

# Gender Differences in Financial Literacy

Tabea Bucher-Koenen



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# Gender Differences in Financial Advice

Tabea Bucher-Koenen (ZEW, University of Mannheim),  
joint with

Andreas Hackethal (Goethe University and SAFE), Johannes Koenen (ARC  
Econ) and Christine Laudenbach (Goethe University and SAFE)

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# What do we know?

- Increasing evidence of differential treatment by financial institutions:
  - Female entrepreneurs are charged higher interest rates (Alesina et al. (2013))
  - For female loan applicants, approval is more likely to depend on the presence of a guarantor (Brock and de Haas (2023))
  - Trained female auditors are more likely to get financial advice towards under-diversification (Bhattacharya et al. (2020))
- Financial advice as a prototypical credence good with advisors being often incentivized by kickbacks  
(e.g., Chen/ Gesche 2018; Kerschbamer/Sutter 2017; Inderst/Ottaviani 2012)

## **This paper:**

1. Examine gender differences in financial advice exploiting administrative bank and survey data; thereby we can examine what advisors and clients do (financial decisions) and what they think (preferences, motivation)
2. Disentangle potential mechanisms for gender differences (price discrimination) in financial advice: statistical discrimination, stereotyping, differences in negotiation skills, product preferences

# Data

## 1. Administrative Bank Data

- Data on **advisory minutes**: client-advisor interactions of a large German bank
- **26,747 advisory meetings** between **13,239 retail clients** and **4,604 advisors** between January 2010 and December 2017.
- Written documentation is mandatory since 2010.
- Client, advisor and meeting characteristics
- More than **35,000 fund recommendations** (type, volume, costs)
- Client transactions → adherence: implementation within 30 days

## 2. Client Survey

- Subsample of clients with survey information (academic survey): 485 clients (1,342 product recommendations), e.g., information on test-based financial literacy and motives for consulting advisors

## 3. Advisor Surveys

- **Advisor Survey**: 331 active advisors from various banks; beliefs about in financial sophistication, negotiation skills, price sensitivity of male versus female clients (April 2023)
- **Experimental Advisor Survey**: 539 active advisors from various banks; small information provision experiment; beliefs about the relationship between gender, financial knowledge, and price sensitivity (August 2023)

# Quality of financial advice

- Mullanathan et al. (2012): **high quality advice provides clients with a broadly diversified but low-cost portfolio** in line with risk preferences
- We analyse recommendations for mutual funds
  - ➔ Diversified
  - ➔ but: vary by costs, which can be directly influenced by the advisor

Two cost components:

1. **up-front fees** (loads) paid when purchasing the fund => decided by the bank and the fund manager; rebates can be granted at advisor's discretion
2. **annual expense ratio** is paid annually and in proportion to the invested amount => are charged by the asset manager (kickbacks are granted to the bank); in case of the bank's own funds these fees are paid to the bank => most profitable for the bank

# Gender differences in up-front fees

Upfront fee: 26% of all recommendations include a rebate

	Rebate on Upfront Load				
	(1)	(2)	(3) >50 recomm.	(4) no bank own	(5) bank own
Female	-0.018 (0.008)	-0.021 (0.008)	-0.019 (0.008)	-0.047 (0.017)	-0.010 (0.009)
ln (value of the recomm.)		0.044 (0.002)	0.044 (0.002)	0.044 (0.005)	0.043 (0.003)
Constant	0.187 (0.266)	-0.141 (0.272)	-0.082 (0.084)	0.030 (0.227)	0.016 (0.104)
Age Groups	N	Y	Y	Y	Y
Risk Tolerance Groups	N	Y	Y	Y	Y
Month x year FE	Y	Y	Y	Y	Y
Advisor FE	Y	Y	Y	Y	Y
ISIN FE	Y	Y	Y	Y	Y
Observations	29,283	29,283	27,777	9,658	19,625
Adjusted R-squared	0.211	0.230	0.227	0.314	0.226

**Women** have a **2pp./8.1% lower probability** to get a **rebate** on the sales charge for the same fund recommended by the same advisor.

