

**Is the gender gap in finance a gap in familiarity?
The effect of a pink portfolio on investor behaviour§**

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PRELIMINARY DRAFT, DO NOT QUOTE

Abstract

We investigate whether lack of familiarity may contribute to an explanation of the gender gap in stock market participation and risk taking. We use ads in widely read women magazines to select companies that are most familiar to women and construct a “pink” portfolio. We ask members of the CentERpanel how they would allocate 100.000 euro of pension wealth. Half of respondents are given the choice between government bonds and a portfolio consisting of companies most traded at Amsterdam Exchanges, while the other half can choose between government bonds and our “pink” portfolio. We find that significantly more women than men choose not to respond after having seen the question and that respondents tend to allocate their hypothetical savings fifty-fifty over stocks and bonds. We find a pink portfolio effect among older women, and a significant of framing which is larger for women than for men. We also find that women who already own stocks allocate significantly more to the stock basket than women who do not, which may be interpreted as an effect of familiarity. We find no such effect among men. Our evidence does not indicate, however, that lack of familiarity with the companies most traded at the Amsterdam stock exchange explains the gender gap in portfolio choice.

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1. Introduction

Women participate less in the stock market than men and if, they do they take less risk. Usually, this gender gap in investing is explained by lower financial literacy and risk tolerance of women compared to men. In this paper we investigate another hypothesis, namely whether the gender gap in financial decision making can be explained by differences in familiarity with investment products most traded in the stock market.

Most policy debates on the gender gap in economics focus on the gap in employment and pay, which persists even across most developed countries, despite increased labor market participation by women (Boeri, Del Boca and Pissarides, 2005). The gender gap in the labor market results in itself in a pension gender gap, and the OECD has called for reducing the gender gap by creating financial inclusion of women, a plea which has been supported by the G20 Ministers of Finance and Central Bank Governors in July 2013, and the G20 leaders in September 2013 (OECD, 2013; G20, 2013).

Gender gaps have been consistently documented when it comes to financial behaviour, for example the allocation of assets in retirement plans (Sunden and Surette, 1998), the choice between DB and DC pension schemes, and the allocation of wealth to stocks after controlling for risk tolerance (e.g. Van Rooij et al, 2007). Gender gaps have also been found in financial literacy (e.g. Lusardi and Mitchell, 2008) and self assessed and measured risk attitudes (e.g. Eckel and Grossman 2002, Van Rooij *et al* 2007, Arano *et al.* 2010). In fact, the gender gap in stock market participation and investing is usually explained by lower financial literacy and risk tolerance of women compared to men (e.g. Schubert *et al.* 1999, Lusardi and Mitchell 2008, Croson and Gneezy 2009, Dohmen *et al.*, 2011), or by a gap in numeracy (Almenberg and Dreber, 2012).

Explaining the gap is important in a world in which financial risk is shifted toward individuals, women (need to) rely more on themselves financially, worldwide women control more than 25% of wealth (Damisch et al, 2010), the financial industry is called upon to put customers central stage and have a care duty in helping people make adequate financial decisions. It is generally assumed that a reduction in the gap should result from a change in women's characteristics and financial behaviour – towards more financial market participation and risk taking -, even though it cannot be excluded that men participate too much and take too much risk. In fact, Barber and Odean (2001) hypothesize that excessive trading in the stock market can be explained by overconfidence. Based on previous findings

that men are on average more overconfident than women, they use gender as a proxy for overconfidence and indeed find that men trade more excessively than women, with the difference being even larger when couples are excluded from the sample.

Be that as it may, research in finance as well as other disciplines (notably psychology and behavioral economics) suggests that the gap in literacy and risk tolerance may be only a partial explanation (e.g. Fellner and Maciejovsky, 2007). In this paper we investigate whether a gender gap in familiarity with the companies traded in the stock market may contribute to explaining the gender gap in investing. We are inspired by the familiarity-breeds-investment explanation of the investor home bias (Huberman, 2001), which is based on a model by Merton (1986). We investigate whether *lack of familiarity* with firms traded in the stock market may contribute to an explanation of the gender gap in portfolio choice. We do so by asking people to allocate a hypothetical amount of 100,000 euro of pension savings over risk free assets and a basket of stocks. Half of respondents are presented with a stock basket based on the index of the stocks most traded at Amsterdam Exchanges, and the other half with a portfolio consisting of companies that advertise in women magazines.

