THE IMPACT OF SOCIO-DEMOGRAPHIC
FACTORS ON GENDER DIFFERENCES IN
FINANCIAL DECISION-MAKING

by

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ACKNOWLEDGMENTS

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LIST OF ABBREVIATIONS

SIPP Survey of Income and Program Participation

SCF Survey of Consumer Finances

NGO Non-governmental organization

CHAPTER 1. INTRODUCTION

The relationship between gender and financial decision-making has for long been an issue that has attracted attention amongst economists and other scholars of finance. Studies have shown that features of financial behavior, for instance, choice of investments, level of risks, saving habits, differs among gender. Unequal financial returns, retirement savings, investment portfolios, and overall financial well-being result from such differences.

Socio-demographic factors such as age, educational degree, salary, single/married status, type of employment and culture affect individual's financial circumstances. Of course, these socio-demographic factors can influence financing decisions, however, it is still unknown how much interrelation they have with gender and why women make different financing decisions compared to men.

The motivation for the study lies in effects of gender-based financial disparities on the affected person, family, or the society. Understanding the causes of differences would result in better policies and interventions for achieving financial equality and prosperity among the society members. In general, financial institutions and service providers, develop products and services ignoring the different financial needs and preferences among genders. The study helps identify the socio-demographic factors which influence these gender disparities, hence suggesting ways of designing specific finance options that will consider such variations in population.

Financial inequality contributes to wider gender inequalities and is one of the key global goals. Further, the thesis will help in the ongoing talk about gender equality by explaining how genders differ in financial decision making.

Gender studies and finance in combination with socio-demographic factors is indeed a promising research area. The thesis contributes to what is already written about gender and finances, brings new insights, and revisits some of the established theories and models thereof.

This thesis inspects the causes of the gender investment gap and concludes whether income level, household members and other social and cultural factors contribute to women's willingness to invest in lower-risk assets. The research answers the question if differences in investment behavior arise due to factors (such as income profiles, number of household members, etc.) and what is the effect. Women and men face difficulties when it comes to investment decisions, there are differences in access to resources, opportunities, and financial education.

The literature review reveals two complementary theories regarding the gender investment gap. The first theory suggests that women in nature are more risk-averse which results in less participation in financial markets and a preference for low-risk assets. The second theory challenges the significance of risk tolerance and emphasizes other factors such as income level, number of households, future expectations about them, financial knowledge, investment experience, social influence, etc.

The results of this study complement the existing literature by considering new factors as observable determinants of the investment gender gap. Since previous studies have mostly focused on personal traits such as risk-aversion, and attributes, this article considers sociodemographic factors. The thesis highlights the challenges women face in accessing resources and opportunities on gaining knowledge of the different levels of financial literacy among men and women. Also, the study noted the impact of traditional gender roles and stereotypes on financial decision-making.

This study is used US data. The reasons for choosing the US financial market are the following: rich data availability - there are numerous data sources relating to financial behavior, investment choices, or socio-demographic characteristics in the U.S; diversity – the United States is one of the most heterogeneous countries with regards to people and the financial market, this variety enables to study on a very broad scope of some socio-demographic aspects; economic significance – the U.S. boasts of one of the largest and powerful financial markets in the world, the individual investment decisions in the USA have international economic impacts; policy application – the study can contribute to ongoing policy debates and initiatives aimed at promoting financial equity. The Census

Bureau's Income and Program Participation Survey (SIPP) is used, and Tobit regression models are implemented to estimate the determinants of the investment gap between women and men.

An analysis of SIPP data detects a gender gap in financial behavior, for instance, that women tend to earn less from risky assets than men. The gap is presented the most in the age range of 30 to 40 years, attributed to career interruptions due to family responsibilities and societal constraints.

The implications of the gender investment gap extend beyond the stock market, with similar disparities observed in real estate markets and retirement accounts. The paper emphasizes the importance of understanding whether differences in risk-taking are driven by preferences or societal constraints when designing policies to promote female financial security.

This paper gives insights concerning the factors that contribute to the gender gap in financial decision-making and highlights the need for educational programs and initiatives to improve financial literacy among women and men both.

The paper is organized as follows: Chapter 2 gives analytical review towards the underlying theory and related study conducted, which allows for a comprehensive understanding of the existing knowledge and the contributions made by previous researchers; Chapter 3 describes the methodology applied in this research by explaining the socio-demographic factors selected as explanatory variables for income from more and less risky assets, as well as the sources and methods used to collect the required information for the analysis; Chapter 4 provides the analysis of the data and dataset; Chapter 5 presents the results obtained and interpretation; Chapter 6 summarizes the key insights, gives recommendation and suggestions for future research.

CHAPTER 2. LITERATURE RVIEW

There are two complementary theories about the main causes of less participation of women in financial market operations and holding less risky assets. The first one relates to the literature documents that the gap is driven by a difference in risk preferences and beliefs. Jianakoplos and Bernasek (1998) reported statistically significant differences between women and men even after accounting for other demographic and socioeconomic factors (age, income, education, wealth). They conclude that women, on average, tend to be risk-averse when it comes to investment decisions.

Overconfidence may be the main factor driving men to trade more often or invest in riskier assets such as stocks. Barber and Odean (2001) found that men are involved in more speculative and non-optimal investment behavior compared to women. Overconfidence induces men to have higher transaction costs and earn lower returns. The concept of overconfidence and sensation seeking is also mentioned by Hager (2022). In this paper personality traits, emotional and cognitive differences are observed. Women, in general, have greater neuroticism (feeling anxiety, irritability, depression, etc.) and agreeableness (being altruistic and tender-minded) scores, which have an impact on their investment choices. High neuroticism makes people more risk-averse and more likely to hold low-risk portfolios because it causes larger emotional reactions to financial loss. Similarly, a desire for fewer hazardous investments is correlated with high agreeability. Aggressive behavior is more inherent for men, rather than women, this type of attitude implies lower risk aversion.

Byrnes, Miller, and Schafer (1999) examine that men engage in more risk-taking behavior. This fact is mainly explained by the socialization processes, hormonal influences, and differences in risk perception and tolerance. Men tend to consider the danger as a fascinating situation and in many cases tried to reach it. An example of such situations may be seen in the abuse of drugs, gambling, and alcohol and their actions on the roads.

