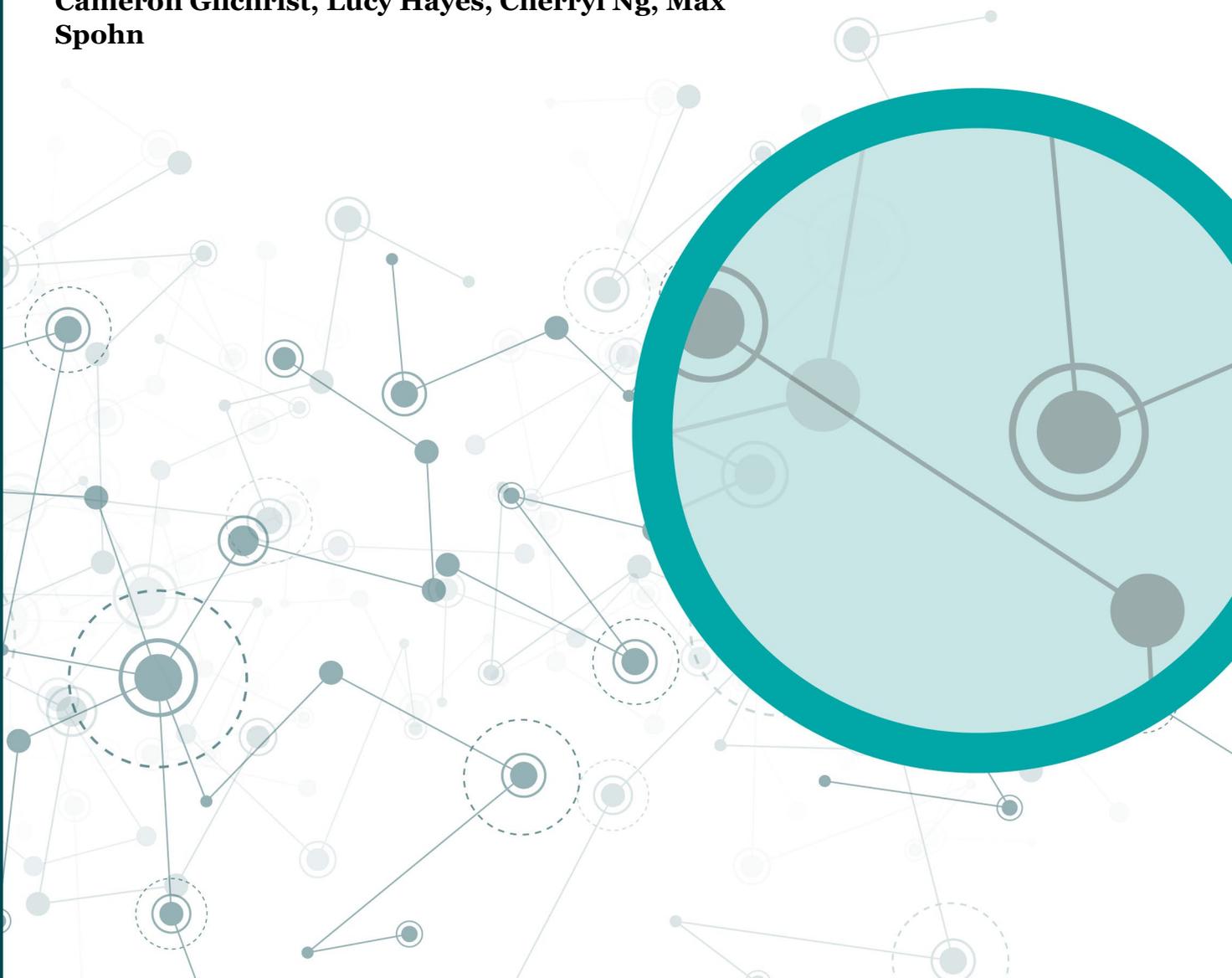


Research Note

January 2022

To certify or not to certify: decision points in the self-certification process

Cameron Gilchrist, Lucy Hayes, Cherryl Ng, Max Spohn



FCA research notes in financial regulation

The FCA research notes

The FCA is committed to encouraging debate on all aspects of financial regulation and to creating rigorous evidence to support its decision-making. To facilitate this, we publish a series of Research Notes, extending across economics and other disciplines.

The main factor in accepting papers is that they should make substantial contributions to knowledge and understanding of financial regulation. If you want to contribute to this series or comment on these papers, please contact Karen Croxson (karen.croxson@fca.org.uk).

Disclaimer

Research notes contribute to the work of the FCA by providing rigorous research results and stimulating debate. While they may not necessarily represent the position of the FCA, they are one source of evidence that the FCA may use while discharging its functions and to inform its views. The FCA endeavours to ensure that research outputs are correct, through checks including independent referee reports, but the nature of such research and choice of research methods is a matter for the authors using their expert judgement. To the extent that research notes contain any errors or omissions, they should be attributed to the individual authors, rather than to the FCA.

Authors

Cameron Gilchrist, Lucy Hayes, Cherryl Ng and Max Spohn (Financial Conduct Authority)

Acknowledgements

We would like to thank Dunvel Délias, Flo Farghly, Dan Gibbons, Jayson Probin and Patrick Sholl for their advice and input.

All our publications are available to download from www.fca.org.uk. If you would like to receive this paper in an alternative format, please call 020 7066 9644 or email publications_graphics@fca.org.uk or write to Editorial and Digital Department, Financial Conduct Authority, 12 Endeavour Square, London E20 1JN.

Contents

	Summary	3
	Equality and diversity considerations	3
1	Introduction and policy context	3
	Self-certification under the Financial Promotions Regime	5
2	Behavioural context and treatment design	7
	Decision Points	8
	Salience and simplification of information	9
	Positive frictions	9
	Framing Effects	11
3	Methodology and sample	12
	Experimental design	12
	Empirical strategy	15
	Sample description and attrition	17
4	Results	18
	Survey	18
	Self-certification	18
	Secondary results	22
	Exploratory results	22
5	Discussion	24

Summary

We conducted an online experiment simulating the experience of retail investors when browsing for high-risk investments. In particular, we explored one part of the consumer journey, self-certification under the Financial Promotions Regime, which requires that prospective investors declare that they are eligible (either wealthy enough or experienced enough) to receive promotions for certain high-risk investments. The UK's Financial Conduct Authority (FCA), which oversees this regime, has expressed concerns that many consumers may incorrectly self-certify, leading them to invest in inappropriate high-risk products that do not meet their needs (FCA, 2021). We investigated how decision points – in the form of salient and simple information and positive frictions that encourage consumers to pause and reflect – impact consumers' decision on whether to self-certify. We introduced positive frictions in the form of checkboxes, evidence declarations (a manual-input field where participants are obliged to enter supporting evidence) and a time delay. In addition, we also simplified the descriptive information accompanying the certification process and introduced a clearer risk warning. Moreover, we also changed the names of the self-certification categories from 'high net worth' and 'sophisticated' to a more negative framing. We find that the combination of checkboxes and evidence declaration fields reduce the proportion of people self-certifying as eligible to invest in a high-risk investment and the effect was mostly driven by the evidence declaration requirement. However, despite this reduction, there are still a significant number of consumers that continue to self-certify despite not being eligible to do so. Finally, we find no evidence that changing the certification names within the experiment reduces the proportion of people self-certifying. The results informed the FCAs' consultation paper (FCA, 2022).

Equality and diversity considerations

We have considered the equality and diversity issues that may arise in this Research Note.

Overall, we do not consider that the research in this Research Note adversely impact any of the groups with protected characteristics i.e. age, disability, sex, marriage or civil partnership, pregnancy and maternity, race, religion and belief, sexual orientation and gender reassignment.

1 Introduction and policy context

A well-functioning consumer investment market can not only help millions of consumers invest with confidence and save for planned and unexpected life events, but also provide essential funding to businesses in the real economy (FCA, 2021). However, social and economic developments, technological advances in the investment sector and the COVID-19 pandemic have pushed more consumers towards high-risk investments (FCA, 2021b). This raises consumer protection concerns given evidence that some of these investors may not understand the risks involved or be able to absorb losses (BritainThinks, 2021).

To help retail investors make more effective investment decisions about high-risk investments¹, the FCA identified three areas where consumer harm can be addressed:

- (i) the classification of high-risk investments that determines which (if any) marketing restrictions an investment is subject to
- (ii) the consumer journey into high-risk investments which, if strengthened, would further distinguish the high-risk investment market from the mainstream one and help consumers understand the risks involved
- (iii) the responsibilities of firms that approve financial promotions to ensure firms have the relevant expertise in the promotions they approve and the overall quality of financial promotions in the market is high.

Our research focuses on the second area identified, which deals with the process consumers must go through to access high-risk investments. By improving consumers' understanding of the risks of high-risk investments compared to the mainstream market, and facilitating more mindful investment decisions, consumers could be less likely to 'click through' and end up investing in inappropriate, high-risk products that do not meet their needs (FCA, 2021). We conducted three separate online experiments to test different segmentation tools that could further help consumers distinguish between high-risk and mainstream products:

1. Improved risk warnings (Délias et al., 2022)
2. Decision points within the customer journey (Farghly et al., 2022)
3. Updated investor categories in self-certification process (this Research Note)

This Research Note presents the findings of the experiment on self-certification.

¹ Any investment subject to marketing restrictions under FCA's rules can be considered high risk. This includes non-readily realisable securities (NRRSs), peer-to-peer (P2P) agreements, non-mainstream pooled investments (NMPIs) and speculative illiquid securities (SISs).

Self-certification under the financial promotions regime

The FCA's financial promotion rules apply varying degrees of marketing restrictions for high-risk investments. These restrictions reflect a judgement on the risks of the investment and whether they are likely to meet retail investor's needs. These marketing restrictions contain exemptions for high net worth and sophisticated investors. These exemptions generally reflect the legislative exemptions available in the Financial Promotions Order (FCA, 2021; FCA, 2022).

The FCA's financial promotions rules require that prospective investors self-certify that they are eligible to receive promotions for certain investment products. The two main types of products are:

1. Non-mainstream pooled investments (NMPs) and Speculative illiquid securities (SISs). Because of the complex nature of these investments, promotions for these types of investment cannot be made to retail investors until they have first been categorised as a 'high net worth'² or 'sophisticated' investor³; and
2. Non readily realisable securities (NRRSs) and Peer to peer (P2P) agreements. A direct offer financial promotion⁴, cannot be made to a retail investor unless they have first been categorised as 'high net worth',⁵ 'sophisticated'⁶ or 'restricted'⁷.

The rationale behind these self-certification rules is that *'these types of investment may generally not be suitable for retail investors as they are high risk and often complex and difficult for investors to understand'* (FCA, 2021). However, the FCA has recently expressed concerns about the efficacy of the current certification rules. Among their concerns are that *'too many consumers do not understand the impact of their categorisation or are led to wrongly categorise themselves as 'high net worth' or 'sophisticated''* (FCA, 2022). There is the accompanying concern that consumers simply *'click through'*, without even pausing to attempt to understand whether the high-risk investment product meets their needs (FCA 2021). Finally, there may be an *'appeal to some retail investors of self-certifying themselves as 'sophisticated' or 'high net worth' and the sense of exclusivity that (this) provide(s)'* (FCA, 2020). The current research design investigates these issues in an experimental setting and tests interventions to try and address them.

Table 6 in **Annex 1** sets out more detailed descriptions of the products to which self-certification is required. For this experiment, we elected to test our interventions in the context of Speculative illiquid securities (SISs). This is because the consequences of mis-certifying for SISs are more severe than for NRRSs and P2P investments. With SISs, mis-certifying consumers would gain access to a highly complex, illiquid and risky investment asset class, which is unlikely to meet their investment needs. We set out the exact criteria to be a high net worth or sophisticated investor for the purposes of SISs (the setting this experiment considers) in **Table 7** in **Annex 1**. Despite testing exclusively in

² See FCA Conduct of Business Sourcebook (COBS) 4.12.6 R for NMPI and COBS 4.14.17 R for SIS.

³ See COBS 4.12.7 R and COBS 4.12.8 R for NMPI and COBS 4.14.18 R and COBS 4.14.19 R for SIS.

⁴ See FCA Handbook Glossary, 'Direct Offer Financial Promotion'

⁵ See COBS 4.12.6 R.