Our main findings are that significantly more women than men choose not to respond after having seen the question, that there is a pink portfolio effect among older women, and that there is a significant of framing which is larger for women than for men. We also find that women who already own stocks allocate significantly more to the stock basket than women who do not, which may be interpreted as an effect of familiarity. We find no such effect among men. Our evidence does not indicate, however, that lack of familiarity with the companies most traded at the Amsterdam stock exchange contributes to an explanation of the gender gap in stock market participation.

The paper is structured as follows. In the next section we provide an overview of empirical findings regarding gender differences in life cycle saving and investing as well as explanations traditionally given for these gaps. Section 3 discusses the concept of familiarity applied to investor behaviour. In section 4 we describe our methodology, data and present summary statistics. Section 5 presents some descriptive findings as well as a regression analysis of the data. In Section 6 we discuss caveats of our findings. Section 7 summarizes and makes suggestions for further research on the gender gap in finance.

2. The gender gap in finance

A gender gap in finance has been consistently documented when it comes to financial literacy (e.g. Lusardi and Mitchell, 2008), risk attitudes (e.g. Eckel and Grossman 2002, Arano *et al.* 2010) the choice between DB and DC pension schemes (e.g. Van Rooij *et al.*, 2007) and the allocation of assets in retirement plans (Sunden and Surette, 1998). Analysis of the interaction between gender and marital status in the allocation of assets in retirement savings plans using the Survey of Consumer Finances 1992-1995 in the US finds that single women take less risk (Sunden and Surette 1998). Bertocchi *et al.* (2011), using more recent data from the Bank of Italy Survey on Household and Wealth, arrive at a similar conclusion, although they find that the effect differs according to whether married women participate in the labor market. When it comes to stock market behavior, Barber and Odean (2001) use gender as a proxy for overconfidence and find that men trade more excessively than women, with the difference being even larger when couples are excluded from the sample.

Lower stock market participation and less risky portfolio choices by women are usually explained by a lower degree of financial literacy and/or a higher risk aversion of women as compared to men (e.g. Schubert *et al.* 1999, Lusardi and Mitchell 2008, Croson and Gneezy 2009, Dohmen *et al.*, 2011). However, research in finance as well as other disciplines (notably psychology and behavioral economics) suggests that this may be only a partial explanation (e.g. Fellner and Maciejovsky, 2007).

Interpreting the results of literacy tests

70% of women who answer “don’t know” to financial literacy questions give the correct answers if the “don’t know” option is not available, reducing (though not eliminating) the gender gap in literacy (Bucher-Koenen *et al.*, 2012). A possible explanation is a gender gap in confidence. Moreover, stereotype threat may play a role. If reminded of their gender, females have worse math scores (Good and Harder, 2008) and negotiation outcomes (Kray *et al.*, 2002), just as white males in sports perform worse after having been reminded that they are white (Stone *et al.*, 1999). Also, in more egalitarian societies, the gender gap in math scores disappears (Guiso *et al.*, 2008).

Interpreting the gender gap in measured risk tolerance

Girls are more likely to choose risky outcomes when assigned to all-girl groups (Booth and Nolan, 2012) – suggesting that context plays a role; in fact, women’s financial choices are more context-specific and sensitive to social clues than men’s (Croson and Gneezy, 2009). Women exhibit lower risk tolerance than men in investing decisions, but not in gambling decisions, and they take more risk in *social* decision making (Weber *et al.* 2002, Harris and Jenkins 2006). The authors suggest that decision making with risk may reflect not only risk tolerance, but also confidence in the ability to manage certain risks. In fact, Barber and

Odean (2001) find that men expect to outperform the stock market by a significantly greater margin than women. People may know that in gambling they cannot manage risk, whereas men may be more confident than women in their ability to manage investment risk, while women may feel more confident in their capacity to manage risk in the social domain (see also Heath and Tversky, 1991). According to Barber and Odean, overconfidence may be the key to understanding excessive trading and explain why men trade more excessively than women, with the difference being larger among singles. Another potential explanation of gender differences in risky decisions may be that women process information differently than men, with the result, *inter alia*, that they tend to be more cautious in decision making (Meyers-Levy, 1989).

Despite their assumed lower propensity to take risk, women have less access to credit, be it business loans or mortgages (Hertz, 2011) and are, after controlling for relevant background characteristics, charged higher interest rates for business credit (Alesina *et al*, 2013). This may reflect less self confidence on the part of the female client. It has been shown that anxiety results in worse negotiation outcomes especially when the belief in one's own ability is low (Wood Brooks and Schweizer, 2011). It may also be due to less explicit confidence on the part of the supplier in the ability of female clients to manage risk or set up a business. An implicit and unintended negative attitude towards women when it comes to business and finance may also play a role. Recent evidence for the labor market suggests that as soon as decision makers learn the sex of a person, gender biases are activated (Bohnet *et al*, 2013). This bias – which can be detected through an implicit association test (Greenwald *et al*, 1998)¹ leads to unintentional discrimination, not based on a rational expectation of future performance (Bertrand *et al*, 2005).

