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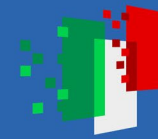
# Missione 4 Istruzione e Ricerca

The interplay between sustainable preferences and behavioral biases in Italian investors

Caterina Cruciani, Luca Gelsomini, Ugo Rigoni  
Venice School of Management, Ca' Foscari University

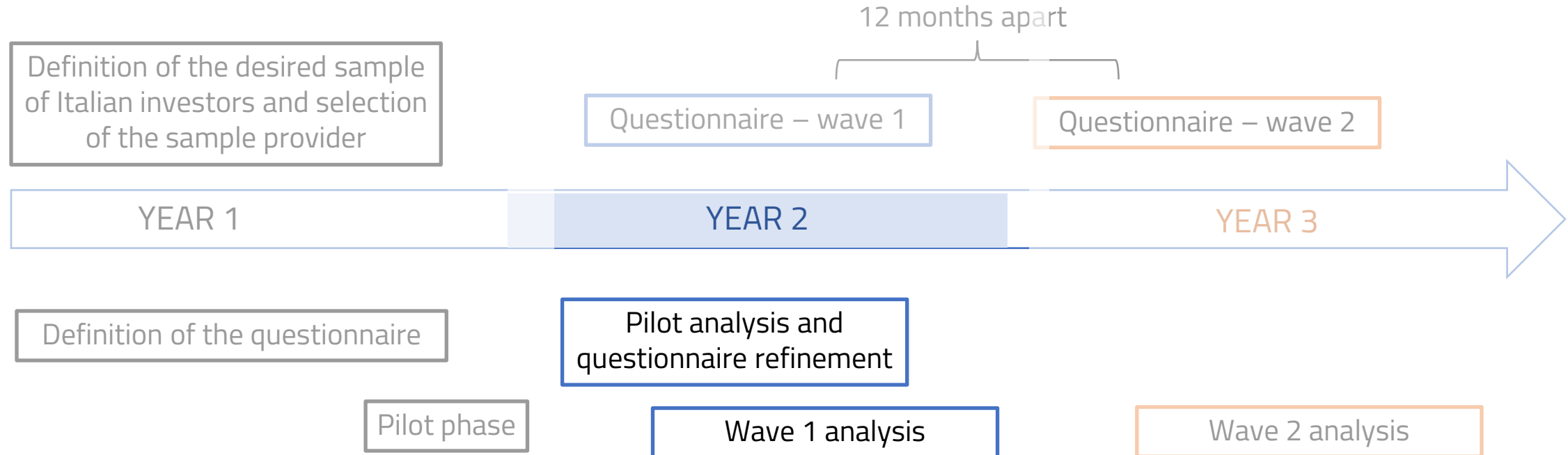


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# Exploring the motives of Italian investors wrt sustainable investment

## A timeline





# The interplay between sustainable and behavioral domains

## How are they related?

Extensive empirical evidence suggests that **investors** do not comply with the tenets of traditional rationality but fall prey to a series of **behavioral biases** (see Barberiss and Tahler (2003) for a review)

**Sustainable finance** is driven by both **material** (e.g. returns) and **non-material motives** (Renneboog et al (2008), Berry, Junkus (2013),Borgers, Pownall (2014) Puaschunder (2017), Riedls, Smiths (2017), Bollen et al (2019))

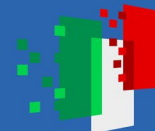
Both **sustainable and behavioral finance** adhere to a **non-standard view of finance** (reduced diversification, longer horizon, non-material aspects) thus a relationship between the two is reasonable



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# Bridging sustainability and behavioral biases

An empirically based research framework

Empirical literature exploring **drivers of demand** for **sustainable investment products** finds a major role of **environmental/social preferences**

*(Barreda-Tarrazona et al., 2011, Døskeland and Pedersen, 2016; Rossi et al., 2019 Gutsche et al., 2021; Riedl and Smeets, 2017; Gutsche et al., 2020 Bauer et al., 2021; Anderson and Robinson, 2022; Aiken et al., 2020 Heeb et al., 2023)*

How does this fit within the **decision-making process** underlying financial investment?

## Risk aversion and behavioral biases

*(Barberis & Thaler, 2003; Kahneman et al., 1974, 1982; Kahneman & Tversky, 1979; Ricciardi, 2008; Ricciardi & Simon, 2015; Statman, 2014; Thaler et al., 2000; Tversky & Kahneman, 1992)*

## Role of financial literacy and financial advisory

*(Calcagno & Monticone, 2015; Collins, 2012; Collins et al., 2010; Gennaioli et al., 2015; Georgarakos & Pasini, 2011; Guiso et al., 2008; Lusardi & Mitchell, 2011, 2014; van Rooij et al., 2011)*



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# Bridging sustainability and behavioral biases

An empirically based research framework

Empirical literature exploring **drivers of demand** for **sustainable investment products** finds a major role of **environmental/social preferences**

*Affect the relative attention devoted to non-economic features of the investment decision*

How does this fit within the **decision-making process** underlying financial investment?

