and foreign exchanges.
Homeownership	Dummy variable equals to one if the household owns residential real estate.
Residential Real Estate Wealth (¥)	Value of primary residence.
Commercial Real Estate Wealth (¥)	Value of rental, industrial, and agricultural properties.
Commercial Real Estate Equity (¥)	Commercial real estate wealth minus mortgages on commercial real estate.
Leverage Ratio	Total debt divided by the sum of financial and real estate wealth.
Equity Share	Proportion of equity values in the portfolio of all financial assets.
Risky Share	Proportion of risky assets in the portfolio of all financial assets.
Broad Risky Share	Proportion of broadly defined risky assets in the portfolio of all financial assets.
Adjusted Risky Share	Proportion of risky assets plus commercial real estate equity in the portfolio of all financial assets and commercial real estate equity.
Adjusted Broad Risky Share	Proportion of broadly defined risky assets plus commercial real estate equity in the portfolio of all financial assets and commercial real estate equity.
Human Capital and Income Risk	
Earning Potential (¥)	Average annual earnings of single individuals of the same gender, age group, education group, and living in the same province.
Human Capital (¥)	Expected present value of future labor income.
Income Innovation	Difference between labor income growth and its fitted value by income process.
Beta of Human Capital	Beta of household's income innovation with respect to the market access return .
Transitory Income Risk	Variance of the transitory component of labor income.
Permanent Income Risk	Variance of the permanent component of labor income.
Entrepreneur Dummy	Dummy variable equals to one if the household owns private equity.
Retirement Dummy	Dummy variable equals to one if the household head is retired.
Habit	
Internal Habit (¥)	Proxied by household's Annual Consumption.
Demographic Characteristics	
High-school Dummy	Dummy variable equals to one if the household head has a high-school degree or above.
College Dummy	Dummy variable equals to one if the household head has a college/university degree or above.
Age Variables (Household Head)	Third polynomials of household head's age–age, age^2 and age^3.
Family Size	Total number of people legally registered in the household.
Number of Children	Number of minor children of the household head couple in the household.
Female Bargaining Power	
Relative Actual Income	Proportion of female spouse's actual income in the household head couple in one household.
Relative Earning Potential	Proportion of female spouse's earning potential in the household head couple in one household.
Relative Human Capital	Proportion of female spouse's human capital in the household head couple in one household.

Table A.13: The Effect of Bargaining Power on Risky Asset Participation Comparisons (Province x Wave FE)

	(1) Equity	(2) Risk	(3) Broad Risk	(4) Adjusted Risk	(5) Adjusted Broad Risk
bp-actual income	0.0265***	0.0309***	0.0472***	0.0245***	0.0390***
	(0.00424)	(0.00465)	(0.00586)	(0.00513)	(0.00605)
bp-earning potential	0.0396***	0.0398***	0.0600***	0.0397***	0.0578***
	(0.00586)	(0.00658)	(0.00838)	(0.00732)	(0.00871)
bp-human capital	0.101***	0.113***	0.181***	0.113***	0.180***
	(0.00956)	(0.0105)	(0.0130)	(0.0116)	(0.0135)
Province x Wave FE	YES	YES	YES	YES	YES

Notes: I've controlled for all observable characteristics, and now I controlled for Province x Wave fixed effect, with standard errors clustered by province (errors in parentheses). Each entry represents a distinct regression: (1) focuses on direct equity investment; (2) and (4) classify equity, some mutual funds, and derivatives as risky, with (4) adding commercial real estate; (3) and (5) expand to include all mutual funds, wealth management products, and gold as risky, with (5) also treating commercial real estate as risky. Participation variables are binary, indicating whether a household has invested in specified risky assets (=1) or not (=0). I compare the coefficients of 3 different proxies of female bargaining power: relative actual income, relative earning potential and relative human capital.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A.14: The Effect of Bargaining Power on Risky Share Comparisons (Province x Wave FE)

	(1) Equity	(2) Risk	(3) Broad Risk	(4) Adjusted Risk	(5) Adjusted Broad Risk
bp-actual income	0.0181	0.0263**	0.0243**	0.0303	0.000995
	(0.0146)	(0.0132)	(0.0106)	(0.0475)	(0.0292)
bp-earning potential	-0.00767	0.0204*	0.00985	-0.125	-0.0817
	(0.0215)	(0.0195)	(0.0154)	(0.0823)	(0.0524)
bp-human capital	0.0135	0.0135	0.0478**	-0.0653	-0.0245
	(0.0334)	(0.0334)	(0.0239)	(0.125)	(0.0583)
Province x Wave FE	YES	YES	YES	YES	YES

Notes: I've controlled for all observable characteristics, and now I controlled for Province x Wave fixed effect, with standard errors clustered by province (errors in parentheses). Each entry represents a distinct regression: (1) focuses on direct equity investment; (2) and (4) classify equity, some mutual funds, and derivatives as risky, with (4) adding commercial real estate; (3) and (5) expand to include all mutual funds, wealth management products, and gold as risky, with (5) also treating commercial real estate as risky. The risky share is defined as the proportion of risky assets (varying by definition for each entry as previously described) in total financial wealth. I compare the coefficients of 3 different proxies of female bargaining power: relative actual income, relative earning potential and relative human capital.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A.15: The Effect of Bargaining Power on Risky Asset Participation: OLS vs IV Comparisons (Province x Wave FE)

	(1) Equity	(2) Risk	(3) Broad Risk	(4) Adjusted Risk	(5) Adjusted Broad Risk
earning potential-OLS	0.0396***	0.0398***	0.0600***	0.0397***	0.0578***
	(0.00586)	(0.00658)	(0.00838)	(0.00732)	(0.00871)
earning potential-IV	0.0534	0.739	1.447*	2.142***	0.206
	(0.508)	(0.582)	(0.767)	(0.797)	(0.726)
bp-IV(1st stage)	0.374***	0.374***	0.374***	0.374***	0.374***
(0.0870)	(0.0870)	(0.0870)	(0.0870)	(0.0870)	
F-value(IV 1st stage)	18.50	18.50	18.50	18.50	18.50
Province x Wave FE	YES	YES	YES	YES	YES

Notes: I've controlled for all observable characteristics, and now I controlled for Province x Wave fixed effect, with standard errors clustered by province (errors in parentheses). Each entry represents a distinct regression: (1) focuses on direct equity investment; (2) and (4) classify equity, some mutual funds, and derivatives as risky, with (4) adding commercial real estate; (3) and (5) expand to include all mutual funds, wealth management products, and gold as risky, with (5) also treating commercial real estate as risky. Participation variables are binary, indicating whether a household has invested in specified risky assets (=1) or not (=0). I compare the coefficients of OLS and IV regressions. In the IV model, the relative earning potential within the household is instrumented using the prevailing local earnings ratio.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A.16: The Effect of Bargaining Power on Risky Share: OLS vs IV Comparisons (Province x Wave FE)

	(1) Equity	(2) Risk	(3) Broad Risk	(4) Adjusted Risk	(5) Adjusted Broad Risk
earning potential-OLS	-0.00767	0.0204*	0.00985	-0.125	-0.0817
	(0.0215)	(0.0195)	(0.0154)	(0.0823)	(0.0524)
earning potential-IV	0.856	0.0114	1.828	0.0185	0.0240
	(1.210)	(1.569)	(1.470)	(3.868)	(2.321)
bp-IV(1st stage)	0.738*	0.498	0.476*	0.465**	0.453**
	(0.397)	(0.347)	(0.247)	(0.208)	(0.183)
F-value(IV 1st stage)	3.47	2.06	3.71	4.99	6.11
Province x Wave FE	YES	YES	YES	YES	YES
Wave FE	YES	YES	YES	YES	YES

Notes: I've controlled for all observable characteristics, and now I controlled for Province x Wave fixed effect, with standard errors clustered by province (errors in parentheses). Each entry represents a distinct regression: (1) focuses on direct equity investment; (2) and (4) classify equity, some mutual funds, and derivatives as risky, with (4) adding commercial real estate; (3) and (5) expand to include all mutual funds, wealth management products, and gold as risky, with (5) also treating commercial real estate as risky. The risky share is defined as the proportion of risky assets (varying by definition for each entry as previously described) in total financial wealth. I compare the coefficients of OLS and IV regressions. In the IV model, the relative earning potential within the household is instrumented using the prevailing local earnings ratio.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A.17: The Effect of Bargaining Power on Risky Asset Participation Comparisons (> 0.5 bargaining power)