The gender gap in risk taking of women in stock markets and that in access to credit are intriguing, but their combination is even more surprising and calls for further research into the determinants of the gender gap in finance. This is what the present research aims at by applying the concept of familiarity.

3. Familiarity and finance

The role of familiarity in finance has been used as an explanation for some stylized facts in investment behaviour.

¹ Readers can see examples of an implicit association test at <http://implicit.harvard.edu>

For instance, investors hold much more stock from their home country than theory would predict, diversifying less than would be optimal according to finance theory (French and Poterba 1991, Tesar and Werner 1996). This so-called home bias has not disappeared with developments in ICT and with the removal of institutional barriers like capital controls. There is even an investor home bias within countries, with investors in US holding more stock from companies operating locally (Coval and Moskowitz, 1999). Moreover, employees hold a large fraction of their pension wealth in employer stock and Enron has not changed this (Laibson, 2005).

Merton (1987) was the pioneer of familiarity and stock market investing, even he did not use the word. He constructs a model to explain why investors hold only a subset of all securities available even if they have perfect access to information and there are no regulatory barriers. He assumes that “*an investor uses security k in constructing his optimal portfolio only if the investor knows about security k* ”. Note that “knows about” does not mean “has access to knowledge about”. Rather, the key aspect of his model is that there exist subsets of investors that trade in a subset of all the securities available: the securities that they *are aware of*. Hence it is not that investors have no access to information about some securities, but that they do not seek access to that information because they are not ‘aware’ of the existence of the securities: “If an investor does not follow a particular firm, then an earnings or other specific announcement about that firm is not likely to cause that investor to take a position in the firm” (Merton, 1987).

Referring to Merton (1987), Huberman (2001) suggests that the investor home bias may be due to familiarity with companies that are close to “home”. Familiarity is also used by Heath and Tversky (1991), who explain why people “prefer to bet on their own judgment (as compared to a chance lottery) in a context where they consider themselves knowledgeable or competent... our feeling of competence is enhanced by general knowledge, familiarity, and experience...” Di Mauro (2008), referring to Heath and Tversky (1991), suggests that feeling knowledgeable may explain the investor home bias.

The fundamental hypothesis underlying the analysis in this paper is therefore that gender differences in *familiarity with the world of finance* may contribute to explaining the gender gap in stock market investing. The focus here is on familiarity with the *companies most traded* in the stock market, while in other research we study *inter alia* familiarity with financial language (see for example Fornero *et al.*, 2013).

In order to test a potential gender gap in familiarity and its effect on risk taking, we perform a study on Dutch households. To this end, we use two portfolios. One is made of a basket

based on the Amsterdam Exchange Index (AEX), which the 25 most traded companies at the Amsterdam Stock Exchange. Many of these companies could be ranked as typically “masculin” (steel, beer, oil and gas, Oil equipment, semiconductors, heavy construction, chemicals and real estate), DSM (chemicals), while the remainder can be seen as fairly neutral (e.g. coffee, consumer electronics, delivery services, publishing, business training, food, banking and insurance, airlines). In what follows we will call a portfolio based on these companies “blue”, in contrast to a ‘pink” portfolio, which we construct as made of companies advertising in women magazines. While this is the easiest way to test differences in familiarity, it may not be the key to understanding the gender gap, as this pink portfolio is a relatively anonymous way of investing. Nevertheless, we see it as a necessary step to increase our understanding of the gender gap in stock market investing in terms of a potential gender gap in familiarity. We ask respondents to allocate a hypothetical large amount of pension savings over government bonds and a basket of stocks, where the stock basket randomly varies between blue and pink.

