# DISCUSSION PAPER

// JAN-CHRISTIAN FEY, OLIVER LERBS, CAROLIN SCHMIDT, AND MARTIN WEBER

Risk Attitude and Capital Market Participation: Is There a Gender Investment Gap in Germany?

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# Risk attitude and capital market participation: is there a gender investment gap in Germany?*

Jan-Christian Fey[1], Oliver Lerbs[2], Carolin Schmidt[†3,5], and Martin Weber[4,5]

[1]University of St. Gallen
[2]HSPV NRW
[3]University of Cambridge
[4]University of Mannheim
[5]ZEW Mannheim

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Do women invest differently than men? We contribute to the answer of this question by analysing the Panel on Household Finances (PHF) of the German Bundesbank. This representative panel collects a wide variety of behavioural and financial variables in the area of household finance. We find that participation in risky assets is generally lower among women than among men. Once risk attitude is controlled for, this effect shrinks to only 2.6 percent. We find no difference when single women are compared to single men – even irrespective of other demographic variables. The raw gap in capital market participation is mainly explained by different risk attitudes and monetary endowments, but women would participate even less in the capital market if they reacted as sensitively to risk aversion as their male counterparts. Lastly, given participation in the market, we find that both genders hold comparable portions of risky assets in their portfolios. Within their risky assets, men invest more in certificates and listed shares whereas women invest more in funds.

# 1 Introduction

Do women invest differently than men? Standard finance theory suggests that—all else equal—women's participation rates in the capital market and the composition of their portfolios should be no different from those of men. That is, investors—male or female—should take on as much risk as is commensurate with their risk attitude. At first view and perhaps contrary to this prediction, however, our analyses show that women participate in the capital market about 8 percentage points less often than men and when they do, their risky asset portfolios look different from those of their male counterparts. This paper investigates if this phenomenon is in line with the level of risk appetite that women in Germany report compared to men.

Specifically, we use the second wave of the Deutsche Bundesbank Panel on Household Finances (PHF)[1]—a dataset that is representative of German households in 2014 and that collects a variety of financial and behavioural variables in the household context—to answer the following three questions: first, do women in Germany participate less often in risky assets than men?; second, what determines the share of risky assets in an investor's portfolio given capital market participation and does it depend on the investor's gender?; and third, do women invest in different risky assets than men? We exploit the fact that the PHF dataset not only includes demographic and economic but also behavioural variables, namely the degree of risk aversion and patience as well as the level of financial literacy. We control for these attitudes to investigate if the observed gap is driven by gender per se or by behavioural factors.

With the dataset, we show that across households, the variation in participation in risky assets and the share held in such assets are not a result of the investor's gender. We find that women participate significantly less in the capital market than men; however, the investor's attitude towards risk explains much more of the observed variation in capital market participation than gender per se or any other explanatory variable. That is, when a man and a woman of similar risk aversion are compared, the gender effect in capital market participation rates drops by roughly one third and it shrinks to half that size when we additionally control for a whole battery of socioeconomic characteristics. We do not find a significant gender gap in the conditional share of risky assets held in the household's total financial assets. Yet, once women participate in capital market assets, their portfolios look slightly different than men's: while men tend to invest more in listed shares and certificates within their menu of risky assets, women prefer fund shares and fixed-income securities.

Our study is novel in several ways: we are the first to exploit the PHF dataset with the specific goal of analysing gender effects in the realm of capital market participation and portfolio allocation in Germany. We do this by using multivariate methods, i.e., we match men and women with similar economic and demographic backgrounds. More specifically,

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[1]For a description of the PHF and its research potential, see Altmann et al. (2020).

we control for behavioural factors that are determinants of investment, precisely risk aversion, patience, and financial literacy. Also, by reporting typical household portfolios, we show that men and women invest according to their risk attitude.

Above and beyond earlier studies, we shed more light on the drivers of the raw gender gap in capital market participation rates by decomposing that gap into determinants at the personal and the household level. On the one hand, we find that two thirds of the 7.87 percent gap can simply be explained by different factor endowments of women, i.e. lower income, wealth and financial literacy as well as their higher propensity of being divorced or widowed and of being risk averse. In particular, if women had the same risk attitude as men, their capital market participation would increase and the gender gap would shrink. On the other hand, and more surprisingly, we find first evidence that men's risk attitude translates differently into capital market participation than women's: if a risk-averse woman had the same coefficients as the average, risk-averse man—that is, if she *behaved* like a man while keeping her own factor endowments—she would be substantially *less* likely to invest in the capital market. This finding suggests that risk-averse men shy away from the capital market much more strongly than their otherwise identical, female counterparts. To the best of our knowledge, there is no other study that analyses the same phenomenon.

Our results correspond well with previous studies and enhance them in a number of ways. For instance, we can confirm that women are more risk averse then men and thus, are less willing to take financial risks and to participate in the capital markets, consistent with the studies by Dohmen et al. (2011) and Falk et al. (2018). Furthermore, in terms of the participation in risky assets, our results are in accordance with the findings by Almenberg and Dreber (2015), who use Swedish data. Like them, we find that the raw gender gap decreases drastically after controlling for relevant factors at the individual level, but unlike them, a small gap of 2.6 percent in participation rates remains, even after accounting for differences at the household level and, more importantly, risk aversion. With our German household data, we broadly confirm other studies carried out for Germany (Arrondel et al., 2016), the U.S. (Dimmock et al., 2016) and other, more gender-equal countries like Finland (Haliassos and Bertaut, 1995), in addition to Sweden as mentioned above.

Our results also tie well into the literature on joint financial decision making, such as the papers by Jianakoplos and Bernasek (1998), or more recently, Ke (Ke), who find that in married households, men may have a greater influence on the participation in the capital market and the risky portfolio. In the sample containing all households, we do find evidence of a small gender effect if we do not control for any other factors. However, this gap disappears when we add household-head and household characteristics to our models. For single and single parent households only, our findings suggest that risk aversion may play a less important role than in multi-person households, presumably because in the latter, one's financial decisions affect more persons than just the investor. Furthermore, we find first evidence that women's risk aversion is unaffected by the way in which a financial decision is made. For all households as well as only single and single parent households, we find a gender effect in risk attitude that is nearly identical in size. That is, women's risk aversion does not appear to depend on the household type.

The remainder of this paper is structured as follows. The next section will briefly summarise the related literature. Section 3 will describe the database, our methodology and first descriptive evidence. In section 4, we will present the regression results of the capital market participation and the risky asset share, as well as the typical portfolios held by men and women. We also analyse the role of financial advice and decompose the raw gender differential found in capital market participation rates. Section 5 discusses the results and concludes.

## 2 Literature

### 2.1 Women, capital market participation, and the share of risky assets

Is there a difference in participation rates in risky assets between men and women? Haliassos and Bertaut (1995), using U.S. data from the 1983 Survey of Consumer Finances, find no gender investment gap. Instead, they find a significant impact of risk attitude, hinting at the possibility that first and foremost, women's decision to stay out of the capital market may be explained by risk attitudes and not by their gender. In a similar study using data from the 2011 wave of the Eurosystem Household Finance and Consumption Survey, Arrondel et al. (2016) show that in most Eurozone countries, there is no such gender difference. For Germany, this coefficient is virtually zero. Unlike Haliassos and Bertaut, though, that study does not account for risk appetite.

Almenberg and Dreber (2015) analyse survey data approximately representative of the Swedish population and report that a significant raw gender gap in capital market participation is not robust to the inclusion of risk aversion. They do not perform any analyses on the risky asset share of households participating in the capital market. Coinciding results for capital market participation have also been found for the U.S. (Dimmock et al., 2016) and in a paper by Halko et al. (2012), which is closest to ours in form and spirit: using a large dataset of Finnish retail bank clients, the authors document that the gender gap in participation rates disappears once risk attitude and other control variables are added. Also, accounting for risk aversion halves the gender difference in the conditional risky asset share, leaving an adjusted gap of 2.8 percentage points. That is, most of the gender gap can be explained by factors that are on average more favourable for men.

Further research shows that once women trade, they do so less often than men. One of these studies is that by Barber and Odean (2001), who use a sample of 35,000 households with a brokerage account. The differences between the genders are most pronounced between male and female single households and less so between multi-person households headed by men and women. Moreover, they show that women tend to hold portfolios that contain less risk than men's. However, it is noteworthy that this study does not control for risk attitudes. Dorn and Huberman (2005), who study how frequently German men and women trade, report a reduced gender effect when self-reported risk attitude is accounted for. Deaves et al. (2009) conduct an experiment with German and Canadian students and show that men trade equally often as women when overconfidence (but not risk appetite) is controlled for. This finding is likely an artefact of the subject pool,

which consists of students of rather mathematical, "male" fields.

Do women hold lower shares of risky assets than men? Charness and Gneezy (2012) review data gained in 15 studies based on one investment game and find that in the majority of these studies, women (in most cases, students) make smaller investments in risky assets than their male counterparts. In a sample of American university faculty aged 50 and older, however, Arano et al. (2010) find that in households where financial decisions are made by a sole decision maker, there is no difference between the genders, conditional on demographic as well as economic control variables. This result is supported by research that evidences that financial risk seeking varies by demographic variables such as age or the number of children: Jianakoplos and Bernasek (1998) show that women over 50 hold riskier portfolios than college-aged women—a phenomenon which may manifest itself in the different subject pools of the two aforementioned studies. As soon as the outcome of joint decision-making in a subsample of married households is studied, the result changes: women who have spouses that influence them to hold a larger share of risky assets in fact increase that share, and they do so by a higher rate than men with spouses who exert the same influence over their husbands' portfolios. This result implies that women seek to hold lower shares of risky assets than men. Yet, while the authors account for heterogeneity in age, marital status, and financial endowments, they do not control for risk attitude, thereby neglecting an important determinant of financial risk seeking.

## 2.2 Women and risk aversion

'Gender' proxies for a bundle of attributes, so what about gender is it exactly that distinguishes women's from men's trading behaviour? One explanation for the low female participation in risky assets is that women are on average more risk averse than men. To test this hypothesis, a recent study by Falk et al. (2018) uses novel survey data on 76 countries that is representative both within countries and worldwide. Their results show that, conditional on other factors, women are indeed significantly less risk tolerant than men worldwide. This finding is confirmed by similar research by Dohmen et al. (2011), who use a lottery choice experiment with which they elicit determinants of risk as well as an additional dataset that is representative of the German resident adult population. They find that not only are women more risk averse than men in general, but that this risk attitude holds across all aspects of life—in sports and leisure, car driving, financial matters, career, and health—and after controlling for a number of demographic and economic variables. Moreover, the findings by Dohmen et al. show that people who are unwilling to take risks in financial matters are less likely to own stocks. Hence, there is reason to presume that women's low participation in the capital market may not be driven by their gender per se but rather by other factors that are independent of their gender, most notably risk aversion.

Furthermore, studies of risk attitudes show that financial risk aversion may vary not only between but also within the genders. Factors that may influence someone's risk appetite in the financial realm are, for instance, financial endowments, age or the number of children (Jianakoplos and Bernasek, 1998). But even though most studies agree that

women are more risk averse then men on average, there are a few studies that find contradicting results. One example is the paper by Harrison et al. (2007), which uses a representative sample of the Danish adult population and finds no significant impact of the investor's gender on risk aversion. Yet, their study design makes it rather difficult to draw meaningful and robust conclusions, given that the gender dummy does not enter the regression at the same time as the other explanatory factors.

## 2.3 Other factors

It is often observed that women perform worse on tests of financial literacy than men. In three surveys conducted in the U.S., the Netherlands and Germany, Bucher-Koenen et al. (2017) find that women of all ages lack financial literacy compared to men. Even more strikingly, they report that single and widowed women, for whom financial knowledge is even more important, are even more likely to be financially illiterate. Moreover, using the 2005 and 2006 waves of the De Nederlandsche Bank Household Survey, van Rooij et al. (2011) show that low financial literacy is a deterrent to stock market participation. We therefore also control for financial literacy in our regressions.

Also, (im)patience may play a role in financial decision making because investors may prefer instant gratification over longer-term payoffs (e.g., Hastings and Mitchell, 2011). That is, impatient investors may shy away from risky assets because they fear that they cannot endure longer depressions in the capital markets. According to Falk et al. (2018), Germans are relatively impatient with women being even more so than men.

Lastly, gender norms might influence men's and women's investment behaviour. The study by Ke (Ke) is devoted to explaining financial decision-making with stereotypical female identity rather than with attitudes and behaviours that can be observed in both genders. Ke investigates this relationship in an experiment involving married couples in the U.S. The theory underlying his research is that conservative gender identity norms may make women feel less inclined to be concerned with "male" domains such as investing. Consistent with this hypothesis, he finds that women who are primed with stereotypical, female identity are less likely to contribute to the household decision-making process. Likewise, men who are primed with male identity are less likely to accept their wives' financial advice. In an additional test using microdata on 30 million U.S. households, he also confirms that households with female heads are less likely to own stocks. All in all, Ke's results show that social norms can have real consequences. Like most previous studies, though, he does not control for risk attitudes nor for other behavioural variables.

# 3 Data and method

Similar to, for instance, Campbell (2006), Arrondel et al. (2016) and Black et al. (2018), our analysis of investment behaviour will be divided into the following three parts: first, we investigate if there is a significant gender gap in the capital market participation given other characteristics of the investor and the household as a whole. In the second step, we analyse if the share of risky assets for the households which participate in the

capital market varies by gender, conditional on other factors. Finally, we want to answer the question if there are gender differences in the capital market portfolios of households participating in the capital market.

## 3.1 Data

For our analysis we use data from the second wave of the Panel on Household Finances (PHF) from the German central bank (Deutsche Bundesbank). As a representative panel survey, it covers information on German households' wealth composition, income, work life as well as other demographic characteristics. The data for the second wave were collected from April to November 2014 and contains information on 4,461 households with 9,259 persons aged 16 years or older. The dataset is multiply imputed and contains population weights such that we can compute descriptives for the whole population. For each household, an interviewer identifies a financially knowledgeable person (FKP) who can provide the necessary information about the household.

For the analysis of our three research questions, we need different household characteristics, which are presented in the following. The corresponding descriptives are presented in subsection 3.2.

### Dependent variables

We use the following dependent variables:

*Capital market participation.* In order to cover a household's capital market participation, we define a dummy variable which is one for households directly or indirectly holding listed shares, fund shares, certificates or fixed income securities such as government bonds, corporate, and bank bonds. We define indirect holdings in risky assets as holdings which are part of private pension plans. The most common form of private pension plans in Germany are Rürup or Riester contracts for which the holders receive government subsidies and tax deductions.

*Share of risky assets in the financial assets.* The share of the risky assets in the financial assets is measured as the proportion of directly or indirectly held listed shares, fund shares, certificates or fixed income securities such as government bonds, corporate, and bank bonds relative to the financial assets of the household.[2] Financial assets constitute checking accounts, life insurance contracts, savings accounts, building loan contracts, the portfolio of risky assets, outstanding debts, the credit card balance and other assets[3]. For all households without financial assets, we set the risky share to missing in order to avoid a division by zero.

*Participation in different categories of capital market assets.* In order to cover the participation in different categories of capital market assets, we define dummy variables for the direct or indirect holding of listed shares, fund shares, certificates and fixed income securities such as government bonds, corporate, and bank bonds.

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[2]We also include fund shares from Riester or Rürup contracts.

[3]Participants can name other assets which they own and are not part of the aforementioned instruments like for instance options, futures or precious metals.

**Independent variables**

Our independent variables are as follows:

*Gender of the FKP.* While other studies analyse the gender effect of a person in the context of a single person's portfolio, we will study how the gender of the FKP influences a household's investment behaviour. For this purpose we define a dummy variable of the FKP's gender which is one if the corresponding FKP is a woman.

*Financial literacy of the FKP.* The PHF survey also contains three financial literacy questions, which have been broadly used in the literature on financial literacy (e.g., Bucher-Koenen et al., 2017) and cover knowledge about the compound interest effect, inflation, and diversification. They are only answered by the household's FKP. The literature often codes this variable as an indicator variable (e.g., van Rooij et al., 2011). For the regression analysis conducted in section 4, we use a dummy for financial illiteracy which is 1 if the household's FKP answers at least two of the three questions either wrong, with "do not know", or with "refuse to answer".

*Impatience of the FKP.* A possible reason why individuals invest less extensively in risky assets may be a lack of patience. Capital investments require great tenacity in order to endure the ups and downs in the capital market. Therefore, an impatient person may feel less inclined to invest in listed shares, fund shares, certificates or fixed income securities. We therefore also control for the level of the FKP's impatience, which is self-assessed on a scale from 0 (very patient) to 10 (very impatient).

*Other demographics of the FKP.* Besides the aforementioned characteristics of a household's FKP, we will use the FKP's age, squared age, dummy variables for being married and divorced or widowed, and a dummy variable if the household reports to have obtained financial advice from its bank.

