# Fool Me if You Want: A Laboratory Experiment on Greenwashing and Enforcement[⋆,⋆⋆]

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## Abstract

Despite being regulated by truth-in-advertising laws, greenwashing continues to be a significant issue, posing challenges to consumer protection and fair competition. Even with these regulations, difficulties in detection and inconsistent enforcement impede a solution to the problem. This paper explores greenwashing through a variation of a sender-receiver game, incorporating a random inspector responsible for detecting false claims. Using signalling theory, we predict the behaviour of sellers and buyers based on each other's beliefs. We then test these predictions in a laboratory setting with real products and consequential purchasing decisions, examining how different detection probabilities influence greenwashing as well as consumption behaviour and beliefs. Not surprisingly, our findings indicate that enforcement primarily acts as a deterrent for sellers. Interestingly, buyers repeatedly purchase green products even when greenwashing is foreseen. Policymakers should address greenwashing differently depending on the weight they give to consumer surplus and environmental concerns.

*Keywords:*
Green consumption, Greenwashing, Enforcement, Label Credence Goods (JEL D12, D82, K42)

# 1. Introduction

The market for green products has recently gained prominence through the production of impure public goods with enhanced environmental features that benefit the environment more than their conventional substitutes. Meanwhile, the term "greenwashing" gained traction from its creator Jay Westerveld who, in 1986, published an essay critiquing hotels' "Save the Towel" campaign, which encouraged guests to reuse their towels to conserve water (Motavalli, 2011). Although the campaign was presented as an effort to reduce the hotels' environmental footprint, Westerveld argued that it misled environmentally conscious consumers by diverting attention away from the hotels' broader, more significant environmental impacts. Despite variations in the 'sins' (de Freitas Netto et al., 2020; TerraChoice, 2010), greenwashing can generally be understood as "the intersection of two firm behaviours: poor environmental performance and positive communication about environmental performance" (Delmas and Burbano, 2011).

Independent of their form, studies have consistently shown that claimed green features significantly increase consumers' willingness to pay compared to identical products without such claims (Laroche et al., 2001). A larger willingness to pay can be driven by a wide range of factors, including intrapersonal motivations such as the "warm glow" effect—the emotional reward of contributing to a greater good (Andreoni, 1990)—as well as socially relevant and context-dependent factors like social norms and concerns for reputation. Additionally, consumers may be motivated by the pursuit of better health (Kareklas et al., 2014) or, more broadly, by a perceived improvement in product quality (see Testa et al. (2021) for a comprehensive systematic review). Regardless of the specific motivation, this increased willingness to pay often persists even when the green claims are unsubstantiated—lacking credible supporting evidence (van der Zee and Fischer, 2018)—which creates fertile ground for opportunistic, fraudulent businesses.

Consumers likely encounter products with suspect green claims in the market, of which only a few are investigated and eventually sanctioned. The 2020 "Sweep" report published by the European Commission and national consumer authorities found that out of a selected sample of 344 seemingly dubious claims "42% of the claims were exaggerated, false or deceptive and could potentially qualify as unfair commercial practices under EU rules" (EC Press release, 2021). This robust evidence corroborates private NGOs investigations TerraChoice (2010) where 95% of the products examined had one or more 'sins of greenwashing' and anonymous studies conducted more recently by The Harris Poll for Google Cloud where "almost three out of four executives (72%) believe that most organizations in their industry would actually be caught greenwashing if investigated thoroughly. When asked about

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their own companies' claims, 59% of executives admitted to overstating — or inaccurately representing — their own sustainability activities" (Cloud, 2023).

This market failure raises concern in at least three economically relevant spheres: competition, consumer protection, and environmental externalities. First, real green retailers might suffer unfair competition such as in *Alcantara SpA v Miko Srl* where the Court of Gorizia (Italy) supported this argument[1]. Second, the set of incentives inevitably favours firms' profitability rather than consumers' surplus, while the European Commission emphasized the need for consumer protection in such a context[2]. And lastly, the environmental externalities generated by more polluting productions impose a social cost on the relevant society, which the market price mechanism fails to internalize. Environmental impacts, either local or global, affect those involved in the market transaction and beyond.

In a simple economy, the incentives for claiming green while not possessing such attributes are: the potential price differential, which fraudulent sellers can exploit; the market shares obtained from real green competitors; and the enforcement systems, as a combination of detection probability and sanction size. While measures against anti-competitive behavior, such as in *Alcantara SpA vs Miko Srl*, are worth further investigation, they are not directly involved in this work, which instead focuses on the enforcement, which appears very lax (Delmas and Burbano, 2011) and ineffective against the multitude of greenwashing cases in the market. The probability of detection in the field of misleading advertising is substantially negligible as often national Market and Consumer authorities rely on consumers' protection groups to report potential cases. While this seems an effective strategy according to a few theoretical studies (Feddersen and Gilligan, 2001; Baron, 2011), it neglects the inability of these groups to provide evidence on vague statements which might potentially be true, with the compound risk of facing costly defamation lawsuits.

Even when enforcement happens and sanctions are imposed, this procedure seems to scarcely impact consumer knowledge. One example is provided by the plastic water bottles market in Italy. Two plastic water bottle producers, Acqua Minerale San Benedetto S.p.a. and Ferrarelle S.p.A, were sanctioned for the adoption of misleading green claims by the

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[1]On July 15th, 2021, Alcantara SpA filed a lawsuit against Miko, claiming that Miko's statements about their product (Dinamica) were damaging to Alcantara's business by favouring a competitor based on false claims about their product. In 2021, the Court of Gorizia recognized the potential harm to Alcantara, noting that environmental concerns heavily influence consumer decisions.

[2]"In March 2023, the Commission adopted a proposal for a Directive on Green Claims. The proposal complements and further operationalises the proposal for a Directive on empowering consumers in the green transition." https://environment.ec.europa.eu/publications/proposal-directive-green-claims_en. Last time accessed: 08/10/2024

Italian authority, respectively in 2009 and 2012. Both authority decisions represent interesting cases that opened the way for consumer protection in the greenwashing environment. At the same time, nowadays it is very easy to find water plastic bottles claiming to be green, and this market appears to be florid. There are several reasons behind this. One possible explanation is that consumers might be inattentive to the authority's decisions, they are scarcely informed, or they have bounded memory. Alternatively, the authority enforcement created heightened trust in 'green' bottles, which still last nowadays. Lastly, buyers might care little about the consequences of their consumption, whether this affects them or the environment, because they feel good anyway in a cognitive dissonance logic (Momsen and Ohndorf, 2022).

