The Gender of Wealth Accumulation: Gender Differences in Risky Portfolio Choices and Their Determinants

Carolin Dylla

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Abstract

While financialization and rising inequalities are often regarded as challenges for fiscal redistribution policies, the role of monetary policy and financial markets is neglected. Although heterodox scholars are drawing attention to the distributional impacts of monetary policy, they are rarely related to dimensions of gender inequality. Indeed, monetary policy may contribute to the gender wealth gap via its effects on asset prices and interest rates should men and women systematically differ in their individual portfolio composition. Hence, I assess the following research question: Are there significant differences in portfolio choices between men and women in the United States of America in 2022? If so, what are the drivers of these differences? I employ the 2022 data wave of the Survey of Consumer Finances. Based on 1,690 observations of single male and female households, I apply a two-stage Heckman selection model. I find that single men are not only more likely to hold stocks in their financial portfolio, but also hold relatively larger amounts thereof compared to single women. These differences in portfolio choices are further driven by diverging financial means and risk preferences between men and women. However, significant gender differences are not robust to the inclusion of other risky financial assets and the households' position as net debtors. Overall, rather than biologically determining risk preferences, my paper suggests that gender is an expression of a diverging male and female socioeconomic status.

Keywords: Gender, Finance, Portfolio Choices, Monetary Policy, Survey of Consumer Finances

Disclaimer
I hereby declare that the work presented herein is entirely my own, composed without assistance from any unauthorised sources. All ideas, concepts, and expressions are original and attributed solely to the author.

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List of Abbreviations

ECB - European Central Bank

Fed - Federal Reserve System

GDP - Gross Domestic Product

GFC - Global Financial Crisis

HFCS - Household Finance and Consumption Survey

IMR - Inverse Mills Ratio

LSH - Lehman Sisters Hypothesis

OLS - Ordinary Least Squares

QE - Quantitative easing

SCF - Survey of Consumer Finances

SOEP - Socio-Economic Panel

USA - United States of America

1 Introduction

Since the 1980s, a phenomenon known as "financialization" has been gaining ground. While it lacks a precise definiton, the most prominent description has been put forward by Epstein (2005, p.3): "financialization means the increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies". This has ramifications for private households, firms, and policy-makers alike. Most relevant for the work presented here is the growing importance of financial income and debt to fund everyday consumption and provide financial security in retirement (e.g. Bajtelsmit and Bernasek (1997)). In this vein, individual portfolio choices are no longer the concerns of a small wealthy elite, but have tangible consequences for the general public. Going hand in hand with financialization is the rise of inequality in many Western societies, accompanied by a rise of populist parties and stagnation of economic prosperity and welfare.

While demands for redistribution policies are often extended towards fiscal policy, financialization and the rise of inequalities are rarely regarded as challenges for monetary policy. Although orthodox economists have adamantly defended the "neutrality of money", this postulation has waned over the last years given the undeniable ramifications of unconventional monetary policy in reaction to the global financial crisis 2007/08 (e.g. Kappes (2023) & Forti Grazzini and Kim (2020)). Especially post- and Monetary Keynesian scholars have been at the forefront of pointing out the impacts of monetary policy on financial income via inducing changes in interest rates and asset prices (e.g. Metzger and Young (2020)).

Nonetheless, these acknowledgements are rarely related to dimensions of gender inequality. This is the overarching aim of this paper which assumes the post-Keynesian stance of non-neutrality of monetary policy and its real distributional implications which may have gender dimensions. Taking a first step towards assessing these implications, this paper strives to determine whether men and women allocate their portfolios differently, whereby asset price changes will affect men and women to varying degrees and may contribute to the gender wealth gap. Consequentially, it asks the following research question: *Are there significant differences in portfolio choices between men and women in the United States of America in 2022? If so, what are the drivers of these differences?* Based on a review of the existing literature, it is hypothesised that women allocate less funds to risky assets than men. These differences in portfolio allocation choices are likely driven by deviating financial means at the disposal of men and women as well as diverging attitudes towards risk. Gender as such is, thus, not to be regarded as an inherent character trait but rather as the expression of a socioeconomic category with women disproportionally represented in the lower end of the income and wealth distribution.

While previous work (e.g. Barasinska and Schäfer (2013)) has explored this question for European countries, this paper turns to the United States of America (USA) using the 2022 wave of the

Survey of Consumer Finances (SCF). The USA are an interesting case to be explored and allow for the following contributions: Income and wealth inequality in the USA is higher than in almost any other industrialised country (Siripurapu, 2022), meaning it must be addressed with particular urgency. This paper hopes to point towards another possible root of inequalities, thereby providing a first step towards their alleviation. Moreover, financialization in the USA is even more pronounced than it is in Europe and stock market participation is more widespread (van Lerven, 2016). Consequentially, financial income is even more relevant for, for instance, ensuring financial security in retirement (Forti Grazzini and Kim, 2020). It will be interesting to compare the results presented here to those obtained for European countries and to assess whether gender differences might evaporate in contexts where private real and financial investments have been normalised. Finally, given this importance of financial investment opportunities, the gendered distributional impacts of monetary policy in the USA might be even more severe should men and women display significantly different portfolio choices. This paper hopes to shed light on these issues and raise awareness thereof among academia and policy-makers alike.

Two disclaimers are in order for the reader to be mindful of. Firstly, this paper uses the terms "portfolio choices" and "investment behaviour" interchangeably as long as not indicated otherwise. This is to maintain consistency with previous literature (e.g. Croson and Gneezy (2009) & Schneebaum et al. (2018)) which has often referred to "investment behaviour" to account for asset holding choices of private individuals rather than investments made by or in private businesses. Secondly, this paper employs a binary understanding of gender according to the male and female sex for reasons of data availability. The author is aware that this does not cover the entire spectrum of gender identities and encourages the institutions in charge to glean more detailed information thereon.

The remainder of this paper is structured as follows: Chapter 2 provides a brief motivation for this line of research by introducing feminist critiques of neoclassical economics. Chapter 3 reviews the existing literature on post-Keynesian stances regarding the non-neutrality of money and empirical work on gendered portfolio choices. This will inform the methodology which will be introduced in sub-chapters 4.1 and 4.2. Chapter 4.3 then details the results of the empirical analysis which will be discussed in chapter 5. Finally, chapter 6 summarises and concludes.

2 Why Gender Matters: Feminist Economics' Criticism of Neoclassical Economics

Feminist economists have criticised both neoclassical macro- and microeconomics for decades already. Concerning orthodox microeconomics, Elson (1993) extends criticism towards their view of individual actors. The author objects to the notion that women's large share of care work is an outcome of the free choice of rational economic agents (Elson, 1993). Indeed, the very basic starting point of neoclassical microeconomics is the individual, which is characterised by a quantifiable preference function, giving rise to the homo oeconomicus, the perfectly rational agent. In mainstream microeconomics, this agent supposedly represents universal characteristics. Elson (1993) however, argues that these characteristics are far more representative of male traits than female ones. The author finds support for this criticism among other feminist scholars. Folbre (1994) claims that the homo oeconomicus has been defined by male scholars in accordance to masculine stereotypes. Similarly, van Staveren (2011) criticises that the representative agent's preference function follows an overly simplistic maximisation algorithm without awareness for its social and moral context. This lack of awareness for the private sphere cannot be afforded by women due to their role as care givers in this very context (Acker, 1990).

Moreover, Elson (1993) disapproves of neoclassical macroeconomics' emphasis on monetary aggregates, prices, and quantities which draw a veil over these underlying gender-differences at the individual level. This is particularly distressing as a high level of inequality may impair economic growth prospects and welfare (Elson, 1993). In this vein, van Staveren (2011) berates neoclassical economists' treatment of gender as an exogenous impact variable without feedback effects on the real or financial economy. Similarly, Braunstein (2013, p.353) criticises that mainstream financial economics has treated gender inequalities as a social issue set to "remain outside the purview of monetary management".

As a sub-school of heterodox economics, feminist economics has embedded economic analysis into systemic social structures whereby gender is endogenised and a two-way relationship between gender and economic processes is ackowledged (van Staveren, 2011). Hence, there is not only a sex-aggregated impact of economic policies, but also an impact of gender inequality on macroeconomic growth rates to be mindful of. It is, thus, too simplistic to only treat gender as an impact variable in economics and finance (van Staveren, 2011). Rather, van Staveren (2011) emphasises that gender coins people's choices and constrains their opportunities in contrast to the neoclassical homo oeconomicus assumed to represent a universal preference and utility function. Indeed, these gender constraints are argued to be behind the segmented labour market outcomes which have persisted for decades (van Staveren, 2011). Besides this segmentation of the labour market, van Staveren (2011) also suggests a segmentation of the financial market coined by gender as an endogenous factor.

Next to an underrepresentation of women in key positions in financial markets and institutions, van Staveren (2011) highlights increased gender gaps regarding financial market participation. Due to the gendered division of labour whereby women take on more care work in the private and public sphere, they have less property and lower income earnings on average, leading them to save and invest smaller amounts and borrow more regularly. The author claims that, therefore, a segmentation of financial markets according to gender has manifested to the disadvantage of women who are perceived to be riskier debtors and less profitable investors. This gender segmentation has resulted in inefficient resource allocation (van Staveren, 2011), a concern which has already been voiced by Aghion et al. (1999) who found that gender inequalities likely contribute to low aggregate saving and investment rates as well as distorted interest rates.

Further, van Staveren (2011) indicates a potential for gender-based instability in financial markets. This claim has gained ground among feminist economists in the aftermath of the 2008 financial crisis which resulted in a significant reduction in gross domestic product (GDP) in industrialised nations. Rather than being initiated due to exogenous shocks as suggested by orthodox economists, van Staveren (2011) claims that the financial instability at the time had endogenous roots, the gender segmentation of financial markets among them. This is further developed by van Staveren in a 2014 article where she reviews existing empirical literature on the "Lehman Sister Hypothesis" (LSH). The LSH suggests that the behaviour exhibited by male bankers in key positions of the financial system might have been responsible for the high-risk, low-regulation behavioural nexus which ultimately led to the global financial crisis (GFC) (van Staveren, 2014). Indeed, there is empirical evidence suggesting that women and men differ in their risk attitudes and responses to uncertainty, as well as their leadership style and consideration for their moral context (van Staveren, 2014). Overall, van Staveren (2014) finds preliminary but clear empirical support for women being more risk averse, less overconfident, and more diligent in selecting from a wider range of responses to uncertain circumstances.

It must be recognised that one can never confirm or deny the LSH due to lack of counterfactual scenarios. Consequentially, this debate will not be elaborated on in this paper. Nonetheless, gender differences in risk attitudes and responses to uncertainty are relevant to the research conducted herein as will be detailed in the following chapter. Moreover, besides the debate surrounding gender dimensions of the triggers of the financial crisis, there is also a debate concerning gender dimensions of its outcomes. There is first evidence suggesting distributional implications of unconventional monetary policy from 2008 onwards which may have taken diverging effects for men and women precisely because of the gender differences in financial market participation and portfolio composition.

3 Literature Review: Monetary Policy and Gendered Portfolio Choices

The previous chapter has laid out this paper's motivation for devoting more attention to gender inequalities in financial market participation, particularly concerning the matter of individual portfolio allocation choices. This chapter will, first, provide an overview of monetary policy during the GFC and its distributional effects via individual portfolios according to heterodox scholars. Secondly, it will review the existing empirical literature exploring drivers of gender differences in portfolio choices which will inform this paper's methodology.

3.1 Is Monetary Policy (Gender) Neutral? - Post-Keynesian Literature and Empirical Evidence

Conventional monetary policy is generally understood as interest rate policy whereby contractionary policies are implemented via an increase in interest rates and expansionary policy via a lowering thereof (Trichet, 2014). Through, for instance, a lowering of interest rates, central banks aim to affect commercial bank's credit supply as their credits are rendered more affordable which, in turn, stimulates credit demand. This is supposed to restore investment, raise labour demand, employment rates and, overall, revive economic growth (see Bini Smaghi (2009)). It should be noted that post-Keynesian scholars are not in full accordance with these stimulating effects given the assumed asymmetry of central bank policies which hampers the effectiveness of lowering interest rates (e.g. Kappes (2023)). While central banks will always be able to slow down the economy by raising interest rates, the stimulating effects of lowering interest rates only manifest if market actors are sufficiently optimistic about the future development of the economy. Indeed, the effectiveness of expansionary monetary policy is contingent on commercial banks passing on lower interest rates to their clients and being willing to grant more credit. Moreover, lowering interest rates faces the limitation of the zero lower bound. Once this boundary has been reached, a central bank has few conventional mechanisms left to stimulate economic growth. Post-Keynesians, hence, caution to assume the same degrees of effectiveness for expansionary and contractionary interest rate policies (Hein, 2023, chapter 4).

In contrast, unconventional monetary policy finds its origins in the GFC 2007/08 after which it was implemented by the central banks of high-income countries, particularly the European Central Bank (ECB) and the USA's Federal Reserve (Fed). Former ECB President Jean-Claude Trichet (2014) argues that the purchases of large-scale assets at the time were inevitable as they ensured the functioning of credit markets and maintained low interest rates, thereby preventing an economic collapse. Although Trichet (2014) highlights that it has not been the only instrument of unconventional monetary policy, quantitative easing was certainly the most prominent one. Metzger and

Young (2020) define quantitative easing (QE) in a broad sense as large scale asset purchases[1] and as the expansion of the central bank's balance sheet in a narrow sense. Accordingly, this paper understands QE as "bond purchases by central banks expanding the quantity of assets in their balance sheets independent of whether the bonds are issued by private or public market actors and independent of the type of risks [...] attached to the bonds" (Metzger and Young, 2020, p.5). Hence, QE is per definition an expansionary monetary policy.

While traditional mainstream economics presumes that any form of monetary policy, including QE, is neutral with regards to real economic measures and wealth distribution in the long-run, heterodox scholars challenge this assumption. Metzger and Young (2020) argue that the alleged distributional neutrality holds only if the impacts of monetary policy across all households, asset and debt categories are proportional. Consequentially, all wages, wealth and debt components must be distributed equally among private households (Metzger and Young, 2020). Evidently, this is not the case and this paper seeks to analyse in more detail whether there is an unequal distribution of wealth components along the lines of gender. Metzger and Young (2020), therefore, argue that monetary policy will indeed have distributional implications and propose the following transmission channels.

Firstly, monetary policy takes effect via the *quantity channel* as it affects the supply of liquidity and credit circulating in the economy. In times of expansionary monetary policy, financial intermediaries are incentivised to provide extra liquidity to the private sector. Moreover, additional liquidity is directly made available to financial intermediaries through the central bank's expansion of its balance sheet as it conducts bond purchases. This further encourages commercial banks to extend their credit supply to the private and public sector (Metzger and Young, 2020). However, the expansionary effects of monetary policy via this channel may manifest along gendered dimensions to the disadvantage of women. Indeed, the incentive to provide extra liquidity may not hold for all borrowers. As mapped out by van Staveren (2011), women are perceived to be riskier debtors due to their, on average, lower income earnings resulting from a gendered labour market and lingering gender stereotypes. Particularly in times of uncertainty such as during a financial crisis, commercial banks may prefer debtors deemed to be relatively safe. This may be men more often than women. More generally, the asymmetric effectiveness of central bank policies according to post-Keynesians (Hein, 2023, chapter 4) must also be acknowledged. During times of crisis, commercial banks may have little optimism and prefer to build up extra reserves rather than grant additional credit.