## **Risk aversion and behavioral biases**

*Affect the correct information collection and processing under uncertainty*

## **Role of financial literacy and financial advisory**

*Prevent a correct mapping of investment preferences /goals into an investment portfolio*



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# Bridging sustainability and behavioral biases

An empirically based research framework

Empirical literature exploring **drivers of demand** for **sustainable investment products** finds a major role of **environmental/social preferences**

*Affect the relative attention devoted to non-economic features of the investment decision*

**Prevent investors from strict pursuit of maximum risk-adjusted returns**

**Risk aversion and behavioral biases**

*Affect the correct information collection and processing under uncertainty*

**Role of financial literacy and financial advisory**

*Hinder a correct mapping of investment preferences /goals into an investment portfolio*



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# Bridging sustainability and behavioral biases

An empirically based research framework

## The ideal investment

*Environmental/social preferences (values)  
self-regarding  
other regarding*

*Socio-demographic and economic dimensions*

*Experience, competence and literacy*

*Trust in financial systems, advisory*

*Decision-making biases*

## The investment you can sign up for

*Choice to own  
sustainable financial  
products*

a. General analysis

b. Focus on sustainable investors

c. Qualitative analysis of competence

In progress



# The representative sample of Italian investors

## Constructing the representative sample

Sample commissioned to **Doxa**

Representativeness based upon **Bank of Italy's «Indagine sui risparmi delle famiglie»**  
and analyses by **Osservatorio Einaudi**

### Key subpopulations

- 815 Mass+ Affluent up to €199K
- 201 Upper affluent (€200-499K)
- 172 Private €500K and above

### Variables defining representativeness

- Education
- Gender
- Age
- Geographical area of residence
- Profession
- Total Wealth

### Dimensions of analysis

*209 variables organized in 7 themes to represent the framework proposed*





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# The representative sample of Italian investors

## Testing the representative-sample sustainable financial behavior

Sample commissioned to **Doxa**

Representativeness based upon **Bank of Italy's «Indagine sui risparmi delle famiglie»**

and analyses by **Osservatorio Einaudi**

### Key subpopulations

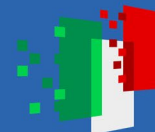
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### Dimensions of analysis

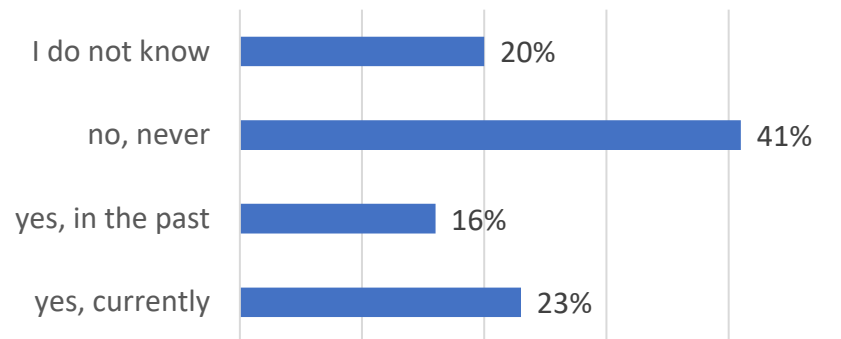
- General values
- DM biases
- Risk attitudes
- Financial education and experience
- Sustainable preferences
- Financial advisory
- Socio-demographic controls



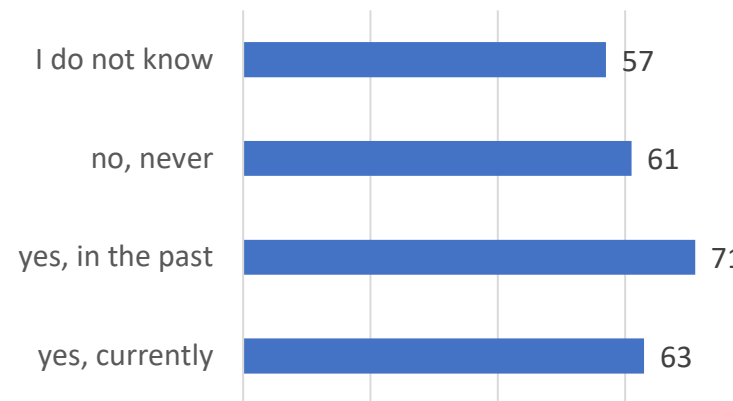
# The representative sample of italian investors

## Summary statistics and relevant insights – sample design variables

### Do you own sustainable financial products?



### % males



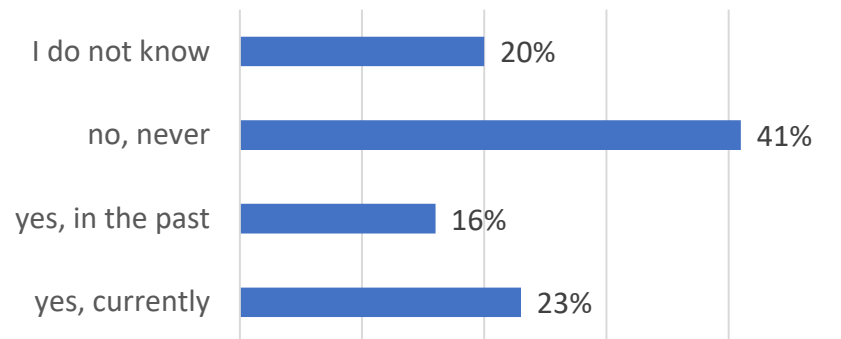
Dependent variable in the general analysis