Experimental studies by Charness and Gneezy (2012) showed that women in general select low-risk asset allocations when playing investment games. Survey evidence

that women underestimate their risk-taking willingness even when controlling for other factors is presented also in Eckel and Grossman (2008). However, differences in risk-aversion may arise not from the innate diverse willingness of taking risk, but from the heterogeneity in expectation about future income levels and household size.

The second theory that contradicts the significant effect of risky tolerance on investment behavior is presented in the next papers. Jørgensen and Tranaas (2020) argue that there is no evidence for choosing different risk levels when comparing individuals of a different gender. The existence of gender-related differences in investment decisions within equity crowdfunding is influenced by a variety of factors, besides risk tolerance, including financial knowledge, investment experience, and social influence. The phenomenon of homophily is described: women are more likely to invest in ventures with a female entrepreneurial team, and they more often choose partners like them (in this case the main character is gender).

Furthermore, the study highlights the impact of gender diversity among investment decision-makers. Greater gender diversity in investment teams may lead to better decision outcomes, as the inclusion of diverse perspectives and approaches can mitigate biases and enhance overall investment performance.

Rygård (2020) explores the topic of gender differences in financial decisions. This study analyzes the gap in economic decision-making between men and women and the factors that may contribute to these differences. Key factors that explain dissimilarities include investment decisions, risk tolerance, savings behavior, and financial planning.

The author found that women had lower financial confidence than men. This difference in confidence levels can influence financial decisions, as individuals with higher confidence levels are more likely to engage in risk-taking investment activities. In addition, the author investigates social and cultural factors that contribute to gender differences in economic decision-making. Socialization and stereotypes about traditional gender roles significantly impact the attitudes. The influence of educational and professional backgrounds on the financial decision-making gap is significant. Women in general have

lower years of experience and level of wage due to babysitting, taking care of other members of the household, unpaid domestic work, and other relative factors.

Bacher (2023) provides the innovative approach and hypotheses that controvert the empirical results made in this field before, paying attention to the participation in the stock market of single individuals and the allocation of risky assets in their investment portfolios. Previous empirical studies have shown that women tend to be more risk-averse in their financial choices, that considered to explain the lower equity share among women. However, this paper presents a structural life-cycle framework analysis that matches the gender investment gap without assuming gender differences in risk preferences.

The author confirms the existence of a gender investment gap, even after accounting for various observable characteristics that influence investment behavior. The gap is largest among young households and decreases over the life cycle. To investigate the factors contributing to the unexplained portion of the gap, the author develops a life-cycle model of portfolio choice that considers household structure (single or couple) and gender. The model is calibrated and estimated using financial and demographic data. The results show that differences in income levels and household sizes are the main determinants of the gender investment gap.

The paper emphasizes the significance of income levels and future earnings expectations in explaining the investment behavior of single women and men. Even if a woman has the same financial wealth and risk aversion as a man, it is rational for her to invest less in risky assets if she expects to earn less in the future. Worse expectations about the future are evidenced by the higher responsibility for women (taking care of household members) and the more painful perception of divorce. Additionally, larger household sizes, particularly due to the likelihood of having children, contribute to reduced financial risk-taking among single women.

The author decomposes the gender investment gap into a composition effect (differences in observable characteristics) and a policy effect (differences in decision rules for equity shares based on future expectations). The findings indicate that early in life, the policy effect is the main driver of the gap, whereas later in life, differences in observable

characteristics become more significant. The paper provides empirical evidence supporting gender differences in expectations regarding future earnings and household composition, particularly among young households.

The implications of the gender investment gap extend beyond the stock market, with evidence of similar disparities in real estate markets and retirement accounts. The paper emphasizes the importance of understanding whether differences in risk-taking are driven by preferences or societal constraints when designing policies to promote female financial security. The author suggests that removing constraints and encouraging women to invest in riskier assets could have positive effects on wealth accumulation and reduce dependence on government transfers during old age.

Love (2010) also explores the role of gender in the relationship between marital status, children, and financial behavior. The effects of marital status and children on savings and portfolio choice differ between male and female individuals. For instance, married women with children are likely to save less compared to single women, while married men with children accumulate more money than single men. Cubeddu and Rios-Rull (2003) modeled changes in marital status as exogenous shocks, they investigated the effect of fertility, marriage, and divorce on the fraction of wealth invested by women in stocks versus bonds.

Marital status, number of children, and family shocks that may face individuals significantly influence financial decision-making. The share of risky assets in the women's investment portfolio increases after the marriage and declines after the divorce, for men the situation goes in the opposite direction. The presence of children tends to reduce savings levels and promote risk-averse investment strategies. Understanding these dynamics can provide valuable insights for individuals, policymakers, and financial institutions in designing appropriate financial plans and services.

Summing up, the first theory insists on gender differences in risk preferences and beliefs. Some studies reveal that sex differences in risk attitudes remain after controlling for some socio-demographic variables like age, income, education, and wealth. The conclusion

about high level of overconfidence, especially amongst male investors, which result in an increased prevalence of high frequency trading in risky assets was made.

Neuroticism and extraversion are among the personality traits that affect women's investment decisions. Individuals who are high in neurotic and agreeable persons will most likely be unwilling to take any risks or dangerous deals. Other reasons for different investment behavior include socialization processes, hormonal influences, risk perception, and tolerance.

The second theory describes factors beyond risk tolerance: financial confidence and social, cultural circumstances have significant effect on behavior regarding investments. Financial attitudes are influenced by socialization and stereotypes related to traditional gender roles. Factors like care giving responsibilities make men take the leading role in financial decision making because of their educational and professional background.

If women were encouraged to put their money into riskier asset, it might lead to improved wealth accumulation and the reduced need of depending on government transfer schemes in later life.

The empirical gap in financial decision-making reported above can be associated with the differences in circumstances (observable characteristics) or due to different preferences or personal traits (unobservable characteristics). For the investigation of the general effect of circumstances on the portfolio choices, Tobit regressions (to account for households that do not participate in the market) were used. Dependent variables are the following: 1) share of total interest income earned over the reference period from jointly owned certificates of deposit and 2) share of dividend income earned over the reference period from jointly owned stocks.

   Tobit regressions were made for both genders to investigate the effect of socio-demographic factors on female and male separately and obtain how family-related shocks along with the employment type, age and others change the direction of financing-decisions.

