

MIFID questionnaires, financial advice and investor behavior

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Observatoire de l'Épargne Européenne (OEE)

14/09/2018

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MiFID

- Markets in Financial Instruments Directive
- Since 2007: **MiFID I (2004/39/EC)** aims at protecting investors according to their level of financial knowledge.
- From January 2018: **MiFID II (2014/65/UE)**

- Requirements: the use of MiFID questionnaire allows providing advices and financial products suited to clients' situation

3 papers for MiFID data over 2 EU countries

- FRANCE

Two matched datasets provided by a large **French commercial bank** over 2007-2015, more than 70,000 retail clients:

- MiFID questionnaire answers
- Banking records

-> **Paper 1 (M.H. Broihanne & H. Orküt): Stock market participation**

- BELGIUM

Large dataset from an online **Belgian brokerage house**: questionnaire answers and trades on stocks over 2003-2012, more than 45,000 retail investors.

- Appropriateness test: A-test (execution and order transmission)
- Suitability test: S-test (before getting general financial advice).

-> **Paper 2 (A. Bellofatto & M.H. Broihanne): Appetite for information**

-> **Paper 3 (A. Bellofatto & R. De Winne & C. D'Hondt): Subjective financial literacy and retail investors' behavior**



Paper 1 (M.H. Broihanne, H. Orküt)

Do MiFID questions answer explain retail clients' stock investment decision?

Two matched datasets provided by a big French commercial bank:

- MiFID questionnaire answers (Dataset 1 -> declared)
- Banking records (Dataset 2 -> real)

Sample size (N): More than **70,000** retail clients

Questionnaire administration period: 04/30/2007 to 07/18/2015

Date of extraction of banking records: 07/31/2015

Questionnaire presentation (Dataset 1)

- **Socio-demographic characteristics:** gender, age, marital status, children
- **Income:** net monthly income, income sources,...
- **Patrimony:** real estate, movable patrimony
- **Credit:** remaining loan amount
- **Investment objectives:**
 - Main investment objectives
 - **Risk tolerance**
 - Experience and knowledge of financial products (shares, bonds, warrants,...)
 - **Attitudes towards losses**

-> There is no standard questionnaire: each bank is free to prepare and organize its own questionnaire.

- This questionnaire has been administered at most 3 times over 2007-2015
 - Same questionnaire all over the period
 - Clients self assess their attitudes (*revealed preference approach*)
 - Interaction with a bank advisor
 - We only use the more recent answers, i.e. close and prior to the 07/31/2015 (extraction of Dataset 2), for **Risk tolerance** and **Attitudes towards losses**.



Main questions

- **Risk tolerance**

As a general rule, which assertion best describes you?

Modalities	Category variables	Proposals
0	Accepting	Accepting lower remuneration by taking no risk on the invested capital.
1	SeekBetter	Seeking better remuneration by taking a capital risk.
2	SeekHigh	Seeking high performance by accepting a significant part of capital risk.

- **Attitudes towards losses**

If in the coming months, your investments value would decrease by 15%, what would you do?

1	SellingAll	Selling all.
2	SellingPart	Selling a part of your portfolio.
3	Waiting	Waiting until values increase.
4	Investing	Taking advantage of a lower price to invest again.

Risk tolerance

« As a general rule, which assertion best describes you? »

	Affirmation	Accepting lower remuneration by taking no risk on the invested capital	Seeking better remuneration by accepting a capital risk	Seeking high performance by accepting a significant part of capital risk	unreported	TOTAL
Q1	Questionnaire 1					
	Number	43 216	10 067	546	10 643	64 472
	Proportion	67,03%	15,61%	0,85%	16,51%	100%
Q2	Questionnaire 1					
	Number	14 322	5 325	306	3 463	23 416
	Proportion	61,16%	22,74%	1,31%	14,79%	100%
	Questionnaire 2					
	Number	15 525	6 933	407	551	23 416
	Proportion	66,30%	29,61%	1,74%	2,35%	100%
Q3	Questionnaire 1					
	Number	6 651	4 600	306	1 145	12 702
	Proportion	52,36%	36,21%	2,41%	9,01%	100%
	Questionnaire 2					
	Number	6 700	5 381	392	229	12 702
	Proportion	52,75%	42,36%	3,09%	1,80%	100%
	Questionnaire 3					
Number	6 066	6 122	475	39	12 702	
	Proportion	47,76%	48,20%	3,74%	0,31%	100%