*Household risk aversion.* As argued in section 2, risk appetite is a crucial determinant of capital market participation. In order to incorporate a household's risk aversion in our analysis, we use two different questions asked in the PHF, which are presented in the appendix (boxes 1 and 2)[4]. The question presented in box 1 is only asked to FKPs of multi-person households while the question shown in box 2 is asked to singles and FKPs of households which answer the question in box 1 with "No uniform classification is possible for the household as a whole.".

With these questions, we construct a dummy variable for risk aversion in the way illustrated in figure 1. That is, the dummy variable for risk aversion takes on a value of 1 if

  i. the household's FKP answers the question in box 1 with "We are not ready to take any financial risks." in a multi-person household,

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[4]The PHF also asks the FKP to self-assess his or her general risk-taking preference on a scale from 0 (not at all willing to take risks) to 10 (very willing to take risks). We did not use this variable to measure risk appetite because its explanatory power for capital market participation is weaker in comparison to the constructed dummy variable for risk aversion in financial matters. That is in line with Dohmen et al. (2011) and Halko et al. (2012) who find that risk measures on financial matters are better predictors for the participation in the stock market than measures of general risk aversion.

ii. the household's FKP answers the question in box 2 with "I am not ready to take any financial risks." in case he or she answered the question in box 1 with "No uniform classification is possible for the household as a whole." in a multi-person household or

iii. the household's FKP answers the question in box 2 with "I am not ready to take any financial risks." in a single-person household.

*Financial advice obtained from the household's main bank.* Households are asked if they obtained financial advice from their main banks in the three years prior to the interview. We code their answers as a dummy variable. While we have no information on the frequency at which households consulted their banks, the content of these meetings or if the household ever acted upon the advice that it receives, this variable gives a first indication about the household's general willingness to seek professional advice.

*Household income.* Household income is estimated by the FKP and measured in €1,000. We perform a 98% winsorisation in order to lower the influence of the outliers on the regression results. This is often done in the literature (e.g., Dimmock and Kouwenberg, 2010; Clark and Mitchell, 2014). Using other conventional values does not make a substantial difference in our results.

*Household net wealth.* We determine the household's net wealth by subtracting the household total debt (all liabilities) from the household's gross wealth (all assets). Household net wealth is measured in €10,000. Moreover, we perform the same winsorisation as with the household income.

*Children in the household.* The number of children in a household is defined as the number of persons aged 15 years or younger. In our empirical analysis, we will use a dummy variable which is 1 if there is at least one child in the corresponding household.

Figure 1: Illustration of the derivation of the dummy variable for risk aversion
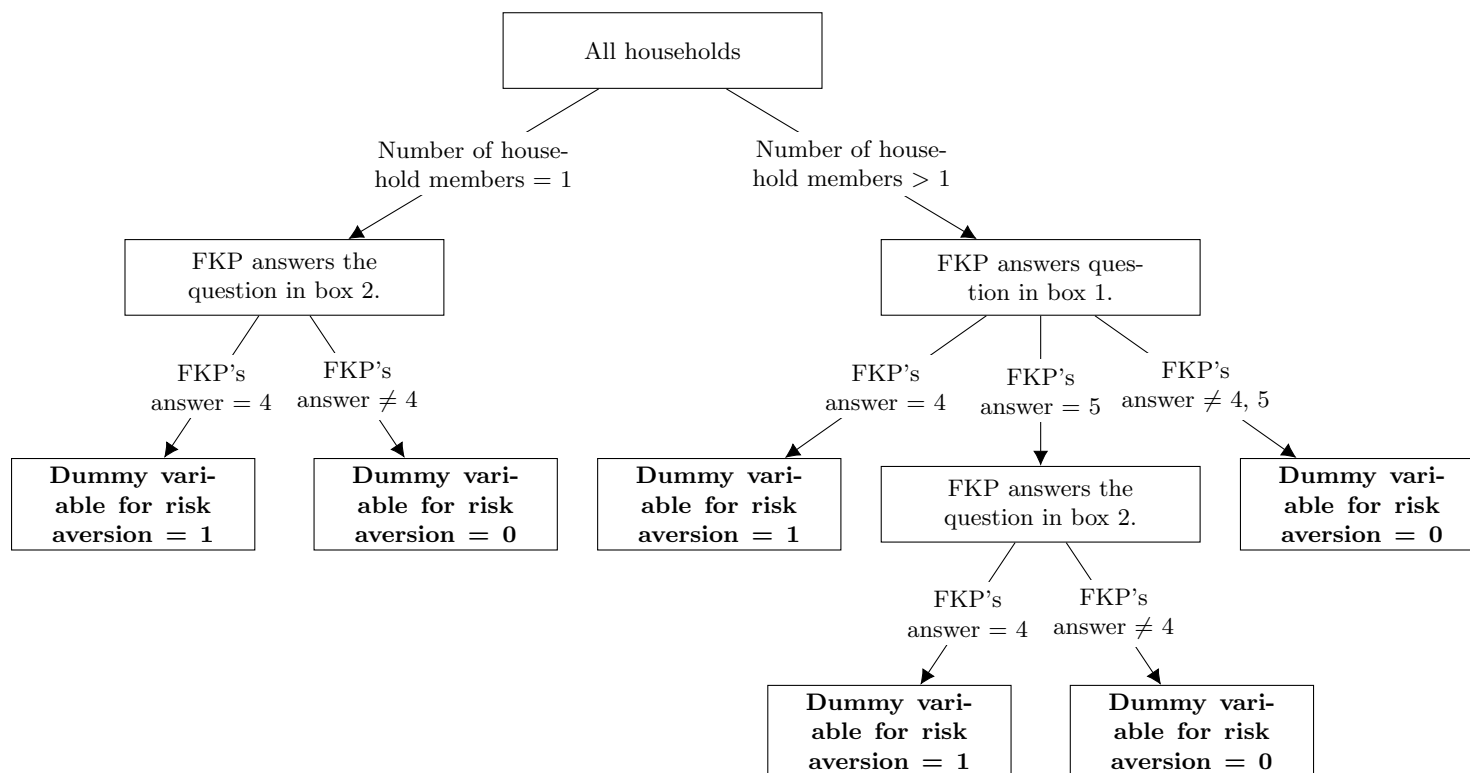
*Note:* This figure illustrates how the dummy variable for risk aversion is derived with the help of the questions in box 1 and 2 from the Deutsche Bundesbank PHF of the year 2014. In the first step, the households were divided into single households and multi-person households. Single households had to answer the question in box 2 and are characterised as risk averse if they answered this question with "I am not ready to take any financial risks.". For a multi-person household the FKP first answered the question in box 1. If he or she answered this question with "No uniform classification is possible for the household as a whole.", he or she had to answer the question in box 2. Multi-person households are characterised as risk averse if the FKP answered the question in box 1 with "We are not ready to take any financial risks." or the question in box 2 with "I am not ready to take any financial risks." given a non-uniform risk classification for the household.

## 3.2 Descriptives

In table 1 we present the descriptive statistics for the variables introduced in subsection 3.1 for all households. An overview of the different types of households is presented in figure A.1. Table 2 shows the descriptive statistics for the case that we only consider households which participate in the capital market. The correlation matrix for the independent variables is presented in table 3.

As we can see in figure 2, 25.82 percent of the households with male FKPs participate in the capital market, while only 17.87 percent of the households with a female FKP do so. When we only consider singles and single parents, the gender gap in the capital market participation shrinks from 7.95 percent to 1.20 percent.

Figure 2: Capital market participation
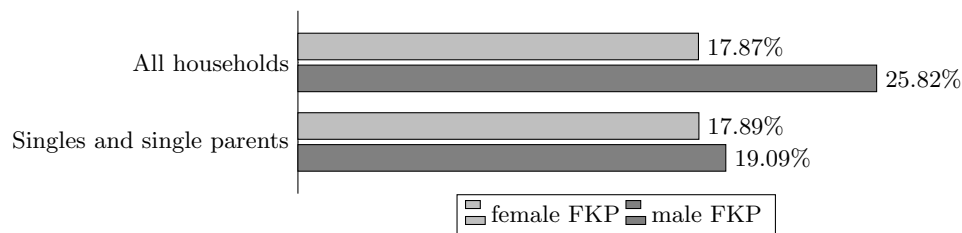


*Source:* 2014 Deutsche Bundesbank PHF, own calculations.

Table 2 displays summary statistics for households that participate in the capital market. The average share of risky assets is 23 percent irrespective of the FKP's gender. A closer look into the portfolios of households participating in the capital market leads us to remarkable gender gaps in the participation rates in listed shares and certificates. Given capital market participation, 48 percent of the households with a male FKP invest in listed shares compared to 35 percent of those with a female FKP. The corresponding gender gap in certificates amounts to 6 percent, where 9 percent of the households with male FKP participate in certificates in comparison to 3 percent for those with female FKP. A deeper analysis of these gender gaps will be presented in subsection 4.1.3.

The proportion of female FKPs is approximately 48 percent and varies significantly between different types of households (see figure 3). Households in which we often find female FKPs are those of widowed or divorced singles or single parents, where the percentage of female FKPs amounts to 65.40 percent.

In section 1, we presented several papers showing that women are less financially literate than men. Consistent with this literature, the proportion of financially illiterate FKPs in our sample is higher for female FKPs.[5] Moreover, female FKPs are about as patient and as old as their male counterparts. Concerning the marital status, we notice that female FKPs are less often married and more often divorced or widowed than male FKPs.

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[5]For a more detailed view on the FKPs' financial literacy, see figure A.3 in the appendix.

Figure 3: Proportion of female FKPs for different household characteristics
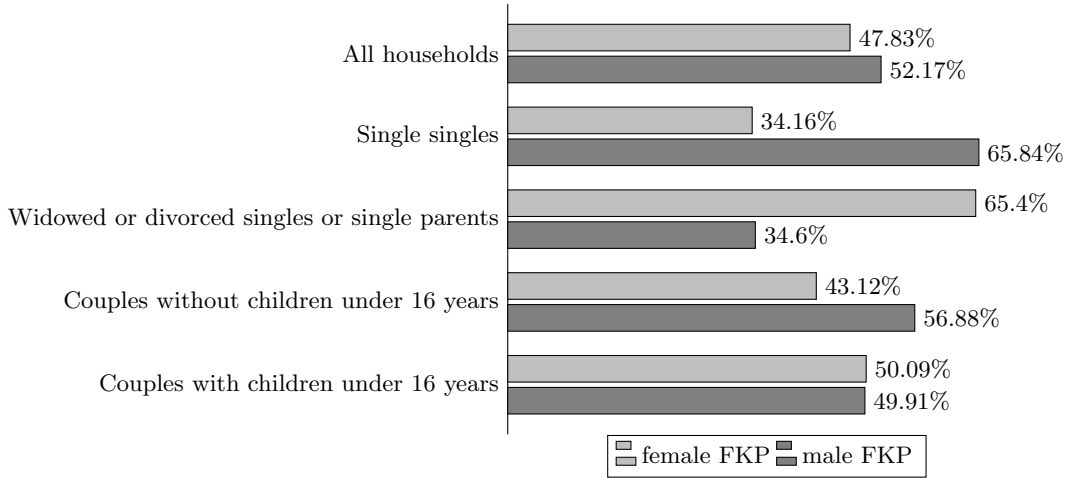
Also in accordance with the literature, especially Dohmen et al. (2011), Halko et al. (2012) and Falk et al. (2018), households with female FKPs are less often willing to take financial risks than households with male FKPs.[6] Looking at table 1, three quarters of the households with female FKPs are characterised as risk averse compared to 62 percent of their male counterparts. If we only consider households participating in the capital market (table 2), the proportion of risk averse households shrinks from 68 to 43 percent. For households with female FKPs it decreases to 55 percent and to 35 percent for the male counterparts. Moreover, in table 3 we find that risk aversion correlates positively with being divorced or widowed and negatively with the household income.

The average household income amounts to approximately €2,440 (€2,270 for households with female FKP and €2,600 for households with male FKP). For households participating in the capital market, the average income increases to €3,340 (€3,030 for households with female FKP and €3,530 for households with male FKP). Households with a female FKP own on average a net wealth of €179,000, which is lower than the average net wealth of households with a male FKP (€237,100). If we consider only the households participating in the capital market, the average net wealth is €396,300 for households with female and €428,300 for households with male FKPs. Moreover, the household net wealth is positively correlated with the household income.

Children are a bit more often found in households with a female FKP. One explanation could be that in families, mothers often run the household's day-to-day business and are therefore often better informed about the financial situation.

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[6]Here, we only discuss the descriptives for the dummy variable for risk aversion. The shares for the answers to the risk aversion questions presented in boxes 1 and 2 are shown in figure A.2 in the appendix.

Table 1: Descriptive statistics

| | All households (N = 4, 307) | | with female FKP (N = 1, 834) | | with male FKP (N = 2, 473) | |
|---|---|---|---|---|---|---|
| | Mean | S.D. | Mean | S.D. | Mean | S.D. |
| Capital market participation (dummy) | 0.23 | – | 0.19 | – | 0.27 | – |
| Share of risky assets in the fin. assets (percent) | 0.05 | 0.19 | 0.04 | 0.16 | 0.06 | 0.20 |
| Participation in listed shares (dummy) | 0.10 | – | 0.07 | – | 0.13 | – |
| Participation in fund shares (dummy) | 0.17 | – | 0.14 | – | 0.19 | – |
| Participation in certificates (dummy) | 0.02 | – | 0.01 | – | 0.02 | – |
| Participation in fixed income securities (dummy) | 0.04 | – | 0.04 | – | 0.05 | – |
| Female FKP (dummy) | 0.47 | – | 1 | – | 0 | – |
| Financially illiterate FKP (dummy) | 0.13 | – | 0.17 | – | 0.09 | – |
| Impatience of the FKP | 4.61 | 3.56 | 4.60 | 3.53 | 4.62 | 3.58 |
| Age of the FKP (years) | 52.50 | 10.07 | 52.86 | 17.59 | 52.17 | 15.87 |
| Married FKP (dummy) | 0.49 | – | 0.44 | – | 0.53 | – |
| Divorced or widowed FKP (dummy) | 0.24 | – | 0.32 | – | 0.17 | – |
| Risk averse household (dummy) | 0.68 | – | 0.75 | – | 0.62 | – |
| Financial advice (dummy) | 0.24 | – | 0.24 | – | 0.24 | – |
| Household income (€1,000) | 2.44 | 1.60 | 2.27 | 1.60 | 2.60 | 1.93 |
| Household net wealth (€10,000) | 20.95 | 53.14 | 17.90 | 47.50 | 23.71 | 60.77 |
| Children in the household (dummy) | 0.19 | – | 0.21 | – | 0.16 | – |

*Note:* This table shows descriptive statistics for the variables used in the analysis. *Source:* 2014 Deutsche Bundesbank PHF, own calculations.

Table 2: Descriptive statistics for households participating in the capital market

| | All households (N = 1,547) | | with female FKP (N = 521) | | with male FKP (N = 1,024) | |
|---|---|---|---|---|---|---|
| | Mean | S.D. | Mean | S.D. | Mean | S.D. |
| Capital market participation (dummy) | 1 | – | 1 | – | 1 | – |
| Share of risky assets in the fin. assets (percent) | 0.23 | 0.28 | 0.23 | 0.32 | 0.23 | 0.27 |
| Participation in listed shares (dummy) | 0.43 | – | 0.35 | – | 0.48 | – |
| Participation in fund shares (dummy) | 0.73 | – | 0.76 | – | 0.71 | – |
| Participation in certificates (dummy) | 0.07 | – | 0.03 | – | 0.09 | – |
| Participation in fixed income securities (dummy) | 0.19 | – | 0.21 | – | 0.18 | – |
| Female FKP (dummy) | 0.39 | – | 1 | – | 0 | – |
| Financially illiterate FKP (dummy) | 0.06 | – | 0.09 | – | 0.04 | – |
| Impatience of the FKP | 4.86 | 3.40 | 4.97 | 3.59 | 4.80 | 3.65 |
| Age of the FKP (years) | 53.48 | 26.91 | 53.61 | 25.40 | 53.40 | 25.19 |
| Married FKP (dummy) | 0.57 | – | 0.48 | – | 0.63 | – |
| Divorced or widowed FKP (dummy) | 0.17 | – | 0.26 | – | 0.12 | – |
| Risk averse household (dummy) | 0.43 | – | 0.55 | – | 0.35 | – |
| Financial advice (dummy) | 0.40 | – | 0.45 | – | 0.37 | – |
| Household income (€1,000) | 3.34 | 3.01 | 3.03 | 2.74 | 3.53 | 2.97 |
| Household net wealth (€10,000) | 41.59 | 99.81 | 39.63 | 91.68 | 42.83 | 111.12 |
| Children in the household (dummy) | 0.20 | – | 0.21 | – | 0.20 | – |

*Note:* This table shows descriptive statistics for the variables used in the analysis for households participating in the capital market. *Source:* 2014 Deutsche Bundesbank PHF, own calculations.