   The estimated regressions with a detailed explanation for independent variables are presented below:

$$STOCKS\_INC_{it} = \alpha_0 + \text{\ss}_1 * AGE_{it} + \text{\ss}_2 * (AGE * CHILD)_{it} + \text{\ss}_3 * AGE^2{}_{it} + \text{\ss}_4$$
$$* EMPLOYEE_{it} + \text{\ss}_5 * SELFEMPL_{it} + \text{\ss}_6$$
$$* MARRIEDP_{it} + \text{\ss}_7 * MARRIEDA_{it} + \text{\ss}_8 * WIDOWED_{it} + \text{\ss}_9$$
$$* DIVORCED_{it} + \text{\ss}_{10} * SEPARATED_{it} + \text{\ss}_{11} * CHILD_{it} + \text{\ss}_{12}$$
$$* (CHILD * DIVORCED)_{it} + \text{\ss}_{13} * BUSINESS_{it} + \text{\ss}_{14} * (BUSINESS * EMPLOYEE)_{it} * \text{\ss}$$
$$* year_{it} + \varepsilon_{it}$$

(1)

$$
\begin{aligned}
DEP\_INC_{it} = {} & \varphi_0 + c_1 * AGE_{it} + c_2 * (AGE * CHILD)_{it} + c_3 * AGE^2{}_{it} + c_4 \\
& * EMPLOYEE_{it} + c_5 * SELFEMPL_{it} + c_6 \\
& * MARRIEDP_{it} + c_7 * MARRIEDA_{it} + c_8 * WIDOWED_{it} + c_9 \\
& * DIVORCED_{it} + c_{10} * SEPARATED_{it} + c_{11} * CHILD_{it} + c_{12} \\
& * (CHILD * DIVORCED)_{it} + c_{13} * BUSINESS_{it} + c_{14} * (BUSINESS * EMPLOYEE)_{it} * \\
& * year_{it} + \xi_{it}
\end{aligned}
$$

(2)

STOCKS_INC is an amount of dividend income earned over the reference period from jointly owned stocks (in USD thousand). It represents the risky part of investment portfolio.

DEP_INC is an amount of total interest income earned over the reference period from jointly owned certificates of deposit (in USD thousand). It is the example of less risky assets. It is useful to compare different types of investments to discover whether women tend to invest more in assets with lower level of risk and return while men invest more in stocks and for which type of employment the difference is bigger.

AGE is the age of the individual. It is essential to discover the impact of this factor to see what is the difference in investment behavior for male and female paying attention to the different stages of life. Age can have positive correlation with the amount of total interest income earned over the reference period from jointly owned certificates of deposit and jointly owned stocks. Older individuals tend to accumulate more assets, have more stable expectations about the future. Moreover, they may prioritize less risky assets, and it can positively affect the amount of income from deposits.

AGE^2 is the age squared. It was chosen due to possible inverted U-shaped relationship. Increase in stock income at a young age followed by a subsequent rise, peak, and consequent decrease as one grows older. It might mean that a person becomes more cautions with his or her money and decreases share of stocks in portfolio as he or she turns older. An identical inverse U-shaped relationship with deposit income, may likewise

suggest that people first accumulate saving deposits followed by spending on such later in life.

CHILD is the number of children ever born. The number of children can negatively affect income from jointly owned stocks where increasing the level of children means higher expenses and reduces the potential abilities of individual to place them into stock investments or other types of risky assets. The number of children may relate in a positive way with deposit income, because people who have children usually prefer for low risk saving alternatives which are aimed at covering family needs.

AGE*CHILD is the interaction term. Positive correlation may be observed since older people with children will probably see an even bigger rise in their earnings than people without children (higher needs and responsibility).

The type of work arrangement, whether work as an employer, self-employed, or other is, as well significant factor in making investment choices. EMPLOYEE is a dummy variable with "1" stands for being employed and "0" for other option. A positive relationship may exist between being employed and an individual's income from stocks, as many individuals receive access to retirement accounts or stock-options provided by their employer. It is possible that employment is also positively correlated with the deposit's earnings since better pay contributes to a high savings ability.

SELFEMPL is also a dummy variable with "1" stands for being self-employed (having a business) and "0" for other option. There could be positive correlation between self-employment and the level of income earned for stocks since this type of work arrangement can lead to a higher investment for self-growth. Again, self-employment might positively link to revenue from depository services since individuals who are self-employed strive to have money safety nets through depository services.

MARRIEDP is a dummy variable with "1" stands for being married with spouse present and "0" for other option, MARRIEDA with "1" stands for being married with spouse absent and "0" for other option. WIDOWED is a dummy variable with "1" stands for being widowed and "0" for other option, DIVORCED is a dummy variable

with "1" stands for being divorced and "0" for other option, SEPARATED is a dummy variable with "1" stands for being separated and "0" for other option.

Income from jointly owned stocks can show positive relationship with being married because married people normally share financial sources which enable them to pool their resources together for investments. Stock investments could yield some degree of positive association with widowed persons provided their families receive an inheritance from their deceased relatives. However, divorced, or separated individuals may exhibit a more complex correlation depending upon their respective financial decision to work independently and/or remarry another partner.

Income from deposits is also affected by marital status. Joint savings accounts could be positively correlated with being married. Positive association of widowed individuals could be due to inheritances or savings. Different correlations exist for divorced or separated individuals depending on their post-divorce fiscal decisions.

CHILD*DIVORCED is the interaction term. For female the correlation may be positive since they may experience a stronger impact on their income from being divorced compared to those without children, they are more motivated to receive additional assets.

BUSINESS is the person-level sum of the value of businesses in which the person owns a share. It is likely to have a strong positive relationship with income from more risky assets, as it represents ownership in businesses, which is a direct source of stock-related income.

EMPLOYEE*BUSINESS is the interaction term. There is an expectation to receive the positive sign since person who is employed and own a share in business has a higher level of financial literacy and can make decisions with higher returns compared to individuals who have one of these options.

YEAR is a dummy variable to fix effects each year.

The model presented above does not include some other characteristics, such as risk-aversion, or personal traits that affect the investment decisions. To investigate the clear effect of socio-demographic factors on the gender investment gap, I used the time-

invariant model described in Wooldridge (2012). This technique helps to account for time-invariant factors, in our case, personal traits or risk-aversion which do not depend on time changes (2018-2021 is not the big time slot, therefore, personal attitude should not be changed).

