Gender Differences in Savings Over the Life-Cycle: The Role of Financial Literacy*

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Abstract

This paper examines gender differences in wealth accumulation through a microfounded model of financial decision-making, and highlights that gender gaps in financial literacy can contribute to gender wealth inequality over the life-cycle. Using data from several US surveys, we show that women are more likely to delegate financial decisions and have lower financial literacy, which however increases after events such as divorce or widowhood, or after shocks to their spouse's health. Moreover, while financial literacy increases women's investment margins more than men's, its impact is stronger for safe assets accumulation and limited for equity holdings, suggesting a role for subjective financial confidence in shaping their investment margins. Our model highlights how marital dynamics influence financial decisions and underscores the importance of targeted policies to improve women's financial literacy, promote independence, and reduce gender wealth disparities over the life-cycle.

1 Introduction

Gender differences in wealth far exceed those in wages. While most estimates of the gender wage gap in advanced economies lie around 20%, the gender wealth gap varies between 40 and 60%. Do marital dynamics play a role in this? In particular, marriage has historically been perceived as an insurance mechanism against financial vulnerability, enabling households to pool

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resources and share risks. However, wealth within married households is often managed by the husband (Fagereng et al. (2022)), which can leave women at a disadvantage in building their own financial skills. This vulnerability is particularly concerning given that one in three marriages ends in divorce, with women's available income on average dropping sharply upon separation from their spouse. On top of this, women's longer life expectancy means they face a higher likelihood of needing to manage finances independently later in life, making the accumulation of both wealth and financial knowledge key for their long-term economic security.

Financial literacy's role in wealth accumulation is well established (Lusardi et al. (2017)), and existing literature documented a persistent gender gap in financial knowledge (Bucher-Koenen et al. (2021)). However, an aspect that has received less attention is how financial literacy evolves over women's life-cycle and interacts with their wealth accumulation patterns. For instance, we know little about whether and how life events such as marriage, divorce, widowhood and shocks to a spouse's health shape the financial capabilities and investment choices of women and men. Do these events affect women's financial literacy and portfolio decisions differently than men's? And, if so, can these differences contribute to the persistence of gender wealth inequality?

In light of these considerations, our paper aims to examine gender differences in wealth accumulation through the life-cycle evolution of agents' financial literacy, and it does so in three steps. First, we provide novel suggestive evidence on existing gender gaps in financial literacy and wealth accumulation over the life-cycle, using data from several surveys. Second, we develop a quantitative model that features endogenous financial literacy acquisition with gender-specific dynamics across marital states, to investigate how life-cycle events shape portfolio decisions and wealth inequality. Finally, we plan to use our framework to analyze potential policies aimed at reducing the gender wealth gap, such as targeted financial education programs, reforms to divorce settlement rules, and interventions to promote women's financial independence.

Our first contribution is to empirically analyze gender differences in *objective* financial literacy over the life-cycle, and their relation to financial confidence, financial decision-making within the household and individual wealth accumulation. To this end, we leverage three US micro-level data sources. First, we exploit the Fed Survey of Consumer Finances (SCF), which combines granular data on wealth with objective and subjective measures of financial knowledge. The SCF allows us to also capture key life-cycle events such as divorce or widowhood to assess their impact on women's financial literacy and wealth accumulation. Second, we use the Survey of Household Economics and Decisionmaking (SHED) which includes questions on financial confidence and involvement in financial decision making in a household. Third, we exploit data from the 1979 and 1997 cohorts of the National Longitudinal Survey of Youth (NLSY) to further investigate the evolution of gender-based disparities in financial literacy over time.

Our empirical analysis reveals four main findings. (1) Women accumulate lower financial literacy than men throughout their life-cycle, and are more likely to delegate financial decision-making to another member of the household. Moreover, married women hold a larger share

of households' checking and savings accounts, which are primarily used for daily expenditures and short-term savings. Being less frequently confronted with investment-related financial responsibilities may explain why women accumulate less financial literacy over the life cycle. (2) Financial literacy is more salient in shaping women's investment strategies than men's. While men and women both benefit from financial literacy, it has a stronger impact on women's likelihood of participating in the stock market, highlighting its role for mitigating gender disparities in investment behaviors. (3) Even conditional on the same level of (objective) financial literacy, women report lower subjective confidence in their financial knowledge and in their investment strategies. (4) Life-cycle events, such as divorce, a spouse's illness, or their decease, are associated with an increase in women's financial knowledge and a shift in their investment behaviors. These events often lead women to take on more financial responsibilities, which in turn may foster their financial independence and literacy, and hence change their portfolio allocations.

To quantify the macroeconomic implications of gender differences in financial literacy for existing wealth inequality, we develop a heterogeneous agents life-cycle model of portfolio choice with endogenous financial literacy. In the model, individuals work, consume, invest in their financial literacy and save in both a risky and a safe asset, while they differ by education, marital status, income, financial literacy, wealth, and health. In addition, the economy is populated by men and women with different initial levels of education and financial literacy, different income processes and survival probabilities. Financial literacy is modeled akin to human capital accumulation: investing in financial knowledge is costly but increases the return savers obtain on the risky asset, directly shaping wealth inequality. In particular, such cost increases for women upon marrying, to capture a higher opportunity cost of managing their finances, and aligning with our empirical findings on the gendered roles in financial decision-making within households.

Moreover, guided by our evidence on gender differences in objective and subjective financial knowledge, we introduce a confidence wedge: conditional on the same financial literacy, women's perceive the return on the risky asset – and thus the benefit of investing in financial literacy – as lower than men's. All together, our model is novel in carefully integrating the gender-specific evolution of financial literacy over the life-cycle, which interacts dynamically with marital transitions. This allows us to highlight how financial literacy can endogenously mediate agents' savings behaviors and explain gender differences in wealth, therefore disentangling its role from the contribution of other gender-based exogenous differences, such as income ones.

As a first exercise, we present qualitative results focusing on single individuals to highlight key mechanisms at play in the model. First, the gender wage gap constrains women's ability to save and invest, reducing their overall wealth accumulation. Second, gender differences in financial confidence disincentivize women from saving in risky assets and investing in their financial literacy, further amplifying gender disparities in wealth. Third, lower initial financial literacy levels delay women's financial knowledge acquisition, compounding wealth inequality over the life cycle. These insights provide a first understanding of the mechanisms driving gender wealth

gaps before introducing marital dynamics into the framework.

As individuals are increasingly responsible for managing their own financial well-being throughout their working lives and retirement, the growing accessibility of saving tools highlights the need for targeted policy responses to mitigate financial vulnerabilities. Our analysis identifies key points in the life cycle—such as marriage, divorce, and widowhood—where gender differences are most dynamic. Our model allows to simulate how gender gaps in financial literacy, whether addressed early in life or through targeted interventions at critical points, shape wealth trajectories over the life cycle. Going forward, we aim to evaluate the most effective policies for reducing gender wealth inequality, comparing approaches that target specific life-cycle events with those that address financial literacy gaps from the outset.[1]

Related Literature. This project contributes to macroeconomic studies on the determinants of wealth accumulation (Cagetti and De Nardi (2008)) by combining two channels. First, it highlights the role of differences in financial literacy in generating wealth inequality through portfolio allocations (Lusardi et al. (2011), Cota and Šterc (2024), Gomez-Cardona (2023)). Second it adds to the research on how marital status and living arrangements influence consumption and portfolio choices (Low et al. (2016), Cubeddu and Ríos-Rull (2003), Bethencourt and Rios-Rull (2009), Bacher (2024)). We take a novel gender-focused approach, contributing to a growing literature on integrating gender dynamics into macroeconomic models (Heathcote et al. (2017)), particularly by modeling the gender-specific life-cycle dynamics of endogenous financial literacy accumulation and its effect on wealth. Our heterogeneous-agent life-cycle model of portfolio allocations in centered on the interplay between initial gender differences and life-cycle events, which exacerbates disparities in financial literacy and, consequently, portfolio choices.

Our paper also contributes to three bodies of applied research. First, different studies have documented gender differences in financial sophistication (Bucher-Koenen et al. (2017), Bottazzi and Lusardi (2021)), distinguishing between the impact of financial knowledge and confidence (Bucher-Koenen et al. (2021)). These differential patterns have been connected to women's lower stock market participation (Almenberg and Dreber (2015), Jha and Shayo (2025)), higher financial risk aversion (Hibbert et al. (2013)), and the gender asset gap (Deere and Doss (2006)). We take a new perspective on this by focusing on gendered responses to life-cycle events such as divorce or widowhood. We show that they are associated with a differential increase in objective and subjective financial knowledge, as well as with shifts in women's investment behavior.

Several studies have explored the impact of gender norms on financial management. Guiso and Zaccaria (2023) examine how gender stereotypes in household financial management can lead to sub-optimal decisions, with consequences on welfare. Fagereng et al. (2022) highlight how assortative mating on personal wealth and returns influences wealth management within

[1] Financial education programs have been shown to be effective. Hibbert et al. (2013) find, for example, that financial education can attenuate women's risk aversion and directly affect their portfolio composition.

households, particularly when one spouse holds the highest potential for wealth growth. Gu et al. (2024) show that gender effects in bargaining power translate into differences in asset allocation. However, there remains a gap in the literature regarding how within-household specialization in financial responsibilities affects the accumulation of financial literacy and confidence over the life-cycle. Our approach is novel in assessing how life-cycle events shape the incentives to acquire financial literacy and how these changes affect women's financial decision-making.

Lastly, our project speaks to a growing empirical literature on gender wealth inequality (Sierminska et al. (2010), Schneebaum et al. (2018), Cordova et al. (2022), Kukk et al. (2020), Ruel and Hauser (2013)), although data limitations with respect to disentangling wealth holding within households make the study of gender gaps in wealth challenging. In the US, the gender wealth gap among never married is close to 60% (McCulloch (2017)), while households led by women have a wealth gap of around 45% relative to those led by men (Hernández Kent and Ricketts R. (2021)). In Germany, Sierminska et al. (2019) highlight both marital dynamics and portfolio composition as drivers of gender wealth inequality. Our approach is novel in proposing gender differences in financial knowledge as a key mechanism to explain wealth inequality by gender.

The paper is organized as follows: Section 2 empirically illustrates the life-cycle evolution of the gender gap in financial literacy, and characterizes how it relates to financial decision-making within the household and shapes wealth accumulation for men and women. In Section 3, we build a heterogeneous agents portfolio choice model that encompasses endogenous financial literacy accumulation across men and women and different marital dynamics. In Section 4, we present preliminary results to illustrate the role of gender and marital status for the dynamics of financial literacy and wealth inequality within our model. Finally, Section 5 concludes.

2 Data

To understand disparities in wealth accumulation by financial literacy, marital status, and gender, the ideal dataset would provide official records of wealth holdings at the individual level, include financial literacy measures, and track both metrics for all agents within households throughout their life. Although data from tax registries may offer precise information on wealth holdings, they are rarely supplemented with individual measures of financial literacy, limiting their scope for this analysis. As a second best, we draw our empirical evidence from the combination of three US surveys on wealth and financial literacy, which we briefly outline below.

First, we use the Survey of Consumer Finances (SCF), an extensive triennial cross-sectional survey of families conducted by the Federal Reserve Board, which is the most detailed self-reported dataset on wealth available for US households, covering liabilities, financial and non-financial assets. We focus on the 2016-2022 waves of the SCF, which also include measures of financial literacy, perceived financial knowledge, and aversion to taking financial risks. Note

that our subsample includes 38,392 working age respondents between 30 and 65 years old.[2]

Second, we incorporate data from the Survey of Household Economics and Decisionmaking (SHED), a rotating panel conducted by the Federal Reserve Board for the years 2017-2022. Our sample comprises 67,260 respondents, including 33,080 women and 34,180 men, and approximately one-third of them are re-interviewed over the years. Importantly, the SHED focuses on the financial well-being of households, covering topics such as savings behaviors and retirement security. Moreover, while both the SCF and the SHED provide measures of objective financial knowledge and subjective willingness to take financial risk – for all singles and for one spouse per couple – the SHED offers additional information on financial independence within couples.

We also exploit data from the 1979 and the 1997 cohorts of the National Longitudinal Survey of Youth (NLSY). Note that NLSY79 and NLSY97 respondents were part of a financial literacy survey in 2012 and 2007 respectively, so at two very different stages of their life-cycle. Moreover, NLSY contains, for both cohorts, the results of attitudinal and competences tests administered to all survey respondents when they were young, often used by the literature as proxy for IQ.

The empirical analysis identifies four key suggestive findings that will lay the foundations of a life-cycle model of portfolio allocation, marital dynamics, and endogenous accumulation of financial literacy. Controlling for an extensive range of socioeconomic characteristics, including individuals' income, education, and age, we establish the following empirical regularities:

1. Women accumulate less financial knowledge than men throughout their life-cycle, and are more likely to delegate financial decision-making to another member of the household.
2. Financial literacy is more salient in shaping women's investment strategies than men's.
3. Even conditional on the same level of (objective) financial literacy, women report lower subjective confidence in their financial knowledge and in their investment strategies.
4. Life-cycle events, such as divorce, a spouse's illness or their decease, are associated with an increase in women's financial knowledge and a shift in their investment behaviors.

The findings highlighted in Fact 1 - Fact 4 round up estimates from all our datasets, and the sections that follow proceed to explain them and our robustness analysis in further detail.

2.1 Financial Literacy and Decision-Making by Gender and Marital Status

Our analysis starts by exploring how financial literacy and financial decision-making vary across respondents of different demographic and socio-economic characteristics. In our datasets, agents' financial literacy score (hereafter: FinLit score) is based on the number of correct answers to *The*

[2]Note that, to accurately characterize respondents' demographics, we adjust for instances where the SCF's recoding of an household's head may lead to misclassify their race or gender, which could otherwise lead to an underrepresentation of female respondents, particularly in attitude-related questions (Lindamood et al., 2007).

Big Three Questions, proposed by (Lusardi and Mitchell, 2014; Lusardi et al., 2017; Lusardi and Mitchell, 2008).[3] Financial literacy is therefore measured objectively, and differs from subjective measures of confidence and risk-taking behaviors, which we will analyze in the next subsections.

We move from the viewpoint that financial literacy is not some innate ability that differs among men and women, but rather a stock of knowledge that accumulates over agents' life-cycle. Supporting this view, evidence from both NLSY cohorts shows that agents' IQ does not differentially explain the variation in financial literacy across men and women (Table A.2). Instead, our hypothesis is that financial knowledge develops dynamically (Cota and Šterc, 2024), and that personal experiences crucially shape it, with potential differences between men and women not just because of their employment history but also because of marital dynamics.

In particular, we build on the well-established correlation between financial literacy and financial decision-making (Lusardi and Mitchell, 2014), and further argue that gender differences in financial literacy can arise due to women's traditional roles within households. We will show that, as financial literacy evolves over time, investment decisions depend not only on knowledge accumulation but also on significant life events—particularly for women, whose financial decision-making shifts in response to changes in household dynamics. Our first step in this direction is to exploit a question in the SHED that assesses respondents' financial independence, detailed as follows:

- *"When it comes to decisions regarding your household's financial activities (such as banking and investing decisions), which of the following statements best describes your involvement?"*

		Literacy (SCF)	Literacy (SHED)	% Making Decisions
Male	Married	2.48	2.28	0.35
Female		2.15	1.93	0.20
Male	Never Married	2.17	1.87	0.58
Female		1.93	1.58	0.57
Male	Separated, Divorced, Widowed	2.15	2.03	0.80
Female		2.01	1.68	0.82

Table 1: **Financial literacy scores and the share of own decision-makers in the SHED and SCF.** Literacy takes a value between 0 to 3, based on the correct answers to 3 questions. SHED: (i) Average financial literacy; (ii) Share making most financial decisions within the household (as opposed to sharing decisions w/ somebody, somebody else making most decisions). Cross-section 2017-2022, with survey weights. SCF: Average financial literacy, cross-section 2016-2022, with survey weights.