⁶ See COBS 4.12.7 R and COBS 4.12.8 R.

⁷ See COBS 4.7.10 R

Research Note

To certify or not to certify: decision points in the self-certification process

the SIS setting, the experiment demonstrates interventions that discourage investors from certifying as either 'high net worth' or 'sophisticated', so that the findings remain relevant for substantially similar settings of: NMPI, NRRS and P2P.

2 Behavioural context and treatment design

Table 1 gives an overview of the treatments that we included in the self-certification processes. Importantly, the treatments were *additive*. That is, as we move from Treatment 1 to Treatment 5 the treatments become more complex by including the treatments that were previously introduced. For example, Treatment 2 – *Evidence Declaration* builds upon and includes Treatment 1 – *Active Choice*. These treatments generally increase in the degree of friction added with some treatments also simplifying the information provided. Because of the potential appeal of the names ‘high net worth’ and sophisticated, we also tested alternative certification names, set out in **Table 2**.

Table 1: List of the self-certification features that were included additively across treatment arms

Treatment arm	Summary	Behavioural rationale
<u>Control</u>	This is the standard self-certification process as currently set out in FCA rules. Participants simply had to type <i>I agree</i> ⁸ and the date below the self-certification form in order to attest that they were eligible to access the investment.	
<u>Treatment 1 – Active Choice</u>	This treatment adds yes/no boxes, so that the participant has to agree to a specific certification criterion before self-certifying ⁹ .	Positive friction
<u>Treatment 2 – Evidence Declaration</u>	On top of Treatment 1, this treatment adds an evidence declaration box, so that participants must provide evidence that they meet specific certification criterion before self-certifying ¹⁰ .	Positive friction
<u>Treatment 3 – Simplify Text</u>	On top of Treatment 1 and 2, this treatment simplifies the certification text, making the risks of certifying particularly clear.	Simplification of information

⁸ This was subject to a validation check, such that ‘I agree’ could not be a random string or characters but rather had to match what was required: ‘I Agree’, ‘i agree’ or so forth. This was also the case for all further treatments.

⁹ This was subject to a validation check such that participants could not self-certify without first ticking a relevant box. This was also the case for all further treatments.

¹⁰ This was subject to a validation check, such that the evidence declared could not contradict the self-certification being made. For example, if a participant wanted to declare that their income was £100,000 or above, they could not pass this validation check by declaring an income of less than £100,000 in the free text box.

<u>Treatment 4 – Time Delay</u>	On top of Treatment 1, 2 and 3, this treatment adds a time delay (of 15 seconds), such that participants cannot self-certify until such time has elapsed.	Positive friction
<u>Treatment 5 – Risks Agreement</u>	On top of Treatment 1, 2, 3 and 4, this treatment adds an additional page which highlights the risks of both self-certifying and the underlying investment. Participants had to tick 'I accept' for both types of risks before having the opportunity to self-certify.	Simplification of information and positive friction

Table 2: List of the alternative self-certification names that were tested

Current Certification Name	Alternative Certification Names
High Net Worth	Exposed
	No Protection
Sophisticated	High Risk
	Accredited

Decision points

Overall, our thinking was influenced by several insights from the behavioural science literature.

Adding steps in the certification process that cause people to slow down and think by disrupting automatic or mindless actions, could prevent people from self-certifying when they should not. These steps are referred to as *microboundaries* in the human-computer interaction research (Cox et al., 2016) or *decision points* in behavioural science (Soman, Xu, and Cheema, 2010).³ Microboundaries act as small obstacles that slow down the user and encourage a brief moment of reflection, which can support better decisions. The research on decision points further highlights the psychological mechanisms driving this behaviour change. Decision-making can be conceptualised as two separate steps. First, people go through a pre-decision deliberation stage, where they think more carefully and form a decision, before entering a more automatic post-decision implementation stage. Decision points interrupt the automatic implementation stage and put people back into a more deliberative pre-decision stage, giving them time to pause, read and reflect.

Soman, Xu, and Cheema (2010) also suggest three ways in which decision points can be introduced:

1. **Providing salient reminders or information**; these decision points not only inform, but also redirect people's attention to neglected considerations
2. **Creating interruptions**; these decision points slow people down and allow them to pause and think
3. **Inserting transaction costs**; these decision points create hassle associated with additional actions and thereby encourage deliberation

This research suggests that while simplified and salient information provides the necessary basis for understanding risks by simply informing investors, it can also redirect their attention. Positive frictions on the other hand – in the form of design elements such as additional clicks or steps in the investment journey – could create the interruptions and transaction costs that allow for additional reflection. Together, we expect information and positive frictions to serve as the decision points that encourage investors to reflect more on the risks associated with certifying as eligible for high-risk investments and change their behaviour accordingly.

Salience and simplification of information

One way to improve comprehension and foster deliberation in the self-certification process is to introduce decision points that contain digestible risk information. Simplifying information is one of the most important policy tools derived from behavioural science (Madrian, 2014; Bhargava and Loewenstein, 2015). Through simplified information, individuals find it easier to navigate complex choice environments. One example is the "Pension Passport" developed for Pension Wise by the Behavioural Insights Team (BIT). BIT simplified the usual 50-100 page information pack issued to those approaching retirement into a single-page handout with a clear call to action to visit an advice website. This simple intervention led to a 10-fold increase in visits to the advice website (BIT, 2017). Another important and widely used step in driving comprehension and engagement is making information more salient. The colour, size, and shape – among other attributes – of a user interface element can guide users' attention towards it (Wolfe and Horowitz, 2017). If investors' attention is directed towards new information, they are likely to engage with it rather than mindlessly clicking through the user journey.

Building on these findings, we designed our treatments: *Simplify Text and Risk Agreement*. We hypothesise that decision points that provide simplified and salient information redirect attention and increase deliberate engagement with the certification decision, leading to fewer people certifying.

Positive frictions

A second way to change the self-certification process is to introduce frictions. Since frictions are a defining feature of 'sludge' – strategies that keep people from acting in a way they wanted to – they are often considered inherently harmful (see e.g. Sunstein and Gosset, 2020; Soman, 2020). They include waiting times, excessive paperwork, or online interfaces that make certain actions more difficult, for example by obscuring important information or requiring many additional clicks. A recent typology of frictions by Shahab and Lades (2021) focused on the distinction between the transaction

costs they inflict on users. For example, choice overload creates search costs and long and complicated texts increase evaluation costs. Similarly, small frictions like checkboxes or manual text inputs lead to implementation costs, and induced stress causes psychological costs.

Recently, however, there has also been an increased interest in positive frictions, which act as what can be called “sludges-for-good”. Soman (2020) develops a theoretical framework in which he recognises that decision points or cooling-off periods that impede decision-making and avoid “hot” emotional states may help consumers make better decisions. Importantly, these positive frictions create specific implementation costs that lead users to rethink their decision, but they avoid search, evaluation, and psychological costs.

A foundational paper in this area, Soman, Xu, and Cheema (2010) report multiple experiments where decision points were introduced to alter dietary choices. For example, they put popcorn into multiple bags that reduced consumption at a cinema and used a queuing stand with ropes that reduced repeat visits at a buffet. Twitter recently tested another decision point, forcing users to open links and articles before tweeting them (Kelly, 2020). This was to encourage users to pause and think about the quality of the link they were sharing, thereby reducing the spread of wrong or misleading news. So positive frictions are used to interrupt people and create implementation costs, thereby fostering deliberation about consumption decisions and other behaviours.

Similar states of deliberation and vigilance can also be achieved through positive friction in financial decisions. Preliminary findings from a field experiment reported in Soman, Cheema, and Chan (2012) show the effects of decision points in spending decisions. Customers of a bank could select to receive warning messages on their phone after spending a certain amount with their credit cards, which they had to click away if they wanted to keep spending. As a result, customers spent less money with more prudence. It is likely that such deliberation can also be achieved in decisions to certify, through positive frictions that act as a decision point requiring additional thought and action.

Finally, some studies have found that people are less likely to be honest (for example, reporting higher test scores than they really achieved) when they have the possibility to be dishonest, unchecked. People also have a drive to maintain a positive self-view and will limit their dishonesty such that they can still tell themselves that they are honest people (Mazar et al, 2008). Another study, which asked people to roll a die and self-report their score, hypothesised that people may limit the degree to which they are dishonest to the extent to which they can credibly defend their dishonesty (Fischbacher & Föllmi-Heusi, 2013). Therefore, as well introducing positive friction, our interventions (in particular *Evidence Declaration*) which require people to actively input their income, for example, may also discourage dishonesty because they actively force people to disclose their position and therefore contradict their positive self-view (if they are tempted to lie). If participants believe their evidence declaration may be checked and therefore their potential dishonesty uncovered, this could further discourage dishonesty. Building on this discussion, we designed our treatments: *Active Choice*, *Evidence Declaration*, *Time Delay* and *Risks Agreement*. We hypothesise that decision points that create implementation costs – in the form of checkboxes or manual text inputs – will further increase deliberate engagement with the certification process and lead fewer people to certify.

Framing effects

A final way in which we changed the self-certification process is to frame certification in a more negative light. The way equivalent information is presented can influence decision-making (Tversky and Kahneman, 1981). One framing that has been particularly influential is loss aversion, defined as the tendency for people to prefer avoiding losses over receiving equivalent gains (Tversky & Kahneman, 1992). Similarly, people who are fearful are more prone to making risk averse choices (Lerner & Keltner, 2001; Habib et al., 2015).

We designed changes to the certification name categories (**Table 2**) Our updated categories predominantly highlighted the potentially negative outcomes associated with certifying.¹¹ We hypothesise that changing the certification names in this way would make certifying less appealing and lead fewer people to certify.

¹¹ In the case of 'accredited', it de-emphasises the positive connotations of being 'sophisticated', or indeed the negative connotations of declaring yourself not 'sophisticated'.

3 Methodology and sample

Experimental design

We conducted an online experiment to measure the impact of our behaviourally informed self-certification processes on our primary outcome:

Self-certification behaviour, whether consumers self-certified as 'high net worth' or 'sophisticated' investors, enabling them to receive promotions for certain investments.

The proportion of people certifying across the behaviourally informed self-certification processes was compared to the proportion of people certifying in our experimental control. Our experimental control was designed to mirror the current self-certification process as set out in the FCA's financial promotion rules.

We decided upon this primary outcome because we cannot measure actual honesty rates. For any given participant, we do not have access to verified information of whether they meet the certification criteria, beyond what they self-report. Therefore, our hypothesis is that under the status quo self-certification process, an excess of consumers would self-certify. We assume further that a reduction in the number of people certifying represents a positive development because those no longer certifying are less likely to (a) meet the self-certification criteria or (b) be intent on self-certifying and accessing the investment. To evidence these assumptions, we capture the number of participants we would expect to be eligible to certify in an unincentivised survey, (see Survey, below).

Participants were recruited through an online panel provider (Prolific.co). Participants were randomly allocated to either our incentivised experiment or the survey. Participants had an equal chance of being randomised across each of the six conditions in our incentivised experiment or the survey.

Incentivised experiment

Participants randomly assigned to the incentivised experiment were asked to go through a fictitious investment browsing experience. Participants were informed that the experiment would be incentivised and that 1p (£0.01) in the experiment would be equivalent to 100 coins. On the next screen, participants were informed that they had 3,000 coins to invest. However, they were also informed that, as per FCA rules, that they would only have a chance to invest in this particular investment if they first self-certified as either a high net worth or sophisticated investor. They were informed that those that self-certified as either a high net worth or sophisticated investor would have the chance to invest to earn up to 30,000 coins. They were also informed that those that did not

self-certify would leave the experiment with only their initial 3,000 coins and would not have a chance to invest.¹²

Participants were then presented with a website mockup, which displayed a product that can be considered a speculative illiquid security (SIS), namely a property bond (see **Figure 1**). In order to find out more about the investment, participants had to click on a button which read 'Certify to find out more'. Participants then arrived at a screen with two buttons (reading 'View statement'), as in **Figure 2**. Clicking on the buttons allowed them to view the high net worth and sophisticated investor statements, respectively.

When participants clicked either of the 'View statement' buttons, the screen they arrived on differed between the treatment groups. Participants were randomly allocated to a control group or one of five treatment conditions that correspond to the interventions described in **Table 1**. The control is shown in **Figure 8** and **Figure 9** in **Annex 2**. As an example, the Evidence Declaration treatment is shown in **Figure 10** and **Figure 11** in **Annex 2**. A further example, the Risks Agreement treatment which includes all behavioural design elements is shown in **Figure 12**, **Figure 13** and **Figure 14** in **Annex 2**.