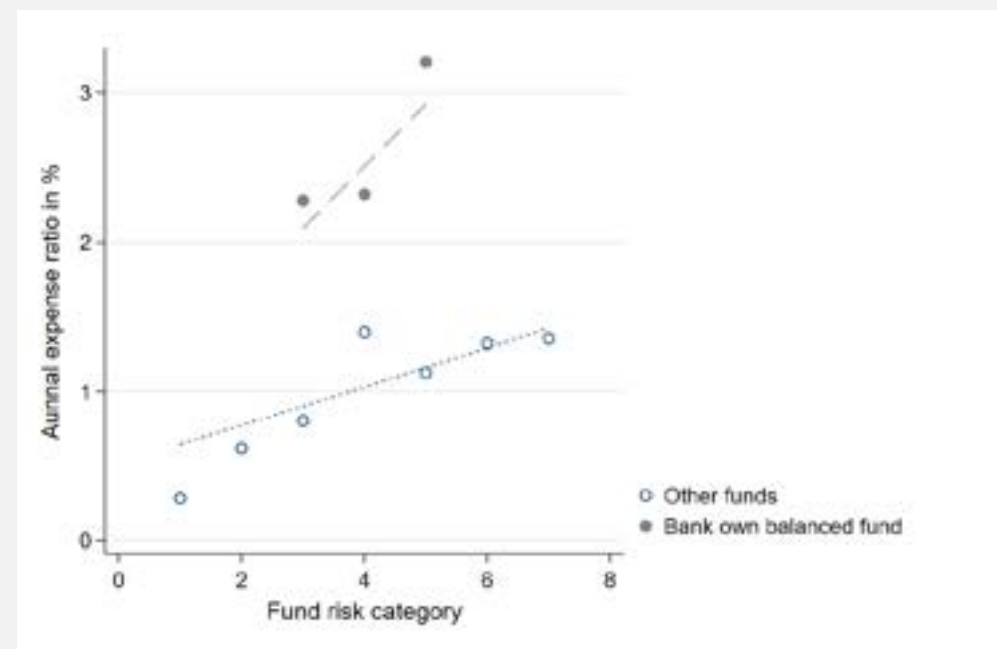
Additional controls in specifications (2) – (5): Investment horizon, risk tolerance, age, financial wealth, married, employment status, foreign citizenship, advice in person, meeting duration

# Gender differences in product recommendations

- Own-bank mutual funds are particularly profitable for banks (Hoechle et al. 2018) and tend to perform significantly worse than other funds (Schaub/ Straumann 2023)
- Explaining and recommending these bank own balanced funds involves less effort for advisors

Advice process highly standardized

- 10 most frequently recommended funds account for more than 40% of recommendations
- Bank own products account for 75% of recommendations (equally weighted)



# Gender differences in product recommendations

	Bank own fund		Bank own <b>balanced</b> fund		Share bank own <b>balanced</b> fund
	(1)	(2)	(3)	(4)	(5)
Female	0.046 (0.006)	0.015 (0.005)	0.058 (0.007)	0.022 (0.007)	0.031 (0.007)
Constant	0.672 (0.035)	0.555 (0.044)	0.436 (0.037)	0.380 (0.048)	0.500 (0.047)
Age Groups	N	Y	N	Y	Y
Month x year FE	Y	Y	Y	Y	Y
Advisor FE	Y	Y	Y	Y	Y
Observations	23,212	23,212	23,212	23,212	23,212
Adjusted R-squared	0.171	0.240	0.296	0.352	0.348

Probability to receive a recommendation for a **high fee bank-owned balanced fund** is 2pp./4.2% higher for **women** (including a rich set of controls).