Losses

« If in the coming months, your investments value would decrease by 15%, what would you do? »

		Selling all	Selling a part of the portfolio	Waiting until values increase	Taking advantage of lower price to invest again	unreported	TOTAL
Q1	Questionnaire 1						
	Number	9 925	3 218	38 964	2 155	10 210	64 472
	Proportion	15,39%	4,99%	60,44%	3,34%	15,84%	100%
Q2	Questionnaire 1						
	Number	2 845	1 108	14 976	1 208	3 279	23 416
	Proportion	12,15%	4,73%	63,96%	5,16%	14%	100%
	Questionnaire 2						
	Number	3 038	1 333	17 149	1 357	539	23 416
	Proportion	12,97%	5,69%	73,24%	5,80%	2,30%	100%
Q3	Questionnaire 1						
	Number	1 215	622	8 834	945	1 086	12 702
	Proportion	9,57%	4,90%	69,55%	7,44%	8,55%	100%
	Questionnaire 2						
	Number	1 188	664	9 636	1 018	196	12 702
	Proportion	9,35%	5,23%	75,86%	8,01%	1,54%	100%
	Questionnaire 3						
	Number	1 078	699	9 840	1 054	31	12 702
	Proportion	8,49%	5,50%	77,47%	8,30%	0,24%	100%

Socio-demographics:

• Gender:

- Women hold less risky assets (Dwyer et al., 2002, Agnew et al., 2003, Charness et al., 2012) are less risk seeking (Booij & Van de Kuilen, 2009, Booth & Nolen, 2012) than men.
- They are less likely to invest in stock market than men (van Rooij et al., 2011, Almenberg & Dreber, 2015), allocate a smaller percentage of their financial assets to stocks than to bonds (Bajtelsmit et al., 1999)

• Age:

- Low proportion of risky assets held by older individuals (Bodie and Crane, 1997).
- Risk aversion increases with population' age (Bakshi and Chen, 1994)
- Impact on the mix of risky assets (Ackert et al., 2002): young households prefer stocks over bonds, older and experienced investors -> risky portfolios
- Age vs. Experience: cognitive aging (i.e. the weakening of memory with age) vs. accumulation of greater investment knowledge with age (Korniotis & Kumar, 2011) -> Account tenure (Bauer et al., 2009, Hoffman et al., 2015)

• Marital status:

- Married investors hold more stocks than single ones (Agnew et al., 2003)
- Married individuals are more risk tolerant (Grable, 2000), marriage -> safe asset (Bertocchi et al, 2011)
- Children: Jianakoplos & Bernasek, 1998, Chaulk et al., 2003.

• Place of birth (US):

- Immigrants hold less financial assets, such as stocks and mutual funds compared to natives (Osili & Paulson, 2004, Chatterjee, 2009, 2011). Their risky holdings increase with the number of years of residence in the US (Love & Schmidt, 2015)

• Occupations:

- Self-employed take more risk compared to salaried workers (Maccrimmon & Wehrung, 1986) and are more risk tolerant (Sung & Hanna, 1996)
- Stock allocations are higher among investors with more seniority on the job (Agnew et al., 2003)

• Education/IQ:

- Educated investors are more likely to hold better diversified equity portfolios (Fuentes et al., 2014) / QI (Grinblatt et al., 2011).