Secondly, a price effect takes place through a variety of mechanisms. Via the traditional *interest rate channel*, a central bank's expansionary policy reduces long-term nominal yields and real interest rates on the bond market, thereby facilitating private and public sector borrowing (Metzger and

[1] This is in line with the definitions of the two major central banks (Federal Reserve Bank of New York, nd; European Central Bank, 2024).

Young, 2020). Further price effects through the *expectation channel* are, once again, contingent on the confidence of financial market actors. Through simply announcing its intention of supporting the economy through a crisis, the central bank may have the ability to influence expectations of market actors without actually changing its policies (Metzger and Young, 2020). Once again, this showcases the importance of commercial banks' and the private sector's expectations for the effectiveness of expansionary monetary policy. Moreover, and similar to the quantity channel, not all market actors and financial products are set to benefit equally from the lowering of interest rates. Again, the financial market is highly segregated whereby different products under different conditions are offered to men and women (van Staveren, 2011). With women being perceived as riskier borrowers (van Staveren, 2011), commercial banks may be more hesitant to lower their interest rates on credits or other products granted to women than they are concerning male clients. Thus, men and women may not necessarily benefit from the interest channel to the same extent. On the contrary, the zero lower bound policy pursued in the aftermath of the GFC was particularly harmful to those who hold their savings in relatively risk-free assets such as current accounts, credit cards, and deposits (Metzger and Young, 2020). As will be argued in the following paragraphs, this may affect women in particular due to the socioeconomic circumstances they find themselves in. Central banks' policies further manifest themselves through the *asset price channel*. Direct asset purchases conducted by the central bank via, for instance, QE have an instant effect on the prices of those assets. Moreover, financial market actors may use the additional liquidity provided by expansionary monetary policies to purchase further assets which will drive up their prices and overall improve the balance sheets of asset holders (Metzger and Young, 2020).

This goes hand in hand with the third effect of expansionary monetary policy whereby the rates of return on assets decline across all risk categories. If individual actors wish to maintain a certain rate of return on their overall portfolio, they will have to use the additional liquidity provided by the central bank to recompose their portfolio and purchase supplemental high-risk, high-return assets. This is known as the *portfolio rebalancing channel* of QE which influences portfolio allocation decisions of private market actors and incentivises riskier investments (Metzger and Young, 2020).

However, these two channels can be exploited by men more so than women who hold fewer risky assets due to their socioeconomic circumstances. A number of papers have conducted preliminary investigations in this vein. Domanski et al. (2016) and Adam and Tzamourani (2016) highlight the above average boosting of equity prices as a result of unconventional monetary policy in the past decades and their role as drivers of inequality in the USA and Europe. Domanski et al. (2016) then explore the distribution of such assets among different income groups. The authors find that stocks, a relatively risky asset, are common components of the well-diversified portfolios of high-income quintiles, and less present in those of lower income classes (Domanski et al., 2016), explaining their relevance to the aforementioned increase in wealth inequalities.

These findings are taken up by Young (2019) who explores their gendered aspects. Young (2019) references a discussion paper presented by Deutsche Bundesbank (Arrondel et al., 2014) based on the 2010/11 wave of the ECB's Household Finance and Consumption Survey (HFCS). The author analyses how households choose to allocate their wealth across various asset classes and finds a systematic relationship between household characteristics and asset holding patterns across countries. Similar to the results put forward by Domanski et al. (2016), most households hold the majority of their wealth in form of their primary residence, only those at the upper end of the wealth distribution dispose of a wider range of asset classes (Young (2019) based on Arrondel et al. (2014)). Based on this, Young (2019) infers that wealth and income are positively correlated to the amount of exposure to risky financial assets. The author then makes a number of assumptions to derive first suggestions concerning a possible gender bias. Young (2019) stresses that single parent households are more often female than male, and that lower education is more common among women. Both characteristics are typically found among households with lower levels of wealth and income hinting at women also holding disproportionally fewer risky financial assets than men (Young, 2019). This implies that the positive wealth effects via the asset price channel manifest largely for men who tend to hold such assets more often, while rarely applying to women. Similarly, recomposing one's portfolio towards riskier assets, thereby exploiting the portfolio rebalancing channel, will be feasible for men in high-income groups while the less diversified portfolios of women in low-income groups will tend to lose value.

While the transmission channels of monetary policy presented thus far have focused on wealth components through financial market participation, another transmission channel takes grasp via *employment effects*. A core argument in favour of expansionary monetary policy states that the reduced borrowing costs for the private sector will result in increased credit supply, thereby higher investment and aggregate demand and, consequentially, higher employment (e.g. Monnin (2017)). Hence, one may argue that QE or other forms of expansionary monetary policy cushion the loss of employment in times of economic crises. Authors such as Monnin (2017) argue that this is particularly relevant for low-income groups. As they are more sensitive to business cycle fluctuations and have fewer financial safety nets to fall back on, they will be quicker to respond to rises in labour demand and readily take on jobs at low pay (Metzger and Young, 2020). Based on the results put forward by van Staveren (2011) and Young (2019), women are disproportionally present in these low-income groups and should, theoretically, be the primary benefactors of expansionary monetary policy's employment effects. Could positive employment, and thus income, effects mediate the effects of the aforementioned transmission channels?

Concerning the impact of unconventional monetary policy, which has been prevalent in the decade since the GFC, Montecino and Epstein (2015) analyse the distributional effects of QE via its various channels in the USA. The authors find an equalising impact due to the improvement in employment rates and mortgage refinancing terms caused by such expansionary monetary policy (Montecino

and Epstein, 2015). As outlined above, women in particular may benefit from the these effects of QE. However, this is outweighed by the appreciation in equity prices (Montecino and Epstein, 2015), which benefits only those who already hold such assets and who are, likely, to a large extent male. Montecino and Epstein (2015), thus, conclude that QE in the USA has resulted in an, albeit moderate, increase in inequalities. Given that the effect most applicable to the male population outweighs that most relevant to the female population, it is likely that QE has concomitantly also resulted in an increase in gender wealth inequalities. This is possible due to the diverging portfolio allocation choices of men and women given their socioeconomic circumstances and the, consequentially, gendered dimensions of the asset price and the portfolio rebalancing channel.

These allegations are, however, based on loose assumptions to which this paper aims to give more substance. Understanding the drivers behind gender differences in portfolio choices and quantifying these differences in more detail is vital for future research to be able to assess gendered distributional implications of monetary policy. Setting up the empirical research to be conducted in the following chapter, the next subsection will review previous empirical literature on the existence and possible drivers of gender differences in portfolio choices.

3.2 Gendered Portfolio Choices: Review of the Existing Literature

The question concerning the existence and possible drivers of gender differences in portfolio choices is a contentious one and, to this day, the literature has not yet reached consensus thereon. While most agree that women tend to accumulate fewer wealth and hold fewer risky financial assets such as stocks in comparison to men, there is no unanimity on the reasons behind these differences. While some attribute them to the gender pay gap (e.g. Badunenko et al. (2010)), others presuppose women's inherently higher risk-aversion (Croson and Gneezy, 2009). This sub-section will contextualise the debate thus far, beginning with allegations on gender differences in risk aversion and ending by placing them in their socioeconomic context. This shall inform the methodology for this paper's empirical analysis in the following chapter.

3.2.1 The Influence of Attitudinal Differences on Portfolio Decisions

The previous sub-chapter has suggested that men tend to hold more risky assets than women, insinuating that they might be inherently different regarding their *risk preferences*. This statement is, however, to be met with caution. Jianakoplos and Bernasek (1998) pay closer attention to gender differences in risk preferences, specifically concerning financial portfolio choices. Using data from the 1989 SCF, the authors construct a measure of relative financial risk aversion for US American households. They regress the value of risky assets as share of a household's total assets on its wealth as well as other control variables considering the household's socioeconomic circumstances. According to Jianakoplos and Bernasek (1998), a positive coefficient on the explanatory

wealth variable implies a decreasing relative risk-aversion. While this coefficient is indeed positive for all household types included in their sample, Jianakoplos and Bernasek (1998) note that it is significantly smaller for single female households than married households or single males.

These findings are reiterated by Croson and Gneezy (2009) in their review on gender differences regarding risk tolerance in economic experiments conducted thus far. The authors identify robust gender differences in risk preferences, sensitivity to social context and competitive preferences. Concerning risk preferences in particular, Croson and Gneezy (2009) stress that the literature finds women to be more risk averse both in lab settings as well as field experiments. Regarding implications thereof for asset allocation, the authors cite Sundén and Surette (1998) who find an individual's sex to be significantly linked to portfolio decisions via diverging risk preferences. Neelakantan and Chang (2010) explore the implications for these presumably diverging risk preferences for portfolio decisions in more detail. Employing data from the USA's Health and Retirement Survey, the authors assess whether, controlling for other factors, gender differences in risk preferences contribute to the gender wealth gap in retirement. Neelakantan and Chang (2010) begin their research on the premise that women are more risk averse than men and that this will negatively impact their retirement wealth which is assumed to be a function of income earned over a lifetime and risk aversion. Indeed, the authors find support for their hypothesis, stating that the gender wealth gap would shrink if risk preferences were equal between men and women.

The question remains whether men and women truly differ inherently with regards to their risk preferences and whether gender as such can, thus, be seen as a key driver of portfolio choices. This is taken up by Nelson (2015) who critically questions the statement that "women are more risk averse than men", berating it as a misleading oversimplification. The author warns that, if taken too literal or if revealed to be untrue, this statement may lead to an inequitable treatment of men and women and inefficient outcomes in their portfolio allocation (Nelson, 2015). Reviewing the literature on this matter, Nelson (2015) stresses that the statistically significant differences found therein may not provide much information on the degree to which they manifest economically. Further, the author stresses that they might simply be the result of other confounding variables such as upbringing, cultural context, and the framing of survey questions. Therefore, Nelson (2015) cautions researchers not to confuse nature with nurture in labelling women as more risk averse. To give further substance to her exhortations, the author supplements existing empirical work on significant gender differences with two measures of economic relevancy. Cohen's d is employed to measure substantive differences between male and female risk preferences and Nelson (2015) constructs an index of similarity to measure substantive overlap thereof. Indeed, only 14 of 35 studies reviewed by Nelson (2015) yield Cohen's d values which are consistently positive and statistically significant. What is more, only 2 studies reveal differences of more than one standard deviation in this measure. Concerning the index of similarity, Nelson (2015) finds that most studies do not yield values below 0.8, with 1 implying perfect similarity in risk preferences between men and

women. Therefore, the author concludes that, while gender differences in risk preferences may be significant, they do not manifest in economically relevant ways. Nelson (2015) hence reprimands researchers who suggest that men and women differ in some essential and inherent way with regards to their risk attitudes.

Barasinska and Schäfer (2013) follow a similar line of argumentation concerning gender differences in risk preferences. In their investigation of whether the willingness to take investment risk is a sex-linked trait, the authors analyse household survey data from Austria, Italy, the Netherlands, and Spain. Barasinska and Schäfer (2013) measure the extent to which a risk is taken by the respective investor along two dimensions. First, the investor makes a participation decision, choosing whether to hold any amount of a risky asset at all. Second, they make an allocation decision, determining how much of their portfolio is allocated to assets deemed risky (Barasinska and Schäfer, 2013). Barasinska and Schäfer (2013) employ a probit- and a Heckmann-model for the first and second decision stage respectively. Similar to the empirical work introduced above, the authors control for a number of socioeconomic factors, a gender dummy, and the household's self-reported risk tolerance. Concerning the participation decision, the authors find that in Austria, the Netherlands, and Spain, men and women do not differ significantly in their willingness to purchase a risky asset. In Italy however, men are eight percent more likely to do so than women. In the second stage, the allocation decision, the authors do not find a difference between men and women who have previously made the decision to hold any amount of risky assets (Barasinska and Schäfer, 2013). Barasinska and Schäfer (2013), therefore, reject the hypothesis that women are inherently more risk averse than men. Instead, the authors highlight the difference in financial means disposable to men and women as well as differences in risk tolerance as drivers of differences in portfolio decisions (Barasinska and Schäfer, 2013). It should be noted here that Barasinska and Schäfer (2013) do not explain the origin of the differences in self-reported risk tolerances and fail to acknowledge that they do indeed vary by gender as has been investigated by previous research. However, as detailed in the following sub-section, these differences are likely due to the diverging socioeconomic circumstances in which women and men tend to find themselves. Hence, Barasinska and Schäfer (2013) caution to simply use gender as a proxy for an individual's willingness to take financial risk.

3.2.2 The Influence of Social and Economic Factors on Portfolio Decisions

As outlined in chapters 2 and 3.1, there are a number of factors impacting the socio-economic context in which each household makes its portfolio decisions which present a particular constraint for women. The *age* of the household head (i.e. the financially responsible person) is often put forward in this regard. Authors such as Sierminska (2017) or Rehm et al. (2022) highlight the life cycle hypothesis. In essence, this hypothesis posits that all individuals enter adulthood with relatively low levels of wealth which are then accumulated through income and savings. This creates a stock of wealth which is drawn on once the individual enters the phase of retirement (Sierminska,

2017). Thereby, the stock of wealth of an individual should follow an inverted U-shape throughout the course of their life. As women tend to live longer than men, they likely have to face longer periods of drawing on their pre-existing stock of wealth. While this makes accumulating such wealth throughout adulthood all the more important for them, there are a number of factors impairing this accumulation.

Important in this vein is the *number of children* present in the household, particularly those who are financially dependent. As pointed out by Young (2019) and others, participation in risky assets tends to increase with wealth. Children, however, are costly, and, thus, impair a household's wealth accumulation (Metzger and Young, 2020). This has consequences for its portfolio allocation choices, as a household with lower wealth levels will likely prefer to hold relatively safe and liquid assets. Metzger and Young (2020) suggest that this is a particular constraint on female-headed households because women are far more likely to take on the role of a single parent than men. Moreover, Grabka et al. (2013) highlight that children also impact the labour market status of mothers in coupled households and, thus, their financial independence. Indeed, given the traditional division of labour within households, women are more likely to take career breaks to care for children which may impede their re-entrance into the labour market and their prospects of a high-profile career. Grabka et al. (2013), in an analysis for Germany, find that having children is associated with lower levels of wealth for women when compared to childless adults. However, this gap vanishes once household income is controlled for (Grabka et al., 2013), a point to which this paper will return in a later paragraph. Concerning the USA, the negative effect of children on women's wealth accumulation through their labour market attachment might be somewhat mediated as paid maternity leave is far less common and women tend to return to work sooner after giving birth than in Germany (see for example Gault et al. (2014) & Holley (2016)). However, there are also fewer social protection and child support policies in place, which may counteract the positive wealth effect of women's stronger labour force attachment in the USA.

Further, and particularly important for the USA, *race* is a predictor of income and wealth accumulation. For instance, Grabka et al. (2013) point out that Black women have higher labour force attachment than White women in the USA on average. Sierminska et al. (2010) emphasise that discrimination based on race also plays a role in accumulating wealth in certain assets. The authors claim that Black single-earner couples are particularly disadvantaged regarding access to mortgage lending and, thus, home ownership in the USA (Sierminska et al., 2010). As such, the transmission channels of monetary policy outlined in chapter 3.1 may not only manifest along lines of gender, but also take an intersectional dimension.