Additional controls in specifications (2), (4), and (5): Investment horizon, invested amount, risk tolerance, age, financial wealth, married, employment status, foreign citizenship, advice in person, meeting duration



# Differences by advisor gender?

	Rebate on Upfront Load		Bank own <b>balanced</b> fund		Fee Rank	
	(1) Female Advisor	(2) Male Advisor	(3) Female Advisor	(4) Male Advisor	(5) Female Advisor	(6) Male Advisor
Female	-0.021 (0.011)	-0.019 (0.011)	0.010 (0.009)	0.037 (0.009)	0.075 (0.028)	0.160 (0.026)
Age Groups	Y	Y	Y	Y	Y	Y
Risk Tolerance Groups	Y	Y	Y	Y	N	N
Meeting Controls	Y	Y	Y	Y	Y	Y
Month x year FE	Y	Y	Y	Y	Y	Y
Advisor FE	Y	Y	Y	Y	Y	Y
ISIN FE	Y	Y	N	N	N	N
Observations	12,785	16,448	12,048	14,847	12,048	14,847
Adjusted R-squared	0.216	0.250	0.325	0.354	0.232	0.254

While male and female advisors offer rebates with a similar likelihood by gender, **male advisors are more likely to recommend the bank own products (higher fees) to women** as compared to female advisors.

### **Result 1:**

*We do find gender differences (price discrimination) in financial advice. **Women** are **less likely to receive a rebate** on the upfront load and are **more likely to be recommended** bank-own **funds with higher management fees**. The differential treatment seems to be **more driven by male** than female **advisors**.*

# Why do advisors price discriminate against women?

1. **Statistical discrimination?**
2. **Stereotyping?**
3. **Willingness to negotiate?**
4. **Differences in ability to interpret signals for financial sophistication? Advisor Confidence?**
5. **Catering/ Gender differences in (non-) monetary preferences?**

# Statistical Discrimination

Idea in a nutshell:

- **Advisor** prefers selling certain investment alternatives over others
- Advisors use **available pertinent information** to differentiate advice between groups of customers (Altonji/Pierret (2001)), e.g., their financial skills

-> Widely documented pattern: women show lower levels of financial literacy and lower confidence than men when it comes to financial decisions

(e.g., Lusardi and Mitchel 2014; Bucher-Koenen et al. 2017; Bucher-Koenen et al. 2020)

Advisors **tend to increase the profitability of interaction** vis-a-vis a setting without discrimination

.

# Statistical Discrimination

## Predictions:

Clients with lower signals of financial aptitude (women) receive financial recommendations more in line with advisor incentives.

- ✓ Women are less likely to receive a rebate offer.
- ✓ Women are more likely to get recommendations for high-fee bank own balanced funds.
  
- ? Are there gender differences in financial sophistication?
  - ✓ Women do also have a lower fee literacy & a lower confidence in their knowledge (2), are less price sensitive, and perceive advisors to be less self-serving compared to men.
  
- ? Do advisors know about gender differences in financial sophistication?
  - ✓ Indeed advisors are aware of gender differences in literacy
  
- ? Do advisors use gender as a proxy for financial sophistication?