Wealth & patrimony:

- Stock ownership is positively associated to different measure of wealth such as **financial net worth** and **labour income** (Shum & Faig, 2006).
- Higher income individuals are more risk tolerant (Maccrimmon & Wehrung, 1986, McInish et al., 1993, Bernheim et al., 2001).
- **Credit-constrained** households have a low tendency to hold risky assets (Guiso et al., 1996, Constantinides et al., 2002, Cardak & Wilkins, 2009).
- **Mortgage debt** result in less stocks and bonds ownership (Thomas & Reza, 2010). Outstanding debt explains households' asset market non-participation.
- **Homeownership** (Cardak & Wilkins, 2009)

Stock market participation determinants

Independent variables

Panel A MiFID indicators	Panel B Socio-demographics	Panel C Wealth & patrimony
Risk tolerance Accepting Seek better Seek high Losses Selling all Selling part Waiting Investing	Gender Age Native Paris Matrimonial Occupations Self-employed Salaried Retired No occupation	Income 0€ <1,500€ [1,500€;3,000€] [3,000€;5,000€] [5,000€;10,000€] >10,000€ Credit 0€ <10,000€ [10,000€;100,000€] >100,000€ Annuities Retirement

Descriptive statistics – Panel A: MiFID indicators

	N	\bar{X} / %	std	min	max
Retail clients	77,365	100%	-	-	-
Dependent variable					
Stocks	77,365	11.05%	-	-	-
Independent variables					
Panel A : MiFID indicators					
Risk tolerance	71,461	0.32	0.50	0	2
Accepting		69.35% ⁽⁰⁾	-	-	-
SeekBetter		28.90% ⁽¹⁾	-	-	-
SeekHigh		1.75% ⁽²⁾	-	-	-
Losses	71,745	2.71	0.78	1	4
SellingAll		14.29% ⁽¹⁾	-	-	-
SellingPart		6.24% ⁽²⁾	-	-	-
Waiting		73.93% ⁽³⁾	-	-	-
Investing		5.54% ⁽⁴⁾	-	-	-

Panel B : Socio-demographics indicators

Gender	77,365	51.24%	-	-	-
Age	77,365	47.97	17.55	18	105
Native	77,365	84.59%	-	-	-
Paris	77,365	12.26%	-	-	-
Matrimonial	77,365	10.30%	-	-	-
Occupations					
Self-employed	77,365	12.61%	-	-	-
Salaried	77,365	55.36%	-	-	-
Retired	77,365	15.59%	-	-	-
No occupation	77,365	16.44%	-	-	-

Descriptive statistics – Panel C: Wealth and patrimony indicators

Panel C : Wealth and patrimony indicators						
Income		77,365	2,418.07	2,192.97	0	10,000
			1.90	1.11	0	5
INCOME BRACKETS :	CODES :					
0	0		7.28% ⁽⁰⁾	-	-	-
<1,500	750		31.62% ⁽¹⁾	-	-	-
1,500-3,000	2,250		36.67% ⁽²⁾	-	-	-
3,000-5,000	4,000		15.32% ⁽³⁾	-	-	-
5,000-10,000	7,500		6.72% ⁽⁴⁾	-	-	-
>10,000	10,000		2.39% ⁽⁵⁾	-	-	-
Credit		77,365	28,668.91	38,960.65	0	100,000
			1.04	1.18	0	3
CREDIT BRACKETS :	CODES :					
0	0		50.08% ⁽⁰⁾	-	-	-
<10,000	5,000		13.51% ⁽¹⁾	-	-	-
10,000-100,000	55,000		18.70% ⁽²⁾	-	-	-
>100,000	100,000		17.71% ⁽³⁾	-	-	-
Annuities		77,365	16.83%	-	-	-
Retirement		77,365	1.37%	-	-	-