While the impact of the aforementioned factors is uncontested in the literature on gendered portfolio choices, the effect of an individual's *relationship status* is far more debated. For a long time, marriage has been regarded as akin to a "safe asset" for women. For instance, (Rehm et al.,

2022, p.699) find a "marriage wealth premium" for married couples relative to single households or cohabitating couples using the 2014 wave of the HFCS for Austria. However, it remains unclear whether this premium translates to higher individual wealth for the woman within a heterosexual couple or if this wealth largely remains in control of the man. Indeed, Rehm et al. (2022) propose two possible effects of marriage on a woman's individual wealth. For one, the authors suggest that marriage is regarded as an increased commitment to a joint life, thereby leading to more wealth sharing (Rehm et al., 2022). In this vein, Sierminska et al. (2010) also highlight that widows often inherit their late husband's wealth and, using the German Socio-Economic Panel (SOEP), find that widows are among the wealthiest women in Germany. In contrast to these findings, Rehm et al. (2022) propose a second possible effect of marriage on women's wealth and portfolio choices. With the single earner model still being predominant, especially among older generations, women often become financially dependent on their husbands and suffer negative effects on their individual wealth accumulation. These effects are particularly evident in case of a divorce after which the woman, having taken a prolonged career break, might struggle to find ground on the labour market again (Rehm et al., 2022). In this vein, Bertocchi et al. (2011) study the joint impact of gender and marital status on households' financial decision making and highlight that marriage can no longer be regarded as the safe institution it once was. Using the Bank of Italy's Survey on Household Income and Wealth from 1989 to 2006, the authors test the hypothesis that marriage is a safe asset and that the effect thereof is stronger for women's wealth accumulation than for men's. Similar to Sierminska et al. (2010), Bertocchi et al. (2011) begin their analysis with the notion of marriage as a source of financial security via a joint commitment and wealth sharing. Therefore, it is assumed that marriage should increase an individual's willingness to invest in risky assets (Bertocchi et al., 2011). The authors estimate a probit model for the decision to invest in risky assets, adding a gender and relationship status dummy as well as a number of socioeconomic controls. As key finding, Bertocchi et al. (2011) present that the differential behaviour of married and single women has evolved over time. While the difference between married and single women's willingness to invest in risky assets peaks in the intermediate years of their sample period, it diminishes afterwards. The authors suggest the evolution of gender roles in society and the parallel erosion of the importance of marriage as reasons behind this observation (Bertocchi et al., 2011). According to Bertocchi et al. (2011), the increase in divorce rates over past decades has resulted in marriage no longer being perceived as a safe commitment and, consequentially, lower wealth sharing among married couples. Moreover, Bertocchi et al. (2011) highlight the increase in female labour force participation rates which has enabled women to gain their own source of income and reduce financial reliance on their husbands. Their findings have been reiterated by Grabka et al. (2013) who argue that every divorce is preceded by a period of non-cooperation between the former couple. This gives the wealthier partner the opportunity to transfer shared assets into their private possession (Grabka et al., 2013). As such, contrasting the notion of a marriage wealth premium, the authors take up the concept of a "marriage disruption penalty", initially put forward by Warren et al. (2001). Thus, this paper cautions to regard marriage as a safe asset. Rather, it is likely

that a household's relationship status will no longer have a significant impact on individual wealth accumulation and portfolio choices. If anything, marriage will have a negative effect on a woman's ability to diversify her portfolio in case of a divorce. While wealth sharing between partners is no longer common practice, married women will likely have sacrificed some of their career opportunities for the sake of care work in the household, thus being less able to benefit from employment effects of monetary policy.

Besides these variables describing a household's broad socioeconomic context, *human capital* (i.e. *education*) is often suggested as a driver of wealth accumulation and, thereby, portfolio allocation decisions. Once again, working with the 2014 wave of the HFCS, Rehm et al. (2022) find that the level of education is positively correlated with wealth, although it does not explain the gender wealth gap in Austria in its entirety. In a similar endeavour, Sierminska et al. (2010) use longitudinal data from the SOEP to analyse the gender wealth gap and its drivers in Germany. Corroborating the results of Rehm et al. (2022), the authors find that education influences an individual's labour market status and, thus, their income and prospects for wealth accumulation, particularly at the bottom of the wealth distribution. Moreover, Sierminska et al. (2010) highlight that men have on average higher levels of education than women, a difference which increases among married couples. Similar results are put forward by Sierminska (2017) who uses data from the 2010/11 HFCS to analyse the gender wealth gap in eleven European countries. Decomposing this gap into observed and unobserved characteristics of the household head, the author finds that, except for Italy, 50 percent of the gender wealth gap can be explained by observed characteristics. Sierminska (2017) lists education and income among the particularly significant explanatory variables. Addressing the importance of education for the gender wealth gap in the USA, Ruel and Hauser (2013) employ data from the Wisconsin Longitudinal Study. The authors find that educational attainment explains 23 to 29 percent of the wealth gap between married men and women. However, concerning single, never-married households, the gender wealth gap widens once educational attainment is controlled for (Ruel and Hauser, 2013). According to Ruel and Hauser (2013), this indicates that men and women have different returns to education, which seem to be lower for women with regards to wealth accumulation than for men. This may, once again, be due to highly-educated women taking on a role as mothers and facing a gender-segregated labour market which impairs their ability to earn the full return on their education, an obstacle less often faced by men. Further, women have a greater tendency to take up studies in social sciences which earn a lower remueration than, for instance, male-dominated natural sciences. Via its overall positive impact on wealth accumulation, education is likely also positively associated with a household's willingness and ability to diversify its portfolio and invest into riskier asset categories.

Another important predictor of a household's overall wealth and, thereby, its range of portfolio diversification is the *level of wealth* that has been passed on to the household. In their analysis of the Wisconsin Longitudinal Study participants' wealth, Ruel and Hauser (2013) highlight the

importance of the family of origin. Wealthy parents not only provided access to quality education and, thus, improved income prospects, but also often assisted in the purchase of the household's first home and helped to minimise mortgage debt (Ruel and Hauser, 2013). As most important mechanism for this transfer of wealth and status, Ruel and Hauser (2013) name past *gifts and inheritances*. The relevance of this mechanism has been long acknowledged as, for instance, Gale and Scholz (1994) found that inheritances accounted for half of wealth accumulation in the USA. In their own empirical work, Ruel and Hauser (2013) find inheritances to explain six to twelve percent of the wealth gap between single male and female households and almost five percent of the wealth gap between married men and women. Most importantly for this work, the access to family wealth transfers has been shown to be gendered. Szymborska (2022) analyses the evolution of the gender wealth gap in the USA using all accessible SCF waves from 1989 to 2019. In 2019, 33.7% of male-headed households had received an inheritance from their family versus 26.4% of female-headed households. This represents an increase in gender differences concerning inheritances since 1989. (Szymborska, 2022). The importance of inheritances, particularly concerning *home ownership* status as emphasised by Ruel and Hauser (2013), is also stressed by Schneebaum et al. (2018). Using the 2010 wave of the HFCS, the authors analyse the gender wealth gap across eight European countries and find home ownership to be positively correlated with wealth, except for at the very top of the wealth distribution (Schneebaum et al., 2018). Therefore, inheritances and, in particular, home ownership status, are predicted to correlate positively with a household's wealth and, consequentially, its opportunities for portfolio diversification in this paper's analysis.

Evidently, another highly significant determinant of a household's wealth and portfolio diversification is its *labour market participation* with regards to the hours worked per week and throughout an individual's lifetime. The relevance of this factor is stressed by Sierminska et al. (2010) who find that the German raw gender wealth gap is driven predominantly by gender differences in labour market experience and, thus, income discrepancies. In this vein, the authors highlight that men are more likely to be employed full-time while women work part-time more often (Sierminska et al., 2010), a finding which is unsurprising given the prevalence of the traditional breadwinner model[2] in Germany. Similar notes are put forward by Bajtelsmit and Bernasek (1997) who conduct a critical review of existing empirical work on gender differences in investment behaviour at the time. The authors claim that, overall, studies do find significant differences in male and female investment in risky assets. All explanations for these differences are rooted in gender-based discrimination or individual preferences (Bajtelsmit and Bernasek, 1997). Such discrimination may very well influence wealth accumulation and participation in risky assets through employment prospects. Undisputedly, labour markets worldwide continue to be highly gender-segregated (see again van Staveren (2011)). As such, women are often concentrated in lower segments of occupational hierarchies and female-dominated occupations continue to be amongst the most low-paying ones (Bajtelsmit

[2]This term describes a form of labour allocation within the household whereby the man works full-time and earns the household's income while the woman is responsible for care and housework and is unemployed or works only very little hours, hence having no substantial income herself.

and Bernasek, 1997). In this context, Ruel and Hauser (2013) put forward the differential exposure hypothesis. Thereby, women are less exposed to structural elements required for wealth accumulation, such as labour market attachment, due to the gendering of both the home and the workplace (Ruel and Hauser, 2013). As such, women tend to take career breaks more often and are more susceptible to taking on part-time work in order to care for children or conduct household work (see also Grabka et al. (2013) and Schneebaum et al. (2018) with similar results for Europe). Indeed, in their empirical examination of wealth accumulation by gender in the USA, Ruel and Hauser (2013) find status attainment through employment most powerful in explaining the gender wealth gap between men and women of the same relationship status. However, it should be noted that labour market participation does not explain the gender wealth gap in full. Even in their full specification, Ruel and Hauser (2013) find a remaining unexplained gender wealth gap. All in all, previous literature seems to confirm women's positioning in the low-income segments of the labour market. While this may allow them to benefit directly from the employment effects of expansionary monetary policy, the extent to which they are able to do so may be constrained by their role as caretakers, limiting the amount of hours they are able to allocate to paid work. Most importantly, the positive employment effects are likely outweighed by the negative income and wealth effects of women's weak labour market attachment and their consequential inability to benefit from the asset price and portfolio rebalancing channel.

Undoubtedly, labour market attachment is closely tied to an individual's *income* and, hence, the stock of wealth they are able to accumulate throughout a lifetime. Badunenko et al. (2010) use the 2004 German SOEP to test the traditional assumption that women are less inclined to take risks and, therefore, tend to invest less in risky assets. The authors group assets into "insecure" and "secure" categories whereby stocks of listed and non-listed companies as well as bond issues are perceived as "insecure" investments (Badunenko et al., 2010). In a first descriptive overview, Badunenko et al. (2010) note a gender gap in assets deemed insecure. Indeed, these types of assets are held by 45 percent of men in their sample, but only by 38 percent of women. The authors go on to acknowledge that this gap is often related to the assumed inherent risk-aversion of women in contrast to men (Badunenko et al., 2010). However, opposing this assumption, Badunenko et al. (2010) argue that gender-differences in risk aversion are not the driver of these different portfolio choices, but rather that they are rooted in women disposing of a lower financial budget to invest. In support of their argument, the authors highlight a positive correlation between the sheer amount of assets held and insecure investments for both men and women (Badunenko et al., 2010). Thus, similar to Young (2019), Badunenko et al. (2010) argue that it is ultimately wealth and income which allows individuals to diversify their portfolio rather than risk aversion or personal characteristics.

This concludes the full circle to taking up the analysis by Barasinska and Schäfer (2013) once again who place particular emphasis on financial means and risk tolerance as drivers of gender differences

in portfolio choices. The previous paragraphs have explored some of the core socioeconomic variables named by the existing literature on the gender wealth gap and gender differences in portfolio allocation choices. Their primary purpose was showcasing that gender in this context is to be understood as a socioeconomic rather than biological category. To take up key concepts of feminist economics introduced in chapter 2 once again, individual portfolio choices by men and women are not made on the same basis. Instead, women face social gender norms in the private sphere which influence their preferences and access to finanical markets. As women are more likely to take on roles as primary caregivers and face a gender-segregated labour market, their income opportunities are constrained. While their positioning in lower income groups may allow them to reap the benefits of monetary policies' employment effects, it severely limits their ability to accumulate wealth and, thus, to diversify their financial portfolio. Hence, whereby men can capitalise the effects of the asset price and portfolio rebalancing channel by purchasing risky financial products, women are unable to do so. What is more, women's generally low income likely also impairs their willingness and ability to take on financial risks as they have less of a safety net to fall back on. Moreover, their role as caregivers presumably inhibits their risk tolerance because women also take ramifications for the financially dependent household members into account. All of these constraints are less applicable to male households and allow them to, on average, dispose of a more diversified and relatively riskier portfolio. Figure 1 traces this process and makes tangible how gender as a socioeconomic category is endogenous to financial markets (see van Staveren (2011) in chapter 2).

While Barasinska and Schäfer (2013) explore this question for European countries, their results have not yet been applied to the context of the USA. Doing so allows this paper to contribute to the existing literature in numerous ways: First, it hopes to point towards another possible root of the particularly high inequalities in the USA, thereby providing a first step towards their alleviation. Moreover, financialization in the USA is even more pronounced than it is in Europe and stock market participation is more widespread (van Lerven, 2016). It will be interesting to compare this paper's results to those of Barasinska and Schäfer (2013) and assess whether the drivers behind the process described in Figure 1 manifest differently in such varying contexts. Finally, given this importance of financial investment opportunities, the gendered distributional impacts of monetary policy in the USA might be even more severe should men and women display significantly different portfolio choices. This paper hopes to shed light on these issues and raise awareness thereof among academia and policy-makers alike.

Figure 1: Gender as endogenous to portfolio choices and distributional outcomes in financial markets. Author's depiction.

It will, thus, pose the following research question: *Are there significant differences in portfolio choices between men and women in the United States of America in 2022? If so, what are the drivers of these differences?* Based on the previous literature review, this paper hypothesises that there are indeed significant differences between male and female portfolio choices. However, rather than by gender itself, it is expected that (1) these differences are largely due to the financial means at the disposal of the respective household. (2) Any remaining differences are likely due to the different risk preferences between men and women given their diverging socioeconomic circumstances.

4 Empirical Analysis

This paper will apply the empirical analysis of Barasinska and Schäfer (2013) to US American households in the SCF 2022. This chapter introduces the methodology in more detail and presents its results which will be discussed in chapter 5.

4.1 Data and Methodology

The 2022 wave of the SCF is the most current data available at the time of writing. The SCF is a triennial cross-sectional survey of US American households which has been gleaning information on households' balance sheets, pensions, income, and demographic characteristics since 1989. The project is funded by the Federal Reserve Board and the data is collected by NORC (previously National Opinion Research Centre), an independent affiliate of the University of Chicago (Federal Reserve System, 2017). It should be noted that information concerning wealth holdings and income is gathered at the household level. Hence, only personal information (e.g. education or age) is available at the individual level but no information on asset holdings of the individual household members can be deducted. Questions on these matters are answered by the household's "reference person" who is identified as the single core individual of the household. For coupled households, this reference person is by default the male member of a heterosexual couple, or the older individual in a same-sex couple (Federal Reserve System, 2022). The SCF's 2022 wave includes 4,595 observations (i.e. households) in total. As the reference person for coupled households is by default male in most cases, there are far more male households (3,497) in the dataset than female ones (1,098). Indeed, out of the 1,098 female households, 1,049 are single and only 49 live with a partner (Board of Governors of the Federal Reserve System (U.S.), 2023). Consequentially, there are a substantial number of "male" coupled households which mask the behaviour of a female decision-maker. Therefore, it is impossible to make any concise statements about gender differences in portfolio choices of coupled households. This paper will, thus, only assess the behaviour of the 1,690 single households in the SCF 2022 data wave. Again, 1,049 of these households are female while the remaining 641 are male (Board of Governors of the Federal Reserve System (U.S.), 2023).

Arguably, this puts a strain on the representativeness of the households and, thus, this paper's findings as single men and women face different socioeconomic circumstances than those in a long-term partnership. It is regretable that most surveys providing information on asset holdings do so at the household level only and fall into the trap of designating the man as the household head.[3] While this is not only an outdated perspective, it also hinders research investigating individual wealth inequalities, especially concerning gender dimensions. Thus, this paper urges the institutions in charge to glean more individualised data for future research to follow up on the results presented here.

[3]See also the HFCS facing similar issues (European Central Bank, 2023).