Table 1 presents averages of financial literacy scores by gender and marital status, as well as the shares of respondents stating they are responsible for most of their household's financial decisions. The first two columns show that women's financial literacy scores are 20% lower than

[3]See Appendix A.1. Women are more likely to answer "Don't know," which we also count as incorrect answer.

men's, regardless of their marital status. In the third column, one can see that married women are less likely to take the lead of financial decisions within their household, whereas there are no differences in the shares of women and men making their own financial choices among never married, divorcees and widows. Importantly, these gendered patterns in financial literacy and decision-making vary over the life-cycle according to agents' marital status: although financial literacy increases for all respondents as they age, Figure A.1 shows that the gender gap in FinLit scores stays relatively wider among married men and women. Figure A.3 instead clarifies that never married, divorced or widowed women take on more financial responsibilities throughout their life, while married women delegate financial decisions more frequently as they age.

To stress the idea that financial literacy is not an intrinsic trait but rather a form of human capital that comes with actual knowledge and with experience in making financial decisions, Table 2 shows that individuals with higher educational attainment, as well as those working in engineering, finance or legal's jobs tend to have higher financial literacy as well as a higher probability of being responsible for most financial decisions within their households. What is more, situations that may force individuals to enhance their financial understanding have a differential effect on men and women. For instance, Table A.4 illustrates that being self-employed or having a unemployed spouse is associated to higher FinLit scores relatively more for women than men.

	Logit			*Logit*		
	Financial Literacy			Financial Decision Making		
	Married	Never Married	Sep/Div/Wid	Married	Never Married	Sep/Div/Wid
Female	-0.483^{***}	-0.506^{***}	-0.523^{***}	-0.499^{***}	-0.083^{**}	0.200^{***}
	(0.022)	(0.038)	(0.052)	(0.022)	(0.042)	(0.073)
Making Financial Decisions	0.140^{***}	0.173^{***}	0.160^{**}			
	(0.023)	(0.046)	(0.076)			
High Financial Literacy				0.183^{***}	0.269^{***}	0.289^{***}
				(0.031)	(0.054)	(0.086)
Bachelor +	0.640^{***}	0.614^{***}	0.628^{***}	0.107^{***}	0.657^{***}	0.699^{***}
	(0.031)	(0.057)	(0.078)	(0.032)	(0.065)	(0.109)
Engineering, law, finance's job	0.252^{***}	0.394^{***}	0.359^{**}	0.214^{***}	0.338^{***}	0.105
	(0.034)	(0.057)	(0.085)	(0.032)	(0.065)	(0.103)
Observations	19,777	6,649	3,515	19,777	6,649	3,515
Pseudo R^2	0.11	0.04	0.09	0.04	0.11	0.18

Table 2: Survey weights are used. Controls: income, age and year FE. *p<0.1; **p<0.05; ***p<0.01.

Finally, as further supporting evidence backing Fact 1, we focus on a complementary aspect

of household's financial responsibilities, and analyze the ownership distribution of checking and savings accounts within couples in the SCF. These accounts, among all financial accounts, provide a rather precise insight into individuals' financial roles within the household, since they are particularly used for day-to-day spending and savings as opposed to long-term investments. Table 3 outlines that women are associated to holding larger shares of checking and saving accounts compared to their spouses. Furthermore, as individuals' own income share within their household increases, their share of these accounts decreases – probably a sign of savvier investments of their liquidity. However, this effect is relatively smaller for women compared to men.

	Share of own accounts in household (HH)'s accounts			
	checking	saving	checking	saving
Female	0.425***	0.798***	0.160***	0.219***
	(0.063)	(0.074)	(0.008)	(0.009)
log(HH income)	−0.026***	−0.009**		
	(0.004)	(0.004)		
log(wage/HH income)			0.007	−0.067***
			(0.006)	(0.007)
Female × log(HH income)	−0.032***	−0.059***		
	(0.005)	(0.006)		
Female × log(wage/HH income)			0.076***	0.138***
			(0.009)	(0.010)
Observations	30,777	18,397	21,782	13,270
Adjusted R^2	0.068	0.059	0.078	0.079

Table 3: **Share of own accounts in all household's checking and savings accounts.** The table uses SCF couples with respondents aged 30-65 and positive household income, restricted to respondents that also report their own wage income in Columns (3)-(4). Personal shares in checking and savings accounts are calculated as the individual's own amount divided by the overall household's one, respectively. Estimates account for survey weights and control for year fixed effects, education, financial literacy, individual's age, and the age gap between spouses. *p<0.1; **p<0.05; ***p<0.01.

All considered, our findings underline significant gender and life-cycle dynamics in financial knowledge and financial decision-making, and align with existing research on gender norms in household finance, highlighting women's greater involvement in managing routine household expenditures. We go back to this point in Section 2.4, and next proceed to explore the link between financial literacy and households' investment behavior by gender and marital dynamics.

2.2 Financial Literacy and Wealth by Gender and Marital Status

The previous subsection highlights key differences in financial literacy and financial decision-making by gender and marital status, but we now turn to more granular wealth data from the

SCF and investigate the heterogeneous effects of financial literacy on observed financial decisions across men and women. While the positive correlation between wealth holdings and financial literacy is already well documented (Lusardi and Mitchell, 2014; Lusardi et al., 2017), we add to the existing literature by analyzing how its salience can vary by gender and marital status.

In terms of financial variables, the SCF allows us to track individual retirement accounts, savings and checking accounts for all single households and for each spouse within a married couple. For single households only, we can also exploit detailed data on mutual funds, bonds, and stock holdings, along with residential and non-residential wealth. The extent of information extracted for each married and single respondent is summarized in Table A.6. We further classify financial instruments as either equity or safe assets (see Table A.7 in the Appendix).

Marital status	**wage gap (%)**	**equity gap (%)**	**safe assets gap (%)**
Co-Living	46.37%	67.96%	53.64%
Separated	32.24%	65.50%	40.46%
Never Married	19.88%	52.70%	34.47%

Table 4: **Gender gaps in wage income and individual wealth by woman's marital status.** Uses the SCF subsample of workers employed with someone else in waves 2016-2022 who reported their wage income, $N = 29,803$. The sample is winsorsized at 97.5th percentile of wage income. All accounts accumulate savings in 401(k), current and future retirement benefits, IRA/Keogh accounts and savings and checking accounts. Equity and safe denote respective shares in stocks (equity) and bonds (safe).

On the one hand, a cross-sectional overview in Table 4 shows significant differences in wages and wealth (both equity and safe assets) across men and women, with these gaps varying according to respondents' marital status. It is important to stress that, due to the limitations of the SCF data on married respondents' individual accounts, we have to restrict our focus on retirement, checking and savings accounts in this analysis, which tend to represent 40% of a household's wealth. Nevertheless, the point we make is that, comparing the married sample to the separated/widowed and the never married ones, the observed gender wealth gap significantly lowers, suggesting the presence of richer interactions between wealth and family dynamics.

On the other hand, when focusing on the extensive margin of investment in equity and safe assets, Columns (1) and (2) in Table 5 show that, controlling for marital status, women are more likely to hold safe assets in their individual accounts, though financial literacy plays a significant role in shaping their investment behaviors. Specifically, higher financial literacy decreases the likelihood of investing in safe assets for women more than for men, while simultaneously increasing their relative likelihood of investing in equity. This further confirms that the gender differences in equity and safe assets market participation are mediated by financial literacy.

Moreover, on the intensive margin of investment, Columns (3) and (4) in Table 5 outline how financial literacy differentially shapes the wealth composition of men and women's portfolios. Specifically, compared to their male counterpart, women hold lower ratios of both equity and safe assets relative to their wages. Simultaneously, financially-literate women increase their port-

	has equity	has safe assets	$\log \frac{\text{equity}}{\text{wage income}}$	$\log \frac{\text{safe assets}}{\text{wage income}}$
	(1)	(2)	(3)	(4)
Female	0.002	0.019***	−0.088	−0.148***
	(0.011)	(0.004)	(0.085)	(0.056)
Female: FinLit score 2	0.041***	0.003	−0.202**	0.146**
	(0.013)	(0.005)	(0.100)	(0.069)
Female: FinLit score 3	0.034***	0.003	−0.050	0.034
	(0.013)	(0.005)	(0.092)	(0.066)
Observations	38,392	38,392	16,123	28,500
Adjusted R^2	0.173	0.045	0.098	0.133

Table 5: **Individual wealth, intensive and extensive margin.** Uses the SCF subsample of workers with reported wage income. "Has equity" is coded as 1 for all individuals with positive equity in any of the pension, checking, and savings accounts. Similarly, "has safe" denotes all individuals with a positive amount of assets in pension, checking, and savings accounts allocated away from stocks. Columns (1)-(2) fitted using linear probability model. In Columns (3)-(4), the dependent variable denotes asset holdings in pension and checking and savings accounts, adjusted by wage income due to the scalability of private and public pension plans. Controls include year fixed effects, age, education, income, financial literacy score, and marital status. Survey weights are used. *p<0.1; **p<0.05; ***p<0.01.

folio allocation to safe assets more than men, although this positive relation between financial literacy and the intensive margin of investments is more muted when it comes to equity.

To further highlight this, we restrict the focus on the portfolio composition of singles only, which allows us to examine more granular equity holdings outside of retirement, checking and savings accounts (i.e. more active investment tools). Regression results in Table A.19 confirm that financial literacy has a positive effect on both safe assets and equity holdings among never married women. Yet, they still hold on average lower amounts of equity and higher amounts of safe assets relative to never married men. Despite the positive influence of financial literacy on equity participation, this persistent gap among singles might point to the presence of a gendered preference for safer investments. In particular, our results align with the existence of a confidence wedge driven— for instance— by ambiguity aversion, which amplifies the perceived cost of financial risk-taking or lowers expected returns from equity investment (Borghans et al., 2009).

Together, this set of findings constitutes our empirical Fact 2, and highlights that financial literacy plays a more prominent role in women's savings strategies – both on the extensive and intensive margins –, as they shape the likelihood of participation in the equity market and the amounts invested in safe assets by relatively more for women compared to men. At the same time, while financial literacy narrows the difference in equity participation, it does not fully offset the gender gap in the intensive margin of equity investment, suggesting that risk perceptions may shape gendered investment behavior. We hence proceed to investigate the existence of gen-

der differences in financial confidence and risk-taking behaviors in the next section.

2.3 Subjective Confidence, Risk-taking and Willingness to Take Financial Risk

Besides objective financial literacy scores based on the Big Three Questions, both the SHED and the SCF contain questions related to agents' subjective financial confidence, their perceived financial knowledge, and their attitudes toward risk. In particular, the SHED asks respondents how comfortable they are with choosing and managing their investments on a scale from 1 (not comfortable) to 4 (very comfortable). In the SCF, we focus instead on the following questions:

1. *Some people are very knowledgeable about personal finances, while others are less knowledgeable. On a scale from zero to ten, where zero is not at all knowledgeable about personal finance and ten is very knowledgeable about personal finance, what number would you be on the scale?*

2. *Some people are fully prepared to take financial risks when they save or make investments, while others try to avoid taking financial risks. On a scale from zero to ten, where zero is not at all willing to take risks and ten is very willing to take risks, what number would you be on the scale?*

3. *Which of the following statements comes closest to describing the amount of financial risk that you are willing to take when you save or make investments?*

We first bin SCF survey responses into three separate categories, whereby financial knowledge and willingness to take risks are projected on a three-level scale, with 1 representing low financial knowledge and no willingness to take on financial risk respectively. Similarly, we use the responses to question 3 on financial risk-taking and scale them from taking the low amount of risk to the high amount of risk, represented by values 0-3. The breakdown in Table 6 shows that female respondents are less willing to take financial risks and are less confident about their financial decisions – irrespective of their marital status –, even though men have higher perceived financial knowledge than women only among married respondents. [4] Moreover, women seem to act on their preference for safe investments and report taking lower risks when making their investment strategies. Importantly, Table A.17 shows that conditioning on respondents' age, education, income, marital status, and financial literacy, women are associated to a statistically significant lower willingness to take risk and lower amount of risk taken when investing.

Second, we analyze the potential gendered link between financial confidence or risk-taking behaviors and the portfolio choices of respondents in the SCF. Recall that results in Section 2.2

[4] Figure A.2 on SHED data shows individuals with higher educational attainment, as well as those working in engineering, finance or legal's jobs tend to have higher financial confidence, but that financial confidence remains significantly lower for women across all education and occupational categories. Compared to the evolution of financial literacy differences, the gender confidence gap is indeed more persistent over agents' life-cycle.

Marital Status	Gender	Confidence (SHED)	Perceived Knowledge (SCF)	Willingness to Take Risk (SCF)	Amount of Risk Taking (SCF)
Married, Living together	Male	2.55	2.48	1.90	1.12
	Female	2.10	2.43	1.71	0.86
Never Married	Male	2.42	2.22	1.85	1.03
	Female	1.90	2.21	1.64	0.73
Separated, Divorced, Widowed	Male	2.49	2.26	1.84	0.92
	Female	2.04	2.36	1.58	0.67

Table 6: **FinLit score, confidence, knowledge and willingness to take risk across gender and marital status.** Uses the subsample of workers in 2016-2022 waves of the SCF, and the 2017-2022 cross-section in the SHED data. Financial knowledge and willingness to take risks are represented on a three-level scale, with 1 representing low financial knowledge and no willingness to take on financial risk. Similarly, confidence is based on a three-level scale. All averages are weighted by survey weights.

suggest financial literacy encourages market participation relatively more for women, and increases by relatively more only the amount they invest in safe assets, not in equity. Table 6 indeed lends support to the hypothesis that a confidence wedge – rooted in ambiguity aversion – may be at play in shaping investment decisions among women. Ambiguity aversion, or the tendency to avoid choices with uncertain probabilities, may lead women to perceive equity returns as lower or riskier, limiting their investment margins despite any actual financial knowledge.

Consistent with our results from Table 5, we confirm that perceived financial knowledge slightly increases participation in equity markets for women but does not necessarily increase the relative amount they invest in equity compared to men (Table A.10). In contrast, agents' willingness to take risks has a significant positive effect on equity holdings, and relatively more for women (Table A.11). This reinforces the idea that both financial confidence and the endogenous accumulation of financial knowledge are crucial in shaping women's investment behavior.

2.4 Life-cycle Events, Financial Literacy and Investment Decisions

Section 2.1 argues that financial literacy accumulates over time, which we interpret as the evolution of a stock of financial knowledge that increases with experience or utilization, but heterogeneously so by gender. We have gathered initial suggestive evidence that situations which may force individuals to enhance their financial understanding have a differential effect across men and women. For instance, being self-employed or having a unemployed, disabled or retired spouse are positively associated to financial literacy more for women than for men. We now investigate further whether financial literacy and, in turn, investment behaviors are shaped by specific life-cycle events, and whether these correlations may vary across men and women.