	Model 1		Model 2		Model 3	
	AMEs	std	AMEs	std	AMEs	std
Dependent variable						
Stocks						
Independent variables						
Panel A: MiFID indicators						
SeekBetter			0.1000***	0.0022		
SeekHigh			0.1821***	0.0053		
Accepting			(omitted)			
SellingAll					-0.0817***	0.0049
SellingPart					-0.0215***	0.0048
Investing					0.0633***	0.0037
Waiting					(omitted)	
Panel B: Socio-demographic indicators						
Gender	0,0146***	0.0021	0.0086***	0.0022	0.0127***	0.0023
Age	0.0037***	0.0001	0.0036***	0.0001	0.0038***	0.0001
Native	0.0454***	0.0033	0.0398***	0.0034	0.0444***	0.0035
Paris	0.0385***	0.0029	0.0368***	0.0030	0.0352***	0.0031
Matrimonial	0.0295***	0.0029	0.0224***	0.0030	0.0281***	0.0031
Self-employed	0.0091***	0.0031	0.0086***	0.0032	0.0096***	0.0033
Retired	-0.0215***	0.0033	-0.0189***	0.0034	-0.0216***	0.0035
No occupation	0.0118***	0.0039	0.0074*	0.0041	0.0119***	0.0042
Salaried	(omitted)		(omitted)		(omitted)	
Panel C: Wealth and patrimony indicators						
ln(Income)	0.0150***	0.0010	0.0087***	0.0010	0.0133***	0.0011
ln(Credit)	-0.0006***	0.0002	-0.0010***	0.0002	-0.0009***	0.0002
Annuities	0.1320***	0.0020	0.0985***	0.0022	0.1280***	0.0021
Retirement	0.0858***	0.0058	0.0737***	0.0059	0.0839***	0.0061
N	77,365		71,461		71,745	

	Model 1		Model 2		Model 3	
	AMEs	std	AMEs	std	AMEs	std
Dependent variable						
Stocks						
Independent variables						
Panel A: MiFID indicators						
SeekBetter			0.1000***	0.0022		
SeekHigh			0.1821***	0.0053		
Accepting			(omitted)			
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Gender	0,0146***	0.0021	0.0086***	0.0022	0.0127***	0.0023
Age	0.0037***	0.0001	0.0036***	0.0001	0.0038***	0.0001
Native	0.0454***	0.0033	0.0398***	0.0034	0.0444***	0.0035
Paris	0.0385***	0.0029	0.0368***	0.0030	0.0352***	0.0031
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Self-employed	0.0091***	0.0031	0.0086***	0.0032	0.0096***	0.0033
Retired	-0.0215***	0.0033	-0.0189***	0.0034	-0.0216***	0.0035
No occupation	0.0118***	0.0039	0.0074*	0.0041	0.0119***	0.0042
Salaried	(omitted)		(omitted)		(omitted)	
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Annuities	0.1320***	0.0020	0.0985***	0.0022	0.1280***	0.0021
Retirement	0.0858***	0.0058	0.0737***	0.0059	0.0839***	0.0061
N	77,365		71,461		71,745	

After controlling for usual determinants, stock ownership is explained by MiFID answers

Paper 2 (A. Bellofatto, M.H. Broihanne)

Is Mandatory Profiling of Individual Investors indicative of investor's appetite for information?

- Database coming from an online Belgian brokerage house (**14,155 investors** over 2008-2012): **MiFID questionnaires answers + trading records (since 2008 only)**
 - 1) Appropriateness test: A-test (execution and order transmission)
 - 2) Suitability test: S-test (before getting general financial advice).
 - Data on stocks: Eurofidai
 - Investors who fulfill the S-test have access to an information tool on stocks
 - Assumptions:
 - A-investors:
 - Fulfill the A-test only
 - Neglect a free access to general advice and professional recommendations
 - S-investors:
 - Fulfill the A-test and the S-test
 - Willingness to have access to a service higher than order execution only
 - Provide an “effort” to access the information tool (cost of fulfilling the S-test)
- > A natural field experiment to test the relationship between trading behavior and a distinct personality trait, the **“appetite for information”**

Table: Descriptive statistics for trading activity

	Mean	Median	Q1	Q3
Number of stock trades	44	18	8	45
Number of different stocks traded	12	7	4	15
Trading experience (in months)	25	24	14	35
Number of daytrades	1.43	0	0	0
Average number of trades on the same stock	3.37	2.4	1.75	3.64
Number of fund trades	7.04	0	0	0
Number of option trades	8.31	0	0	0
Number of bond trades	0.08	0	0	0

Table: Descriptive statistics for monthly portfolio data

	Mean	Median	Q1	Q3
Number of stocks	4.25	2.76	1.36	5.29
Portfolio value (€)	22,005	6,490	2,195	17,779
Gross return (%)	0.40	0.23	-1.47	1.98
Net return (%)	-0.40	-0.22	-2.21	1.48
Volatility (%)	18.01	11.22	7.17	18.29