At this stage, participants had two main options of how to continue with the experiment. They could:

1. View both statements and elect to continue the experiment without self-certifying. Participants could continue the experiment in this manner by clicking a third button which read 'None of these apply to me' that appeared after both statements had been opened. Participants were informed at the top of this page that they would have to view both statements at least once before electing to continue in this way. There was no limit to the number of times that participants could view both statements before choosing not to self-certify.
2. View one or both statements and elect to self-certify. Participants did not need to view both statements in order to continue by self-certifying, rather they could continue by self-certifying after viewing only one. Additionally, there was no limit to the number of times that participants could view both statements before choosing to self-certify.

Participants therefore had a choice to self-certify or to continue the experiment without self-certifying. Those who continued without self-certifying kept their 3,000 coins. Participants that did self-certify then had the option to invest in a product with expected return 300 coins (range: 0 coins to 3000 coins) or to keep their 300 coins without investing. Participants that did not self-certify left the website with their 300 coins and no chance to invest. All screenshots from the experiment are displayed in **Figure 4** to **Figure 16** in **Annex 2**.

Independent of the treatment assignment, we also randomised participants to see the self-certification names that are presented in **Table 2**. Any one participant therefore could have seen any combination of names from the 'high net worth' or 'sophisticated' rows in that table. (e.g. 'high net worth' and 'accredited' or 'exposed' and

¹² In line with Iscenko et al (2014) who explored the add on insurance market, we provide participants with 'house money'. We then let all financial consequences of their certification and investment decision play out in the experiment. As described in Nieboer (2020) participants thus have a monetary incentive to consider the potential gain of their behaviour (in this case, certifying) in the experiment, much as one would expect that they would when choosing whether to certify in the real world.

Research Note

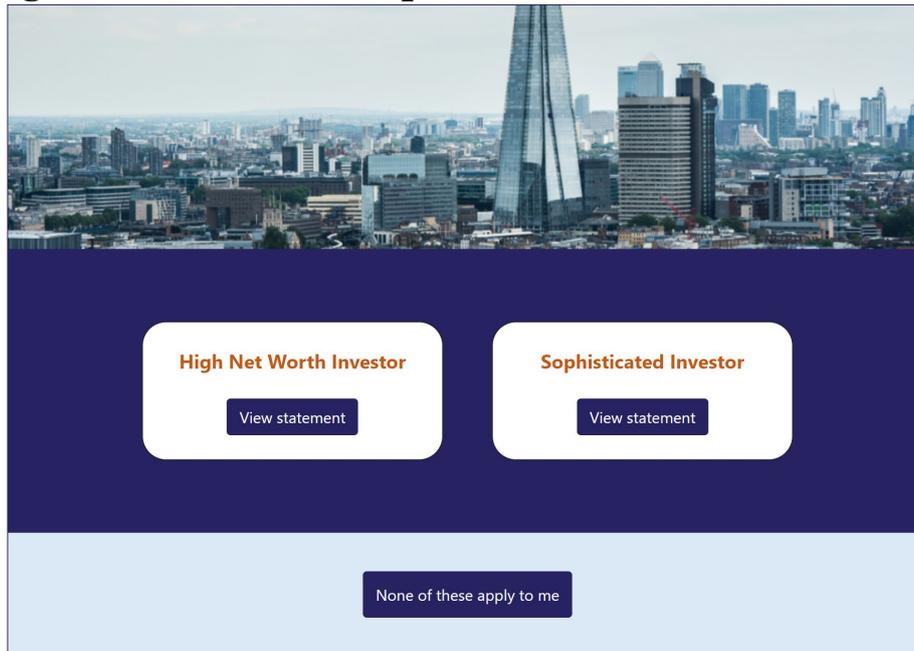
To certify or not to certify: decision points in the self-certification process

'sophisticated'). Participants would have seen the same name throughout their entire customer journey¹³.

Once participants exited the hypothetical investment website, they were asked several questions on their risk comprehension and beliefs. First, participants were asked whether they certified honestly. Then, participants were asked how they would certify in real life. Next, participants were asked to rate the riskiness of the investment opportunity (property bond) they had seen on a scale from 1-10. Following that, we asked participants whether they would consider investing in property bonds in the future. Finally, participants completed questions on demographics and their investment experience before exiting the experiment.



¹³ However, for clarity, we continue to refer only to 'high net worth' and 'sophisticated' investors throughout this research note.

Figure 2: Website mockup – View certification statements

Survey

Some participants were not randomly assigned to our incentivised experiment but were instead assigned to a survey ('the survey arm'). The survey consisted of six questions used to determine if participants met the criteria for being high net worth or sophisticated. The purpose of the survey was to ascertain a baseline measure of how many of our participants should be expected to honestly certify in the incentivised experiment. **Table 8** in **Annex 3** shows these six questions as they relate to the two high net worth criteria and the four criteria relating to the sophisticated investor. Full eligibility criteria is shown in **Table 6** in **Annex 1**.

After we asked participants in the survey arm these questions, we also asked participants about their perceptions of two randomly assigned certification names (**Table 2**). Participants were asked: how desirable they thought it was to be considered that type of investor; how much they would trust an individual classified in that way, and whether it was clear to them what that type of investor is. For each question, participants could give an answer on a scale of 1 to 10. Finally, participants completed questions on demographics and their investment experience before exiting the experiment.

Empirical strategy

Table 3 presents the outcome measures used to assess the effectiveness of decision points, along with the associated research questions and regression models. To estimate the treatment effects of our interventions, we used standard logistic regression models. Except for the exploratory analysis, we do not report results using covariates – this is explained in the Results section. For the exploratory analysis, these covariates included dummy variables for participants' age, gender, region, past investment experience and income. We report and visualise the results from the models excluding covariates. For our regressions, we report the average marginal effects in percentage points (pp).

Table 3: Research questions, empirical strategy, and dependent variables

Research question	Empirical Strategy and dependent variable
<p><u>Primary analysis</u></p> <p>Did updated self-certification process reduce the number of people self-certifying?</p>	<p>Logistic regression model:</p> <ul style="list-style-type: none"> • 1 if participant self-certifies • 0 if participant continues the experiment without self-certifying
<p><u>Secondary analysis I</u></p> <p>Did updated self-certification process reduce the number of people stating they were dishonest whilst self-certifying?</p>	<p>Logistic regression model:</p> <ul style="list-style-type: none"> • 1 if participant states they were dishonest when self-certifying in the experiment • 0 if participant states they were honest
<p><u>Secondary analysis II</u></p> <p>Did updated self-certification process reduce the number of people stating they would self-certify in real life?</p>	<p>Logistic regression model:</p> <ul style="list-style-type: none"> • 1 if the participant states they would self-certify in real life • 0 if the participant states they would not self-certify in real life
<p><u>Secondary analysis III</u></p> <p>Did updated self-certification process increase the risk perception of the investment product?</p>	<p>Logistic regression model:</p> <ul style="list-style-type: none"> • 1 if the participant states their risk perception of the investment product is greater than 7 on a scale of 1-10. • 0 if the participant states their risk perception of the investment product is less than 8 on a scale of 1-10.
<p><u>Secondary analysis IV</u></p> <p>Did updated self-certification process reduce the number of people stating they are interested in investing in the investment product?</p>	<p>Logistic regression model:</p> <ul style="list-style-type: none"> • 1 if the participant states they are interested in investing in the investment product • 0 if the participant states they are not interested in investing in the investment product • Excluded if participants states they already invest in the investment product.
<p><u>Exploratory analysis I</u></p> <p>Did proposed new certification names change participants perceptions of (a) desirability (b) trustworthiness or (c) clarity of that investor type</p>	<p>Logistic regression model:</p> <ul style="list-style-type: none"> • 1 if the participant states their perception of (a) desirability (b) trustworthiness (c) clarity of the certification name is greater than 7 on a scale of 1-10. • 0 if the participant states their perception (a) desirability (b) trustworthiness (c) clarity of the certification name is less than 8 on a scale of 1-10.

Sample description and attrition

We collected 9,618 responses across the main experiment and survey arm. After excluding incomplete responses, invalid participant labels and duplicate panel IDs, 7,860 completed the experiment. The participants were randomly allocated to one of six treatment conditions or a survey – **Table 9 in Annex 6** shows the number of observations in each group, as well as summary statistics of all characteristics across the treatment groups. As compared to the control group, the number of observations is significantly lower across all treatments. This is due to higher attrition¹⁴ and will be discussed further below.

To check whether our randomisation was successful, we test for balance across demographic, financial and investment experience characteristics. We find the sample is generally gender, age, region and investor experience balanced, but there are instances of imbalance. Where, there are some differences, this does not appear to be systematic except for those reporting high income. To exemplify, the number of people reporting their income to be greater than £72,000 is 2.49% in the survey, 4.13% in the control but averages 6.49% across the treatment groups that include the evidence declaration (See **Table 9 in Annex 6**). Rather than being indicative of participant imbalance in the experiment arms, this is likely explained by the desire for participants to be internally consistent. If participants actively misrepresented their income to pass the certification checks in the incentivised experiment, they may be more likely to do so in the income questions at the end of the experiment.

Finally, we examine attrition in the experiment. Excluding the survey group, 8226 participants were shown the incentivised experiment and 6537 (79.5%) completed the experiment. Compared to the control group, where attrition was 7.5%, we find significantly higher attrition in all other treatment groups. Attrition was highest in the *Risks Agreement* treatment, where participants were 23pp less likely to finish the experiment (see **Table 10 in Annex 6**). Generally, as the treatments became more complex, and more friction was included, attrition increased. There was no such significant relationship between the certification names and attrition. With more friction, participants were subject to more validation checks and therefore were significantly more likely to make errors. **Column 3 of Table 10 in Annex 6** shows that each error in the certification screens was associated with a reduced likelihood of completing the experiment by 5.3pp. The vast majority (87.1%) of the dropouts in the experiment are accounted for on one of the certification screens. A further 5.1% of people dropped out on the *Risks* Screen, the unique screen introduced on the *Risks Agreement* treatment. We discuss our approach to attrition below.

¹⁴ Attrition is the proportion of participants dropping out before completing the experiment.

4 Results

First, we present results from our survey. Then we present results from the self-certification experiment. We present results from the survey first to provide a baseline measure of how many of our participants should be expected to certify honestly in the incentivised experiment.

Survey

The results from the survey treatment arm (**Table 4**) show that when asked outside of the context of an incentivised experiment, only around 16% of survey participants provide answers that would qualify them to be considered high net worth or sophisticated investors. Across the sample 12.7% participants provided answers suggesting they could be classified as sophisticated investors and 3.5% participants provided answers suggesting they would be classified as high net worth investors.

Table 4: Certification eligibility in the sample, based on our survey

	Eligible	Total Observations	Eligible (%)	Prefer not to say (undefined)
Income greater than £100,000	6	1256	0.48	67
Assets greater than £250,000	40	1323	3.02	0
High net worth	44	1258	3.50	65
Network eligible	45	1323	3.40	0
Investment eligible	75	1323	5.67	0
Sector eligible	80	1323	6.05	0
Company eligible	27	1323	2.04	0
Sophisticated	168	1323	12.70	0
High net worth or sophisticated	203	1269	16.00	54

Participants can be eligible to be high net worth or sophisticated through multiple criteria or just one, so the eligibility percentages do not sum perfectly. In addition, participants could opt not to provide their income by answering 'prefer not to say'. In some instances, these participants could be classified as high net worth or sophisticated anyway, based on their answers to other questions. In 54 instances they did not meet the other criteria and given that they did not disclose their income, they are left as 'undefined' for the purposes of this survey.