4. Methodology and data

Our data have been collected through an internet survey in September 2013 among participants of the CentERpanel run by CentERdata at Tilburg University. CentERdata is a survey research institute that is specialized in data collection and internet surveys. The CentERpanel consists of about 2000 households representative of the Dutch-speaking population in the Netherlands. Within the household, all household members are invited to participate. Panel members fill out short questionnaires via the internet on a weekly basis. Annually, panel members provide information on individual income, household wealth, health, employment, pensions, savings attitudes, and savings behavior for the DNB Household Survey (DHS), providing researchers with a rich set of background information on the respondents. The availability of a computer or internet connection is not a prerequisite of the selection procedure, which is done by a combination of recruiting randomly selected households over the phone and by house visits. After having agreed to participate, panel members receive explanation on survey administration, which is conducted via the internet. If necessary, either a computer with internet access or alternative equipment such as a set top box for communication through the television is provided to respondents. Data collected with internet surveys display higher validity and less social desirability response bias than those collected via telephone interviewing (Chiang and Krosnick, 2003). The panel has been used

for numerous studies including those into pension attitudes among Dutch employees (see for instance Van Rooij *et al*, 2007, and Prast *et al*, 2013) and financial literacy and retirement planning in the Netherlands (see Alessie *et al* , 2011). For more information on the panel see Teppa and Vis (2012).

In order to confront the survey respondents with two portfolios that should present a different degree of familiarity for men and women, we first constructed what we call a “blue” and a “pink” basket of stocks. The blue portfolio consisted of a selection of the AEX companies. The pink portfolio was constructed as follows. We collected copies of the most sold women magazines in Italy, the Netherlands, the UK and the US over the period January 2011 – summer 2013, one of each magazine for each season. We made an inventory of the advertisements in these copies, and made a selection from those traded in the stock market. **Full data to be given in appendix**

The resulting pink and blue portfolios were the following:

Table 1- Composition of the Pink and of the Blue portfolios

Pink		Blue	
<i>Company</i>	<i>Sector</i>	<i>Company</i>	<i>Sector</i>
1 Estee Lauder	Cosmetics	1 Ahold	Supermarkets
2 Dior	Cosmetics	2 AIR FRANCE –KLM	Airline
3 Ralph Lauren	Designer Fashion	3 AKZO NOBEL	Chemicals
4 Tiffany & Co	Jewelry	4 ARCELORMITTAL	Steel
5 L' Oreal	Cosmetics	5 ASML HOLDING	Semiconductors
6 Zara	Fashion	6 CORIO	Steel
7 Revlon	Cosmetics	7 DE Master Blenders	Coffee
8 Shiseido	Cosmetics	8 DSM	Chemicals
9 Burberry	Designer Fashion	9 FUGRO	Oil equipment
10 Ikea	Home	10 ING	Financial
11 Douglas	Cosmetics	11 Philips	Electronics
12 Svenska Cellulosa		12 SBM OFFSHORE	Oil equipment
13 Esprit	Fashion	13 Shell	Oil
14 IFF	Perfumes	14 UNIBAIL Rodamco	Real estate investmentt
15 Prada	Designer fashion	15 Unilever	Consumer products

Panel members were then given the following hypothetical situation (see Appendix B for original question in Dutch):

Imagine you have 100.000 euro's available to put aside for retirement. You need to allocate it over government bonds with an interest rate of 4 percent, and a basket of stocks which is expected to yield a return of 8 percent. You cannot touch the money until retirement.

You do not invest in individual stock but in a ‘basket’ of 15 different stocks, which reduces the risk without reducing the return, as bad outcomes of one firm may be compensated for by good outcomes of another.

Upon retirement you will receive with certainty the money that you put in the government bonds plus accumulated interest, hence it is similar to a savings account with a fixed interest rate. The money you put in the stock basket is expected to increase in value eight percent each year. However, this is not certain. It is possible that it grows with more than eight percent each year, but also with less.

A numerical example.

If you put the whole amount in government bonds, it will be worth 148.000 in ten years. If you put everything in stocks, it is expected to be worth 215.000 in ten years. However, it can also be more, for example 280.000, or less, for example 130.000. Assume that you have 100.000 euro available to set aside for retirement. You can choose between risk free government bonds with an interest rate of 4 percent, and a basket of stocks with an expected return of 8 percent. You cannot touch your savings until you retire

How would you allocate the money?

Half of respondents (chosen randomly) were given the blue basket, while the other half of were provided with the pink basket of stocks selected on the basis of advertisements in the most read women magazines. Hence respondents could NOT choose between different (baskets of) stocks. The question was formulated this way because we wanted to investigate the effect of pink versus blue on risk taking. Hence respondents were assigned to condition Blue or Pink.

Moreover, we wanted to see whether there was a framing effect of the question. (Van Rooij et al, 2011) find that the answer on financial literacy question depends on how the words stock and bonds were used in the question. We therefore randomly assigned half of respondents to the following condition:

How would you allocate the money?

Bondseuro
Stockseuro

And the other half to:

How would you allocate the money?