A- and S- Investors answers to A-test

48% of A-investors
and
52% of S-investors

Both have fulfilled the
A-test

		Empirical frequencies (%)
Self-estimated knowledge of financial markets		
	Level 0	29.21
	Level 1	30.99
	Level 2	31.76
	Level 3	8.04
Self-evaluated experience in "complex" instruments		
	Level 0	84.71
	Level 1	9.98
	Level 2	5.31
Investment in "complex" instruments		
	No	66.13
	Yes	33.87
Level of education		
	Level 0	6.09
	Level 1	21.49
	Level 2	72.42
Gender		
	Female	14.80
	Male	85.20
Language		
	French-speaker	45.35
	Dutch-speaker	50.77
	English-speaker	3.88
Professional status		
	Executive	16.67
	Other	83.33
	N	14,155

- Comparison of the trading behavior between A- and S-investors but...
- Investors who ask for more financial information may differ from the other investors on a large set of covariates (Gerhardt and Hackethal (2009), Kramer (2012), Hackethal et al (2012), Georgarakos and Inderst (2014) and Calcagno and Monticone (2015)) :
 - Gender, financial literacy, income, professional status...
 - Therefore differences in trading behavior of the two groups may be due to investors-immanent effects that are correlated with the appetite for information
- Matching procedure to control for the effect of other covariates
- Compare a group of “twins” S-investors and A-investors by random matching:
 - For each S-investor, we associate a “matched” A-investor (Stuart, 2010)
 - Nearest-neighbor matching algorithm based on the propensity score (Rosenbaum and Rubin, 1983)
 - For each individual of the control group we associate an individual of the treatment group with the “closest” propensity score

Investors characteristics comparison

	A-investors (%)	S-investors (%)	Difference (%)
Self-estimated knowledge of financial markets			
Level 0	29.30	29.12	-0.18
Level 1	31.01	30.97	-0.04
Level 2	30.72	32.74	2.02***
Level 3	8.97	7.17	-1.80***
Self-evaluated experience in “complex” instruments			
Level 0	82.77	86.57	3.8***
Level 1	11.10	8.91	-2.19***
Level 2	6.13	4.52	-1.61***
Investment in “complex” instruments			
No	67.08	65.23	-1.85**
Yes	32.92	34.77	1.85**
Level of education			
Level 0	7.03	5.19	-1.84***
Level 1	22.90	20.15	-2.75***
Level 2	70.07	74.66	4.59***
Gender			
Female	18.91	10.88	-8.03***
Male	81.09	89.12	8.03***
Language			
French-speaker	47.62	43.19	-4.43***
Dutch-speaker	48.36	53.08	4.72***
English-speaker	4.02	3.73	-0.29
Professional status			
Executive	15.15	18.12	2.97***
Other	84.85	81.88	-2.97***
N	6,913	7,242	

A- and S-investors largely differ on a large set of covariates

Independent variables	Parameters estimates
Intercept	-1.0138***
Self-estimated knowledge of financial markets 1	-0.0671
Self-estimated knowledge of financial markets 2	-0.0532
Self-estimated knowledge of financial markets 3	-0.2697***
Self-evaluated experience in complex instruments 1	-0.2902***
Self-evaluated experience in complex instruments 2	-0.3251***
Investment in complex instruments "Yes"	0.1484***
Level of education 1	0.2121***
Level of education 2	0.3757***
Male	0.6137***
French-speaker	-0.1860***
English-speaker	-0.1798**
Executive	0.1366***
Age	-0.00106
Ln(PF value)	0.0174
Trading experience	0.00965***
Pseudo R ²	1.94%
N	14,155

Propensity score

- **Propensity score:** Probability to be part of the treatment group, i.e. probability to have asked for financial information (*Appetite for information=1*)
- Logit model:
 - Dep. Var: Prob(*Appetite for information=1*)
 - Indep. Vars: A-test items answers