	(1) Equity	(2) Risk	(3) Broad Risk	(4) Adjusted Risk	(5) Adjusted Broad Risk
bp-actual income	0.0478***	0.0392**	0.0621***	0.0269	0.0511**
	(0.0173)	(0.0187)	(0.0220)	(0.0201)	(0.0225)
bp-earning potential	0.0396***	0.0453***	0.120***	0.0612***	0.125***
	(0.0151)	(0.0165)	(0.0200)	(0.0181)	(0.0207)
earning potential-IV	0.0628	0.524	2.452***	0.869	2.045**
	(0.533)	(0.584)	(0.845)	(0.665)	(0.842)
bp-IV(1st stage)	0.508***	0.508***	0.508***	0.508***	0.508***
	(0.0919)	(0.0919)	(0.0919)	(0.0919)	(0.0919)
F-value(IV 1st stage)	30.47	30.47	30.47	30.47	30.47
bp-human capital	-0.00297	0.00676	0.0785***	0.0180	0.0988***
	(0.0158)	(0.0172)	(0.0209)	(0.0185)	(0.0215)
Province FE	YES	YES	YES	YES	YES
Wave FE	YES	YES	YES	YES	YES

Notes: I've controlled for all observable characteristics, and now I controlled for Province and Wave fixed effects, with standard errors clustered by province (errors in parentheses). Each entry represents a distinct regression: (1) focuses on direct equity investment; (2) and (4) classify equity, some mutual funds, and derivatives as risky, with (4) adding commercial real estate; (3) and (5) expand to include all mutual funds, wealth management products, and gold as risky, with (5) also treating commercial real estate as risky. Participation variables are binary, indicating whether a household has invested in specified risky assets (=1) or not (=0). I compare the coefficients of 3 different proxies of female bargaining power: relative actual income, relative earning potential and relative human capital.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A.18: The Effect of Bargaining Power on Risky Share Comparisons (> 0.5 bargaining power)

	(1) Equity	(2) Risk	(3) Broad Risk	(4) Adjusted Risk	(5) Adjusted Broad Risk
bp-actual income	0.123***	0.138***	0.0809**	-0.0299	-0.00118
	(0.0448)	(0.0405)	(0.0350)	(0.172)	(0.104)
bp-earning potential	0.0308	0.0749*	0.0283	-0.0744	-0.0375
	(0.0465)	(0.0427)	(0.0349)	(0.117)	(0.0671)
earning potential-IV	2.137	-0.952	1.515	-1.539	0.449
	(2.220)	(1.592)	(1.093)	(2.664)	(1.821)
bp-IV(1st stage)	0.635*	0.621*	0.729***	0.659***	0.687***
	(0.360)	(0.320)	(0.248)	(0.202)	(0.186)
F-value(IV 1st stage)	3.11	3.77	8.62	10.61	13.57
bp-human capital	0.0550	0.0550	-0.00532	0.135	-0.0285
	(0.0523)	(0.0523)	(0.0389)	(0.179)	(0.0867)
Province FE	YES	YES	YES	YES	YES
Wave FE	YES	YES	YES	YES	YES

Notes: I've controlled for all observable characteristics, and now I controlled for Province and Wave fixed effects, with standard errors clustered by province (errors in parentheses). Each entry represents a distinct regression: (1) focuses on direct equity investment; (2) and (4) classify equity, some mutual funds, and derivatives as risky, with (4) adding commercial real estate; (3) and (5) expand to include all mutual funds, wealth management products, and gold as risky, with (5) also treating commercial real estate as risky. The risky share is defined as the proportion of risky assets (varying by definition for each entry as previously described) in total financial wealth. I compare the coefficients of 3 different proxies of female bargaining power: relative actual income, relative earning potential and relative human capital.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A.19: The Effect of Bargaining Power on Risky Asset Participation Comparisons (< 0.5 bargaining power)

	(1) Equity	(2) Risk	(3) Broad Risk	(4) Adjusted Risk	(5) Adjusted Broad Risk
bp-actual income	-0.0148	-0.00397	0.0132	-0.00470	0.00899
	(0.00999)	(0.0109)	(0.0136)	(0.0120)	(0.0141)
bp-earning potential	0.0263**	0.0220	0.0247	0.0211	0.0247
	(0.0134)	(0.0150)	(0.0200)	(0.0170)	(0.0207)
bp-human capital	0.153***	0.144***	0.284***	0.153***	0.280***
	(0.0273)	(0.0310)	(0.0407)	(0.0357)	(0.0427)
Province FE	YES	YES	YES	YES	YES
Wave FE	YES	YES	YES	YES	YES

Notes: I've controlled for all observable characteristics, and now I controlled for Province and Wave fixed effects, with standard errors clustered by province (errors in parentheses). Each entry represents a distinct regression: (1) focuses on direct equity investment; (2) and (4) classify equity, some mutual funds, and derivatives as risky, with (4) adding commercial real estate; (3) and (5) expand to include all mutual funds, wealth management products, and gold as risky, with (5) also treating commercial real estate as risky. Participation variables are binary, indicating whether a household has invested in specified risky assets (=1) or not (=0). I compare the coefficients of 3 different proxies of female bargaining power: relative actual income, relative earning potential and relative human capital.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A.20: The Effect of Bargaining Power on Risky Share Comparisons (< 0.5 bargaining power)

	(1) Equity	(2) Risk	(3) Broad Risk	(4) Adjusted Risk	(5) Adjusted Broad Risk
bp-actual income	0.0886***	0.103***	0.00671	-0.0626	-0.0752
	(0.0311)	(0.0286)	(0.0230)	(0.102)	(0.0595)
bp-earning potential	-0.00936	0.0360	0.0553	-0.283	-0.162
	(0.0533)	(0.0483)	(0.0370)	(0.282)	(0.185)
bp-human capital	0.142	0.142	0.0900	-0.553	-0.0520
	(0.114)	(0.114)	(0.0761)	(0.589)	(0.178)
Province FE	YES	YES	YES	YES	YES
Wave FE	YES	YES	YES	YES	YES

Notes: I've controlled for all observable characteristics, and now I controlled for Province and Wave fixed effects, with standard errors clustered by province (errors in parentheses). Each entry represents a distinct regression: (1) focuses on direct equity investment; (2) and (4) classify equity, some mutual funds, and derivatives as risky, with (4) adding commercial real estate; (3) and (5) expand to include all mutual funds, wealth management products, and gold as risky, with (5) also treating commercial real estate as risky. The risky share is defined as the proportion of risky assets (varying by definition for each entry as previously described) in total financial wealth. I compare the coefficients of 3 different proxies of female bargaining power: relative actual income, relative earning potential and relative human capital.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A.21: The Effect of Bargaining Power on Risky Asset Participation Comparisons (Female Household Head)

	(1) Equity	(2) Risk	(3) Broad Risk	(4) Adjusted Risk	(5) Adjusted Broad Risk
bp-actual income	0.0230**	0.0279***	0.0434***	0.0318***	0.0481***
	(0.00979)	(0.0106)	(0.0128)	(0.0116)	(0.0133)
bp-earning potential	-0.000740	0.00864	0.0228	0.00468	0.0213
	(0.0139)	(0.0155)	(0.0189)	(0.0170)	(0.0197)
earning potential-IV	0.894	1.029	1.971	2.431*	0.769
	(0.821)	(0.909)	(1.305)	(1.332)	(1.148)
bp-IV(1st stage)	0.465**	0.465**	0.465**	0.465**	0.465**
	(0.183)	(0.183)	(0.183)	(0.183)	(0.183)
F-value(IV 1st stage)	6.48	6.48	6.48	6.48	6.48
bp-human capital	0.0200	0.0765**	0.177***	0.117***	0.235***
	(0.0344)	(0.0374)	(0.0469)	(0.0417)	(0.0488)
Province FE	YES	YES	YES	YES	YES
Wave FE	YES	YES	YES	YES	YES