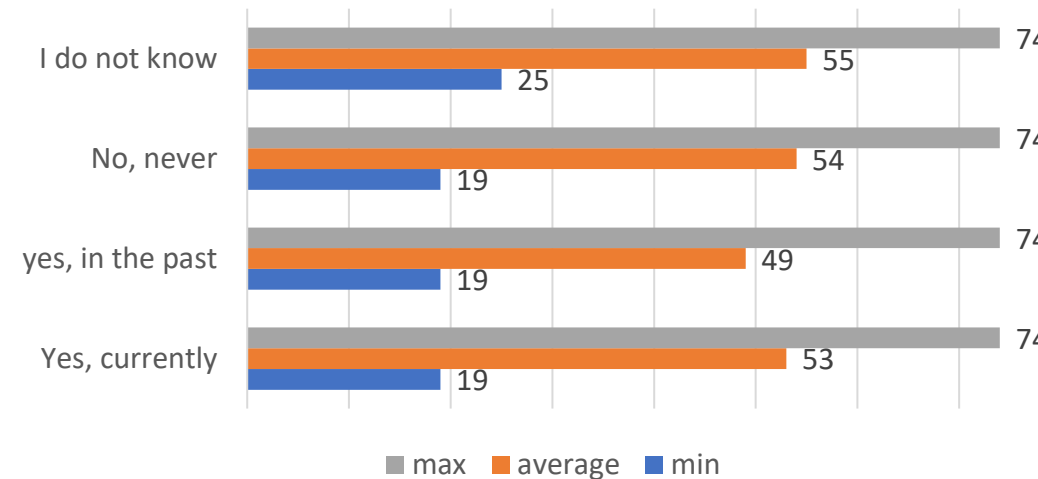
# The representative sample of italian investors

## Summary statistics and relevant insights – sample design variables

### Do you own sustainable financial products?



### age

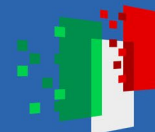




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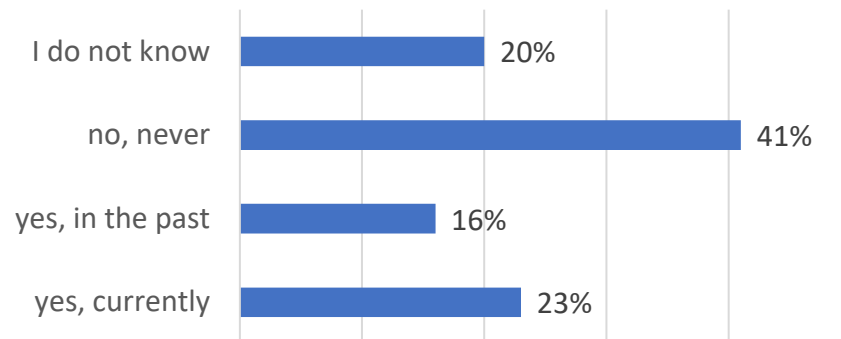


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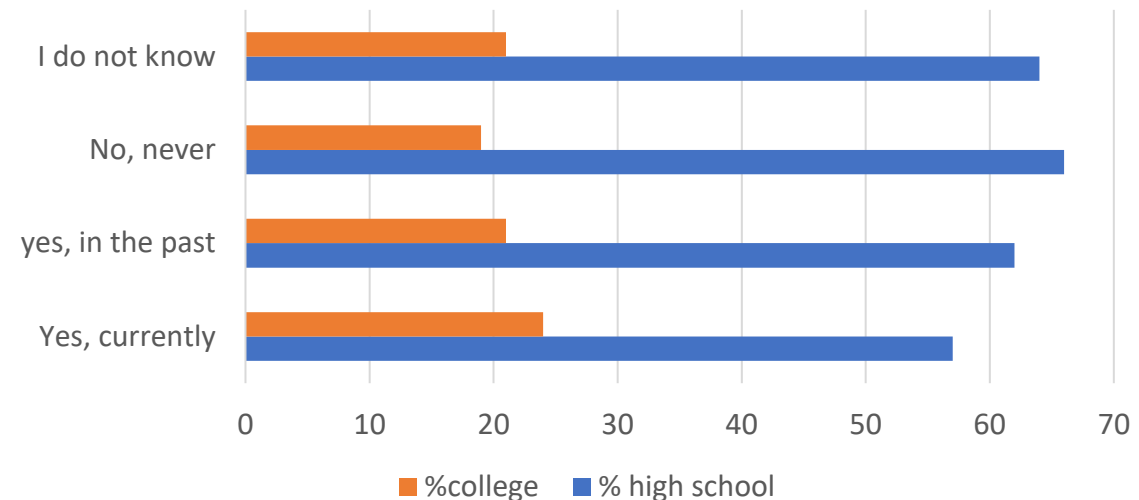
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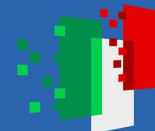
## Summary statistics and relevant insights – sample design variables