Univariate Analysis of the matched samples

	“matched” A-investors	S-investors	Difference
Number of stock trades	43.658	48.457	4.799***
Number of daytrades	1.6331	1.3694	-0.2637*
Average number of trades on the same stock	3.7095	3.1540	-0.5555***
Proportion of option traders (%)	17.16	19.41	2.25***
Proportion of bond traders (%)	2.39	4.03	1.64***
Disposition Effect (%)	17.7230	16.5495	-1.1735*
Number of different stocks traded	10.7211	13.6081	2.8870***
Number of stocks	3.7636	4.8258	1.0623***
Volatility (%)	18.5101	17.7121	0.7980
Proportion of fund traders (%)	16.09	27.51	11.42***
HHI (%)	58.05	51.00	-7.05***
Modified HHI (%)	58.05	45.99	-12.06***
Gross return (%)	0.172	0.506	0.334***
Net return (%)	-0.604	-0.338	0.266***
Gross Sharpe ratio	-0.00991	0.00684	0.0167***
Net Sharpe ratio	-0.0735	-0.0767	-0.00325
N	3,819	7,242	

DE is the disposition effect, i.e. the tendency of investors to hold too long on losers and to sell winners too quickly.

HHI is the Herfindhal-Hirschman Index and **M-HHI** is the modified measure that includes funds.

- from **0** (well-diversified portfolios)
 - to **1** (underdiversified portfolios with only 1 stock)

A- and S-investors differ in their trading behavior:

- **S-investors** trade a **larger stock universe**, trade funds, do less daytrades, are less subject to the DE, hold better **diversified PTF**, and earn **higher returns**,
- **A-investors** display a more “intuitive” trading behavior

Paper 3 (A. bellofatto, C. D'Hondt & R. De Winne)

- **Is investors' self-assessment of their financial literacy useful for characterizing investors' trading behavior?**
- **Financial literacy:** « the ability to process economic information and make informed decisions about financial planning, wealth accumulation, debt and pensions » (Lusardi and Mitchell 2014).
- Low financially literate individuals are less likely to plan for retirement and therefore accumulate less wealth during their lifetime (Lusardi and Mitchell 2017).
- Financial literacy is strongly correlated with the degree of portfolio diversification (Guiso and Jappelli 2008) and stock market participation (Kimball and Shumway 2006, Christelis et al. 2010, Van Rooij et al. 2011).

The above papers use an **objective measure** of financial literacy (set of questions of Lusardi and Mitchell (2014)). In this paper: a **subjective measure of financial literacy** that rely on MiFID questions asking individuals to self-assess their financial knowledge and expertise is used.

« **Can we trust what people state?** »

Data

- Data on investors' trades and portfolios
 - **20,285 investors** of a Belgian brokerage house
 - 2,107,382 trades on about 13,000 stocks (Eurofidai and Bloomberg)
 - Period: January 2003-March 2012 (MIFID enforced in November 2007)
- Two tests and two questionnaires:
 - 1) Appropriateness test: A-test (execution and order transmission)
 - 2) Suitability test: S-test (before getting general financial advice).
 - -> online tests, no conversation with any broker or financial advisor
 - -> « do-it-yourselfers » investors

Subjective financial literacy questions

Panel A: A-test question	Answers
<i>What is your knowledge of financial markets?</i>	
Level 0	I know a few things but I am interested by the financial markets
Level 1	I have sufficient experience to understand well the importance of a good diversification of risks
Level 2	I understand the functioning of the financial markets. I know that the fluctuations can be important and that the various sectors and categories of products have different characteristics relating to their revenue, growth and risk profile
Level 3	I consider myself as an experienced investor who manages any aspect of the financial markets
Panel B: S-test questions	Answers
<i>What is your knowledge of the financial markets?</i>	
Level 1	I know very little about it and I am not really interested in it
Level 2	I am not familiar with investments, but I am interested in it
Level 3	I have sufficient experience to acknowledge the importance of risk diversification
Level 4	I have a good knowledge of the financial markets. I am aware that the financial markets can strongly fluctuate, that sector and asset categories have different characteristics regarding revenue, growth and risk profile
Level 5	I consider myself as an experienced investor who thoroughly masters all the aspects of the financial markets
<i>How do you estimate your level of knowledge and experience about risks and potential obligations inherent to shares, bonds, funds and structured products?</i>	(based upon the type of product in which you have the lowest experience)
Level 0	No knowledge
Level 1	Average knowledge
Level 2	Good knowledge