In particular, we exploit the fact that the SCF records information about the time of events such as divorce, widowhood, spousal disability and retirement, and business starting dates, to assess their impact on the accumulation of financial literacy by gender. This further analysis

	Financial Literacy		Equity in Own Accounts	
	(1)	(2)	(3)	(4)
Female	−0.595***	−0.966***	−0.084***	−0.005
	(0.093)	(0.164)	(0.020)	(0.026)
Time Since Separation/Divorce/Widowhood	−0.012**		−0.003***	
	(0.006)		(0.002)	
Time Since Sep/Div/Widow:Female	0.029***		0.004***	
	(0.006)		(0.002)	
Time Since Partner Became Disabled/Retired		−0.015**		0.0004
		(0.008)		(0.001)
Time Since Partner Dis/Ret:Female		0.023**		−0.005**
		(0.012)		(0.002)
Observations	6,448	2,160	3,920	1,599
Pseudo/Adjusted R^2	0.073	0.144	0.115	0.146

Table 7: **FinLit score dynamics and lifecycle events by gender.** Uses the SCF subsample of workers with recorded wage income. Column 1 and 2 present estimates of an ordinal logistic model, using survey weights. FinLit score takes values 1-3, with 0 correct responses and one correct response binned together. Time passed is coded as the number of years since the event. The dependent variable in columns 3 and 4 is the share of equity in all personal accounts, mainly consisting of pension, checking, and savings accounts. Controls: respondent's education, age, income, and year fixed effects. *p<0.1; **p<0.05; ***p<0.01.

constitutes the evidence behind our empirical Fact 4: as shown in Table 7, women's financial literacy significantly increases following life-cycle events such as separation, divorce, or widowhood, as well as spousal disability or retirement.[5] These findings suggest that increased financial responsibility may enhance financial literacy, while Tables A.20 and A.21 investigate the impact of these same events on agents' perceived financial knowledge and their willingness to take financial risks. In line with our reasoning so far, we find that separation, divorce and widowhood increase perceived financial knowledge and risk-taking attitudes of women relative to men. Shocks to spousal health or their retirement do not affect perceived financial knowledge for women more than for men, and decrease their relative willingness to take financial risks.

Third, after estimating the differential effect of life-cycle events on women's financial literacy, we quantify the impact of these same events on their investment behaviors through the evolution of equity and safe assets composition of individual accounts. Note that the evidence from Section 2.2 suggests that financial literacy is particularly salient in predicting equity investments, and that women have disproportionately less wealth invested in equity. For this reason, we conjecture that changes in financial literacy related to these life-cycle events should be reflected in changes to equity investments, and, given the results in Table 7, particularly so for women. Indeed, Table 7 shows that time passed since separation or the death of a spouse is associated with

[5]Inheriting a business is also associated to an increase in financial literacy for women. The sample size is however quite small (roughly 530 respondents in SCF ever inherited a business) and results are available upon request.

a 0.3 p.p. decline per year in equity exposure for men. However, for women, this is offset by a 0.4 p.p. increase per year, resulting in a net positive shift in their equity exposure over time. At the same time, spousal disability or retirement decreases women's equity exposure by relatively more, in line with their relative lower willingness to take financial risks reported in Table A.21.

Overall, these results highlight that life-cycle events, such as divorce, a spouse's illness or their decease, are associated with an increase in women's financial knowledge and a shift in their investment behaviors.[6] Notwithstanding the gender gap in financial confidence, women's relative disengagement from financial decision-making regarding long-term savings may explain the lower accumulation of financial literacy over the life-cycle. As such, women's financial literacy improves in response to increased economic responsibility, and seems to be associated to a relative increase in their equity investments compared to men, tying together the evidence summarized in Facts 1 - 4. We will next explore quantitatively how much of the gender wealth inequality is explained by the interaction between financial literacy and marital dynamics.

2.5 Robustness Analysis

In conclusion, we discuss few robustness checks in the SCF to exclude the role of other major confounding factors in driving our results. First, Table A.9 shows that the gender gap in financial literacy is not driven by how "mathsy" each of the Three Big Questions is. Specifically, women refuse to answer more often than men, but, conditional on answering, their relative performance does not vary across quantitative or more qualitative questions. Second, Table A.15 finds no evidence of the fact that women compensate for lower financial literacy by resorting to a financial advisor, which otherwise would confound the link between their lower financial literacy and lower investments in equity, both on the extensive and the intensive margin.

Third, Table A.13 clarifies that the gender gap in equity and safe assets does not seem to be driven by women's lower research effort before making an investment, with female respondents reporting spending more time than men to assess borrowing and investing opportunities. Fourth, Table A.12 shows that individual as opposed to joint-tax filing is related to an increase in women's perceived financial knowledge, although the effect on their financial literacy relative to men's is not statistically significant. Finally, using data on revolving credit card debt – which provides the closest connection of a financial decision to individual debt levels – we find similar gender differences in the impact of financial literacy on credit card interest rates, even after controlling for the amount of debt (Table A.14). While we do not have the same granular debt data for investment decisions, the findings on credit card interest rates further support our broader theory of how financial literacy shapes financial behavior differently for men and women.

[6] Exploiting data from NLSY, Table A.3 shows that the time spent since life-cycle events such as separation, divorce or spousal death increases women's financial literacy relative to men's, even when controlling for respondent's IQ.

3 Quantitative Framework

In this section, we develop a stochastic life-cycle model of marital dynamics and portfolio choices, with endogenous accumulation of wealth and financial literacy. The economy is in partial equilibrium but encompasses rich heterogeneity across agents, specifically in their gender, education, income, marital and health status, financial literacy, equity, and safe assets, as described below.

3.1 Model's Description and Choice Variables

Time is discrete and the model period is one year. The economy is populated by women and men – and we denote gender by $g \in \{f, m\}$ – who are either single or married ($k \in \{\mathcal{M}, \mathcal{S}\}$). Specifically, agent i starts her working life at 25, retires at 65 and may live up to age T, the maximum life span. While retirement age is deterministic, we allow for gender differences in mortality risk at all ages, and, specifically, we denote by p_t^g agents' one-year survival probability.

Individuals start their lives as singles, and are heterogeneous in their education level e_i^g, initial safe assets $s_{i,t=25}^g$, and initial financial literacy $\ell_{i,t=25}^g$, which can vary by gender. During their working period, all agents face income profiles, which have both a deterministic component that increases with their age and varies with their gender and education, and a stochastic one given by uninsurable and idiosyncratic shocks. Singles decide how much to consume ($c_i^{\mathcal{S}}$), and how much to save in safe ($s_{i,t}^{\mathcal{S}}$) and risky assets ($a_{i,t}^{\mathcal{S}}$), and they face an exogenous marriage probability that depends on their age. Moreover, the probability of meeting a partner j of opposite sex and with given education e_j^g depends on individual's i own e_i^g, consistent with marital sorting.

Married agents also decide on consumption and their own portfolio's composition by choosing investments in safe ($s_{i,t}^{\mathcal{M}}$) and risky assets ($a_{i,t}^{\mathcal{M}}$), independently from their spouse. Indeed, we do not assume a unitary model of the household, whereby married agents are solely responsible for their consumption and saving choices. Yet, the budget constraint of married households features two sources of income, which are allocated to family consumption, and married agents' utility function reflects that through the presence of equivalence-scale parameters. Note that married individuals face an exogenous divorce probability that varies by age. Finally, during retirement, agents live either as singles or in a couple, face stochastic age-dependent medical expenditures, earn a pension and choose how much to consume and save in safe or risky assets.

3.2 Preferences

All agents have time-separable CRRA preferences over a consumption good c. The period flow of utility for singles and couples is given by:

$$\text{Singles} : u(c) = \frac{\eta_t^{\mathcal{S}} (\frac{c}{\eta_t^{\mathcal{S}}})^{1-\gamma}}{1-\gamma} \qquad \text{and} \qquad \text{Couples} : u(c) = \frac{\eta_t^{\mathcal{M}} (\frac{c}{\eta_t^{\mathcal{M}}})^{1-\gamma}}{1-\gamma}$$

where γ is the coefficient of relative risk aversion, and η^k is an equivalence scale that adjusts for household size. Note that the term η is allowed to vary by age t and family type $k \in \{\mathcal{M}, \mathcal{S}\}$.

3.3 Dynamics

Income Profiles. Income profiles are allowed to vary between men and women, according to their age and education levels. Moreover, we impose a common flat labor income tax following (Huggett and Kaplan, 2016). As such, net income $y_{i,t}^{g,e}$ for an individual i of given age, education and gender can be split into a deterministic and a stochastic component, and it is expressed as:

$$y_{i,t}^{g,e} = (1-\tau)\,\bar{y}_i^g\,\xi_{e,t}\,\tilde{y}_{it}.$$

where the term $\bar{y}_i^g$ denotes a constant that depends on gender, and $\xi_{e,t}$ represents a deterministic component that varies with the age and education level of individuals. The stochastic component of income, given by $\tilde{y}_{i,t}$, follows instead an autoregressive process of order one:

$$\tilde{y}_{i,t} = \rho\tilde{y}_{i,t-1} + \nu_{i,t},$$

where $\nu_{i,t}$ is an uninsurable independent zero-mean random shock with variance σ^2. For simplicity, we assume that the idiosyncratic stochastic component of the income process of each individual within a married household is independent from the one of their spouses. Because of this and since the budget constraint of married agents contains the sum of their respective incomes, spousal income serves as informal insurance against an agent's own income risk.

Out-of-Pocket Medical Expenditures. When retired, agents are subject to medical expenditure shocks h, which capture uninsurable health risks. Medical expenditures are modeled as i.i.d shocks to agents' consumption, in the form of a proportional cost adjustment, and each agent within a married couple faces health shocks that are independent of their partner's.

Marriage and Divorce. Singles meet a partner with exogenous probability μ_t, which declines as they age. Conditional on meeting a partner, the probability that partner j has education e_j is defined as $\Pi(e_j^g \mid e_i^g)$ and depends on agent i's education level e_i. Note that, since agents' education level affects their income, this assumption implicitly deliver marital sorting on individual income as well. For simplicity, we assume that both spouses are of the same age. Moreover, married agents face an exogenous divorce probability d_t, which also declines as they age.

3.4 Financial Literacy, Confidence and Investment Technologies

When born in the economy at age $t = 25$, agents have heterogeneous gender-dependent initial financial literacy $l_{i,t=25}^g$ and can accumulate it by investing in it. Since obtaining knowledge, in

the form of investment ι_t, has a convex cost $\pi(\kappa^{k,g}\iota)$, financial literacy evolves according to:

$$\ell_{i,t+1} = \delta\ell_{i,t} + \iota_{i,t},$$

where we allow for δ to capture financial skills depreciation, following (Lusardi et al., 2017). Moreover, in Section 2 we established that women are more likely to delegate financial decision-making to another member of the household - especially if they are married. We thus allow the cost of investing in financial literacy to be higher for married women. This aims to reflect women's opportunity cost for greater involvement in managing routine household expenditures and lower exposure to investment-related financial decisions. We denote the additional cost of acquiring financial literacy by $\kappa^{k,g}$ and keep it one for men ($g = m$) and all single agents ($k = \mathcal{S}$).

Importantly, agents choose to invest resources in two different investment technologies: first, a basic technology (e.g. checking accounts) that yields a certain return $\bar{R} = 1 + r$, which we define as safe assets, s. Second, agents can invest in a more sophisticated technology – defined as risky assets, a – that allows them to receive a higher expected return, which is stochastic and depends on the agent's level of financial knowledge at age t. Its specific function is given by:

$$\tilde{R}(\ell_t^g) = \bar{R} + r(\theta^g\,\ell_t^g) + \epsilon_{t+1} \tag{1}$$

where ϵ_{t+1} is a $\mathcal{N}(0, \sigma_\epsilon)$ i.i.d shock realized at the end of t. Not only we assume that the excess return $r(\ell_t)$ is increasing in agents' financial literacy ℓ_t, but, guided by our empirical results in Section 2.3, we introduce a gender-specific confidence wedge θ^g. For men we impose $\theta^m = 1$, reflecting that, for a given level of financial literacy, their subjective return coincides with the objective one. For women we assume $\theta^f < 1$. Hence, for the same level of financial literacy, a female agent may believe they can achieve a lower return on their risky asset than a man.

3.5 Timing

At the beginning of each period, when agents are t years old and have a given level of accumulated assets and financial literacy, they learn their current income shock and also their health shock, if they are retired. Note that, for married individuals, the income and health shock of the spouse are observed as well. Moreover, all individuals learn their marital status and risky asset level, because the former depends on marring and divorce probabilities, while the latter depends on the realization of the return on their risky asset holdings. After observing all the shock realizations, agents decide on how much to consume and save in both the risky and safe assets, as well as how much to invest in the accumulation of their financial skills.

3.6 Recursive Formulation

We express the problem recursively by defining value functions for singles and married both at working or retirement age.

Singles - Working Age. The state variables of a single agent are her age t, holdings of safe and risky assets s and a, current financial literacy ℓ, as well as their current income realization $\tilde{y}$. The corresponding value function reads as follows:

$$V^{g,e,\mathcal{S}}(t,s,a,\ell,\tilde{y}) = \max_{(c,s',a',\iota)} \frac{\eta_t^{\mathcal{S}} \left(\frac{c}{\eta_t^{\mathcal{S}}}\right)^{1-\gamma}}{1-\gamma} + (1-\mu_t) p_t^g \beta \mathbb{E} V^{e,g,\mathcal{S}}(t+1,s',a',\ell',\tilde{y}') + \mu_t \, \Pi(e_j^g \mid e_i^g) \, p_t^g \beta \, \mathbb{E} V^{g,e,\mathcal{M}}(t+1,s',a',\tilde{y}',\tilde{y}_j',\ell')$$

subject to:

$$\begin{aligned} s' + a' + c + \pi(\kappa^{k,g}\iota) &= y^{g,e} + \bar{R}s + \tilde{R}(\ell_t^g)a \\ \ell^{g'} &= \delta \ell^g + \iota \\ \tilde{R}(\ell^g) &= \bar{R} + r(\theta^g \ell^g) + \epsilon' \\ s', a', c, \iota &\geq 0 \end{aligned}$$

The labor income and risky return process are defined in Section 3.3 and 3.4 respectively. $V^{g,e,\mathcal{M}}$ expresses the value of individual i getting married to a partner j (of opposite gender). Singles take the expected value over the realizations of their future productivity and risky asset returns, as well as the expected value over the income process of their potential partner.

Singles - Retirement. During retirement, the state variables of a single agent are their age t, holdings of safe and risky assets s and a, current financial literacy ℓ, as well as their current health shock realization h. The corresponding value function reads as:

$$V^{g,e,\mathcal{S}}(t,s,a,\ell,\tilde{y}_{64},h) = \max_{(c,s',a',\iota)} \frac{\eta_t^{\mathcal{S}} \left(\frac{c}{\eta_t^{\mathcal{S}}}\right)^{1-\gamma}}{1-\gamma} + (1-\mu_t) p_t^g \beta \mathbb{E} V^{g,e,\mathcal{S}}(t+1,s',a',\ell',\tilde{y}_{64},h') + \mu_t p_t^g \beta \mathbb{E} V^{g,e,\mathcal{M}}(t+1,s',a',\ell',\tilde{y}_{64},\tilde{y}_{64,j},h',h_j')$$

subject to

$$\begin{aligned} s' + a' + c + \pi(\kappa^{k,g}\iota) + h = pen(y_{64}^{g,e}) + \bar{R}s + \tilde{R}(\ell_t^g)a \\ \ell^{g'} = \delta\ell^g + \iota \\ \tilde{R}(\ell^g) = \bar{R} + r(\theta^g\ell^g) + \epsilon' \\ s', a', c, \iota \geq 0, \end{aligned}$$

where pen is the replacement rate applied to agents' last income realization before retiring, denoted by $\tilde{y}_{64}$. $V^{g,e,\mathcal{M}}$ expresses the value for an individual i getting married to partner j. Single individuals take the expected value over the realizations of their future health shock and risky assets return, as well as over the health shock of their potential partner.