Table 3: Correlation matrix for the independent variables

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) Female FKP (dummy) | 1 | | | | | | | | | | |
| (2) Financially illiterate FKP (dummy) | 0.1030 | 1 | | | | | | | | | |
| (3) Impatience of the FKP | −0.0023 | −0.0211 | 1 | | | | | | | | |
| (4) Age of the FKP (years) | 0.0174 | 0.1056 | −0.0444 | 1 | | | | | | | |
| (5) Married FKP (dummy) | −0.0825 | −0.0615 | 0.0206 | 0.0970 | 1 | | | | | | |
| (6) Divorced or widowed FKP (dummy) | 0.1739 | 0.1172 | −0.0768 | 0.3782 | −0.5554 | 1 | | | | | |
| (7) Risk-averse household (dummy) | 0.1327 | 0.1158 | −0.0524 | 0.1963 | 0.0352 | 0.1323 | 1 | | | | |
| (8) Financial advice (dummy) | 0.0037 | −0.0538 | 0.0378 | 0.0144 | 0.0566 | −0.0508 | −0.1373 | 1 | | | |
| (9) Household income (€ 1,000) | −0.1030 | −0.1490 | 0.0589 | −0.0574 | 0.3790 | −0.2383 | −0.2288 | 0.1271 | 1 | | |
| (10) Household net wealth (€ 10,000) | −0.0637 | −0.0801 | 0.0402 | 0.1188 | 0.1890 | −0.0819 | −0.1653 | 0.1264 | 0.4545 | 1 | |
| (11) Children in the household (dummy) | 0.0734 | −0.0239 | −0.0020 | −0.3585 | 0.2446 | −0.1636 | −0.0409 | −0.0057 | 0.1939 | 0.0037 | 1 |

*Note:* This table shows the correlation matrix for the independent variables used in the analysis. *Source:* 2014 Deutsche Bundesbank PHF, own calculations.

## 3.3 Methods

We employ several methods to analyse the men's and women's capital market participation. To analyse if women participate less often in the capital market than men, we will estimate different specifications of a simple OLS model for all households as well as for singles and single parents, where the dummy variable for the capital market participation is used as the dependent variable[7]. In all regressions, we take into account the multiply imputed nature of the dataset and use bootstrapping method to estimate variances.

At first, we regress the dummy variable for capital market participation only on the FKP's gender. After that, we add the FKP characteristics to the model, i.e., the dummy variable for financial illiteracy, the impatience variable, the FKP's age and age squared, the dummy variable for a married FKP and the dummy variable for a divorced or widowed FKP. Next, we add the dummy variable for risk averse households to the model since we expect that risk aversion will have a strong influence on the $R^2$ of the regression. In the last step, we incorporate the following household characteristics in the model: a variable indicating if the household obtained financial advice within the three years preceding the survey, household income, household net wealth and the dummy variable for children in the household. We report all these regressions separately in order to show how adding more explanatory variables alters the coefficient on the female dummy.

For certain significant independent variables in the OLS models described above, we will also estimate OLS models in which these characteristics are used as dependent variables in order to analyse if there are significant gender differences in these variables.

In the second step of our analysis, we will estimate different specifications of an OLS model in which the household's share of risky assets in the financial assets is used as the dependent variable. We only consider households participating in the capital market. Moreover, our analysis is divided into the analysis of all households and the analysis of all singles and single parents—both conditional on capital market participation. The independent variables are added to the model in the same way as in the model for the capital market participation.

Third, we investigate the capital market portfolio of households participating in the capital market with a focus on the FKP's gender. At first, we perform a descriptive analysis of the participation rates in different categories of capital market assets for these households. For the categories of capital market assets in which there are bigger gender gaps in the participation, we will estimate OLS models in order to figure out if these gender gaps are significant when we control for other household characteristics. Finally, we investigate the composition of the average capital market portfolio of the households participating in the capital market by the FKP's gender.

Financial advice can also influence how intensively households invest in risky assets. Therefore, we investigate whether households have a higher probability of participating in the capital market and hold different amounts of risky assets when they seek professional investment advice from their main bank.

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[7]We also ran logit and probit regressions which confirm our results.

Lastly, we conduct a Oaxaca–Blinder decomposition to get insights into the origins of the observed differential in capital market participation between men and women. Traditionally, this method has been used to analyse gender wage gaps. In that literature, the explained component of the raw differential in wages is the fraction that can be explained by differences in men's and women's endowment with human-capital indicators, i.e., different levels of work experience or education. That explained component measures changes in the outcome variable for the case that a woman has a man's factor endowment. In this paper, it represents the hypothetical case that women in our sample have men's average endowments of, say, wealth or risk aversion. In the labour literature, the unexplained component, by contrast, is the fraction of the wage gap that arises due to different valuations of men's and women's human-capital indicators, i.e., discrimination. In our case, it measures the effect on the outcome variable for the case that a woman behaves like a man, i.e. has his regression coefficients while keeping her average factor endowments.

## 4 Results

### 4.1 Baseline regressions

#### 4.1.1 Do households with female FKP participate less in the capital market?

First, we investigate whether a household with a female FKP participates less in the capital market if we control for different FKP and household characteristics. Ideally, in multi-person households, we would observe each household member's contribution to the decision-making process and be able to derive the influence that each member has on the end result. However, we can only observe the final decision in our data. Therefore, we divide our analysis into two parts: one part in which we investigate all households and another part in which we consider only singles and single parents.

We estimate different specifications of an OLS model in which the households' capital market participation is the dependent variable for all households and for singles and single parents. The OLS regression results[8] are shown in table 4.

Columns 1 to 4 show the regressions for all households. When we regress the capital market participation only on the FKP's gender, we obtain that being female has a highly significant, negative association with the capital market participation of that household: if the FKP is a woman, that rate drops by 7.95 percent relative to that of a male FKP. However, this finding masks the fact that the lower participation rates observed among women may be the result of different characteristics that are independent of the FKP's gender. Also, with an adjusted $R^2$ of merely 1.5 percent, the female dummy explains almost none of the variation in observed capital market participation rates.

Therefore, in column 2, we next include the FKP's characteristics in the model. In this regression, the gender gap drops by a third and remains highly significant. Consistent with our expectations, financially illiterate and divorced or widowed FKPs are less likely

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[8]Logit and probit regressions confirm our analyses.

to own risky assets. By contrast, being married is positively correlated with capital market participation. Moreover, there is an age affect that reflects the life cycle or cohort trends. Somewhat surprisingly, higher levels of patience—needed to endure the ups and downs in the stock market—make capital market participation less likely.

Since we consider capital market participation as ownership of risky assets, we expect that adding the risk-aversion dummy to the model will result in a negative coefficient on this variable. This hypothesis is confirmed according to column 3: the dummy variable for risk aversion is highly significant and has a large economic influence on the capital market participation. Given other characteristics, the likelihood of participating in the capital market decreases by 26.93 percent if a household is risk averse. Moreover, the adjusted $R^2$ increases from 5.67 to 19.62 percent, which shows that risk aversion explains a substantial part of the variation in capital market participation. Furthermore, addition of the risk-aversion dummy reduces the influence of the gender dummy on the observed participation rates by two-thirds relative to column 1. Most importantly, this renders the gender gap only marginally significant.

In the last step of the analysis of the capital market participation for all households, we add to the model household income and net wealth as well as the dummy variables for financial advice obtained by the household's main bank and whether there are children. Almost all of these variables are significant with the expected signs, while we document a marginally significant gender gap of 2.6 percent. Notably, the effect of obtaining financial advice is economically and statistically significant. Furthermore, the dummy variable for risk-averse households is still highly significant and carries the strongest discount on the capital market participation, followed by the financial-advice dummy with an effect size of 14 percent.

Having analysed the capital market participation of all households, we proceed with singles and single parents. This group is of particular interest because the investment decision is made by only one person while in multi-person households, it is typically the result of a household discussion. The analysis is done in the same way as in the investigation of all households. Columns 5 to 8 show the corresponding regressions.

Singles and single parents seem to stand out from the total group of households as there is no significant gender gap to begin with when we regress participation on the female dummy only, whereas in the regression with all households, we found a significant gap of around 8 percent. A possible explanation could be that among singles, women and men share more common characteristics than do households in the entire sample.

When we add FKP characteristics to the model in column 6, we see that it is other factors rather than gender that influence how much one participates in the capital market. For instance, we find that the FKP's impatience and age positively influence the capital market participation while the coefficients on the dummy variables for illiteracy and divorced and widowed FKPs are significant and negative.

In column 7, we add the dummy variable for risk-averse households to the model. As a result, the adjusted $R^2$ increases from 4.28 to almost 15 percent, showing that risk aversion explains a substantial part of the variation in the capital market participation. Moreover, the coefficient on the risk aversion variable is significant and highly important in economic terms, like in the analysis of all households. The coefficient for the dummy

variable for a female FKP remains insignificant.

Finally, moving from column 7 to 8, we include household income and net worth and dummy variables for financial advice and children. Only the divorced or widowed dummy, age, risk aversion, the financial advice dummy and household income have significant coefficients. Not surprisingly, the risk-aversion dummy has the largest negative while the financial-advice dummy has the largest positive coefficient.

In a nutshell, in all regressions for singles and single parents, the dummy variable for female FKPs is insignificant. This implies that once women decide for themselves, they make the same investment decisions that a man with the same characteristics would make. For the whole sample, we can conclude that there is a marginally significant gender-induced investment gap in Germany and a much larger risk-aversion-induced one. This echoes results by Halko et al. (2012), Almenberg and Dreber (2015), or Dimmock et al. (2016).

Our previous analysis has shown that household risk aversion has a significant and economically relevant effect on the household's capital market participation. Given this effect, we are interested if there is a gender gap in the household risk aversion if we control for other household characteristics. The literature has shown that women are in general more risk averse than men. Since we do not consider risk aversion on the level of the individual but on the level of the household, the question arises if the higher risk aversion of a female FKP also translates into a higher risk aversion of her household.

Moreover, we are also interested in gender gaps in the dummy variable for a financially illiterate FKP and the FKP's impatience—two variables which have a significant influence on the capital market participation according to our previous analysis. In order to analyse the three named variables, we estimate different models with the three variables as dependent variables for all households as well as for singles and single parents. The corresponding regression results are shown in table 5.

Concerning the household risk aversion, we find a significant gender gap for the dummy variable for risk-averse households, thereby confirming the studies by Dohmen et al. (2011), Halko et al. (2012), Almenberg and Dreber (2015) and more recently, Falk et al. (2018). What is remarkable is that we obtain this result both for all households as well as for singles and single parents, where the gap is of approximately the same magnitude. That is, it seems to be the case that the gender gap in risk aversion at the individual level translates into a gender gap at the household level through the influence of the FKP on a household's investment strategy. The fact that the gender gap is of nearly the same size both for all households and singles and single parents could imply that the gender gap in the individual risk aversion of FKPs does not decrease through the household investment decision process. The regression the sample containing all households also reveals that married FKPs are 17.49 percent more likely to be risk averse than unmarried FKPs. This result corresponds well with our finding of a less pronounced impact of risk aversion on risky asset holding for single households that we presented in table 4.

Furthermore, we find that a higher household income significantly decreases the household's likelihood of being risk averse. Also, households obtaining financial advice from their main bank are less likely to be risk averse. This effect is economically large. While there is a significant gender gap in the likelihood of an FKP being financially illiterate for

all households but not for only singles, we do not find a significant correlation between being illiterate and seeking professional investment advice. Lastly, there is no gender gap in the impatience of the FKP.

Table 4: Determinants of capital market participation

| | All households | | | | Singles and single parents | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Female FKP (dummy) | −0.0795*** | −0.0557*** | −0.0270* | −0.0259* | −0.0121 | 0.0129 | 0.0380 | 0.0357 |
| | (0.02) | (0.02) | (0.02) | (0.01) | (0.03) | (0.03) | (0.03) | (0.03) |
| Financially illiterate FKP (dummy) | | −0.1138*** | −0.0846*** | −0.0541*** | | −0.0942*** | −0.0665** | −0.0446 |
| | | (0.02) | (0.02) | (0.02) | | (0.03) | (0.03) | (0.03) |
| Impatience of the FKP | | 0.0082*** | 0.0064*** | 0.0040 | | 0.0089* | 0.0068 | 0.0041 |
| | | (0.00) | (0.00) | (0.00) | | (0.01) | (0.00) | (0.00) |
| Age of the FKP (years) | | 0.0143*** | 0.0131*** | 0.0072** | | 0.0153*** | 0.0145*** | 0.0080* |
| | | (0.00) | (0.00) | (0.00) | | (0.00) | (0.00) | (0.00) |
| $Age^2$ of the FKP | | −0.0001*** | −0.0001*** | −0.0000 | | −0.0001*** | −0.0001** | −0.0000 |
| | | (0.00) | (0.00) | (0.00) | | (0.00) | (0.00) | (0.00) |
| Married FKP (dummy) | | 0.0017 | 0.0307 | −0.0517** | | 0.0012 | 0.0293 | 0.0066 |
| | | (0.02) | (0.02) | (0.03) | | (0.08) | (0.08) | (0.08) |
| Divorced or widowed FKP (dummy) | | −0.0887*** | −0.0557* | −0.0610** | | −0.1134** | −0.0906* | −0.0811* |
| | | (0.03) | (0.03) | (0.03) | | (0.04) | (0.05) | (0.05) |
| Risk-averse household (dummy) | | | −0.2693*** | −0.1981*** | | | −0.2153*** | −0.1662*** |
| | | | (0.02) | (0.02) | | | (0.04) | (0.04) |
| Financial advice (dummy) | | | | 0.1382*** | | | | 0.1492*** |
| | | | | (0.02) | | | | (0.04) |
| Household income (€ 1,000) | | | | 0.0503*** | | | | 0.0789*** |
| | | | | (0.01) | | | | (0.02) |
| Household net wealth (€ 10,000) | | | | 0.0009*** | | | | 0.0005 |
| | | | | (0.00) | | | | (0.00) |
| Children in the household (dummy) | | | | 0.0220 | | | | 0.0603 |
| | | | | (0.02) | | | | (0.06) |
| Constant | 0.2582*** | −0.1464** | 0.0127 | −0.0236 | 0.1909*** | −0.2279** | −0.1016 | −0.1257 |
| N | 4461 | 4453 | 4453 | 4453 | 1042 | 1039 | 1039 | 1039 |
| Adj. $R^2$ | 0.0153 | 0.0567 | 0.1962 | 0.2701 | 0.0036 | 0.0428 | 0.1457 | 0.2548 |

*Note:* This table shows OLS regression results for different specifications of the capital market participation model for all available households and only singles and single parents. ***, ** and * denote the statistical significance at the 1, 5 and 10% levels. Robust standard errors are reported in parentheses. Regression results for models with multiple dummy variables for the number of correctly answered financial literacy questions and the degree of risk aversion based on the questions in box 1 and box 2 are shown in table A.1 in the appendix. *Source:* 2014 Deutsche Bundesbank PHF, own calculations.

Table 5: Determinants of risk aversion, financial literacy and patience

| | Risk averse household | | Financially illiterate FKP | | Impatience of the FKP | |
|---|---|---|---|---|---|---|
| | All households | Singles and single parents | All households | Singles and single parents | All households | Singles and single parents |
| Female FKP (dummy) | 0.0943*** | 0.1006*** | 0.0462*** | 0.0296 | 0.0996 | 0.0584 |
| | (0.02) | (0.03) | (0.01) | (0.03) | (0.11) | (0.21) |
| Risk-averse household (dummy) | | | 0.0401*** | 0.0673*** | −0.1414 | −0.2556 |
| | | | (0.01) | (0.03) | (0.14) | (0.21) |
| Financially illiterate FKP (dummy) | 0.0680*** | 0.1019*** | | | −0.0425 | −0.2298 |
| | (0.02) | (0.04) | | | (0.18) | (0.32) |
| Impatience of the FKP | −0.0038 | −0.0069 | −0.0007 | −0.0041 | | |
| | (0.00) | (0.01) | (0.00) | (0.01) | | |
| Age of the FKP (years) | 0.0022 | 0.0011 | −0.0090*** | −0.0106** | −0.0262 | −0.0879** |
| | (0.00) | (0.01) | (0.00) | (0.00) | (0.02) | (0.04) |
| Age$^2$ of the FKP | 0.0000 | 0.0000 | 0.0001*** | 0.0001*** | 0.0002 | 0.0008** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Married FKP (dummy) | 0.1749*** | 0.1223* | 0.0129 | 0.0734 | −0.1542 | −0.0548 |
| | (0.03) | (0.07) | (0.02) | (0.08) | (0.17) | (0.63) |
| Divorced or widowed FKP (dummy) | 0.1117*** | 0.0872* | 0.0437* | 0.0368 | −0.4697** | −0.4394* |
| | (0.03) | (0.05) | (0.03) | (0.04) | (0.19) | (0.25) |
| Financial advice (dummy) | −0.1139*** | −0.0987*** | −0.0213 | −0.0016 | 0.1579 | 0.1614 |
| | (0.02) | (0.04) | (0.02) | (0.04) | (0.12) | (0.26) |
| Household income (€ 1,000) | −0.0547*** | −0.0582*** | −0.0189*** | −0.0239* | 0.0766** | 0.2270** |
| | (0.01) | (0.02) | (0.00) | (0.01) | (0.03) | (0.11) |
| Household net wealth (€ 10,000) | −0.0010*** | −0.0005 | −0.0001 | −0.0004 | 0.0009 | −0.0029 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Children in the household (dummy) | 0.0158 | 0.0727 | 0.0272 | 0.1046 | −0.1461 | −0.5303 |
| | (0.03) | (0.07) | (0.03) | (0.07) | (0.20) | (0.45) |
| Constant | 0.5626*** | 0.5615*** | 0.2840*** | 0.2916*** | 5.3058*** | 6.8411*** |
| N | 4453 | 1039 | 4453 | 1039 | 4453 | 1039 |
| Adj. $R^2$ | 0.1306 | 0.1205 | 0.0463 | 0.0609 | 0.0079 | 0.0262 |

*Note:* This table shows OLS regression results for different independent variables for all available households and only singles and single parents. ***, ** and * denote the statistical significance at the 1, 5 and 10% levels. Robust standard errors are reported in parentheses. *Source:* 2014 Deutsche Bundesbank PHF, own calculations.