Stockseuro
Bondseuro

The question was submitted in the first week of September 2013 (see Appendix II for the original Dutch version of the question) to respondents aged 18+ who are not retired (totaling 2138), and it was completely filled out by a total of 1319 respondents. Table 2 presents the summary statistics.

Table 2. Summary statistics of survey respondents

Number of household members:	2138	(100%)
Nonresponse:	808	(37.8%)
Response incomplete:	11	(0.5%)
Response complete:	1319	(61.7%)

Source: authors based on CentERpaneldata

The response rate was 61.3%, which is very low if compared to the usual level in the CentERpanel that is around 80%. There are two main explanations for the low response. One is that in general the response rate of retirees within the panel is above average (most likely because they have more time), and our sample excluded pensioners. The other one is that the number of people opening the link and then closing it without answering the question was much higher than normal: 110 instead of around 20. A closer look reveals a major gender gap among the panel members who, after seeing the question, decided not to answer it: 69.1 % is female, 30.9 % male. As the question did not allow for ‘don t know’ as an answer, perhaps this non-response should be interpreted as don’t know/not for me. Moreover, women that participated took significantly more time than men to answer the question, took more time in the blue than in the pink condition, and the gender difference was significantly smaller in the pink than in the blue condition. We were therefore interested in looking at the main background characteristics of these panel members as compared to the whole sample. As Table 3 shows, the average age of the respondents and of those who “backed out” is about the same. There is some difference in the level of education, with the percentage of higher educated being somewhat higher among respondents. What stands out is the gender difference: of the 110 panel members choosing not to respond after having seen the question, 76% are women and hence 34% men. This results in a sample of respondents containing only 2% less women than men.

Table 3. Summary statistics respondents and panel members deciding not to answer after having opened the link and seen the question (n=110)

	110 (% of total)	Respondents
Women	69 %	44 %
Men	31 %	46 %
Average age	47	49
Higher educated	38%	44%

Source: authors based on CentERpaneldata

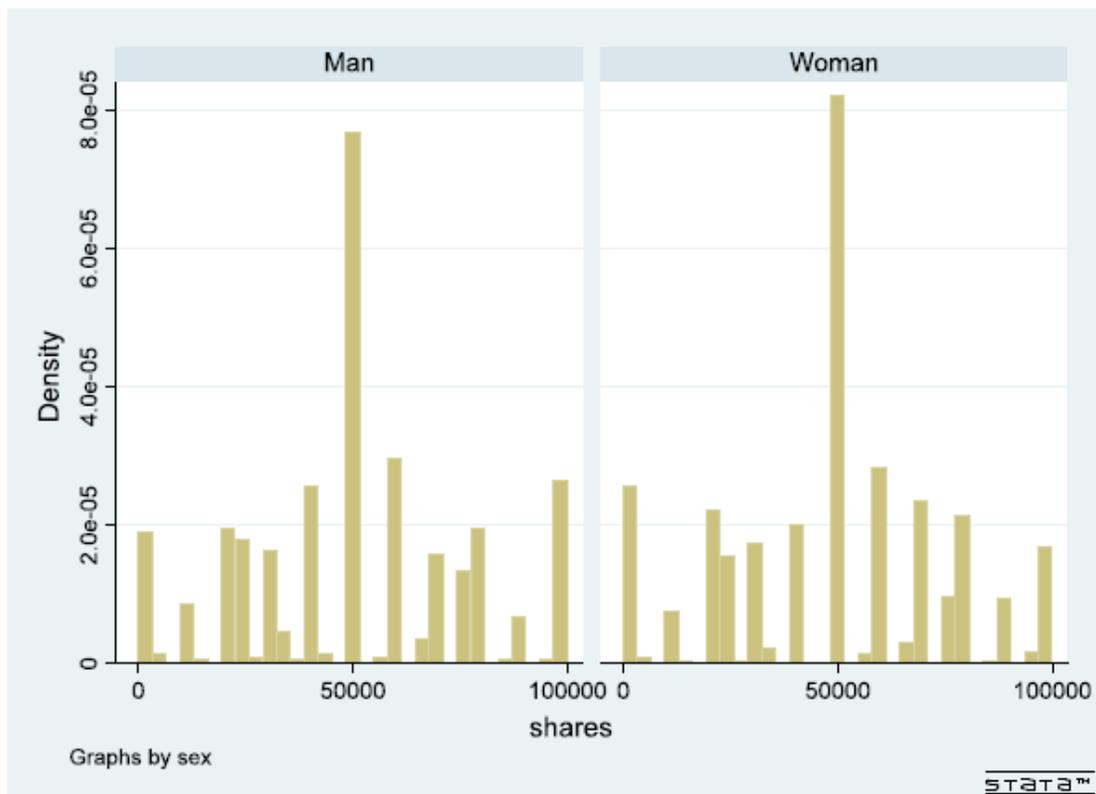
5. Results

In this section we first provide some descriptive analyses of the answers obtained which highlight some noteworthy feature, then we analyse by means of regression analysis of the data the association between familiarity in portfolio choices and household demographic and economic characteristics.