Crucially, authorities are increasingly stepping forward in the formulation of criteria to discern greenwashing cases. For instance, the Directive (EU) 2024/825 of the European Parliament and of the Council has strengthened the regulatory effort against unsubstantiated green claims. The Directive sets up increasing specific prohibitions of such claims, based on a case-by-case assessment. National legislation should now have all the enforcement tools to distinguish between legal and illegal claims, an essential precondition that is meant to be followed by actual monitoring efforts by national authorities.

All these examples show how deep the presence of greenwashing is, and how rare it is enforcing authorities to target it. In addition, consumers who are environmentally friendly but also inattentive are usually willing to pay a green premium for such ambiguous green claims. In this context, some authorities are increasingly establishing criteria to define what can amount to sanctions, while monitoring efforts are to be decided. The objective of this paper is to combine this set of conditions to investigate to what extent monitoring, defined as the enforcement strength in terms of detection probability, influences consumer perceptions when false greenwashing constitutes one of the viable strategies available to sellers. In pursuit of this objective, this work investigates the issue through a laboratory experiment grounded in precise predictions regarding individuals' beliefs and behaviors. The designed sender-receiver game allows the exploitation of a variation in the extent of detection probability. Sellers (as senders) operate in a context where choosing to greenwash might generate a green premium while incurring the risk of being sanctioned. Buyers (as receivers) face an ambiguous context where they can purchase claimed green products, which might be true or false, depending on the market conditions.

This paper is structured as follows. First, we place the contribution of this paper within the experimental literature on asymmetric information provision within a sender-receiver paradigm (Section 2). We then present the methodology employed, the game design of the

experiment (Section 3.1), supported by the predictions and the resulting hypotheses (Section 3.2). Lastly, we present the findings (Section 4) and concluding remarks (Section 5).

## 2. Related literature

This paper contributes to the body of experimental literature concerning asymmetric information related to unverifiable quality, with an emphasis on the behavioral factors that impact fraud, credibility, and consumption decisions. A substantial portion of experimental studies on asymmetric information frequently consider experience goods, wherein buyers can verify the quality post-purchase (Miller and Plott, 1985; Lynch et al., 1986; Cason and Gangadharan, 2002). Other experimental investigations have concentrated on experts' services classified as credence goods (Dulleck et al., 2011), for which quality cannot be discerned through experience or search (for a definition, Darby and Karni, 1973). Attributes related to sustainability, such as environmental impact or production fairness, are generally classified as label credence goods (Balafoutas and Kerschbamer, 2020). This scenario engenders profit prospects for sellers, especially when buyers consistently attach value to sustainable products that purport to alleviate social and environmental damage (Bartling et al., 2015).

Limited attention has been given to label credence goods and the interplay between the probability of fraud and consumers' preferences for potentially false sustainable products. We designed an experiment grounded in a signaling framework, in which an external monitoring authority engages in random verification of claims and thereby establishes incentives for presenting either accurate or misleading product assertions. In contrast to standard market experiments (Rode et al., 2008; Etilé and Teyssier, 2016; Feicht et al., 2016; Pigors and Rockenbach, 2016), we abstain from production and price endogeneity, and we create a controlled environment where consumers must depend on a limited set of information to distinguish between pooling and separating conditions, contingent upon the likelihood of enforcement. Moreover, while numerous experimental investigations concerning goods with externalities typically employ abstract commodities (among others, Bartling et al., 2015), our methodology allows consumers to engage with actual, consumable products (as in Berger, 2019). This strategy aims to enhance the external validity of our conclusions in the context of everyday purchasing choices, for which prior empirical evidence has indicated the existence of a green premium.

Several mechanisms have been theoretically analyzed to deter misleading advertisements within green markets. Third-party certifications—commonly known as eco-labels—serve as indicators of product quality through costly investments (Amacher et al., 2004; Hamilton and Zilberman, 2006). Similarly, activists and non-governmental organizations (NGOs) may

perform a monitoring role by auditing firms and shaping public opinion, either by rewarding good performers or penalizing greenwashing via information dissemination (Feddersen and Gilligan, 2001; Lyon and Maxwell, 2011; Heyes and Martin, 2017). Nevertheless, the efficacy of both mechanisms is fundamentally reliant on the strength and credibility of monitoring. Whether executed by certifiers, activists, or a public market and consumer protection authority, the monitoring process generally entails the assessment of the environmental impact of production over time, with varying degrees of access to private information. The successful operation of these mechanisms is contingent upon credible sanctions in response to discrepancies between stated and actual environmental performance, applied directly (e.g., fines, decertification) or indirectly (e.g., reputational harm, consumer backlash). This work relies on the existence of a well-defined set of regulations enabling a generic authority to directly impose sanctions on violators upon detecting false green advertising. This framework permits the generalization of enforcement's direct impact on sellers, which in turn affects buyers' expectations and consumption patterns. The resultant observations elucidate the core behavioral responses to enforcement, intentionally excluding the influence of costly investments and reputation.

Methodologically, we rely on a sender-receiver game setup, which can be defined as a two-player communication game where one player (the sender) possesses private information and the other player (the receiver) takes an action based on the message received from the sender (Gneezy, 2005). The common sender-receiver game employs deterministic preferences over the game outcome (Gneezy and Kajackaite, 2020; Vranceanu and Dubart, 2019). Senders can usually discern the prior from the receiver's ranked preferences for all the possible outcomes. Our work contributes to the study of senders' actions in the presence of receivers' stochastic preferences. Senders formulate their expectations on the demand for green products and their distribution, but can hardly perfectly anticipate them. Finally, this study contributes to the understanding of preferences for truth-telling in strategic conditions, meaning telling the truth even if lying is beneficial. While the design impedes causal arguments, ethical motives are explored. Literature suggests that pure truth-telling is widely present in sender-receiver games with (Gneezy and Kajackaite, 2020; Sheremeta and Shields, 2013) and without strategic interaction (Abeler et al., 2019; López-Pérez and Spiegelman, 2013). The following section provides details on the employed methodology.

## 3. Methods

The methodology adopted consists of a laboratory experiment based on a revised sender-receiver game, with real consumption decisions. First, we introduce the game design, then

we discuss the predictions and hypotheses derived from the underlying assumptions. The model is not intended to explain players' behavior in a general equilibrium fashion but rather to provide partial rational predictions and foundations to the game.