Notes: I've controlled for all observable characteristics, and now I controlled for Province and Wave fixed effects, with standard errors clustered by province (errors in parentheses). Each entry represents a distinct regression: (1) focuses on direct equity investment; (2) and (4) classify equity, some mutual funds, and derivatives as risky, with (4) adding commercial real estate; (3) and (5) expand to include all mutual funds, wealth management products, and gold as risky, with (5) also treating commercial real estate as risky. Participation variables are binary, indicating whether a household has invested in specified risky assets (=1) or not (=0). I compare the coefficients of 3 different proxies of female bargaining power: relative actual income, relative earning potential and relative human capital.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A.22: The Effect of Bargaining Power on Risky Share Comparisons
(Female Household Head)

	(1) Equity	(2) Risk	(3) Broad Risk	(4) Adjusted Risk	(5) Adjusted Broad Risk
bp-actual income	0.0292	0.0227	0.00899	0.131	0.0270
	(0.0274)	(0.0256)	(0.0212)	(0.0927)	(0.0472)
bp-earning potential	0.00823	0.0119	0.0122	0.0438	0.0605
	(0.0419)	(0.0385)	(0.0328)	(0.0972)	(0.0493)
earning potential-IV	0.111	0.357	2.634	4.879	2.683
	(1.225)	(1.768)	(1.721)	(5.461)	(2.527)
bp-IV(1st stage)	1.247*	0.849	0.848**	0.944**	0.870**
	(0.681)	(0.577)	(0.423)	(0.421)	(0.350)
F-value(IV 1st stage)	3.36	2.17	4.02	5.03	6.18
bp-human capital	0.0206	0.0206	0.0416	0.310	-0.144
	(0.108)	(0.108)	(0.0820)	(0.520)	(0.181)
Province FE	YES	YES	YES	YES	YES
Wave FE	YES	YES	YES	YES	YES

Notes: I've controlled for all observable characteristics, and now I controlled for Province and Wave fixed effects, with standard errors clustered by province (errors in parentheses). Each entry represents a distinct regression: (1) focuses on direct equity investment; (2) and (4) classify equity, some mutual funds, and derivatives as risky, with (4) adding commercial real estate; (3) and (5) expand to include all mutual funds, wealth management products, and gold as risky, with (5) also treating commercial real estate as risky. The risky share is defined as the proportion of risky assets (varying by definition for each entry as previously described) in total financial wealth. I compare the coefficients of 3 different proxies of female bargaining power: relative actual income, relative earning potential and relative human capital.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

B: Robustness Checks

Province x Wave FE

Tables A.13, A.14, A.15 and A.16 present the regression results when employing "province x wave" as fixed effect, closely resembling the outcomes in the main text where province and wave are included as separate fixed effects.

Female Bargaining Power > 0.5

Tables A.17 and A.18 exhibit regression results for households where female bargaining power exceeds 0.5, showing larger absolute values of coefficients and more pronounced effect sizes compared to the comprehensive household data in the main text.

Female Bargaining Power < 0.5

Tables A.19 and A.20 detail regression results for households with female bargaining power less than 0.5, where many of the main coefficients are no longer statistically significant.

Female Household Head

Tables A.21 and A.22 display the regression results for households with female heads, which do not significantly differ from the overall household data presented in the main text, contrary to expectations that changes in female bargaining power in these households would more distinctly influence the household's investment portfolio.

C: Income Process

I estimate the following income process using the six waves[43] of China Family Panel Study (CFPS) data.

Before retirement, investor i's age t labor income, Y_{it}, is exogenously given by:

$$log(Y_{it}) = f(t, Z_{it}) + v_{it} + \epsilon_{it}$$

where $f(t, Z_{it})$ is a deterministic function of age (third polynomial of age) and of a vector of other individual characteristics Z_{it} (marital status, employment status and family size). ϵ_{it} is an idiosyncratic temporary shock distributed as $N(0, \delta_{\epsilon}^2)$. And v_{it} is

[43]six waves:2010, 2012, 2014, 2016, 2018, 2020.

given by

$$v_{it} = v_{i,t-1} + u_{it}$$

, where u_{it} is distributed as $N(0, \delta_u^2)$ and is uncorrelated with ϵ_{it}. Thus before retirement, log income is the sum of a deterministic component that can be calibrated to capture the hump shape of earnings over the life-cycle, and two random components, one transitory and one persistent.

The process for v_{it} is taken to be a random walk. I assume that the temporary shock ϵ_{it} is uncorrelated across households, but I decompose the permanent shock u_{it} into an aggregate component ξ_t (distributed as $N(0, \delta_\xi^2)$ and an idiosyncratic component $\omega_i t$ (distributed as $N(0, \delta_\omega^2)$).

$$u_{it} = \xi_t + \omega_{it}$$

This decomposition implies that the random component of aggregate labor income follows a random walk. At the same time, empirical time series for individual labor income exhibit less persistence and this is achieved by adding the idiosyncratic transitory shock ϵ_{it} .

The variance decomposition follows closely after the variance decomposition by Carroll and Samwick (1997). And I use a similar method to estimate the beta of human capital–correlation between labor income shocks and market excess market return[44], ρ, the decomposition results are shown in the A.24. Aligned with Calvet and Sodini (2014) and other previous researches, since it's decomposed by running regressions, the permanent shocks can be negative in average, and transitory shocks are positive, and the estimated value are similar to those in America and Sweden. However, the correlation of risky asset excess returns and labor income shocks are higher than those estimated in Cocco et al. (2005)

The mean market return[45] in China is 10.07% with a standard deviation of 0.47 (1994/01-2019/03). The high mean return and high standard deviation are consistent with the findings in Fang et al. (2015). The mean return of three month treasury-bill in China is 1.75% (1994/01-2019/03).

Retirement income (after retirement age K-for China, male is 60 and female is 50/55, here I choose 50 as retirement age for women) is modeled as a constant fraction λ(replacement ratio) of permanent labor income in the last working-year:

$$log(Y_{it}) = log(\lambda) + f(t, Z_{iK}) + v_{it} + \epsilon_{it}$$

[44]Captured by beta of household's income innovation with respect to the market access return. Income innovation is the difference between labor income growth and its fitted value by income process.

[45]Captured by the average return of Shanghai Stock Exchange Composite Index.

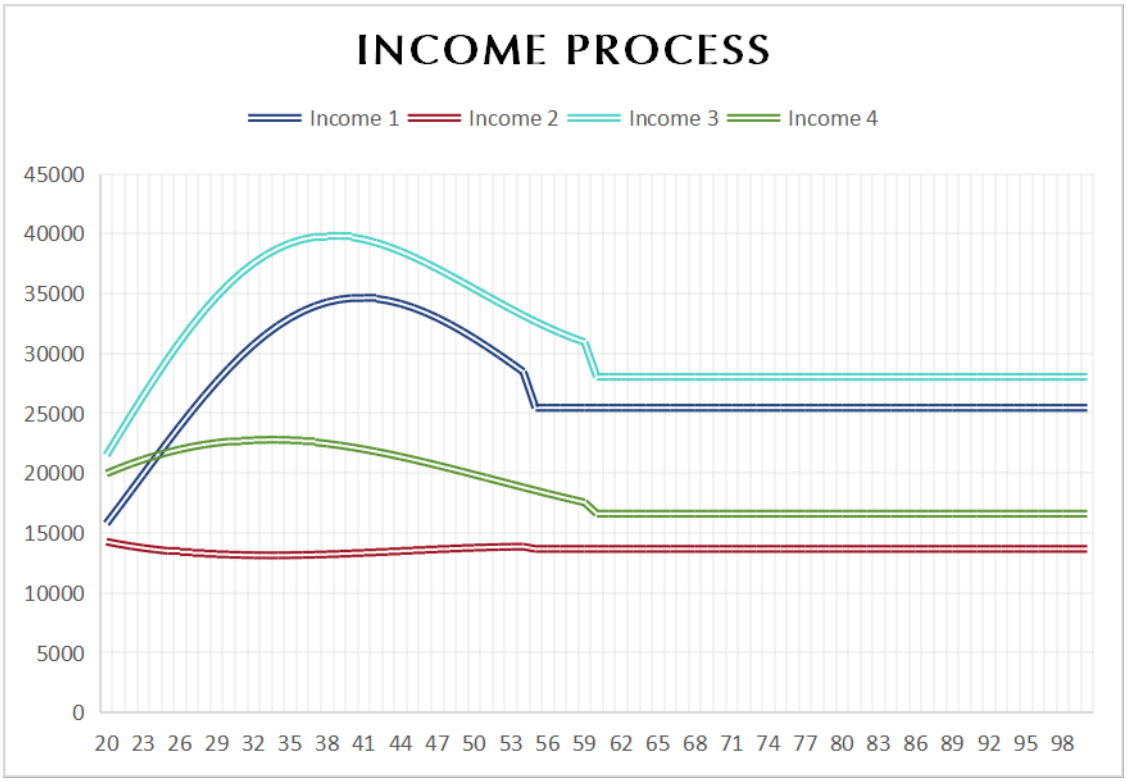


Figure 4: Pridicted Income Process over the Life Cycle of 4 different groups

*Notes:*In this graph, Income 1 curve represents the estimated income of men with high school education and above, Income 2 curve represents the estimated income of women with high school education and above, Income 3 curve represents the estimated income of men with less than high school education, and Income 4 curve represents the estimated income of women with less than high school education.