### Do you own sustainable financial products?



### education

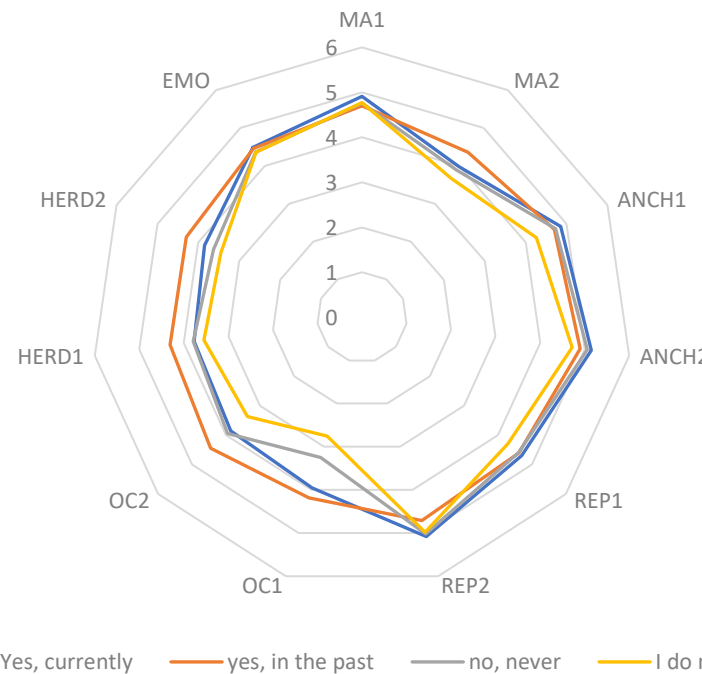
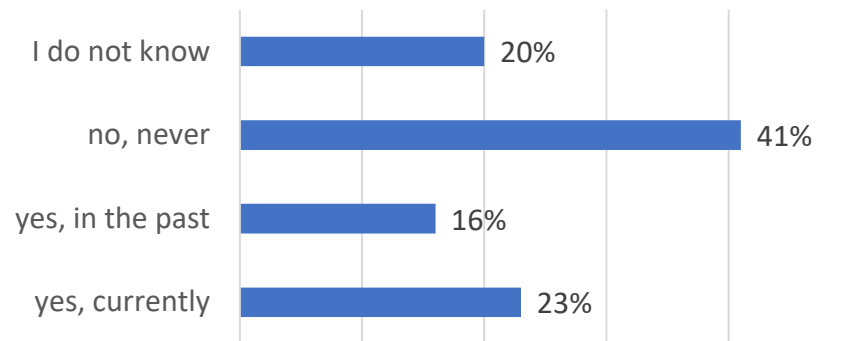




# The representative sample of Italian investors

## Summary statistics and relevant insights – behavioral biases

### Do you own sustainable financial products?

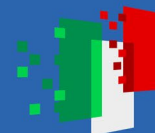


**Confused investors** score lower  
Similar patterns across **investors** but

- **former** investor more prone to herding, OC and MA
- **current** investors more prone to REP and EMO

Also scoring higher wrt the **Disposition effect**

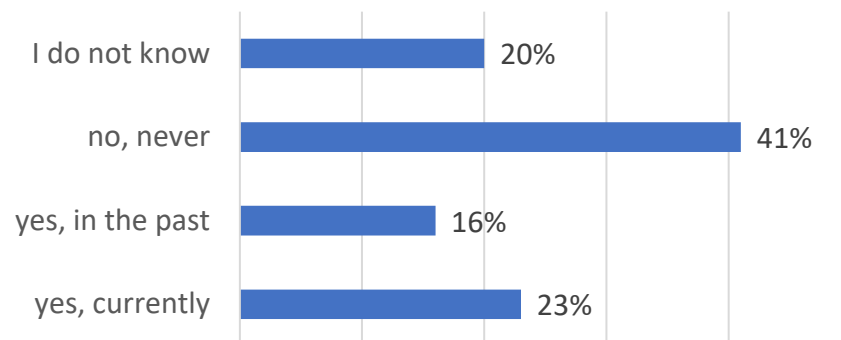
Set of self-assessment questions (1-7 Likert scale) inspired by (Baker et al., (2019, 2021) and (Wood & Zaichkowsky, 2004)



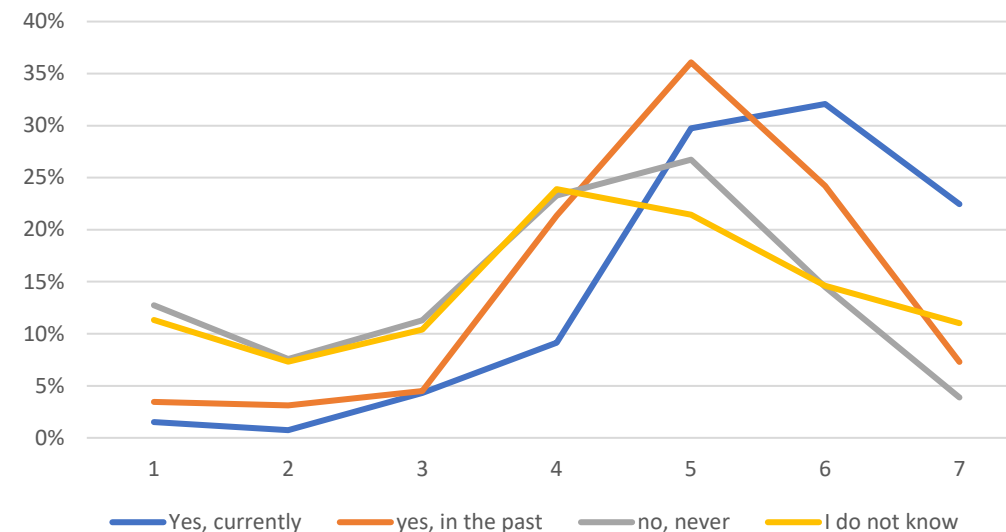
# The representative sample of italian investors

## Summary statistics and relevant insights – sustainable preferences

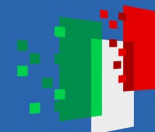
### Do you own sustainable financial products?