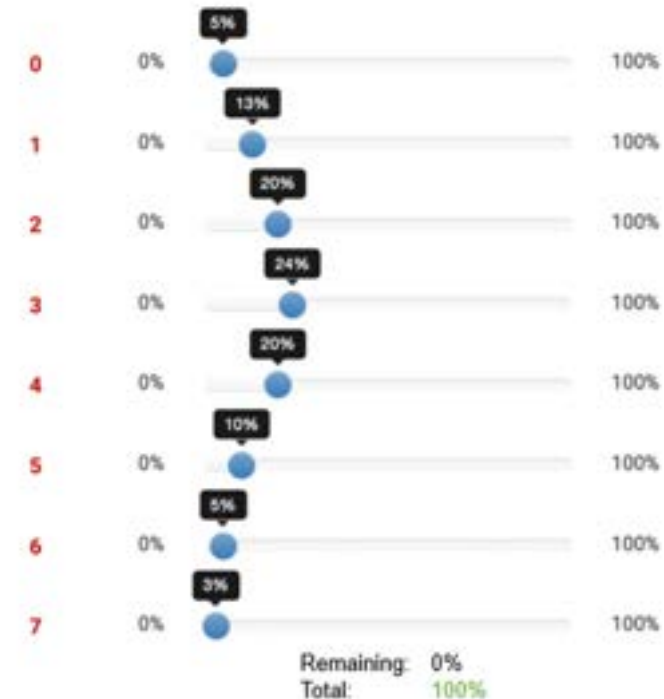
# Statistical Discrimination

**Do advisors know?** For statistical discrimination, advisors need to be aware of the differences in **literacy** and/or **sophistication** across gender

Now please estimate how the **bank clients responded back then**. What percentage of clients answered none, one, two, three, etc. questions on financial knowledge correctly. If you guess well, you **get an extra 5€ per task**. "Well" means that you are not more than 20 percentage points off, added up over all seven lines. To make it more concrete, we ask separately for female and male clients .

Please assess the **financial knowledge of clients**. The participants could answer between 0 and 7 questions correctly. Your assessment: What percentage of the **female advisory clients** of the big bank correctly answered none, exactly one, exactly two, exactly three, etc. of the seven questions on **financial knowledge**? Together, the percentages must add up to 100%. To help you, the remaining percentage is displayed at the bottom.

Proportion of female counselling clients with exactly ... correct answers



# Statistical Discrimination

Do advisors utilize gender as a proxy for financial sophistication due to imperfect information?

➔ Assess beliefs and actions with and without revealing client gender

How to incorporate this in an experimental setting?

- Confront advisors with a randomized sequence of five female and five male client profiles.
- Profile information: age, marital status, education, wealth at the bank, risk tolerance, (gender)

# Statistical Discrimination

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**To ensure that pictures solely differ with regards to gender for a given pair, prompt Open AI Dalle-E-picture generator:**

**“Generate two separate high-quality portraits of the twins Thomas (male) and Sabine (female) from Germany, both are 35 years old and dressed handsome. Neutral background and photos should be visually appealing and suitable for social media.”**



# Statistical Discrimination

Experimental Design:

## Control Group

50 Jahre alt  
und  
verheiratet

Bildungsabschluss  
Abitur

Rendite-Risiko:  
II Einkommen

Vermögen bei Bank:  
18.300€

36 Jahre alt  
und  
nicht verheiratet

Bildungsabschluss  
Studium

Rendite-Risiko:  
III Wachstum

Vermögen bei Bank:  
50.100€

65 Jahre alt  
und  
nicht verheiratet

Bildungsabschluss  
Abitur

Rendite-Risiko:  
II Einkommen

Vermögen bei Bank:  
24.800€

49 Jahre alt  
und  
verheiratet

Bildungsabschluss  
Abitur

Rendite-Risiko:  
II Einkommen

Vermögen bei Bank:  
17.400€

37 Jahre alt  
und  
verheiratet

Bildungsabschluss  
Studium

Rendite-Risiko:  
III Wachstum

Vermögen bei Bank:  
52.600€


64 Jahre alt  
und  
nicht verheiratet

Bildungsabschluss  
Abitur

Rendite-Risiko:  
II Einkommen

Vermögen bei Bank:  
26.100€

## Treatment Group



50 Jahre alt  
und  
verheiratet

Bildungsabschluss  
Abitur

Rendite-Risiko:  
II Einkommen

Vermögen bei Bank:  
18.300€



36 Jahre alt  
und  
nicht verheiratet

Bildungsabschluss  
Studium

Rendite-Risiko:  
III Wachstum

Vermögen bei Bank:  
50.100€



65 Jahre alt  
und  
nicht verheiratet

Bildungsabschluss  
Abitur

Rendite-Risiko:  
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Vermögen bei Bank:  
24.800€



49 Jahre alt  
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Bildungsabschluss  
Abitur

Rendite-Risiko:  
II Einkommen

Vermögen bei Bank:  
26.100€

# Statistical Discrimination

### Experimental Design:



60 years old  
and  
not married

Highest degree:  
**A-levels**

Return-risk:  
**II Income**

Wealth held at bank:  
**73,554€**

[illegible][illegible][illegible][illegible]

What sales fees would you charge this client? You can opt for the full load or select one out of four rebate levels.

