

# Is the gender gap in finance influenced by a gap in familiarity?

## The effect of a pink portfolio on investment decisions

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# Stylized facts: behaviour

- Women participate less in the stock market and if they do, they take less risk
- If women need to make portfolio decisions regarding their pension, they take less risk (e.g. Sunden and Surette, 1998)

# Conventional explanation

- Women are less financially literate than men
- Women are less risk tolerant than men

# Literacy and risk tolerance tests

- Women have lower scores on financial literacy tests than men (e.g. Lusardi and Mitchell, 2008)
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- Gender gap in measured and self assessed financial risk tolerance (Van Rooij *et al* 2007, Eckel and Grossman 2002, Arano *et al.* 2010)
- Women have stronger preference for DB over DC than men (Van Rooij *et al* 2007)

# Policy/practical relevance

- Financial inclusion of women is an important issue on policy agenda:  
G20, OECD: CLOSING THE GAP:
- **OECD/INFE POLICY GUIDANCE ON ADDRESSING WOMEN'S AND GIRLS' NEEDS FOR FINANCIAL AWARENESS AND EDUCATION**

# Note

- The gender gap may imply that **women** take *too little* risk and participate too little, but also that **men** take *too much* risk and participate too much in stock market
- Evidence on beneficial effect of financial education on behavior lacking:
  - > Willis 2008, 2009, AER 2011
  - > Haliassos Pension Summit 2012
  - > Mandell CFA 2012, Prast and Van Soest 2014

# Note (1)

- Gender gap in financial literacy is reduced if “don’t know” is not an option (Bucher-Koenen *et al*, 2012)
- If reminded of their gender, women score worse in math and in negotiating (Good and Harder 2008, Kray *et al* 2002, Spencer *et al.* 1999), just like white male athletes perform worse if reminded of their color prior to match (Stone *et al*, 1999)
- In egalitarian societies, gender gap in math scores disappears (Guiso *et al*, 2008)

## Note (2)

- In gambling no gender gap in risk taking, and in social decisions women take more risk than men (Weber *et al.* 2002, Harris and Jenkins 2006 )
- In all girls environment, girls take more risk than in mixed environment (Booth and Nolan, 2012)



## Note (3)

- Women's financial choices are more context-specific and sensitive to social clues than men's (Croson and Gneezy, 2009)
- Women process information differently than men, with the result that they tend to be more cautious in decision making (Meyers-Levy, 1989)

# Our work

- We want to assess whether a *gender gap in familiarity* may play a role
- Familiarity is not new in economics and finance: Merton, Huberman, ....

# Familiarity in Merton (1987)

- Theoretical model
- Assumes perfect markets, no regulation or info asymmetries
- Investors only assess info of stocks they are aware of (“familiar” stocks)
  - > Explains why investors choose only a small subset

# Familiarity in Huberman (2001)

- Empirical analysis
- Geographic distribution of the shareholders of the U.S. Regional Bell Operating Companies
- Holdings of the *local* RBOC tend to be larger than investments in RBOCs that serve *other areas*

# Familiarity breeds investment

- Huberman conclusion:
- “People invest in the familiar while often ignoring the principles of portfolio theory“
- Wishful thinking also plays a role
  - > Hope affects expectation

# Home bias in investing

- One of the six major puzzles in economics (Obstfeld and Rogoff, 2000)
- Has NOT disappeared with information technology and removal of capital controls
- There is even a local bias (Coval and Moskowitz, 1999), an employer bias for pension savings, despite Enron (Laibson 2005), and an industry bias (Doskeland and Hvide, 2011)

# Familiarity and the gender gap

- Could a gender gap in familiarity explain the gender gap in investing?
  - > with the companies traded in the stock market ?
  - > with the type of products you can invest in?
  - > with the language used in the financial industry?

# Familiarity with listed companies

- We create two different stock baskets: a blue and a pink one
- We ask respondents to allocate hypothetical pension savings (100K euro) over a risk free asset and a stock basket
- We randomly assign respondents to a pink or a blue condition



# Pink or blue condition

- Blue: allocate over risk free asset and a “blue” stock basket (15 stocks) based on AEX, traded on Euronext Amsterdam
  - > AEX mostly consists of steel, chemicals, oil
- Pink: allocate over risk free asset and a “pink” stock basket (15 stocks) based on advertisements in women magazines

# Blue stock basket

Ahold  
Air France-KLM  
Akzo Nobel  
ArcelorMittal  
ASML  
CORIO  
DE Master Blenders  
DSM  
Fugro  
Philips  
Shell  
SBM Offshore  
Unibail Rodamco  
Unilever