Married - Working Age. The value of a married individual during working age depends on their age t, holdings of safe and risky assets s and a, current financial literacy ℓ, as well as their own and their partner's income $\tilde{y}, \tilde{y}_j$.[7] The corresponding value function reads as follows:

$$\begin{aligned} V^{g,e,\mathcal{M}}(t, s, a, \tilde{y}, \tilde{y}_j, \ell) = \max_{(c,s',a',\iota)} \frac{\eta_t^{\mathcal{M}} \left(\frac{c}{\eta_t^{\mathcal{M}}}\right)^{1-\gamma}}{1-\gamma} + (1-d_t)p_t^g \beta \mathbb{E} V^{g,e,\mathcal{M}}(t+1, s', a', \tilde{y}', \tilde{y}_j', \ell') \\ + d_t p_t^g \beta \mathbb{E} V^{g,e,\mathcal{S}}(t+1, s', a', \ell', \tilde{y}'), \end{aligned}$$

subject to

$$\begin{aligned} s' + a' + c + \pi(\kappa^{k,g}\iota) = \frac{y^{g,e} + y_j^{g,e}}{2} + \bar{R}s + \tilde{R}(\ell_t^g)a \\ \ell^{g'} = \delta\ell^g + \iota \\ \tilde{R}(\ell^g) = \bar{R} + r(\theta^g\ell^g) + \epsilon' \\ s', a', c, \iota \geq 0. \end{aligned}$$

Married agents take the expected value over the realizations of their future income and risky assets return, as well as over their partners' stochastic labor income. Note instead that $V^{g,e,\mathcal{S}}$ expresses the value of a single individual, in case of realization of the divorce shock.[8]

Married -Retirement The value of an individual being married during retirement depends on their age t, their safe and risky assets s and a, financial literacy ℓ, as well as their own and their

[7] Following our empirical analysis we study the changes in savings and investment behavior of an individual being married rather than the savings behavior of a couple. This allows us to isolate the evolution of financial literacy of each spouse and will, in future work, allow us to speak to specialization within the households finances.

[8] Future work includes carefully modeling asset division at divorce and any potential cost of divorcing.

partners' health shocks and pensions. The corresponding value function reads as follows:

$$V^{g,e,\mathcal{M}}(t,s,a,\ell,\tilde{y}_{64},\tilde{y}_{64,j},h,h_j) = \max_{(c,s',a',\iota)} \frac{\eta_t^{\mathcal{M}}\left(\frac{c}{\eta_t^{\mathcal{M}}}\right)^{1-\gamma}}{1-\gamma} + (1-d_t)p_t^g\beta\mathbb{E}V^{g,e,\mathcal{M}}(t+1,s',a',\ell',\tilde{y}_{64},\tilde{y}_{64,j},h',h'_j) + d_t p_t^g \mathbb{E}V^{g,e,\mathcal{S}}(t+1,s',a',\ell',\tilde{y}_{64},h')$$

subject to

$$\begin{aligned} s'+a'+c+\pi(\kappa^{k,g}\iota)+h &= \frac{pen(y_{64}^{g,e})+pen(y_{64,j}^{g,e})}{2}+\bar{R}s+\tilde{R}(\ell_t^g)a \\ \ell^{g'} &= \delta\ell^g+\iota \\ \tilde{R}(\ell^g) &= \bar{R}+r(\theta^g\ell^g)+\epsilon' \\ s',a',c,\iota &\geq 0, \end{aligned}$$

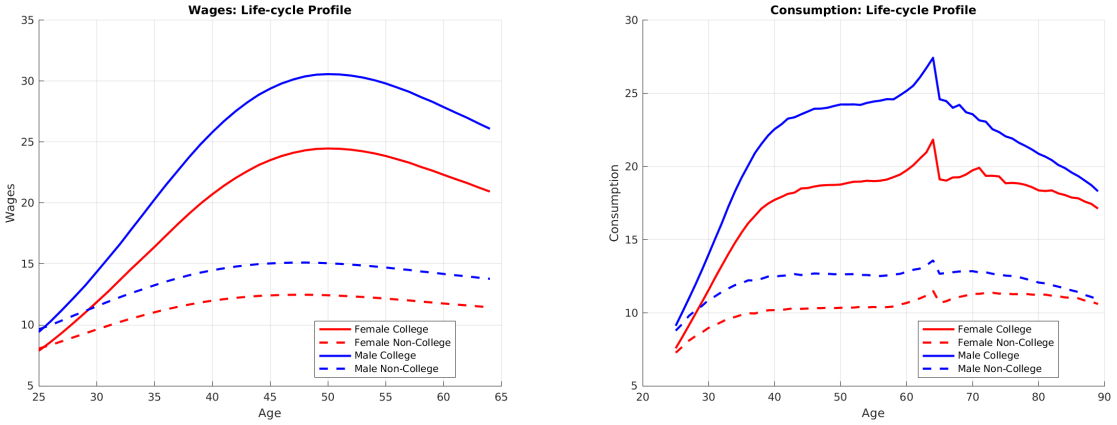
where again pen is the replacement rate applied to the last income realization before retiring for each spouse. $V^{g,e,\mathcal{S}}$ expresses the value of a single individual, in case of realization of the divorce shock. Married agents take the expected value over their own and their partner's future health states, as well as over the realization of the return on their own risky assets holdings.

4 Qualitative Results

In what follows, we discuss the intuition behind some key mechanisms at play in our model. While we are still working on the quantitative calibration of the framework, we present some qualitative predictions that align our theory with the evidence from Facts 1-4. To fix ideas, we begin by analyzing an economy where agents are born and remain single throughout their life. Then, we follow by discussing how marital transitions affect portfolio choices and the evolution of financial literacy. Parameter values for the following simulations can be found in Table B.6.

To start, Figure 1 below shows the path for labor income and consumption over the life-cycle of always single individuals, distinguishing between male and female agents, with and without college studies. In our framework, higher education is reflected in a college wage premium, whereas women face a wage penalty compared to men, irrespective of their education level. As a consequence of these embedded differences in labor income profiles by gender and educational attainment, the consumption profiles of male individuals is higher than the one of female ones, with a further distinction between college and non-college educated agents. Moreover, the labor income profile of any given agent in our model has a slope and a curvature, reflecting a faster growth in wages at the start of workers' labor careers. Subsequently, consumption increases quite rapidly in the first 10 to 20 years of all individuals' working life, and then is kept relatively

Figure 1: Consumption and Income profiles by Gender and Education



stable afterwards, in partly due to accumulated savings and consumption-smoothing motives.

4.1 Single Households

4.1.1 The Role of the Gender Wage Gap

Our first set of comparative statistics concerns the gender wage gap included in the model. Earning less than their male counterparts, women in our economy have lower available resources to both consume and save, which is reflected in their portfolio choices – both on the extensive and the intensive margins – and hence in their investment in financial literacy. Figure 2 illustrates how an economy populated by singles only reacts to a 10 p.p. increase in the gender wage gap (from 20% to 30%) for all educational categories and keeping all the other parameters fixed.

Overall wealth for women decreases, but this decline is especially driven by (i) the saving choices of college-educated ones and (ii) the drop of risky compared to safe assets. Although our calibration is not quantitative yet, what emerges is that non-college educated women have less margin to adjust their portfolio choices, because – by earning lower income – they may already struggle to keep their consumption profiles stable. Moreover, lower relative earnings for women can also exacerbate the gender differences in portfolio choices, as women cut their investment in risky assets by relatively more than in safe assets, which further discourages their accumulation of financial knowledge. Since risky assets yield higher returns on average, this comparative statics clarifies that labor market disparities across men and women may get amplified in terms of consequences on their portfolio choices, and on gender wealth inequality more generally.

Figure 2: Increasing the Gender Wage Gap (Left: Baseline. Right: Counterfactual)

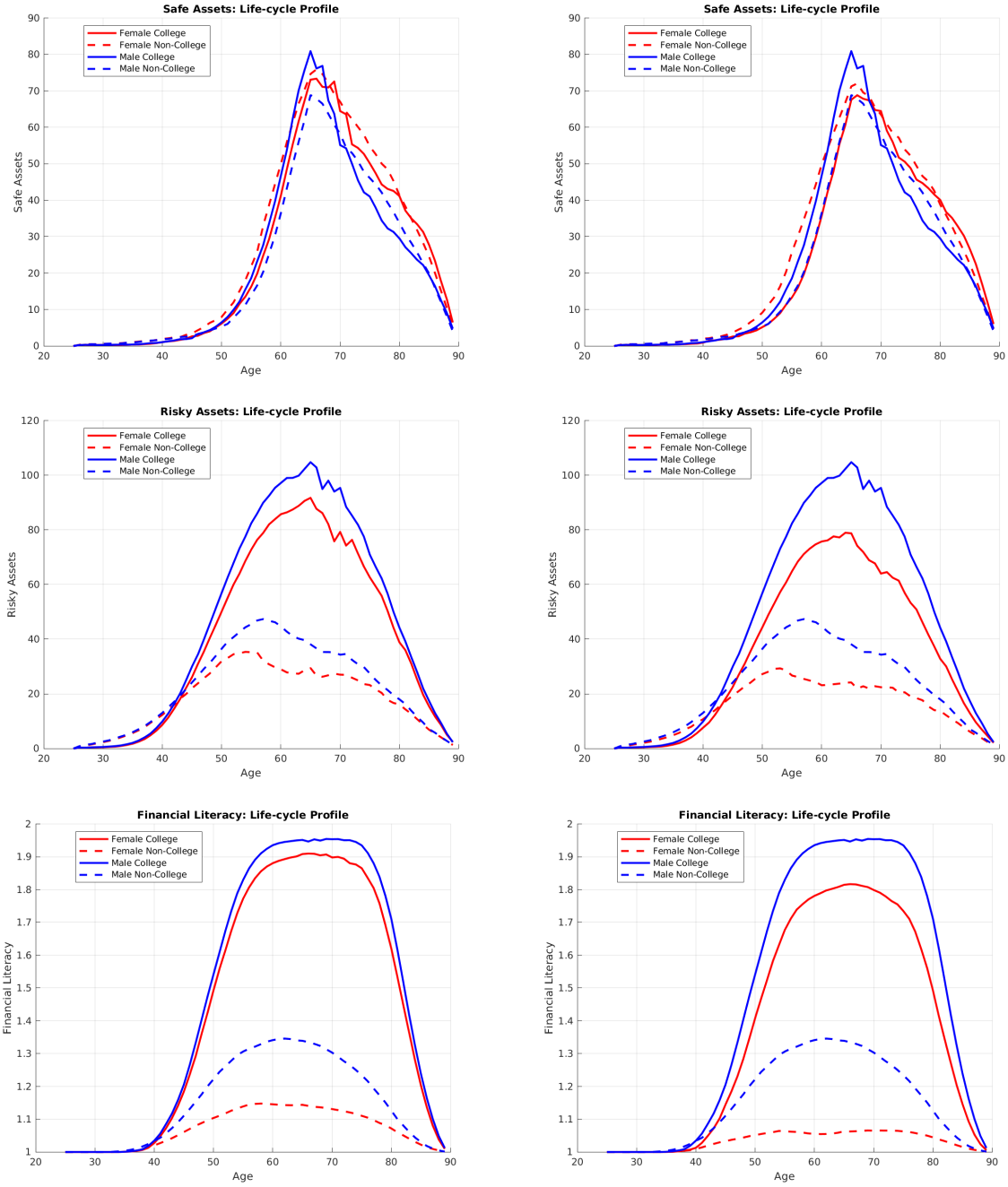
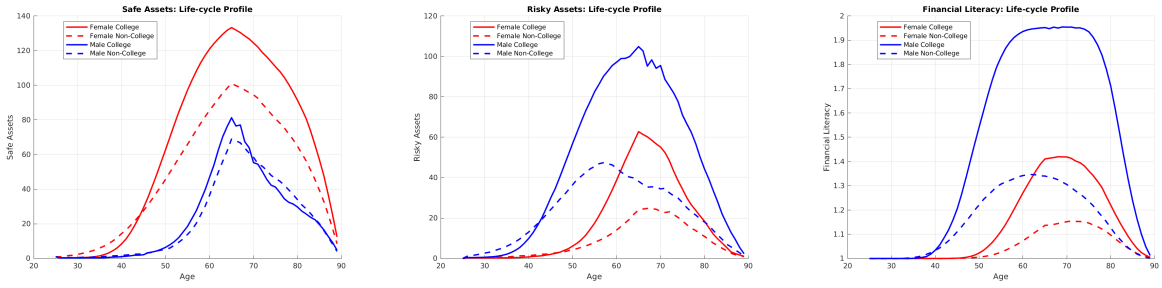


Figure 3: Increasing the Gender Gap in Financial Confidence (Counterfactual)