To account for effect that reflects to each individual, I added dummy variables in the model. The updated model with controlling for constant variables for every person are presented below:

$$
\begin{aligned}
STOCKS\_INC_{it} = {} & \alpha_0 + ß_1 * AGE_{it} + ß_2 * (AGE * CHILD)_{it} + ß_3 * AGE^2{}_{it} + ß_4 \\
& * EMPLOYEE_{it} + ß_5 * SELFEMPL_{it} + ß_6 \\
& * MARRIEDP_{it} + ß_7 * MARRIEDA_{it} + ß_8 * WIDOWED_{it} + ß_9 \\
& * DIVORCED_{it} + ß_{10} * SEPARATED_{it} + ß_{11} * CHILD_{it} + ß_{12} \\
& * (CHILD * DIVORCED)_{it} + ß_{13} * BUSINESS_{it} + ß_{14} * (BUSINESS * EMPLOYEE)_{it} * ß_t \\
& * year_{it} + \theta_i + \vartheta_i + \varepsilon_{it}
\end{aligned}
$$

$$(1)$$

$$
\begin{aligned}
DEP\_INC_{it} = {} & \varphi_0 + c_1 * AGE_{it} + c_2 * (AGE * CHILD)_{it} + c_3 * AGE^2{}_{it} + c_4 \\
& * EMPLOYEE_{it} + c_5 * SELFEMPL_{it} + c_6 \\
& * MARRIEDP_{it} + c_7 * MARRIEDA_{it} + c_8 * WIDOWED_{it} + c_9 \\
& * DIVORCED_{it} + c_{10} * SEPARATED_{it} + c_{11} * CHILD_{it} + c_{12} \\
& * (CHILD * DIVORCED)_{it} + c_{13} * BUSINESS_{it} + c_{14} * (BUSINESS * EMPLOYEE)_{it} * \\
& * year_{it} + \theta_i + \vartheta_i + \xi_{it}
\end{aligned}
$$

$$(2)$$

where:

θ_i – the dummy variable, time-invariant for the individual i, if the person is willing to take financial risk, the value for dummy variable is 1, otherwise 0

ϑ_i – the dummy variable, time-invariant for the individual i, if the person is not willing to take financial risk, the value for dummy variable is 1, otherwise 0

In the survey the question was next: "Are you willing to take financial risk" with possible answers "yes" and "no". And the same question states the opposite.

Table 1. Variable description, riskier asset model

Variable	Symbol	Exp. Sign	
		Male	Female
Age	AGE	+	+
Age squared	AGE^2	? (U-shaped)	?(U-shaped)
Number of children	CHILD	-	-
Interaction term	AGE*CHILD	+	+
Employed	EMPLOYEE	+	+
Self-employed	SELFEMPL	+	+
Married (spouse present)	MARRIEDP	-	-
Married (spouse absent)	MARRIEDA	+	+
Widowed	WIDOWED	+	+
Divorced	DIVORCED	+	+
Separated	SEPARATED	+	+
Interaction term	CHILD*DIVORCED	+	+
Value of businesses in which the person owns a share	BUSINESS	+	+
Interaction term	EMPLOYEE*BUSINESS	+	+
Wants to take risk	θ_i	+	-
Doesn't want to take risk	ϑ_i	-	+

Table 2. Variable description, less risky asset model

Variable	Symbol	Exp. Sign	
		Male	Female
Age	AGE	-	-
Age squared	AGE^2	+	+
Number of children	CHILD	+	-
Interaction term	AGE*CHILD	-	+
Employed	EMPLOYEE	+	+
Self-employed	SELFEMPL	+	+
Married (spouse present)	MARRIEDP	-	-
Married (spouse absent)	MARRIEDA	+	+
Widowed	WIDOWED	-	+
Divorced	DIVORCED	-	+
Separated	SEPARATED	-	+
Interaction term	CHILD*DIVORCED	-	-
Value of businesses in which the person owns a share	BUSINESS	+	-
Interaction term	EMPLOYEE*BUSINESS	+	+
Wants to take risk	θ_i	+	-
Doesn't want to take risk	ϑ_i	-	+

The reason for adding two dummy variables is that some individuals did not categorize themselves as very high or low risk-averse person, they are neutral, or want not to answer this question.

On estimating the model, the hypothesis to be tested is whether the difference in investment behavior is affected by the chosen socio-demographic factors or not. That will be seen from the coefficients' values and significance, as well as the model's significance via R-squared value.

CHAPTER 4. DATA

The following section describes the data selection and methodology used to investigate the impact of socio-demographic factors on the financial behavior of women and men. Also, I provide empirical evidence on portfolio choices of both genders and the mean value of income received from more and less risky assets.

For income variables, demographics, and factors that indicate participation in risky asset investing, I use the 2018-2021 panel wave for the United States, Census Bureau Income and Program Participation Survey (SIPP). SIPP collects data on various topics such as workforce participation, income, education, health coverage, housing, household, and personal demographics. A longitudinal approach allows us to track changes in income and other factors over time, providing a more comprehensive understanding of economic dynamics and the impact of different policies and programs.

The survey is carried out at the household level but at the same time, it provides information about individual demographic characteristics, income variables, and whether owning different assets as well as detailed information about joint asset holdings of the household. To represent correctly the US population data I weighted each observation for chosen variables by the survey weights provided for all years.

In total, the SIPP data for 2018-2021 consists of 320,612 men-year and 341,839 women-year observations, which correspond to 265,182 married individuals with a spouse present, 64,407 divorced individuals, 160,074 never married for entire life individuals and several other categories describing marital status that will be mentioned next in the paper.

Financial assets are determined as the sum of housing assets and debt (net wealth). Risky assets include stock holdings, corporate and foreign bonds, mutual funds participation, as well the part of accounts for retirement purposes that were invested in stock holdings. For the analysis, some of these types of more and less risky assets are used. The list contains stocks, mutual funds, and deposits.

In the Table 3 the descriptive statistic about some variables is presented.

Table 3. Descriptive statistic per gender

Male							
Variable	**N**	**Mean**	**St. Dev.**	**Min**	**Pctl(25)**	**Pctl(75)**	**Max**
STOCKS_INC	1277552	2282.0	6521.0	0.0	1.0	1000.0	47300.0
DEP_INC	1277552	534.5	895.2	0.0	9.0	216.0	52200.0
CHILD	1277552	1.47	1.3	0.0	0.0	2.0	6.0
Female							
Variable	**N**	**Mean**	**St. Dev.**	**Min**	**Pctl(25)**	**Pctl(75)**	**Max**
STOCKS_INC	1363552	1965.0	4384.2	0.0	0.0	1000.0	47300.0
DEP_INC	1363552	1085.0	2243.6	0.0	5.0	256.0	52200.0
CHILD	1363552	1.73	1.3	0.0	0.0	3.0	6.0

It can be observed from the table that women have less income from jointly owned stocks compared to men, however, the income from deposits is higher. The distribution is not normal for both female and male, the small part of individuals accumulates the biggest amount of income from risky and less risky assets. Figure 1 and 2 represents income distribution by type of asset.