# Construction of pink portfolio

- Advertisements in women magazines, 2011-summer 2013, 1 per season
  - > Italian: Anna, Amica, Donna Moderna, Gioia, Glamour, Myself
  - > Dutch : Libelle, Flair, Viva, Linda
  - > English UK : Elle, Vogue, Good Housekeeping, Glamour
  - > English US: Elle, Vogue, Good Housekeeping, Cosmopolitan

# Construction of pink portfolio (2)

- Select advertising companies that are traded in the stock market (sometimes under a different name),  $n=65$
- Make out of those 65 a selection of 15, making sure to reflect industry composition and to have both luxury and non-luxury, leaving out male/neutral oriented eg cars
- One exception: we added Ikea because we thought it more familiar than the other “home” categories

# Pink basket

**Estee Lauder**

**Dior**

**Ralph Lauren**

**Tiffany & Co**

**L' Oreal**

**Zara**

**Revlon**

**Shiseido**

**Burberry**

**Ikea**

**Douglas**

**Svenska Cellulosa**

**Esprit**

**International Flavors and Fragrances**

**Prada**

# Pink vs blue, note:

## Pink:

consumer products, mainly apparel  
various stock exchanges  
no Euronext, no Dutch companies

## Blue:

mostly raw materials  
consumer services  
all Euronext, all Dutch companies

# CentERpanel/DHS

- Panel of over 2500 hh, all hh members
- Once a year full set of questions
- Additional questions possible, answers can be linked to full set
- Internet-based
- Used often for (Netspar) research
- See Teppa and Vis (2012)

# This study uses

- The 2012 wave published in March 2013
- Additional question on savings allocation posed in September 2013



# Question

- 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.

# Our question (continued)

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?

# Response ordering

- Framing A. How would you allocate the money?

Bonds ....euro

Stocks ....euro

Or

- Framing B. How would you allocate the money?

Stocks ....euro

Bonds ....euro

# Summary statistics

Our sample: 16 years and older, not retired

Data collection: week 36, 2013

N of household members: 2138

Response rate 61.7%\*

N of observations 1319

\*normally around 80%

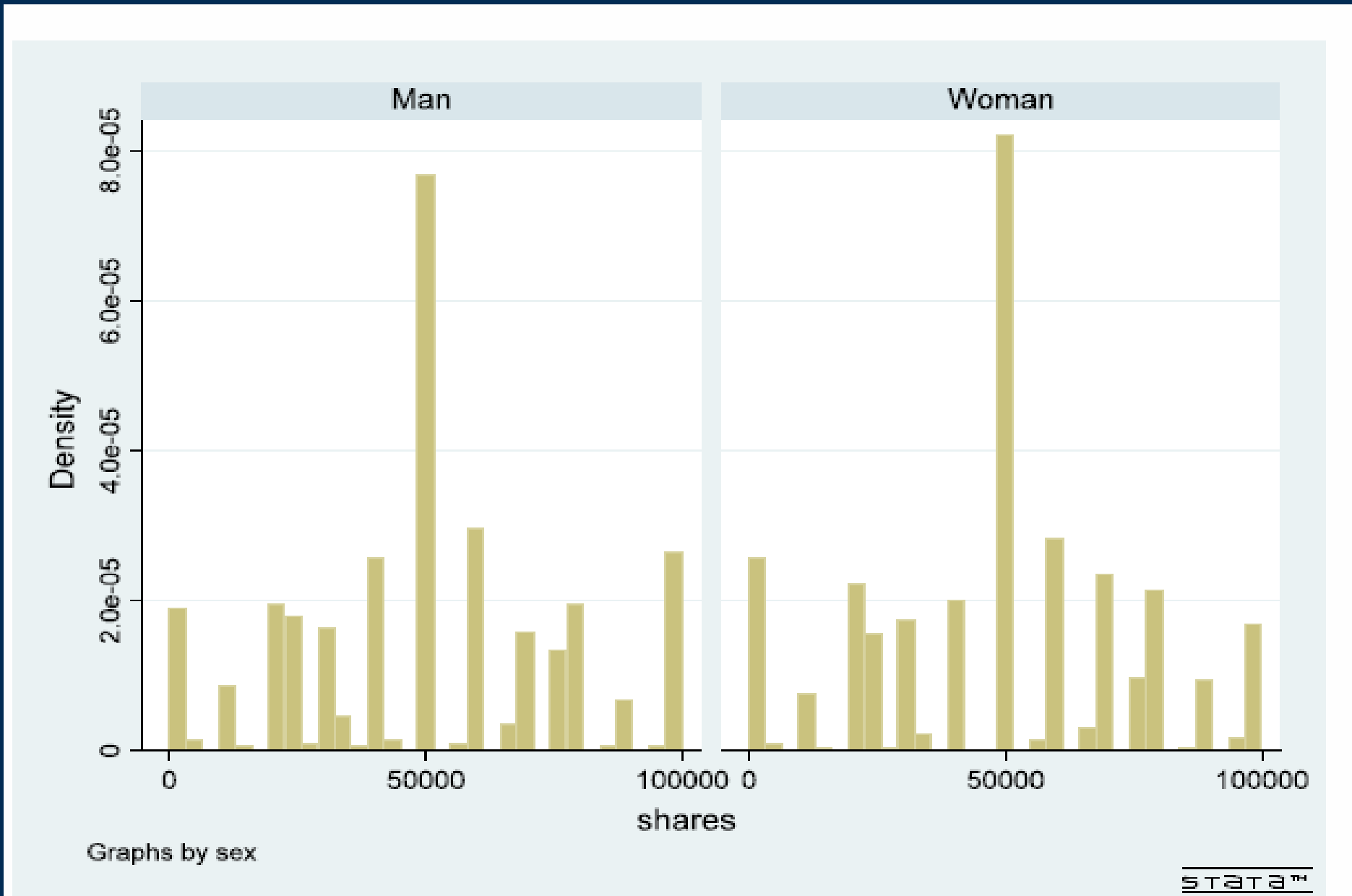
# Why low response rate?