4.1.2 The Role of the Gender Gap in Financial Confidence

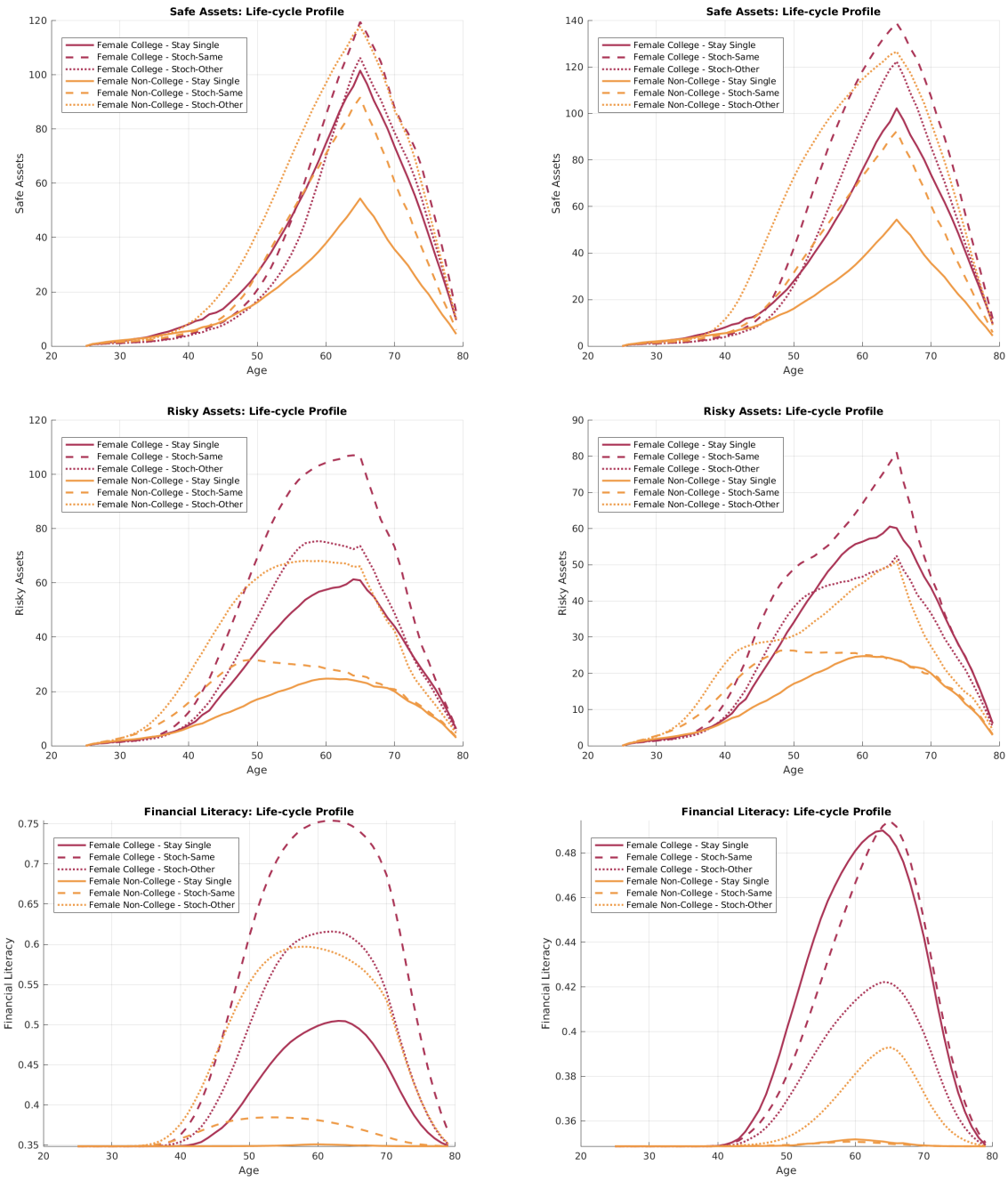
Figure 3 illustrates the importance of the gender gap in financial confidence. Our empirical analysis reveals that women tend to have lower financial confidence than men; in the model, female agents perceive investment returns as lower than their male counterparts, which works as a disincentive for women to invest in financial literacy and ultimately influence their portfolio choices and wealth accumulation. As Figure 3 shows, assuming that women perceive investment returns to be 10% lower than men – relative to our baseline –, significantly reduces their investment in financial literacy, drastically limits their investments in risky assets and instead increases their investment in safe assets. This misperception leads to lower investment in both financial knowledge and risky assets, compounding wealth inequality over time. Depending on the size of the gender gap in financial confidence, a college-educated woman may end up with a similar level of financial literacy and risky assets than a non college-educated man.

4.2 Marital Dynamics

In what follows, we reintroduce marriage and divorce. We do this sequentially to highlight the additional incentives and disincentives from marital dynamics. There are four potential types of married households, depending on the combination of educational attainment. For readability we focus on women. Single women in the following figures now differ from single agents in the previous section as they internalize the possibility of getting married but happen not to do so. Note that in the current version of the model, married agents take into account their partner's wage income but not their assets.

Figure 4 shows, on the left panel, the baseline economy when single agents face exogenous marriage probabilities and married agents face exogenous divorce probabilities. Gender gaps in wages and a college premium are included, but in this baseline we still abstract from the confidence wedge and most importantly the additional cost for women of acquiring financial literacy during marriage. Hence, college-educated women married to a college-educated man fare best in financial literacy, risky assets and later in life also in safe assets. Conversely, non-

Figure 4: Increasing the Cost of Financial Literacy (Left: Baseline. Right: Counterfactual)



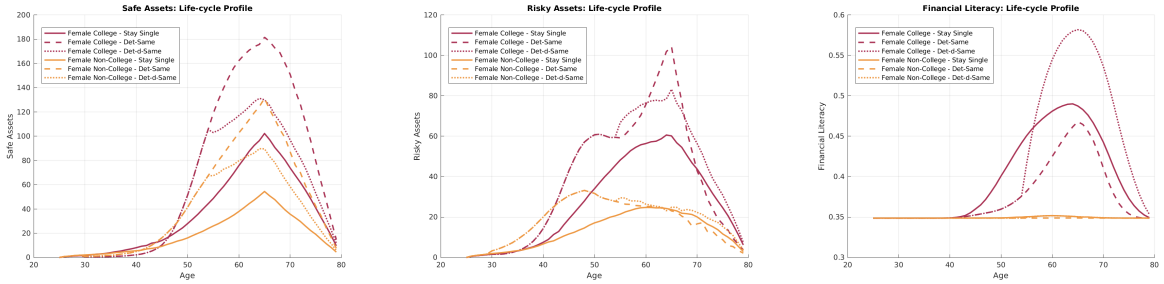
college educated single women manage the lowest amount of assets and accumulate no financial literacy over the life-cycle. Given that in this baseline model a married women differs from a single women only in the additional income she is managing, this outcome is to be expected.

4.2.1 The Role of Higher FinLit Cost

The right column of Figure 4 illustrates the effects of higher costs of investing in financial literacy for married women. Our empirical analysis revealed that married women are most likely to delegate financial decision making and mostly manage routine household expenditures. We capture this opportunity cost by introducing higher costs of investing in financial literacy for women during marriage. As Figure 4 shows, a two times higher cost of investing in financial literacy – relative to our baseline –, makes safe assets relatively more attractive for all married agents. While for single agents the risky asset profile over the life-cycle stays similar, for married agents life-cycle profile is tilted towards later years and significantly smaller. By construction, the most apparent difference with respect to our baseline economy is the evolution of financial literacy over the life-cycle. The disincentives from higher costs of attaining financial literacy offsets the high income of a two college-educated household, such that college-educated married (to a college-educated) and college-educated single women have similar financial literacy.

Universal Divorce at 55. In our empirical analysis we show that life-cycle events such as divorce are associated with an increase women's financial literacy that is accompanied by a shift in their investment behavior (Fact 4). To illustrate how our model is able to capture this, we impose all married agents divorce at 55.[9] Hence, in Figure 5 all agents after the age of 55 are either single or divorced. When women divorce, they show a significant increase in financial literacy and wealth accumulation compared to their married years. The higher cost of investing in financial literacy during marriage disincentivizes them from acquiring financial knowledge. Once this barrier is lifted, they not only catch up but also adjust their investment behavior, shifting from safer assets to riskier ones, regardless of the lower income they are now managing.

Figure 5: Increase Cost of Financial Literacy and All Divorce at Age 55 (Counterfactual)



[9] Agents do not anticipate that they will divorce at age 55; however, in the simulation, all divorces occur at that age. We do so to create an event-study like figure.

4.3 Final Remarks on Other Model Primitives

In the baseline economy without marital dynamics, there are three main sources of uncertainty for individuals. First, individuals face uninsurable and persistent income shocks that create uncertainty about future resources, which interacts with individuals' saving and investment decisions. The gender wage gap of 20% affects not only current consumption possibilities but also the ability to accumulate wealth and invest in financial literacy over time. The presence of persistent income shocks creates a strong precautionary saving motive for all individuals, with the same underlying uncertainty across genders. However, the effect of these shocks is asymmetric across genders due to the wage gap: women's lower average income means they have less buffer against negative income realizations, which pushes them toward safer investment choices. This precautionary behavior is further amplified by their lower financial confidence, leading to a portfolio composition tilted toward safe assets even when their financial literacy would allow them to access higher returns through risky investments.

Second, we embed in the model survival probabilities, which vary by age and gender. In particular, female individuals have higher survival probabilities throughout their life, which is a further incentive to accumulate assets, given the higher chances they will have to sustain a stable level of consumption for longer years after retirement. The positive effect of higher survival probabilities on women's accumulation of savings is nonetheless mediated by the existence of gender gaps in both income and financial confidence: an expected longer life increases women's accumulation safe assets by relatively more than their risky assets, and hence foster only moderately their investment in the accumulation of financial literacy.

Finally, the presence of health shocks during retirement is a key incentive for all individuals to save resources and accumulate financial literacy. Without health shocks, wealth in the economy would be lower, and so would the investment in financial knowledge, for both men and women and across college and non-college educated agents. Especially for women though, lower incentives to save would further tilt their portfolio composition towards safe as opposed to risky assets, and hence lower by more their investment in financial literacy.

In the economy that includes marital dynamics there are additional sources of uncertainty, namely when, whether and to whom agents get married and whether and when they will divorce. This uncertainty significantly impacts the amount of income an individual manages, but again the effect is gendered. Since women face higher costs of acquiring financial literacy during marriage, they are discouraged from investing in it—not only while married but also beforehand. Anticipating the potentially higher costs in the future, women are less likely to accumulate financial literacy early on, as maintaining a high level would be costly during marriage. Lastly, additional uncertainty arises from the fact that in a marriage, both partners can experience health shocks, requiring to insure against these risks with the combined income.

5 Conclusion

This project explores gender differences in wealth accumulation through a micro-founded model of financial decision-making over the life-cycle. The model explicitly incorporates endogenous financial literacy and major life-cycle events such as marriage, separation, and spousal longevity. The micro-foundations of our model are grounded in empirical findings derived from three publicly available US micro-level data sets, namely the National Longitudinal Survey of Youth, the Survey of Household Economics and Decision-making, and the Survey of Consumer Finances. Our analysis consistently reveals multiple sources of gender differences in financial literacy, and highlights the interplay of intra-household family budgeting with important life-cycle events in women's lives in shaping their financial literacy.

First, we find that women more often delegate financial decision-making to their spouses, and focus more on daily family expenses by using (liquid) checking and savings accounts. Second, financial literacy plays a relatively bigger role in shaping women's savings and investment choices and, while being particularly salient for equity participation, is limited in effect on the amounts invested in equity. Lastly, we find that life-cycle events such as divorce, separation, spouse's illness, or decease are positively associated with an increase in women's financial knowledge and confidence. Separation or spousal's illness often implies taking over financial responsibilities, which in turn increases financial knowledge over time, and results in an increase in equity exposure and in the understanding of investment opportunities.

Our model allows us to simulate how gender gaps in financial literacy, driven by the interaction of inherent gender differences in financial confidence or income and agents' life-cycle dynamics, shape the wealth trajectories of individuals, which has direct repercussions on wealth inequality across men and women. The paper is still evolving and, looking ahead, we seek to evaluate the effectiveness of financial education policies in mitigating gender wealth disparities, particularly in the context of marital roles and the potential depreciation of financial literacy over time. Motivated by our findings on family budgeting dynamics, we aim to compare the impact of financial education at the start of one's career versus at key life events, such as separation, to assess their differential effects on gender wealth inequality.

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A Data analysis

A.1 The Big Three Questions

All surveys contain the FinLit score based on responses from the three-question survey. The set of questions tests individual understanding of inflation, risk diversification, and compounding. Correct answers are marked with double star:

1. Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?
   - More**/Exactly/Less than $102
   - Do not know/Refuse to answer
2. Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?
   - More/Exactly/Less** than today
   - Do not know/Refuse to answer
3. Please tell me whether this statement is true or false. "Buying a single company's stock usually provides a safer return than a stock mutual fund."
   - True
   - False**
   - Do not know
   - Refuse to answer

While the usual score joins the three answers together, the Survey of Consumer Finances suggests that none of the questions carry the most of the variation in gender.

A.2 Evidence from the US National Longitudinal Survey of Youth

We take a look at two cohorts, NLSY79 and NLSY97 separately, to understand the determinants of financial literacy and how they differ based on gender in separate times within the lifecycle. Both survey responses show significant gender difference in financial literacy level, as shown in Table A.1.

NLSY97 interviews respondents about FinLit when they are fairly young (between 22 and 29 years old), which allows us to understand differences in FinLit at the beginning of the work life,

	NLSY79 ($\sim$ 50 yo)	NLSY97 ($\sim$ 25 yo)
Men	2.30	1.95
Women	2.07	1.64
N	7022	7500

Table A.1: **Financial literacy breakdown across cohorts and gender.**NLSY79 measures individual financial literacy score, with averages including survey weights.

and with NLSY79 we see how these differences track across marital status and occupation. Table A.2 shows that, besides education, IQ explains the variation in the FinLit score, persistently so for men and women. Since income may not play as an important role at the beginning of the lifecycle, we include parental wealth with young respondents in '97 and find that family net wealth plays an important role. Interestingly, parental education plays a smaller of a role in the variation.

	Financial Literacy Score			
	NLSY79 ($\sim$ 50 yo)		NLSY97 ($\sim$ 25 yo)	
	Men	Women	Men	Women
Education	0.115	0.073	0.15	0.093
IQ test	0.0625	0.0687	0.08	0.071
Educ of mother	0.0000	0.0000	0.001	0.0007
Educ of father	0.0009	0.0001	0.0004	0.000
Income	0.0085	0.0023		
Family wealth			0.006	0.0006
Observations	2,674	2,896	1,386	1,292
Adjusted R^2	0.186	0.143	0.233	0.165

Table A.2: **Financial literacy breakdown across cohorts.** IQ test corresponds to Armed Forces Qualification Test (AFQT). Income restricted to positive individual income.

Initial differences define a starting point for young men and women, but marriage, and financial decision-making allocation and confidence play a role for understanding personal finance later on. Finally, Table A.3 confirms that life-cycle events that may foster financial independence, such as separations, divorces and spousal death, are associated to a larger increase in financial

literacy for women relative to men, even controlling for agents' IQ.

	FinLit Score
Female	-1.030***
	(0.233)
Years Since Sep/Divorce/Widowhood	-0.018
	(0.009)
Female:Years Since Sep/Divorce/Widowhood	0.034**
	(0.013)
IQ Test	0.017***
	(0.002)
Observations	1,706
R^2	0.082

Table A.3: **Financial literacy after life-cycle events.** Survey weights. *p<0.1; **p<0.05; ***p<0.01. Controls: age, income, education

A.3 Evidence from the US Survey of Household Economics and Decision-making

We use SHED to make a more detailed overview of differences in FinLit scores based on women's characteristics and marital status. In particular, Table A.4 shows that education and marital status have more of an effect on women's scores when compared to men's, with high-educated and separated women scoring better than their counterparts.

We revisit our estimates on education differences in FinLit scores to find that occupation-based differences contribute to some of the dynamics in financial literacy (FinLit) scores over the lifecycle. Women who major in STEM-related fields tend to experience the most substantial improvements in financial literacy over time. In contrast, Figure A.2 shows that financial confidence remains significantly lower for women, even when comparing highly educated women with less-educated men. Additionally, confidence is more persistent, with separated women exhibiting the greatest gains over the lifecycle. We quantify these differences in detail using the SCF data, and corroborate our findings with SHED, cross-referencing both datasets. Occupations are grouped into three main categories: Community, Healthcare and Service (including healthcare workers, social workers, service support staff), Creative, Education and Management (including teachers, artists, administrators) and Legal, Finance and Engineering (including lawyers, financial analysts, software developers).