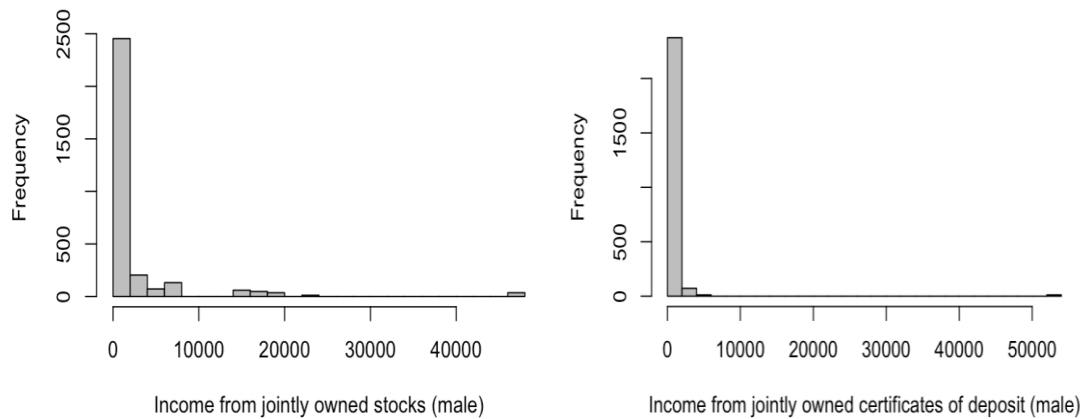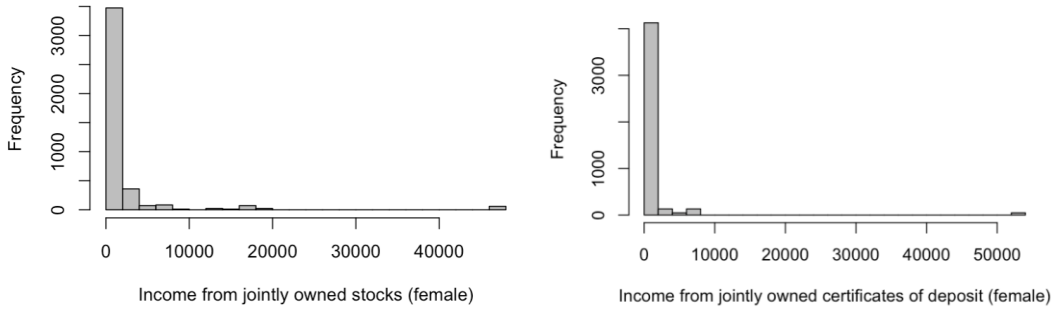**Figure 1. Male's Income distribution per type of asset, R output**

Figure 2. Female's income distribution per type of asset, R output

In Figure 3 there is a person-level sum of income earned over the reference period from stocks and mutual funds are presented. This indicator can describe the differences between women and men considering risky assets. It can be concluded from the graph that the gender gap in financial behavior is the lowest in the age range from 20 to 30 years old included. This phenomenon can be explained by the fact that during the twenties women and men are in most cases single, or without children, studying or starting their careers.

Figure 3. Mean person-level sum of income earned over the reference period from stocks and mutual funds by gender and age group, USD
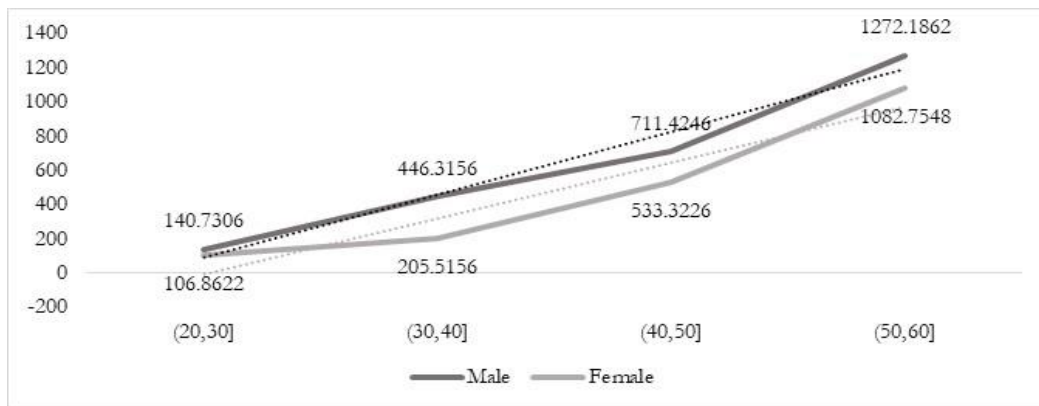
Therefore, the presence of children, maternity leave, or other issues related to household unpaid work does not influence the trend. Despite this, the gap is still present

and can be explained by the fact that women come across gender discrimination during the work search, therefore, receive less paid and prestigious jobs.

In contrast, the biggest gap is observed in the age range from 30 to 40 years old. It is the time when women lose their career promotions to manager positions for maternity leave, taking care of children, and doing unpaid work (household stuff). Considering the age groups from 40 to 60 years old, the gap remains almost the same in absolute terms, but different if calculating the share of differences in the total amount of personal income received. The gender difference in the ages from 40 to 50 is 25% and between the ages of 50 and 60 is 14.9%, a decrease of 10.1 percentage points.

Figure 4 shows the mean amount of total interest income earned over the reference period from jointly owned certificates of deposit. The general trend for holding the certificates of deposit is positive, the amount of interest income from the certifications of deposits increases by 5.71 times for men and 8.65 times for women. It is sufficient to mention here that the amount of income from certifications of deposit for older women is higher than for older men (age range from 40 to 60). This difference can appear due to the less confidence of women shortly, therefore, they are trying to save themselves. From 40 years old and higher, males in most cases occupy managerial positions, in conclusion, they accumulate bigger amounts of funds.