## 3.1. The Game

The game involves two distinct player roles: a seller (as sender) and a buyer (as receiver). The seller is exogenously endowed with a product that may possess green attributes, which are hardly verifiable. If the product exhibits these credence attributes, it is classified as a green good (quality g). Conversely, if the product lacks any green attributes, it is categorized as a conventional good (quality c). Apart from the green attributes, both product types are identical in all other respects. The specifics of each product type and each quality chosen[3] are shown in Fig. 17 in Appendix.

The game is characterized by an information asymmetry on product quality: only the seller possesses the information about the environmental performance of the good, whereas buyers cannot obtain the information on their own through experience or search.

Figure 1: Game sequence
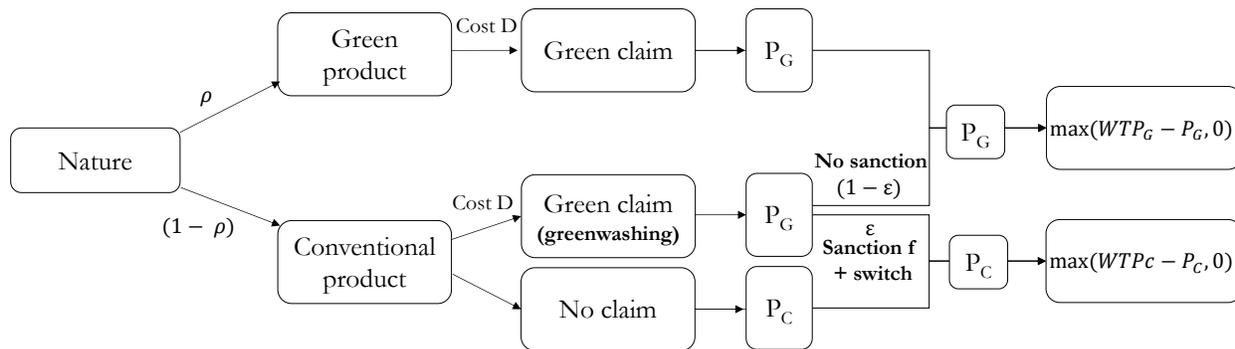


Note: From left to right, Nature randomly assigns a green or a conventional product to sellers, which decide whether to adopt a Green claim or not and consequently the price $P_G$ or $P_C$. The monitoring authority with $\epsilon$ probability verifies the match between quality and claim. In case of greenwashing, it assigns a sanction of size $f$ and removes the claim from the product. Finally, buyers receive the product and maximize utility given the set of information.

As displayed in Fig. 1, sellers must select a claim for the product, which directly influences the price offered to the buyer. The set of possible prices is restricted to two levels: the price

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[3]The rationale behind the choice followed three principles: (1) holding green credence attributes with similarity in all other respects, (2) empirical evidence of a green premium over the green characteristics and (3) ease of purchase, stock availability and non-perishability for the experimenter.

associated with a green claim ($P_g$) and the price of a conventional good ($P_c$). For each type and quality, the prices are set exogenously at the medians of empirically tested willingness-to-pay distributions where buyers had certainty of the true quality of the product[4]. For all product types involved in this study, there exists a green premium between the conventional and the green version. Table 1 reports the product types and the relative descriptive statistics from the pre-experimental auctions.

Therefore, by adopting a green claim, the seller with a conventional product falsely represents the product's attributes and aims for a higher markup. The adoption of a green claim incurs a disclosure cost $D$, which is small and identical regardless of whether the claim is truthful or false.

Table 1: Evidence of green premium from the Becker-DeGroot-Marschak auctions.

| Product type | $\mathbf{WTP}_C$ & $\mathbf{P}_C$ | $\mathbf{WTP}_G$ & $\mathbf{P}_G$ | $\Delta_{Q2}$ (%) |
|---|---|---|---|
| Cotton buds | € 1.50 | € 2.00 | € 0.50 (33%) |
| Chocolate | € 1.80 | € 3.00 | € 1.20 (67%) |
| Coffee | € 2.00 | € 3.60 | € 1.60 (80%) |
| Cola | € 0.95 | € 1.65 | € 0.70 (74%) |
| Dish. liquid | € 1.60 | € 2.30 | € 0.70 (44%) |
| Soap Bar | € 2.30 | € 2.65 | € 0.35 (15%) |
| Toothpaste | € 1.50 | € 2.20 | € 0.70 (47%) |
| Total | € 1.72 | € 2.45 | € 0.73 (42%) |

Note: This table displays the median prices of each product tested through the BDM auctions, which are used as the prices in the sender-receiver game. During the BDM auction, all participants were shown all product types, either conventional or green, to avoid order effects. Each combination of type X quality had 42 observations. $\Delta$ is the difference between $WTP_{green}$ and $WTP_{conventional}$ for each product type. % equals ratio between $\Delta$ and $WTP_{conventional}$. Basmati rice, which was first included in the auctions, was later excluded from the study because of the missing green premium (3%).

If the seller opts to use a false claim, they face the risk of detection by an authority, which verifies the claim's truthfulness with a probability $\epsilon$ which varies according to the treatment. If the false claim is detected, the seller is always subject to a fixed and known fine of size $f$, which according to the parameterization, described in Table 5, is set to be € 0.60. Moreover, in this case, the false claim is removed, and the price is restored to $P_c$.

In the last stage, the buyer receives the product with one of the two claims after the

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[4]The auctions described in Section 4 and in Appendix A.5 allowed us to establish the price parameters of the game. Prices for products are set at the median WTP under the scenario of *truthful claims*. During the auction, participants were informed that: "For the completion of the questionnaire, we guarantee that all sustainability claims related to the product have been verified and deemed correct. 100% of the products containing environmental and social sustainability claims indeed possess the stated characteristics". By setting prices to the median level we expect a demand of green products of 50% in a credible market. More details on the BDM auctions can be found in the Supplementary Material (Appendix A.5.2).

potential authority's intervention without knowing whether the product has been verified and sanctioned. The buyer elicits two equally relevant decisions. Firstly, the buyer must indicate the willingness to pay for the product only with the claim received following the Becker-DeGroot-Marshack (BDM) auction procedure proposed by (Bohm et al., 1997). Secondly, the buyer is informed about the products' market prices ($P_g$ and $P_c$) and decides whether to purchase the product by paying the offered price.