Assuming that all the personal characteristics apart from age will not change in the future and that women retire age 50 and men retire at age 60, for each education*gender group, the labor income at age $a+t$ of an individual at age a can be calculated using the income process as follows:

$$Y_{i,a+t} = Y_{i,a} \times \frac{\exp(f(t+a, Z_{it}))}{\exp(f(a, Z_{it}))} (not\ retired, a+t < K)$$

$$Y_{i,a+t} = Y_{i,a} \times \lambda \frac{\exp(f(K, Z_{it}))}{\exp(f(a, Z_{it}))} (retired, a+t \geq K)$$

where $Y_{i,a+t}$ is the individual labor income and λ is the average replacement ratio of households i.e. the ratio of retirement income to the labor income just before retirement.

With the exception of the group of women without a high school diploma, our estimated income process curves are hump-shaped, and in 7 I can clearly see the gender earnings gap over the life cycle.

Notice that it is often important to control a variable called

	Female High school	Female No high school	Male High school	Male No high school
Age	0.219***	-0.0595*	0.234***	0.0750**
	(8.690)	(-2.520)	(10.621)	(3.218)
Age^2	-0.00397***	0.00145**	-0.00486***	-0.00162**
	(-6.931)	(2.834)	(-10.110)	(-3.225)
Age^3	0.0000211***	-0.0000111**	0.0000314***	0.00000988**
	(5.226)	(-3.234)	(9.426)	(2.845)
Marital Status	-0.0717*	0.0828	0.0677*	0.170***
	(-2.245)	(1.826)	(2.132)	(4.379)
Employment	0.279***	0.285***	0.479***	0.367***
	(4.409)	(5.214)	(6.172)	(6.983)
Family Size	-0.0450***	-0.0288***	-0.0458***	-0.0319***
	(-5.772)	(-3.888)	(-7.820)	(-5.500)
Constant	6.577***	10.07***	6.631***	8.705***
	(20.307)	(31.809)	(21.748)	(25.592)
Replac.ratio(M60,F50)	0.9262539	0.9878516	0.9062646	0.9464829
Replac.ratio(M60,F55)	0.894347	0.9862375	0.9062646	0.9464829
N	8103	6307	9814	8824

Notes: This table presents the determinant components of the income process across four demographic groups.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
t statistics in parentheses

Table A.23: Labor income process: coefficients and replacement ratios

	Female High school	Female No high school	Male High school	Male No high school
δ_u^2	-.0730568	-.0540961	.0128182	-.0411904
δ_ϵ^2	0.5127705	0.5012255	0.40220685	0.4167964
ρ	.2773812	.2349083	.365514	.2535146

Notes: This table shows the income shocks variance decomposition results for 4 demographic groups. In this table, δ_u^2 represents the permanent income shock, δ_ϵ^2 represents the transitory income shock and ρ represents the beta of human capital.

Table A.24: Variance decomposition and correlation with stock returns

D: Industry Classifications of the 2019 CHFS Survey

The following table A.25 demonstrates the industry gender ratios based on the industry classification of the 2019 CHFS (there are 12 major industries after deleting "Agriculture, Forestry, Livestock and Fisheries"). The gender ratios are calculated based on the 2015 CHFS data, which were utilized for the weight computation in the shift/share instrumental variable (IV) analysis.

Table A.26 selects Shanghai and Sichuan as representative provinces to compare the proportion of women in various industries within these regions, as recorded in the 2015 China Household Finance Survey (CHFS) data. Notable differences in the female ratio, particularly in industries such as construction and real estate, can be observed between the two provinces.

Industry Group	**Male Ratio (%)**	**Female Ratio (%)**
Mining and manufacture	62.37	37.63
Construction	88.68	11.32
Production and supply of electricity, gas, and water	83.67	16.33
Wholesale and retail	36.65	63.35
Transportation, storage, and postal service	82.67	17.33
Hotel and catering	43.88	56.12
Information transmission, computers, and software industry	63.97	36.03
Finance	48.87	51.13
Real estate	62.75	37.25
Scientific research, education, culture and health	38.73	61.27
Residential and other service industry	52.18	47.82
Public administration, social welfare and social organization	61.91	38.09

Table A.25: Industry Classification: with 2015 Wave Industry Gender Ratios

E: List of Complete Main Regression Tables

In this section, I present the main regression results from the text that include regression coefficients for all household-level control variables. Tables A.27 and A.28 display the regression results using relative actual income as a proxy variable for female bargaining power. Similarly, Tables A.29 and A.30 utilize relative actual income to represent female bargaining power. Tables A.31 and A.32 use relative human capital as the proxy variable for female bargaining power. Tables A.33 and A.34 exhibit the regression results employing a shift/share instrumental variable (IV).

Industry Group	**Female Ratio in Shanghai (%)**	**Female Ratio in Sichuan (%)**
Mining and manufacture	35.61	41.11
Construction	30.56	12.69
Production and supply of electricity, gas, and water	13.04	28
Wholesale and retail	68.06	72.22
Transportation, storage, and postal service	26.76	32.43
Hotel and catering	61.90	52.27
Information transmission, computers, and software industry	46.34	38.71
Finance	42.86	46.15
Real estate	43.75	28
Scientific research, education, culture and health	68.04	59.34
Residential and other service industry	56.82	43.36
Public administration, social welfare and social organization	46.67	32.05

Table A.26: 2015 Gender Ratios by Industry in Shanghai and Sichuan Province

Table A.27: The Effect of Bargaining Power (by Actual Income) on Risky Asset Participation