Figure 4. Mean amount of total interest income earned over the reference period from jointly owned certificates of deposit by gender and age group, USD
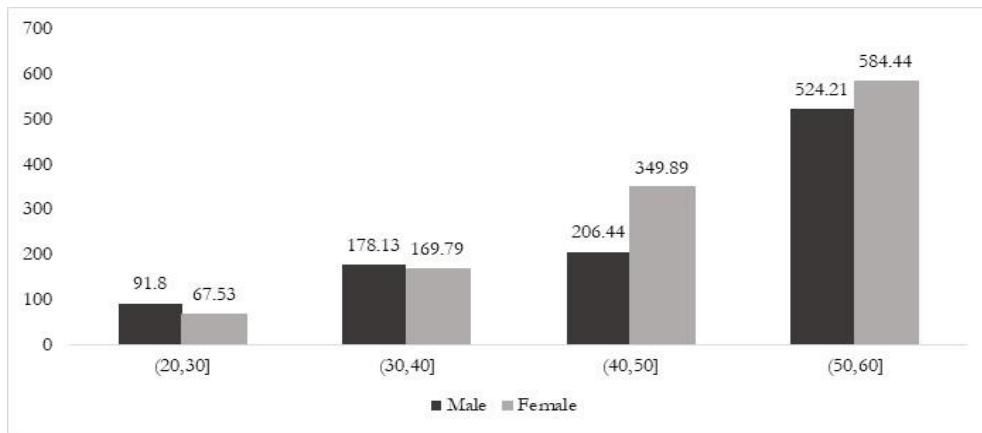
Figure 5 describes the willingness of respondents to take or not to take financial risk, in other words, we can make conclusion about the risk-aversion of the individuals. There are two questions in survey that reflects to this factor. First question: "Respondent willing to take financial risk", the answer is "Yes", or "No". The second question is "Respondent not willing to take financial risk", answer options are the same.

Figure 5. Share of respondents that are willing and not willing to take financial risk
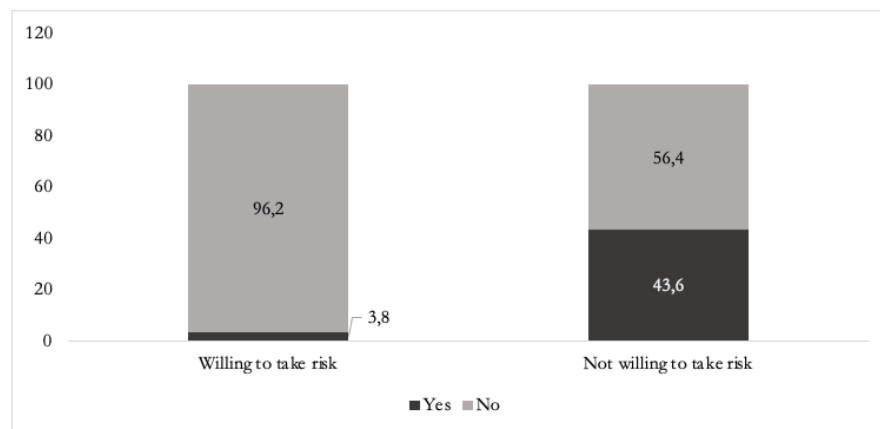
Dissimilar proportion of people that are willing to take risk regarding to questions can be explained by the fact that first sentence about willingness is more aggressive comparing to the second one. In addition, the second question that denies the desire of person to take risk can cause an individual to want to prove the opposite.

CHAPTER 5. RESULTS

The estimation results are presented in Table 4 and Table 5.

Table 4. Estimations results for the Tobit regression model – the effect of socio-demographic factors on the gender gap in financing decision-making, risky assets

| | Dependent variable | |
| | Amount of income earned from jointly owned stocks | |
	Male	Female
AGE	0.467***	0.153***
	(0.096)	(0.030)
AGE^2	-0.006***	-0.002***
	(0.001)	(0.000)
CHILD	-3.593***	-1.109***
	(0.890)	(0.325)
AGE*CHILD	0.061***	0.011
	(0.015)	(0.006)
EMPLOYEE	-1.137	-2.590*
	(1.030)	(1.159)
SELFEMPL	-0.914	-3.216**
	(1.127)	(1.162)
MARRIEDP	-0.072	0.000
	(1.419)	(0.000)
MARRIEDA	7.019***	0.997***
	(0.824)	(0.268)
WIDOWED	2.030	0.346
	(1.090)	(0.292)
DIVORCED	0.348	-0.299
	(0.926)	(0.338)
SEPARATED	0.827	0.927**
	(0.995)	(0.345)
CHILD*DIVORCED	0.572	0.429*
	(0.354)	(0.182)
BUSINESS	0.000	0.000*
	(0.000)	(0.000)
EMPLOYEE*BUSINESS	-0.000	0.000***
	(0.000)	(0.000)
θ_i	1.973***	0.238**
	(1.052)	(0.179)
ϑ_i	-0.126*	-2.451***
	(0.983)	(2.183)
Constant	-7.029***	0.550
	(1.965)	(1.240)
Observations	1277552	1363552
R2, Adjusted R2	0.131; 0.124	0.312; 0.307
Residual St. Error	5589 (df = 1613)	2172 (df = 1530)
F Statistic	18.71*** (df = 13; 1613)	57.87*** (df = 12; 1530)
Note:	*p<0.1; **p<0.05; ***p<0.01	

The Tobit regression model is used to identify the factors which explain the gender gap in investment decisions and the comparison of the participation of women and men in investments in more and less risky assets is provided.

The effect of age is positive for both men and women, for men the coefficient is higher and statistically is significant on 1% level. The age squared demonstrates U-shaped relationship - increase in stock income at a young age and consequent decrease as one grows older.

The effect of being employed by the company or organization or being self-employed (running your own business) has a negative effect both for women and men, for women the effect is bigger. Marital status, especially, being married with spouse absent, positively affects the amount of funds held in stocks for men and women. Widowed or divorced men are more likely to participate in risky markets than married ones. Women, on the contrary, are less involved in the financial market after divorce, but more being separated and widowed.

The empirical evidence for divorced women to participate more in the financial market and in obtaining interest income from the stocks, especially, is present in Figure 6.