The game is designed to be repeated multiple times with each product type, using a stranger-matching protocol without providing feedback on sanctions or purchase decisions[5].

### 3.2. Assumptions and Predictions

The predictions of the game are obtained through an adapted signalling model to derive a cutoff detection rate that generates pooling and separating conditions. By pooling, we mean that both seller types adopt the same (green) claim, while in separating conditions, truthful revelation emerges.

### 3.2.1. Assumptions

The predictions are founded on a set of assumptions on: i) exogenous production and pricing; ii) a perfect enforcement system; iii) an incomplete and imperfect information setup; iv) the (perfect) substitutability between types; and v) the set of strategies which can be adopted. Then, the cutoff enforcement $\epsilon^*$ level allows for establishing predictions and testable hypotheses. Details are included in Appendix A.1.

➤ **Exogenous production and pricing**: Production and price decisions convey information that is often incorporated into more complex models. However, since the primary focus of this research is on buyers' behavior rather than sellers' strategic decisions, both production and pricing are treated exogenously. Specifically, product quality is assigned probabilistically to sellers to abstract from production choices, which are not central to the analysis. Similarly, prices are set exogenously, equal to the median willingness-to-pay from Becker-DeGroot-Marshack auctions (Bohm et al., 1997) conducted on the same product types. This approach ensures that consumers' empirical valuation is isolated from sellers' strategic production and pricing considerations, allowing for a cleaner identification of buyer behavior conditional on the game parameters.

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[5]While offering feedback would be interesting to study the role of learning, doing so would require a much larger set of products to obtain statistically robust evidence.

➤ **Perfect enforcement**: Enforcement occurs before the product goes to the buyer and is conceived to be perfect. This means that once detection happens and a crime is found, the sanction is always imposed. Although this is a quite strict scenario, we can think of it as an administrative fine, which is reasonable in the realm of SME greenwashing cases. Moreover, this assumption allows an easier understanding of the sanctioning system both for sellers and buyers in the laboratory.

➤ **Incomplete and imperfect information**: The model is characterized by informational asymmetry in two ways: information is incomplete and imperfect. Information is incomplete both for sellers and buyers. The seller possesses information about the realization of the product quality and buyers cannot obtain the information on their own throughout nor experience neither search. Crucially, buyers can only infer it from available market conditions under which sellers operate. However, the seller has no information on the buyers' type $\gamma$. This means that the seller does not know whether they are facing a conscious buyer or not. Information is imperfect regarding the enforcement. Players know the general level of the enforcement, however, they do not possess any information whether the sanction has been imposed before the product reaches the market[6].

➤ **Perfect substitutes except environmental attribute**: Goods are assumed to be perfect substitutes and therefore buyers derive identical utility from consumption in all the characteristics but the environmental attribute $X \in \{0,1\}$[7]. More specifically, the buyer's utility[8] is defined as $U = \sigma + X\theta f(\tau, \gamma)$. It is the sum of a constant $\sigma$, held by both product qualities[9] and a component $X\theta f(\tau, \gamma)$ where $\theta$ is a variable depending on the credibility of the green claim, $\tau$ is the magnitude of the environmental performance and $\gamma$ is the buyer's affinity towards the environmental attribute of the product[10]. Crucially,

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[6]This assumption is supported by the consistent lack of attention buyers typically pay to market authority decisions especially on especially on consumer goods.

[7]The product features do not differ between the two types which make them substitutes in all respects but the environmental credence attribute. This assumption implies that the utility of basic common features is not altered by the interaction with credence green attributes. Therefore, the additional utility of the environmental attribute is captured entirely by X $\theta f(\tau, \gamma)$

[8]Among the possible functional forms, a potential representation of the utility function is: $U = \sigma + X\theta e^{(\tau\gamma)}$, where X is a random binary variable that takes value 1 with probability $\rho$ if the product has an environmental attribute and 0 with probability $(1 - \rho)$ if it has no environmental attributes.

[9]We assume that $\sigma$ is a binary random variable with a Bernoulli distribution $\mathcal{B}(2, \mathcal{F}(\sigma))$ which takes value 0 if the individual has no utility from the product at all or value $\sigma$ positively with probability $\mathcal{F}(\sigma)$.

[10]The parameter $\tau$ is randomly drawn from a probability distribution $\mathcal{F}(\tau) \sim \mathcal{U}(0,1)$ and, similarly, $\mathcal{F}(\gamma) \sim \mathcal{U}(0,1)$. The higher the $\tau$, the larger the environmental performance of the attribute, and the higher the $\gamma$ the more environmentally conscious the buyer is.

$\theta$ depends on the probability that a green-claimed product would be actually green. This matter is discussed in section 3.2. For practical reasons, in the remainder of the chapter, we refer to the utility produced by the green products as $V_g$ and the utility generated by the conventional product $V_c$. Additionally, $\overline{V_g}$ indicates the maximum utility each individual can get from the green product when $\theta$ equals 1.

➤ **Strategies and payoffs**: The seller's utility depends on her own strategy, the potential sanction and the buyer's action. In brief, conventional sellers can either claim truthfully (N$^c$) or falsely (G$^c$), while green sellers can only be truthful (G$^g$). Buyers can either buy (B) or not buy (NB) the proposed product with the relative claim. Strategies and the relative payoffs are summarised in Table 2 and presented extensively in Figure 9.

Table 2: Payoffs for both Seller S$_s$ and Buyer S$_b$ conditional on the strategy chosen and enforcement (nature) outcome.

| Player's strategies (S$_s$ ; S$_b$) | Nature Detection prob. | Payoffs ($\pi_s; \pi_b$) | Outcome |
|---|---|---|---|
| (G$^g$; B$^G$) | - | ($P_g - D; V_g - P_g$) | True Green |
| (G$^g$; NB$^G$) | - | ($-D; 0$) | |
| (G$^c$; B$^G$) | (1-$\epsilon$) | ($P_g - D; V_c - P_g$) | Undetected |
| (G$^c$; NB$^G$) | (1-$\epsilon$) | ($-D; 0$) | Greenwashing |
| (G$^c$; B$^c$) | $\epsilon$ | ($P_c - D - f; V_c - P_c$) | Detected |
| (G$^c$; NB$^c$) | $\epsilon$ | ($D - f; 0$) | Greenwashing |
| (N$^c$; B$^c$) | - | ($P_c; V_c - P_c$) | Conventional |
| (N$^c$; NB$^c$) | - | ($0; 0$) | |