- Pensioners usually have response rate above average, but were not included here
- Many more respondents having opened the link but closed it without answering when they saw the question (110, against normally around 20)
  - > Many more women than men chose to close link (69%, 31%)

# Some aggregate findings

- 96% of men, 93% of women allocate an amount to stock basket
- More man then women choose to invest al in stock basket
- Many choose fift/fifty

# Allocation distribution



**Table 7. Response ordering effect: % allocated to stocks**

	Men	Women
Stock basket first	56,670	60,851
Bonds first	46,623	36,866
Primacy effect (in €)	10,047*	23,985*

*Source: authors based on CentER data panel outcomes*

\*significant effect



# Some comments

- Fifty-fifty allocation: In line with  $1/n$  heuristic found for portfolio choice in DC plans (Huberman and Jiang, *Journal of Finance*, 2006)
- Allocation to stocks much higher than in Van Rooij *et al* (2007)
- Primacy effect and its gender gap in line with earlier findings ((Brunel and Nelson, 2003)

## Table 2: Summary statistics, on question evaluation

	Respondents who got to choose from Pink stocks and bonds			Respondents who got to choose from AEX companies' Stocks and bonds			All types together		
	Male (1)	Female (2)	All (3)	Male (4)	Female (5)	All (6)	Male (7)	Female (8)	All (9)
Difficulty of task	2.01	2.45***	2.24	2.05	2.54***	2.32	2.03	2.50	2.28
Clearness of task	4.09	4.05	4.07	4.15	4.10	4.13	4.12	4.08***	4.10
Thought-provoking	2.77	2.61	2.69	2.69	2.82	2.76	2.73	2.72	2.73
Interest in the task	3.34	2.90***	3.11	3.27	3.04***	3.14	3.30	2.97***	3.13
Pleasure of completing the task	3.52	3.26***	3.38	3.57	3.36***	3.46	3.54	3.31***	3.42
Comments on the task	1.97	1.96	1.97	1.97	1.97	1.97	1.97	1.97	1.97
Duration of survey (seconds)	4051.08 (113.63)	3060.70 (119.26)	3533.76 (116.03)	4308.53 (107.40)	8758.00 (132.04)	6739.13 (121.08)	4178.54 (109.81)	6018.45 (127.19)	5161.96 (117.37)
Observations	310	339	649	304	366	670	614	705	1319

The stars represent statistically significant t-test mean difference between the stock or bonds options allocations by women versus men, at 1%, 5% and 10% significance levels, respectively.

# Decision time explained

**Table 3: Regression of Duration on Gender, and Familiarity**

	All (1)	Women (2)	Men (3)
Pink Portfolio	-3303.64 (1726.04)	-6132.05*** (2666.6)	-416.052 (2078.8)
Difficulty of task	-263.771 (702.04)	666.1979 (1018)	-1856.66** (930.8)
Clearness of task	-498.08 (966.7)	31.46901 (1446.8)	-1736.69 (1216)
Thought-provoking	-180.841 (835.7)	-3043.38*** (1316.6)	2940*** (992.4)
Interest in the task	185.357 (1133.2)	2769.61 (1763.1)	-2615.88 (1355.8)
Pleasure of completing the task	-793.741 (1142.2)	-1838.69 (1688)	1184.387 (1457.2)
Comments on the task	-9301.68 (4893.7)	-10032.9 (7512.7)	-8761.79 (5947.1)
Gender	1736.34 (1770.5)	(omitted)	(omitted)
Observations	1319	705	614
R-squared	0.0078	0.0192	0.0236

\*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively.