Full sales fee	-25%	-50%	-75%	-100%
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What sales fees would you charge this client? You can opt for the full load or select one out of four rebate levels.

Full sales fee	-25%	-50%	-75%	-100%
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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# Statistical Discrimination

## Experimental Results:

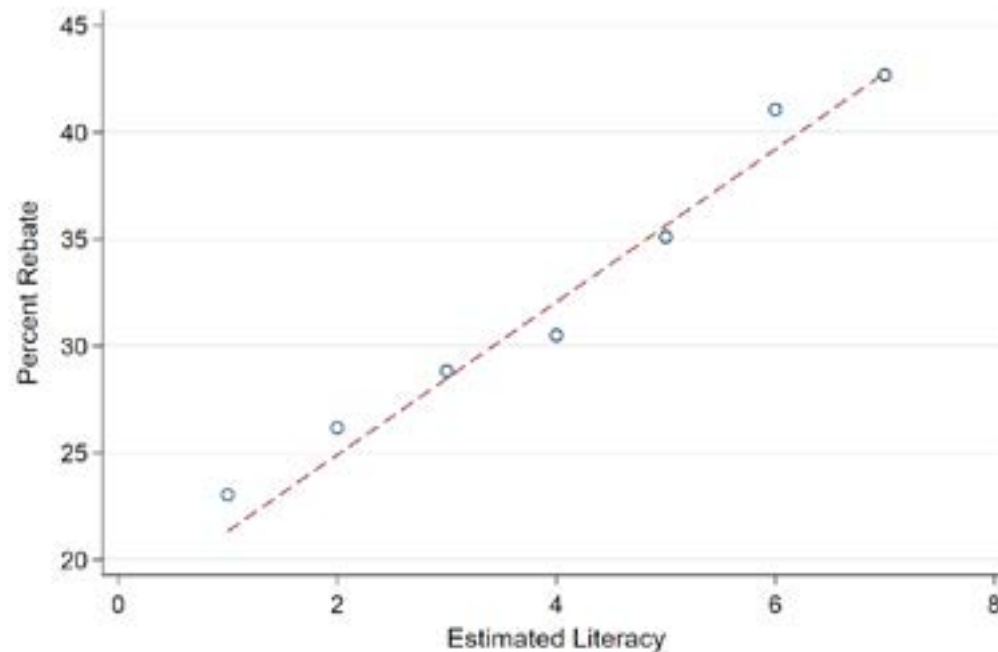
**Panel A:** Differences in advisor beliefs by treatment (gender vs. no gender)

	No Gender			Gender		
	Female	Male	T-stat	Female	Male	T-stat
Literacy in investing	4,280	4,290	<b>0,260</b>	3,904	4,216	<b>7,200</b>
Consideration of fees	4,633	4,597	<b>-0,987</b>	4,482	4,537	<b>1,330</b>
Independence in financial decisions	3,996	4,022	<b>0,769</b>	3,660	4,060	<b>8,202</b>
<b>Rebate on load</b>	<b>33,419</b>	<b>32,715</b>	<b>-1,245</b>	<b>29,738</b>	<b>31,069</b>	<b>2,070</b>

# Statistical Discrimination

## Relationship between financial sophistication and price setting?

This figure shows a binned scatter plot of rebates to clients vs. advisors' beliefs on their literacy level. The data are from an online experiment with 539 financial advisors.