*3.2.2. Predictions and Hypotheses*

Given the incomplete and imperfect information regimes, the deterrence is achieved through the sanctioning system, which can impede sellers to choose the green claim while holding a conventional product. Enforcement can enable both pooling and separating conditions. These conditions correspond to scenarios where rational sellers would do green-washing (pooling) or not (separating). A threshold level $\epsilon^*$, indicates the monitoring level which makes sellers *a priori* indifferent between engaging in greenwashing or not. While the detailed analytical steps are outlined in Appendix A.1.1), the cutoff level is:

$$\epsilon^* = \frac{\mathcal{F}(\gamma)P_g - \mathcal{F}(\sigma)P_c - D}{\mathcal{F}(\gamma)P_g - \mathcal{F}(\sigma)P_c + f} \tag{1}$$

The higher the profitability of green products $(\mathcal{F}(\gamma)P_g)$ with respect to the conventional ones $(\mathcal{F}(\sigma)P_c)$, the more monitoring is required. While, as expected, an increase in advertising cost $D$ and in sanction size $f$ diminishes the need for a stronger enforcement.

Using backward induction, the buyer's strategy (B or NB) is based on the information she possesses. Given the price gap between green and conventional products, the size of sanctions, and the detection probability, buyers can rationally assess whether incentives to do greenwashing are present. Consequently, in the separating equilibrium, the probability of receiving a truly green product is one. The buyer's updated utility, influenced by $\theta$, is then compared to the proposed price, and the buyer will proceed with the purchase only if the updated utility $V_g'$ exceeds the price. Prediction 3.1 follows:

**Prediction 3.1.** *In the separating equilibrium region, if $\epsilon \geq \epsilon^*$, the buyer knows that cheating is not incentivized and therefore $V_g' = \overline{V_g}$.*

Alternatively, even if greenwashing is not deterred, detection occurs at the $\epsilon$ rate. Bayes' rule provides the probability of receiving a truly green product $P(g|G)$ which is, in the pooling area, strictly smaller than 1. Prediction 3.2 follows:

**Prediction 3.2.** *In the pooling equilibrium region, if $\epsilon < \epsilon^*$, the buyer knows that cheating is incentivized and therefore $V_g' < \overline{V_g}$.*

The resulting impact develops second-order beliefs held by the seller about the buyer's optimal strategy. While separating conditions ensure trustful green products and the willingness to pay for the green attributes is unaffected in pooling conditions, the WTP for green products is expected to drop as a consequence of $\theta$. The resulting prediction 3.3 is formulated:

**Prediction 3.3.** *If $V_g' < P_g$ and the seller correctly anticipates it, then a unique equilibrium exists such that the demand for products with green claims is zero and the seller has no incentive to cheat. As a consequence, the separating equilibrium region gets larger.*

These predictions led us to adopt a pragmatic strategy regarding the treatments, assigning to the detection probability $\epsilon$ either a 1%, in the pooling treatment or 50% in the separating treatment[11]. By adjusting $\epsilon$ to reflect the specified pooling and separating scenarios, we aim to accomplish three objectives: a) to analyze the behavior of sellers and buyers

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[11]The pre-registered treatments are three: Strong Pooling (1%), Weak Pooling (20%), and Separating (50%) treatments. However, due to budget constraints and a substantially insignificant difference between buyers' behavior in Strong Pooling and Separating conditions rendered the Weak Pooling treatment was rendered inconsequential. These considerations were undertaken prior to the commencement of the sessions and are elucidated in Section 9 of the pre-registered Analysis Plan.

across both equilibrium spaces; b) to maintain identical instructions, save for the parameter $\epsilon$; and c) to facilitate participants' comprehension of the enforcement condition. The predictions and treatment arms inform the pre-registered experimental hypotheses, which are summarized in Table 3. Additional details can be accessed on the AEA Social Science Registry[12] website.

Table 3: Summary of Hypotheses

| | |
|---|---|
| *Sellers' Behavior – Greenwashing* | |
| S1 | In the pooling equilibrium (low enforcement), greenwashing is expected to be positive. |
| S2 | In the separating equilibrium (high enforcement), no greenwashing is expected. |
| S3 | Higher enforcement levels should reduce greenwashing. |
| *Sellers' Motives – Beliefs and motivations* | |
| S4 | If greenwashing occurs under profitable conditions, sellers are likely driven by monetary incentives. If not, non-monetary motives (e.g., lying aversion) may be at play. |
| S5 | When expected demand for green products is low, sellers will not greenwash. If they do, it may signal poor understanding of the game. |
| *Buyers' Behavior – Willingness to Pay (WTP) for green claimed products* | |
| B1 | WTP under full verification (100%) is at least as high as in the separating equilibrium (50%). |
| B2 | WTP under full verification (100%) and in the separating equilibrium (50%) is higher than WTP under pooling (1%). |
| *Buyers' Behavior – Purchase Choices of green claimed products* | |
| B3 | In the separating equilibrium, buyers purchase green products with a likelihood of 50%. |
| B4 | In the pooling equilibrium, the likelihood of purchasing green products is lower due to the risk of greenwashing. |
| *Buyers' Motives – Belief updating on sellers' greenwashing* | |
| B5 | In the separating equilibrium, buyers believe that there is no greenwashing. |
| B6 | In the pooling equilibrium, buyers believe that greenwashing takes place. |
| B7 | Buyers expecting high greenwashing have lower WTP and are less likely to purchase green products. |

### 3.3. Experimental Procedures

### 3.3.1. Sessions

The experiment was programmed using oTree (Chen et al., 2016) and the sessions were held at the Bologna Laboratory for Experiments in Social Science in Bologna. The pre-experimental BDM auction was run between October 24th and November 3rd 2023 with 85

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participants and the interactive sessions with both roles from January 8$^{\text{th}}$ 2024 to February 14$^{\text{th}}$ 2025 with 308 participants recruited through the ORSEE platform (Greiner, 2015) adopted by the University of Bologna[13]. Participants earned €11.7 on average including a €5 show-up fee. A detailed list of each session's participant number is available in Appendix A.5.6.