### 4.1.2 Conditional on capital market participation, is there a gender gap in the portfolio's share of risky assets?

Having analysed capital market participation of German households, we want to investigate the share of risky assets in a household's total portfolio of financial assets, given the household's capital market participation. To this end, we will again divide our discussion into one part for all households and one part for singles and single parents. The results of the regressions are presented in table 6.

First, we consider all households in columns 1 to 4. In column 1, where we regress the risky share only on the dummy variable for a female FKP, it strikes that there is no significant gender gap. That is, once a household has decided to hold risky assets, women and men hold equal portions of them. In a sample of financially-trained persons in Finland—a more gender-equal country than Germany[9]—a small but significant gender effect remains after inclusion of risk aversion and many socioeconomic variables (Halko et al., 2012). In that analysis, the controls reduce the raw gender gap of 5.4 percent by about one half. A regression using a sample of students and investors rather than retail bank clients, however, confirms our result of no gender difference in the risky asset share.

In column 2, we add the FKP characteristics to the model, which only changes the magnitude of the insignificant gender dummy. Moreover, we find a minuscule effect of the FKP's age. Once a household holds risky assets, FKP characteristics play virtually no role.

Next, we additionally include the dummy variable for risk-averse households in the model. This dummy variable has a significant and negative association with the risky share: a risk-averse household participating in the capital market has on average a 4.28 percent lower risky share, again controlling for the other independent variables. This is a substantial economic effect and underlines our results that differences in the FKP's risk aversion are the main driver for the more limited capital market participation of households with a female FKP—precisely because of the higher risk aversion of women, but not because of their gender per se.

Finally, household characteristics are incorporated in column 4. Adding these variables to the model has nearly no effect on the adjusted $R^2$, indicating that they only explain a negligible part of the variation in the risky share. Moreover, adding these variables to the model leaves the other variables' coefficients virtually unaffected. The dummy variable for a female FKP remains insignificant and the risk aversion has a strong influence on the risky share of approximately the same magnitude as in column 3.

Following the analysis for all households, we only consider singles and single parents to disentangle decisions made alone from those made jointly. The regression results are presented in columns 5 to 8. In the first model we regress the risky share only on the dummy variable for female FKPs. It is not surprising that we observe no significant gender gap in the risky share. As for the case of all households, once single women participate in the capital market and decide on their own, they choose risky asset shares

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[9]The Global Gender Gap Report 2020, World Economic Forum, Geneva, Switzerland, 2020. In this report, Germany ranks #10 (Finland: #3) out of 153.

that are similar to those of men.

In columns 6 to 8, we add the FKP and household characteristics to the model, but all coefficients are insignificant. Not even risk aversion seems to play a role for the conditional risk share of singles and single parents. In spite of this, these variables do add some incremental explanatory power compared to the model in column 5.

Table 6: Determinants of the risky share in the financial assets

| | All households | | | | Singles and single parents | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Female FKP (dummy) | −0.0021 | −0.0076 | 0.0005 | 0.0002 | 0.0114 | 0.0053 | 0.0170 | 0.0155 |
| | (0.02) | (0.02) | (0.02) | (0.02) | (0.03) | (0.03) | (0.04) | (0.04) |
| Financially illiterate FKP (dummy) | | −0.0019 | 0.0070 | 0.0065 | | 0.0206 | 0.0293 | 0.0347 |
| | | (0.03) | (0.03) | (0.03) | | (0.05) | (0.05) | (0.05) |
| Patience of the FKP | | −0.0037 | −0.0040 | −0.0038 | | −0.0017 | −0.0028 | −0.0018 |
| | | (0.00) | (0.00) | (0.00) | | (0.01) | (0.01) | (0.01) |
| Age of the FKP (years) | | −0.0034 | −0.0036 | −0.0032 | | −0.0036 | −0.0034 | −0.0019 |
| | | (0.00) | (0.00) | (0.00) | | (0.01) | (0.01) | (0.01) |
| Age$^2$ of the FKP | | 0.0001* | 0.0001* | 0.0001* | | 0.0001 | 0.0001 | 0.0000 |
| | | (0.00) | (0.00) | (0.00) | | (0.00) | (0.00) | (0.00) |
| Married FKP (dummy) | | −0.0368 | −0.0322 | −0.0281 | | −0.0750 | −0.0746 | −0.0979 |
| | | (0.02) | (0.02) | (0.02) | | (0.05) | (0.05) | (0.06) |
| Divorced or widowed FKP (dummy) | | −0.0177 | −0.0126 | −0.0130 | | −0.0326 | −0.0269 | −0.0301 |
| | | (0.04) | (0.04) | (0.04) | | (0.04) | (0.04) | (0.04) |
| Risk-averse household (dummy) | | | −0.0428** | −0.0454** | | | −0.0443 | −0.0441 |
| | | | (0.02) | (0.02) | | | (0.04) | (0.04) |
| Financial advice (dummy) | | | | −0.0102 | | | | −0.0320 |
| | | | | (0.01) | | | | (0.03) |
| Household income (€ 1,000) | | | | −0.0057 | | | | −0.0081 |
| | | | | (0.00) | | | | (0.01) |
| Household net wealth (€ 10,000) | | | | 0.0001 | | | | 0.0005 |
| | | | | (0.00) | | | | (0.00) |
| Children in the household (dummy) | | | | 0.0053 | | | | 0.0265 |
| | | | | (0.02) | | | | (0.08) |
| Constant | 0.2345*** | 0.2989*** | 0.3133*** | 0.3188*** | 0.2518*** | 0.2970** | 0.3070** | 0.2855* |
| N | 1549 | 1547 | 1547 | 1547 | 251 | 251 | 251 | 251 |
| Adj. $R^2$ | 0.0280 | 0.0738 | 0.0962 | 0.0970 | 0.0010 | 0.0522 | 0.0591 | 0.0462 |

*Note:* This table shows regression results for different specifications of the OLS model for the risky share in the financial assets for all households and only singles and single parents, given capital market participation. ***, ** and * denote the statistical significance at the 1, 5 and 10% levels. Robust standard errors are reported in parentheses. Regression results for models with multiple dummy variables for the number of correctly answered financial literacy questions and the degree of risk aversion based on the questions in box 1 and box 2 are shown in table A.2 in the appendix. *Source:* 2014 Deutsche Bundesbank PHF, own calculations.

### 4.1.3 Do women invest in different categories of capital market assets than men?

In the last step of our analysis, we take a look at capital market portfolios of households participating in the capital market. To this end, we will divide our discussion into one part about participation rates in different categories of capital market assets and one part about the composition of the typical capital market portfolio owned by a household.

In table 7, we report participation rates for different categories of capital market assets for households participating in the capital market, separately for all households and for singles and single parents.

Table 7: Participation in different categories of capital market assets

| All households | Female FKP | Male FKP |
|---|---|---|
| Fund shares | 75.90% | 70.92% |
| Listed shares | 35.37% | 48.48% |
| Fixed income securities | 21.28% | 17.85% |
| Certificates | 3.09% | 8.77% |
| **Singles and single parents** | **Female FKP** | **Male FKP** |
| Fund shares | 74.26% | 64.55% |
| Listed shares | 30.18% | 53.42% |
| Fixed income securities | 25.30% | 20.01% |
| Certificates | 2.30% | 16.54% |

*Note:* This table shows the households' participation rates in different categories of capital market assets by gender, for households participating in the capital market. *Source:* 2014 Deutsche Bundesbank PHF, own calculations.

When we consider all households, we notice that fund shares are the most popular capital market asset independent of the FKP's gender. Specifically, the participation rate in funds shares is above 70 percent for both FKP genders. Listed shares are the second most preferred asset class. But while 48.48 percent of the households with male FKP invest in listed shares, only 35.37 percent of the household with female FKP do so. We find the third highest participation rate for fixed income securities, which is nearly the same for both FKP genders. Lastly, households with male FKP participate almost three times as much in certificates as households with female FKP.

As a conclusion for all households, we can say that households with male FKP invest more often in the riskier categories of capital market assets—a result which is consistent with our finding that households with male FKP are less risk averse than households with female FKP.

For the participation rates of singles and single parents, we obtain a picture similar to the one for all households. For both genders, we find the highest participation rate

Table 8: Determinants of the participation in listed shares and certificates

| | Listed shares | | Certificates | |
|---|---|---|---|---|
| | All households | Singles and single parents | All households | Singles and single parents |
| Female FKP (dummy) | −0.0867** | −0.1702* | −0.0563** | −0.1598*** |
| | (0.04) | (0.10) | (0.02) | (0.05) |
| Financially illiterate FKP (dummy) | −0.0167 | 0.0425 | −0.0375** | −0.0076 |
| | (0.09) | (0.18) | (0.02) | (0.04) |
| Impatience of the FKP | 0.0139 | 0.0116 | 0.0098** | 0.0221** |
| | (0.01) | (0.02) | (0.00) | (0.01) |
| Age of the FKP (years) | 0.0089 | −0.0023 | −0.0021 | −0.0088 |
| | (0.01) | (0.02) | (0.00) | (0.01) |
| Age$^2$ of the FKP | −0.0000 | 0.0000 | 0.0000 | 0.0001 |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Married FKP (dummy) | −0.0860 | −0.0245 | −0.0342 | 0.0418 |
| | (0.06) | (0.26) | (0.03) | (0.12) |
| Divorced or widowed FKP (dummy) | −0.0840 | 0.0024 | 0.0090 | 0.0686 |
| | (0.08) | (0.11) | (0.04) | (0.05) |
| Risk-averse household (dummy) | −0.1252*** | −0.1047 | −0.0563*** | −0.0668 |
| | (0.04) | (0.11) | (0.02) | (0.05) |
| Financial advice (dummy) | −0.0562 | −0.0667 | 0.0469** | 0.1012* |
| | (0.04) | (0.08) | (0.02) | (0.05) |
| Household income (€1,000) | 0.0283** | 0.0252 | −0.0016 | −0.0415* |
| | (0.01) | (0.04) | (0.01) | (0.02) |
| Household net wealth (€10,000) | 0.0007** | 0.0003 | 0.0002* | 0.0007 |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Children in the household (dummy) | −0.0665 | −0.2602* | −0.0360 | −0.0439 |
| | (0.06) | (0.15) | (0.02) | (0.05) |
| Constant | 0.0815 | 0.4887 | 0.1332 | 0.3721 |
| N | 1547 | 251 | 1547 | 251 |
| Adj. $R^2$ | 0.1036 | 0.0895 | 0.0568 | 0.0515 |

*Note:* This table shows OLS regression results for the participation in listed shares and certificates for all available households and only singles and single parents, given capital market participation. ***, ** and * denote the statistical significance at the 1, 5 and 10% levels. Robust standard errors are reported in parentheses. Regression results for models with multiple dummy variables for the number of correctly answered financial literacy questions and the degree of risk aversion based on the questions in box 1 and box 2 are shown in table A.3 in the appendix. *Source:* 2014 Deutsche Bundesbank PHF, own calculations.

for fund shares, however, for singles and single parents we now find a differential of around 10 percentage points between men (64.55%) and women (74.26%). While there is a notable difference in the participation in fixed income securities, we find substantial gender gaps in the participation in listed shares and certificates bigger in size than the ones for all households.

In a nutshell, we find more pronounced gender gaps in the participation rates for listed shares and certificates; a result which leads us to the question if these gender gaps are significant when we control for several household characteristics. In order to answer this question, we perform several regressions for all households and for singles and single parents participating in the capital market. We report these results in table 8.

Concerning the participation in listed shares, we document a significant gender gap for all households as well as for singles and single parents. The participation rate for listed shares is ceteris paribus 8.67 percent lower for households with female FKP when we consider all households. For singles and single parents, the corresponding gender gap amounts to 17.02 percent. That is, the gender gap in the participation in certain risky assets decreases in multi-person households, an observation which could be explained by household discussions concerning financial decisions.

Furthermore, we find that the household's risk aversion, household income and net wealth have a significant effect on the participation in listed shares of all households participating in the capital market. If we only take a look at the regression for singles and single parents, we find no significant variable other than the FKP's gender and minors in the household—not even risk aversion. This is in line with our previous findings in tables 4 and 6 where we found that FKPs investing only for themselves react differently to risk aversion than FKPs in multi-person households, whose investment decisions also affect others. Another explanation could be the fact that singles hold on average lower proportions of listed shares than FKPs living in multi-person households: it is conceivable that singles do not invest in stocks with a long-term investment goal but as a hobby, possibly rendering risk aversion less of an issue for them.

In the second half of the table, we consider the regression results for the participation in certificates. For all households as well as for singles and single parents we obtain that households with female FKP participate significantly less in certificates, where the coefficient for singles is around 16 percent. The corresponding gender gap for all households is 5.63 percent. Again, the gender gap in the participation is larger for singles and singles parents than for the whole set of households.

In addition, the FKP's literacy and patience, the dummy variables for risk-averse households and financial advice and household net wealth have significant effects on the participation in certificates in the regression for all households. For singles and single parents, the coefficients on net wealth becomes insignificant, but household income is significantly related to certificate-holding, albeit surprisingly in a negative manner. An explanation could be that certificates are often viewed as a possibility to quickly earn a lot of money, and this gamble could look attractive to households with lower incomes.

Figure 4 and figure 5 depict the composition of the average capital market portfolios held by households with (a) female and (b) male FKP as well as the corresponding medians of the capital market portfolios for all households and for singles and single

Figure 4: Composition of the capital market portfolio for all households

(a) Female FKP (median of the capital market portfolio: € 11,400)
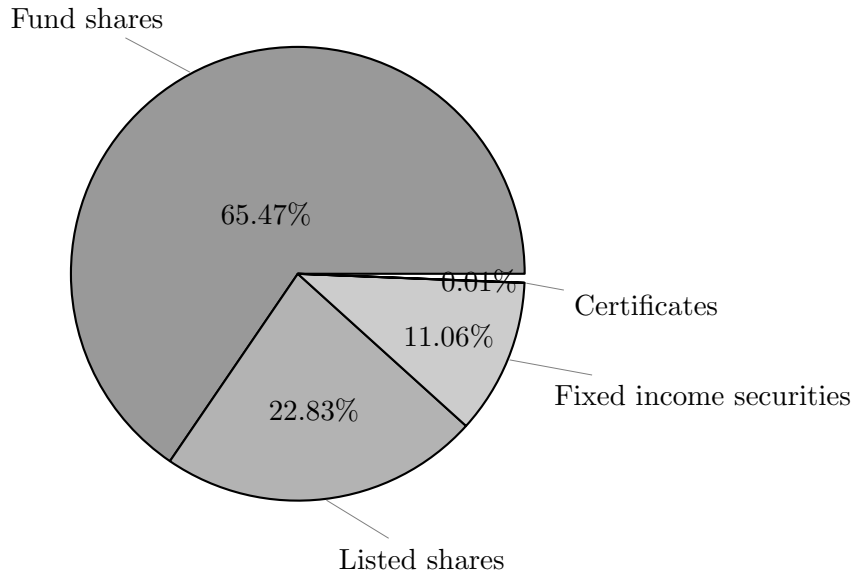


(b) Male FKP (median of the capital market portfolio: € 14,600)
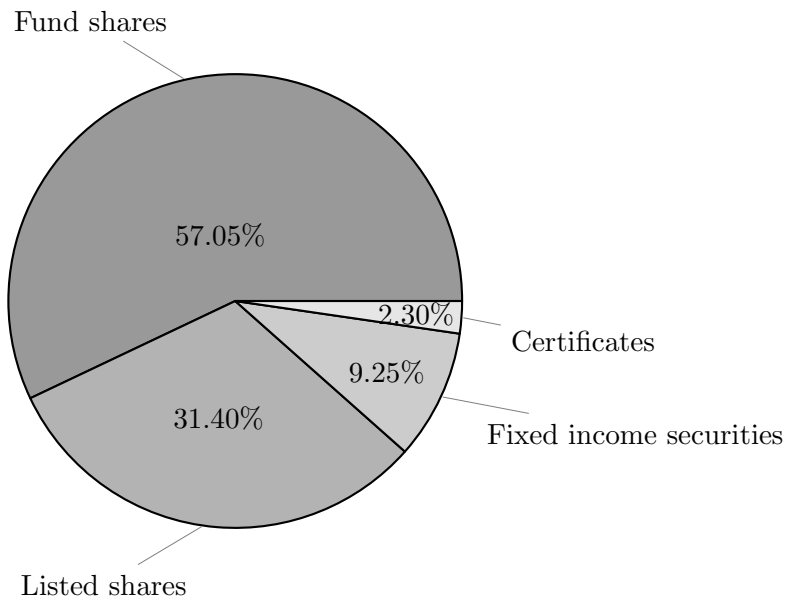


*Note:* This figure shows the average proportions of different categories of capital market assets for all households participating in the capital market divided by female and male FKP as well as the corresponding medians of the capital market portfolio. *Source:* 2014 Deutsche Bundesbank PHF, own calculations.