	(1) Equity	(2) Risk	(3) Broad Risk	(4) Adjusted Risk	(5) Adjusted Broad Risk
bp-actual income	0.0266***	0.0310***	0.0475***	0.0245***	0.0391***
	(0.00423)	(0.00465)	(0.00585)	(0.00513)	(0.00605)
lfasset	0.0248***	0.0313***	0.0518***	0.0235***	0.0426***
	(0.000462)	(0.000513)	(0.000641)	(0.000579)	(0.000681)
lnrre	0.00309***	0.00277***	0.00362***	0.00204***	0.00130*
	(0.000791)	(0.000866)	(0.000975)	(0.000632)	(0.000756)
lncre	0.00161***	0.00184***	0.00301***	0.0585***	0.0483***
	(0.000581)	(0.000621)	(0.000697)	(0.000397)	(0.000489)
lnconsump	0.0237***	0.0326***	0.0543***	0.0331***	0.0508***
	(0.00216)	(0.00237)	(0.00288)	(0.00257)	(0.00296)
famsize	0.00135***	0.00131***	0.00425***	0.00264***	0.00478***
	(0.000310)	(0.000340)	(0.000452)	(0.000369)	(0.000458)
edugroup	0.0334***	0.0550***	0.0550***	0.0522***	0.0525***
	(0.00669)	(0.00729)	(0.00848)	(0.00785)	(0.00875)
age	0.0183***	0.0131***	-0.0163***	0.00761*	-0.0177***
	(0.00312)	(0.00357)	(0.00463)	(0.00399)	(0.00475)
age2	-0.000249***	-0.000140**	0.000304***	-0.0000687	0.000324***
	(0.0000582)	(0.0000667)	(0.0000861)	(0.0000740)	(0.0000883)
age3	0.00000110***	0.000000432	-0.00000171***	0.000000144	-0.00000180***
	(0.000000341)	(0.000000391)	(0.000000504)	(0.000000431)	(0.000000516)
college	0.0604***	0.0762***	0.107***	0.0771***	0.0958***
	(0.00575)	(0.00616)	(0.00675)	(0.00650)	(0.00684)
bchild_num	-0.00867***	-0.0108***	-0.0193***	-0.00509**	-0.0104***
	(0.00201)	(0.00223)	(0.00291)	(0.00253)	(0.00303)
business	-0.0187***	-0.0140*	-0.0291***	0.0170**	0.00764
	(0.00706)	(0.00794)	(0.00963)	(0.00858)	(0.00979)
retirement	0.0173***	0.0169***	0.0249***	0.0226***	0.0289***
	(0.00485)	(0.00536)	(0.00652)	(0.00580)	(0.00671)
homeownership	-0.0294***	-0.0233**	-0.0392***	0.00541	0.00860
	(0.0103)	(0.0114)	(0.0130)	(0.00827)	(0.0101)
lhc1	0.0568***	0.0651***	0.105***	0.0852***	0.120***
	(0.00605)	(0.00665)	(0.00821)	(0.00719)	(0.00848)
lincome	0.00777***	0.00946***	0.0121***	0.0135***	0.0154***
	(0.00132)	(0.00147)	(0.00190)	(0.00166)	(0.00197)
fleverage	-0.00000154	-0.00000703	0.0000395	0.000777***	0.000743***
	(0.0000141)	(0.0000181)	(0.0000484)	(0.000174)	(0.000168)
rho	-0.147**	-0.276***	-0.276***	-0.242***	-0.261***
	(0.0593)	(0.0642)	(0.0722)	(0.0685)	(0.0741)
Province FE	YES	YES	YES	YES	YES
Wave FE	YES	YES	YES	YES	YES
Observations	44636	44636	44636	44636	44636
R^2	0.159	0.195	0.285	0.350	0.340

Notes: I've controlled for all observable characteristics, including province and wave fixed effects, with standard errors clustered by province (errors in parentheses). Each entry represents a distinct regression: (1) focuses on direct equity investment; (2) and (4) classify equity, some mutual funds, and derivatives as risky, with (4) adding commercial real estate; (3) and (5) expand to include all mutual funds, wealth management products, and gold as risky, with (5) also treating commercial real estate as risky. Participation variables are binary, indicating whether a household has invested in specified risky assets (=1) or not (=0). Female bargaining power is now defined as the actual income share of the female in a couple.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A.28: The Effect of Bargaining Power (by Actual Income) on Risky Share

	(1) Equity	(2) Risk	(3) Broad Risk	(4) Adjusted Risk	(5) Adjusted Broad Risk
bp-actual income	0.0164	0.0269**	0.0251**	0.0219	-0.000367
	(0.0145)	(0.0131)	(0.0106)	(0.0469)	(0.0289)
lfasset	-0.0343***	-0.0356***	0.0160***	-0.0511***	-0.0302***
	(0.00374)	(0.00328)	(0.00224)	(0.00404)	(0.00238)
lnrre	0.00169	0.000538	0.00204	0.00977***	0.0106***
	(0.00181)	(0.00168)	(0.00142)	(0.00265)	(0.00210)
lncre	0.000133	0.00106	0.00115	0.0102***	0.0213***
	(0.00114)	(0.00104)	(0.000873)	(0.00228)	(0.00145)
lnconsump	0.0155**	0.0213***	0.000808	0.0509*	0.0273*
	(0.00645)	(0.00579)	(0.00482)	(0.0266)	(0.0152)
famsize	-0.000815	-0.00153	-0.00183**	0.00242	-0.000351
	(0.00114)	(0.00105)	(0.000810)	(0.00350)	(0.00186)
edugroup	0.00477	0.0109	0.0559***	-0.189**	-0.0495
	(0.0163)	(0.0149)	(0.0121)	(0.0940)	(0.0511)
age	0.0392***	0.0279***	0.0147*	0.0767	0.0585**
	(0.0111)	(0.0105)	(0.00759)	(0.0500)	(0.0272)
age2	-0.000607***	-0.000417**	-0.000208	-0.00155	-0.00107*
	(0.000216)	(0.000205)	(0.000149)	(0.000999)	(0.000546)
age3	0.00000310**	0.00000207*	0.00000112	0.00000935	0.00000615*
	(0.00000132)	(0.00000125)	(0.000000911)	(0.00000598)	(0.00000326)
college	0.00760	0.0199**	0.0377***	0.104*	0.107***
	(0.00922)	(0.00844)	(0.00721)	(0.0540)	(0.0332)
bchild_num	0.00703	0.00643	-0.00496	0.0232	0.00980
	(0.00754)	(0.00685)	(0.00527)	(0.0329)	(0.0196)
business	-0.0202	-0.0419**	-0.0121	-0.0924***	-0.0194
	(0.0190)	(0.0168)	(0.0140)	(0.0347)	(0.0235)
retirement	0.00785	0.00961	0.0381***	-0.0389	0.0132
	(0.0161)	(0.0146)	(0.0121)	(0.0405)	(0.0258)
homeownership	-0.0406	-0.0157	-0.0288	-0.0428	-0.0547
	(0.0262)	(0.0243)	(0.0203)	(0.0557)	(0.0340)
lhc1	0.0111	-0.00334	0.00913	0.0154	0.00860
	(0.0198)	(0.0186)	(0.0148)	(0.0917)	(0.0473)
lincome	-0.00928	-0.00405	0.0167***	0.0320	0.0456**
	(0.00612)	(0.00554)	(0.00439)	(0.0293)	(0.0186)
fleverage	0.00199	0.00281**	0.000199***	-0.0000883**	0.000148***
	(0.00210)	(0.00121)	(0.0000185)	(0.0000395)	(0.0000461)
rho	0.160	0.136	-0.229***	0.754	0.264
	(0.109)	(0.0997)	(0.0856)	(0.503)	(0.290)
Province FE	YES	YES	YES	YES	YES
Wave FE	YES	YES	YES	YES	YES
Observations	4597	5928	11232	9438	14025
R^2	0.0561	0.0563	0.0688	0.0220	0.0225

Notes: I've controlled for all observable characteristics, including province and wave fixed effects, with standard errors clustered by province (errors in parentheses). Each entry represents a distinct regression: (1) focuses on direct equity investment; (2) and (4) classify equity, some mutual funds, and derivatives as risky, with (4) adding commercial real estate; (3) and (5) expand to include all mutual funds, wealth management products, and gold as risky, with (5) also treating commercial real estate as risky. The risky share is defined as the proportion of risky assets (varying by definition for each entry as previously described) in total financial wealth. Female bargaining power is now defined as the actual income share of the female in a couple.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A.29: The Effect of Bargaining Power (by Earning Potential) on Risky Asset Participation