### 3.3.2. Protocol and Additional Variables

Once randomly seated, checked-in participants started the experimental session from Part A, consisting of the sender-receiver game with fixed roles, which lasted for eight rounds, one per product type. Products were assigned randomly at the participant level (except for chocolate always set to be the first type), while pairs had a stranger-matching reassignment at the end of each round. Treatment of Part A was assigned at the session level. Part B followed, consisting of an incentivized Bomb Risk Elicitation Task to reveal risk preferences (Crosetto and Filippin, 2013). After that, Part C was different depending on the player role. Sellers were asked to elicit their beliefs concerning the expected demand for each product and claim. They were asked to express "*what you think the percentage of each product purchased was with both labels in previous sessions identical to this one*" with answers ranging 10% from 0 to 1. Buyers, instead, were asked to elicit with a binary answer (yes or no) whether they think there are profitable conditions for greenwashing: "*Do you think that sellers with a conventional product and these conditions have adopted the claim B?*". Finally, participants received a questionnaire on attitudes towards purchasing each product type (only for buyers), environmental matters, institutions, advertising, and enforcement against advertising. In the end, they were asked to type their most influential decision-making factors in Part A and to rate the difficulty of the experiment. Once filled out the payment form, buyers received the purchased product privately[14]. The protocol and complete instructions can be found in Appendices A.5 and A.6.

### 3.4. Sample, Power and Statistical Analysis

The participants' demographic characteristics are not different between Pooling and Separating treatments as shown in Tables 6 and 7. The sample is mostly composed of students

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[13]The list of ORSEE is filtered with the following requirements: students, with a participation count smaller than 10 and a no-show count smaller than 2. The resulting available sample is around 3.500 students.

[14]The packaging of each product was prepared by the experimenter to avoid disclosure of the true quality even after receiving the purchased product. Participants who received a product with a false green claim were not able to distinguish it from a true green claim. Examples for dishwashing liquid and chocolate are shown in Figure 18 in Appendix A.5.5

(92%); women are the majority (62% of the total). Additionally, 49% of the participants are unable to support themselves financially and are economically dependent on their family income, which averages 29.950€. Study fields range across all disciplines with a minor discrepancy across treatments for buyers with slightly more students from economics in the Separating treatment (Table 8 and 9).

The preregistered power calculation, based on buyers' pre-experimental auctions, supported achieving at least 280 independent observations (80 participants observing one green claim out of two) as decisions on green claimed products per treatment arm to detect an effect between green and conventional WTPs[15]. In the end, while buyers were in total 154, the number of observations was 743, as sellers did greenwashing more than the lower bound.

The empirical analysis combines descriptive statistics across treatments and product types, supplemented, where appropriate, by regression and predictions. The outcome variables are defined as follows: GW is a binary variable for greenwashing, taking the value 1 when a seller with a conventional product makes a green claim, and 0 otherwise; WTP is a continuous variable representing willingness to pay; Purchase is a binary variable indicating whether a proposed product is purchased. Outcomes are explored using OLS and Logit regressions. Moreover, to account for individual-level and product-type-level heterogeneity, we employ Linear Mixed Models that incorporate random effects.

## 4. Results

After providing an overview of the general outcomes, we provide three main sets of results concerning treatment effects on greenwashing behavior (Result 1), on buyers' willingness to pay and purchasing behavior of green claimed products (Result 2) and on the accuracy and the role of beliefs in purchasing green products (Result 3).

Fig. 2 shows that the willingness to pay and the purchasing behavior are well-reflected in the stated interest in the products, confirming the reliability of the revealed elicitation mechanisms. For conventional and green claimed products, the higher the stated interest (between 0 and 2), the higher the WTP and the purchasing behavior of green products. Overall, for all treatments, we observe the mean WTP for green products (€ 2.49) is significantly larger than for conventional products (€ 1.96) (t-test, p-value < 0.001). Therefore, a green premium is stable and consistent independently of the level of monitoring. According

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[15]As reported in the Pre-registered analysis for the power analysis we opted for revealed WTP counting each observation as an independent observation: "firstly, because the design with stranger-matching protocol and the inability for participants to learn throughout the rounds of the game and, secondly, because the main hypotheses are tested considering all products while the potential role of learning is explored secondarily."

Figure 2: Stated and revealed preferences for claimed green products across treatments
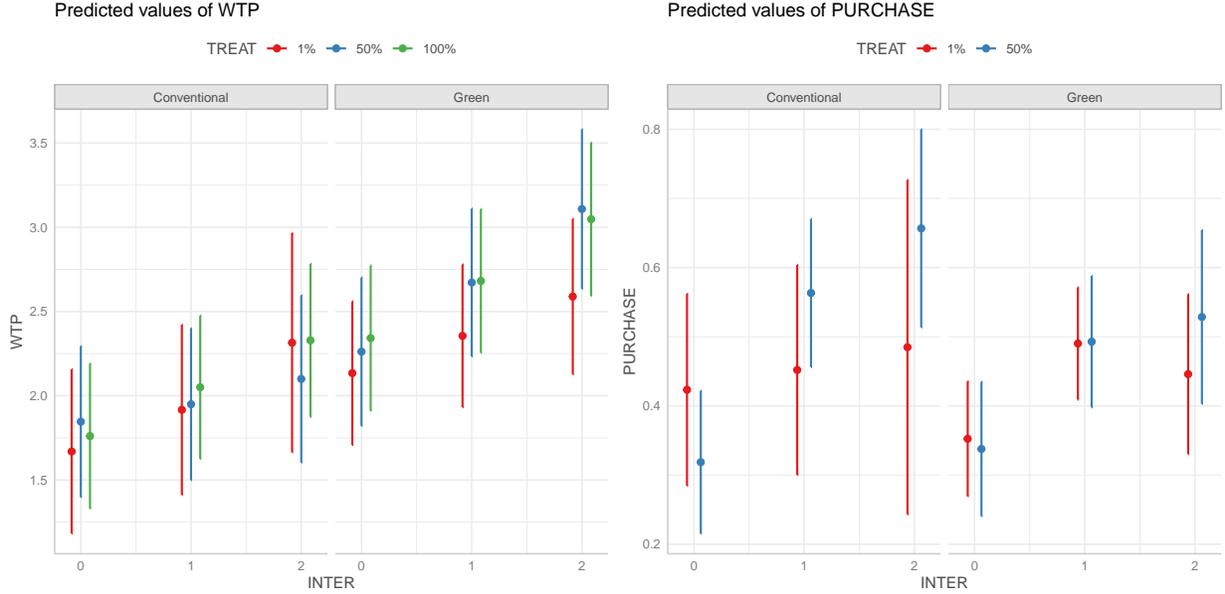
Note: Figure shows the predicted values of two Linear Mixed models. The left panel is an LMM with WTP as a continuous dependent variable and the predictors are the interaction between: Interest (0-2) x Green (Conventional-Green) x Treatment (1%-50%-100%). The right panel is determined by a GLMM model, where the dependent variable Purchase is binary. Random effects at the Product Type and Individual level. The regression table 12 is presented in Appendix A.4.

to average marginal effects of the predictors of WTP and Purchasing behavior, presented in Fig. 3, stronger preferences translate into higher WTP and purchasing of green products, especially for female participants, if sustained economically by the family, and when holding a stronger pro-environmental attitude. From tables 15 and 17, we can also argue that trust in green advertising increases the WTP and the purchase rate of claimed green products.