# Further analysis

Long decision time because of

ambition: interest in problem/wish to find the optimal allocation

lack of confidence in being able to decide\*

\*long thinkers choose more often fifty fifty

# Further look at the data

- CentERpanel database includes objective and subjective background variables
- Last wave (March 2013)
- Dependent = (log) allocated money to stock portfolio out of 100,000

# Some regression results, log

	FEMALE	MALE
pink	-0.3648 (0.3178)	-0.2405 (0.2863)
ov60	-1.1242** (0.5340)	0.7861* (0.4129)
pink*60ov	1.2118** (0.5020)	-0.2724 (0.7148)
risk aversion	0.3547 (0.3575)	0.2019 (0.2934)
OBL	-1.5458*** (0.2922)	-0.4833* (0.2674)
havingstocks	0.7309*** (0.2303)	0.3505 (0.3503)

Other regressors used: age (m-\*) financial literacy, income, paid job (f-\*), asset, education, partner present, urban area (m+\*)\*.

# Comments (1)

- Pink does not affect portfolio response (negative and not significant), except for women 60+
- Women/men over 60 invest less/more in stocks  
women 60+ invest more in pink condition
- Women already holding stock allocate significantly more to stocks; no such effect among men
- Men in urban areas allocate more to stocks: works through familiarity or...? TBA

# Comments (2)

- Primacy effect remains significant for both genders
- Primacy effect stronger for women
  - > In line with other findings both in financial and other domains
    - Women generally more conditioned by context
    - Especially if they don't feel confident
    - Primacy effect depends negatively on crystallization



# Regressions, amount

**Table 7: Regression of the amount invested in stocks, on the pink portfolio**

	All		Male		Female	
	(1)	(2)	(3)	(4)	(5)	(6)
Pink Stocks	10953.8*** (1388.86)	10563.15*** (1393.38)	8709.18*** (2076.39)	7855.06*** (2055.44)	13022.2*** (1863.41)	12670.05*** (1884.77)
Age		-63.31 (55.41)		-74.59 (87.93)		-9.69 (74.53)
Education		-454.62 (577.24)		-818.54 (890.03)		339.90 (779.65)
Partner		-3351.47 (2740.70)		2979.61 (4794.87)		-4793.36 (3441.97)
Household Size		-1554.94 (2091.16)		14814.64*** (4096.62)		2251.13 (2420.85)
Children		1050.01 (2176.49)		14925.88*** (4192.03)		-3221.13 (2562.70)
Net Personal Income		0.14 (0.71)		-2.52 (1.41)		-1.48 (1.37)
Net Household Income		-0.04 (0.39)		2.64** (1.06)		-0.26 (0.44)
Urban Residence		1430.77*** (544.12)		1838.40** (802.65)		1288.50 (736.16)
Social Class		-15.35 (686.20)		765.05 (1066.23)		-539.44 (896.78)
Accommodation Type		-814.13 (1881.24)		-2329.83 (2864.74)		885.25 (2500.02)
R squared	0.0448	0.0533	0.0278	0.0745	0.0645	0.0748
Observations	1328	1317	618	613	710	704

\*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively.

# Comments

- Here too strong urban effect for men, not women
  - > Could this reflect familiarity with firms/industries that are stock listed, through occupation?
    - To be analyzed
- Strong effect of household size on men, not women – providing (men) vs sharing and caring (women)?

# Conclusions (1)

- We find strong evidence that women in the pink condition find deciding easier than in the blue condition
- Women (men) find deciding in the pink (blue) condition easier than men (women)

# Conclusions (2)

- We find no evidence that the gender gap in risk taking would be smaller if the index of most traded stocks would contain companies that advertise in women's magazines
- We do find evidence that a pink portfolio would make it easier for women to participate in the stock market

# Possible interpretations

- Familiarity with companies plays no role?
- Advertising in women's magazines is not a good measure of familiarity with stocks?
- AEX is home, Pink is foreign: home bias dominates over pink?
- We should have taken Dutch magazines only?

# Some flaws

- Our selection of magazines may not have been the best for respondents of all generations
- The blue portfolio had two familiar elements that the pink portfolio lacked: all Dutch companies, and all Amsterdam-listed
- Perhaps we should have asked respondents to allocate over bonds and a selection of 15 stocks that they could choose from a blue and pink selection

# Further elaboration

- These data
- Similar analysis for Italy
- Asking respondents to allocate over bonds and a selection of stocks from a list containing blue and pink
- Eliminating home bias by making blue basket consisting of foreign companies in same industries as AEX
- Choosing cohort based pink companies
- ....?

# Conclusions

- No pink effect on risk taking
- Huge pink effect on time needed to decide, hence cannot have to do with financial literacy
- Gender gap in primacy effect may result from familiarity gap AND underscores importance of language when addressing women on financial issues
- More research needed