Self-certification

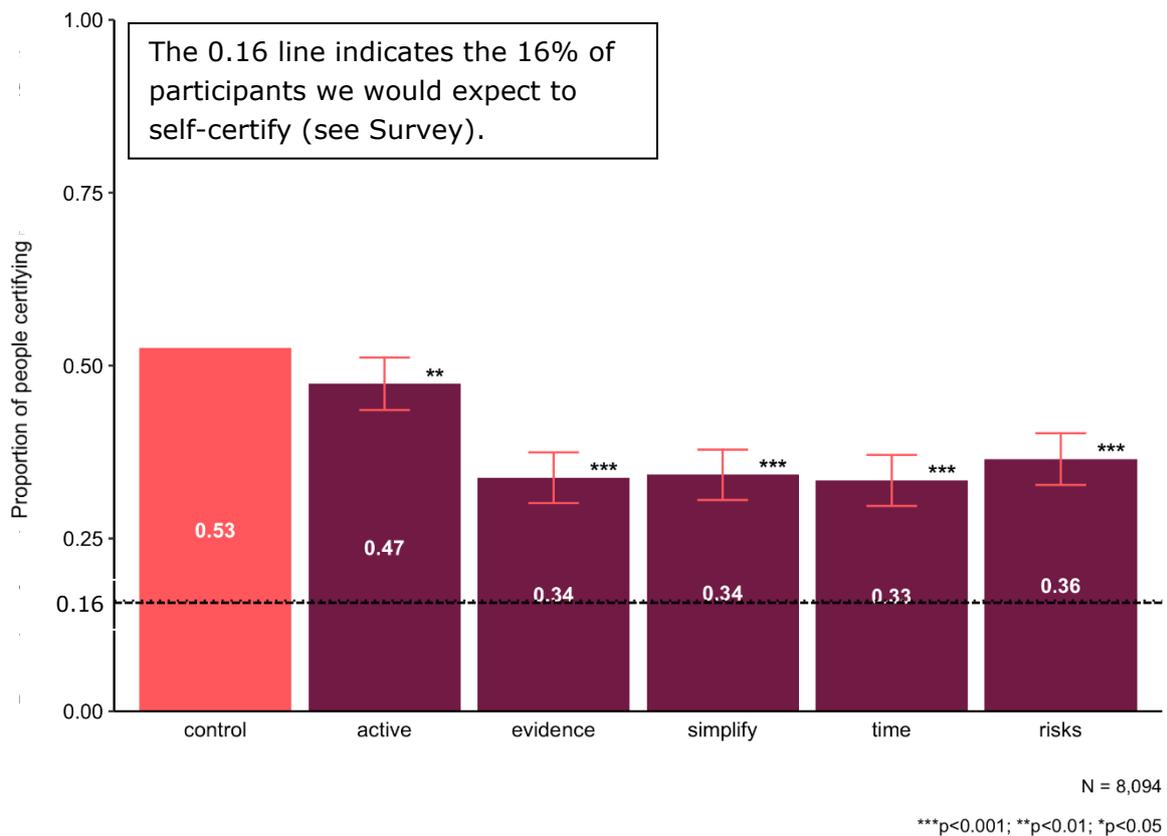
Participants who were faced with *Active Choice* and *Evidence Declaration* were less likely to self-certify during the experiment, compared to the control. *Evidence Declaration* appears to drive most of our treatment effects. Despite this reduction, there are still a significant number of participants that continue to self-certify despite not being eligible to do so.

We estimated the impact of the treatments on the likelihood of a participant certifying as high net worth or sophisticated. Here we report the Intention-to-treat (ITT) estimate, which includes all participants that agreed to take part in the experiment regardless of whether they later dropped out or not. We chose this approach because we believe the attrition was not random, but likely caused by our treatments. Reporting the ITT rather than just the complete case analysis avoids the bias associated with non-random loss of participants. Therefore, we include all 8,094 participants who were assigned to one of our treatments and who decided to begin the incentivised experiment. We do not control for covariates in our regressions, because we collected covariate information at the end of the experiment and so we do not have covariate information for all participants that are analysed.

As set out above, of these 8,094 participants, only 6,537 completed the experiment. Therefore, we have missing data on how 1,557 participants would have certified if they remained in the experiment. We elect to use the assumption that all those who dropped-out of the experiment chose not to self-certify. We chose this as the main result because of its equivalence to a consumer exiting the self-certification process altogether if they were faced with such a self-certification process in real life. In this case, exiting the self-certification process altogether would be equivalent to continuing without self-certifying. In addition, we also conduct sensitivity checks to explore the robustness of our main result to these assumptions.

The results (reported in **Table 11** in **Annex 7**) show that all treatments significantly reduce the likelihood of self-certifying. The effect size is similar for *Evidence Declaration*, *Simplify Text*, *Time Delay* and *Risks Agreement*, which made participants 18.8pp (~35.8%), 18.3pp (~34.8%), 19.2pp (~36.6%) and 16pp (~30.5%) less likely to certify, respectively. Pairwise comparisons reveal that there is no significant difference between these four treatments in terms of reducing certification. However, all the estimates for these four treatments are significantly larger than the estimate on *Active Choice*, which reduced self-certification by 5.2pp (~9.9%) compared to the control group. Given the additive nature of the treatments, we interpret this to mean that adding the design elements of *Simplify Text*, *Time Delay* and *Risks Agreement* to the *Evidence Declaration* does not significantly decrease self-certification beyond the *Evidence Declaration* and *Active Choice*. The results are visualised in **Figure 3**.

Figure 3: Certification



Survey

As well as comparing the results of our treatments against the control, we can also compare the results from our treatments against the survey estimate for the proportion of participants we would expect to self-certify honestly. In our treatments that perform the best, the proportion of people certifying remains at least 33%. This is significantly higher (more than double) the 16% of participants that we would expect to be eligible based on the survey arm of the experiment. This demonstrates that whilst our treatments do reduce the proportion of participants self-certifying, there are still a significant number of participants that continue to self-certify despite not being eligible to do so.

Certification names

The results (**Column 2 of Table 11 in Annex 7**) also show that effect of changing certification names. Both alternative names to sophisticated, 'high risk' and 'accredited' had insignificant effects on self-certification. Of the alternative names to high net worth, *exposed* also had an insignificant effect on certification behaviour. Surprisingly, *no protection* increased certification significantly by 3.7pp (~7%). It is unclear why exactly more people self-certified under 'no protection' certification name. It may be that with the 'high net worth' certification name, participants could more readily identify that they did not meet the criteria. So, despite its desirability, participants were less likely to certify under that condition. Further, participants may have felt that the 'no protection' certification name was clearer in meaning than the 'exposed' certification name, and

subsequently decided they were comfortable self-certifying without ‘protection’ for the purposes of this experiment. Overall, however, it generally appears that changing the self-certification names had a limited effect on participants decision to self-certify.

Sensitivity checks

By conducting the ITT analysis, we have had to make assumptions about what the people dropping out of the experiment would have done if they had not dropped out. In addition, we also explore the full range of estimates that are consistent with our results. To do so, we conduct analysis on the best-case (upper-bound) and worst-case (lower-bound) scenarios (Horowitz and Manski, 2000). The upper-bound estimate shows the maximum possible decrease in self-certification that is consistent with our results. Whereas, the lower-bound estimate shows the maximum possible increase in self-certification that is consistent with our results. For the best-case scenario, we assume that all those who dropped-out in the control would have certified and all those who dropped-out in the treatments would have not self-certified. For the worst-case scenario, we assume that those who dropped-out in the control would have not self-certified and all those who dropped-out in the treatments would have self-certified. This is illustrated in **Table 5**.

Table 5: Assumptions for upper-bound and lower-bound estimates

Estimate	Dropped-out in the control	Dropped-out in the treatments	Result
Upper-bound (best-case)	Assume they would certify	Assume they would not certify	The largest possible decrease in self-certification, given our sample.
Lower-bound (worst-case)	Assume they would not certify	Assume they would certify	The largest possible increase in self-certification, given our sample.

We report the upper-bound and lower-bound estimates in **Column 1 and 2 of Table 12** in **Annex 7**, respectively. The bounded estimates show that the co-efficient on *Evidence Declaration* must lie between a statistically significant decrease of 24.9pp (42.5%) and a statistically non-significant increase. This offers support to our conclusion that *Evidence Declaration* very likely reduced self-certification, regardless of our assumptions on attrition. The bounds are similar on *Simplify Text*. The bounds on the *Active Choice*, *Time Delay* and *Risks Agreement* do not completely rule out that these treatments could have led to a significant increase in those certifying, if all participants had completed the experiment.

Secondary results

In most cases we cannot make definitive conclusions based on our secondary analysis, due to attrition. Unlike our primary outcome (self-certification), it is more difficult to assume how participants would have answered our secondary questions if they had not dropped out of the experiment.

After asking participants to participate in the incentivised part of the experiment, we then asked a series of follow up questions. A central difficulty with interpreting the outcomes from these questions is that some participants left the experiment before reaching these questions. Unlike the primary outcome, whether a participant certified or not, it is more difficult to make reliable assumptions about what the imputed values should be for the secondary outcomes. Therefore, for these secondary outcomes, we only report the upper-bound and lower-bound estimates, again using an ITT analysis. Due to attrition these upper-bound and lower-bound estimates often suggest the estimates could be consistent with a wide range of possible values. We report the results in **Annex 7** in **Table 13**, **Table 14**, **Table 15** and **Table 16**, predominantly for transparency. The secondary analysis is described in further detail in **Annex 4**.

Exploratory results

From our separate survey arm, we find that as compared to being a 'high net worth' or 'sophisticated' investor, being an 'exposed', 'no protection' or 'high risk' investor is considered less desirable. We put less weight on these results than on our experimental results, however, which showed no consistent effects for name changes.

In the survey arm, some exploratory analysis was conducted on the participants' perception of different names for the certification categories. Participants were asked about their perception of an investor classified as 'high net worth' or a proposed alternative (see **Table 2**). Participants were then asked about their perception of an investor that was categorised as 'sophisticated' or a proposed alternative (see **Table 2**). Overall, the results demonstrate that far more participants considered being either 'high net worth' or 'sophisticated' to be significantly more desirable (**Figure 17**) and trustworthy (**Figure 18**), when compared to alternative investor names such as 'exposed', 'no protection' and 'high risk'. However, only the meaning of 'high risk' investor was considered clearer than the current status quo (**Figure 19**). Full results are reported in **Table 17**, **Table 18**, **Table 19** and **Table 20** in **Annex 5**.

When coupled with the results from our incentivised part of our self-certification experiment, our findings paint a mixed picture. Evidence from this survey suggests that participants may be less likely to self-certify under the alternative certification names. However, in the incentivised part of our experiment we found that the alternative names did not decrease self-certification. An important difference is that the incentivised experiment offers a view of observed behaviour, which we would generally weight more heavily than self-reported perception, which is captured in the survey. Our interpretation

Research Note

To certify or not to certify: decision points in the self-certification process

is that in a setting that more closely reflects the self-certification process, where the self-certification category names are a less salient part of that process and there is perceived financial incentive to self-certify, the certification names play a very limited role in the decision that participants make.

5 Discussion

The results from our online experiment suggest that decision points – in the form of salient and simple information and positive frictions that encourage consumers to pause and reflect – can be an effective tool in discouraging retail investors from self-certifying as eligible for high-risk investments. In particular, the combination of active choice checkboxes and evidence declaration fields significantly reduced the proportion of participants self-certifying. Nonetheless, even under our best-performing treatments, the proportion of people self-certifying remains significantly higher than (more than double) those that are eligible.

Whilst recent work (Farghly et al, 2022) demonstrates that positive frictions may not increase consumer comprehension in an online experiment setting, the results from the online experiment reported in this paper align with previous studies that have successfully employed positive frictions to change consumer behaviours (see Soman, Cheema, and Chan, 2012; Soman, Xu, and Cheema, 2010) in the field.

We do not find evidence that changing the names of the self-certification categories to frame them more negatively leads to significantly fewer people self-certifying in our incentivised experiment. In fact, in one case, where we change the 'high net worth' category to be called 'no protection', we find people are actually more likely to self-certify. This is contrary to what might be expected from our non-incentivised survey, which showed that negative framing of certification could discourage participants from self-certifying. This difference suggests that in a setting that more closely reflects the self-certification process, where the self-certification category names are a less salient part of that process and when there are perceived financial incentives to self-certifying, the certification names become less important in deciding whether to self-certify.

Finally, we note higher attrition in our treatments that featured strong positive frictions. Namely, more participants dropped out when they were faced with manual text-entry boxes to declare the evidence that made them eligible to self-certify. This attrition made further analysis on secondary outcomes of interest difficult. Despite this, a clear majority of participants (77%) still completed the experiment when asked to provide evidence declarations. We argue that policymakers should continue to test positive frictions as decision points and policy tools, preferably in field settings with real firms and consumers.