Statistics for questions on subjective financial literacy

Understands the functioning of the financial markets and **knows the fluctuations can be important** and that the various sectors and **categories of products** have different characteristics relating to their revenue, growth and risk profile

Panel A: A-test question					
	0	1	2	3	
Knowledge of financial markets	20%	28%	41%	11%	
Panel B: S-test questions					
	1	2	3	4	5
Knowledge of financial markets	3%	14%	31%	43%	9%
	0	1	2		
Knowledge and experience about "complex" instruments	14%	56%	30%		

Has a good knowledge of the financial markets and **is aware that the financial markets can strongly fluctuate**, that sector and **asset categories** have different characteristics relating to their revenue, growth and risk profile

Average knowledge

(1) Consistency across investors' answers in both MiFID tests

A-test		S-test					Total
		1	2	3	4	5	
0	(#)	166	1,847	1,172	797	80	4,062
	(%)	0.82	9.11	5.78	3.93	0.39	20.02
	(r%)	4.09	45.47	28.85	19.62	1.97	
	(c%)	28.92	64.81	18.85	9.04	4.39	
1	(#)	188	745	2,898	1,765	106	5,102
	(%)	0.93	3.67	14.29	8.70	0.52	28.11
	(r%)	3.30	13.07	50.82	30.95	1.86	
	(c%)	32.75	26.14	46.61	20.01	5.81	
2	(#)	154	234	1,952	5,379	547	8,266
	(%)	0.76	1.15	9.62	26.52	2.70	40.75
	(r%)	1.86	2.83	23.61	65.07	6.62	
	(c%)	26.83	8.21	31.40	60.98	30.01	
3	(#)	66	24	195	880	1,090	2,255
	(%)	0.33	0.12	0.96	4.34	5.37	11.12
	(r%)	2.93	1.06	8.65	39.02	48.34	
	(c%)	11.50	0.84	3.14	9.98	59.79	
Total	(#)	574	2,850	6,217	8,821	1,823	20,285
	(%)	2.83	14.05	30.65	43.49	8.99	100.00

8.99% of investors select the highest level of literacy in the S-test BUT 48.34% of investors also select the highest level in the A-test.

Statistics Value P-value

χ^2 11,291 <.0001

Spearman's rank correlation 0.54 <.0001

High but not perfect level of consistency across answers

(2) Univariate analyses (ANOVA)

		Financial knowledge				F-stat
		0	1	2	3	
Experience and familiarity	Number of total trades	74.11	110.27	168.77	272.22	167.02**
	Number of stock trades	60.34	86.62	118.83	171.20	84.66***
	Turnover (%)	29.17	27.60	27.38	33.82	0.93
	Option_trader (%)	13.98	20.69	37.45	63.76	792.00***
Diversification	DE	13.94	12.85	10.94	9.90	22.91***
	Number of different stocks traded	16.63	23.91	31.71	39.79	270.22**
	Number of stocks	4.41	5.64	6.91	7.30	127.97**
	Volatility (%)	24.78	27.49	28.83	30.83	5.33***
	Fund_trader (%)	21.07	29.12	40.78	47.93	249.71**
Performance	HHI	0.55	0.48	0.45	0.48	113.84**
	M_HHI	0.51	0.44	0.39	0.41	175.80**
	Gross return (%)	0.28	0.53	0.80	0.92	23.43***
	Net return (%)	-0.43	-0.06	0.18	0.22	24.42***
	Gross Sharpe-ratio (%)	-0.88	-0.93	0.10 (NS)	0.56	3.07**
	Net Sharpe-ratio (%)	-5.15	-4.55	-3.72	-3.09	3.99***
	Net excess Sharpe-ratio (%)	-5.58	-3.20	-1.47	0.11 (NS)	26.48***