5.1 Descriptive findings

We first look at differences in portfolio allocation across gender only. Figure 1 gives the distribution of the percentages allocated to the stock portfolio by gender. For both men and women the distribution shows a peak at a choice of fifty percent risk free assets, fifty percent stock basket.

Figure 1 Distribution of percentage allocated to stock basket according to gender



This is in line with evidence of a $1/n$ heuristic used by employees in the US when allocating their pension savings among the different investment opportunities offered by the employer: if the employer offers five possibilities, workers tend to allocate 20% of their savings to each of them, if he offers ten possibilities they allocate ten percent to each one, etcetera (Huberman and Jiang, 2006). This suggests that when deciding on how to save for retirement, people are biased towards dividing their pension wealth equally over the number of investment options available. There are various ways to interpret this result. One is that those who have no idea how to allocate, tend to divide the amount equally, because they perceive it as “not choosing”. In this interpretation, the fifty-fifty choice is a way of saying “don ‘t know” (don t know was not an answer category). Another is that respondents see this as the obvious way to apply the “not all eggs in one basket” rule, or as close as they can get to the default. Be that as it may, it is clear that a larger fraction of women than man chooses fifty-fifty, but further analysis shows that the difference is not significant.

Then, we differentiate across both gender and portfolio assigned (blue, pink). Table 4 provides the percentage of respondents who do at least allocate part of the hypothetical pension savings to the stock basket,.

Table 4. Respondents allocating part or all of money to stock basket (%)

	Blue	Pink	Color Gap (P-B)
Men	95.7 %	92.9 %	-2.8
Women	92.6 %	91 %	-1.6
Gender gap (M-W)	3.1	1.9	

Source: authors based on CentERpaneldata

As Table 4 shows, an overwhelming majority of respondents allocate some or all of the hypothetical pension savings to the stock basket. In both conditions the percentage is higher among the men, but the differences are not too apparent. Moreover, of the respondents assigned to the blue condition, a higher fraction decides to allocate some or all of the money to stocks than in the pink condition. Again, the gap is higher for men than for women, but the differences are not noteworthy.

A similar conclusion holds for the average amount of pension savings allocated to stocks (Table 5).

Table 5. Average amount allocated to stocks, by portfolio color and gender

	Blue	Pink	Color Gap (P-B)
Men	52,196	54,753	2,557
Women	53,150	53,762	0,612
Gender gap (M-W)	-954	991	

Source: authors based on CentERpaneldata

Finally, we focus on the effect of the framing of the question: bonds or stocks first. Here we find a significant effect: respondents allocate more of the hypothetical savings to the investment opportunity that is presented first. The difference is large (Table 5) and it is also considerably larger for women than for men.

Table 5 Framing (order of bonds, stocks) effect: % allocated to stocks

	Men	Women
Stock basket first	56,670	60,851
Bonds first	46,623	36,866
Difference due to framing	10,047*	23,985*

5.2 Regression results

We now turn to multivariate regression analysis of the results. In order to do so we mix the data of our question with those of the most recent DNB Household Survey wave, that of 2012 published in March 2013.² This in itself reduces our number of observations from 1319 to ????.

The dependent variable is defined as the log of the amount allocated to the stock basket. In order to be able to detect any gender differences in the determinants of stock allocation, we have chosen to analyze men and women separately. As potentially relevant determinants we have used a large variety of objective and subjective background characteristics. As for the former, we have taken a look at age, education, income, wealth, whether the respondent has

² http://cdata3.uvt.nl/dhs/files/SpaarOnderzoekCodebook_2012_en_1.2.pdf

a job, lives in an urban area (taken as a proxy of more familiarity with financial world), has a partner, and holds individual stocks or invests in mutual funds. As subjective controls we have used self assessed financial expertise and self assessed risk tolerance

Recall that retirees are not in our sample, because we asked people about the allocation of savings for retirement.