Annex 1: Research Context

The table below shows the two criteria relating to being a high net worth investor and the four criteria relating to being a sophisticated investor. A prospective investor needs to meet only one of the criteria in either section to declare they are of the relevant investor type. The table is based on COBS 4.14.17 R and COBS 4.14.19 R.

Table 6: Investment Types

Investment Types	Description
<p>Non-mainstream pooled investments (NMPIs)</p>	<p>An NMPI includes the following investments:</p> <ul style="list-style-type: none"> • a unit in an unregulated collective investment scheme (UCIS) • a unit in a qualified investor scheme (QIS) • certain securities issued by special purpose vehicles • a traded life policy investment
<p>Speculative illiquid securities (SISs)</p>	<p>A SIS is a debenture or preference share where the proceeds are used for on-lending, buying or acquiring investments, or buying or funding the development of property. While listed securities are generally not SISs, a listed debenture that meets the definition of a SIS and is not regularly traded, is also caught by the SIS rules.</p>
<p>Non-readily realisable securities (NRRSs)</p>	<p>NRRS are, very broadly, unlisted and non-exchange traded shares or bonds. They can be sold either directly by the issuer or through an intermediary such as a crowdfunding platform.</p>
<p>Peer-to-peer (P2P) agreements</p>	<p>P2P agreements are entered into via a P2P platform.</p>

Table 7: Eligibility Criteria

Investor Type	Eligibility Criteria	Description
High net worth	Income	<ul style="list-style-type: none"> I had, throughout the (last) financial year... an annual income to the value of £100,000 or more. Annual income for these purposes does not include money withdrawn from my pension savings (except where the withdrawals are used directly for income in retirement).
	Asset	<ul style="list-style-type: none"> I held, throughout the (last) financial year... net assets to the value of £250,000 or more. Net assets for these purposes do not include: <ul style="list-style-type: none"> the property which is my primary residence or any money raised through a loan secured on that property; or any rights of mine under a qualifying contract of insurance; or any benefits (in the form of pensions or otherwise) which are payable on the termination of my service or on my death or retirement and to which I am (or my dependants are), or may be, entitled; or any withdrawals from my pension savings (except where the withdrawals are used directly for income in retirement).
Soph-isticated	Network	<ul style="list-style-type: none"> I am a member of a network or syndicate of business angels and have been so for at least the last six months prior to (today).
	Investment	<ul style="list-style-type: none"> I have made more than one investment in an unlisted company in the two years prior to (today).
	Sector	<ul style="list-style-type: none"> I am working, or have worked in the two years prior to the date (today)..., in a professional capacity in the private equity sector, or in the provision of finance for small and medium enterprises.
	Company	<ul style="list-style-type: none"> I am currently, or have been in the two years prior to the date (today)..., a director of a company with an annual turnover of at least £1 million.

Annex 2: Experimental screenshots

Figure 4: Experiment instructions

Imagine you are browsing for investments online. **You have 3,000 coins to invest.** You come across the investment website displayed on the next page.

Before you are able to find out more about the investments on this website, you are prompted to 'self-certify'.

As per Financial Conduct Authority (FCA) rules, if you self-certify as **High Net Worth** or **Sophisticated**, you can access the investments on this website and can choose whether to invest for the **chance to earn 30,000 coins.**

However, if you do not self-certify as **High Net Worth** or **Sophisticated**, you cannot access investments on this website and will not be able to invest. You would be left with **only 3,000 coins.**

Note: You will have to explore both self-certification statements before being able to decide to certify as neither.

Next

Figure 5: Website mockup – Certify to find out more



Figure 6: Website mockup – View certification statements

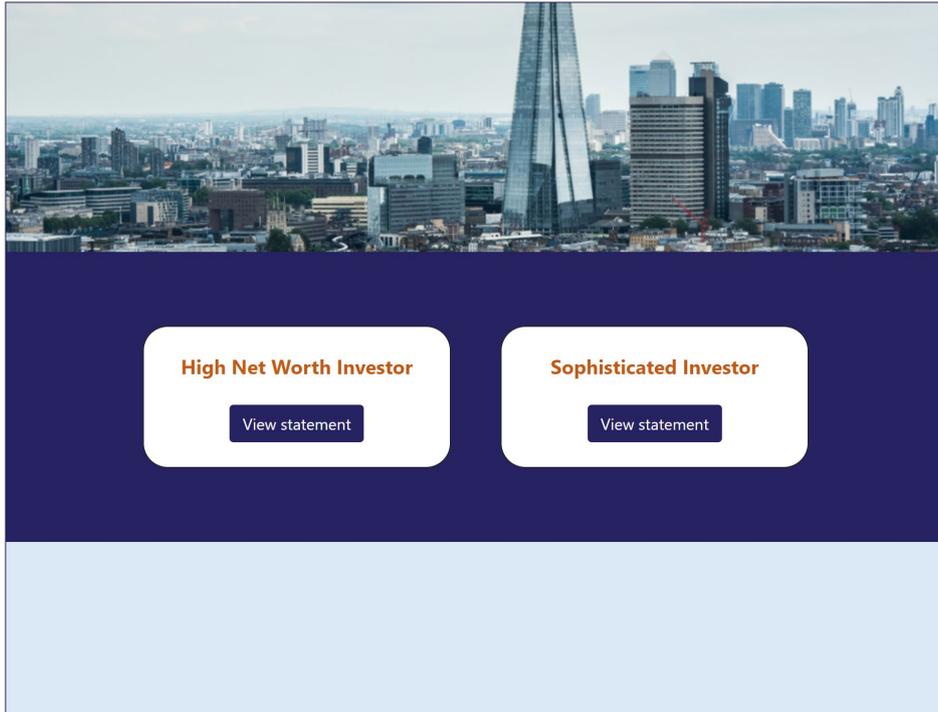


Figure 7: Website mockup – None of these apply to me

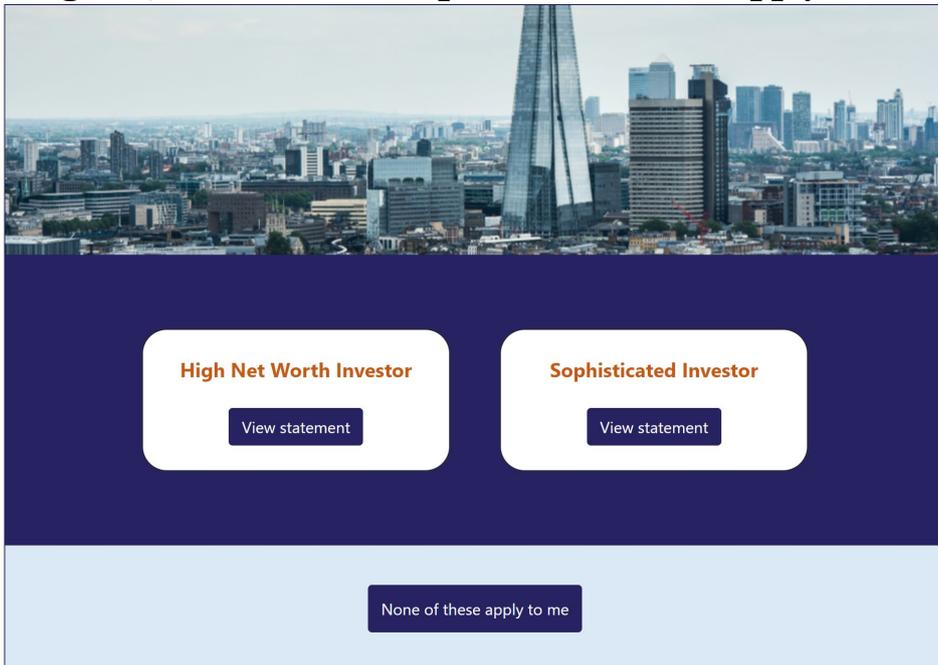


Figure 8: Website mockup – High Net Worth Investor Statement (Control)

High Net Worth Investor Statement

I make this statement so that I can receive promotional communications which are exempt from the restriction on promotion of non-mainstream pooled investments. The exemption relates to certified high net worth investors and I declare that I qualify as such because at least one of the following applies to me:

- I had, throughout the financial year immediately preceding the date below, an annual **income** to the value of **£100,000** or more. Annual income for these purposes does not include money withdrawn from my pension savings (except where the withdrawals are used directly for income in retirement).
- I held, throughout the financial year immediately preceding the date below, **net assets** to the value of **£250,000** or more. Net assets for these purposes do **not** include:
 - a. the property which is my primary residence or any money raised through a loan secured on that property; or
 - b. any rights of mine under a qualifying contract of insurance; or
 - c. any benefits (in the form of pensions or otherwise) which are payable on the termination of my service or on my death or retirement and to which I am (or my dependants are), or may be, entitled; or
 - d. any withdrawals from my pension savings (except where the withdrawals are used directly for income in retirement).

I accept that the investments to which the promotions will relate may expose me to a significant risk of losing all of the money or other property invested. I am aware that it is open to me to seek advice from an authorised person who specialises in advising on non-mainstream pooled investments.

To agree to this statement,

Type "I agree":

Date (dd/mm/yyyy):

[Certify as a High Net Worth Investor](#)

[Back](#)

Figure 9: Website mockup – Sophisticated Investor Statement (Control)

Sophisticated Investor Statement

I declare that I am a self-certified sophisticated investor for the purposes of the restriction on promotion of non-mainstream pooled investments. I understand that this means:

- I can receive promotional communications made by a person who is authorised by the Financial Conduct Authority which relate to investment activity in non-mainstream pooled investments;
- the investments to which the promotions will relate may expose me to a significant risk of losing all of the property invested.

I am a self-certified sophisticated investor because at least one of the following applies to me:

- a. I am a member of a network or syndicate of business angels and have been so for at least the last six months prior to the date below;
- b. I have made more than one investment in an unlisted company in the two years prior to the date below;
- c. I am working, or have worked in the two years prior to the date below, in a professional capacity in the private equity sector, or in the provision of finance for small and medium enterprises;
- d. I am currently, or have been in the two years prior to the date below, a director of a company with an annual turnover of at least £1 million.

I accept that the investments to which the promotions will relate may expose me to a significant risk of losing all of the money or other property invested. I am aware that it is open to me seek advice from someone who specialises in advising on non-mainstream pooled investments.

To agree to this statement,

Type "I agree":

Date (dd/mm/yyyy):

Figure 10: Website mockup – High Net Worth Investor Statement (Evidence Declaration)

High Net Worth Investor Statement

I make this statement so that I can receive promotional communications which are exempt from the restriction on promotion of non-mainstream pooled investments. The exemption relates to certified high net worth investors and I declare that I qualify as such because at least one of the following applies to me:

- I had, throughout the financial year immediately preceding the date below, an annual **income** to the value of **£100,000** or more. Annual income for these purposes does not include money withdrawn from my pension savings (except where the withdrawals are used directly for income in retirement).

No
 Yes

If yes, please specify your net income (as defined above) in the last financial year:
Please don't use commas or decimals.

£

- I held, throughout the financial year immediately preceding the date below, **net assets** to the value of **£250,000** or more. Net assets for these purposes do **not** include:
 - a. the property which is my primary residence or any money raised through a loan secured on that property; or
 - b. any rights of mine under a qualifying contract of insurance; or
 - c. any benefits (in the form of pensions or otherwise) which are payable on the termination of my service or on my death or retirement and to which I am (or my dependants are), or may be, entitled; or
 - d. any withdrawals from my pension savings (except where the withdrawals are used directly for income in retirement).

No
 Yes

If yes, please specify your net assets (as defined above) in the last financial year:
Please don't use commas or decimals.

£

To agree to this statement,

Type "I agree":

Date (dd/mm/yyyy):

Certify as a High Net Worth InvestorBack

Figure 11: Website mockup – Sophisticated Investor Statement (Evidence Declaration)

Sophisticated Investor Statement

I declare that I am a self-certified sophisticated investor for the purposes of the restriction on promotion of non-mainstream pooled investments. I understand that this means:

- I can receive promotional communications made by a person who is authorised by the Financial Conduct Authority which relate to investment activity in non-mainstream pooled investments;
- the investments to which the promotions will relate may expose me to a significant risk of losing all of the property invested.