As aforementioned, this paper follows the methodological approach of Barasinska and Schäfer (2013). The dependent variable of interest is the household's holdings of risky assets. Following Barasinska and Schäfer (2013), risky assets are first defined as directly held stocks and as directly held stocks plus mutual funds at a later stage. These types of assets are of particular interest to this paper given the role of euqity prices in the rise in inequalities in the USA highlighted in chapter 3.1 (Domanski et al., 2016). The main independent variable of interest is the household's *gender*, a dummy which takes the value of 1 if the reference person is a man, and 0 otherwise.

Evidently, not all single households in the dataset hold risky assets. Therefore, this paper will have to account for the households' self-selection into risky asset-holders. This is ensured by applying a two-stage Heckman selection model (Barasinska and Schäfer, 2013). In a first stage, this paper will analyse the household's participation decision to hold any amount of risky assets. According to Barasinska and Schäfer (2013), the variable explaining this decision is the household's *status as owner of residential property* – a dummy equal to 1 if the household owns any residential real estate and 0 otherwise. The authors argue that a household whose wealth is bound in real estate likely has no further means at its disposal to invest in financial products, especially risky ones. However, once a household has made the decision to invest in such assets, ownership of real estate becomes irrelevant concerning the optimal share of risky assets in a household's portfolio (Barasinska and Schäfer, 2013).

The dependent variable in the first stage model is, thus, a dummy variable equal to 1 if the household *owns any amount of risky assets* and 0 otherwise. This dependent variable is employed in a probit regression on the explanatory variables gender, ownership of real estate and a number of socioeconomic control variables.

The first of these controls is the logarithm[4] of the household's *gross annual total income* which is presumed to positively affect the decision to invest in risky assets as outlined in chapter 3.2. Secondly, Barasinska and Schäfer (2013) include dummies on the household's positioning in *financial wealth quartiles* one to four as explanatory variables with the first quartile being the base category. The 2022 USD values of income and wealth have been winsorised at the 99 percent level to exclude the impact of extreme outliers following Barasinska and Schäfer (2013). The regression further includes dummies for the reference person's *age group* (<30, 30-39, 40-49, 50-59, 60-69, >=70) with the group below 30 being the baseline category. Moreover, the *number of children* in the household is expected to have a negative impact on the household's risky asset holdings as elaborated in chapter 3.2. Further dummies indicate the *relationship status* (never married, married, divorced/separated, widowed with married being the baseline category) and the reference person's level of *education* (1 if they obtained a college degree and 0 otherwise). While the latter is expected

[4]To account for zero and negative values, the monetary values of income and wealth have been subjected to an inverse hyperbolic sine transformation following Schneebaum et al. (2018). For simplicity, this paper refers to their "log" value in the following.

to increase holdings of risky assets via its positive effect on wealth, the effect of the former is to be analysed with some caution. As this paper only takes the behaviour of single households (i.e. those living without a partner) into consideration, any married households are hardly representative and no cogent statement about the effect of marriage will be possible. Nonetheless, a positive effect of widowhood via wealth accumulation and a negative effect of separation or divorce is expected in line with the discussion in chapter 3.2.

This paper then deviates from the analysis of Barasinska and Schäfer (2013) to some extent. While the authors assess the effects of labour market attachment only via a dummy for *self-employment*, this paper argues that with regards to its research question, it is sensible to also analyse this factor through the household's *weekly working hours*. As aforementioned, women in their role as primary caregivers are more constrained in allocating their time between care work and paid work. This likely has negative implications for their income and willingness to take financial risk. Hence, labour market attachment is captured via the expected positive effect of weekly working hours and self-employment status following Barasinska and Schäfer (2013). Concerning the latter, it can be assumed that self-employed individuals are generally more comfortable with taking risks since they decided to opt for making a living without the safety net of employment benefits. This also implies that these individuals will have to ensure their financial security in old age through private investments, possibly spurring them to invest some amount of their portfolio into relatively high-risk, high-yield assets. Moreover, as the country of interest in this paper is the USA, the regression will also include a dummy indicating the household's *race* (White, Black/African American, Hispanic, Asian, Other with White being the baseline category). This is important given the racial discrimination faced by non-White US Americans and the ramifications this has on their socioeconomic status (see Sierminska et al. (2010) in chpater 3.2). Finally, this paper follows Schneebaum et al. (2018) by including a dummy variable on the household's past *inheritances*. This is particularly important to ensuring the validity of the identification restriction employed in the Heckman model. As detailed in section 3.2, inheritances are highly relevant to building up a household's wealth (Ruel and Hauser, 2013). Most importantly, a household which has gained real estate ownership status via an inheritance will still dispose of sufficient financial means to invest in risky assets. Hence, controlling for inheritances is vital to fully capturing the identification restriction employed by Barasinska and Schäfer (2013). In line with Schneebaum et al. (2018), this paper conservatively assumes real value retention using the annual inflation rates from the World Bank (2024) database for the USA. The dataset's median net wealth is then used to calculate dummy variables indicating whether the household has received a small or large inheritance, with no inheritance being the baseline category.[5]

Up to this point, Barasinska and Schäfer (2013) name the model a naïve model capturing the gross effect of gender on the decision to invest in risky financial assets. In a further step, the household's

[5]For further information on the methodology regarding inheritances, please see Schneebaum et al. (2018).

self-reported *risk tolerance* is added as final explanatory variable to account for the socioeconomic restrictions faced by women and their implications for women's risk preferences. The SCF includes a question on the amount of financial risk the reference person is willing to take when saving or making investments. The respondent has the option to choose between four answers: (1) no risk, (2) average risk, (3) above average risk and (4) substantial risk. Evidently, a higher self-reported risk tolerance is expected to positively affect a household's risky asset holdings. Moreover, Barasinska and Schäfer (2013) find that gender is no longer a significant driver of portfolio decisions in the advanced model, a finding taken up by this paper's hypothesis.

Thus concludes the first model analysing the household's participation decision. The second model then employs a Heckman regression to account for the self-selection into risky asset-holders when analysing a household's allocation decision. To do so, the *Inverse Mills Ratio (IMR)* is obtained from the first stage model and included as additional explanatory variable in the ordinary least squares (OLS) regression in model two. The dependent variable is now the *share of risky assets*[6] in the household's net wealth following Barasinska and Schäfer (2013). Two further adaptations are made. Financial wealth as explanatory variable is now expressed in its logarithm form as the share of risky assets is expected to take a concave increasing function of wealth (Barasinska and Schäfer (2013) following Guiso et al. (2008)). Moreover, the second model excludes the identification restriction from the first model, residential property ownership. All other explanatory variables from model one are included in the second stage OLS model as described above. Again, this paper first employs the naïve model without accounting for risk tolerance and then adds this explanatory variable to the regression. The entirety of the portfolio composition process and households' self-selection into risky asset-holders as traced by this paper's methodology is described by Figure 2.

[6] Computed as $\frac{\text{USD amount of asset}}{\text{USD amount of net worth}}$.

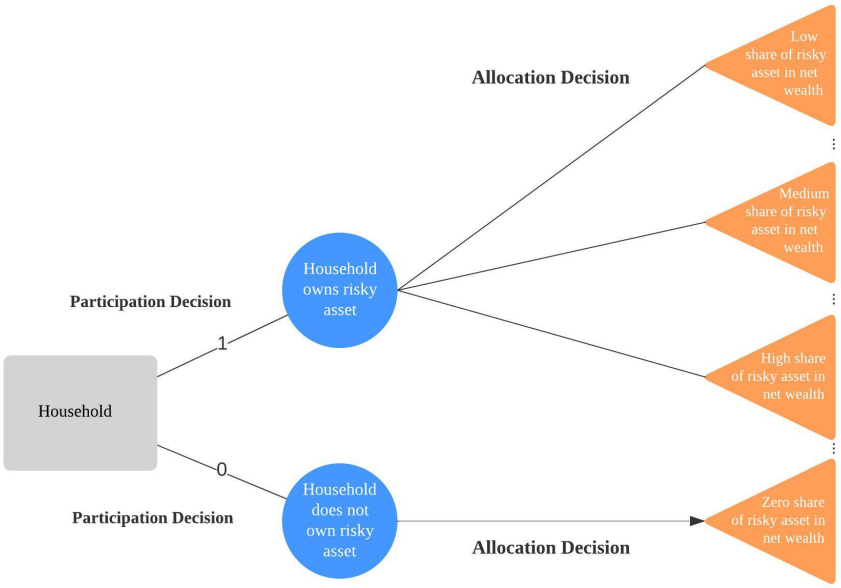

Figure 2: Tracing a household's portfolio composition process based on participation and allocation decision. Author's depiction based on Barasinska and Schäfer (2013).

One final remark concerning the SCF data is noteworthy. The SCF provides five imputations per data wave to account for item non-responses. Due to time constraints and the relatively minimal benefits from using all five imputations, this paper runs the regressions in section 4.3 only with the average imputation as suggested by the SCF 2022 Codebook (Federal Reserve System, 2022). However, the descriptive statistics presented in section 4.2 use all five imputations and the survey weights provided in the dataset.

4.2 Descriptive Statistics

This section serves to answer the first part of this paper's research question, whether there are differences in portfolio choices between male and female single households in the USA in 2022. By and large, the data confirms the hypotheses derived from the literature review in chapter 3. As shown in Figure 3, single male households dispose of higher income than female households at the median. While men have an annual income of 43,235 USD, women receive 38,900 USD per year at the median (Board of Governors of the Federal Reserve System (U.S.), 2023). This corroborates the notion of gender being a socioeconomic category and women having relatively fewer income at their disposal to invest in portfolio diversification. It is striking, however, that

single female households nonetheless have accumulated a somewhat higher net worth than single males at the median as depicted in Figure 4. Indeed, single females in the 2022 SCF have garnered a net worth of about 74,500 USD while single men dispose of 72,900 USD at the median (Board of Governors of the Federal Reserve System (U.S.), 2023). These results are astonishing and stand in stark contrast to the results of the 2016 SCF where single females had accumulated a net worth of 45,000 USD whereas single men disposed of 55,300 USD of net wealth at the median (Board of Governors of the Federal Reserve System (U.S.) (2023), see Figure 10 in the appendix). While it is not this paper's aim to determine the reasons behind this change, it is certainly worthwhile for future research to investigate this development in more detail and assess whether monetary policy could unexpectedly be linked to this.[7]

[7]Both the 2016 and the 2022 wave contained roughly the same share of widowed women (22.5% & 21.1% respectively (Board of Governors of the Federal Reserve System (U.S.), 2023)). Thus, the difference cannot be due to widowed women in 2022 having inherited their late husbands' networth and skewing the data in favour of single female households. It should be noted that the 2022 SCF is taken at a peculiar point in time relative to the 2016 wave. Future research may look into the effects of the pandemic on single household's wealth. Further, the outbreak of the war in Ukraine and its consequences for the global economy may also have affected men and women differently as they do indeed hold different forms of assets (see below). While it is beyond the scope of this paper, following up on these possibilities is an interesting endeavour for future research.

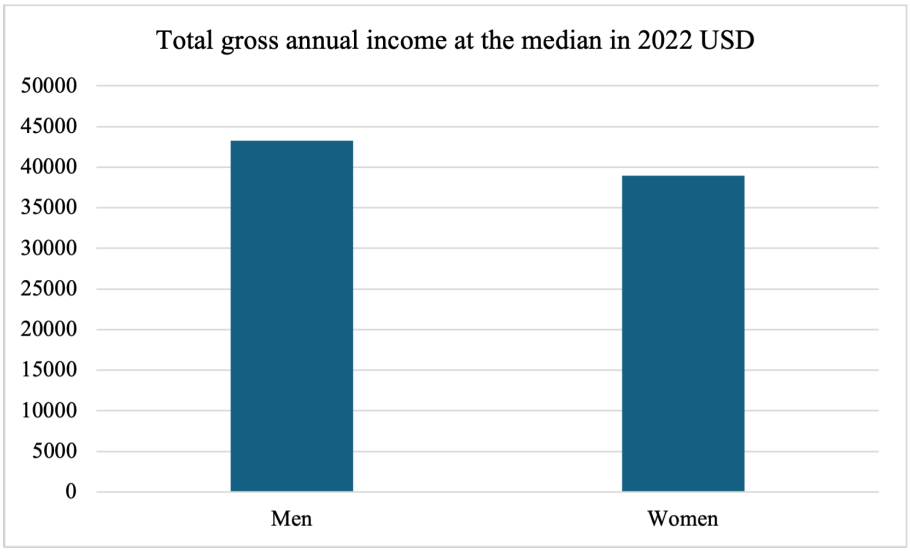

Figure 3: Total gross annual income of male and female single households at the median in 2022 USD. Author's depiction based on the SCF 2022 (Board of Governors of the Federal Reserve System (U.S.), 2023).

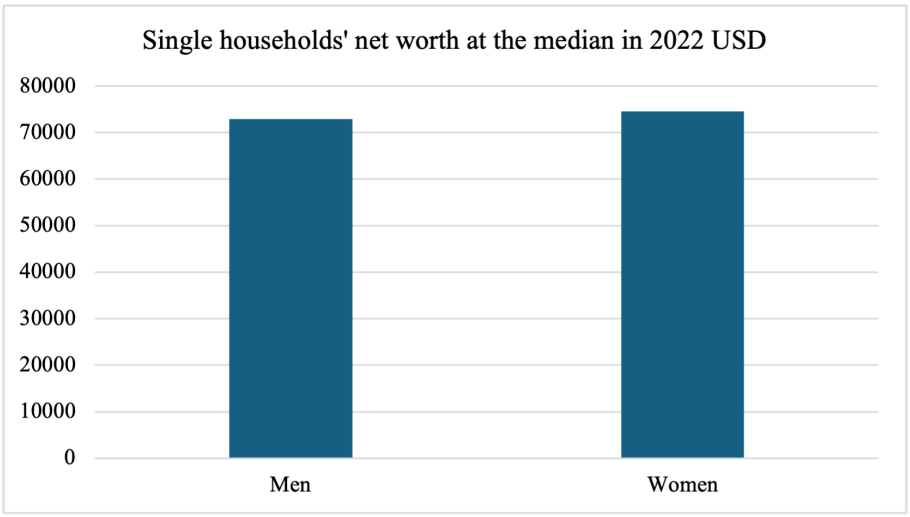

Figure 4: Net worth of male and female single households at the median in 2022 USD. Author's depiction based on the SCF 2022 (Board of Governors of the Federal Reserve System (U.S.), 2023).

Nonetheless, despite women's higher net worth at the median, men hold slightly more value in financial assets in 2022. As shown in Figure 5, single men hold financial assets worth about 12,600 USD while single women's financial assets are worth ca. 11,300 USD at the median (Board of Governors of the Federal Reserve System (U.S.), 2023).[8]

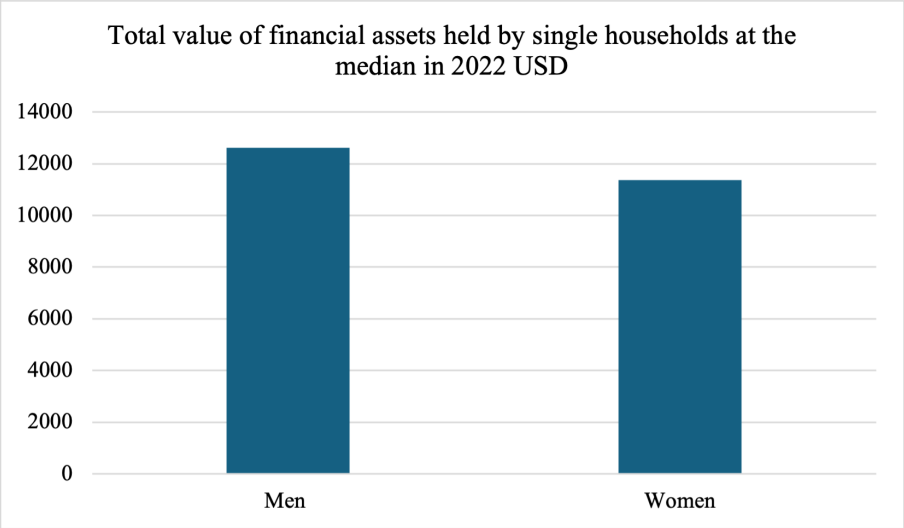

Figure 5: Total gross value of financial assets held by male and female single households at the median in 2022 USD. Author's depiction based on the SCF 2022 (Board of Governors of the Federal Reserve System (U.S.), 2023).