Table 6. Regression results, by gender.
Dependent variable = log of savings allocated to stock basket

	female	male
	b/se	b/se
pink	-0.3296 (0.3317)	-0.2796 (0.2894)
pink60ov	1.5890*** (0.5625)	-0.0778 (0.6869)
risk1	0.4060 (0.4254)	0.3377 (0.3226)
ov60	-1.2005* (0.6336)	1.3434*** (0.4779)
indexrisk	0.0188 (0.2288)	-0.1201 (0.1709)
control	0.6292 (0.4485)	0.2399 (0.4094)
Netto maandinkomen~n	-0.0000 (0.0001)	-0.0000 (0.0002)
paidjob	-0.6677** (0.3314)	-0.3258 (0.3117)
total amount savin~	-0.0000 (0.0000)	-0.0000 (0.0000)
age	-0.0089 (0.0698)	0.1220 (0.0910)
age2	0.0002 (0.0007)	-0.0018 (0.0011)
urban	-0.1373 (0.2858)	0.5304* (0.2774)
partner present in~d	-0.0882 (0.5362)	0.2779 (0.5259)
higheduc	0.0159 (0.3532)	-0.0177 (0.3371)
_cons	10.0002*** (1.9356)	8.5372*** (1.7974)
N	395	377
R2_p		
p	0.013	0.372

We find a pink portfolio effect among older women, and a significant effect of framing which is larger for women than for men. We also find that women who already own stocks allocate significantly more to the stock basket than women who don't, which may be interpreted as an effect of familiarity. We find no such effect among men. Our evidence does not indicate, however, that lack of familiarity with the companies most traded at the Amsterdam stock exchange explains the gender gap in portfolio choice. This may imply that familiarity with stocks traded is irrelevant in explaining the gender gap in investing. However, it could also be that the portfolios we selected are not a good measure when it comes to familiarity, for example because women of different ages may read different women's magazines, because the blue portfolio did contain familiar stocks, and because the blue portfolio was not selected through a similar procedure as the pink one (advertisements in men's magazines) and was more diversified than the pink one.

6. Discussion of findings

More interpretations. Analysis of relation between time it took to respond and choices made. Relate to existing literature. Provide interpretation of findings. Describe flaws of analysis.. Draw implications for further research.

7. Conclusion and further research

Purpose of this paper was to add to our understanding of the gender gap in finance by using the concept of familiarity (Merton 1987, Huberman, 2001). We have used a very simple measure of familiarity: stocks whose companies advertise in women magazines were assumed to be more familiar to women, whereas stocks traded in the AEX were thought to be more familiar to men. **Etc etc etc**

Several findings of our analysis stand out. The first is the high percentage of CentERpanel members that chose not to answer after having seen the question. The second is the gender gap here: around 70% women and 30% men. Perhaps this is due to the fact that the question did not allow for a "don't know" answer. In that case it could reflect lack of knowledge, lack of self confidence when it comes to investment decisions, lack of familiarity. In this respect it should be stressed that we have chosen to use standard financial language in the question, while it may be that this appeals less to women than to men (Formero et al, 2013). The third finding is the tendency, in both the blue and pink condition, and among both men and women, to allocate the 100.000 fifty-fifty over the stock basket and the risk free asset. This is in line with the 1/n heuristic found in previous empirical research on the allocation of pension savings (Huberman and Yang, 2008). This choice may be interpreted in various

ways: it may be felt as the closest to not choosing or it is perceived as the recommended choice (default effect), or it reflects people's interpretation of "don't put all your eggs in one basket. Whatever the reason may be, we find a small difference for the fifty fifty preference between men and women, which is not significant however. We do find a large and significant framing effect. Respondents tend to allocate more pension savings to the first asset mentioned. The framing effect is much larger among women than among men, and this difference is significant – a result which remains in a multivariate regression analysis. The average percentage allocated to stocks does not differ significantly between men and women and across the blue and pink condition. It is much higher than the percentage found by Van Rooij *et al* (2007) for the hypothetical allocation of pension wealth of the Dutch population as assessed through the CentERpanel. This difference may be due to the fact that the sample by Van Rooij *et al* (2007) did contain retirees and ours did not. Moreover, the framing of the question and the examples of stock market outcomes differed.