I am a self-certified sophisticated investor because at least one of the following applies to me:

a. I am a member of a network or syndicate of business angels and have been so for at least the last six months prior to the date below;

No
 Yes

If yes, what is the name of the network or syndicate?

b. I have made more than one investment in an unlisted company in the two years prior to the date below;

No
 Yes

If yes, how many investments have you made in the last two years?

c. I am working, or have worked in the two years prior to the date below, in a professional capacity in the private equity sector, or in the provision of finance for small and medium enterprises;

No
 Yes

If yes, what is / was the name of your employer?

d. I am currently, or have been in the two years prior to the date below, a director of a company with an annual turnover of at least £1 million.

No
 Yes

If yes, what is / was the name of the company?

I accept that the investments to which the promotions will relate may expose me to a significant risk of losing all of the money or other property invested. I am aware that it is open to me seek advice from someone who specialises in advising on non-mainstream pooled investments.

To agree to this statement,

Type "I agree":

Date (dd/mm/yyyy):

[Certify as a Sophisticated Investor](#)

[Back](#)

Figure 12: Website mockup – Additional Risk Agreement Screen

UNDERSTANDING RISK AND CERTIFICATION REQUIREMENT STATEMENT

I accept that the investments to which the promotions on this website relate may expose me to a significant risk of losing all of the money or other property involved.

Yes

I understand that I am being asked to self-certify because the investments to which the promotions will relate are considered to be unsuitable for the majority of UK investors.

Yes

To agree to this statement,

Type "I accept":

[Continue to self-certification](#)

Figure 13: Website mockup – High Net Worth Investor Statement (Risks Agreement)

High Net Worth Investor Statement

If you certify as a High Net Worth Investor, you understand that you:

- i. Will receive promotions relating to high-risk investments.
- ii. Will be exposed to a very high risk of losing all the money you invest.
- iii. Are still able to seek advice from an authorised person that specialises in advising on high risk investments, before making any investment decisions.

In the last financial year, did you:

- Have an annual **income of more than £100,000**? Do **NOT** include any one-off pension withdrawals.

No
 Yes

If yes, please specify your net income (as defined above) in the last financial year:
Please don't use commas or decimals.

 £

To agree to this statement,

Type "I agree":

Date (dd/mm/yyyy):

[Certify as a High Net Worth Investor](#)

[Back](#)

Figure 14: Website mockup – High Net Worth Investor Statement (Risks Agreement)

Sophisticated Investor Statement

If you certify as a a Sophisticated Investor, you understand that you:

- i. Will receive promotions relating to high-risk investments;
- ii. Will be exposed to a very high risk of losing all the money you invest.
- iii. Are still able to seek advice from an authorised person that specialises in advising on high risk investments, before making any investment decisions.

In the last two years, have you:

a. Worked in **Private Equity**, or in the **provision of finance for small and medium enterprises**?

No
 Yes

If yes, what is / was the name of your employer?

b. Been the **director of a company** with an annual turnover of at least £1 million?

No
 Yes

If yes, what is / was the name of the company?

c. Made two or more **investments in an unlisted company**?

No
 Yes

If yes, how many investments have you made in the last two years?

OR:

d. For the last six months have you been a **member of a network or syndicate of business angels**?

No
 Yes

If yes, what is the name of the network or syndicate?

I accept that the investments to which the promotions will relate may expose me to a significant risk of losing all of the money or other property invested. I am aware that it is open to me seek advice from someone who specialises in advising on non-mainstream pooled investments.

To agree to this statement,

Type "I agree":

Date (dd/mm/yyyy):

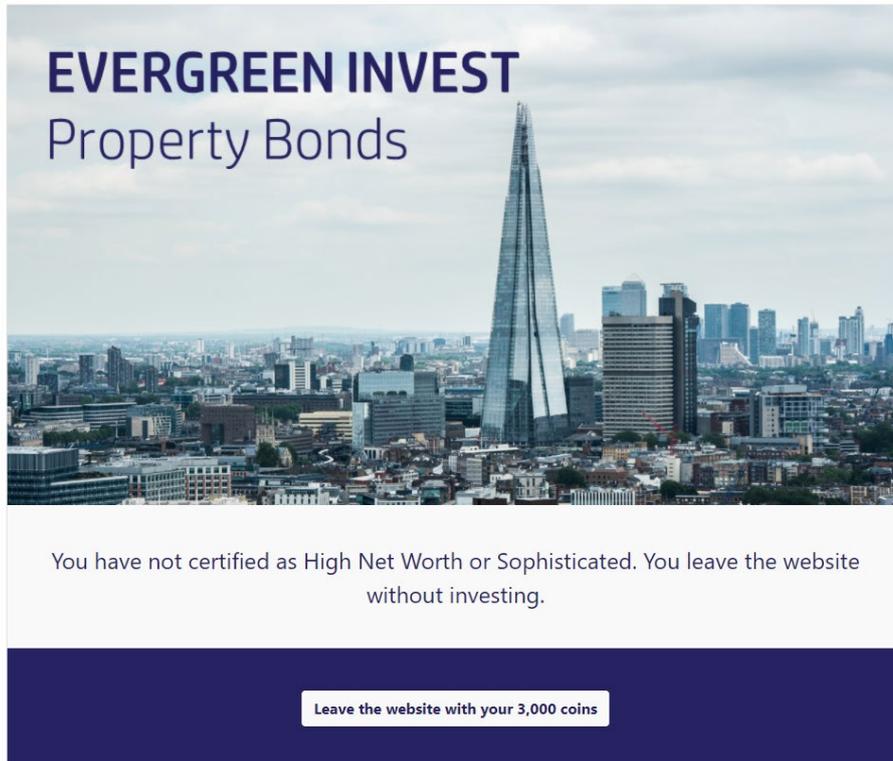
[Certify as a Sophisticated Investor](#)

[Back](#)

Figure 15: Website mockup – Certified: Investment Decision



Figure 16: Website mockup – Not certified: Leave the Website



Annex 3: Survey questions

Table 8: Survey Questions

Investor Type	Eligibility Criteria	Question	Possible Answers
High Net Worth	Income	What was your annual income in the last financial year? Do NOT include any one-off pension withdrawals	(a) <£12,000 (b) £12,000-£24,000 ... (h) £84,000-£100,000 (i) >£100,000 (j) Prefer not to say
	Asset	What were your net assets in the last financial year? Do NOT include: your home (primary residence); your pension (or any pension withdrawals) or insurance contracts.	(a) < £20,000 (b) £20,000-£40,000 ... (l) £240,000-£250,000 (m) >£250,000
Soph-isticated	Network	Are you a member of a network or syndicate of business angels and have you been so for at least the last six months prior to today's date?	(a) Yes (b) No
	Investment	Have you made more than one investment in an unlisted company in the two years prior to today's date?	(a) Yes (b) No
	Sector	Are you working, or have you worked in the two years prior to the date below, in a professional capacity in the private equity sector, or in the provision of finance for small and medium enterprises?	(a) Yes (b) No
	Company	Are you currently or have been in the two years prior to the date below, a director of a company with an annual turnover of at least £1 million?	(a) Yes (b) No

Annex 4: Secondary analysis

This Annex presents the results from the secondary analysis. All regression tables for the secondary analysis are displayed in **Annex 7**.

Dishonesty

Counter-intuitively, we find that our treatments appear to increase the number of participants that admit they certified dishonestly. We believe this is because - due to the friction introduced - participants better understand the self-certification criteria which they have dishonestly stated that they meet.

During the experiment, participants were asked whether they self-certified honestly. Potential answers were 'Yes, I've certified honestly' and 'No, I certified dishonestly'. Participants were assured that their answer to this question would not affect any payoff they received from the experiment. Our prior expectation was that more people would report certifying honestly under the new treatments.

The upper-bound estimate, which considers the maximum increase in participants reporting honesty (**Table 13, Column 1**) shows that only the estimate on *Evidence Declaration* becomes positive. Whereas, the other estimates remain insignificantly different from 0. The lower-bound estimates (**Table 13, Column 2**) are between 18pp – 38pp for the different treatment groups. This suggests we can be relatively confident that all of our treatments increased the number of people stating they certified dishonestly.

Overall, this seems counter-intuitive because significantly fewer people self-certify in our treatments than in the control. However, an alternative explanation to the treatments making more people self-certify dishonestly, is instead that more people are able or prepared to admit their dishonesty in the treatment groups. This could be because the friction in our treatments force people to engage with the certification process more intently. Participants therefore better understand the criteria for certifying and thus more readily realise that they have had to lie in order to meet that criteria.

Crucially, this explanation is consistent with the fact that all our treatments drive the self-certification rate down from 53%, the rate of which people self-certify in the control, towards to 16%, the rate at which we would expect people to self-certify based on our survey. This ultimately suggests that more people certify honestly in the treatment groups. Moreover, it suggests that a higher proportion of those that are dishonest are aware and willing to admit to being dishonest.

Self-certification intention

During the experiment, participants were asked how they would certify in real life. Potential answers were 'Yes, I would self-certify' and 'No, I wouldn't self-certify'.

The upper-bound estimates, which considers the maximum decrease in intention to self-certify based on the attrition in the experiment (**Table 14, Column 1**). shows that all estimates on our treatments are negative and significant and between 12.4pp – 21.3pp for the different treatment groups. Conversely, the lower-bound estimate, which

considers the maximum increase in intention to self-certify based on the attrition in the experiment (**Table 14, Column 2**) shows that all estimates on our treatments become positive and significant and are between 6.4pp – 14.7pp for the different treatment groups. Therefore, due to attrition we cannot conclusively say whether our treatments reduce intention to self-certify.

Intention to invest

During the experiment, participants were asked whether they would consider investing in property bonds in the future. Potential answers were Yes or No. Exactly 100 participants of the 8,094 answered that they already invest in property bonds and so these participants were excluded. Therefore 7,994 participants were asked whether they would consider investing in property bonds in future.

The upper-bound estimate, which considers the maximum decrease in intention to invest based on the attrition in the experiment (**Table 15, Column 1**) shows that all estimates on our treatments become negative and significant and are between 9.7pp – 25.9pp for the different treatment groups. Conversely, the lower-bound estimates, which considers the maximum increase in intention to self-certify based on the attrition in the experiment (**Table 15, Column 2**) shows that all estimates on our treatments are negative and significant and between 9.3pp – 13.9pp for the different treatment groups. Therefore, due to attrition we cannot conclusively say whether our treatments reduce intention to invest.

Perceived Riskiness

During the experiment, participants were asked how risky they thought property bonds were. Property bonds are the investment product for which participants decided whether they would self-certify. Participants could give an answer on a scale of 1 to 10, 1 being not at all risky and 10 being very risky.

The upper-bound estimate, which considers the maximum increase in risk perception based on the attrition in the experiment (**Table 16, Column 1**) shows that all estimates on our treatments become positive and significant and are between 9.6pp – 28.9pp for the different treatment groups. Conversely, the lower-bound estimates, which considers the maximum decrease in risk perception based on the attrition in the experiment (**Table 16, Column 2**) shows that all estimates on our treatments are negative and significant and between 6.9pp – 11.5pp for the different treatment groups. Therefore, due to attrition we cannot conclusively say whether our treatments increase risk perception.

Annex 5: Exploratory analysis

This Annex provides further commentary on the exploratory analysis.

Overall, participants were asked about their perceptions of two investor types that were randomly allocated to them. Importantly, participants in the survey arm did not see any further information on the self-certification process, its purpose, the criteria involved, or the process required to certify. They were simply being asked about their perception of investors that had been categorised under different names.

Participants were asked: how desirable they thought it was to be considered that type of investor; how much they would trust an individual classified in that way, and whether it was clear to them what that type of investor is. For each question, participants could give an answer on a scale of 1 to 10, 1 being not at all desirable/trustworthy/clear and 10 being very desirable/trustworthy/clear, respectively. The score of 8 is chosen as cut-off point such that a score of 8 or above reflects very desirable/trustworthy/clear. Attrition from the survey arm was 5% and we report and display the results from complete case analysis.