Figure 6. Mean amount of total interest income earned over the reference period from stocks and mutual funds by gender and marital status, USD
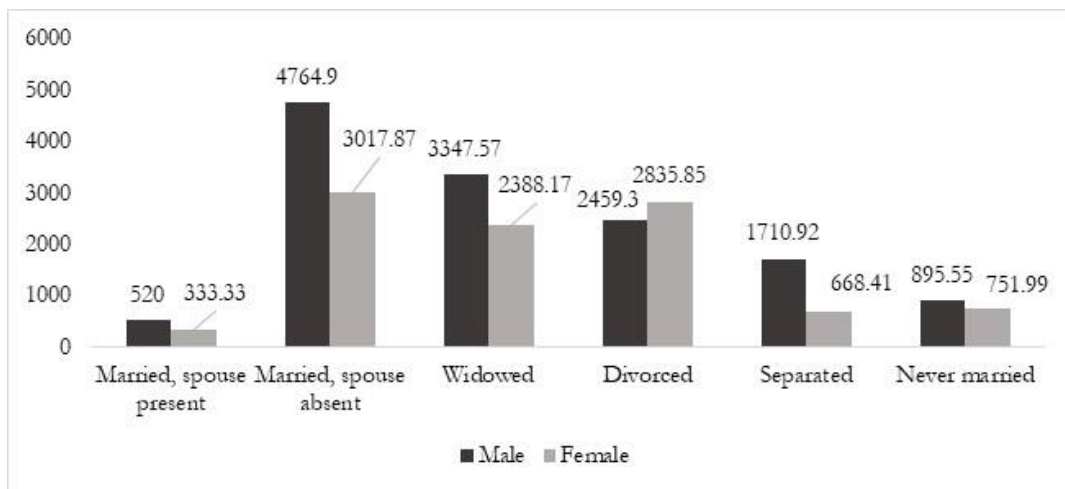
The increase in the number of children, negatively affects the amount of funds held in stocks for both genders, for men the effect is higher. Having a one more child for men means to have less income from stocks by USD 3.593 thousand. There is a higher responsibility for parents, especially for women, who are the first affected by the birth of children (the empirical evidence presented a considerable decrease in women's share of holding risky assets in the age range from 30 to 40). The parameter is significant on the 1% level for female and male.

The interaction term of age and number of children ever born is positive and confirm the hypothesis that older people with children will probably see an even bigger rise in their earnings than people without children (higher needs and responsibility). The interaction term of having children and being divorced positively affects the amount of income. Individuals experience an impact of USD 0.429 thousand on their income from stocks from being divorced compared to those without children (significant on 10% level).

The coefficient near the interaction term of being employed by company or organization and have a share in business is positive, but in absolute terms the impact is very low.

Variable "person-level sum of the value of businesses in which the person owns a share of business" has a positive sign, affects a little amount of income received from stocks.

Table 5 represents the estimate coefficients, standard errors, z-value, and p-value with marked variables as statistically significant.

The effect of age is negative for both men and women, for men the coefficient is higher and statistically is significant on 1% level. Being 1-year older means decrease in income from jointly owned certificates of deposit by USD 31. The age squared has not a significant impact in absolute term.

The effect of being employed by the company or organization or being self-employed (running your own business) has a positive effect both for women and men, however the effect of being self-employed for men is much higher. Being self-employed means having more income from deposits by USD 485. As empirical evidence shows,

women participate less in business. Marital status, especially, being married with spouse present, negatively affects the amount of funds held in stocks for men.

Table 5. Estimations results for the Tobit regression model – the effect of socio-demographic factors on the gender gap in financing decision-making, less risky assets

	Dependent variable	
	Amount of income earned from jointly owned certificates of deposit	
	Male	**Female**
AGE	-0.031***	-0.006
	(0.006)	(0.016)
AGE^2	0.000***	0.000
	(0.000)	(0.000)
CHILD	0.171**	-0.877***
	(0.059)	(0.215)
AGE*CHILD	-0.002	0.013***
	(0.001)	(0.003)
EMPLOYEE	0.123	0.180
	(0.125)	(0.137)
SELFEMPL	0.485***	0.000
	(0.132)	(0.000)
MARRIEDP	-0.457**	0.000
	(0.150)	(0.000)
MARRIEDA	0.278***	0.367*
	(0.052)	(0.185)
WIDOWED	-0.245***	0.534**
	(0.066)	(0.191)
DIVORCED	-0.063	1.024***
	(0.067)	(0.185)
SEPARATED	0.000	0.434
	(0.000)	(0.289)
CHILD*DIVORCED	-0.095**	-0.290**
	(0.030)	(0.100)
BUSINESS	-0.000*	-0.000
	(0.000)	(0.000)
EMPLOYEE*BUSINESS	0.000	0.000
	(0.000)	(0.000)
θ_i	-0.369**	-0.248*
	(0.291)	(0.195)
ϑ_i	0.562***	1.038***
	(0.496)	(0.179)
Constant	0.546***	-0.023
	(0.162)	(0.356)
Observations	1277552	1363552
R2, Adjusted R2	0.182; 0.173	0.085; 0.078
Residual St. Error	391.8 (df = 1054)	1332 (df = 1342)
F Statistic	19.52 *** (df = 12; 1054)	11.4*** (df = 11; 1342)
Note:	*p<0.1; **p<0.05; ***p<0.01	

Moreover, for men being widowed or divorced means keeping less amount of money in deposit. It might be related to the fact that being married forces men to look for a stable income. For women the situation is opposite: being divorced leads to higher income from deposits by USD 1.024 thousand. Non-married women tend to hold more risky assets. Being separates and widowed, as well means for women to have more funds. It can be explained by the fact that women without men are not limited with the stereotypes and unpaid job. Moreover, being single for women means being more independent and freer in action and thoughts.

The increase in the number of children, negatively affects the amount of funds held in deposit for women and positively for men. Having a one more child for men means to have more income from deposits by USD 171. It verifies the hypothesis that parents tend to accumulate more funds to pay for university etc. The parameter is significant on the 1% and 5% level for female and male.

The interaction term of age and number of children ever born is positive for women and negative for men but has a little effect in absolute meaning. The interaction term of having children and being divorced negatively affects the amount of income for both genders. For women the individuals experience an impact of USD -290 on their income from deposits from being divorced compared to those without children (significant on 5% level).

The coefficient near the interaction term of being employed by company or organization and have a share in business is positive, but in absolute terms the impact is very low. Having a share in business has a positive impact, as well, however, the change in share of business has almost zero effect on having income from deposits.