### Stated interest towards sustainable investment (likert scale 1-7)



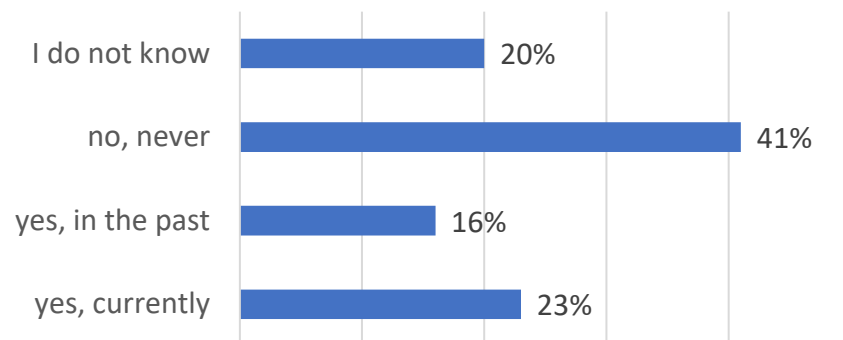
Significant difference between those who have/had sustainable investment and the other groups



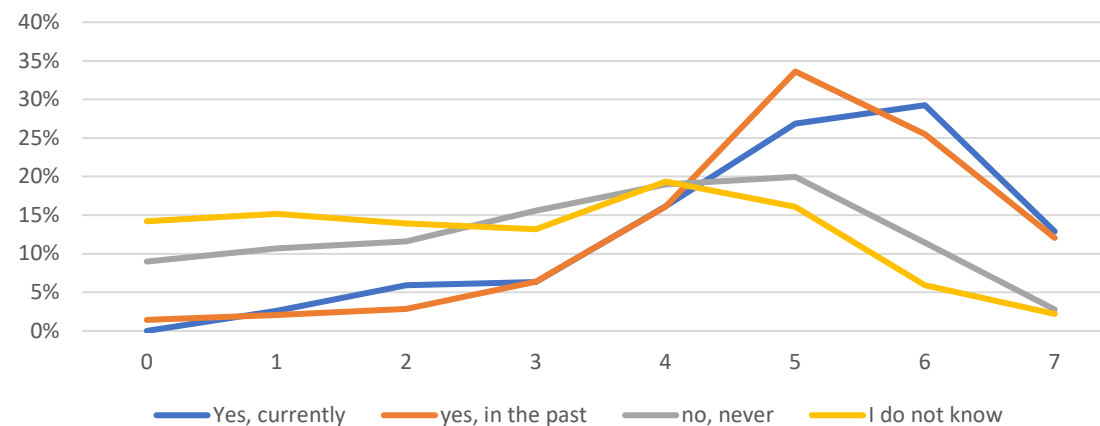
# The representative sample of italian investors

## Summary statistics and relevant insights – sustainable preferences

### Do you own sustainable financial products?



### Self-assessed competence wrt sustainable investment (likert scale 1-7, 0=no answer)

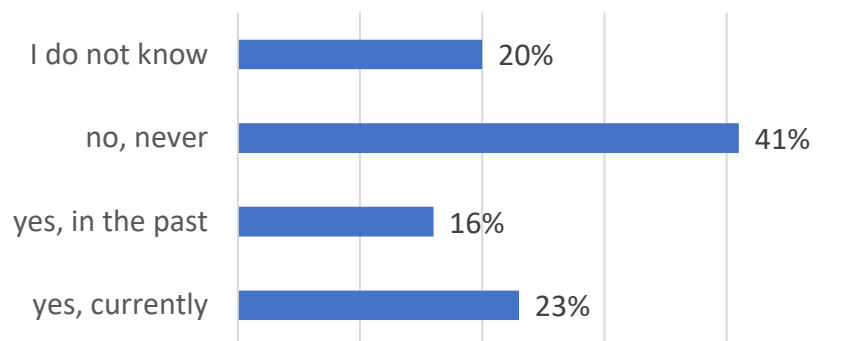


Significant difference between those who have/had sustainable investment and the other groups

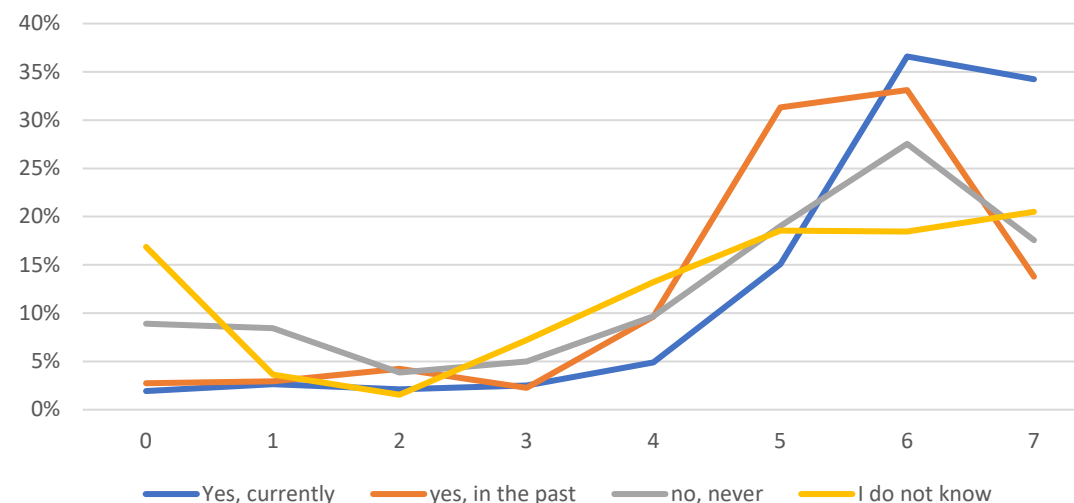
# The representative sample of italian investors