Figure 17: Certification Desirability

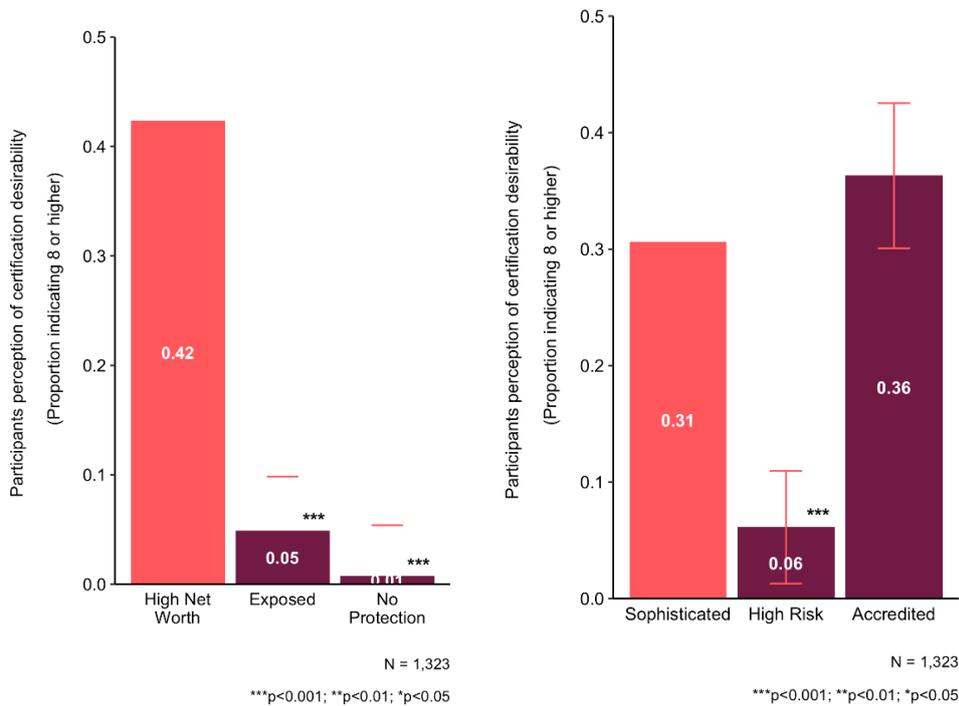


Figure 18: Certification Trustworthiness

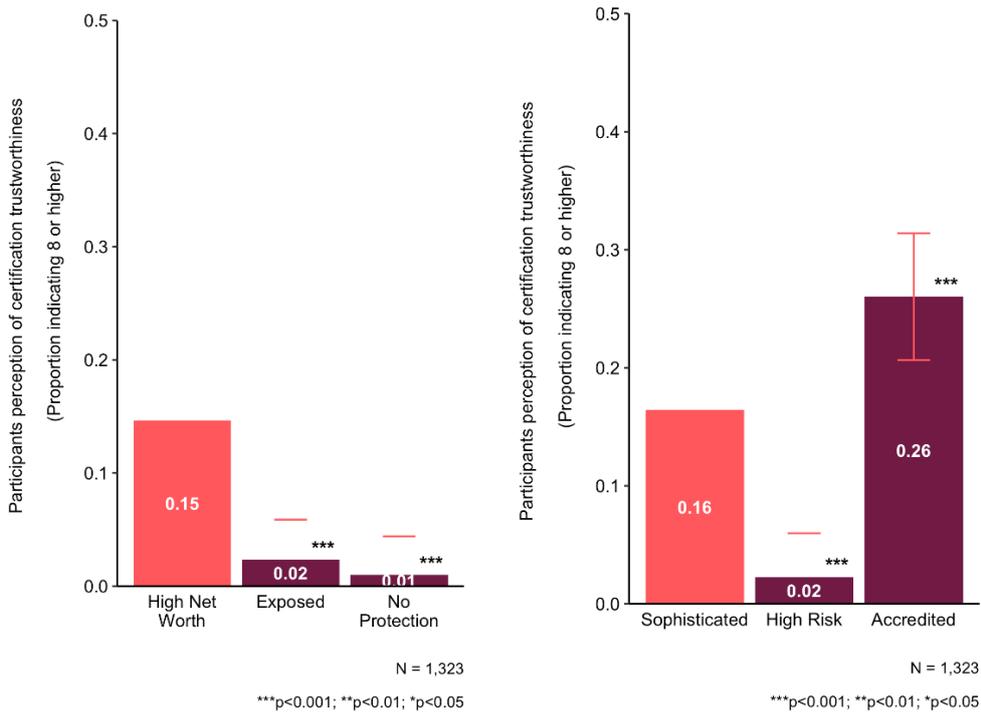
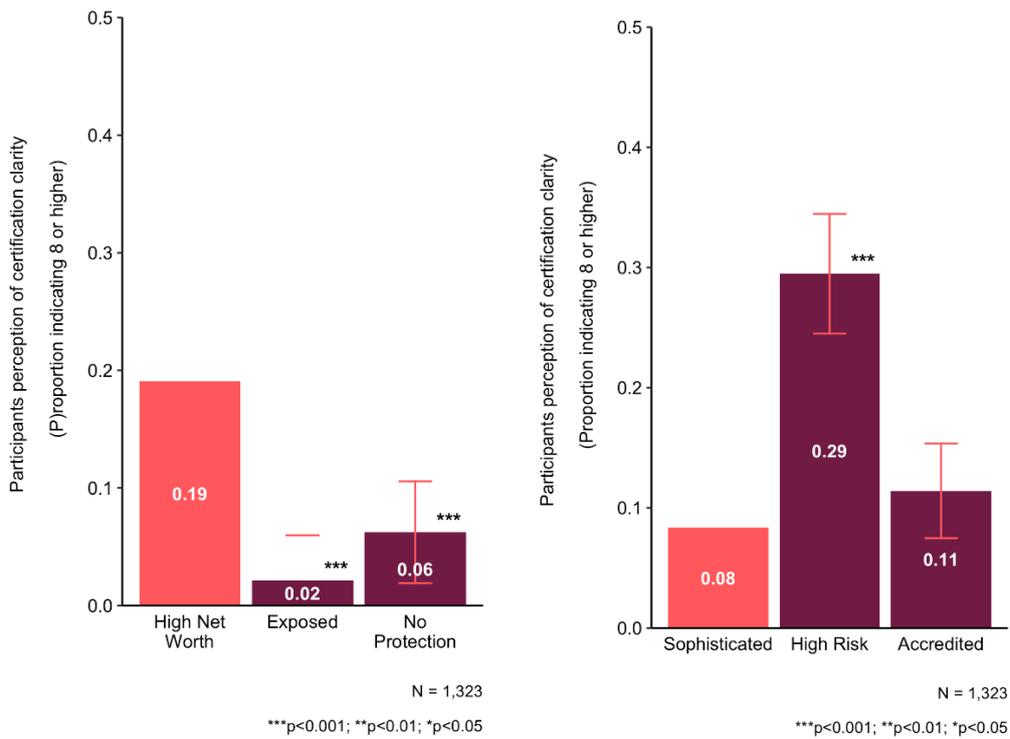


Figure 19: Certification Clarity



Annex 6: Sample description and attrition

Table 9: Sample description

	Control	Active Choice	Evidence Declaration	Simplify Text	Time Delay	Risks Agreement	Survey
Observations	1,258	1,162	1,063	1,115	1,021	918	1,323
Average age	37.20	37.02	37.58	37.38	37.12	37.29	36.57
Female (%)	49.60	51.12	45.72	49.60	49.66	46.08	51.32
Region							
South East England (%)	16.77	14.11	14.39	13.36	14.10	15.58	15.57
Greater London (%)	16.14	14.63	13.55	15.52	13.22	13.18	12.70
Northern Ireland (%)	1.51	2.15	1.69	2.51	2.55	1.96	1.89
Income							
Income less than £12,000 (%)	20.99	21.08	19.38	20.99	20.67	18.85	26.00
Income £24,000 - £36,000 (%)	25.04	22.55	23.52	22.42	23.80	24.62	23.73
Income greater than £72,000 (%)	4.13	3.87	6.30	6.10	7.25	6.32	2.49
Non-investor (%)	27.42	28.49	26.43	27.62	27.33	26.36	29.02

Table 10: Attrition

	Completion:		
	Average likelihood of completing the experiment		
	(1)	(2)	(3)
Treatment: Ref – Control			
Active	-0.070 ^{***} (0.012)		
Evidence	-0.159 ^{***} (0.013)		
Simplify	-0.151 ^{***} (0.013)		
Time	-0.173 ^{***} (0.014)		
Risks	-0.230 ^{***} (0.015)		
Survey	0.025 ^{**} (0.009)		
Name: Ref –			
High Net worth			
Exposed	-0.006 (0.009)		
No Protection	-0.013 (0.009)		
Name: Ref –			
Sophisticated			
Accredited	-0.015 (0.009)		
High Risk	-0.017 (0.009)		
Mobile usage		-0.056 ^{***} (0.008)	
Errors			-0.053 ^{***} (0.004)
Observations	9,618	9,447	8,226
Log Likelihood	-4,294.217	-4,250.396	-4,075.270
Akaike Inf. Crit.	8,610.434	8,504.793	8,154.540

Note: * p<0.05; ** p<0.01; *** p<0.001;
 Log odds were transformed into average marginal effects (AMEs) for ease of interpretation.
 Constants are not displayed as there are no AMEs associated with them.

Annex 7: Regression tables

Table 11: Certification (Intention-to-treat estimates)

Certification:		
Average likelihood of certifying as eligible		
Treatment: Ref – Control		
Active	-0.052** (0.019)	
Evidence	-0.188*** (0.019)	
Simplify	-0.183*** (0.019)	
Time	-0.192*** (0.019)	
Risks	-0.161*** (0.019)	
Name: Ref – High Net worth		
Exposed		0.003 (0.013)
No Protection		0.037** (0.013)
Name: Ref – Sophisticated		
Accredited		0.021 (0.013)
High Risk		0.022 (0.013)
Observations	8,094	8,094
Log Likelihood	-5,338,019	-5,426,118
Akaike Inf. Crit.	10,688,040	10,862,240

Note:

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$;

Log odds were transformed into average marginal effects (AMEs) for ease of interpretation.

Constants are not displayed as there are no AMEs associated with them.

For clarity, we present the regression models above, with separate regressions for Certification on Treatment, and Certification on Names. The results in these regression models are robust to two alternative specifications. Namely, the results are robust to the (1) inclusion of both Treatment and Names as explanatory variables in the same regression model. As well as a further specification which (2) includes both Treatment, Names and the interaction terms between Treatments and Names as explanatory variables. In this second regression, all interaction terms are insignificant at the $*p < 0.05$ level.

Table 12: Certification (upper-bound and lower-bound estimates)

	Certification:	
	Average likelihood of certifying as eligible	
	(1) certified (upper-bound)	(2) certified (lower-bound)
Treatment: Ref – Control		
Active	-0.113*** (0.019)	0.075*** (0.019)
Evidence	-0.249*** (0.019)	0.035 (0.019)
Simplify	-0.244*** (0.018)	0.029 (0.019)
Time	-0.253*** (0.019)	0.045* (0.019)
Risks	-0.221*** (0.019)	0.137*** (0.019)
Alternative names for High Net Worth	Yes	Yes
Alternative names for Sophisticated	Yes	Yes
Observations	8,094	8,094
Log Likelihood	-5,312.507	-5,468.840
Akaike Inf. Crit.	10,645.010	10,957.680

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$;
 Log odds were transformed into average marginal effects (AMEs) for ease of interpretation.
 Constants are not displayed as there are no AMEs associated with them.

Table 13: Dishonesty

	Dishonesty:	
	Average likelihood of participants declaring they certified dishonestly	
	(1) Dishonesty (upper-bound)	(2) Dishonesty (lower-bound)
Treatment: Ref – Control		
Active	-0.004 (0.015)	0.183*** (0.015)
Evidence	-0.028* (0.014)	0.256*** (0.016)
Simplify	-0.0001 (0.014)	0.273*** (0.016)
Time	-0.014 (0.014)	0.283*** (0.016)
Risks	0.014 (0.015)	0.372*** (0.016)
Alternative names for High Net Worth	Yes	Yes
Alternative names for Sophisticated	Yes	Yes
Observations	8,094	8,094
Log Likelihood	-3,645.915	-4,913.217
Akaike Inf. Crit.	7,311.831	9,846.434

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$;
*Log odds were transformed into average marginal effects (AMEs) for ease of interpretation.
 Constants are not displayed as there are no AMEs associated with them.*

Table 14: Intention to self-certify

Intention:		
Average likelihood of participants declaring that they would certify as high net worth or sophisticated		
	(1) Intention (upper-bound)	(2) Intention (lower-bound)
Treatment: Ref – Control		
Active	-0.124*** (0.019)	0.064*** (0.019)
Evidence	-0.197*** (0.018)	0.087*** (0.019)
Simplify	-0.210*** (0.018)	0.063*** (0.019)
Time	-0.213*** (0.018)	0.084*** (0.019)
Risks	-0.211*** (0.018)	0.147*** (0.019)
Alternative names for High Net Worth	Yes	Yes
Alternative names for Sophisticated	Yes	Yes
Observations	8,094	8,094
Log Likelihood	-4,722.490	-5,542.691
Akaike Inf. Crit.	9,464.981	11,105.380

Note:

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$;

Log odds were transformed into average marginal effects (AMEs) for ease of interpretation.