These differences in values of financial assets also translate to the holdings of risky assets, specifically stocks. Expressed in terms of the weighted generalisable population, 19.4 percent of single men hold stocks while only 11.5 percent of single female households do so (see Figure 6, Board of Governors of the Federal Reserve System (U.S.) (2023)). However, when it comes to owning one's main residence, an arguably safe form of investment, women seem to have a greater tendency to invest therein. Indeed, as shown in Figure 6, about 47 percent of single male households own their home versus 52 percent of single women (Board of Governors of the Federal Reserve System (U.S.), 2023). This shall serve as a first indication that women's wealth tends to be bound in relatively safe assets such as their primary residence. Moreover, it lends further substance to employing ownership of residential property as identification restriction in the Heckman selection model in line with Barasinska and Schäfer (2013).

[8]Again, the difference in 2016 is more pronounced with single women holding 7,566 USD worth in financial assets and single men 11,411 USD (expressed in 2016 USD, (Board of Governors of the Federal Reserve System (U.S.), 2023)

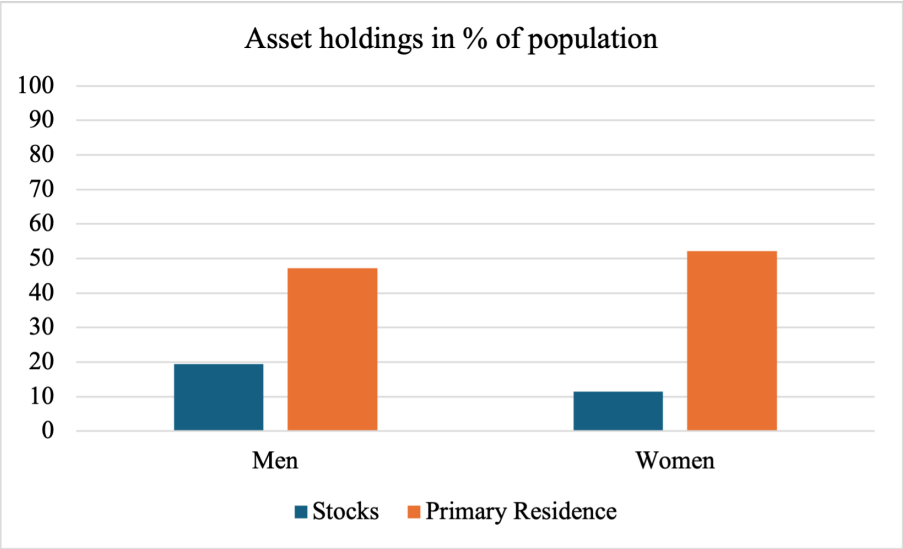

Figure 6: Percent of single male and female households holding stocks and owning their primary residence in the USA in 2022. Author's depiction based on the SCF 2022 (Board of Governors of the Federal Reserve System (U.S.), 2023).

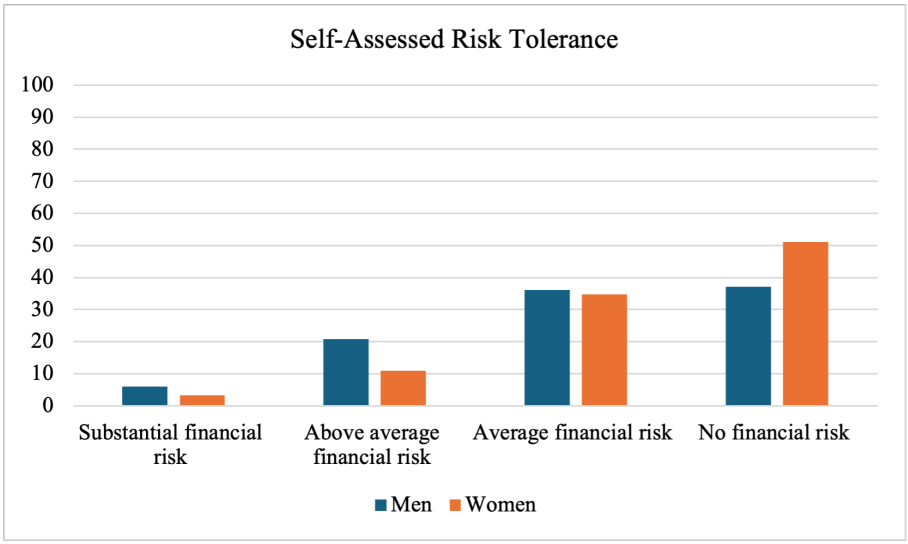

Figure 7: Self-reported risk tolerance of single male and female households in the USA 2022 in weighted shares of the generalisable population. Author's depiction based on the SCF 2022 (Board of Governors of the Federal Reserve System (U.S.), 2023).

Finally, Figure 7 corroborates that men and women differ in their attitudes towards risk given their socioeconomic contexts as outlined in chapter 3. As described in section 4.1, survey respondents are asked to rank their willingness to take financial risks on a scale from 1 (none) to 4 (substantial). Figure 7 shows that, expressed in percentages of the generalisable population, men outnumber women in all categories except in that for the lowest risk tolerance. About 51 percent of single women are unwilling to take any financial risk while this applies to only 37 percent of single men (Board of Governors of the Federal Reserve System (U.S.), 2023).

All in all, the descriptive statistics have shown that single men and women hold surprisingly similar levels of wealth, although single women have far less gross annual income and men hold more wealth in terms of financial assets. As suspected, there are also evident differences in portfolio choices between single male and female households in the USA's 2022 SCF. While women tend to hold their wealth in the form of their primary residence, men seem to more readily invest in stocks, a risky asset by definition of this paper (Barasinska and Schäfer, 2013). This is also reflected in the diverging self-reported risk tolerance of men and women. Men report as more ready to take on financial risk while women state to be rather conservative investors. Overall, this gives further reason to assume that particularly the differences in terms of financial means and self-reported risk tolerance drive differences in portfolio choices between men and women. This will be put to the test empirically in the following section.

4.3 Results

This section presents the results of the empirical analysis following the two-stage Heckman model of Barasinska and Schäfer (2013). Table 1 shows the regression results for the participation decision of the main model described in section 4.1. Column (1) denotes the naïve model capturing the gross effect of being a man and column (2) displays the advanced model with the net effect of gender once risk tolerance in controlled for (Barasinska and Schäfer, 2013). Being a man increases the probability of a single household holding stocks in both model specifications. In the advanced model, a man is 14.4% more likely to participate in the stock market than a woman. In line with this paper's expectations, the coefficient on the male dummy loses its magnitude and some of its significance in the advanced model, now being only relevant at the 10% level. This mirrors the results of Barasinska and Schäfer (2013) for Italy. Further, in contrast to a substantial willingness to take financial risk, a complete lack of risk tolerance renders the household 75% less likely to own stocks. This gives support to the paper's hypothesis of risk preferences being a driver of gender differences in financial portfolio choices. It was also expected that the probability of owning stocks increases as the household moves upwards on the financial wealth distribution, an effect which is highly significant for all wealth quartiles when compared to being in the first quartile of the distribution. Somewhat surprising is, however, that income seems to have no significant effect on the participation decision.

Concerning the socioeconomic control variables, the following results are noticeable: As expected, having a college degree is positively associated with owning stocks and significant for the naïve model. Further, it is no surprise that self-employment and weekly working hours have a positive effect on the probability of stock ownership. Age is negatively associated with owning stocks and significant for all age groups above 40 in contrast to the youngest cohort aged below 30. This effect is strongest for those aged 50 to 59, a result which will be discussed in the following chapter. It is also interesting that, concerning the participation decision, having children seems to be insignificant. While this is similar to the results presented by Barasinska and Schäfer (2013), it is surprising given the discussion of key variables in chapter 3.2. However, as will be shown subsequently (Table 2), children are significant when deciding on the optimal allocation of assets in one's portfolio. Further, it is noteworthy that in contrast to being married, any relationship status is positively associated with the probability of owning risky assets. Again, however, this paper cautions to jump to conclusions based on these results as only single households are accounted for in the empirical analysis. Moreover, concerning race, Hispanic households seem to be significantly less likely than White households to hold stocks whereas Asians are more likely to do so. As will be shown subsequently, this is robust across different model specifications.

Finally, regarding the variables aimed at capturing the selection bias, both the ownership of residential real estate and inheritances are insignificant when deciding whether to hold stocks. Once again, this mirrors the results of Barasinska and Schäfer (2013) for Italy. The implications of this will be discussed in chapter 5.

Table 1: Participation decision: Probit regression of stock ownership on gender and socioeconomic controls

	Dependent variable:	
	Participation decision	
	(1)	(2)
Male	0.210^{**}	0.144^{*}
	(0.088)	(0.086)
Real estate	-0.006	0.007
	(0.099)	(0.100)
Income (log)	0.033	0.017
	(0.033)	(0.030)
Q2 financial wealth	0.559^{***}	0.441^{***}
	(0.149)	(0.146)
Q3 financial wealth	0.800^{***}	0.667^{***}
	(0.154)	(0.156)
Q4 financial wealth	1.397^{***}	1.160^{***}
	(0.183)	(0.180)
Aged 30-39	-0.165	-0.088
	(0.121)	(0.116)
Aged 40-49	-0.292^{**}	-0.231^{*}
	(0.135)	(0.130)
Aged 50-59	-0.808^{***}	-0.680^{***}
	(0.163)	(0.161)
Aged 60-69	-0.522^{***}	-0.316^{**}
	(0.155)	(0.159)
Aged 70 or older	-0.576^{***}	-0.317
	(0.214)	(0.227)
One child	-0.106	-0.128
	(0.131)	(0.132)
Two children	-0.661	-0.650
	(0.449)	(0.420)
Three or more children	-0.743	-0.615
	(0.926)	(0.950)
Separated/divorced	2.443^{***}	2.618^{***}
	(0.472)	(0.479)
Widowed	2.563^{***}	2.735^{***}
	(0.506)	(0.514)
Never married/single	2.191^{***}	2.356^{***}
	(0.490)	(0.498)
College	0.162^{*}	0.127
	(0.085)	(0.087)
Self-employed	0.354^{***}	0.278^{*}
	(0.134)	(0.146)
Weekly working hours	0.006^{***}	0.006^{***}
	(0.002)	(0.002)
Black/African American	-0.005	-0.012
	(0.108)	(0.104)
Hispanic	-0.593^{***}	-0.571^{***}
	(0.173)	(0.172)
Asian	0.518^{**}	0.568^{***}
	(0.221)	(0.198)

Continued on next page

Table 1 – continued from previous page

	Dependent variable:	
	Participation decision	
	(1)	(2)
Other ethnicity	−0.458	−0.328
	(0.477)	(0.487)
Small inheritance	0.058	0.060
	(0.128)	(0.126)
Large inheritance	−0.052	−0.071
	(0.146)	(0.157)
Risk tolerance: above average		0.096
		(0.201)
Risk tolerance: average		−0.256
		(0.193)
Risk tolerance: None		−0.754***
		(0.204)
Intercept	−4.373***	−3.988***
	(0.616)	(0.611)
Observations	1,690	1,690
Note:	*p<0.1; **p<0.05; ***p<0.01	
	Dataset: SCF 2022	
	Probit regression	

Following the decision to hold a risky asset, a household decides what share of its overall net worth to allocate thereto. Thus, Table 2 depicts the results of the second stage, the allocation decision, following the baseline model by Barasinska and Schäfer (2013). Once again, being a man has a significant and positive effect on the allocation decision which diminishes in the advanced model. Here, the share of stocks in the net worth of a male household is predicted to be 0.7% higher than that of a female household, although this is significant only at the 10% level. It should be noted that these results deviate from Barasinska and Schäfer (2013) who find gender to be insignificant in the allocation decision for all four European countries. In line with the expectations is, however, the positive and significant effect of both income and financial wealth on the allocation decision. Concerning the fourth key variable of interest, risk tolerance, the results are similar to those of the participation decision. Once again, having no risk tolerance is negatively associated with the share of stocks held in a household's portfolio when contrasted with the baseline category of substantial risk tolerance. This effect is significant at the 10% level as opposed to the 1% significance level in the participation decision.

With regards to the socioeconomic controls, there are a few further deviations from the first stage decision. Evidently, different socioeconomic circumstances come into play at different stages of the overall portfolio composition process. As such, having a college degree is now positively and significantly associated with the share of stocks held by a household whereas self-employment status and working hours no longer seem to matter. Similarly, the effect of age groups has weakened considerably, with age being insignificant in the advanced model. The same can be noted with

regards to relationship status. Having children, however, is now negatively and highly significantly associated with the share of stocks in a household's net worth. Compared to being childless, any household having one or more children is predicted to hold a share of stocks in their overall net worth that is up to 1.4% lower. In a similar manner, race has considerably less impact once a household has made the decision to invest in stocks. Only being Asian maintains a significant and positive effect on the allocation decision in contrast to being White. Further, having received a large inheritance now has a positive and significant effect on a household's allocation decision. Once again, the reasons behind these discrepancies in the drivers between the first and second stage of the overall portfolio composition process will be discussed in chapter 5.

It is worth devoting a few words to the IMR obtained from the probit regression and meant to account for the self-selection bias into stockholders. As in Barasinska and Schäfer (2013), the IMR is insignificant for both model specifications which will be taken up in the following chapter.