	(1) Equity	(2) Risk	(3) Broad Risk	(4) Adjusted Risk	(5) Adjusted Broad Risk
bp-earning potential	0.0338***	0.0338***	0.0550***	0.0352***	0.0546***
	(0.00568)	(0.00640)	(0.00817)	(0.00716)	(0.00850)
lfasset	0.0238***	0.0298***	0.0498***	0.0227***	0.0408***
	(0.000411)	(0.000456)	(0.000571)	(0.000512)	(0.000602)
lnrre	0.00352***	0.00322***	0.00438***	0.00236***	0.00175***
	(0.000670)	(0.000735)	(0.000856)	(0.000548)	(0.000651)
lncre	0.00120**	0.00124**	0.00287***	0.0600***	0.0500***
	(0.000487)	(0.000522)	(0.000610)	(0.000349)	(0.000425)
lnconsump	0.0232***	0.0324***	0.0548***	0.0339***	0.0512***
	(0.00182)	(0.00200)	(0.00248)	(0.00219)	(0.00254)
famsize	0.00103***	0.00107***	0.00359***	0.00254***	0.00432***
	(0.000265)	(0.000292)	(0.000398)	(0.000322)	(0.000403)
edugroup	0.0384***	0.0600***	0.0665***	0.0547***	0.0607***
	(0.00623)	(0.00679)	(0.00799)	(0.00735)	(0.00822)
age	0.0140***	0.0102***	-0.0160***	0.00771**	-0.0161***
	(0.00267)	(0.00305)	(0.00410)	(0.00346)	(0.00422)
age2	-0.000178***	-0.0000960*	0.000301***	-0.0000813	0.000290***
	(0.0000497)	(0.0000568)	(0.0000762)	(0.0000640)	(0.0000782)
age3	0.000000736**	0.000000234	-0.00000170***	0.000000285	-0.00000159***
	(0.000000292)	(0.000000334)	(0.000000447)	(0.000000373)	(0.000000458)
college	0.0642***	0.0819***	0.115***	0.0833***	0.105***
	(0.00551)	(0.00589)	(0.00645)	(0.00621)	(0.00653)
bchild_num	-0.00700***	-0.00956***	-0.0189***	-0.00634***	-0.0119***
	(0.00173)	(0.00192)	(0.00255)	(0.00219)	(0.00264)
business	-0.0219***	-0.0253***	-0.0326***	-0.00115	-0.00798
	(0.00394)	(0.00434)	(0.00565)	(0.00483)	(0.00574)
retirement	0.00830**	0.0101**	0.00723	0.0176***	0.0155***
	(0.00390)	(0.00430)	(0.00535)	(0.00465)	(0.00547)
homeownership	-0.0336***	-0.0276***	-0.0461***	0.00334	0.00602
	(0.00872)	(0.00961)	(0.0114)	(0.00717)	(0.00873)
lhc1	0.0518***	0.0605***	0.0909***	0.0850***	0.112***
	(0.00496)	(0.00547)	(0.00689)	(0.00604)	(0.00715)
lnep	0.00279***	0.00263***	0.00364***	0.00186**	0.00281***
	(0.000559)	(0.000634)	(0.000814)	(0.000728)	(0.000858)
fleverage	0.00000363	0.00000232	0.0000163	0.000319***	0.000313***
	(0.00000397)	(0.00000501)	(0.0000139)	(0.0000820)	(0.0000784)
rho	-0.138**	-0.264***	-0.283***	-0.233***	-0.272***
	(0.0564)	(0.0611)	(0.0693)	(0.0654)	(0.0710)
Province FE	YES	YES	YES	YES	YES
Wave FE	YES	YES	YES	YES	YES
Observations	52269	52269	52269	52269	52269
R2	0.154	0.189	0.274	0.374	0.347

Notes: I've controlled for all observable characteristics, including province and wave fixed effects, with standard errors clustered by province (errors in parentheses). Each entry represents a distinct regression: (1) focuses on direct equity investment; (2) and (4) classify equity, some mutual funds, and derivatives as risky, with (4) adding commercial real estate; (3) and (5) expand to include all mutual funds, wealth management products, and gold as risky, with (5) also treating commercial real estate as risky. Participation variables are binary, indicating whether a household has invested in specified risky assets (=1) or not (=0). Female bargaining power is now defined as the earning potential share of the female in a couple.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A.30: The Effect of Bargaining Power (by Earning Potential) on Risky Share

	(1) Equity	(2) Risk	(3) Broad Risk	(4) Adjusted Risk	(5) Adjusted Broad Risk
bp-earning potential	-0.00513	0.0228*	0.0114	-0.0996	-0.0640
	(0.0207)	(0.0188)	(0.0150)	(0.0784)	(0.0491)
lfasset	-0.0336***	-0.0343***	0.0148***	-0.0473***	-0.0287***
	(0.00343)	(0.00301)	(0.00208)	(0.00428)	(0.00266)
lnrre	0.00184	0.000334	0.00216*	0.00979***	0.0107***
	(0.00167)	(0.00157)	(0.00130)	(0.00233)	(0.00184)
lncre	0.000558	0.00113	0.000637	0.00880***	0.0206***
	(0.00105)	(0.000980)	(0.000788)	(0.00218)	(0.00131)
lnconsump	0.0131**	0.0182***	0.00533	0.0639***	0.0426***
	(0.00586)	(0.00530)	(0.00440)	(0.0216)	(0.0129)
famsize	-0.00148	-0.00195**	-0.00142*	0.00326	0.00131
	(0.00104)	(0.000962)	(0.000734)	(0.00248)	(0.00130)
edugroup	0.0115	0.0122	0.0566***	-0.161**	-0.0461
	(0.0155)	(0.0141)	(0.0114)	(0.0743)	(0.0414)
age	0.0365***	0.0274***	0.0153**	0.0593	0.0570**
	(0.0104)	(0.00993)	(0.00716)	(0.0452)	(0.0249)
age2	-0.000572***	-0.000413**	-0.000222	-0.00123	-0.00107**
	(0.000203)	(0.000194)	(0.000141)	(0.000894)	(0.000495)
age3	0.00000291**	0.00000203*	0.00000123	0.00000759	0.00000634**
	(0.00000124)	(0.00000119)	(0.000000861)	(0.00000538)	(0.00000297)
college	0.00583	0.0184**	0.0422***	0.0993**	0.112***
	(0.00857)	(0.00787)	(0.00678)	(0.0484)	(0.0305)
bchild_num	0.00854	0.00740	-0.00343	0.0202	0.00751
	(0.00681)	(0.00616)	(0.00472)	(0.0276)	(0.0170)
business	-0.0143	-0.0253**	-0.0335***	-0.0873**	-0.0382*
	(0.0118)	(0.0108)	(0.00860)	(0.0340)	(0.0223)
retirement	0.00623	0.00575	0.0441***	-0.0408	0.0315
	(0.0148)	(0.0135)	(0.0112)	(0.0357)	(0.0228)
homeownership	-0.0428*	-0.0136	-0.0309*	-0.0547	-0.0624**
	(0.0242)	(0.0228)	(0.0187)	(0.0499)	(0.0296)
lhc1	-0.00212	-0.0137	0.0214	0.0347	0.0506
	(0.0176)	(0.0166)	(0.0130)	(0.0625)	(0.0318)
lnep	-0.00505**	-0.00174	-0.000926	-0.00406	-0.00471
	(0.00236)	(0.00205)	(0.00152)	(0.00500)	(0.00324)
fleverage	0.00122	0.00247**	0.000198***	-0.0000555***	0.0000357*
	(0.00213)	(0.00116)	(0.0000178)	(0.0000150)	(0.0000212)
rho	0.110	0.109	-0.251***	0.584	0.198
	(0.105)	(0.0958)	(0.0823)	(0.423)	(0.246)
Province FE	YES	YES	YES	YES	YES
Wave FE	YES	YES	YES	YES	YES
Observations	5071	6530	12629	11156	16333
R2	0.0539	0.0556	0.0662	0.0223	0.0239

Notes: I've controlled for all observable characteristics, including province and wave fixed effects, with standard errors clustered by province (errors in parentheses). Each entry represents a distinct regression: (1) focuses on direct equity investment; (2) and (4) classify equity, some mutual funds, and derivatives as risky, with (4) adding commercial real estate; (3) and (5) expand to include all mutual funds, wealth management products, and gold as risky, with (5) also treating commercial real estate as risky. The risky share is defined as the proportion of risky assets (varying by definition for each entry as previously described) in total financial wealth. Female bargaining power is now defined as the earning potential share of the female in a couple.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A.31: The Effect of Bargaining Power (by Human Capital) on Risky Asset Participation