Summing up, the effect of socio-demographic factors differs a lot. Age positively influences the investment decisions of men and women. Males benefit more from age, and the relationship is statistically significant. The age squared term exhibits a U-shaped relationship, with stock income increasing in younger age, followed by a decline as individuals becomes older. Being employed by a company or self-employed has a negative effect on investment by both men and women. This effect is more notable for women.

Being married, especially in the absence of a spouse, positively affects the amount of money in savings accounts for both men and women. However, widows or divorcees participate more in riskier markets than those who are married. The impact is different for women, who are less likely to participate in financial markets after divorce but more likely when being separated and widowed. Increasing number of children negatively affects the amount of savings in savings accounts for both sexes, with the effect being greater among men and having more children reducing income from the bank accounts. The interaction term between age and number of children ever born is positive and indicates that older people with children may see a greater increase in their income than people without children.

Being divorced and having children result in higher returns on investments, which impacts men more. Having a share in a business has a positive effect on investment returns. Changes in trading shares have virtually no effect on investment returns. Overall, the findings provide insight into the interplay between demographic and socio-economic factors influencing investment decisions and how these factors differ between men and women.

CHAPTER 6. CONCLUSIONS AND RECOMMENDATIONS

This paper studies the factors that partially may explain the gender investment gap among socio-demographic characteristics. First, empirical evidence about the presence of a gender gap in investment decision-making is provided, women tend to less participate in operations on the financial market, especially operations with more risky assets. The gap between women's and men's portfolio choices remains statistically significant even though a wide range of observable characteristics were accounted for.

The effect of the unexplained part of the gender investment gap (relates to the unobservable characteristics, such as preferences, personal traits, and risk-aversion of individuals) can be described deeply in the next studies.

The SIPP survey panel waves confirmed the highest gender investment gap in the age range from 30 to 40 years old (being in most cases the time for women to be on maternity leave and take care of children and other household members, old parents, etc.) as in previous papers mentioned, where Survey of Consumer Finances and the Panel Study of Income Dynamics were used.

Some variables were added to the model estimation, the number of children ever born/fathered, the person-level sum of the value of businesses in which the person owns a share of the business, and the employment status of the worker. The results indicate that the increase in the number of children decreases the share of risky assets in the portfolio. The fact that women are the main responsible persons for children's care, which is a widespread stereotype, affects the ability of women to participate in holding more risky assets. Future expectations about the increased number of household members, especially children, and the uncertainty about the income level increases future consumption and, simultaneously, decrease financial risk-taking already in the current period.

The essential factor to consider while searching for the determinants of the gender gap in financial decision-making is the type of employment and involvement in sharing the business. Women are more likely to be employed by company or organization, rather than self-employed (running a business or being a freelancer), men, on the other, hand are more

presented in being entrepreneurs or having a share in someone else's business. This factor, as well as other stereotypes in the market about the occupations and positions that women should have, negatively affects women's development and independence.

Some improvements can be done to increase the explanatory power of the model:

1) looking for more interaction effects, for example the interaction between being employed by the company or being self-employed and the number of children or marital status;

2) adding some variables that describe better the financial literacy of the person. Financial literacy can have a significant impact on investment decisions. For this purpose, it would be advantageous to use another survey, for instance, SCF etc.;

3) including variables related to personal wealth and assets. This may include homeownership, other investments (e.g., real estate), or the value of other assets that may affect investment choices;

4) considering more data about risk tolerance: having only a one question with possible answers "yes" or "no" might not be enough. Risk tolerance can be a key factor in choice of investments and can be crucial in understanding variable dependency;

5) paying attention to education of respondents. Higher levels of education may be associated with different types of financial behavior, as educated individuals may make more informed financial decisions;

6) discovering the nature and impact of psychological factors, it can be useful to consider including variables related to psychological factors that can affect investment decisions such as perception of risk, overconfidence, or prior experiences with investing.

7) suggesting financial experience, such as years of investments, previous investments, or types of investments. Using market indicators, as well, can be useful (bank performance indicators or interest rates). These can influence the choice of currency.

8) consider using model selection techniques (e.g., stepwise regression, information criteria) to determine the most appropriate variables for your sample and achieve a balance between sampling robustness and explanatory power.

The recommendation for institutions is to develop financial literacy in equal proportion between men and women and provide some additional bonuses and possibilities for mothers to discourage them from leaving their jobs.

To promote economic inclusion and gender equality, reducing the gap between women's and men's economic behavior is essential. Here are some specific suggestions for organizations and businesses to address this issue. The recommendation for institutions is to develop financial literacy in equal proportion between men and women and provide some additional bonuses and possibilities for mothers to discourage them from leaving their jobs. For financial education and literacy programs it will be beneficial to develop and implement financial education programs aimed at women and men. These plans should cover basic financial concepts, investment strategy, and risk management. Developing economic products and services designed to meet the diverse needs and aspirations of women is the key (paying attention to the number of children, family members cared for by a woman). Here it is essential to consider strategies that align with their risk tolerance and financial goals.

It is necessary to establish mentoring programs that connect women with experienced investors or financial advisors. Guidance from experienced professionals can help women feel confident in their financial decisions. Making the economic forums on gender inclusion should be mandatory for underdeveloped countries. It includes conducting workshops and seminars on economic topics with emphasis on gender. These events can provide a supportive environment for learning and networking.

One more advice is to encourage female representation in leadership roles in financial institutions. When women see other women in leadership positions, they may be more inclined to participate in financial services. Create an online platform that is user-friendly, accessible, and flexible, meeting the needs of women who may experience time constraints due to family or work obligations.

More recommendations: to implement policies and training to eliminate gender bias in financial institutions, to raise awareness about gender stereotypes and their impact on financial decision-making is crucial, encourage the formation of investment clubs and

networks for women. These groups can provide a supportive community for learning and sharing experiences. It is important to ensure that marketing and communication strategies are inclusive and avoid gender biases. Messaging should resonate with both women and men. Investing in research and data collection to better understand the unique investment needs and challenges faced by women is crucial. For policies it is worth to advocate for government policies that support gender equality in finance, including maternity leave, childcare facilities, and equal pay, collaborate with organizations, NGOs, and government agencies that focus on gender equality and financial inclusion to leverage their expertise and resources. Reducing the gender gap in investment behavior is a multifaceted effort that requires a combination of education, product innovation, and a supportive environment. By making such changes in circumstances for women, the society contributes to more equal and inclusive financial environment.

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