# Statistical Discrimination

## Experimental Results:

**Panel B:** Differences in Advisor Beliefs Before and After Information Provision

	1st Round			2nd Round		
	Female	Male	T-stat	Female	Male	T-stat
Literacy in investing	4.219	4.571	<b>6.859</b>	4.352	4.504	<b>3.781</b>
Consideration of fees	4.577	4.668	<b>1.759</b>	4.591	4.618	<b>0.637</b>
Independence in financial decisions	3.935	4.462	<b>8.931</b>	4.062	4.332	<b>5.760</b>
<b>Rebate on load (%)</b>	30.940	31.519	<b>1.889</b>	32.056	32.426	<b>0.517</b>

Panel B shows the average assessments of advisors of 6 client profiles. This includes client literacy, independence in investment decision-making, the relevance of fees, as well as their willingness to grant a fee rebate to that client, before and after being provided with information regarding the clients' test scores in a literacy quiz as well as self-assessed confidence when it comes to financial decision-making.

## **Result 2:**

We find strong evidence for statistical discrimination: **advisors price discriminate against women** based on their lower financial sophistication. **Female** clients show **lower literacy, lower confidence**, and are **less price sensitive**, and this is also reflected in **advisors' beliefs**.

# Why do advisors price discriminate against women?

1. Statistical discrimination?
2. Stereotyping?
3. **Willingness to negotiate?**
4. Differences in ability to interpret signals
5. Catering/ Gender differences in (non-)monetary preferences

### **Result 3:**

We find that **male clients are more likely to ask for a rebate**, but it is also **more likely that rebates are offered to male clients** by advisors without being prompted.



# Why do advisors price discriminate against women?

1. Statistical discrimination?
2. Stereotyping?
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# Interpretation of signals

**Advisor heterogeneity:** One of the groups (women) is not behaving optimally in a profit maximising sense.

If stereotyping is an unlikely mechanism – what can explain differences in effects by advisor gender?

Under statistical discrimination / price discrimination the behavior of all advisors of the bank should be similar if advisors **interpret the signals in a similar way**

# Interpretation of signals

Does the assessment of literacy differ by advisor gender? **No!**

	Fem. Advisors	Male Advisors	T-stat	Data Source
<i>Incentivized Choices:</i>				
Estimated client literacy gap (points)	0.185	0.160	<b>0.293</b>	AS
<i>Confidence in Client Estimates:</i>				
Conf. in literacy estimates (f)	3.379	3.915	<b>3.259</b>	AS
Conf. in literacy estimates (m)	3.400	4.031	<b>3.829</b>	AS
Conf. in estimates client profiles	4.402	4.993	<b>6.160</b>	Exp. AS
<i>(Confidence in) Own Abilities</i>				
Actual literacy score (0-7)	5.107	5.521	<b>2.279</b>	AS
Self-assessed literacy score (0-7)	5.043	5.858	<b>5.285</b>	AS
Feeling well-trained (1-5)	3.765	3.954	<b>2.462</b>	Exp. AS

#### **Result 4:**

We find evidence that **male advisors seem more confident** about their own financial sophistication and also about their ability to interpret client signals. This could lead to a higher ability or willingness to price discriminate.

# Why do advisors recommend different products to women compared to men?

1. Statistical discrimination? Price discrimination?
2. Willingness/ability to negotiate?
3. Stereotyping?
4. Differences in ability to interpret signals for financial sophistication? Advisor Confidence?
5. Catering/ Gender differences in (non-) monetary preferences?

# Gender differences in advice seeking

**There are differences in motives for seeking advice**

**Women** are more likely to seek advice **to get things off the table**, while **male clients** are interested in a **second opinion**

# Tailored Fund Recommendations

	Share of Recommendations for		T-stat
	Female Clients	Male Clients	
Money Doctors	0.362	0.309	<b>-10.438</b>
Investment Strategy	0.499	0.474	<b>-4.610</b>
Diversification	0.585	0.592	<b>1.404</b>
Return	0.687	0.678	<b>-1.777</b>