Figure 5: Composition of the capital market portfolio for singles and single parents

(a) Female FKP (median of the capital market portfolio: € 11,000)



(b) Male FKP (median of the capital market portfolio: € 16,700)



*Note:* This figure shows the average proportions of different categories of capital market assets for singles and single parents participating in the capital market divided by female and male FKP as well as the corresponding medians of the capital market portfolio. *Source:* 2014 Deutsche Bundesbank PHF, own calculations.

parents.

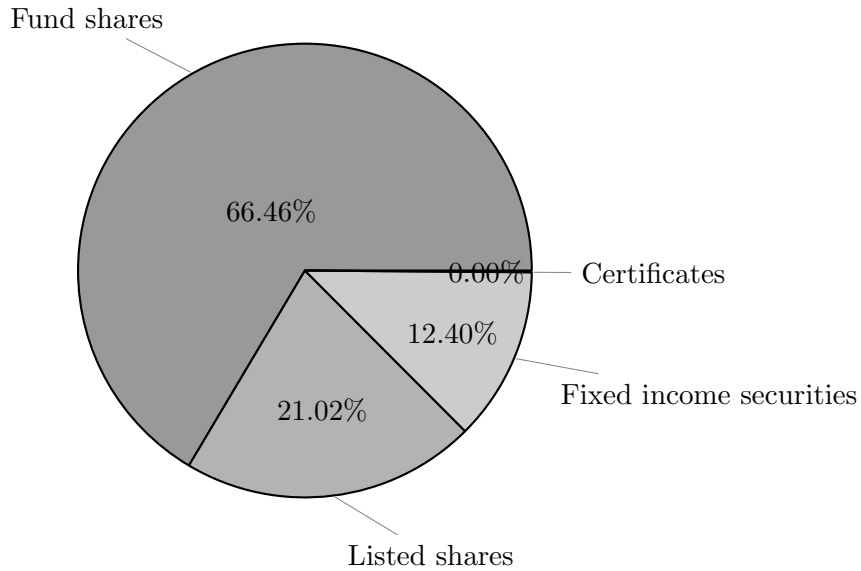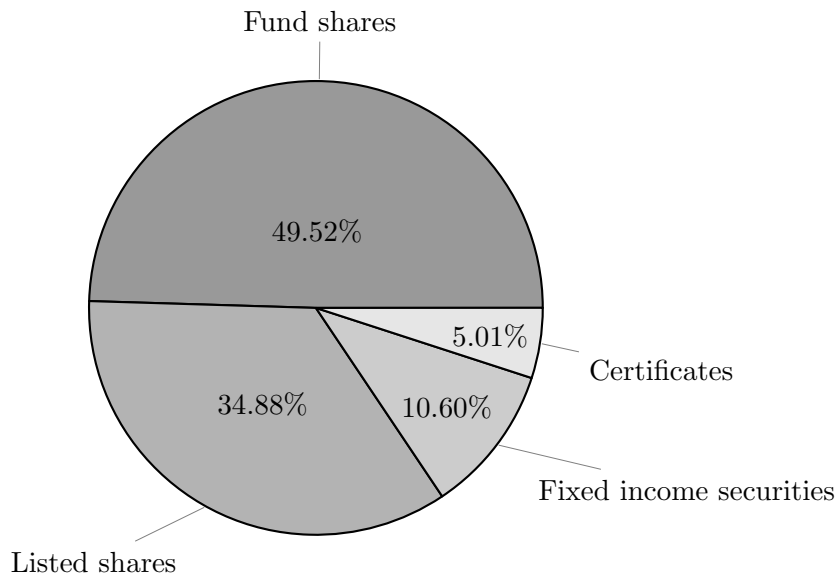Note that the median of the capital market portfolio of households with female FKP is €11,400, which is lower than the median for households with male FKP (€14,600). While single women and single mothers' average portfolio is a bit smaller than that of the average female household (€11,000), single men's and single fathers' is larger than that of the average male household (€16,700). From the composition of the average portfolios we learn that, independent of the FKP's gender, households invest most of their wealth into fund shares and listed shares. The average female FKP invests 65.47 percent of her household's capital market portfolio in fund shares and 22.83 percent in listed shares. For households with male FKP, the average share of fund shares amounts to 57.05 percent while the average share of listed shares is 31.40 percent.

The average share for fixed income securities is roughly the same for both types of households. For the average share of certificates, we confirm our previous results that households with a male FKP invest a higher (albeit negligible) fraction of their wealth in certificates than households with a female FKP.

Comparing figures 4 and 5, we note that the median values of the capital market portfolios held by women are comparable for all households and for singles , but single men hold larger portfolios than the average man. In terms of the average portfolio composition, those of female singles and the average female FKP are almost identical, while there are bigger differences for men: male singles invest less in fund shares than does the average male FKP in the all-households sample. Instead, they hold larger proportions of listed shares, fixed income securities and more than twice as much in certificates.

In a nutshell, we observe remarkable gender differences in the composition of capital market portfolios, which are more pronounced for singles and single parents. In order to see if these differences are significant, we perform several regressions for the conditional capital market assets' proportions for the two household types. The corresponding results are reported in table 9.

In line with previous results, we find that women tend to hold significantly higher proportions of fund shares than men when we control for FKP and household characteristics. For single women and single mothers, however, the coefficient is negative. The same is true for listed shares and certificates: single women are less likely to invest in these asset categories than comparable men. The dummy variable for risk aversion is insignificant in all models. People seeking financial advice are more likely to invest in listed shares. Interestingly, singles and single parents seem to be advised to invest less in fund shares and more in certificates. Children make a difference too: the coefficient is positive and large for fixed income securities for the average household, but large and negative when we look at single households only. The negative association is even stronger for households holding certificates. Also, households tend to hold lower proportions in listed shares when there are children in the household.

Table 9: Determinants of the share of different categories of capital market assets in the capital market portfolio

| | Fund shares | | Listed shares | | Fixed income securities | | Certificates | |
|---|---|---|---|---|---|---|---|---|
| | All households | Singles and single parents | All households | Singles and single parents | All households | Singles and single parents | All households | Singles and single parents |
| Female FKP (dummy) | 0.0712** | −0.0631* | 0.0126 | −0.0206** | 0.1445 | −0.1006 | 0.0201 | −0.0640** |
| | (0.04) | (0.03) | (0.02) | (0.01) | (0.09) | (0.08) | (0.06) | (0.03) |
| Financially illiterate FKP (dummy) | −0.0680 | 0.0481 | 0.0314 | −0.0115* | −0.0505 | 0.0755 | −0.0144 | −0.0106 |
| | (0.10) | (0.08) | (0.07) | (0.01) | (0.19) | (0.16) | (0.10) | (0.02) |
| Impatience of the FKP | −0.0030 | 0.0061 | −0.0049 | 0.0018 | 0.0082 | 0.0047 | −0.0164* | 0.0035 |
| | (0.01) | (0.01) | (0.00) | (0.00) | (0.02) | (0.02) | (0.01) | (0.00) |
| Age of the FKP (years) | −0.0035 | 0.0028 | 0.0028 | −0.0022 | 0.0030 | −0.0068 | 0.0094 | −0.0056 |
| | (0.01) | (0.01) | (0.01) | (0.00) | (0.01) | (0.01) | (0.01) | (0.00) |
| $Age^2$ of the FKP | −0.0000 | 0.0000 | −0.0000 | 0.0000 | −0.0000 | 0.0001 | −0.0001 | 0.0000 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Married FKP (dummy) | 0.0683 | −0.0481 | −0.0139 | −0.0063 | −0.2841 | 0.0208 | 0.2547 | 0.0086 |
| | (0.04) | (0.04) | (0.03) | (0.01) | (0.17) | (0.15) | (0.22) | (0.03) |
| Divorced or widowed FKP (dummy) | 0.0397 | −0.0383 | −0.0179 | 0.0164 | −0.0720 | −0.0370 | 0.0685 | 0.0405* |
| | (0.06) | (0.06) | (0.05) | (0.02) | (0.09) | (0.09) | (0.07) | (0.02) |
| Risk-averse household (dummy) | 0.0326 | −0.0380 | 0.0087 | −0.0033 | −0.0132 | −0.0623 | 0.0611 | 0.0145 |
| | (0.04) | (0.04) | (0.03) | (0.01) | (0.09) | (0.09) | (0.07) | (0.03) |
| Financial advice (dummy) | 0.0477 | −0.1082*** | 0.0413* | 0.0192** | 0.0363 | −0.0792 | −0.0016 | 0.0446** |
| | (0.03) | (0.03) | (0.02) | (0.01) | (0.08) | (0.07) | (0.05) | (0.02) |
| Household income (€ 1,000) | −0.0238** | 0.0234** | −0.0015 | 0.0018 | −0.0273 | 0.0363 | −0.0055 | −0.0035 |
| | (0.01) | (0.01) | (0.00) | (0.00) | (0.03) | (0.03) | (0.02) | (0.00) |
| Household net wealth (€ 10,000) | −0.0005 | 0.0004 | 0.0000 | −0.0000 | −0.0000 | −0.0004 | 0.0005 | −0.0001 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Children in the household (dummy) | 0.0767 | −0.0317 | −0.0334* | −0.0116 | 0.4233*** | −0.1634* | −0.2309** | −0.0290 |
| | (0.05) | (0.05) | (0.02) | (0.01) | (0.11) | (0.10) | (0.11) | (0.02) |
| Constant | 0.8465*** | 0.0916 | −0.0103 | 0.0722 | 0.4962 | 0.3602 | −0.0425 | 0.1862 |
| N | 1536 | 1536 | 1536 | 1536 | 248 | 248 | 248 | 248 |
| Adj. $R^2$ | 0.0766 | 0.0530 | 0.0371 | 0.0099 | 0.0378 | 0.0250 | 0.0087 | 0.0000 |

*Note:* This table shows OLS regression results for different independent variables for all available households and only singles and single parents participating in the capital market. ***, ** and * denote the statistical significance at the 1, 5 and 10% levels. Robust standard errors are reported in parentheses. Regression results for models with multiple dummy variables for the number of correctly answered financial literacy questions and the degree of risk aversion based on the questions in box 1 and box 2 are shown in table A.4 in the appendix. *Source:* 2014 Deutsche Bundesbank PHF, own calculations.

## 4.2 The role of financial advice

In this subsection, we make further use of the financial advice variable which we have used only as a control variable so far. Since we found significant and large positive coefficients in our regression of capital market participation, we now go a step further: table 10 reports the regression results for the research question on capital market participation—but this time, run separately for groups reporting that they do versus do not obtain financial advice from their main bank.

We find that only in the subset of all households that do not obtain financial advice, there is a statistically significant gender gap of 3.17 percent. That is, female FKPs who do not seek financial advice from their banks are less likely to own risky assets than comparable men. In the subsamples of households who do consult their banks for financial advice, there is no such gap. There is also none in the group of singles and single parents even in the absence of financial advice. This is not surprising as we did not find a gender gap for this group in the regression reported in table 6.

Single households looking for professional investment advice appear to be advised by their banks to invest according to their life cycle. By far the largest influence on capital market participation has, again, the risk-aversion dummy. In all but the last column, its effect is significantly negative and decreases the likelihood of participating in the capital markets by up to 21 percent, but it is slightly less relevant for single households. Household income is positively related to capital market participation in all cases but for singles who seek financial advice. Lastly, there is a positive relationship with the dummy for children in households with singles parents which is not present in any of the other regressions. One explanation could be that single parents with children may seek bank advice to save for their children's education.

To sum up briefly, there is only one instance where we find a significant gender effect, namely in the subsample of households who do not obtain financial advice. That is, given all other control variables, women that do not consult their banks are less active in the capital market than their male counterparts. The risk-aversion dummy carries more weight in the regressions of households who do not obtain financial advice from their bank. One possible explanation could be that households seeking investment advice have already taken the first hurdle toward investing in risky assets, unlike their counterparts that do not seek financial advice because they may be more risk averse in the first place. This result is confirmed by our analyses in table 11.

In table 11 we analyse the relationship between taking financial advice from a bank and potential correlating factors both for all and for only single households. Our results show that independent of the sample, women seek financial advice between 3.5 and 5.9 percent more often than their male counterparts, given all other variables. What also plays a role consistently is household income and net wealth, where better-off households are more likely to either consult their banks for advice or are to be approached by their banks. Risk aversion has the strongest adverse impact: all household types are 8.4 to 10.6 percent less likely to take financial advice when they are risk averse, i.e. households that are relatively risk loving self-select into seeking financial advice. Notably, financial illiteracy is uncorrelated with households' propensity to seek investment advice.

Table 10: Determinants of capital market participation for households that obtain financial advice from their bank and those that don't

| | All households | | Singles and single parents | |
|---|---|---|---|---|
| | w/o FA | with FA | w/o FA | with FA |
| Female FKP (dummy) | −0.0317* | −0.0053 | 0.0190 | 0.0956 |
| | (0.02) | (0.04) | (0.03) | (0.09) |
| Financially illiterate FKP (dummy) | −0.0372* | −0.0987 | −0.0217 | −0.1025 |
| | (0.02) | (0.06) | (0.03) | (0.11) |
| Impatience of the FKP | 0.0025 | 0.0068 | −0.0020 | 0.0206 |
| | (0.00) | (0.01) | (0.00) | (0.02) |
| Age of the FKP (years) | 0.0039 | 0.0179** | 0.0008 | 0.0290** |
| | (0.00) | (0.01) | (0.01) | (0.01) |
| Age$^2$ of the FKP | −0.0000 | −0.0001 | 0.0000 | −0.0002** |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Married FKP (dummy) | −0.0410 | −0.0983 | −0.0058 | 0.1752 |
| | (0.03) | (0.07) | (0.08) | (0.30) |
| Divorced or widowed FKP (dummy) | −0.0358 | −0.1555* | −0.0456 | −0.2078 |
| | (0.03) | (0.09) | (0.04) | (0.14) |
| Risk-averse household (dummy) | −0.2136*** | −0.1607*** | −0.1847*** | −0.1058 |
| | (0.03) | (0.05) | (0.04) | (0.09) |
| Household income (€ 1,000) | 0.0543*** | 0.0407** | 0.1010*** | 0.0290 |
| | (0.01) | (0.02) | (0.02) | (0.03) |
| Household net wealth (€ 10,000) | 0.0009** | 0.0009** | 0.0002 | 0.0011 |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Children in the household (dummy) | 0.0382 | −0.0220 | 0.1021* | −0.2441 |
| | (0.03) | (0.06) | (0.06) | (0.17) |
| Constant | 0.0780 | −0.2138 | 0.0702 | −0.5533** |
| N | 3224 | 1229 | 797 | 242 |
| Adj. $R^2$ | 0.2570 | 0.1876 | 0.2014 | 0.1844 |

*Note:* This table shows OLS regression results for capital market participation for all available households and only singles and single parents. ***, ** and * denote the statistical significance at the 1, 5 and 10% levels. Robust standard errors are reported in parentheses. Regression results for models with multiple dummy variables for the number of correctly answered financial literacy questions and the degree of risk aversion based on the questions in box 1 and box 2 are shown in table A.5 in the appendix. *Source:* 2014 Deutsche Bundesbank PHF, own calculations.

Table 11: Determinants of the propensity to seek financial advice

|  | All households | Singles and single parents |
|---|---|---|
| Female FKP (dummy) | 0.0351* | 0.0591** |
|  | (0.02) | (0.03) |
| Financially illiterate FKP (dummy) | −0.0338 | −0.0021 |
|  | (0.03) | (0.05) |
| Patience of the FKP | 0.0040 | 0.0037 |
|  | (0.00) | (0.01) |
| Age of the FKP (years) | 0.0048 | 0.0043 |
|  | (0.00) | (0.01) |
| Age$^2$ of the FKP | −0.0000 | −0.0000 |
|  | (0.00) | (0.00) |
| Married FKP (dummy) | 0.0017 | −0.0896 |
|  | (0.03) | (0.07) |
| Divorced or widowed FKP (dummy) | −0.0344 | −0.0402 |
|  | (0.03) | (0.04) |
| Risk-averse household (dummy) | −0.1064*** | −0.0845*** |
|  | (0.02) | (0.03) |
| Household income (€ 1,000) | 0.0150** | 0.0413*** |
|  | (0.01) | (0.02) |
| Household net wealth (€ 10,000) | 0.0007*** | 0.0013* |
|  | (0.00) | (0.00) |
| Children in the household (dummy) | −0.0201 | −0.0806 |
|  | (0.02) | (0.06) |
| Constant | 0.0940 | 0.0754 |
| N | 4453 | 1039 |
| Adj. $R^2$ | 0.0430 | 0.0640 |

*Note:* This table shows OLS regression results for the probability of obtaining financial advice from a bank for all households or only singles and single parents. ***, ** and * denote the statistical significance at the 1, 5 and 10% levels. Robust standard errors are reported in parentheses. Regression results for models with multiple dummy variables for the number of correctly answered financial literacy questions and the degree of risk aversion based on the questions in box 1 and box 2 are shown in table A.6 in the appendix. *Source:* 2014 Deutsche Bundesbank PHF, own calculations.