	(1) Equity	(2) Risk	(3) Broad Risk	(4) Adjusted Risk	(5) Adjusted Broad Risk
bp-human capital	0.100***	0.113***	0.182***	0.113***	0.181***
	(0.00955)	(0.0105)	(0.0130)	(0.0116)	(0.0135)
lfasset	0.0237***	0.0297***	0.0496***	0.0225***	0.0406***
	(0.000409)	(0.000454)	(0.000568)	(0.000509)	(0.000599)
lnrre	0.00338***	0.00304***	0.00418***	0.00226***	0.00157**
	(0.000670)	(0.000735)	(0.000854)	(0.000546)	(0.000650)
lncre	0.00120**	0.00124**	0.00285***	0.0600***	0.0500***
	(0.000486)	(0.000521)	(0.000609)	(0.000348)	(0.000424)
lnconsump	0.0231***	0.0321***	0.0544***	0.0337***	0.0510***
	(0.00181)	(0.00199)	(0.00246)	(0.00218)	(0.00252)
famsize	0.00112***	0.00120***	0.00384***	0.00268***	0.00456***
	(0.000263)	(0.000290)	(0.000396)	(0.000320)	(0.000401)
edugroup	0.0283***	0.0473***	0.0457***	0.0424***	0.0403***
	(0.00646)	(0.00700)	(0.00820)	(0.00756)	(0.00842)
age	0.0139***	0.00995***	-0.0161***	0.00762**	-0.0161***
	(0.00265)	(0.00303)	(0.00408)	(0.00344)	(0.00419)
age2	-0.000174***	-0.0000901	0.000305***	-0.0000784	0.000293***
	(0.0000494)	(0.0000565)	(0.0000758)	(0.0000637)	(0.0000778)
age3	0.000000705**	0.000000192	-0.00000174***	0.000000258	-0.00000162***
	(0.000000290)	(0.000000332)	(0.000000444)	(0.000000371)	(0.000000455)
college	0.0621***	0.0794***	0.111***	0.0805***	0.100***
	(0.00551)	(0.00589)	(0.00644)	(0.00622)	(0.00653)
bchild_num	-0.00637***	-0.00878***	-0.0180***	-0.00585***	-0.0112***
	(0.00172)	(0.00191)	(0.00253)	(0.00218)	(0.00263)
business	-0.0212***	-0.0243***	-0.0317***	-0.000140	-0.00686
	(0.00390)	(0.00431)	(0.00561)	(0.00480)	(0.00570)
retirement	0.00634	0.00801*	0.00343	0.0153***	0.0115**
	(0.00387)	(0.00427)	(0.00531)	(0.00463)	(0.00544)
homeownership	-0.0318***	-0.0252***	-0.0436***	0.00471	0.00833
	(0.00872)	(0.00961)	(0.0113)	(0.00714)	(0.00870)
lhc1	0.0556***	0.0656***	0.0995***	0.0898***	0.120***
	(0.00496)	(0.00545)	(0.00686)	(0.00603)	(0.00712)
fleverage	0.00000378	0.00000250	0.0000166	0.000321***	0.000315***
	(0.00000405)	(0.00000512)	(0.0000141)	(0.0000823)	(0.0000785)
rho	-0.0452	-0.152**	-0.0989	-0.123*	-0.0882
	(0.0587)	(0.0633)	(0.0714)	(0.0677)	(0.0731)
Province FE	YES	YES	YES	YES	YES
Wave FE	YES	YES	YES	YES	YES
Observations	52654	52654	52654	52654	52654
R2	0.155	0.190	0.276	0.375	0.349

Notes: I've controlled for all observable characteristics, including province and wave fixed effects, with standard errors clustered by province (errors in parentheses). Each entry represents a distinct regression: (1) focuses on direct equity investment; (2) and (4) classify equity, some mutual funds, and derivatives as risky, with (4) adding commercial real estate; (3) and (5) expand to include all mutual funds, wealth management products, and gold as risky, with (5) also treating commercial real estate as risky. Participation variables are binary, indicating whether a household has invested in specified risky assets (=1) or not (=0). Female bargaining power is now defined as the human capital share of the female in a couple.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A.32: The Effect of Bargaining Power (by Human Capital) on Risky Share

	(1) Equity	(2) Risk	(3) Broad Risk	(4) Adjusted Risk	(5) Adjusted Broad Risk
bp-human capital	0.0140	0.0140	0.0488**	-0.0739	-0.0276
	(0.0330)	(0.0330)	(0.0239)	(0.128)	(0.0596)
lfasset	-0.0333***	-0.0333***	0.0148***	-0.0468***	-0.0287***
	(0.00343)	(0.00343)	(0.00207)	(0.00427)	(0.00263)
lnrre	0.00181	0.00181	0.00212	0.00975***	0.0106***
	(0.00166)	(0.00166)	(0.00130)	(0.00231)	(0.00183)
lncre	0.000421	0.000421	0.000577	0.00886***	0.0207***
	(0.00105)	(0.00105)	(0.000786)	(0.00215)	(0.00130)
lnconsump	0.0129**	0.0129**	0.00538	0.0638***	0.0424***
	(0.00586)	(0.00586)	(0.00439)	(0.0215)	(0.0129)
famsize	-0.00142	-0.00142	-0.00142*	0.00340	0.00141
	(0.00104)	(0.00104)	(0.000728)	(0.00243)	(0.00130)
edugroup	0.00804	0.00804	0.0533***	-0.168**	-0.0530
	(0.0154)	(0.0154)	(0.0114)	(0.0752)	(0.0437)
age	0.0355***	0.0355***	0.0146**	0.0596	0.0572**
	(0.0104)	(0.0104)	(0.00712)	(0.0441)	(0.0242)
age2	-0.000547***	-0.000547***	-0.000205	-0.00124	-0.00107**
	(0.000203)	(0.000203)	(0.000140)	(0.000877)	(0.000485)
age3	0.00000274**	0.00000274**	0.00000111	0.00000770	0.00000639**
	(0.00000124)	(0.00000124)	(0.000000857)	(0.00000532)	(0.00000293)
college	0.00522	0.00522	0.0418***	0.0964**	0.110***
	(0.00856)	(0.00856)	(0.00677)	(0.0471)	(0.0298)
bchild_num	0.00875	0.00875	-0.00286	0.0183	0.00671
	(0.00680)	(0.00680)	(0.00471)	(0.0276)	(0.0170)
business	-0.0149	-0.0149	-0.0326***	-0.0914***	-0.0390*
	(0.0118)	(0.0118)	(0.00858)	(0.0344)	(0.0222)
retirement	0.00345	0.00345	0.0413***	-0.0400	0.0319
	(0.0148)	(0.0148)	(0.0112)	(0.0366)	(0.0230)
homeownership	-0.0419*	-0.0419*	-0.0301	-0.0581	-0.0640**
	(0.0241)	(0.0241)	(0.0186)	(0.0497)	(0.0296)
lhc1	-0.00209	-0.00209	0.0216*	0.0361	0.0517
	(0.0173)	(0.0173)	(0.0129)	(0.0608)	(0.0318)
fleverage	0.00110	0.00110	0.000199***	-0.0000553***	0.0000364*
	(0.00212)	(0.00212)	(0.0000177)	(0.0000152)	(0.0000212)
rho	0.133	0.133	-0.217***	0.619	0.245
	(0.106)	(0.106)	(0.0834)	(0.452)	(0.266)
Province FE	YES	YES	YES	YES	YES
Wave FE	YES	YES	YES	YES	YES
Observations	5084	5084	12673	11212	16410
R2	0.0525	0.0525	0.0669	0.0222	0.0238

Notes: I've controlled for all observable characteristics, including province and wave fixed effects, with standard errors clustered by province (errors in parentheses). Each entry represents a distinct regression: (1) focuses on direct equity investment; (2) and (4) classify equity, some mutual funds, and derivatives as risky, with (4) adding commercial real estate; (3) and (5) expand to include all mutual funds, wealth management products, and gold as risky, with (5) also treating commercial real estate as risky. The risky share is defined as the proportion of risky assets (varying by definition for each entry as previously described) in total financial wealth. Female bargaining power is now defined as the actual income share of the female in a couple.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A.33: The Effect of Bargaining Power on Risky Asset Participation (IV)