## Summary statistics and relevant insights – sustainable preferences

### Do you own sustainable financial products?



### Agreement with goals of EU green deal



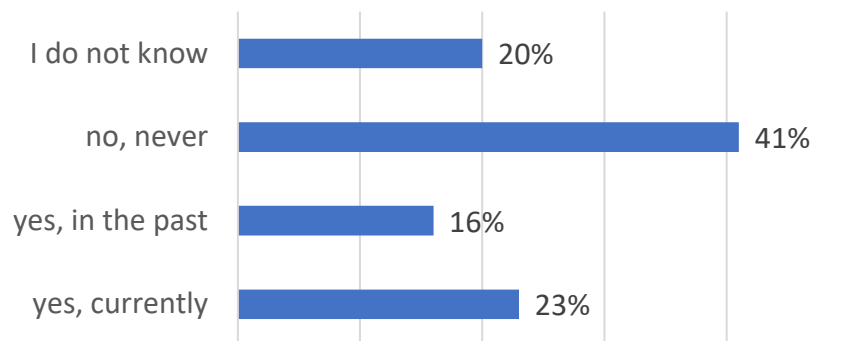
Significant difference between those who have/had sustainable investment and the other groups



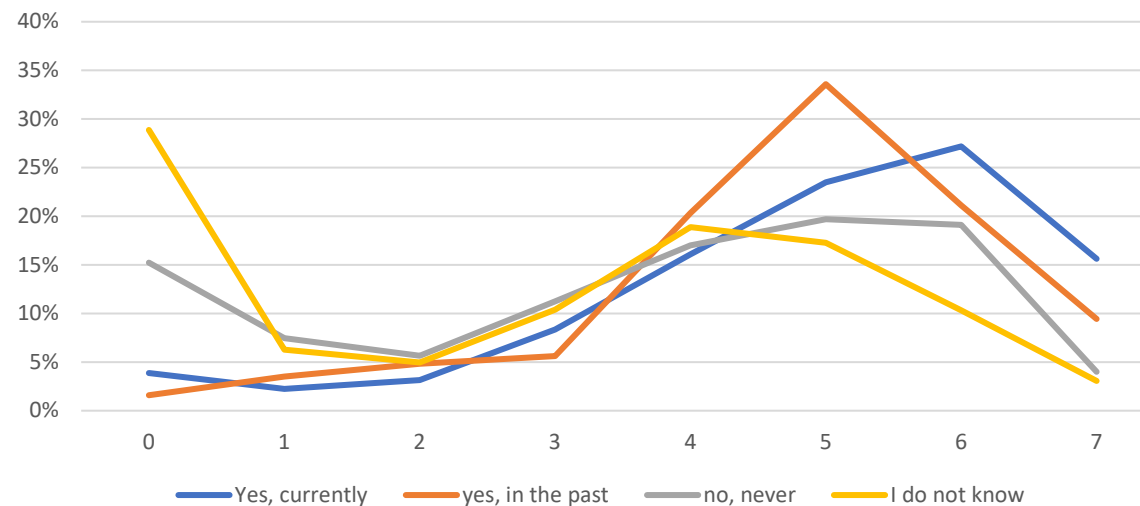
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## Summary statistics and relevant insights – sustainable preferences

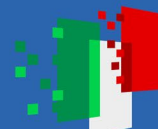
### Do you own sustainable financial products?




### Agreement with appropriateness of Eu green deal tools



Significant difference between those who have/had sustainable investment and the other groups



## Regression analysis – variables and method

Do you own sustainable financial products? 

*Dependent variable unordered, categorical*

General values	-----	<i>Generalised trust, altruism, UG</i>
Decision-making biases	-----	<i>MA, representativeness, anchoring, OC, herding, emotions, DE</i>
Risk attitudes	-----	<i>Sub and obj risk aversion, fin. self efficacy, r-r tradeoff, loss aversion</i>
Financial education and experience	---	<i>Financial literacy, information sources, no. of financial products held, % investment in fin. Products, fin d-m style</i> <i>COMPETENCE: use of strategies, self-assessed competence, use of info sources, tendency to spot difference between sust and non sust</i>
Sustainable preferences	-----	<i>INTEREST: declared interest, features making sust inv attractive</i> <i>VALUES: agreement with EU green deal and with its advantages from having advisors, no. of meetings with advisor, appropriateness</i>
Financial advisory	-----	<i>support by advisor in checking PT</i>
Socio-demographic controls	-----	<i>Income, no. of income sources in family, no. of dependents, values reflected in PT</i>



# The representative sample of Italian investors - insights

Investors who currently hold sustainable financial products (23% of the sample)