A.3.1 Differential Effect of FinLit on financial confidence and decision making

Table 2 highlighted that financial literacy scores are associated to higher financial confidence and to higher likelihood o being responsible for financial decisions. Table A.5 shows that this effect

	FinLit score					
	(1)	(2)	(3)	(4)	(5)	(6)
Female	−0.325***	−0.388***	−0.373***	−0.359***	−0.389***	−0.347***
	(0.091)	(0.012)	(0.012)	(0.009)	(0.011)	(0.010)
Female: earns $\geq \$150,000$	0.028					
	(0.092)					
Female:Self-Employed		0.075**				
		(0.032)				
Female:Bachelor			0.016			
			(0.019)			
Female:Bachelor +			0.072***			
			(0.022)			
Female:Never Married				0.082*		
				(0.047)		
Female:Separated, Divorced, Widowed				0.150**		
				(0.062)		
Female:Spouse Unemployed					0.076***	
					(0.017)	
Female: Legal, Finance, Engineering						0.036
						(0.031)
Observations	45,312	26,823	45,312	45,312	43,030	45,312
R^2	0.235	0.233	0.235	0.235	0.236	0.237

Table A.4: **FinLit score across gender, education, and marital status.** Uses the SHED sample 2017-2022, with survey weights. FinLit score is standardized to accommodate the OLS regression. While each column focuses on one of the characteristics, the rest (income, age, education, and the indicator for spouse unemployed) are always used as a control. *p<0.1; **p<0.05; ***p<0.01.

is gendered: When we add the interaction terms, we see that compared to a man with the same level of financial literacy, a woman tends to have lower financial confidence and decision-making across different literacy levels. Specifically, for women with medium to high financial literacy, the negative effect on financial confidence and decision-making is larger compared to their male counterparts. This suggests that even when controlling for financial literacy, gender differences persist in these financial outcomes, with women generally having lower financial confidence and decision-making abilities than men with similar literacy levels. A similar patterns is true when interacting occupation or education with gender, i.e. higher education has attenuated effect on women's financial confidence or decision making compared to men.

A.3.2 Financial Literacy across marital dynamics – panel data evidence

An ideal dataset for this analysis would track individuals' financial literacy (FinLit) scores over time while capturing changes in their marital status. The closest approximation available is the limited panel dimension of the SHED, in which approximately half of the respondents in our sample are re-interviewed at least once. We categorize these respondents into six marital transition groups and examine the evolution of their average financial literacy over time, disaggre-

	Ordered Logit:			*Logit:*		
	Financial Confidence			Financial Decision Making		
	Married	Never Married	Sep/Div/Wid	Married	Never Married	Sep/Div/Wid
Female	-0.352^{***}	-0.647^{***}	-0.179	-0.117^{**}	0.054	0.242^{*}
	(0.048)	(0.071)	(0.112)	(0.051)	(0.075)	(0.140)
High FinLit:Medium	0.0003	-0.080	0.072	0.225^{***}	0.183^{**}	0.116
	(0.049)	(0.075)	(0.120)	(0.053)	(0.085)	(0.156)
High FinLit:High	0.344^{***}	0.264^{***}	0.476^{***}	0.492^{***}	0.391^{***}	0.368^{***}
	(0.043)	(0.065)	(0.109)	(0.047)	(0.077)	(0.140)
Bachelor +	0.117^{***}	0.246^{***}	0.252^{***}	0.099^{***}	0.660^{***}	0.703^{***}
	(0.029)	(0.053)	(0.073)	(0.032)	(0.065)	(0.109)
Legal, Finance, Engineering	0.180^{***}	0.173^{***}	0.169^{**}	0.211^{***}	0.335^{***}	0.103
	(0.030)	(0.050)	(0.079)	(0.032)	(0.065)	(0.103)
Female:Medium FinLit	-0.098	0.205^{**}	-0.185	-0.305^{***}	-0.114	0.074
	(0.063)	(0.100)	(0.144)	(0.067)	(0.107)	(0.186)
Female:High FinLit	-0.156^{***}	-0.026	-0.412^{***}	-0.581^{***}	-0.261^{***}	-0.163
	(0.055)	(0.087)	(0.130)	(0.059)	(0.099)	(0.168)
Observations	22,526	7,785	4,042	19,777	6,649	3,515
Pseudo R^2	0.07	0.07	0.08	0.05	0.19	0.08

Table A.5: Survey weights are used. Controls: income, age and year FE. *p<0.1; **p<0.05; ***p<0.01.

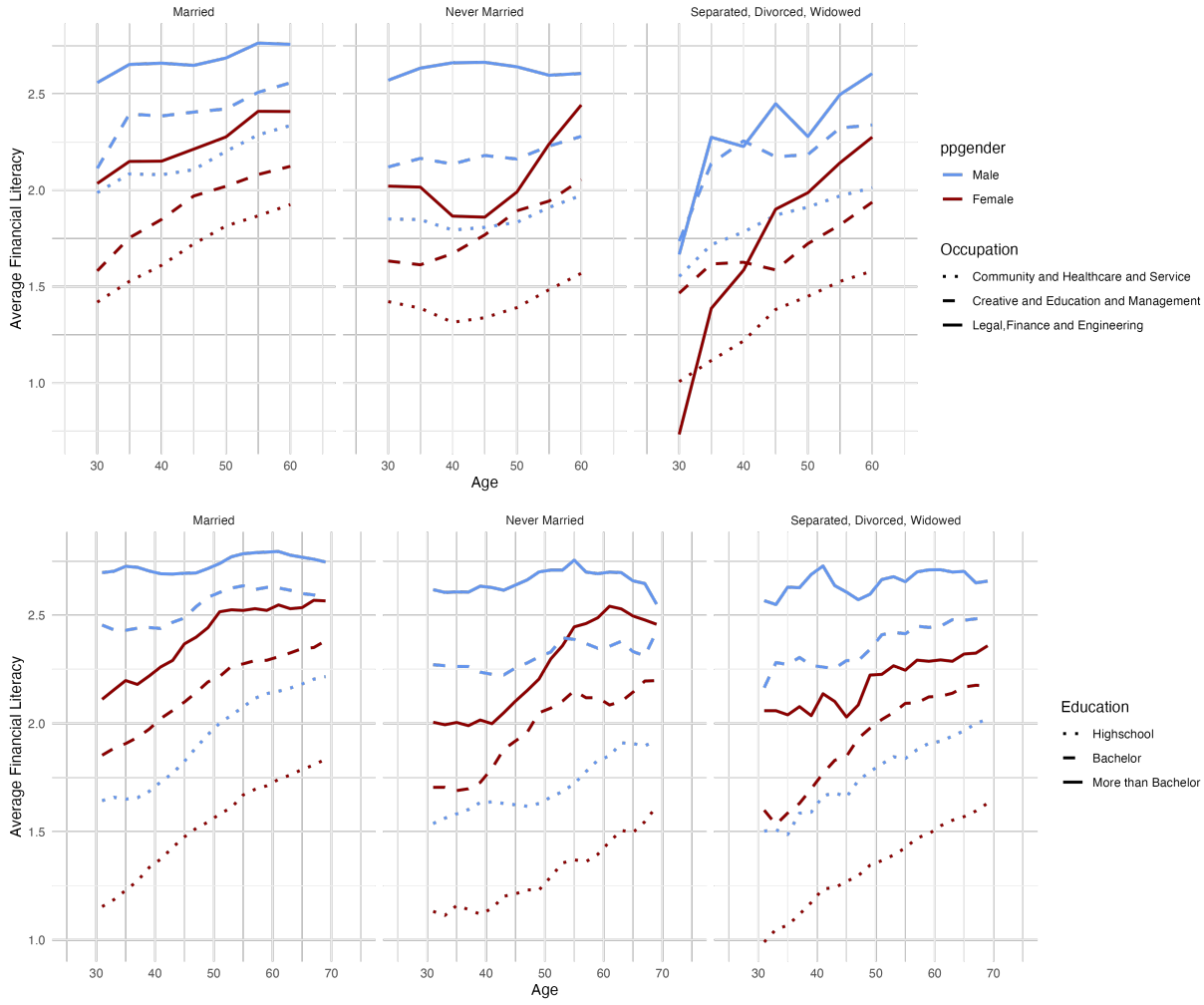


Figure A.1: **Average Financial Literacy over the Life-cycle by marital status, gender, education and occupation.** Uses the 2017-2022 SHED waves.

gated by gender. The time span between consecutive observations ranges from two to four years. Figure A.4 presents the findings. Notably, among individuals who experience divorce between survey waves, the gender gap in financial literacy narrows most significantly. While men exhibit a slight decline in financial knowledge, women's financial literacy increases substantially. Additionally, men's financial literacy improves upon remarriage, whereas women in this category exhibit the smallest financial literacy gains relative to other groups.

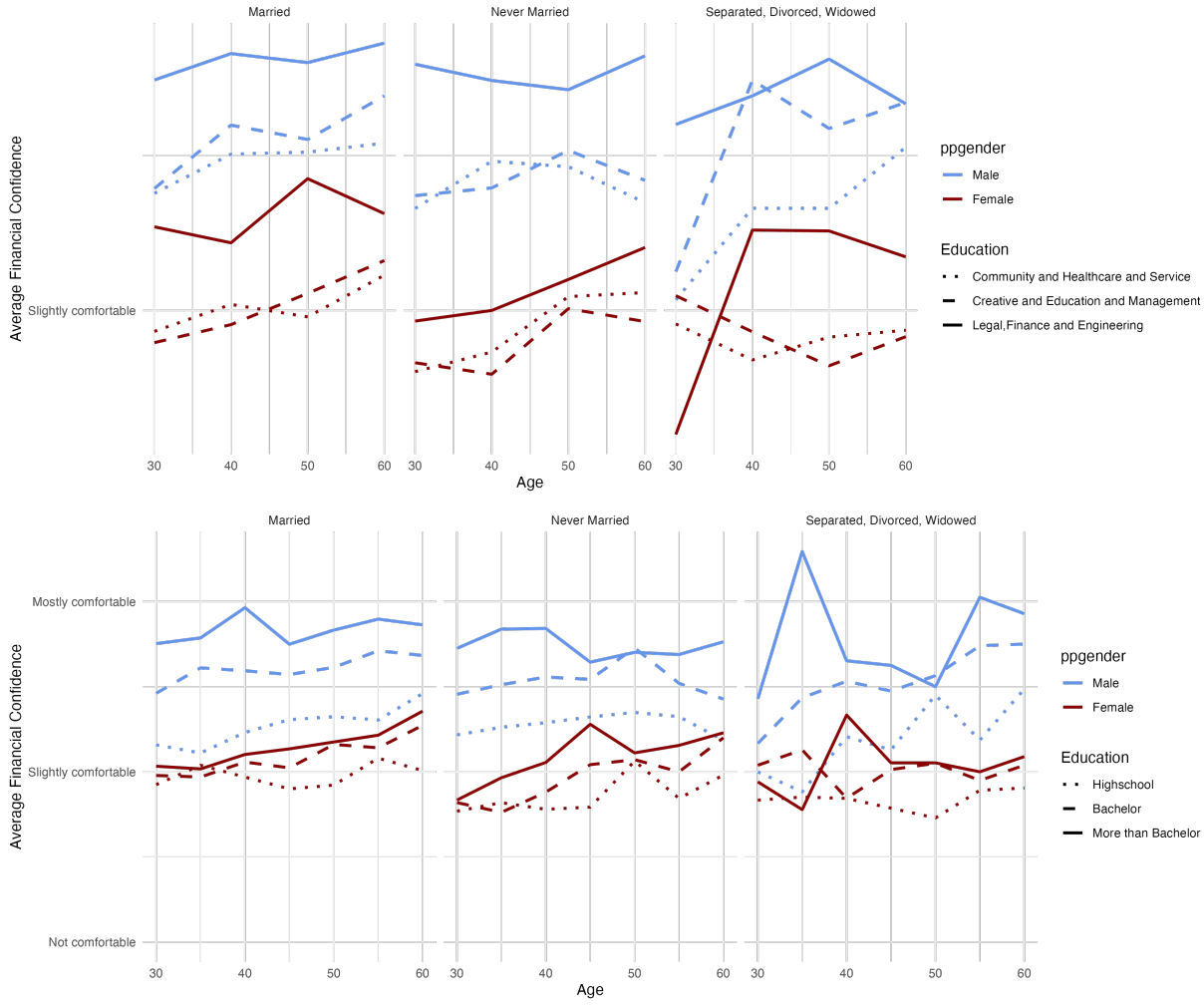


Figure A.2: **Average Financial Confidence over the Life-cycle by marital status, gender, education and occupation.** Uses the 2017-2022 SHED waves.

A.4 Evidence from the US Survey of Consumer Finances

A.4.1 Definition of Equity and Safe Assets and Sample Construction

Table A.6 details which asset variables can be tracked in the Survey of Consumer Finances (SCF) for singles and for each spouse within a couple respectively. This further clarifies the data limitations we face when investigating the gender differences in savings behavior by respondents' marital status, as we can only focus on a subset of all financial instruments agents may invest into.

To identify share of accounts held in stocks, we exploit a set of two questions related to the particular account:

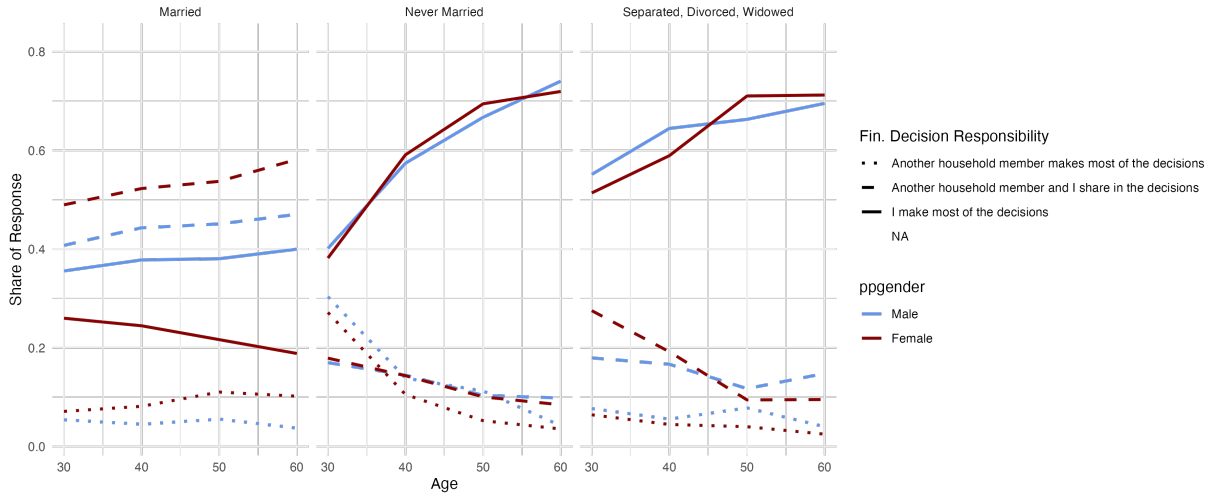


Figure A.3: **Share of each financial responsibility response across the life-cycle and across marital status.** Moving average of cross-section of households 2017-2022, with age bins and separates between the three answers to the financial responsibility question.

1. "How is the money in this account invested? Is it all in stocks, all in interest-earning assets, is it split between these, or something else?"

2. "About what percent is in stocks?"

We obtain the share of stocks in each of these accounts, and define them as individual share in risky assets. Table A.7 lists all types of accounts.