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Appendix I Women magazine selection

TBA Cristina Druta

Appendix II Companies used for the portfolios

<i>Pink condition:</i>	<i>AEX condition:</i>
1 Estee Lauder	1 Ahold
2 Dior	2 AIR FRANCE -KLM
3 Ralph Lauren	3 AKZO NOBEL
4 Tiffany & Co	4 ARCELORMITTAL
5 L' Oreal	5 ASML HOLDING
6 Zara	6 CORIO
7 Revlon	7 DE Master Blenders
8 Shiseido	8 RODAMCO DSM
9 Burberry	9 FUGRO
10 Ikea	10 ING
11 Douglas	11 Philips
12 Svenska Cellulosa	12 SBM OFFSHORE
13 Esprit	13 Shell
14 International Flavors and Fragrances	14 UNIBAIL
15 Prada	15 Unilever

Appendix III Questionnaire (Dutch, and English translation)

Imagine you have 100.00 euro's available to put aside for retirement. You need to allocate it over government bonds with an interest rate of 4 percent, and a basket of stocks which is expected to yield a return of 8 percent. You cannot touch the money until retirement. You do not invest in individual stock but in a 'basket' of 15 different stocks, which reduces the risk without reducing the return, as bad outcomes of one firm may be compensated for by good outcomes of another.

Upon retirement you will receive with certainty the money that you put in the government bonds plus accumulated interest. Hence it is similar to a savings account with a fixed interest rate.

The money that you put in the stock basket is expected to increase in value eight percent each year. However, this is not sure. It is possible that it grows with more than eight percent each year, but also with less.

A numerical example.

If you put the whole amount in government bonds, it will be worth 148.000 in ten years. If you put everything in stocks, it is expected to be worth 215.000 in ten years. However, it can also be more, for example 280.000, or less, for example 130.000.

The basket of stocks consists of

<i>if arandom=1</i>	<i>if arandom=2</i>
1 Estee Lauder	1 Ahold
2 Dior	2 AIR FRANCE -KLM
3 Ralph Lauren	3 AKZO NOBEL
4 Tiffany & Co	4 ARCELORMITTAL
5 L' Oreal	5 ASML HOLDING
6 Zara	6 CORIO
7 Revlon	7 DE Master Blenders
8 Shiseido	8 RODAMCO DSM
9 Burberry	9 FUGRO
10 Ikea	10 ING
11 Douglas	11 Philips
12 Svenska Cellulosa	12 SBM OFFSHORE
13 Esprit	13 Shell
14 International Flavors and Fragrances	14 UNIBAIL
15 Prada	15 Unilever

How much would you put in government bonds and how much in the basket of stocks?

Original question in Dutch

Stel u hebt honderdduizend euro ter beschikking om te sparen voor uw pensioen.

U moet dit verdelen over staatsobligaties met een rente van 4 procent en een mandje aandelen waarvan de opbrengst naar verwachting 8 procent zal zijn. U kunt pas aan uw geld komen als u de pensioenleeftijd hebt bereikt.

U belegt niet in individuele aandelen maar in een "mandje" van 15 verschillende aandelen, wat het risico vermindert zonder dat de opbrengst daardoor lager wordt. Immers, tegenvallers bij het ene bedrijf kunnen worden gecompenseerd door meevallers bij het andere.

Het geld dat u in de staatsobligaties stopt krijgt u te zijner tijd zeker terug, plus de rente die er elk jaar is bijgekomen. Het lijkt dus op een spaarrekening met een vaste rente. Het geld dat u in de aandelen stopt wordt naar verwachting gemiddeld acht procent meer waard per jaar. Maar dat is, anders dan de vier procent rente op de staatsobligaties, niet zeker. Er is een kans dat u er meer dan 8 procent bij krijgt per jaar en een kans dat u minder krijgt.

Een getallenvoorbeeld:

Als u alles in de staatsobligaties stopt is het bedrag over tien jaar zeker gegroeid tot ruim 148.000.

Stopt u alles in aandelen, dan is het over tien jaar naar verwachting ruim 215.000. Maar het kan ook meer zijn, bijvoorbeeld 280.000 euro, of minder, bijvoorbeeld 130.000.

Het mandje bestaat uit de volgende aandelen:

<i>if arandom=1</i>	<i>if arandom=2</i>
1 Estee Lauder	1 Ahold
2 Dior	2 AIR FRANCE -KLM
3 Ralph Lauren	3 AKZO NOBEL
4 Tiffany & Co	4 ARCELORMITTAL
5 L' Oreal	5 ASML HOLDING
6 Zara	6 CORIO
7 Revlon	7 DE Master Blenders
8 Shiseido	8 RODAMCO DSM
9 Burberry	9 FUGRO
10 Ikea	10 ING
11 Douglas	11 Philips
12 Svenska Cellulosa	12 SBM OFFSHORE
13 Esprit	13 Shell
14 International Flavors and Fragrances	14 UNIBAIL
15 Prada	15 Unilever