86% have an advisor

## Behavioral biases

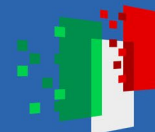
- ❖ Anchoring on purchase price
  - Role of past performance
- ❖ Overconfidence in own appraisal wrt analysts's
  - Disposition effect

## Sustainable preferences and values

- Self assessed competence, values and interest
- Sustainable focus in information search
- Other-regarding nature

q36	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Generalized trust	.88	.094	-1.20	.231	.713	1.085	
Voluntary activities	1.563	.369	1.89	.058	.985	2.481	*
UG	1.033	.055	0.61	.54	.931	1.146	
MA2	.977	.073	-0.32	.751	.844	1.131	
ANCH1	.929	.096	-0.71	.477	.759	1.137	
ANCH2	.817	.071	-2.32	.02	.688	.969	**
REP1	1.175	.112	1.69	.091	.975	1.417	*
REP2	.986	.073	-0.18	.854	.853	1.141	
OC 2	.835	.068	-2.20	.027	.711	.98	**
Disposition effect	1.47	.217	2.61	.009	1.1	1.965	***
% stocks	.998	.005	-0.50	.616	.989	1.007	
Loss aversion	.836	.096	-1.56	.118	.667	1.046	
Fin literacy	.967	.136	-0.24	.811	.735	1.273	
Gen info from advisor	.417	.12	-3.05	.002	.237	.731	***
Gen info from web	.495	.136	-2.55	.011	.288	.85	**
No. of fin products	1.429	.125	4.08	0	1.203	1.696	***
Sust competence	1.585	.134	5.46	0	1.343	1.87	***
Sust values	1.304	.205	1.69	.091	.959	1.773	*
Nodiff_sust	.989	.019	-0.57	.566	.954	1.026	
Sust info from advisor	3.079	.788	4.39	0	1.865	5.085	***
Sust info from web	1.597	.433	1.73	.084	.938	2.717	*
sust_interest	3.464	.539	7.98	0	2.553	4.7	***
Supply	.728	.202	-1.14	.252	.423	1.254	
Meetings w/advisor	.929	.13	-0.53	.595	.706	1.221	
Adv_role:finance	.98	.073	-0.27	.788	.846	1.135	
Adv_role:edu	1.064	.102	0.65	.517	.882	1.284	
Adv_role:trust	.794	.082	-2.25	.025	.649	.971	**
Total wealth	1.126	.061	2.18	.029	1.012	1.253	**
Family income sources	.625	.108	-2.73	.006	.446	.876	***
DM style	1.195	.279	0.77	.444	.757	1.888	
Constant	.125	.15	-1.73	.083	.012	1.31	*
Mean dependent var		2.444	SD dependent var			1.098	
Pseudo r-squared		0.260	Number of obs			912	
Chi-square		409.971	Prob > chi2			0.000	
Akaike crit. (AIC)		1959.479	Bayesian crit. (BIC)			2407.334	

\*\*\* p<.01, \*\* p<.05, \* p<.1



# The representative sample of Italian investors - insights

Investors who used to hold sustainable financial products (16% of the sample)

78% have an advisor

## Behavioral biases

- Mental accounting

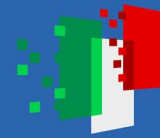
## Sustainable preferences and values

- Self assessed competence and interest
- ❖ Sustainable values
- Sustainable focus in information search but loose relationship with advisor
- Other-regarding nature more marked

q36	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Generalized trust	1.028	.128	0.22	.822	.805	1.314	
Voluntary activities	1.724	.477	1.97	.049	1.002	2.966	**
UG	1.13	.063	2.19	.029	1.013	1.26	**
MA2	1.23	.118	2.15	.031	1.019	1.484	**
ANCH1	.848	.101	-1.39	.165	.672	1.07	
ANCH2	.857	.089	-1.49	.136	.699	1.05	
REP1	1.043	.11	0.40	.69	.849	1.281	
REP2	.972	.079	-0.35	.73	.829	1.14	
OC2	1.033	.092	0.37	.714	.868	1.23	
Disposition effect	1.344	.255	1.56	.12	.926	1.95	
% stocks	1.009	.005	1.64	.1	.998	1.019	
Loss aversion	.878	.115	-0.99	.322	.679	1.136	
Fin literacy	.754	.112	-1.91	.056	.564	1.008	*
Gen info from advisor	.586	.209	-1.50	.134	.291	1.179	
Gen info from web	.773	.244	-0.81	.415	.417	1.435	
No. of fin products	1.245	.127	2.14	.032	1.019	1.521	**
Sust competence	1.646	.175	4.69	0	1.337	2.028	***
Sust values	.668	.124	-2.17	.03	.464	.962	**
Nodiff_sust	1.019	.024	0.79	.429	.973	1.066	
Sust info from advisor	2.088	.637	2.41	.016	1.149	3.797	**
Sust info from web	.821	.261	-0.62	.534	.441	1.529	
sust_interest	1.566	.232	3.03	.002	1.172	2.092	***
Supply	1.105	.348	0.32	.751	.596	2.05	
Meetings w/advisor	.615	.111	-2.69	.007	.432	.876	***
Adv_role:finance	.999	.076	-0.02	.987	.86	1.159	
Adv_role:edu	.978	.108	-0.20	.843	.788	1.215	
Adv_role:trust	.732	.08	-2.85	.004	.591	.908	***
Total wealth	1.014	.07	0.21	.836	.887	1.16	
Family income sources	.597	.118	-2.60	.009	.405	.881	***
DM style	1.509	.409	1.52	.129	.887	2.569	
Constant	.19	.248	-1.27	.203	.015	2.455	
Mean dependent var		2.444	SD dependent var			1.098	
Pseudo r-squared		0.260	Number of obs			912	
Chi-square		409.971	Prob > chi2			0.000	
Akaike crit. (AIC)		1959.479	Bayesian crit. (BIC)			2407.334	