	(1) Equity	(2) Risk	(3) Broad Risk	(4) Adjusted Risk	(5) Adjusted Broad Risk
bp-earning potential	0.496	1.049**	1.175**	1.661***	0.470
	(0.352)	(0.415)	(0.521)	(0.512)	(0.514)
bp-IV(1st stage)	0.455***	0.455***	0.455***	0.455***	0.455***
	(0.0778)	(0.0778)	(0.0778)	(0.0778)	(0.0778)
F-value(IV 1st stage)	34.22	34.22	34.22	34.22	34.22
lfasset	0.0243***	0.0306***	0.0493***	0.0236***	0.0405***
	(0.000492)	(0.000581)	(0.000710)	(0.000695)	(0.000700)
lnrre	0.00356***	0.00362***	0.00324***	0.00331***	0.00144*
	(0.000773)	(0.000882)	(0.00102)	(0.000794)	(0.000772)
lncre	0.00125**	0.00112*	0.00255***	0.0596***	0.0493***
	(0.000533)	(0.000597)	(0.000675)	(0.000480)	(0.000463)
lnconsump	0.0271***	0.0371***	0.0536***	0.0406***	0.0520***
	(0.00227)	(0.00262)	(0.00320)	(0.00309)	(0.00310)
famsize	0.00524**	0.00884***	-0.00123	0.0141***	0.00383
	(0.00215)	(0.00253)	(0.00317)	(0.00312)	(0.00313)
edugroup	0.0441***	0.0757***	0.0191	0.0859***	0.0290*
	(0.0114)	(0.0135)	(0.0166)	(0.0165)	(0.0161)
age	0.0213***	0.0258***	-0.0371***	0.0333***	-0.0257***
	(0.00633)	(0.00750)	(0.00950)	(0.00922)	(0.00939)
age2	-0.000278***	-0.000330***	0.000671***	-0.000480***	0.000473***
	(0.000107)	(0.000127)	(0.000161)	(0.000156)	(0.000159)
age3	0.00000149**	0.00000193**	-0.00000408***	0.00000312***	-0.00000268**
	(0.000000706)	(0.000000838)	(0.00000106)	(0.00000103)	(0.00000105)
college	0.0658***	0.0846***	0.106***	0.0889***	0.100***
	(0.00607)	(0.00669)	(0.00744)	(0.00740)	(0.00728)
bchild_num	-0.00534***	-0.00703***	-0.0208***	-0.00186	-0.0111***
	(0.00205)	(0.00244)	(0.00313)	(0.00299)	(0.00304)
business	-0.0297***	-0.0372***	-0.0249***	-0.0187**	-0.00514
	(0.00573)	(0.00672)	(0.00852)	(0.00806)	(0.00826)
retirement	0.0115**	0.0157***	0.00875	0.0254***	0.0194***
	(0.00449)	(0.00531)	(0.00642)	(0.00629)	(0.00610)
homeownership	-0.0336***	-0.0327***	-0.0299**	-0.00937	0.0103
	(0.0102)	(0.0118)	(0.0138)	(0.0108)	(0.0106)
lhc1	0.166***	0.273***	-0.0446	0.401***	0.0950
	(0.0582)	(0.0686)	(0.0859)	(0.0846)	(0.0849)
lnep	-0.0757	-0.157***	0.175**	-0.251***	0.0696
	(0.0517)	(0.0611)	(0.0766)	(0.0754)	(0.0756)
fleverage	-0.00000232	-0.00000831	0.0000257	0.000393***	0.000396***
	(0.00000798)	(0.0000118)	(0.0000188)	(0.000111)	(0.0000986)
rho	-0.386**	-0.759***	0.276	-1.033***	-0.0550
	(0.180)	(0.210)	(0.262)	(0.259)	(0.258)
Province FE	YES	YES	YES	YES	YES
Wave FE	YES	YES	YES	YES	YES
Observations	45911	45911	45911	45911	45911
R2	0.121	0.0609	0.183	0.159	0.337

Notes: I've controlled for all observable characteristics, including province and wave fixed effects, with standard errors clustered by province (errors in parentheses). Each entry represents a distinct regression: (1) focuses on direct equity investment; (2) and (4) classify equity, some mutual funds, and derivatives as risky, with (4) adding commercial real estate; (3) and (5) expand to include all mutual funds, wealth management products, and gold as risky, with (5) also treating commercial real estate as risky. Participation variables are binary, indicating whether a household has invested in specified risky assets (=1) or not (=0). Female bargaining power is now defined as the actual income share of the female in a couple. In the IV model, the relative earning potential within the household is instrumented using the prevailing local earnings ratio.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A.34: The Effect of Bargaining Power on Risky Share (IV)

	(1) Equity	(2) Risk	(3) Broad Risk	(4) Adjusted Risk	(5) Adjusted Broad Risk
bp-earning potential	1.048	0.122	1.775**	0.726	1.079
	(0.865)	(0.978)	(0.883)	(2.480)	(1.573)
bp-IV(1st stage)	0.950***	0.705**	0.709***	0.660***	0.673***
	(0.345)	(0.311)	(0.219)	(0.189)	(0.166)
F-value(IV 1st stage)	7.58	5.14	10.47	12.16	16.50
lfasset	-0.0371***	-0.0356***	0.00931**	-0.0468***	-0.0293***
	(0.00440)	(0.00450)	(0.00371)	(0.00509)	(0.00402)
lnrre	0.00116	0.000632	0.00143	0.0107***	0.0108***
	(0.00216)	(0.00200)	(0.00177)	(0.00264)	(0.00211)
lncre	0.000168	0.00134	0.000259	0.00927***	0.0210***
	(0.00133)	(0.00141)	(0.00102)	(0.00238)	(0.00150)
lnconsump	0.0111	0.0188***	0.00565	0.0550**	0.0411***
	(0.00721)	(0.00566)	(0.00556)	(0.0215)	(0.0138)
famsize	-0.00972	-0.00237	-0.0127**	-0.00130	-0.00625
	(0.00686)	(0.00737)	(0.00606)	(0.0173)	(0.0109)
edugroup	0.00521	0.0138	0.0346*	-0.209*	-0.0725
	(0.0223)	(0.0244)	(0.0192)	(0.121)	(0.0582)
age	0.00612	0.0168	-0.0326	0.0391	0.0308
	(0.0260)	(0.0268)	(0.0240)	(0.0737)	(0.0475)
age2	-0.0000205	-0.000198	0.000635	-0.000894	-0.000621
	(0.000476)	(0.000480)	(0.000428)	(0.00135)	(0.000865)
age3	-0.000000799	0.000000675	-0.00000440	0.00000548	0.00000338
	(0.00000315)	(0.00000317)	(0.00000279)	(0.00000858)	(0.00000550)
college	0.0139	0.0184*	0.0450***	0.0986**	0.119***
	(0.0118)	(0.0101)	(0.00856)	(0.0481)	(0.0312)
bchild_num	-0.00177	0.00878	-0.0125	0.0217	0.00306
	(0.0104)	(0.00800)	(0.00824)	(0.0356)	(0.0224)
business	-0.00206	-0.0266	-0.00513	-0.0821**	-0.0211
	(0.0169)	(0.0184)	(0.0184)	(0.0347)	(0.0271)
retirement	-0.0176	-0.00955	0.0245	-0.0493	0.0209
	(0.0201)	(0.0189)	(0.0180)	(0.0461)	(0.0333)
homeownership	-0.0296	-0.0202	-0.0174	-0.0481	-0.0551*
	(0.0331)	(0.0320)	(0.0259)	(0.0542)	(0.0325)
lhc1	-0.194	-0.0263	-0.265*	-0.0757	-0.144
	(0.153)	(0.168)	(0.150)	(0.426)	(0.276)
lnep	0.142	0.00429	0.255**	0.0960	0.156
	(0.126)	(0.139)	(0.126)	(0.366)	(0.227)
fleverage	-0.000588	0.000977	0.000118***	-0.0000597**	0.0000596**
	(0.00302)	(0.00118)	(0.0000390)	(0.0000272)	(0.0000241)
rho	0.445	0.128	0.346	0.988	0.643
	(0.312)	(0.350)	(0.315)	(1.012)	(0.554)
Province FE	YES	YES	YES	YES	YES
Wave FE	YES	YES	YES	YES	YES
Observations	4626	5924	11441	9970	14653
R2	-0.145	0.0555	-0.355	0.0177	0.0120

Notes: I've controlled for all observable characteristics, including province and wave fixed effects, with standard errors clustered by province (errors in parentheses). Each entry represents a distinct regression: (1) focuses on direct equity investment; (2) and (4) classify equity, some mutual funds, and derivatives as risky, with (4) adding commercial real estate; (3) and (5) expand to include all mutual funds, wealth management products, and gold as risky, with (5) also treating commercial real estate as risky. The risky share is defined as the proportion of risky assets (varying by definition for each entry as previously described) in total financial wealth.In the IV model, the relative earning potential within the household is instrumented using the prevailing local earnings ratio.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.