Concerning sellers, stronger environmental attitudes, such as reported importance and weight, determine slightly higher levels of greenwashing across the entire population. At the same time, the more knowledgeable about the environment, the less they do greenwashing. As reported in Table 18, gender, trust in agencies and advertising and other demographic variables hold no role in predicting greenwashing. Result 1 reports the main factors concerning sellers' decisions to mislead buyers.

**Result 1:** *A stronger enforcement deters to some extent greenwashing even when it is profitable, while a fifth of individuals are moved by ethical reasons.*

Support for Result 1 can be found in Fig. 4. Specifically, with a 1% detection proba-

Figure 3: AME of selected predictors of WTP and Purchase of green products
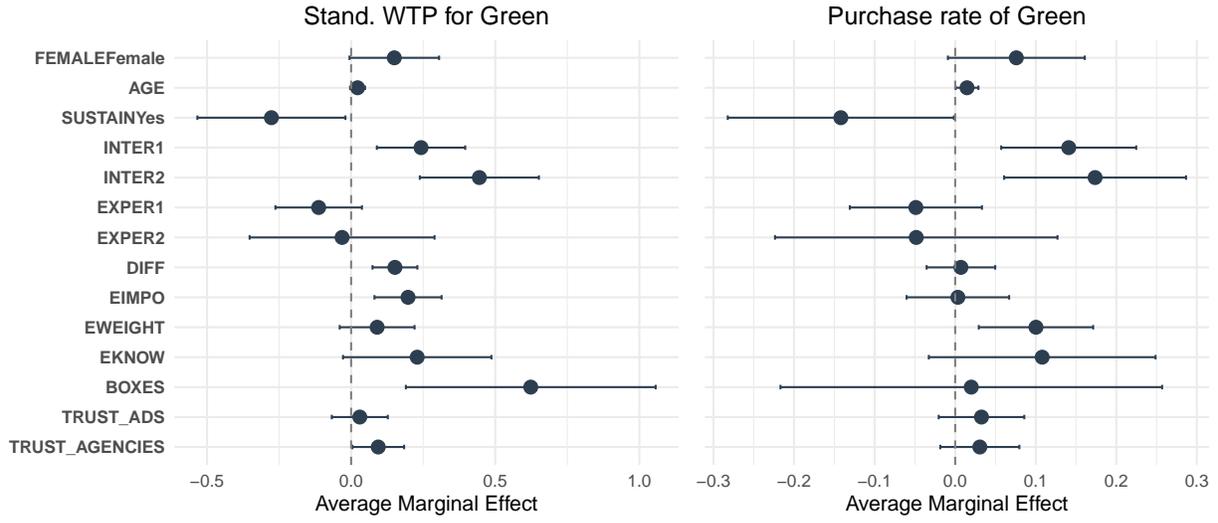


Note: Figure shows the Average Marginal Effects with 95% confidence intervals for two models and only for the selected predictors. The full models are displayed in Tables 16 and 17. Diff stands for stated difficulty, while boxes refer to risk attitude from BRET. Other predictors are excluded because generally non-significant.

bility, sellers holding conventional products adopt green claims 62.6% of the time (Hp S1: accepted), still lower than a potential 100%. In contrast, with 50% detection, the incidence of greenwashing is significantly lower, amounting to 38.2% ($\chi$-squared test, $p < 0.001$), but higher than the hypothesized absence of greenwashing (Hp S2: rejected).

Despite some heterogeneity, 1% enforcement drives more dishonest behaviour for all product types. For some products, the difference in greenwashing is quite stark, such as for cotton buds ($p < 0.01$), dishwashing liquid ($p < 0.05$) and toothpaste ($p < 0.01$); the difference is not statistically significant for the remaining types. Data for chocolate and coffee (which both hold a larger green premium) display a high greenwashing rate (between 57% and 74%) in both treatments, while for cola and soap bars this is generally lower. This result suggests that dishonest behaviour is not solely driven by detection probability but from a combination of product characteristics and profitable conditions. From the expected demand questions in Part C, we reconstruct the expected profitability of doing greenwashing for each product. The $EPROFIT$ variable is obtained by deducting the expected profitability of not doing greenwashing from the expected profitability of doing greenwashing. As shown in Table 13, one euro higher expected profitability increases the probability of doing greenwashing by