Table 2: Allocation decision: OLS regression of share of stocks on gender and socioeconomic controls

	Dependent variable:	
	Allocation decision	
	(1)	(2)
Male	0.009^{**}	0.007^{*}
	(0.004)	(0.004)
Income (log)	0.006^{***}	0.006^{***}
	(0.002)	(0.002)
Financial wealth (log)	0.004^{***}	0.003^{***}
	(0.001)	(0.001)
Self-employed	0.005	0.003
	(0.005)	(0.005)
Weekly working hours	−0.0002	−0.0002
	(0.0001)	(0.0001)
College	0.010^{**}	0.009^{**}
	(0.004)	(0.004)
Aged 30-39	0.005	0.007
	(0.008)	(0.008)
Aged 40-49	-0.011^{**}	−0.009
	(0.006)	(0.006)
Aged 50-59	-0.015^{**}	−0.012
	(0.007)	(0.007)
Aged 60-69	−0.011	−0.006
	(0.007)	(0.007)
Aged 70 or older	−0.001	0.004
	(0.010)	(0.010)
Separated/divorced	−0.010	−0.007
	(173.862)	(537.998)
Widowed	−0.012	−0.009
	(173.863)	(537.998)

Continued on next page

Table 2 – continued from previous page

	Dependent variable:	
	Allocation decision	
	(1)	(2)
Never married/single	−0.013	−0.010
	(173.863)	(537.998)
One child	−0.008**	−0.008**
	(0.004)	(0.004)
Two children	−0.014***	−0.014***
	(0.004)	(0.004)
Three or more children	−0.014***	−0.012***
	(0.004)	(0.004)
Black/African American	0.001	−0.0002
	(0.003)	(0.003)
Hispanic	−0.002	−0.001
	(0.004)	(0.004)
Asian	0.040*	0.040*
	(0.024)	(0.024)
Other ethnicity	0.001	0.002
	(0.010)	(0.010)
Small inheritance	0.004	0.005
	(0.007)	(0.007)
Large inheritance	0.032**	0.032**
	(0.013)	(0.013)
Risk tolerance: above average		−0.003
		(0.012)
Risk tolerance: average		−0.009
		(0.013)
Risk tolerance: None		−0.020*
		(0.011)
IMR	0.000	0.000
	(0.00001)	(0.00000)
Intercept	−0.070	−0.052
	(173.862)	(537.998)
Observations	1,690	1,690
Note:	*p<0.1; **p<0.05; ***p<0.01	
	Dataset: SCF 2022	
	OLS regression	

4.3.1 Robustness Check: Extending Risky Assets to Include Mutual Funds

In their investigations of gender differences in portfolio choices for European households, Barasinska and Schäfer (2013) extend their definition of risky assets as directly held stocks to include mutual funds. The authors do so in reference to Christelis et al. (2011) who find that single women prefer to hold stocks indirectly through mutual funds while men tend to do so directly. Hence, only analysing direct ownership of stocks may distort the data and paint female portfolio decisions to be more risk averse than appropriate. This may serve as an explanation for the unexpected, albeit weak, remaining significance of gender in the advanced baseline model. Table 3, therefore, shows the same probit regression as Table 1, with the only difference being in the dependent variable now

equalling 1 if the household holds either stocks or mutual funds and 0 otherwise. The coefficient on gender is now insignificant in the advanced model as risk preferences seem to explain the remaining gender differences concerning the participation decision. Next to a complete risk-aversity, an average tolerance of financial risk now also is negatively and significantly associated with the decision to hold risky assets. While the former decreases the probability of holding risky assets by 91.3%, the latter does so by 53%. The significance of wealth displayed in the baseline model is also corroborated by the results of this regression while income still has no significant effect on the participation decision. Concerning the remaining socioeconomic controls, the only major difference to the baseline model is the now negative and significant effect of having children, albeit this is in line with the expectations based on chapter 3.2.

Table 3: Participation decision: Probit regression of risky asset ownership on gender and socioeconomic controls

	Dependent variable:	
	Participation decision	
	(1)	(2)
Male	0.181^{**}	0.113
	(0.087)	(0.086)
Real estate	0.045	0.067
	(0.091)	(0.091)
Income (log)	0.045	0.033
	(0.033)	(0.031)
Q2 financial wealth	0.595^{***}	0.500^{***}
	(0.142)	(0.141)
Q3 financial wealth	1.008^{***}	0.904^{***}
	(0.144)	(0.144)
Q4 financial wealth	1.862^{***}	1.656^{***}
	(0.169)	(0.168)
One child	-0.179	-0.199^{*}
	(0.113)	(0.116)
Two children	-0.607^{**}	-0.586^{**}
	(0.271)	(0.266)
Three or more children	-0.865	-0.742
	(0.703)	(0.716)
... [9]		
Risk tolerance: above average		-0.130
		(0.186)
Risk tolerance: average		-0.530^{***}
		(0.163)
Risk tolerance: None		-0.913^{***}
		(0.181)
Intercept	-4.541^{***}	-3.925^{***}

Continued on next page

[9]For simplicity, only the key variables of interest are depicted here. For the full table, please refer to Table 5 in the Appendix

Table 3 – continued from previous page

	Dependent variable:	
	Participation decision	
	(1)	(2)
	(0.534)	(0.540)
Observations	1,690	1,690
Note:	*p<0.1; **p<0.05; ***p<0.01	
	Dataset: SCF 2022	
	Probit regression	

Table 4 then shows the results for the allocation decision. Again, the control variables mirror those of the regression in Table 2, only the dependent variable now includes the share of mutual funds next to stocks in a household's net worth. Now, gender loses its significance in the advanced model, corroborating the results of Barasinska and Schäfer (2013) and the hypotheses of this paper derived from the literature review. Income and wealth are once again positively and significantly associated with the allocation decision. Having an average or no financial risk tolerance is negatively associated with the share of risky assets in a household's portfolio, although average risk tolerance is significant only at the 10% level. The remaining coefficients on the socioeconomic controls by and large mirror those described in the baseline model (Table 2). Only the effect of age groups has somewhat shifted as being aged 30 to 39 or 70 and above is now significantly and positively associated with the allocation decision, even in the advanced model.

Table 4: Allocation decision: OLS regression of share of risky assets on gender and socioeconomic controls

	Dependent variable:	
	Allocation decision	
	(1)	(2)
Male	0.012^{*}	0.009
	(0.006)	(0.006)
Income (log)	0.010^{***}	0.010^{***}
	(0.002)	(0.002)
Financial wealth (log)	0.010^{***}	0.010^{***}
	(0.001)	(0.001)
...		
Aged 30-39	0.017^{*}	0.019^{**}
	(0.009)	(0.009)
Aged 40-49	−0.007	−0.004
	(0.008)	(0.008)
Aged 50-59	0.001	0.005
	(0.010)	(0.010)
Aged 60-69	−0.002	0.004
	(0.010)	(0.010)
Aged 70 or older	0.027^{*}	0.034^{**}

Continued on next page

Table 4 – continued from previous page

	Dependent variable:	
	Allocation decision	
	(1)	(2)
	(0.014)	(0.015)
...[10]		
Risk tolerance: above average		−0.012
		(0.016)
Risk tolerance: average		−0.029*
		(0.015)
Risk tolerance: None		−0.035***
		(0.013)
IMR	−0.000	−0.000
	(0.00004)	(0.00002)
Intercept	−0.149	−0.114
	(2,296.317)	(5,629.689)
Observations	1,690	1,690
Note:	*p<0.1; **p<0.05; ***p<0.01	
	Dataset: SCF 2022	
	OLS regression	

4.3.2 Robustness Check: The Case of Net Debtors

Finally, the case of those households having a negative net worth whilst holding risky assets must be discussed. While there are 221 net debtors among the 1,690 single households in the 2022 SCF dataset, only 14 of them also own risky assets in the form of directly held stocks (Board of Governors of the Federal Reserve System (U.S.), 2023). Dividing these stock holdings over their negative nethworth would return a negative share of risky assets which is not very meaningful with regards to the allocation decision. Therefore, the share of risky assets in the portfolio has been coded to 0 for those 14 households thus far. Nonetheless, taking on debt is a portfolio decision as such and should be considered in the analysis of gender differences therein. The baseline model is, thus, extended by adding a dummy variable on a household's position as a net debtor (1 if they are net debtor, 0 otherwise). The results of this regression for both the participation and the allocation decision can be found in the appendix (Table 7 and Table 8). Overall, they confirm the results of the baseline model. However, with regards to the participation decision, gender becomes insignificant in the advanced model, lending support to this paper's hypothesis. Being a net debtor is not significant for the participation decision, although it is significant at the 1% level when deciding on the optimal share of directly held stocks to own. A net indebted household is predicted to hold a share of stocks 1.2% lower than that of a housheold with no net debt. The effect of debt and the interplay between debt, gender, and portfolio choices will be discussed in more detail in chapter 5.

[10]For simplicity, only the key variables of interest are depicted here. For the full table, please refer to Table 6 in the Appendix

Overall, the results presented in this subsection are somewhat ambiguous regarding the hypotheses derived from the literature review in chapter 3.2 and the work of Barasinska and Schäfer (2013). Both financial wealth and risk tolerance are significant drivers of portfolio choices along both stages of the decision-making process while income is significant with regards to the allocation decision. While this is in accordance with the hypotheses, the results on gender are unexpected in some aspects. Particularly the significance of gender in the baseline allocation decision stands in contrast to the results of Barasinska and Schäfer (2013) who find that gender no longer is a driver of portfolio decisions at this stage once risk tolerance is controlled for. However, this significance holds at the 10% level only instead of the usually accepted 5% threshold. Most importantly, gender is no longer significant when including mutual funds into the definition of risky assets. This lends support to the notion that gender differences in portfolio choices, specifically regarding risky assets, are not due to inherently male and female traits but rather their different socioeconomic circumstances which may also impact their willingness and ability to tolerate financial risk. Further nuances in these drivers will be discussed subsequently.

5 Discussion of the Empirical Results

This chapter is devoted to a more nuanced discussion of the empirical results described above. It will place the focal point on the key variables of interest: gender, financial means, and risk tolerance. Further, some of the outcomes on the socioeconomic controls are discussed, although diving into them is beyond the scope of this paper and will be left for future research.

Concerning financial wealth and income, the results of chapter 4.3 confirm this paper's hypothesis, that they are a key driver of individual portfolio choices. Still, it was not expected that income would be relevant only for the allocation decision while having no significant effect on the participation decision, an observation robust across all model specifications. A possible explanation for this result may be that, to make the decision of investing in risky assets, one needs to build up a financial safety net and cover one's daily needs first. Income serves this purpose. After spending its income on daily consumption, a household which still has a remainder thereof will likely first invest this into relatively safe assets to build up the aforementioned safety net. Only once this safety net has been accumulated in the form of financial wealth will the household make the decision to diversify its portfolio in favour of more risky assets. Hence, regarding the participation decision, pre-existing financial wealth is crucial while income as such may not play as significant of a role. Once the participation decision has been made, however, income is relevant for deciding on how much of one's portfolio to allocate to these risky assets. A household with a stable income sufficient to finance its daily needs and build up a safety net through relatively secure savings may be more willing to invest a larger amount into risky assets. Indeed, this household can be certain to still dispose of sufficient liquidity if the risk taken does not play out to its advantage, a condition not

enjoyed by low-income households.

As expected, risk tolerance showed to be a significant driver of portfolio decisions both in the participation and the allocation decision although its significance waned from 1% to 10% in the allocation stage of the baseline model. Hence, a household's risk tolerance can be interpreted as a hurdle mainly for the decision to invest into any amount of risky asset in the first place. Once this decision has been made, however, most households focus on their general socioeconomic circumstances and financial means when making the allocation decision. Another point that must be addressed here is this paper's understanding of gender as a socioeconomic category with risk preferences being no synonym of inherently male and female characteristics. Why then are risk preferences still significant when controlling for both gender and socioeconomic factors? The simple answer may be that one cannot control for all relevant socioeconomic factors. Most importantly, socioeconomic gender differences originate from gender-based discrimination and gender roles perpetrated in society, phenomena which are especially difficult to quantify and control for. However, there are numerous arguments showcasing that these gender norms prevail in the USA and, possibly, have an impact on women's and men's risk tolerance. Economics, particularly financial markets, continue to be a male-dominated field. In this kind of environment, character traits such as risk-taking are perceived to be more masculine and seem to be exhibited by men especially when being juxtaposed to a woman (van Staveren (2014) based on Gerdes and Gransmark (2010)). Given these gender norms and societal pressures to abide by them, women may self-report themselves as more risk averse whereas men might register higher risk tolerances in the SCF survey. This may contribute to the significance of risk preferences despite controlling for socioeconomic circumstances. Indeed, Ronay and Kim (2006) find that gender differences in explicit, self-reported measures of risk tolerance are driven by males' social motivation to self-report as risk-tolerant whereas women tend to downplay their willingness to take risks. As such, explicit measures of risk tolerance may not be the most accurate predictor of actual risk-taking. Rather, implicit measures of risk tolerance have been shown to predict risky behaviour more accurately than self-reported measures (Ronay and Kim, 2006). This is a major limitation of the SCF, and consequentially this paper, as it only includes explicit (i.e. self-reported) measures of risk tolerance. Future research may devote more attention to gender differences in explicit and implicit risk tolerance and assess their use for predicting various forms of risk-taking.

Most importantly, these societal norms and pressures may also explain why gender remains significant even once risk tolerance is controlled for. This has been the most surprising result of the empirical analysis conducted in chapter 4.3 and stands in opposition to this paper's hypotheses derived from the results of Barasinska and Schäfer (2013). In their 2013 work, gender is significant in the participation decision only for Italy and insignificant in the advanced model allocation decision across all four European countries (Barasinska and Schäfer, 2013). Again, the significance of gender observed in this paper is not robust to the inclusion of mutual funds as dependent variable.

Further, gender is significant in the advanced baseline model for both decision stages at the 10% level only. Nonetheless, this result warrants further attention.

Barasinska and Schäfer (2013) themselves offer a starting point for explaining this puzzling observation. The authors argue that the alignment of women's portfolio choices with their socioeconomic status and risk preferences depends on the overall degree of gender equality in the given society. Regarding their finding of gender being significant to the participation decision in Italy, the authors claim that women in unequal societies may feel obliged to succumb to their assigned gender norm to avoid social repercussions. As such, it is not only possible that a risk-loving woman will self-report as more risk averse as pointed out above. Instead, she may choose to act more conservative and refrain from risky financial decisions, explaining the significance of gender even when controlling for risk preferences (Barasinska and Schäfer, 2013).

Barasinska and Schäfer (2013) test this hypothesis in their comparative study of the Netherlands, Spain, Austria, and Italy using the World Economic Forum's 2009 Global Gender Gap Report as measure of gender equality. In this regard, Italy is pointed out as the most unequal of the four countries. Thus, the authors' hypothesis finds support in their finding gender to be significant in the portfolio decision-making process only in Italy (Barasinska and Schäfer, 2013). Potentially, the USA have fallen into the same trap of both men and women abiding by societal gender norms rather than their reported risk preferences. In the 2022 Global Gender Gap Report, the USA is ranked 27^{th} of 146 countries, in between the Netherlands (28) and Austria (21). Spain (17) is the most gender equal country while Italy (63) continues to rank lowest (World Economic Forum, 2022). Similarly, in the 2009 Report, the USA (31) placed in the mid-field between Spain (17) and Austria (42) (Hausmann et al., 2009). Assuming the hypothesis of Barasinska and Schäfer (2013) to have merit, one would expect the results for the USA in chapter 4.3 to mirror those of Barasinska and Schäfer (2013) for Austria rather than Italy. This, however, is not the case meaning some other confounding factor must be at play in the USA.

As highlighted previously, financialization in the USA has manifested earlier and has taken a stronger grip than for most European countries (van Lerven, 2016). Moreover, there are institutional differences between the USA and European countries, with the latter being known as welfare states while the USA has been branded a liberal market economy (Hall and Soskice, 2013). As such, the socioeconomic safety net in the USA is much looser than in Europe, especially than in Austria which ranked closest to the USA in the Global Gender Gap Report. This might make risk preferences and their gendered aspects in light of financialization all the more important in the USA, possibly explaining the significance of gender in this paper's findings.

While future research may look into a comparison of such institutional contexts in more detail, some acknowledgements must be made qualifying the deviation of the USA compared to the re-

sults of Barasinska and Schäfer (2013). First, the SCF 2022 was taken at a peculiar time with the Covid19 pandemic only just subsiding and the Russian attack on Ukraine. In reaction to these phenomena's effects on the global economy, monetary policy was changing, esteemed institutions were adjusting their economic forecasts, and times were generally more uncertain. Hence, one should be careful to directly compare the results of this paper to those of Barasinska and Schäfer (2013). Instead, future research may explore whether men and women react differently to varying types of shocks such as the pandemic, different forms of monetary policy, or outbreaks of violent conflicts. This may provide further explanations for the significance of gender in the 2022 data contrasted with earlier results. It may also serve as a starting point to explain the unexpected reversal of the gender wage gap between the 2016 and 2022 SCF data waves discussed in section 4.2. As such, future research may also investigate this paper's research question with pre-pandemic SCF data to develop an analysis for the ways in which Covid19 impacted portfolio choices.