## 4.3 Oaxaca–Blinder decomposition of capital market participation

To further analyse the systematic differences between the average endowments with socioeconomic factors of men and women, we conduct a Oaxaca–Blinder decomposition of the 7.87 percentage points participation gap in the capital market. This procedure will allow us to determine what fraction of this differential is explained by gender-specific endowments (e.g., income, age, or risk aversion) rather than by gender-specific regression coefficients (e.g., behavioural differences between men and women). First, we will analyse capital market participation for both genders separately and test if the coefficients vary with the investor's gender. Second, we will decompose the differences in the outcome variable into contributing factors. We do this for capital market participation and in the all-households sample only, since we did not find a significant gender effect for the conditional risky share or the subsample of singles and single households in the previous sections, whereas FKP characteristics seem to play a minor role.

Table 12 illustrates the results for the regressions by gender. Independent of the FKP's gender, households are less likely to participate in the capital market when their risk-aversion is high. Curiously, however, the participation discount for risk-averse households is much stronger for households with male than for those with female FKPs: male, risk-averse FKPs are 25.83 percent less likely to invest in the capital market than comparable FKPs that are not risk-averse; for women, it is only 11.91 percent.[10] Overall, the results in this table give rise to the notion that the differential in capital market participation may be explained by differences in one or more of the characteristics at the household level.

To check if the coefficients vary systematically with the investor's gender, we then run a regression of capital market participation on the female dummy and its interactions with all the other explanatory variables. If the interaction terms are jointly significantly different from zero, a Oaxaca–Blinder decomposition is in order, which will permit us to analyse which socioeconomic variables contribute how much to the observed gender gap. We do not report these results here in the interest of space, but the test is highly significant; thus, the explanatory variables have differential effects on the outcome variable for men and women. This result is the basis of our Oaxaca–Blinder decomposition, which is documented in table 13[11].

The model decomposes the raw differential of 7.87 percentage points resulting from predicted participation rates of 25.78 percent for men and 17.91 percent for women. Of this gap, two thirds can be explained by differences in the genders' observable factor endowments. Overall, it is household characteristics (55.91 percent)—not personal characteristics of the FKP (11.13 percent)—that explain the observed gender gap. Which of the variables in our model contribute most to this gap? Clearly, the average endowment

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[10]In another, unreported regression, we find that this difference is less striking for singles and single parents: single men are 20.96 percent ($p < 0.01$) less likely to hold risky assets if they are risk averse, whereas for comparable women this probability is 10.93 percent ($p < 0.10$).

[11]We conduct the Oaxaca–Blinder decomposition using each of the five imputed datasets separately. Instead of computing average effects over these five results along with correct inference, we chose to report the regression output using the first implicate only as the results do not differ notably among these five sets of coefficients.

Table 12: Determinants of capital market participation by gender for all households

|  | Female FKP | Male FKP |
|---|---|---|
| Financially illiterate FKP (dummy) | −0.0414** | −0.0796** |
|  | (0.02) | (0.04) |
| Impatience of the FKP | 0.0027 | 0.0064* |
|  | (0.00) | (0.00) |
| Age of the FKP (years) | 0.0050 | 0.0084* |
|  | (0.00) | (0.00) |
| Age$^2$ of the FKP | −0.0000 | −0.0001 |
|  | (0.00) | (0.00) |
| Married FKP (dummy) | −0.1001*** | −0.0083 |
|  | (0.04) | (0.04) |
| Divorced or widowed FKP (dummy) | −0.0760** | −0.0652 |
|  | (0.04) | (0.04) |
| Risk-averse household (dummy) | −0.1191*** | −0.2583*** |
|  | (0.03) | (0.03) |
| Financial advice (dummy) | 0.1536*** | 0.1209*** |
|  | (0.03) | (0.03) |
| Household income (€ 1,000) | 0.0475*** | 0.0514*** |
|  | (0.01) | (0.01) |
| Household net wealth (€ 10,000) | 0.0016*** | 0.0005 |
|  | (0.00) | (0.00) |
| Children in the household (dummy) | 0.0085 | 0.0313 |
|  | (0.03) | (0.04) |
| Constant | −0.0238 | −0.0369 |
| N | 1903 | 2550 |
| Adj. $R^2$ | 0.2394 | 0.2759 |

*Note:* This table shows OLS regression results for all households by the FKP's gender. ***, ** and * denote the statistical significance at the 1, 5 and 10% levels. Robust standard errors are reported in parentheses. Regression results for models with multiple dummy variables for the number of correctly answered financial literacy questions and the degree of risk aversion based on the questions in box 1 and box 2 are shown in table A.7 in the appendix. *Source:* 2014 Deutsche Bundesbank PHF, own calculations.

Table 13: Oaxaca–Blinder decomposition: determinants of the gap in capital market participation by gender, all households

|  | Explained component | | Unexplained component | |
|---|---|---|---|---|
|  | Effect | % of raw differential | Effect | % of raw differential |
| **FKP characteristics** | | | | |
| Financially illiterate FKP (dummy) | 0.0037** | 4.74 | −0.0045 | −5.66 |
|  | (0.00) | | (0.01) | |
| Impatience of the FKP | 0.0000 | 0.00 | 0.0144 | 18.29 |
|  | (0.00) | | (0.03) | |
| Age of the FKP (years) | −0.0044 | −5.63 | 0.1440 | 183.01 |
|  | (0.01) | | (0.33) | |
| Age$^2$ of the FKP | 0.0041 | 5.20 | −0.0690 | −87.63 |
|  | (0.00) | | (0.17) | |
| Married FKP (dummy) | −0.0046* | −5.86 | 0.0471* | 59.92 |
|  | (0.00) | | (0.03) | |
| Divorced or widowed FKP (dummy) | 0.0090** | 12.62 | 0.0047 | 6.01 |
|  | (0.00) | | (0.02) | |
|  | | | | |
| **Household characteristics** | | | | |
| Risk-averse household (dummy) | 0.0242*** | 30.81 | −0.1031*** | −130.96 |
|  | (0.00) | | (0.03) | |
| Financial advice (dummy) | −0.0005 | −0.58 | −0.0072 | −9.16 |
|  | (0.00) | | (0.01) | |
| Household income (€ 1,000) | 0.0168*** | 21.34 | 0.0062 | 7.82 |
|  | (0.00) | | (0.03) | |
| Household net wealth (€ 10,000) | 0.0050** | 6.34 | −0.0206** | −26.23 |
|  | (0.00) | | (0.01) | |
| Children in the household (dummy) | −0.0016 | −2.02 | 0.0057 | 7.21 |
|  | (0.00) | | (0.01) | |
| Constant | | | 0.0082 | 10.36 |
|  | | | | |
| **Of raw differential (0.0787***)** | 0.0527*** | 67.03 | 0.0259 | 32.97 |
| N | 4453 | | | |

*Note:* This table shows Oaxaca–Blinder decomposition results for all households by the FKP's gender using the first implicate only, where results using the other implicates yield identical results. The composition is expressed from the viewpoint of female FKPs. ***, ** and * denote the statistical significance at the 1, 5 and 10% levels. Robust standard errors are reported in parentheses. We restrict this analysis to the binary risk aversion and financial illiteracy variable. *Source:* 2014 Deutsche Bundesbank PHF, own calculations.

with risk aversion of female FKPs' households is an important determinant, explaining 30.81 percent of the gender gap in capital market participation and about half of the explained component. Had female FKPs in our sample the same average level of risk aversion as men but women's typical behaviour, ceteris paribus, their predicted participation rate would be higher by 2.42 percentage points. Moreover, lower household income, net wealth and financial literacy compared to their male counterparts disfavour women as well, since they would be more likely to participate in the capital market if the means of these variables were identical to men's. Another factor contributing to the gap is women's higher propensity of being widowed.

The unexplained component of the gap measures the change in the predicted capital market participation if a typical, female FKP had a typical, male FKP's coefficients, i.e., if she *behaved* like a man without having his endowments, though. Any significant coefficient in the second-to-last column of table 13 thus indicates that the relationship between the respective variable and capital market participation is different for men and women. In fact, we find that if a woman had a man's risk aversion coefficient, her predicted capital market participation would be *reduced* by 10.31 percent. Although this is in line with our finding of different coefficients on risk aversion in table 12, it is still surprising as it implies that men are actually more sensitive to risk aversion than women and that extremely risk-averse men may shy away from risky assets to a greater extent than similarly risk-averse women. Unfortunately, the data do not permit greater analysis of risk aversion within the answer category referring to the highest household risk aversion. Further, married men seem to behave differently relating to capital market participation than married women. Lastly, household net wealth is another important factor. It appears that men use additions to their household net wealth differently than women. Had our average female FKP an average male FKP's wealth coefficient, then she would be less likely to own risky assets. This could be because wealthy men may own risky assets whereas when they become richer, they may substitute them with other investments .

## 5 Conclusion

To shed further light on the gender investment gap, we analysed if capital market participation as well as investment portfolios differ between women and men in Germany. To do, we make use of a handful of behavioural variables that are available in the 2014 Deutsche Bundesbank PHF dataset and which have not yet been used in the literature to study this research question for the case of Germany. This is surprising as these variables—most notably risk aversion—are of paramount importance for the decision whether or not to participate in the capital market and invest in risky assets.

Our results confirm the common view that women are not very active in the capital market. However, their limited capital market participation can only be explained to a small extent by their gender and much more by their relatively low risk tolerance. In fact, when we look at participation rates while controlling for risk aversion, the gap shrinks drastically, and when we additionally control for a range of factors at the FKP

and household level, there is a 2.6 percent gap left. That is, unlike e.g., Haliassos and Bertaut (1995), Almenberg and Dreber (2015) or Dimmock et al. (2016), we find a persistent but small gender gap in our full models. The effect of impatience on whether and how households invest in the capital market is negligible, whereas we document larger discounts in capital market participation for financially illiterate households and premiums for households seeking investment advice. Most of the gap in participation rates can be explained by factors that are on average more unfavourable for women.

Once households have decided to own risky assets, we find no differences in the share of risky assets held by women or men. The coefficient on risk aversion in the sample of singles and single parents is insignificant, which is consistent with the above explanation of risk attitude in different household types.

Moreover, we document that women not only are less often involved in the capital market, but when they are, they choose their risky assets differently than men. While men more often invest in individual, listed shares and certificates, their female counterparts prefer to diversify by investing higher fractions of their wealth in fund shares and lower fractions in listed shares and certificates. This rather conservative investment outcome echoes their risk attitude. However, single women and single mothers own significantly lower shares of different risky assets than comparable men, even when we control for personal and household characteristics.

In a nutshell, men and women with similar risk attitudes and other characteristics are both likely to shy away from holding risky assets, irrespective of their gender. This implies that it could well be that a relatively risk-loving woman holds more risky assets than a relatively risk-averse man. We therefore conclude that the investment gap found between men and women is not mostly gender-induced but rather risk-aversion-induced.

This paper also raises interesting questions for future research. One pertains to the FKP's risk aversion in different household types. Our regressions of risk aversion on gender and other factors reveal that a single female FKP's risk aversion appears to make its way through the joint financial decision-making process even if she becomes the FKP in a multi-person household. Future research into this could therefore attempt to lay open the role of joint financial decision making in shaping someone's risk attitude. Also, our analyses reveal that the strength of the FKPs' reaction towards their own risk aversion differs by the investor's gender. That is, risk-averse men are much less likely to hold risky assets than risk-averse women even though the average man has a higher probability to participate in the capital market than the average woman. Investigating this phenomenon in greater detail was beyond the scope if this paper.

Our paper also has an important policy dimension. Women have a higher average life expectancy than men and therefore, have to save more over their lifetime to sustain their desired consumption levels during retirement. Our results show that there is a small but persistent gender gap in capital market participation even if we compare women to otherwise identical men. If women systematically shy away from risky assets, they may forgo attractive investment possibilities that would in fact be commensurate with their risk attitude and that would otherwise help them build up wealth for retirement.

# Appendix

**Box 1: Question about risk aversion for multi-person households**

| |
|---|
| If savings or investment decisions are made in your household: Which of the statements on the following list best describes the attitude toward risk? Try to characterize the household as a whole, even if it is not always easy. <br><br> 1. *We take significant risks and want to generate high returns.* <br><br> 2. *We take above-average risks and want to generate above-average returns.* <br><br> 3. *We take average risks and want to generate average returns.* <br><br> 4. *We are not ready to take any financial risks.* <br><br> 5. *No uniform classification is possible for the household as a whole.* |

**Box 2: Question about risk aversion for single households and households with inconclusive risk aversion, i.e. the FKP answers "No uniform classification is possible for the household as a whole." in box 1**

| |
|---|
| If you personally make the savings or investment decisions: Which of the statements on the following list best describes your personal attitude toward risk? <br><br> 1. *I take significant risks and want to generate high returns.* <br><br> 2. *I take above-average risks and want to generate above-average returns.* <br><br> 3. *I take average risks and want to generate average returns.* <br><br> 4. *I am not ready to take any financial risks.* |

Figure A.1: Overview about different household types
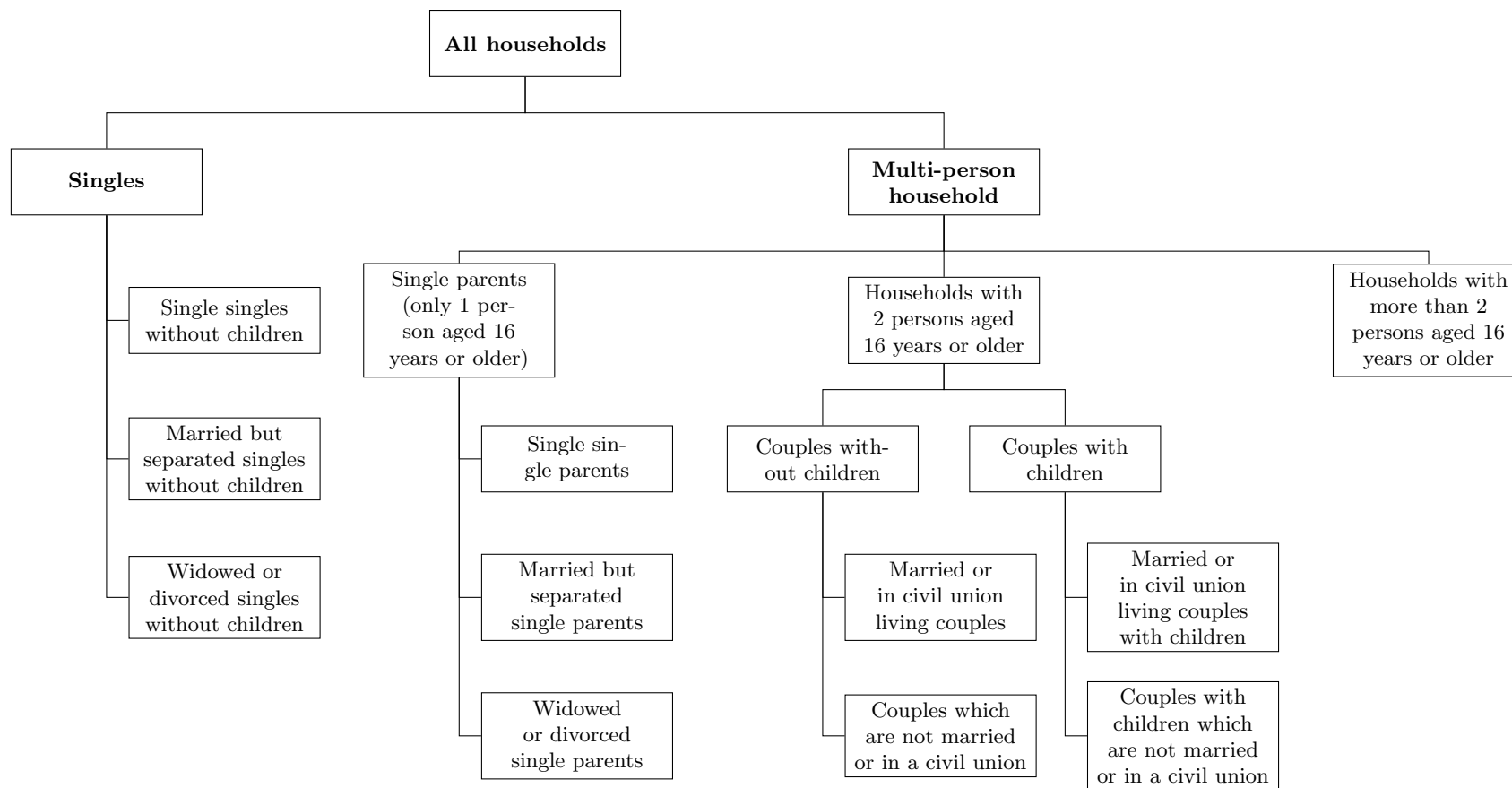
Figure A.2: Household risk aversion by gender and household type