	Spouses	**Singles**
Checking account	YES	YES
Saving account (share in stocks)	YES	YES
IRA/Keogh (share in stocks)	YES	YES
Pension account (401(k), 403(b))(share in stocks)	YES	YES
Current and future pension benefits accounts	YES	YES
Prepaid cards	NO	YES
Govt, mortgage, corporate bonds	NO	YES
Stocks, directly held	NO	YES
Mutual funds (combined, stocks, treasury bonds, etc.)	NO	YES
Trusts, annuities	NO	YES

Table A.6: **Granularity of wealth - individual versus household-level in the SCF.**

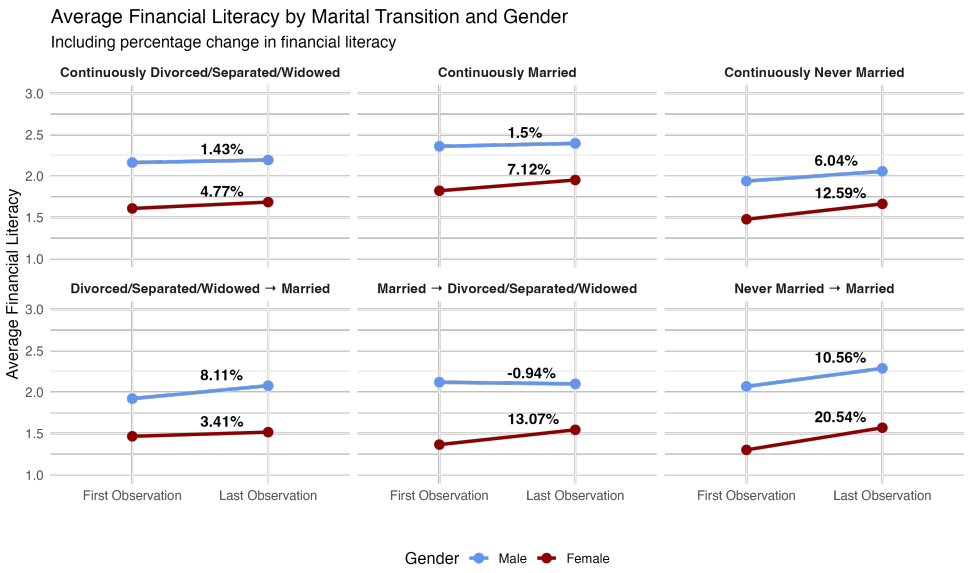


Figure A.4: Average financial literacy across repeated observations by marital transition and gender.

Asset Type	Safe	Risky
Savings accounts	non-equity share	equity share
401k/403b accounts	non-equity share	equity share
all types of IRA/Keogh accounts	non-equity share	equity share
Future pension benefits	non-equity share	equity share
Current pension benefits	non-equity share	equity share
Checking accounts	total amount	-

Table A.7: **Disaggregated individual asset holdings among singles and couples in the SCF.**

A.4.2 The Big Three Questions and Response Rates Across Genders

Lower women's scores in FinLit tests have been systematically shown to hold across countries. We check if the lower score pertains to a specific question among the three, and find no significant differences in the response scores. However, we find that women answer "Don't know" more often (as shown in Table A.8). We code the "Don't know" answer as 0 in our FinLit score calculations, across all three data sets. However, Table A.9 shows that, regardless of which question is answered correctly, women still score lower comparably to men.

A.4.3 Other mechanisms driving the FinLit and wealth gap

Perceived financial knowledge and risk aversion While financial literacy encourages equity participation, it does not drive higher equity holdings. Instead, our findings suggest that a con-

Question	Gender	Don't Know/Refuse	True/More than $102/More than Today	False/Less than Today	Other Responses (Same/Exact)
"Buying a single stock safer than stock mutual fund"	Male	13.6	15.4	**71.0**	-
	Female	25.9	16.9	**57.2**	-
"I.R. 1%, inflation 2%, more or less in a year?"	Male	1.9	5.7	**84.6**	7.7
	Female	3.5	8.2	**74.3**	14.0
"$100 in savings, 2% I.R., how much in 5 years?"	Male	1.5	**82.6**	6.5	9.3
	Female	3.2	**75.4**	7.7	13.8

Table A.8: **Gender differences in responses to financial literacy questions.** Uses the SCF sample of respondents of age 30-65, for waves 2016-2022. The table summarizes responses for three financial literacy questions, showing the percentage of responses by gender. The bolded percentages represent the correct answers.

	FinLit score		
	(1)	(2)	(3)
Portfolio diversification correct	1.183***		
	(0.009)		
Math question 1 ($100)		1.117***	
		(0.011)	
Math question 2 (inflation)			1.276***
			(0.010)
Female	−0.130***	−0.069***	−0.008
	(0.011)	(0.013)	(0.013)
Portfolio div. correct : Female	−0.025**		
	(0.013)		
Mathy question 1 correct: Female		−0.084***	
		(0.014)	
Mathy question 2 correct : Female			−0.108***
			(0.014)
Observations	46,045	46,045	46,045
Adjusted R^2	0.434	0.342	0.418
Note:			*p<0.1; **p<0.05; ***p<0.01

Table A.9: **Question structure and response across gender.** Uses the SCF subsample of respondents of age 30-65 with corresponding survey weights. Correct responses to each of the questions are coded as dummy variables.

fidence wedge—rooted in ambiguity aversion—plays a key role in shaping investment decisions among women. Ambiguity aversion, or the tendency to avoid choices with uncertain probabilities, may lead women to perceive equity returns as lower or riskier, limiting their allocations despite comparable financial knowledge. Consistent with our results on financial literacy (Table 5), perceived financial knowledge slightly increases participation but does not translate into higher investments (Table A.10). In contrast, willingness to take risks has a significant positive effect on equity holdings (Table A.11), even more so for women, reinforcing the idea that risk preferences and the endogenous accumulation of financial knowledge jointly shape women's investment behavior.

	has equity	has safe	$\log \frac{\text{equity}}{\text{wage income}}$	$\log \frac{\text{safe}}{\text{wage income}}$
	(1)	(2)	(3)	(4)
Female	−0.009	0.049***	−0.186	−0.352***
	(0.016)	(0.006)	(0.134)	(0.082)
Female: Moderate Percieved Knowledge	0.037**	−0.033***	0.036	0.287***
	(0.017)	(0.006)	(0.140)	(0.089)
Female: High Percieved Knowledge	−0.014	−0.028***	0.003	0.299***
	(0.017)	(0.006)	(0.139)	(0.089)
Observations	38,392	38,392	16,123	28,500
Adjusted R^2	0.238	0.042	0.103	0.136

Table A.10: **Individual wealth and perceived financial knowledge.** Uses the SCF subsample of workers with reported wage income. "Has equity" is coded as 1 for all individuals with positive equity in any of the pension, checking, and savings accounts. Similarly, "has safe" denotes all individuals with a positive amount of assets in pension, checking, and savings accounts allocated away from stocks. Columns (1)-(2) fitted using a linear probability model. In Columns (3)-(4), the dependent variable denotes asset holdings in pension and checking and savings accounts, adjusted by wage income due to the scalability of private and public pension plans. Controls include year fixed effects, age, education, financial literacy score, marital status, and income in the first two columns. Survey weights are used. *p<0.1; **p<0.05; ***p<0.01.

	has equity	has safe	$\log \frac{\text{equity}}{\text{wage income}}$	$\log \frac{\text{safe}}{\text{wage income}}$
	(1)	(2)	(3)	(4)
Female	0.019**	0.022***	−0.282***	−0.126***
	(0.008)	(0.003)	(0.058)	(0.042)
Moderate Risk Tolerance	0.172***	0.007**	0.264***	0.382***
	(0.007)	(0.003)	(0.048)	(0.039)
High Risk Tolerance	0.149***	−0.003	0.562***	0.371***
	(0.010)	(0.004)	(0.060)	(0.052)
Female: Moderate Risk Tolerance	−0.009	0.001	0.177***	0.171***
	(0.010)	(0.004)	(0.067)	(0.051)
Female: High Risk Tolerance	−0.014	−0.005	0.283***	−0.135*
	(0.015)	(0.006)	(0.098)	(0.080)

Table A.11: **Individual wealth and willingness to take risks.** Uses the SCF subsample of workers with reported wage income. "Has equity" is coded as 1 for all individuals with positive equity in any of the pension, checking, and savings accounts. Similarly, "has safe" denotes all individuals with a positive amount of assets in pension, checking, and savings accounts allocated away from stocks. Columns (1)-(2) fitted using a linear probability model. In Columns (3)-(4), the dependent variable denotes asset holdings in pension and checking and savings accounts, adjusted by wage income due to the scalability of private and public pension plans. Controls include year fixed effects, age, education, financial literacy score, marital status, and income in the first two columns. Survey weights are used. *p<0.1; **p<0.05; ***p<0.01.

Tax Filings. The SCF allows to track whether respondents file their taxes separately from their spouse. Filing taxes separately does not have a significant effect on the gender differences in financial literacy, but positively correlates with financial confidence (Table A.12), suggesting that independence with respect to decisions that affect individuals financially can affect their

financial confidence.

	Perceived Financial Knowledge	FinLit Score
Female	0.182***	-0.352
	(0.041)	(0.040)
Female :Filed jointly	0.054	0.004
	(0.056)	(0.054)
Female: Filed separately	−0.017***	-0.044
	(0.081)	(0.080)
Female: Only respondent filed	1.073***	-0.297
	(0.187)	(0.185)
Female: Only spouse filed	−0.211	0.186
	(0.445)	(0.427)
Observations	38,287	38,287
Pseudo R^2	0.04	0.10
Note:	*p<0.1; **p<0.05; ***p<0.01	

Table A.12: **Tax filing, perceived financial knowledge and the FinLit score.** Uses the subsample of workers with recorded wage incomes in waves 2016-2022. Financial knowledge and FinLit score represented with values 1-3, and the model is ordered logistic regression. Filing options are coded as dummies. Controls include year fixed effects, wage income, education, and age.

Research effort in finding investment opportunities. Differential research effort seems not to contribute to the gender gap in investment behavior. We define research effort through responses to the following question:

> "On a scale from zero to ten, where zero is no searching and ten is a great deal of searching, what number would you be on the scale?"

We bin responses into low (0-3), moderate (4-7), and high (8-10) time dedication. Table A.13 shows that women report spending more time on average. Contrary to the notion that women may be less engaged in financial decision-making, the SCF data shows that women, on average, report dedicating more time to researching both borrowing and investment opportunities (as shown in Table A.13). However, despite the higher effort, their investment allocations remain more conservative, suggesting that factors beyond information constraints—such as risk preferences and financial confidence—may be at play.

Revolving debt To further explore the asymmetric impact of financial literacy on investment decisions, we examine gender differences in credit card debt management. Table A.14 indicates that financial literacy has a more pronounced effect on women's ability to manage credit card interest rates. This suggests that women may respond more effectively to financial education when dealing with debt instruments often perceived as a necessity rather than an inherently risky financial exposure.

Taking up financial advisors SCF data show that financially literate women are more likely to seek financial advice (Table A.15), which might facilitate market entry (the intensive margin of equity participation in the main part of the text) but not significantly affect portfolio allocation.

	Search amount (borrowing)	Search amount (investing)
FinLit score 2	0.145***	0.172***
	(0.055)	(0.055)
FinLit score 3	0.378***	0.276***
	(0.053)	(0.053)
Female	0.398***	0.137**
	(0.057)	(0.058)
Never Married	−0.458***	−0.148***
	(0.033)	(0.032)
Separated	−0.315***	−0.107***
	(0.032)	(0.031)
FinLit score 2: Female	−0.278***	−0.198***
	(0.070)	(0.070)
FinLit score 3: Female	−0.337***	−0.199***
	(0.068)	(0.067)
Observations	38,392	38,392
Pseudo R^2	0.024	0.014

Table A.13: **Research effort when investing.** Uses the subsample of workers with recorded wage incomes in waves 2016-2022. Research effort is denoted with 1-3, depending on the time reported spent in searching. FinLit score is discrete with values 1-3, and the model is ordered logistic regression. Controls include year fixed effects, wage income, education, and age. *p<0.1; **p<0.05; ***p<0.01.

	Credit card interest rate
Female	0.797***
	(0.218)
FinLit score 2	−0.037
	(0.202)
FinLit score 3	0.575***
	(0.190)
log(wage income)	−0.115**
	(0.052)
Never Married	−0.243**
	(0.120)
Separated	0.479***
	(0.115)
Female: FinLit score 2	−0.810***
	(0.261)
Female: FinLit score 3	−0.883***
	(0.247)
Constant	16.199***
	(0.623)
Observations	31,469
R^2	0.019
Adjusted R^2	0.019
Residual Std. Error	1,080.870 (df = 31454)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A.14: **Gender differences in credit card interest rate.** Uses the SCF subsample of workers with reported wage income and credit card debt amounts. Marital status and gender are coded as dummy variables with ”Married” and ”Male” as reference categories. Controls include age, education, income, debt amount, and year fixed effects.

This pattern suggests that while advisors mitigate barriers to participation, they do not override underlying risk preferences. Coupled with evidence that women exert greater research effort in financial decision-making (Table A.13), this implies that advisors may serve as a complement rather than a substitute in shaping investment behavior, particularly outside equity markets.

	Turning to financial advisor when...	
	borrowing	investing
	(1)	(2)
Female	−0.049***	0.053***
	(0.010)	(0.011)
FinLit score 2	−0.029***	−0.001
	(0.009)	(0.011)
FinLit score 3	−0.040***	−0.008
	(0.009)	(0.010)
Never Married	−0.054***	−0.077***
	(0.005)	(0.006)
Separated	−0.039***	−0.074***
	(0.005)	(0.006)
Female: FinLit score 2	0.032***	−0.002
	(0.012)	(0.014)
Female:FinLit score 3	0.071***	0.045***
	(0.011)	(0.013)
Constant	0.135***	0.122***
	(0.030)	(0.035)
Observations	38,392	38,392
Pseudo R^2	0.017	0.037
Note:		*p<0.1; **p<0.05; ***p<0.01

Table A.15: **Financial advisor uptake across gender and FinLit score.** Uses the SCF subsample of workers with reported wage income and survey weights. Advisor take-up is coded as an indicator, and FinLit and marital status are category variables with "1" and "Married" as references. Controls include age, income, education, and year fixed effects.

Heterogeneity in Finlit effects on equity holdings In the main text, we show that while financial literacy (FinLit) significantly influences equity participation among women, its effect on the amount invested is much less pronounced. To understand the underlying effect of other characteristics, we focus on the heterogeneity of this effect across marital status and find substantial variation among women. Figure A.5 shows that the dampening effect of FinLit on equity holdings is most pronounced among separated women, who exhibit a negative relationship between financial literacy and equity investment. As discussed in the main text, this negative effect diminishes over time as financial literacy improves post-separation, suggesting a process of financial adaptation that helps reduce post-marital financial disparities.

For cohabiting (married) and never-married women, the relationship with equity holdings remains positive but weaker. This suggests that marital status—particularly separation—plays a crucial role in shaping how financial literacy influences investment behavior, with separated women facing greater challenges in leveraging FinLit for wealth accumulation.