Secondly, it should be acknowledged that gender does indeed lose its significance in both stages of the portfolio composition process when also including mutual funds into the definition of risky assets. This is aligned with this paper's expectations based on Barasinska and Schäfer (2013). The aforementioned theory on the importance of societal gender norms when making portfolio decisions (Barasinska and Schäfer, 2013) may come into play less in this instance due to the perception of mutual funds. Through investments in a mutual fund, a household does not hold or trade stocks directly but leaves this to the fund manager. Thus, although a household may hold stocks via a mutual fund, such an investment might not be regarded as risky as acquiring stocks directly. Thereby, a risk-loving woman, even in an unequal society, may perceive holding mutual funds as a more subtle opposition against gender norms than direct stock market participation, thus alleviating the significance of gender in this instance. Once again, these possibilities are left for further research to explore while this paper will now turn to discussing some of the results on the socioeconomic controls.

Overall, the coefficients on the socioeconomic control variables carried the signs expected based on the literature review in chapter 3.2, particularly those on self-employment, working hours, and college education. Regarding children, their negative and significant effect for the allocation decision is in line with this paper's expectations. However, it is surprising that having children does not affect the participation decision in a relevant way in the baseline model although it does indeed when also considering mutual funds. As discussed in section 3.2, children bind some of a household's wealth that could otherwise be invested in risky assets (Metzger and Young, 2020). According to the regression results, this occupation of financial means does not manifest to the extent that a household cannot invest into risky assets at all, but rather the overall share of net worth it can allocate thereto.

Somewhat less clear are the outcomes concerning age cohorts. Concerning the participation decision, all age groups are less inclined to hold risky assets when contrasted with the baseline category of households below 30 years of age. This observation is fairly robust across all model specifications. Likely, it mirrors the youngest age group being least concerned about their portfolio choices' ramifications for financial security. As this group is just entering the financial market and not yet worried about building up wealth for retirement, they may be most willing to experiment and take financial risks. In contrast to this youngest cohort, the age group between 50 to 59 is 68% less likely to hold stocks in the baseline advanced model. Indeed, this group is close to entering the stage of retirement while often still having financially dependent children to support. Hence, they may be most risk-averse and refrain from holding risky assets. Some of this pressure may be alleviated once this cohort has entered retirement and their children are in secure employment. This is reflected in the negative but smaller effect of being aged 60 and above. Concerning the allocation decision, age is insignificant in the advanced baseline model. However, when also considering mutual funds to be a risky asset, age cohorts 30 to 39 and 70 and above seem to hold relatively larger shares of risky assets than those below 30. This baseline category likely has an entry-level income and has not yet been able to diversify its portfolio towards not only stocks but also mutual funds. Concerning those in the mid-stages of their lives, responsibilities such as financially dependent children and partners may once again play a role in their relatively less diversified portfolios.

As noted in chapter 3.2, the effect of relationship status on individual portfolio decisions is a research question in itself and is beyond the scope of this paper. The results presented in section 4.3 are set in contrast to the baseline category of being married. Once again, this paper is looking at non-cohabitating households only. Thus, there are only three married households in the sample (Board of Governors of the Federal Reserve System (U.S.), 2023), which make up only 0.09% of single households in the 2022 SCF as shown in Figure 8. The other three relationship categories, on the contrary, are rather overrepresented.

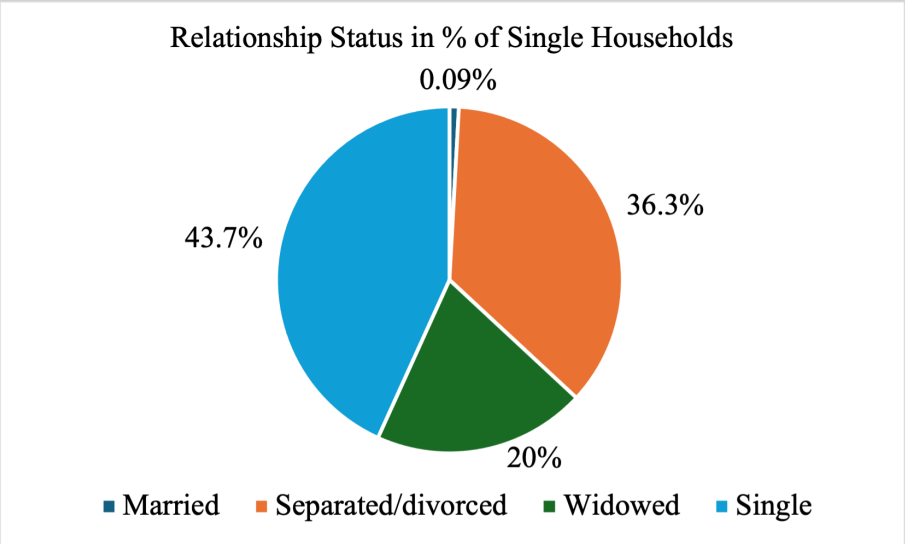

Figure 8: Relationship categories in percentages of single households in the USA in 2022. Author's depiction based on the SCF 2022. (Board of Governors of the Federal Reserve System (U.S.), 2023).

This also explains the high magnitudes of the coefficients and standard errors on the relationship variables across all model specifications. Therefore, the baseline model has been conducted again with never-married households being the baseline category (see Tables 9 and 10 in the appendix). While this paper will refrain from making any statement about the effect of marriage for the aforementioned reasons, some words may be devoted to the effects of divorce and widowhood. As can be inferred from Table 9, divorced households are 26% more likely to hold any amount of stocks than those who never married and widowed households are 38% more likely to do so. As such, the "marriage disruption penalty" suggested by Warren et al. (2001) cannot be confirmed by this paper. However, it is notable that the magnitude of the positive effect of marriage on risky asset holdings is larger when the marriage itself has been successful and has ended only due to the death of a partner. Hence, while marriage as such may enable individual risky asset holdings even in case of a divorce, there is a price to be paid in contrast to a successful partnership. Once again, however, these are only preliminary discussion points and must be explored in more detail by future research.

In a similar vein, the effect of race/ethnicity also merits its own research. Overall, the results of the regression analysis support the notion that matters of gender (in)equalities in the USA must be analysed with an intersectional lense. As such, Hispanics seem to be more risk averse while Asian households display a greater tendency to hold risky assets and allocate a larger share of their wealth thereto in comparison to White households. However, no definitive conclusions should be drawn based on these findings as these are no homogenous groups and the many differences within

ethnicities are not captured by this paper.

Another point of discussion is the role of inheritances in the portfolio composition process. In line with expectations, a household with a large inheritance will have a share of stocks in their overall wealth that is 3.2% higher than that of a household who never inherited. It is, however, unclear why inheritances are irrelevant with regards to the participation decision and a more detailed analysis of the kinds of inheritances transferred in the USA may be worthwhile. For instance, Ruel and Hauser (2013) suggest that inheritances in the USA are often used to reduce mortgage debt. Hence, they are bound for this purpose and cannot be drawn on when deciding whether to participate in the stock market. Rather, to make this decision, the household must rely on its pre-existing financial wealth as mirrored in Table 1. When it comes to the allocation decision, however, any household which is debt-free or has already secured means to pay their debt via an inheritance may be more inclined to allocate a larger share of their remaining wealth to risky assets.

It should then be noted that the model's identification restriction, residential real estate, did not have a significant impact on the participation decision. Neither did the IMR which was meant to account for the self-selection bias of stock-owning households in the allocation decision (Barasinska and Schäfer, 2013). This matches the results of Barasinska and Schäfer (2013) who argue that, consequentially, it was not necessary to account for the self-selection bias. However, it is also possible that real estate was not an appropriate choice of identification restriction. Indeed, it is not quite clear why this should be relevant to the participation decision only and have no impact on the allocation decision. On the contrary, when following the line of argumentation established by Ruel and Hauser (2013) concerning inheritances and their role in acquiring real estate, this should also have an impact on the allocation decision. Regrettably, Barasinska and Schäfer (2013) do not elaborate on their argument for residential real estate having no impact on the allocation decision which places a major limitation on this paper. Their model was adopted to allow for optimal comparison between the USA and the European context as discussed above. However, future research may devote further attention to the model's specification and the effect of real estate on different stages of portfolio choices.

Finally, the effect of debt and its interplay with gender shall be discussed. As can be inferred from Table 7 in the appendix, being a net debtor is not significant to the participation decision. Concerning the allocation decision, a household who is a net debtor will have a share of risky assets 1.2% lower than a household who is not (Table 8). This effect is highly significant. Hence, being a net debtor does not preclude a household from owning stocks at all, but rather from deciding how much of its net worth to allocate thereto. Indeed, an indebted household will first allocate its existing net worth towards paying its obligations, meaning less is available for holding stocks. Finally, it is notable that controlling for debt renders gender insignificant for the advanced participation decision (Table 7). As noted above, not all socioeconomic factors in which men and women

differ can be controlled for. Gender differences in debt levels seem to have been one of them as is reflected in the SCF 2022 survey. Of the 221 net debtors, 165 are women while 56 are male households. Expressed in shares of the generalisable population, these are 14.18% of the female population versus 9.65% of the male population of single households as shown in Figure 9 (Board of Governors of the Federal Reserve System (U.S.), 2023).

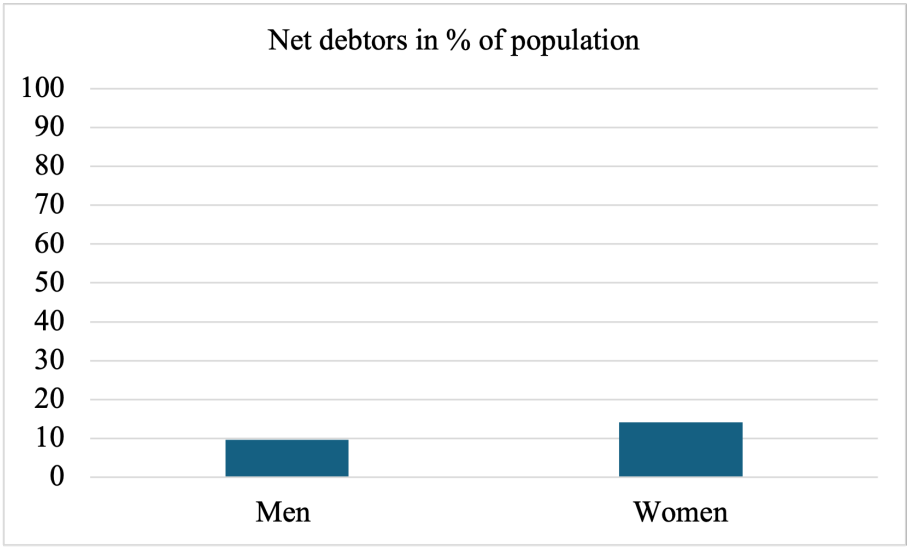

Figure 9: Net debtors expressed in percentages of male and female single households in the USA in 2022. Author's depiction based on the SCF 2022. (Board of Governors of the Federal Reserve System (U.S.), 2023).

Once again, women are more likely facing socioeconomic circumstances that necessitate taking on debt due to their average lower income, weaker labour market attachment, and role as caregivers. This, in turn, constrains women in their ability to diversify their portfolios towards more risky assets, thereby contributing to the gender differences in portfolio choices described in section 4.2.

6 Outlook and Conclusion

This paper will now return to its research question one final time: *Are there significant differences in portfolio choices between men and women in the United States of America in 2022? If so, what are the drivers of these differences?* Regarding the first part of the question, the results in chapter 4.2 confirm that there are differences in portfolio decisions between men and women and those of chapter 4.3 attest to their significance. As discussed above, the regression results also corroborate this paper's hypothesis that financial means and risk preferences are key drivers of gender differ-

ences in portfolio choices. However, they are ambiguous regarding this paper's view of gender as a socioeconomic category. In the baseline model, gender continues to be a significant, albeit weak, driver of portfolio choices along both stages of the composition process. While this is not robust to an extension of the model, future research may look into the relevance of societal gender norms in this regard, following the suggestion by Barasinska and Schäfer (2013). It may also be worthwhile to capture whether the significance of gender found in this paper was due to the specific times of "polycrisis" (Tooze, 2022) in which the SCF 2022 was collected.

Concerning the overarching motivation of this paper - exploring whether monetary policy may have gendered distributional impacts - its results lend support to this notion. As men tend to hold larger shares of risky assets in their finanical portfolio, they were likely disproportionately able to reap the benefits of QE via the asset price and portfolio rebalancing channel in the aftermath of the GFC. However, investigating the exact extent to which monetary policy contributed to the gender wealth gap is beyond the scope of this paper and is left for future research. A first step in this vein has been taken by Forti Grazzini and Kim (2020) who explore gender differences in portfolio adjustments to interest rate shocks. Further research may expand this line of research to consider women's and men's reactions to other forms of shocks such as environmental catastrophes or the outbreak of violent conflicts. This may also serve to explain the seeming closure of the gender wealth gap from 2016 to 2022 described in section 4.2.

All in all, further understanding gender differences in access to financial markets and portfolio choices will be crucial in light of ongoing financialization and rising inequalities. However, this paper cautions readers not to mistake such research for the stereotypisation of male and female behaviours and preferences. Rather, its aim is to raise awareness for gendered dimensions of institutions and organisations so relevant to everyday life and livelihood. Ultimately, this will be key to designing a financial system more equitable, sustainable and fit to support the wellbeing of future generations.

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7 Appendix

7.1 Further Descriptive Statistics

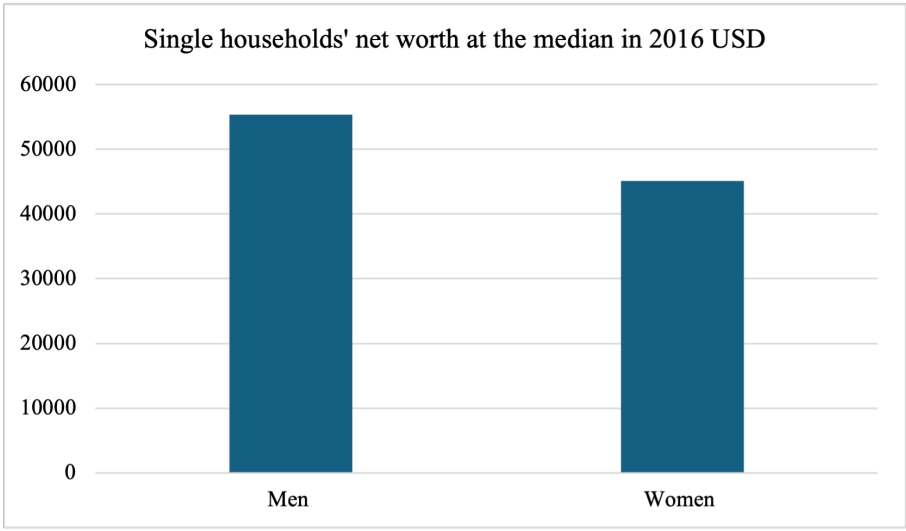

Figure 10: Net worth of male and female single households at the median in 2016 USD. Author's depiction based on the SCF 2016 (Board of Governors of the Federal Reserve System (U.S.), 2023).