A-test

		Knowledge and experience about “complex” instruments				F-stat
		0	1	2		
Experience and familiarity	Number of total trades	80.21	119.05	224.11	210.72***	
	Number of stock trades	61.39	91.99	146.49	105.51***	
	Turnover (%)	31.53	27.06	29.79	1.04	
	Option_trader (%)	15.64	24.31	50.74	905.81***	
Diversification	DE	13.88	12.45	10.15	29.64***	
	Number of different stocks traded	17.78	25.03	36.43	319.41***	
	Number of stocks	4.62	5.87	7.23	130.74***	
	Volatility (%)	23.22	27.72	30.36	12.05***	
	Fund_trader (%)	22.44	31.13	45.84	301.77***	
Performance	HHI	0.54	0.48	0.46	84.37***	
	M_HHI	0.50	0.43	0.39	147.32***	
	Gross return (%)	0.34	0.56	0.91	28.74***	
	Net return (%)	-0.33	-0.07	0.28	26.99***	
	Gross Sharpe-ratio (%)	-0.78	-0.76	0.67	6.06***	
	Net Sharpe-ratio (%)	-5.05	-4.47	-3.18	6.12***	
	Net excess Sharpe-ratio (%)	-0.23 (NS)	0.70	2.91	17.53***	
Net excess Sharpe-ratio (%)	-4.5	-3.00	-0.93	17.73***		

S-test

Measures of trading behavior (except turnover) significantly vary across the different levels of financial literacy

(3') Multivariate analyses

Table 11: Results for subjective financial literacy in the A-test & performance

	(1)	(2)	(3)	(4)	(5)	(6)
	Gross return	Net return	Gross Sharpe-Ratio	Net Sharpe-Ratio	Gross E-Sharpe-Ratio	Net E-Sharpe-Ratio
Intercept	-1.53***	-2.65***	-0.09***	-0.16***	-0.10***	-0.17***
Gender	-0.28***	-0.39***	-0.01*	-0.02***	-0.03***	-0.03***
Age	0.02***	0.02***	0.01***	0.01***	0.01***	0.01***
Level of education 1	-0.17	-0.29**	-0.01	-0.02*	-0.02*	-0.02**
Level of education 2	-0.11	-0.10	0.01	-0.01	-0.01	-0.01
Ln(PF value)	0.11***	0.13***	0.01***	0.01***	0.01***	0.01***
Trading experience	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***
Financial markets knowledge 1	0.12	0.17*	-0.01	-0.01	0.01	0.01
Financial markets knowledge 2	0.29***	0.27***	-0.01	-0.01	0.02***	0.01**
Financial markets knowledge 3	0.41***	0.29**	-0.01	-0.01	0.03***	0.02***
Adjusted R ²	1.92%	2.69%	0.71%	1.56%	1.82%	2.92%
Pseudo R ²	-	-	-	-	-	-
N	20,285	20,285	20,285	20,285	20,285	20,285

Investors who report higher levels of financial literacy tend to **invest smarter**: they display higher returns and excess Sharpe ratios.

Results are **not consistent with overconfidence** because their higher trading activity does result in better performance.

Conclusion

- The MiFID provides a natural experiment to investigate the relationship between customers' expectations and trading behavior
- Investor segmentation based on questionnaire answers works pretty well
- However, questionnaire answers are biased (*due to data collection*), and a poor quality is reported for suitability tests, clients profiling and advisory services, as a consequence (AMF 2010, FSA 2011, ESMA 2012, FSMA 2014) (*due a wide latitude for interpretation*).
- In France, banks do not use (or store) MiFID data enough

Work in progress:

FRANCE

- MiFID answers and stock market participation: Causality?
- PTF analysis (allocations, PTF diversification and assets diversification, home bias, ...)

BELGIUM

- Social/peers and culture impact?
- Investor sentiment

Thank you for your attention!

The authors are grateful to the commercial bank and to the online brokerage house for providing the data, to AMF and FSMA for their support and to the European Savings Institute (Observatoire de l'Épargne Européenne) for its financial support.



OBSERVATOIRE DE L'ÉPARGNE EUROPÉENNE

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