Constants are not displayed as there are no AMEs associated with them.

Table 15: Risk Perception

	Risk:	
	Participants risk perception of the investment opportunity (Risk perception equal or greater than 8)	
	(1) Risk (upper-bound)	(2) Risk (lower-bound)
Treatment: Ref – Control		
Active	0.096*** (0.017)	-0.092*** (0.017)
Evidence	0.170*** (0.018)	-0.115*** (0.016)
Simplify	0.184*** (0.017)	-0.090*** (0.016)
Time	0.209*** (0.018)	-0.088*** (0.017)
Risks	0.289*** (0.018)	-0.069*** (0.017)
Alternative names for High Net Worth	Yes	Yes
Alternative names for Sophisticated	Yes	Yes
Observations	8,094	8,094
Log Likelihood	-5,247.239	-4,161.670
Akaike Inf. Crit.	10,514.480	8,343.340

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$;
 Log odds were transformed into average marginal effects (AMEs) for ease of interpretation.
 Constants are not displayed as there are no AMEs associated with them.

Table 16: Intention to invest

Invest:		
Average likelihood of participants declaring that they would consider investing in property bonds in the future (excluding those that already invest in property bonds)		
	(1) Invest (upper-bound)	(2) Invest (lower-bound)
Treatment: Ref – Control		
Active	-0.097*** (0.019)	0.093*** (0.019)
Evidence	-0.148*** (0.019)	0.139*** (0.019)
Simplify	-0.150*** (0.019)	0.127*** (0.019)
Time	-0.192*** (0.019)	0.109*** (0.019)
Risks	-0.259*** (0.019)	0.104*** (0.019)
Alternative names for High Net Worth	Yes	Yes
Alternative names for Sophisticated	Yes	Yes
Observations	7,994	7,994
Log Likelihood	-5,408.542	-5,197.233
Akaike Inf. Crit.	10,837.080	10,414.470

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$;
 Log odds were transformed into average marginal effects (AMEs) for ease of interpretation.
 Constants are not displayed as there are no AMEs associated with them.

Table 17: Certification name perception

	Perception*:		
	Participants perception of the certification name (Perception of desirability/trustworthiness/clarity equal or greater than 8)		
	(1) Desirable	(2) Trustworthy	(3) Clear
Treatment: Ref – High Net Worth			
Exposed	-0.375*** (0.025)	-0.123*** (0.018)	-0.169*** (0.020)
No Protection	-0.416*** (0.024)	-0.136*** (0.017)	-0.128*** (0.022)
Observations	1,323	1,323	1,323
Log Likelihood	-416.860	-262.364	-361.732
Akaike Inf. Crit.	839.719	530.727	729.465

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$;
 Log odds were transformed into average marginal effects (AMEs) for ease of interpretation.
 Constants are not displayed as there are no AMEs associated with them.

Table 18: Certification name perception

	Perception*:		
	Participants perception of the certification name (Perception of desirability/trustworthiness/clarity equal or greater than 8)		
	(1) Desirable	(2) Trustworthy	(3) Clear
Treatment: Ref – Sophisticated			
High Risk	-0.245*** (0.025)	-0.142*** (0.019)	0.211*** (0.025)
Accredited	0.057 (0.032)	0.096*** (0.027)	0.031 (0.020)
Observations	1,323	1,323	1,323
Log Likelihood	-662.075	-497.306	-550.310
Akaike Inf. Crit.	1,330.150	1,000.613	1,106.619

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$;
 Log odds were transformed into average marginal effects (AMEs) for ease of interpretation.
 Constants are not displayed as there are no AMEs associated with them.

Table 19: Certification name perception

	Perception*:		
	Participants perception of the certification name (Perception of desirability/trustworthiness/clarity equal or greater than 8)		
	(1) Desirable	(2) Trustworthy	(3) Clear
Treatment: Ref – High Net Worth			
Exposed	-0.370*** (0.025)	-0.124*** (0.018)	-0.170*** (0.020)
No Protection	-0.411*** (0.024)	-0.138*** (0.017)	-0.132*** (0.022)
Age	-0.002* (0.001)	-0.002** (0.001)	0.001 (0.001)
Treatment: Ref – Female			
Male	-0.003 (0.018)	0.012 (0.013)	0.056*** (0.017)
Non-binary	-0.166*** (0.012)	-0.056*** (0.008)	-0.063*** (0.010)
Prefer not to say	-0.166*** (0.012)	-0.056*** (0.008)	-0.063*** (0.010)
Non-investor	-0.007 (0.020)	-0.026 (0.016)	-0.018 (0.018)
Region	Yes	Yes	Yes
Income	Yes	Yes	Yes
Alternative names for Sophisticated	Yes	Yes	Yes
Observations	1,323	1,323	1,323
Log Likelihood	-402.248	-236.197	-335.688
Akaike Inf. Crit.	866.496	534.395	733.377

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$;
 Log odds were transformed into average marginal effects (AMEs) for ease of interpretation.
 Constants are not displayed as there are no AMEs associated with them.

Table 20: Certification name perception

	Perception*:		
	Participants perception of the certification name (Perception of desirability/trustworthiness/clarity equal or greater than 8)		
	(1) Desirable	(2) Trustworthy	(3) Clear
Treatment: Ref – Sophisticated			
High Risk	-0.239*** (0.025)	-0.137*** (0.018)	0.213*** (0.019)
Accredited	0.056 (0.032)	0.096*** (0.027)	0.031 (0.018)
Age	-0.003** (0.001)	-0.004*** (0.001)	0.001 (0.001)
Treatment: Ref – Female			
Male	-0.046* (0.023)	-0.002 (0.019)	0.070*** (0.017)
Non-binary	-0.132 (0.129)	-0.151*** (0.013)	-0.130*** (0.010)
Prefer not to say	-0.266*** (0.016)	-0.151*** (0.013)	-0.130*** (0.010)
Non-investor	-0.048 (0.026)	-0.051* (0.023)	-0.039* (0.018)
Region	Yes	Yes	Yes
Income	Yes	Yes	Yes
Alternative names for High Net Worth	Yes	Yes	Yes
Observations	1,323	1,323	1,323
Log Likelihood	-634.845	-463.900	-524.038
Akaike Inf. Crit.	1,331.691	989.799	1,110.077

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$;
 Log odds were transformed into average marginal effects (AMEs) for ease of interpretation.
 Constants are not displayed as there are no AMEs associated with them.

Annex 8: References

Behavioural Insights Team (2017). *Improving engagement with pension decisions: The results from three randomised controlled trials*, available online at: <https://www.bi.team/wp-content/uploads/2017/10/Pension-wise-trials.pdf>

Bhargava, Saurabh, and George Loewenstein (2015). Behavioral Economics and Public Policy 102: Beyond Nudging. *American Economic Review* 105(5), pp. 396-401.

BritainThinks. (2021). Understanding self-directed investors: A summary report of research conducted for The Financial Conduct Authority.

Cox, Anna L., et al. (2016). Design Frictions for Mindful Interactions: The Case for Microboundaries. *Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems*, pp. 1389-1397.

Délias, D., Farghly, F., Hayes, L., Ng, C., & Spohn, M. (2022). Going beyond 'capital at risk': Behaviourally informed risk warnings for high-risk investment products. *FCA Research Note*. Available online at: <https://www.fca.org.uk/publication/research/behaviourally-informed-risk-warnings.pdf>

Farghly, F., Hayes, L., Ng, C., & Spohn, M. (2022). Pausing, reading, and reflecting: Decision Points in high-risk investment user journeys. *FCA Research Note*. Available online at: <https://www.fca.org.uk/publication/research/decision-points-consumer-journeys.pdf>

Financial Conduct Authority. (2020). Call for Input: Consumer Investments. Available online at: <https://www.fca.org.uk/publication/call-for-input/consumer-investments-market.pdf>

Financial Conduct Authority. (2021). DP 21/1: Strengthening our financial promotion rules for high-risk investments and firms approving financial promotions. Discussion Paper. Available online at: <https://www.fca.org.uk/publication/discussion/dp21-1.pdf>

Financial Conduct Authority. (2021b). Consumer Investments: Strategy and Feedback Statement. Available online at: <https://www.fca.org.uk/publications/corporate-documents/consumer-investments-strategy>

Financial Conduct Authority. (2021c). Perimeter Report 2020/2021. Available online at: <https://www.fca.org.uk/publication/annual-reports/perimeter-report-2020-21.pdf>

- Financial Conduct Authority. (2022). CP22/2: Strengthening our financial promotion rules for high-risk investments (including cryptoassets). Available online at: <https://www.fca.org.uk/publication/consultation/cp22-2.pdf>
- Fischbacher, U., & Föllmi-Heusi, F. (2013). Lies in disguise—an experimental study on cheating. *Journal of the European Economic Association*, 11(3), 525-547.
- Habib, M., Cassotti, M., Moutier, S., Houdé, O., & Borst, G. (2015). Fear and anger have opposite effects on risk seeking in the gain frame. *Frontiers in psychology*, 6, 253.
- Horowitz, J. L., & Manski, C. F. (2000). Nonparametric analysis of randomized experiments with missing covariate and outcome data. *Journal of the American statistical Association*, 95(449), 77-84.
- Iscenko, Z., Duke, C., Huck, S., and Wallace, B. (2014). How does selling insurance as an add-on affect consumer decisions? *FCA Occasional Paper 3*. Available online at: <https://www.fca.org.uk/publication/occasional-papers/occasional-paper-3.pdf>
- Lerner, J. S., & Keltner, D. (2001). Fear, anger, and risk. *Journal of personality and social psychology*, 81(1), 146.
- Kelly, Makena (2020). *Twitter would like you to actually read stories before you retweet them*. The Verge. Available online at: <https://www.theverge.com/21286855/twitter-articles-prompt-unread-feature-conversations>
- Madrian, Brigitte C. (2014). Applying insights from behavioral economics to policy design. *Annual Review of Economics* 6 (1), pp. 663-688.
- Mazar, N., Amir, O., & Ariely, D. (2008). The dishonesty of honest people: A theory of self-concept maintenance. *Journal of marketing research*, 45(6), 633-644.
- Nieboer, Jeroen (2020). Using online experiments for behaviourally informed consumer policy. *FCA Occasional Paper 51*. Available online at: <https://www.fca.org.uk/publication/occasional-papers/occasional-paper-51.pdf>
- Shahab, Sina, and Leonhard K. Lades (2021). Sludge and transaction costs. *Behavioral Public Policy*, pp. 1-21.
- Soman, Dilip (2020). Sludge: A Very Short Introduction. *BEAR*. Available online at: <https://www.rotman.utoronto.ca/-/media/Files/Programs-and-Areas/BEAR/White-Papers/BEARx BIORg-Sludge-Introduction.pdf?la=en&hash=DCB98795CB485977A04DDB27EFD800C3DA40220E>

Soman, Dilip, Amar Cheema, and Eugene Y. Chan (2012). Understanding consumer psychology to avoid abuse of credit cards. In: *Transformative consumer research for personal and collective well-being*. Abingdon: Routledge. Chapter 20.

Soman, Dilip, Jing Xu, and Amar Cheema (2010). Decision Points: A Theory Emerges. *Rotman Magazine*, Winter 2010, pp. 64-68.

Sunstein, Cass R., and Julien L. Gosset (2020). Optimal Sludge? The Price of Program Integrity. *Duke Law Journal Online* 70, pp. 74-90.

Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science*, 211(4481), 453-458.

Wolfe, Jeremy M., and Todd S. Horowitz (2017). Five factors that guide attention in visual search. *Nature Human Behaviour* 1, Article 0058.