(a) All households



(b) Singles and single parents



(c) Households participating in the capital market
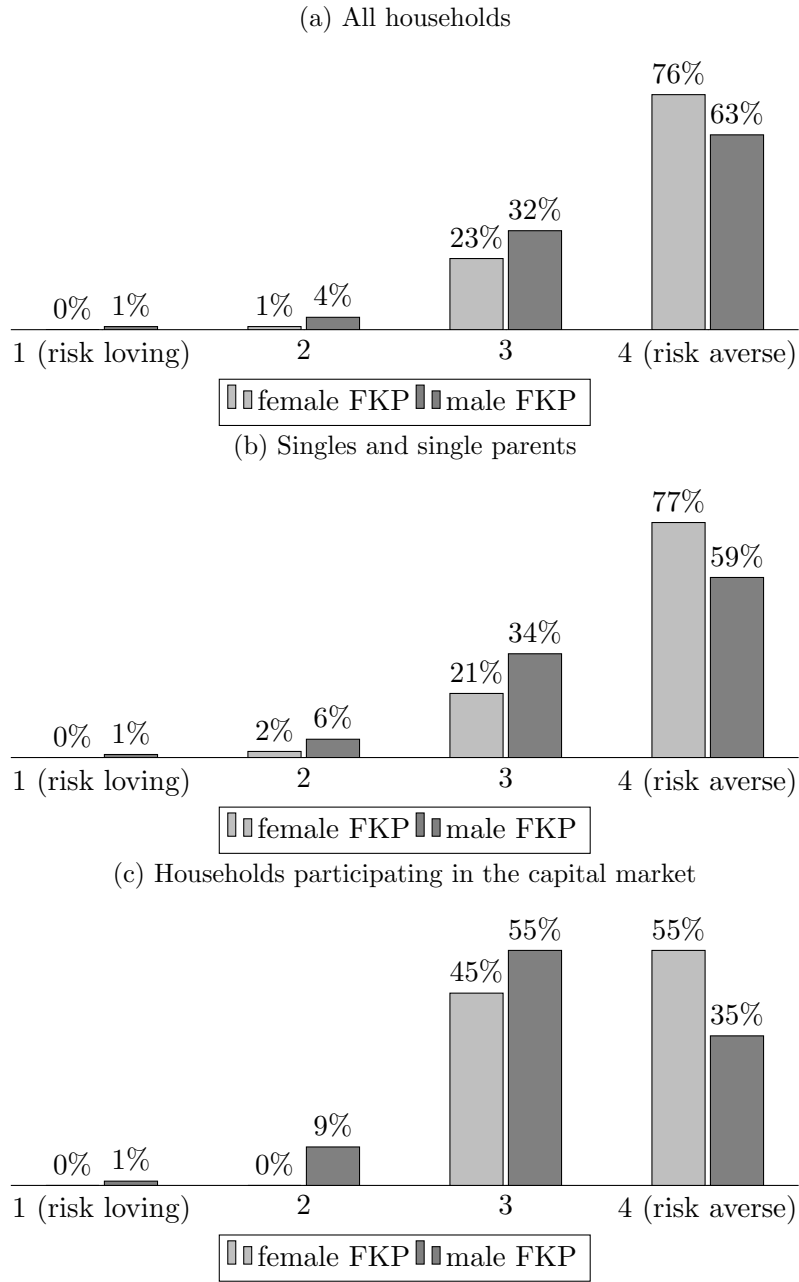


This figure shows the distribution of risk-aversion levels by gender and household type. Risk aversion ranges from 1 = "We/I take significant risks and want to generate high returns" to 4 = "We are/I am not ready to take any financial risk". *Source:* 2014 Deutsche Bundesbank PHF, own calculations.

Figure A.3: Female and male FKPs' financial literacy

(a) Compound-interest effect
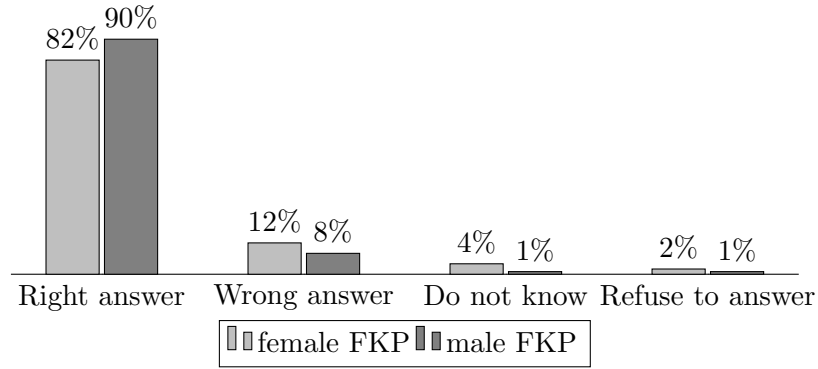
(b) Inflation
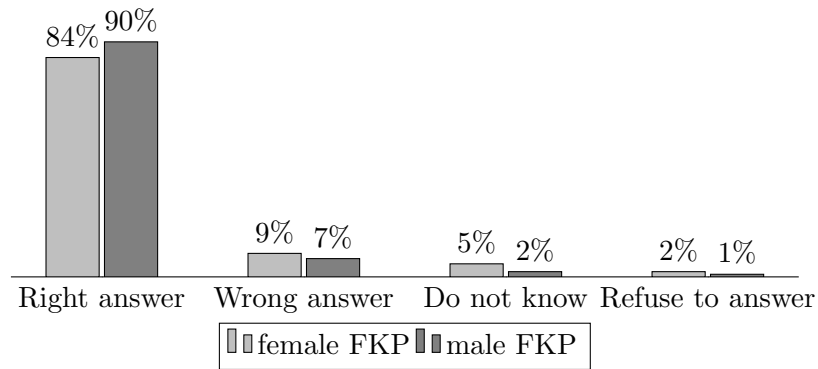
(c) Diversification
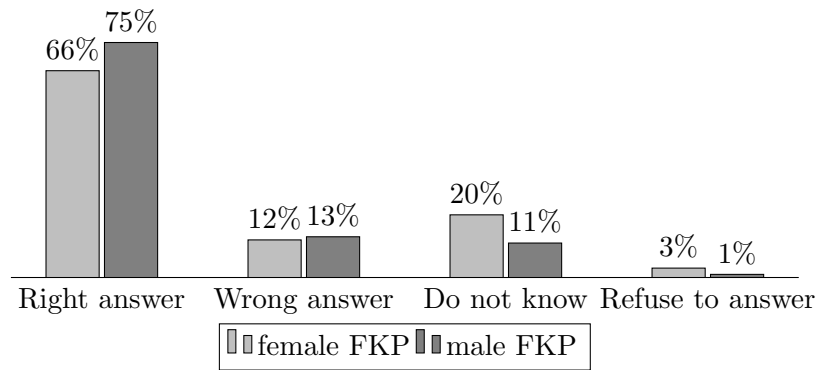
This figure shows the FKPs' answers to the *Big Three* questions which were used in the literature in order to measure financial literacy (e.g. Bucher-Koenen et al., 2017). They cover knowledge about the compound-interest effect, inflation and diversification. *Source:* 2014 Deutsche Bundesbank PHF, own calculations.

Table A.1: Determinants of capital market participation for different levels of risk aversion and financial literacy

| | All households | | | | Singles and single parents | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Female FKP (dummy) | −0.0795*** | −0.0485*** | −0.0213 | −0.0212 | −0.0121 | 0.0188 | 0.0443 | 0.0407 |
| | (0.02) | (0.02) | (0.02) | (0.01) | (0.03) | (0.03) | (0.03) | (0.03) |
| One literacy question correct (dummy) | | 0.0324 | 0.0190 | 0.0048 | | 0.0858* | 0.0671 | 0.0487 |
| | | (0.04) | (0.03) | (0.03) | | (0.05) | (0.05) | (0.05) |
| Two literacy questions correct (dummy) | | 0.0746*** | 0.0586** | 0.0336 | | 0.1114*** | 0.0860*** | 0.0666* |
| | | (0.03) | (0.02) | (0.02) | | (0.03) | (0.03) | (0.04) |
| Three literacy questions correct (dummy) | | 0.1659*** | 0.1191*** | 0.0720*** | | 0.1772*** | 0.1334*** | 0.0916*** |
| | | (0.03) | (0.02) | (0.02) | | (0.04) | (0.03) | (0.03) |
| Impatience of the FKP | | 0.0082*** | 0.0065*** | 0.0041* | | 0.0082 | 0.0056 | 0.0029 |
| | | (0.00) | (0.00) | (0.00) | | (0.01) | (0.00) | (0.00) |
| Age of the FKP (years) | | 0.0137*** | 0.0127*** | 0.0069** | | 0.0147*** | 0.0137*** | 0.0074 |
| | | (0.00) | (0.00) | (0.00) | | (0.00) | (0.00) | (0.00) |
| Age$^2$ of the FKP | | −0.0001*** | −0.0001*** | −0.0000 | | −0.0001*** | −0.0001** | −0.0000 |
| | | (0.00) | (0.00) | (0.00) | | (0.00) | (0.00) | (0.00) |
| Married FKP (dummy) | | 0.0031 | 0.0314 | −0.0496* | | 0.0044 | 0.0275 | 0.0028 |
| | | (0.02) | (0.02) | (0.03) | | (0.09) | (0.08) | (0.08) |
| Divorced or widowed FKP (dummy) | | −0.0846*** | −0.0548* | −0.0611** | | −0.1092** | −0.0903* | −0.0830* |
| | | (0.03) | (0.03) | (0.03) | | (0.04) | (0.05) | (0.05) |
| Household's risk aversion = 1 (dummy) | | | 0.1490 | 0.1296 | | | 0.5625 | 0.5812* |
| | | | (0.15) | (0.16) | | | (0.34) | (0.32) |
| Household's risk aversion = 2 (dummy) | | | 0.3245*** | 0.2897*** | | | 0.2419*** | 0.2160** |
| | | | (0.06) | (0.06) | | | (0.09) | (0.09) |
| Household's risk aversion = 3 (dummy) | | | 0.2601*** | 0.1876*** | | | 0.2010*** | 0.1502*** |
| | | | (0.02) | (0.02) | | | (0.04) | (0.04) |
| Financial advice (dummy) | | | | 0.1396*** | | | | 0.1516*** |
| | | | | (0.02) | | | | (0.04) |
| Household income (€ 1,000) | | | | 0.0492*** | | | | 0.0778*** |
| | | | | (0.01) | | | | (0.02) |
| Household net wealth (€ 10,000) | | | | 0.0009*** | | | | 0.0005 |
| | | | | (0.00) | | | | (0.00) |
| Children in the household (dummy) | | | | 0.0208 | | | | 0.0645 |
| | | | | (0.02) | | | | (0.06) |
| Constant | 0.2582*** | −0.2793*** | −0.3524*** | −0.2778*** | 0.1909*** | −0.3728*** | −0.4152*** | −0.3568*** |
| N | 4461 | 4453 | 4453 | 4453 | 1042 | 1039 | 1039 | 1039 |
| Adj. $R^2$ | 0.0153 | 0.0734 | 0.2032 | 0.2745 | 0.0036 | 0.0540 | 0.1510 | 0.2596 |

*Note:* This table shows OLS regression results for different specifications of the capital market participation model for all available households and only singles and single parents. ***, ** and * denote the statistical significance at the 1, 5 and 10% levels. Robust standard errors are reported in parentheses. Risk-aversion dummies range from low risk aversion (1 = "We/I take significant risks and want to generate high returns") to high risk aversion (4 = "We are/I am not ready to take any financial risk"). *Source:* 2014 Deutsche Bundesbank PHF, own calculations.

Table A.2: Determinants of the risky share in the financial assets for different levels of risk aversion and financial literacy

| | All households | | | | Singles and single parents | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Female FKP (dummy) | −0.0021 | −0.0059 | 0.0060 | 0.0053 | 0.0114 | 0.0077 | 0.0320 | 0.0293 |
| | (0.02) | (0.02) | (0.02) | (0.02) | (0.03) | (0.03) | (0.04) | (0.04) |
| One literacy question correct (dummy) | | 0.0831 | 0.0949* | 0.0920 | | 0.1863 | 0.1870 | 0.2129* |
| | | (0.06) | (0.06) | (0.06) | | (0.11) | (0.11) | (0.11) |
| Two literacy questions correct (dummy) | | 0.0449 | 0.0518 | 0.0479 | | 0.1289 | 0.1329 | 0.1508 |
| | | (0.06) | (0.05) | (0.05) | | (0.10) | (0.10) | (0.10) |
| Three literacy questions correct (dummy) | | 0.0774 | 0.0781 | 0.0769 | | 0.1591 | 0.1578 | 0.1747* |
| | | (0.06) | (0.05) | (0.05) | | (0.10) | (0.10) | (0.10) |
| Impatience of the FKP | | −0.0033 | −0.0043 | −0.0041 | | −0.0014 | −0.0050 | −0.0042 |
| | | (0.00) | (0.00) | (0.00) | | (0.01) | (0.01) | (0.01) |
| Age of the FKP (years) | | −0.0034 | −0.0037 | −0.0032 | | −0.0032 | −0.0036 | −0.0022 |
| | | (0.00) | (0.00) | (0.00) | | (0.01) | (0.01) | (0.01) |
| $Age^2$ of the FKP | | 0.0001*** | 0.0001** | 0.0001* | | 0.0000 | 0.0001 | 0.0000 |
| | | (0.00) | (0.00) | (0.00) | | (0.00) | (0.00) | (0.00) |
| Married FKP (dummy) | | −0.0347 | −0.0281 | −0.0240 | | −0.0675 | −0.0741 | −0.1024 |
| | | (0.02) | (0.02) | (0.02) | | (0.05) | (0.05) | (0.06) |
| Divorced or widowed FKP (dummy) | | −0.0142 | −0.0110 | −0.0112 | | −0.0277 | −0.0287 | −0.0318 |
| | | (0.03) | (0.03) | (0.04) | | (0.04) | (0.04) | (0.04) |
| Household's risk aversion = 1 (dummy) | | | 0.1875*** | 0.1865*** | | | 0.2191*** | 0.2162** |
| | | | (0.05) | (0.05) | | | (0.07) | (0.09) |
| Household's risk aversion = 2 (dummy) | | | 0.0794** | 0.0818** | | | 0.1114* | 0.1179* |
| | | | (0.03) | (0.03) | | | (0.07) | (0.07) |
| Household's risk aversion = 3 (dummy) | | | 0.0364* | 0.0390** | | | 0.0317 | 0.0329 |
| | | | (0.02) | (0.02) | | | (0.04) | (0.04) |
| Financial advice (dummy) | | | | −0.0066 | | | | −0.0254 |
| | | | | (0.01) | | | | (0.03) |
| Household income (€ 1,000) | | | | −0.0061* | | | | −0.0100 |
| | | | | (0.00) | | | | (0.01) |
| Household net wealth (€ 10,000) | | | | 0.0001 | | | | 0.0006* |
| | | | | (0.00) | | | | (0.00) |
| Children in the household (dummy) | | | | 0.0071 | | | | 0.0368 |
| | | | | (0.02) | | | | (0.08) |
| Constant | 0.2345*** | 0.2206** | 0.1930** | 0.1974** | 0.2518*** | 0.1311 | 0.1131 | 0.0767 |
| N | 1549 | 1547 | 1547 | 1547 | 251 | 251 | 251 | 251 |
| Adj. $R^2$ | 0.0280 | 0.0752 | 0.1046 | 0.1054 | 0.0001 | 0.0634 | 0.0912 | 0.0816 |

*Note:* This table shows regression results for different specifications of the OLS model for the risky share in the financial assets for all available households and only consider singles and single parents, given capital market participation. ***, ** and * denote the statistical significance at the 1, 5 and 10% levels. Robust standard errors are reported in parentheses. Risk-aversion dummies range from low risk aversion (1 = *We/I take significant risks and want to generate high returns*) to high risk aversion (4 = *We are/I am not ready to take any financial risk*). *Source:* 2014 Deutsche Bundesbank PHF, own calculations.