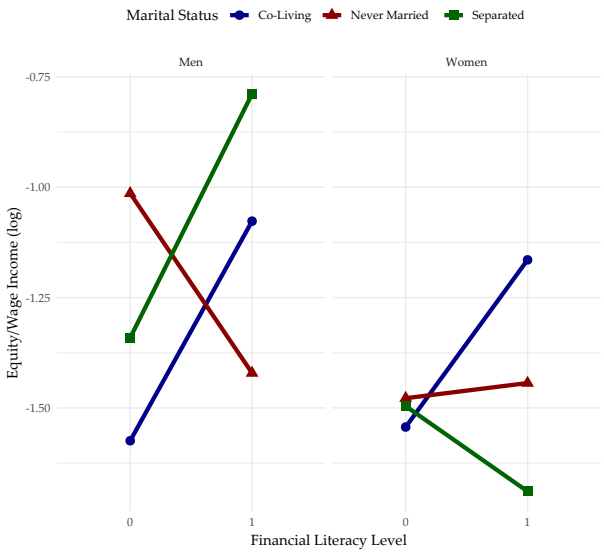


Figure A.5: **Marginal effects plot illustrating the triple interaction between gender, marital status, and financial literacy (FinLit) on (log) equity-to-income holdings.** Uses the SCF subsample of workers with reported wage income and positive equity holdings with survey weights. Controls include education, age, and year fixed effects.

	log(equity/wage income)	log(safe assets/wage income)
	(1)	(2)
Never Married	0.560***	0.135
	(0.157)	(0.104)
Separated	0.233	−0.015
	(0.205)	(0.118)
Female	0.031	0.177**
	(0.106)	(0.087)
FinLit score ≥2	0.497***	0.536***
	(0.083)	(0.072)
Never Married: Female	−0.495**	−0.451***
	(0.218)	(0.134)
Separated: Female	−0.186	−0.814***
	(0.246)	(0.142)
Never Married: Finlit Score ≥ 2	−0.904***	−0.064
	(0.169)	(0.114)
Separated: FinLit score ≥ 2	0.055	−0.255**
	(0.216)	(0.129)
Female: FinLit score ≥ 2	−0.119	−0.112
	(0.112)	(0.094)
Never Married:Female:FinLit score ≥ 2	0.560**	−0.027
	(0.235)	(0.150)
Separated:Female:FinLit score ≥ 2	−0.627**	0.473***
	(0.261)	(0.157)
Constant	−2.492***	−2.757***
	(0.116)	(0.093)
Observations	16,123	28,500
R^2	0.095	0.125
Adjusted R^2	0.094	0.124
Note:		*p<0.1; **p<0.05; ***p<0.01

Table A.16: **Equity and safe holdings relative to income, heterogeneity in FinLit effects.** Uses the subsample of SCF workers with reported wage income and positive equity and safe asset holdings, respectively. Controls include age, education, and year fixed effects.

Motivating the wedge Our analysis shows that the effect of financial literacy (FinLit) on equity holdings differs by marital status, particularly among women, and that this effect is more dynamic than among men. Coupled with lower levels of financial knowledge and confidence, we consistently find that women, on average, hold substantially less equity than men, even though financial literacy has a positive effect on equity holdings among married and never-married women. On the other hand, the willingness to take risks has a significant and positive effect on female equity holdings, as shown in Table A.11.

We motivate the wedge along three dimensions, as shown in Tables A.17 and A.19. First, we show that women are less willing to take risks compared to men, even after controlling for financial literacy. Second, we show that this difference in risk willingness translates directly into behavior, with women consistently reporting lower levels of risk-taking. Lastly, we use data from singles, consisting of granular wealth decomposition to control for marital status effects. By applying a revealed preference argument, we show that women exhibit a preference for safer assets, even after controlling for financial literacy.

	Willingness to take risks (Risk tolerance)	Amount of risk taken
	(1)	(2)
Female	−0.430***	-0.140***
	(0.025)	(0.025)
Moderate risk tolerance		1.631***
		(0.029)
High risk tolerance		2.820***
		(0.046)
FinLit score 2	0.157***	0.235***
	(0.036)	(0.038)
FinLit score 3	0.429***	0.693***
	(0.037)	(0.038)
Observations	38,392	38,392
Pseudo R^2	0.326	0.394

Table A.17: **Risk-taking behavior and risk tolerance among women.** Uses the SCF subsample of workers with reported wage income. Willingness to take risk is based on a 3-scale measure, and the amount of risk taken is self-reported on a scale 0-3. Estimated using the ordinary logistic model with corresponding survey weights. Controls include age, education, income and year fixed effects.

Using data on singles, we exclude retirement accounts and isolate active investment behavior to shed light on the gendered patterns of equity ownership independent of marital status, further motivating the wedge. Table A.18 outlines the distinction between equity (risky) and safe assets in our analysis. Regression results in Table A.19 show a clear pattern of gendered preference for risky assets.

Equity	**Safe Assets**
savings account share in stocks	savings accounts share outside of stocks
total stock in trusts	total bond in trusts
corporate, mortgage-backed and foreign bond	government, tax-free and savings bonds
company and foreign stock value	-
stock, combination, and other funds	-
IRA/Keogh share in stocks	IRA/Keogh share in bonds
pensions share in stocks	pensions share in bonds
-	checking accounts

Table A.18: **Asset breakdown among singles in the SCF data.**

	equity investment share	safe investment share
	(1)	(2)
Female	-0.237^{**}	-0.005
	(0.114)	(0.008)
FinLit score 2	-0.278^{**}	-0.015^{**}
	(0.109)	(0.007)
FinLit score 3	-0.181^{*}	-0.075^{***}
	(0.107)	(0.007)
Female: FinLit score 2	0.174	0.017^{*}
	(0.123)	(0.010)
Female: FinLit score 3	0.180	0.044^{***}
	(0.117)	(0.010)
Observations	916	8,148
R^2	0.179	0.096
Adjusted R^2	0.169	0.095
Note:		*p<0.1; **p<0.05; ***p<0.01

Table A.19: **Equity investments outside retirement accounts among singles in the SCF data.** Uses the SCF sample of never-married individuals with reported wage income and survey weights. The left column shows singles with positive equity holdings, while the right column shows those with positive safe assets. Controls include age, education, and year fixed effects.

A.4.4 Returns and FinLit

A.4.5 Life-cycle events, perceived financial knowledge and willingness to take risks

Parallel to our findings on the effects of life-cycle events on FinLit scores and how these differ for women, we show that women exhibit more dynamics in their willingness to take risks (as shown in Table A.21), which ultimately translates to their portfolio shifts, as shown in Table 7 in the main text.

	Perceived financial knowledge (1-4)		
	(1)	(2)	(3)
Female	−0.031	0.497***	−0.496***
	(0.093)	(0.183)	(0.056)
Time Since Separation/Divorce/Widowhood	−0.034**		
	(0.006)		
Time Since Sep/Div/Widow:Female	0.029***		
	(0.006)		
Time Since Partner Became Disabled/Retired		−0.021**	
		(0.012)	
Time Since Partner Dis/Ret:Female		−0.039	
		(0.017)	
Years Married			−0.001
			(0.006)
Years Married:Female			−0.010
			(0.007)
Observations	6,448	2,160	24,874
Pseudo R^2	0.048	0.114	0.105
Note:			*p<0.1; **p<0.05; ***p<0.01

Table A.20: **Percieved financial knowledge and lifecycle events by gender.** Uses the SCF subsample of workers with recorded wage income. Estimated by fitting ordinal logistic model, using survey weights. Fin. knowledge takes values 1-4, with 1 denoting the lowest. Time passed is coded as the number of years since the event, and gender is coded as a dummy variable. All estimates control for respondent's education, age, income, and year fixed effects.

	Willingness to take financial risk		
	(1)	(2)	(3)
Female	−0.952***	−0.020	−0.259***
	(0.097)	(0.164)	(0.058)
Time Since Separation/Divorce/Widowhood	−0.015***		
	(0.009)		
Time Since Sep/Div/Widow:Female	0.019***		
	(0.007)		
Time Since Partner Became Disabled/Retired		−0.026	
		(0.009)	
Time Since Partner Dis/Ret:Female		−0.033*	
		(0.018)	
Years Married			0.0014
			(0.002)
Years Married:Female			0.0005
			(0.003)
Observations	6,448	2,160	24,679
Pseudo R^2	0.049	0.054	0.039
Note: Controls include ind. income, age, education and year FE.			*p<0.1; **p<0.05; ***p<0.01

Table A.21: **Financial risk-taking and lifecycle events by gender.** Uses the SCF subsample of workers with recorded wage income. Estimated by fitting ordinal logistic model, using survey weights. Fin. knowledge takes values 1-4, with 1 denoting the lowest. Time passed is coded as the number of years since the event, and gender is coded as a dummy variable. All estimates control for respondent's education, age, income, and year fixed effects.

B Model Specifications

Parameter	Value	Description
R	1.03	Safe return
β	0.96	Discount rate
Twork	40	Periods working
Told	15	Periods retired
γ	5	Risk aversion
δ	0.9	Finlit depreciation
h_h	1/3	Share of consumption lost (high shock)
h_l	1/4	Share of consumption lost (low shock)
Prob_h	0.3	Probability of high health shock
pen	0.68212	Pension replacement rate
τ	0.2	Tax progressivity
τ_{max}	0.5	Maximum tax rate
Aa (non-college)	0.530	Wage progression intercept (non-college)
B1 (non-college)	0.168	Linear term (non-college)
B2 (non-college)	-0.00323	Quadratic term (non-college)
B3 (non-college)	0.0000197	Cubic term (non-college)
Aa (college)	-1.614	Wage progression intercept (college)
B1 (college)	0.3194	Linear term (college)
B2 (college)	-0.00577	Quadratic term (college)
B3 (college)	0.000033	Cubic term (college)
μ_y	0	Mean productivity shock
ρ	0.8	Productivity persistence
σ_ν	0.25	Standard deviation of productivity
$\mu_{\tilde{R}}$	1.04	Mean return on risky assets
$\sigma_{\tilde{R}}$	0.2	Standard deviation of risky returns
Female longevity	1.02	Female survival probability scaling
Wage gap	0.8	Scaling factor on female wages

Figure B.6: **Model parameters and their initial values.** Values are broadly following the literature and are currently only for illustrative purposes.

Target the averages, but check the lifecycle paths and see.

Parameter	Value	Source/Target
Externally set		
wage process		Borella et al. (2022)
survival probabilities		actuarial data from US (here)
medical expenditure shocks $h_{L,H}$		Borella et al. (2022); Bacher (2024) age-dependent
equivalence scale $\eta^{\mathcal{M}}$		De Nardi structural models and Bacher
divorce probabilities d_t		separated age profiles in SCF
unconditional marriage probabilities μ_t		shares married, age profile in the SCF
conditional marriage probabilities $\Pi(e_i, e_j)$		marriages shares by education in SCF
δ		Lusardi (6%)
Internally calibrated		
θ		risky asset share (SCF/Dutch data)
$\pi(\iota)^g$		average FinLit by gender in SCF
		stock participation SCF/Dutch
$\pi(\iota)^{e,g}$		average FinLit by gender and educ

Table B.22: Model paramaters.

C Calibration and Parametrization - to be commented out for draft

One study reported that undergraduates' economic learning depreciated at 4-10% annually (Kipps, Kohen, and Paden 1984). Wage and labor supply information have also been used to measure human capital depreciation; for instance, Heckman (1976) estimated annual depreciation rates of 3-7%

.

C.1 Externally set

I have prepared shares married and separated for each age bin, and conditional on being married, share of spouses with same eduction in Table C.23. To have all education combinations I have done the table of weighted shares of these matches in the SCF data among Co-Living in Table C.24, and let's keep them fixed over age for the time being.

age_group	married	same educ (if married)	separated
(25,30]	0.5814408	0.6428041	0.04539600
(30,35]	0.6228855	0.6877846	0.09431109
(35,40]	0.6538568	0.6962316	0.13649628
(40,45]	0.6408428	0.6870740	0.18746253
(45,50]	0.6547357	0.7075373	0.22184113
(50,55]	0.5932749	0.6892659	0.26802524
(55,60]	0.5831226	0.6940225	0.29754146
(60,65]	0.5747755	0.7302073	0.33240389

Table C.23: Marital status shares over the lifecycle.

Respondent gender	educ. comb	share
Male Non-College Respondent, Non-College Spouse	20.6%	
Female Non-College Respondent, Non-College Spouse	26.0%	
Male Non-College Respondent, College Spouse	3.81%	
Female Non-College Respondent, College Spouse	5.53%	
Male College Respondent, Non-College Spouse	9.96%	
Female College Respondent, Non-College Spouse	11.4 %	
Male College Respondent, College Spouse	14.7 %	
Female College Respondent, College Spouse	7.93%	

Table C.24: Education matches, aggregate.

C.2 Internally calibrated

We will first try using average shares of risky assets for men and women across the total sample, and then see if the calibration delivers an okay match with lifecycle profiles (risk aversion and beta can help if we run out of options).

Another option that does not involve going for a lifecycle is to use the marital status breakdown of FinLit to inform the costs $\pi(\iota)^{g,\mathcal{S},\mathcal{M}}$ - this gives it some dynamics because we do have probabilities of marriage and divorce over time.

Health process We could parametrize the percentage of income taken away for low and high shock by matching wealth data among retirees. In the data, I would be using equity+safe at every age bin in retirement, on your end, you calculate the wealth distribution, and then we rescale it to see if it matches. Probability-wise, we would need to use medical expense data (or averages by Mariacritina), but maybe the wealth would help us enough.

C.3 Targeted

Equity share across the sample 25-80, SCF. Informing θ The third column excludes retirement accounts.

Gender	equity share (ret acc.)	equity share (no ret acc.)
Male	0.38	0.60
Female	0.27	0.55

Equity participation across gender, 25-80. Informing $\pi(\iota)^g$

gender	eq participation includes ret acc	eq participation excludes ret acc
Male	0.37	0.37
Female	0.26	0.25

Average FinLit by gender in SCF. Informing $\pi(\iota)^g$

Gender	average FinLit
Male	0.80
Female	0.70

Average FinLit by gender and marital status. Informing $\pi(\iota)^{g,\mathcal{S},\mathcal{M}}$

Education	gender	avg FinLit
High School	Male	0.72
	Female	0.66
Bachelor	Male	0.86
	Female	0.75
Post-Bacc	Male	0.92
	Female	0.82

status	gender	Avg FinLit
Co-Living	Male	0.83
	Female	0.73
Separated	Male	0.73
	Female	0.68
Never Married	Male	0.74
	Female	0.65

C.4 Non-targeted

Equity shares and financial literacy across the lifecycle, 25-80, SCF. The third column excludes retirement accounts.

Age bin	gender	equity share (ret acc.)	equity share (no ret acc.)	Avg Finlit
25-30	Male	0.35	0.67	0.75
	Female	0.16	0.61	0.64
30-35	Male	0.30	0.64	0.79
	Female	0.21	0.62	0.65
35-40	Male	0.36	0.68	0.78
	Female	0.23	0.60	0.68
40-45	Male	0.42	0.68	0.81
	Female	0.23	0.57	0.69
45-50	Male	0.38	0.64	0.79
	Female	0.26	0.58	0.70
50-55	Male	0.38	0.61	0.81
	Female	0.28	0.58	0.74
55-60	Male	0.43	0.59	0.81
	Female	0.30	0.52	0.75
60-65	Male	0.40	0.54	0.82
	Female	0.34	0.54	0.72
65-70	Male	0.43	0.55	0.81
	Female	0.30	0.50	0.71
70-75	Male	0.37	0.51	0.82
	Female	0.37	0.54	0.72
75-80	Male	0.42	0.53	0.81
	Female	0.31	0.45	0.67