## Textual analysis:

**Preference for “money doctors”** is strongly tied to justifications when recommending products

# Tailored Fund Recommendations

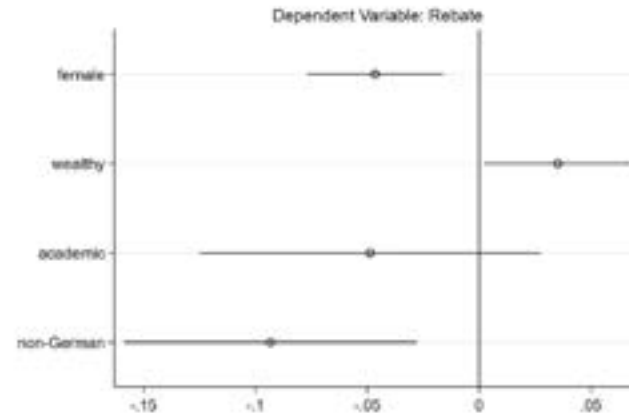
Concept	German Search Term (Original)	English Translation
Money doctors	Expertise	expertise
	Experte/n	expert/s
	professionell	professional
	professionelles Management	professional management
	Anlagespezialisten	investment specialists
	Spezialist	specialist
	Delegation	delegation
	aktives Management/Verwaltung	active management
	managen lassen	let manage
	nicht mehr auseinander setzen	no need to deal with
	kümmern	take care of
	nicht selbst/nicht aktiv	not yourself/not active
	kritische Börsenzeiten	critical market times
	verunsichert	insecure
	Bequemlichkeit/bequem	convenience/convenient
	Zeitersparnis	time savings
	Planbarkeit/planbar	planability/plannable
	schon kennen	already familiar
Diversification	Diversifikation	diversification
	Risikostreuung/Streuung	spreading risk/spreading
	Mischung/Mix/Kombination	mixture/mix/combination
	streut/gestreut	spread
	Beimischung/Depotbeimischung	additional blending of portfolio
	unterschiedliche Assetklassen	different asset classes
	verschiedene Märkte	various markets
	Ausnutzung des Anlageuniversums	utilization of investment universe
	global/weltweit/international/breit	global/worldwide/international/broad
	Klumpenrisiko	concentrated risk
	Einzeltitelrisiko	single security risk
	keine Einzelwerte	no single securities
	Flickenteppich	patchwork portfolio

Concept	German Search Term (Original)	English Translation
Investment strategy	Anlagepolitik/Anlagestrategie	investment strategy
	Depotstrategie	portfolio strategy
	Musterportfolio	model portfolio
	Anlagehorizont	investment horizon
	Anlageschwerpunkt	investment focus
	Anlageziele/Ihre Ziele	investment objectives/your objectives
	Zielinvestment	target investment
	Umschichtung	re-balancing
	Portfolio Theorie	portfolio theory
	Optimierung/optimal	optimization/optimal
	Inflation	inflation
	Enteignung	expropriation
	Risikosteuerung	risk management
	Risikoreduzierung	risk reduction
	Marktsituation	market situation
	Flexibilität	flexibility
Return	Rendite	return
	Zins	interest
	Wertentwicklung	price development
	Wertsteigerung	price appreciation
	Performance	performance
	Ertrag/Erträge	earning/s
	Gewinn	profit
	erwirtschaften	earn/generate
	Kupon/Zinszahlung	coupon/payout of interest
	Dividende	dividend
	Ausschüttung	disbursements
	Chance	opportunity
	Aussicht	outlook
	aussichstreich	with good prospects
	attraktiv	attractive
	positive Kurserwartung	positive return expectation
	positives Votum	positive vote/assessment



# Discussion: Is it all about gender? Apparently Not.

Panel A: Administrative Bank Data



Panel B: Experimental Advisors Survey Data



# Conclusion

Yes, there are gender differences in financial advice  
(No conclusion about general importance of advice)

## Policy Advice?

- Improve financial literacy and confidence
- Provide costless reliable information on financial product choice
- Make cost differences in products more salient (e.g., benchmarking)