7.2 Full Results for the Inclusion of Mutual Funds as Dependent Variable in Section 4.3.1

Table 5: Participation decision: Probit regression of risky asset ownership on gender and socioeconomic controls

	Dependent variable:	
	Participation decision	
	(1)	(2)
Male	0.181**	0.113
	(0.087)	(0.086)
Real estate	0.045	0.067
	(0.091)	(0.091)
Income (log)	0.045	0.033
	(0.033)	(0.031)
Q2 financial wealth	0.595***	0.500***
	(0.142)	(0.141)
Q3 financial wealth	1.008***	0.904***
	(0.144)	(0.144)
Q4 financial wealth	1.862***	1.656***

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Table 5 – continued from previous page

	Dependent variable:	
	Participation decision	
	(1)	(2)
	(0.169)	(0.168)
Aged 30-39	−0.099	−0.016
	(0.131)	(0.129)
Aged 40-49	−0.300**	−0.246*
	(0.140)	(0.134)
Aged 50-59	−0.768***	−0.641***
	(0.151)	(0.151)
Aged 60-69	−0.645***	−0.439***
	(0.158)	(0.161)
Aged 70 or older	−0.421**	−0.160
	(0.186)	(0.193)
One child	−0.179	−0.199*
	(0.113)	(0.116)
Two children	−0.607**	−0.586**
	(0.271)	(0.266)
Three or more children	−0.865	−0.742
	(0.703)	(0.716)
Separated/divorced	2.547***	2.646***
	(0.372)	(0.379)
Widowed	2.573***	2.666***
	(0.408)	(0.411)
Never married/single	2.397***	2.501***
	(0.386)	(0.393)
College	0.156*	0.133*
	(0.081)	(0.080)
Self-employed	0.335**	0.247*
	(0.135)	(0.146)
Weekly working hours	0.005**	0.005**
	(0.002)	(0.002)
Black/African American	−0.075	−0.111
	(0.113)	(0.114)
Hispanic	−0.556***	−0.570***
	(0.177)	(0.169)
Asian	0.378*	0.388*
	(0.221)	(0.201)
Other ethnicity	−0.672	−0.538
	(0.481)	(0.488)
Small inheritance	−0.006	0.001
	(0.123)	(0.122)
Large inheritance	−0.032	−0.054
	(0.140)	(0.150)
Risk tolerance: above average		−0.130
		(0.186)
Risk tolerance: average		−0.530***
		(0.163)
Risk tolerance: None		−0.913***
		(0.181)
Intercept	−4.541***	−3.925***

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Table 5 – continued from previous page

	Dependent variable:	
	Participation decision	
	(1)	(2)
	(0.534)	(0.540)
Observations	1,690	1,690
Note:	*p<0.1; **p<0.05; ***p<0.01	
	Dataset: SCF 2022	
	Probit regression	

Table 6: Allocation decision: OLS regression of share of risky assets on gender and socioeconomic controls

	Dependent variable:	
	Allocation decision	
	(1)	(2)
Male	0.012^{*}	0.009
	(0.006)	(0.006)
Income (log)	0.010^{***}	0.010^{***}
	(0.002)	(0.002)
Financial wealth (log)	0.010^{***}	0.010^{***}
	(0.001)	(0.001)
Self-employed	−0.002	−0.005
	(0.007)	(0.007)
Weekly working hours	-0.0004^{**}	-0.0004^{**}
	(0.0002)	(0.0002)
College	0.021^{***}	0.021^{***}
	(0.006)	(0.006)
Aged 30-39	0.017^{*}	0.019^{**}
	(0.009)	(0.009)
Aged 40-49	−0.007	−0.004
	(0.008)	(0.008)
Aged 50-59	0.001	0.005
	(0.010)	(0.010)
Aged 60-69	−0.002	0.004
	(0.010)	(0.010)
Aged 70 or older	0.027^{*}	0.034^{**}
	(0.014)	(0.015)
Separated/divorced	−0.039	−0.039
	(2,296.317)	(5,629.690)
Widowed	−0.042	−0.043
	(2,296.318)	(5,629.690)
Never married/single	−0.024	−0.024
	(2,296.317)	(5,629.690)
One child	-0.014^{***}	-0.014^{***}
	(0.005)	(0.005)
Two children	-0.018^{***}	-0.016^{***}
	(0.005)	(0.005)
Three or more children	-0.016^{**}	-0.013^{*}
	(0.007)	(0.007)

Continued on next page

Table 6 – continued from previous page

	Dependent variable:	
	Allocation decision	
	(1)	(2)
Black/African American	−0.004	−0.006
	(0.004)	(0.004)
Hispanic	−0.001	−0.001
	(0.004)	(0.005)
Asian	0.051*	0.050*
	(0.027)	(0.027)
Other ethnicity	−0.019*	−0.016
	(0.011)	(0.011)
Small inheritance	0.011	0.012
	(0.012)	(0.012)
Large inheritance	0.049***	0.048***
	(0.017)	(0.017)
Risk tolerance: above average		−0.012
		(0.016)
Risk tolerance: average		−0.029*
		(0.015)
Risk tolerance: None		−0.035***
		(0.013)
IMR	−0.000	−0.000
	(0.00004)	(0.00002)
Intercept	−0.149	−0.114
	(2,296.317)	(5,629.689)
Observations	1,690	1,690
Note:	*p<0.1; **p<0.05; ***p<0.01	
	Dataset: SCF 2022	
	OLS regression	

7.3 Full Results for Controlling for Households' Net Debtor Position in Section 4.3.2

Table 7: Participation decision: Probit regression of stock ownership controlling for debt

	Dependent variable:	
	Participation decision	
	(1)	(2)
Male	0.206**	0.141
	(0.089)	(0.086)
Real estate	−0.041	−0.025
	(0.102)	(0.104)
Income (log)	0.032	0.016
	(0.032)	(0.029)
Q2 financial wealth	0.538***	0.418***
	(0.148)	(0.146)
Q3 financial wealth	0.762***	0.629***
	(0.152)	(0.155)

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Table 7 – continued from previous page

	Dependent variable:	
	Participation decision	
	(1)	(2)
Q4 financial wealth	1.356***	1.121***
	(0.184)	(0.181)
Aged 30-39	−0.180	−0.106
	(0.123)	(0.118)
Aged 40-49	−0.307**	−0.245*
	(0.136)	(0.131)
Aged 50-59	−0.826***	−0.698***
	(0.162)	(0.161)
Aged 60-69	−0.540***	−0.334**
	(0.155)	(0.159)
Aged 70 or older	−0.601***	−0.340
	(0.218)	(0.231)
One child	−0.103	−0.123
	(0.132)	(0.133)
Two children	−0.642	−0.631
	(0.452)	(0.423)
Three or more children	−0.736	−0.608
	(0.929)	(0.953)
Separated/divorced	2.497***	2.674***
	(0.465)	(0.480)
Widowed	2.621***	2.794***
	(0.499)	(0.514)
Never married/single	2.241***	2.410***
	(0.483)	(0.497)
College	0.185**	0.146*
	(0.087)	(0.088)
Self-employed	0.350***	0.273*
	(0.135)	(0.147)
Weekly working hours	0.006**	0.006**
	(0.002)	(0.002)
Black/African American	0.004	−0.003
	(0.108)	(0.105)
Hispanic	−0.615***	−0.587***
	(0.175)	(0.173)
Asian	0.517**	0.569***
	(0.222)	(0.199)
Other ethnicity	−0.474	−0.342
	(0.475)	(0.484)
Small inheritance	0.046	0.048
	(0.126)	(0.125)
Large inheritance	−0.058	−0.076
	(0.146)	(0.157)
Net debtor	−0.279*	−0.251
	(0.164)	(0.171)
Risk tolerance: above average		0.104
		(0.202)
Risk tolerance: average		−0.241
		(0.193)

Continued on next page

Table 7 – continued from previous page

	Dependent variable:	
	Participation decision	
	(1)	(2)
Risk tolerance: None		-0.741^{***}
		(0.204)
Intercept	-4.340^{***}	-3.969^{***}
	(0.605)	(0.609)
Observations	1,690	1,690
Note:	*p<0.1; **p<0.05; ***p<0.01	
	Dataset: SCF 2022	
	Probit regression	

Table 8: Allocation decision: OLS regression of share of stocks controlling for debt

	Dependent variable:	
	Allocation decision	
	(1)	(2)
Male	0.008^{**}	0.007^{*}
	(0.004)	(0.004)
Income (log)	0.006^{***}	0.005^{***}
	(0.002)	(0.002)
Financial wealth (log)	0.004^{***}	0.003^{***}
	(0.001)	(0.001)
Self-employed	0.004	0.002
	(0.005)	(0.005)
Weekly working hours	−0.0002	−0.0002
	(0.0001)	(0.0001)
College	0.011^{***}	0.010^{**}
	(0.004)	(0.004)
Aged 30-39	0.004	0.006
	(0.008)	(0.008)
Aged 40-49	-0.013^{**}	-0.011^{*}
	(0.006)	(0.006)
Aged 50-59	-0.017^{**}	-0.014^{*}
	(0.007)	(0.007)
Aged 60-69	-0.012^{*}	−0.008
	(0.007)	(0.007)
Aged 70 or older	−0.004	−0.002
	(0.010)	(0.010)
Separated/divorced	−0.007	−0.004
	(248.713)	(761.922)
Widowed	−0.010	−0.006
	(248.714)	(761.922)
Never married/single	−0.010	−0.007
	(248.714)	(761.922)
One child	-0.008^{*}	-0.008^{*}
	(0.004)	(0.004)
Two children	-0.014^{***}	-0.013^{***}

Continued on next page

Table 8 – continued from previous page

	Dependent variable:	
	Allocation decision	
	(1)	(2)
	(0.004)	(0.004)
Three or more children	-0.013^{***}	-0.011^{**}
	(0.004)	(0.004)
Black/African American	0.001	0.0002
	(0.003)	(0.003)
Hispanic	-0.003	-0.002
	(0.004)	(0.004)
Asian	0.039	0.039
	(0.024)	(0.024)
Other ethnicity	0.0004	0.002
	(0.011)	(0.010)
Small inheritance	0.004	0.004
	(0.007)	(0.007)
Large inheritance	0.032^{**}	0.031^{*}
	(0.013)	(0.013)
Net debtor	-0.012^{***}	-0.012^{***}
	(0.003)	(0.003)
Risk tolerance: above average		-0.003
		(0.012)
Risk tolerance: average		-0.009
		(0.013)
Risk tolerance: None		-0.020^{*}
		(0.011)
IMR	0.000	0.000
	(0.00001)	(0.00000)
Intercept	-0.068	-0.049
	(248.713)	(761.922)
Observations	1,690	1,690
Note:	*p<0.1; **p<0.05; ***p<0.01	
	Dataset: SCF 2022	
	OLS regression	

7.4 Baseline Model with Changed Relationship Base Category

Table 9: Participation decision: Probit regression of stock ownership with "single" as baseline relationship category

	Dependent variable:	
	Participation decision	
	(1)	(2)
Male	0.210^{**}	0.144^{*}
	(0.088)	(0.086)
Real estate	-0.006	0.007
	(0.099)	(0.100)
Income (log)	0.033	0.017
	(0.033)	(0.030)

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Table 9 – continued from previous page

	Dependent variable:	
	Participation decision	
	(1)	(2)
Q2 financial wealth	0.559***	0.441***
	(0.149)	(0.146)
Q3 financial wealth	0.800***	0.667***
	(0.154)	(0.156)
Q4 financial wealth	1.397***	1.160***
	(0.183)	(0.180)
Aged 30-39	−0.165	−0.088
	(0.121)	(0.116)
Aged 40-49	−0.292**	−0.231*
	(0.135)	(0.130)
Aged 50-59	−0.808***	−0.680***
	(0.163)	(0.161)
Aged 60-69	−0.522***	−0.316**
	(0.155)	(0.159)
Aged 70 or older	−0.576***	−0.317
	(0.214)	(0.227)
One child	−0.106	−0.128
	(0.131)	(0.132)
Two children	−0.661	−0.650
	(0.449)	(0.420)
Three or more children	−0.743	−0.615
	(0.926)	(0.950)
Separated/divorced	0.252**	0.261**
	(0.115)	(0.118)
Widowed	0.372**	0.378**
	(0.156)	(0.162)
Married	−2.191***	−2.356***
	(0.485)	(0.497)
College	0.162*	0.127
	(0.085)	(0.087)
Self-employed	0.354***	0.278*
	(0.134)	(0.146)
Weekly working hours	0.006***	0.006***
	(0.002)	(0.002)
Black/African American	−0.005	−0.012
	(0.108)	(0.104)
Hispanic	−0.593***	−0.571***
	(0.173)	(0.172)
Asian	0.518**	0.568***
	(0.221)	(0.198)
Other ethnicity	−0.458	−0.328
	(0.477)	(0.487)
Small inheritance	0.058	0.060
	(0.128)	(0.126)
Large inheritance	−0.052	−0.071
	(0.146)	(0.157)
Risk tolerance: above average		0.096
		(0.201)

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Table 9 – continued from previous page

	Dependent variable:	
	Participation decision	
	(1)	(2)
Risk tolerance: average		−0.256
		(0.193)
Risk tolerance: None		−0.754***
		(0.204)
Intercept	−2.182***	−1.632***
	(0.400)	(0.379)
Observations	1,690	1,690
Note:	*p<0.1; **p<0.05; ***p<0.01	
	Dataset: SCF 2022	
	Probit regression	

Table 10: Allocation decision: OLS regression of share of stocks with "single" as baseline relationship category

	Dependent variable:	
	Allocation decision	
	(1)	(2)
Male	0.009**	0.007*
	(0.004)	(0.004)
Income (log)	0.006***	0.006***
	(0.002)	(0.002)
Financial wealth (log)	0.004***	0.003***
	(0.001)	(0.001)
Self-employed	0.005	0.003
	(0.005)	(0.005)
Weekly working hours	−0.0002	−0.0002
	(0.0001)	(0.0001)
College	0.010**	0.009**
	(0.004)	(0.004)
Aged 30-39	0.005	0.007
	(0.008)	(0.008)
Aged 40-49	−0.011**	−0.009
	(0.006)	(0.006)
Aged 50-59	−0.015**	−0.012
	(0.007)	(0.007)
Aged 60-69	−0.011	−0.006
	(0.007)	(0.007)
Aged 70 or older	−0.001	0.004
	(0.010)	(0.010)
Separated/divorced	0.003	0.003
	(0.004)	(0.004)
Widowed	0.0003	0.0004
	(0.006)	(0.006)
Married	0.013	0.010
	(173.863)	(537.998)
One child	−0.008**	−0.008**

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Table 10 – continued from previous page

	Dependent variable:	
	Allocation decision	
	(1)	(2)
	(0.004)	(0.004)
Two children	-0.014^{***}	-0.014^{***}
	(0.004)	(0.004)
Three or more children	-0.014^{***}	-0.012^{***}
	(0.004)	(0.004)
Black/African American	0.001	−0.0002
	(0.003)	(0.003)
Hispanic	−0.002	−0.001
	(0.004)	(0.004)
Asian	0.040^{*}	0.040^{*}
	(0.024)	(0.024)
Other ethnicity	0.001	0.002
	(0.010)	(0.010)
Small inheritance	0.004	0.005
	(0.007)	(0.007)
Large inheritance	0.032^{**}	0.032^{**}
	(0.013)	(0.013)
Risk tolerance: above average		−0.003
		(0.012)
Risk tolerance: average		−0.009
		(0.013)
Risk tolerance: None		-0.020^{*}
		(0.011)
IMR	0.000	0.000
	(0.00001)	(0.00000)
Intercept	-0.083^{***}	-0.062^{***}
	(0.022)	(0.024)
Observations	1,690	1,690

Note:	*p<0.1; **p<0.05; ***p<0.01
	Dataset: SCF 2022
	OLS regression