Table A.3: Determinants of participation in listed shares and certificates for different levels of risk aversion and financial literacy

| | Listed shares | | Certificates | |
|---|---|---|---|---|
| | All households | Singles and single parents | All households | Singles and single parents |
| Female FKP (dummy) | −0.0781* | −0.1318 | −0.0430** | −0.1337*** |
| | (0.04) | (0.10) | (0.02) | (0.05) |
| One literacy question correct (dummy) | 0.1513 | 0.3032 | 0.0242 | −0.0641 |
| | (0.24) | (0.33) | (0.04) | (0.10) |
| Two literacy questions correct (dummy) | 0.1432 | 0.3739 | 0.1028* | 0.0400 |
| | (0.23) | (0.32) | (0.06) | (0.11) |
| Three literacy question correct (dummy) | 0.1401 | 0.2014 | 0.0413 | −0.0851 |
| | (0.23) | (0.30) | (0.04) | (0.10) |
| Impatience of the FKP | 0.0132 | 0.0072 | 0.0089** | 0.0209** |
| | (0.01) | (0.02) | (0.00) | (0.01) |
| Age of the FKP (years) | 0.0088 | −0.0031 | −0.0021 | −0.0095 |
| | (0.01) | (0.02) | (0.00) | (0.01) |
| Age$^2$ of the FKP | −0.0000 | 0.0000 | 0.0000 | 0.0001 |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Married FKP (dummy) | −0.0815 | −0.0538 | −0.0325 | 0.0359 |
| | (0.06) | (0.27) | (0.03) | (0.12) |
| Divorced or widowed FKP (dummy) | −0.0839 | −0.0129 | 0.0026 | 0.0575 |
| | (0.08) | (0.11) | (0.04) | (0.05) |
| Household's risk aversion = 1 (dummy) | 0.2671 | 0.1676 | 0.0320 | −0.0596 |
| | (0.24) | (0.38) | (0.18) | (0.35) |
| Household's risk aversion = 2 (dummy) | 0.2152** | 0.3806** | 0.2499*** | 0.3142** |
| | (0.09) | (0.16) | (0.07) | (0.14) |
| Household's risk aversion = 3 (dummy) | 0.1187*** | 0.0899 | 0.0470*** | 0.0544 |
| | (0.04) | (0.11) | (0.02) | (0.05) |
| Financial advice (dummy) | −0.0521 | −0.0815 | 0.0472** | 0.0882* |
| | (0.04) | (0.09) | (0.02) | (0.05) |
| Household income (€ 1,000) | 0.0286** | 0.0284 | −0.0001 | −0.0403* |
| | (0.01) | (0.03) | (0.01) | (0.02) |
| Household net wealth (€ 10,000) | 0.0007** | 0.0005 | 0.0002 | 0.0008 |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Children in the household (dummy) | −0.0641 | −0.2801* | −0.0356 | −0.0620 |
| | (0.06) | (0.16) | (0.02) | (0.06) |
| Constant | −0.1945 | 0.1507 | 0.0058 | 0.3651 |
| N | 1547 | 251 | 1547 | 251 |
| Adj. $R^2$ | 0.1049 | 0.1150 | 0.0629 | 0.0697 |

*Note:* This table shows OLS regression results for listed shares and certificates for all available households and only singles and single parents, given capital market participation. ***, ** and * denote the statistical significance at the 1, 5 and 10% levels. Robust standard errors are reported in parentheses. Risk-aversion dummies range from low risk aversion (1 = *We/I take significant risks and want to generate high returns*) to high risk aversion (4 = *We are/I am not ready to take any financial risk*). *Source:* 2014 Deutsche Bundesbank PHF, own calculations.

Table A.4: Determinants of the share of different categories of capital market assets in the capital market portfolio for different levels of risk aversion and financial literacy

| | Fund shares | | Listed shares | | Fixed income securities | | Certificates | |
|---|---|---|---|---|---|---|---|---|
| | All households | Singles and single parents | All households | Singles and single parents | All households | Singles and single parents | All households | Singles and single parents |
| Female FKP (dummy) | 0.0654* | −0.0573* | 0.0082 | −0.0164* | 0.1183 | −0.0765 | 0.0112 | −0.0530** |
| | (0.04) | (0.03) | (0.03) | (0.01) | (0.09) | (0.08) | (0.06) | (0.03) |
| One literacy question correct (dummy) | 0.2421 | 0.2024 | −0.4526* | 0.0080 | 0.0545 | 0.2849 | −0.3135 | −0.0258 |
| | (0.22) | (0.16) | (0.23) | (0.01) | (0.38) | (0.24) | (0.33) | (0.02) |
| Two literacy questions correct (dummy) | 0.2657 | 0.1133 | −0.4118* | 0.0328** | −0.0549 | 0.2798 | −0.2523 | 0.0273 |
| | (0.21) | (0.14) | (0.23) | (0.02) | (0.37) | (0.27) | (0.35) | (0.03) |
| Three literacy questions correct (dummy) | 0.2640 | 0.1214 | −0.3982* | 0.0128 | 0.1404 | 0.1764 | −0.2886 | −0.0283 |
| | (0.20) | (0.14) | (0.23) | (0.01) | (0.35) | (0.24) | (0.33) | (0.02) |
| Impatience of the FKP | −0.0018 | 0.0048 | −0.0046 | 0.0016 | 0.0134 | −0.0014 | −0.0151 | 0.0031 |
| | (0.01) | (0.01) | (0.00) | (0.00) | (0.02) | (0.02) | (0.01) | (0.00) |
| Age of the FKP (years) | −0.0031 | 0.0024 | 0.0028 | −0.0021 | 0.0048 | −0.0079 | 0.0090 | −0.0058 |
| | (0.01) | (0.01) | (0.01) | (0.00) | (0.01) | (0.01) | (0.01) | (0.00) |
| $Age^2$ of the FKP | −0.0000 | 0.0000 | −0.0000 | 0.0000 | −0.0001 | 0.0001 | −0.0001 | 0.0000 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Married FKP (dummy) | 0.0695 | −0.0430 | −0.0206 | −0.0058 | −0.2290 | −0.0281 | 0.2524 | 0.0046 |
| | (0.04) | (0.04) | (0.03) | (0.01) | (0.21) | (0.15) | (0.23) | (0.02) |
| Divorced or widowed FKP (dummy) | 0.0474 | −0.0368 | −0.0250 | 0.0144 | −0.0504 | −0.0510 | 0.0655 | 0.0359* |
| | (0.06) | (0.06) | (0.05) | (0.02) | (0.09) | (0.09) | (0.07) | (0.02) |
| Household's risk aversion = 2 (dummy) | 0.2393 | −0.3329 | −0.0017 | 0.0675* | −0.1550 | 0.1564 | −0.0937 | 0.0923 |
| | (0.27) | (0.25) | (0.06) | (0.04) | (0.15) | (0.15) | (0.07) | (0.09) |
| Household's risk aversion = 3 (dummy) | 0.2956 | −0.3573 | 0.0335 | 0.0003 | 0.0163 | 0.0565 | −0.0531 | −0.0197 |
| | (0.26) | (0.25) | (0.06) | (0.01) | (0.09) | (0.09) | (0.07) | (0.02) |
| Household's risk aversion = 4 (dummy) | 0.3171 | −0.3920 | 0.0471 | | | | | |
| | (0.25) | (0.24) | (0.06) | | | | | |
| Financial advice (dummy) | 0.0491 | −0.1023*** | 0.0339 | 0.0192** | 0.0450 | −0.0798 | −0.0039 | 0.0386* |
| | (0.03) | (0.03) | (0.02) | (0.01) | (0.08) | (0.07) | (0.05) | (0.02) |
| Household income (€ 1,000) | −0.0241** | 0.0238** | −0.0020 | 0.0023 | −0.0354 | 0.0411 | −0.0026 | −0.0031 |
| | (0.01) | (0.01) | (0.00) | (0.00) | (0.03) | (0.03) | (0.02) | (0.01) |
| Household net wealth (€ 10,000) | −0.0005 | 0.0004 | 0.0001 | −0.0000 | −0.0001 | −0.0003 | 0.0004 | −0.0001 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Children in the household (dummy) | 0.0756 | −0.0271 | −0.0370* | −0.0115 | 0.4389*** | −0.1638 | −0.2379** | −0.0372** |
| | (0.05) | (0.05) | (0.02) | (0.01) | (0.13) | (0.10) | (0.11) | (0.02) |
| Constant | 0.2873 | 0.3266 | 0.3684 | 0.0456 | 0.3520 | 0.1227 | 0.3075 | 0.2179* |
| N | 1536 | 1536 | 1536 | 1536 | 248 | 248 | 248 | 248 |
| Adj. $R^2$ | 0.0793 | 0.0552 | 0.0381 | 0.0111 | 0.0545 | 0.0338 | 0.0000 | 0.0080 |

*Note:* This table shows OLS regression results for different independent variables for all available households and only singles and single parents participating in the capital market. ***, ** and * denote the statistical significance at the 1, 5 and 10% levels. Robust standard errors are reported in parentheses. Risk-aversion dummies range from low risk aversion (1 = *We/I take significant risks and want to generate high returns*) to high risk aversion (4 = *We are/I am not ready to take any financial risk*). *Source:* 2014 Deutsche Bundesbank PHF, own calculations.

Table A.5: Determinants of capital market participation for households that obtain financial advice from their bank and those that don't for different levels of risk aversion and financial literacy

| | All households | | Singles and single parents | |
|---|---|---|---|---|
| | w/o FA | with FA | w/o FA | with FA |
| Female FKP (dummy) | −0.0275* | −0.0014 | 0.0248 | 0.1075 |
| | (0.02) | (0.04) | (0.03) | (0.09) |
| One literacy question correct (dummy) | 0.0352 | −0.1619 | 0.0590 | 0.2757 |
| | (0.03) | (0.20) | (0.05) | (0.23) |
| Two literacy questions correct (dummy) | 0.0419* | −0.0823 | 0.0423 | 0.3393* |
| | (0.02) | (0.18) | (0.04) | (0.20) |
| Three literacy questions correct (dummy) | 0.0741*** | −0.0208 | 0.0745** | 0.3536* |
| | (0.02) | (0.17) | (0.03) | (0.20) |
| Impatience of the FKP | 0.0025 | 0.0066 | −0.0036 | 0.0186 |
| | (0.00) | (0.01) | (0.00) | (0.01) |
| Age of the FKP (years) | 0.0035 | 0.0186** | −0.0003 | 0.0292** |
| | (0.00) | (0.01) | (0.01) | (0.01) |
| Age$^2$ of the FKP | −0.0000 | −0.0001 | 0.0000 | −0.0002** |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Married FKP (dummy) | −0.0398 | −0.0921 | −0.0103 | 0.1429 |
| | (0.03) | (0.07) | (0.08) | (0.36) |
| Divorced or widowed FKP (dummy) | −0.0358 | −0.1499* | −0.0459 | −0.2086 |
| | (0.03) | (0.09) | (0.04) | (0.13) |
| Household's risk aversion = 1 (dummy) | 0.2131 | −0.1509 | 0.6431* | 0.1613 |
| | (0.18) | (0.34) | (0.32) | (0.62) |
| Household's risk aversion = 2 (dummy) | 0.2714*** | 0.3489** | 0.1980** | 0.2951 |
| | (0.06) | (0.15) | (0.09) | (0.27) |
| Household's risk aversion = 3 (dummy) | 0.2029*** | 0.1534*** | 0.1674*** | 0.1007 |
| | (0.03) | (0.05) | (0.05) | (0.09) |
| Household income (€ 1,000) | 0.0536*** | 0.0365** | 0.1004*** | 0.0216 |
| | (0.01) | (0.02) | (0.02) | (0.04) |
| Household net wealth (€ 10,000) | 0.0009*** | 0.0009** | 0.0002 | 0.0012 |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Children in the household (dummy) | 0.0368 | −0.0129 | 0.1035* | −0.2379 |
| | (0.03) | (0.06) | (0.06) | (0.20) |
| Constant | −0.1908** | −0.3497 | −0.1477 | −1.0114*** |
| N | 3224 | 1229 | 797 | 242 |
| Adj. $R^2$ | 0.2616 | 0.1893 | 0.2103 | 0.1811 |

*Note:* This table shows OLS regression results for capital market participation for all available households and only singles and single parents. ***, ** and * denote the statistical significance at the 1, 5 and 10% levels. Robust standard errors are reported in parentheses. Risk-aversion dummies range from low risk aversion (1 = *We/I take significant risks and want to generate high returns*) to high risk aversion (4 = *We are/I am not ready to take any financial risk*). *Source:* 2014 Deutsche Bundesbank PHF, own calculations.

Table A.6: Determinants of the financial advice dummy for different levels of risk aversion and financial literacy

| | All households | Singles and single parents |
|---|---|---|
| Female FKP (dummy) | 0.0343* | 0.0584** |
| | (0.02) | (0.03) |
| One literacy question correct (dummy) | 0.0905** | 0.1192** |
| | (0.04) | (0.06) |
| Two literacy questions correct (dummy) | 0.1026** | 0.0859 |
| | (0.04) | (0.06) |
| Three literacy questions correct (dummy) | 0.0939** | 0.0816 |
| | (0.04) | (0.06) |
| Impatience of the FKP | 0.0037 | 0.0035 |
| | (0.00) | (0.01) |
| Age of the FKP (years) | 0.0049 | 0.0043 |
| | (0.00) | (0.01) |
| $\text{Age}^2$ of the FKP | −0.0000 | −0.0000 |
| | (0.00) | (0.00) |
| Married FKP (dummy) | 0.0030 | −0.0829 |
| | (0.03) | (0.07) |
| Divorced or widowed FKP (dummy) | −0.0314 | −0.0355 |
| | (0.03) | (0.04) |
| Household's risk aversion = 1 (dummy) | −0.0485 | −0.0863 |
| | (0.14) | (0.17) |
| Household's risk aversion = 2 (dummy) | 0.0104 | −0.0175 |
| | (0.05) | (0.06) |
| Household's risk aversion = 3 (dummy) | 0.1186*** | 0.0994*** |
| | (0.02) | (0.04) |
| Household income (€1,000) | 0.0149** | 0.0423*** |
| | (0.01) | (0.02) |
| Household net wealth (€10,000) | 0.0007*** | 0.0012* |
| | (0.00) | (0.00) |
| Children in the household (dummy) | −0.0191 | −0.0818 |
| | (0.02) | (0.06) |
| Constant | −0.1096 | −0.0908 |
| N | 4453 | 1039 |
| Adj. $R^2$ | 0.0454 | 0.0666 |

*Note:* This table shows OLS regression results for the probability of obtaining financial advice from a bank for all households or only singles and single parents. ***, ** and * denote the statistical significance at the 1, 5 and 10% levels. Robust standard errors are reported in parentheses. Risk-aversion dummies range from low risk aversion (1 = *We/I take significant risks and want to generate high returns*) to high risk aversion (4 = *We are/I am not ready to take any financial risk*). *Source:* 2014 Deutsche Bundesbank PHF, own calculations

Table A.7: Determinants of capital market participation by gender for all households for different levels of risk aversion and financial literacy

|  | Female FKP | Male FKP |
|---|---|---|
| One literacy question correct (dummy) | 0.0392 | −0.0120 |
|  | (0.04) | (0.06) |
| Two literacy questions correct (dummy) | 0.0440* | 0.0400 |
|  | (0.03) | (0.06) |
| Three literacy questions correct (dummy) | 0.0748*** | 0.0794 |
|  | (0.02) | (0.05) |
| Impatience of the FKP | 0.0019 | 0.0060 |
|  | (0.00) | (0.00) |
| Age of the FKP (years) | 0.0050 | 0.0081* |
|  | (0.00) | (0.00) |
| Age$^2$ of the FKP | −0.0000 | −0.0001 |
|  | (0.00) | (0.00) |
| Married FKP (dummy) | −0.0920** | −0.0082 |
|  | (0.04) | (0.04) |
| Divorced or widowed FKP (dummy) | −0.0712* | −0.0691 |
|  | (0.04) | (0.04) |
| Household's risk aversion = 1 (dummy) | −0.0333 | 0.2791 |
|  | (0.16) | (0.29) |
| Household's risk aversion = 2 (dummy) | −0.0416 | 0.3927*** |
|  | (0.04) | (0.07) |
| Household's risk aversion = 3 (dummy) | 0.1297*** | 0.2384*** |
|  | (0.03) | (0.03) |
| Financial advice (dummy) | 0.1500*** | 0.1241*** |
|  | (0.03) | (0.03) |
| Household income (€ 1,000) | 0.0450*** | 0.0505*** |
|  | (0.01) | (0.01) |
| Household net wealth (€ 10,000) | 0.0016*** | 0.0005 |
|  | (0.00) | (0.00) |
| Children in the household (dummy) | 0.0093 | 0.0298 |
|  | (0.03) | (0.04) |
| Constant | −0.2039** | −0.3557*** |
| N | 1903 | 2550 |
| Adj. $R^2$ | 0.2418 | 0.2814 |

*Note:* This table shows OLS regression results for all households by the FKP's gender. ***, ** and * denote the statistical significance at the 1, 5 and 10% levels. Robust standard errors are reported in parentheses. Risk-aversion dummies range from low risk aversion (1 = *We/I take significant risks and want to generate high returns*) to high risk aversion (4 = *We are/I am not ready to take any financial risk*). *Source:* 2014 Deutsche Bundesbank PHF, own calculations.

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