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

Estimates expressed as Relative Risk Ratios (RRR)



# The representative sample of Italian investors

Investors who do not know if they currently hold sustainable financial products (20% of the sample)

71% have an advisor

## Behavioral biases

- ❖ Anchoring on price range
- Role of past performance in profits

## Sustainable preferences and values

- NO role of any sustainable preference dimensions!
- ❖ Concern for limited supply of viable sust investment options
- ❖ Independent investment style
- ❖ Distrust in others

q36	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
<u>Generalised trust</u>	.752	.08	-2.69	.007	.612	.926	***
Voluntary activities	.949	.24	-0.21	.836	.578	1.557	
UG	.991	.051	-0.17	.861	.896	1.096	
MA2	.974	.065	-0.39	.697	.856	1.11	
<u>ANCH1</u>	.863	.077	-1.65	.099	.725	1.028	*
ANCH2	.964	.073	-0.48	.629	.832	1.118	
REP1	1.035	.101	0.35	.726	.855	1.253	
<u>REP2</u>	1.177	.078	2.45	.014	1.033	1.34	**
OC1	.907	.073	-1.22	.223	.774	1.061	
Disposition effect	1.183	.181	1.10	.271	.877	1.597	
% stocks	.993	.005	-1.52	.128	.984	1.002	
Loss aversion	.827	.106	-1.49	.136	.644	1.062	
Fin literacy	.898	.118	-0.82	.414	.693	1.163	
<u>Gen info from advisor</u>	.622	.173	-1.70	.089	.361	1.074	*
<u>Gen info from web</u>	.494	.128	-2.72	.006	.297	.821	***
No. of fin. products	1.013	.097	0.14	.891	.84	1.222	
Sust competence	.979	.068	-0.31	.76	.855	1.121	
Sust values	1.15	.164	0.98	.329	.869	1.522	
<u>Nodiff_sust</u>	1.047	.018	2.59	.01	1.011	1.084	***
<u>Sust info from advisor</u>	2.541	.669	3.54	0	1.517	4.257	***
Sust info from web	1.126	.325	0.41	.681	.639	1.983	
<u>sust_interest</u>	1.236	.168	1.56	.119	.947	1.613	
<u>Supply</u>	.458	.153	-2.33	.02	.238	.882	**
Meetings with advisor	1.091	.156	0.61	.544	.824	1.444	
<u>Adv_role:finance</u>	.874	.06	-1.94	.052	.764	1.001	*
<u>Adv_role:edu</u>	.799	.062	-2.91	.004	.687	.93	***
<u>Adv_role:trust</u>	1.093	.109	0.89	.371	.899	1.33	
Total wealth	.966	.062	-0.55	.584	.852	1.094	
<u>Family income sources</u>	.7	.125	-2.00	.046	.494	.993	**
DM style	1.394	.329	1.41	.159	.878	2.214	
Constant	5.857	7.159	1.45	.148	.534	64.284	
Mean dependent var		2.444	SD dependent var			1.098	
Pseudo r-squared		0.260	Number of obs			912	
Chi-square		409.971	Prob > chi2			0.000	
Akaike crit. (AIC)		1959.479	Bayesian crit. (BIC)			2407.334	





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# The representative sample of italian investors

## Preliminary insights from regression analysis

The analysis confirms that **holders of sustainable financial products**

are more prone to emotional considerations and are driven by value considerations.

rely on advisors for sustainable information but do not rely heavily on advisors in general, even if large majority is advised

**Former holders** of sustainable financial product

are much less prone to biases, seem to be driven also by diversification concerns and meet advisors less than the comparison group

**Uncertain investors**

are less trusting of others, prone to several biases and impervious to sustainability value concerns

their confusion stretches also to the comparison between sustainable and non sustainable products



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## WIP on the representative sample of italian investors

### A focus on sustainable investors with Pierangela Peruzzo

Focus on the **489 investors** in the sample that have or had sustainable investment products

**Propensity score matching** to come up with a control group

Understand whether the two groups differ in terms of the relevance of **different dimensions of sustainability literacy**

Data analysis in progress

### Exploring investors' narratives with Carlo Santagiustina

Focus on the **open-ended question** in the sample regarding the difference between sustainable and non sustainable investment products

Understand whether different groups of investors rely on **different narratives regarding sustainability** using a topic-modeling approach

In progress (phase 2?)



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## Next steps

### Getting ready for phase 2 of the data collection

Panel data functionality of Doxa sample allows to further explore dynamics emerged in the first wave

Role of **experience** (with sustainable investment and beyond)

Vignettes to understand **behavior in action** might further understanding of behavioral biases

**Personal narratives** regarding investment styles might uncover interesting dimensions in the topic modeling analysis





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# Thank you!

Let's continue the conversation