Figure 4: Mean level of greenwashing holding a conventional product
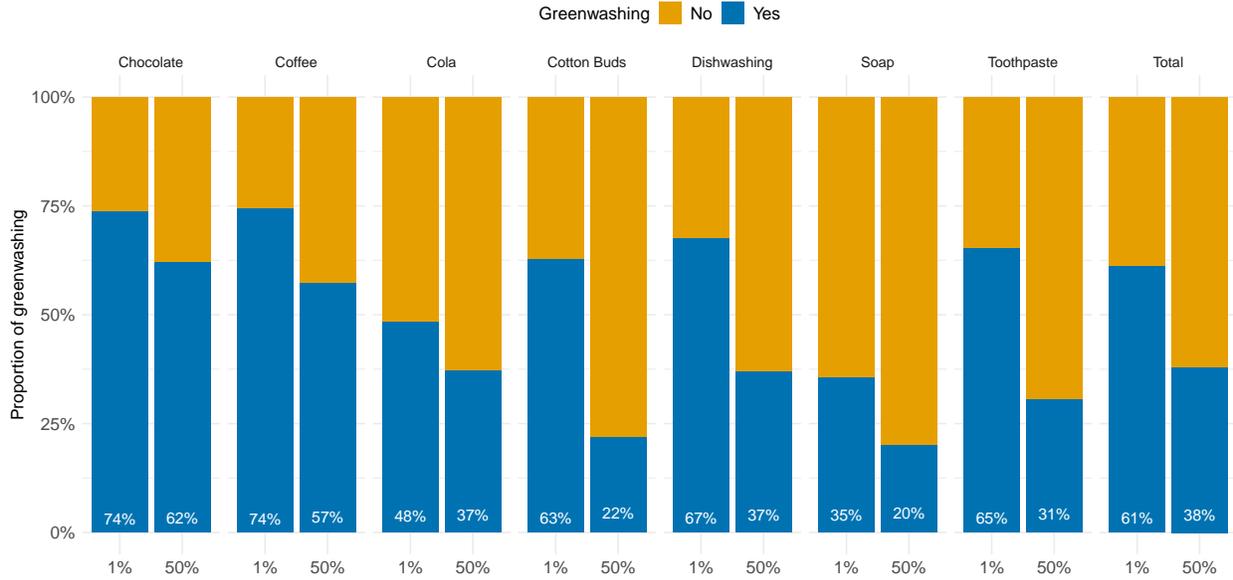


Note: This figure shows the simple mean level of greenwashing adoption by product type and on average across products, i.e. the adoption of Claim B holding a conventional product.

66% (Log-odds = 0.665, p < 0.01)[16].

Figure 5 shows that higher profits in expectations lead to more greenwashing: even with a stronger enforcement, sellers select a green claim. Neither risk loving attitudes nor failures in comprehension questions explain these choices. Finally, Figure 5 shows that ethical motives drastically drop greenwashing to lower levels (around 30% for both treatments) than what a stronger enforcement system does (38.2%). The participants led by earnings still do not greenwash to their maximum extent in pooling conditions, highlighting some sort of unexpressed fraud aversion. Lastly, greenwashing is very similar across treatments among the participants who thought carefully about the potential buyer's demand, suggesting the importance (at least for a few individuals) of second-order beliefs as hypothesised. These results are confirmed by Table 14: greenwashing is 35.3% less likely among ethically-moved individuals (p < 0.001), and 15.7% less likely among those who thought about the buyer's demand. And in particular, the higher the expected demand for the green claim, the higher the probability of doing greenwashing (+18,5%, GLM, p<0.01) and the higher the expected

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[16]This result is also confirmed by Model 2 in Table 13 where the GAP between the green and the conventional product is a significant predictor of greenwashing

Figure 5: Drivers of greenwashing
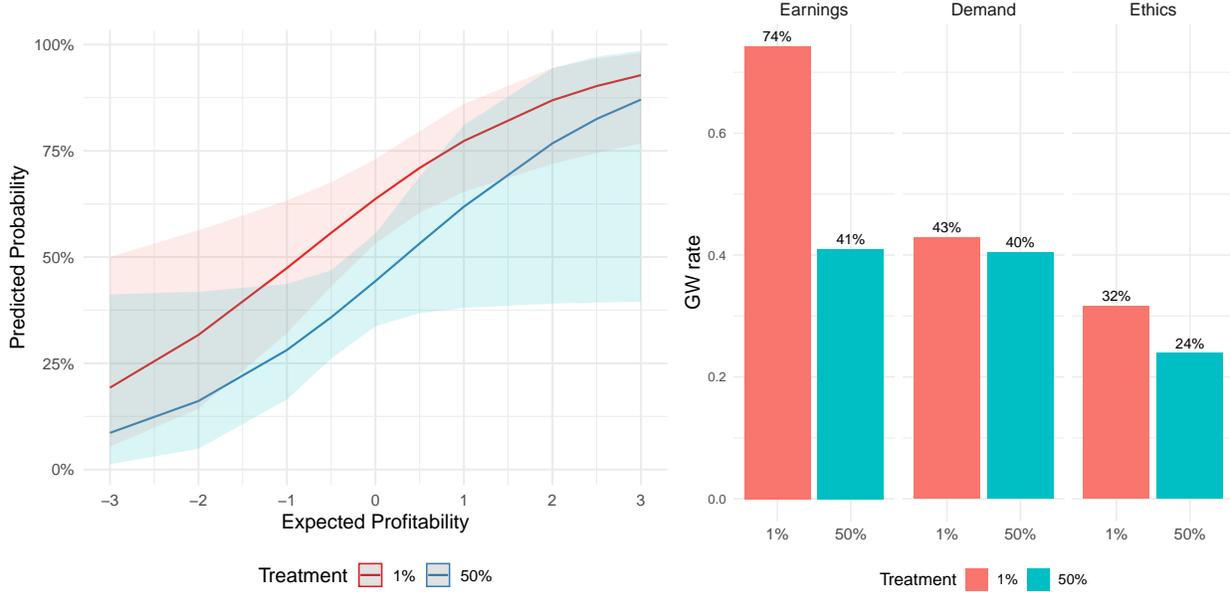
Note: (To the left) The predicted probabilities of the seller doing greenwashing (holding a conventional product). The interaction between the variables GW and EPROFIT from a Generalised Linear Model (GLM) presented in Table 13. (To the right) The registered Greenwashing rate across stated motivating factors: Earnings (declared 45.5%), Ethics (20.3%), and Demand (16.2%).

demand for conventional claims, the higher the probability of not doing greenwashing (-16%, GLM, p<0.05).

**Result 2:** *WTP for claimed green products varies depending on the enforcement level. At the same time, consumers become unresponsive to different monitoring levels when informed about sellers' exploitable gap.*

Support for Result 2 is provided in Fig. 6 and Table 4. The WTP for green products increases with higher detection probability rising from €2.36 at 1% detection probability to €2.55 at 50% and €2.63 at 100%. While this tendency is observed globally, a disaggregated analysis reveals distinct patterns for chocolate and cola. Specifically, for chocolate, the differences are nullified, whereas for cola, the 100% treatment exhibits the lowest mean. Standardised WTP means are presented in Table 4. Notably, the differences between treatments, 50% and 100% are not statistically significant. However, the standardized mean WTP in 1% is significantly lower than that for both the 50% (Tukey HSD test, p = 0.07) and the 100% (Tukey HSD test, p = 0.02) treatments.

Secondly, buyers could decide directly whether to purchase the received product after

Figure 6: Mean WTP for green products between types and treatments.
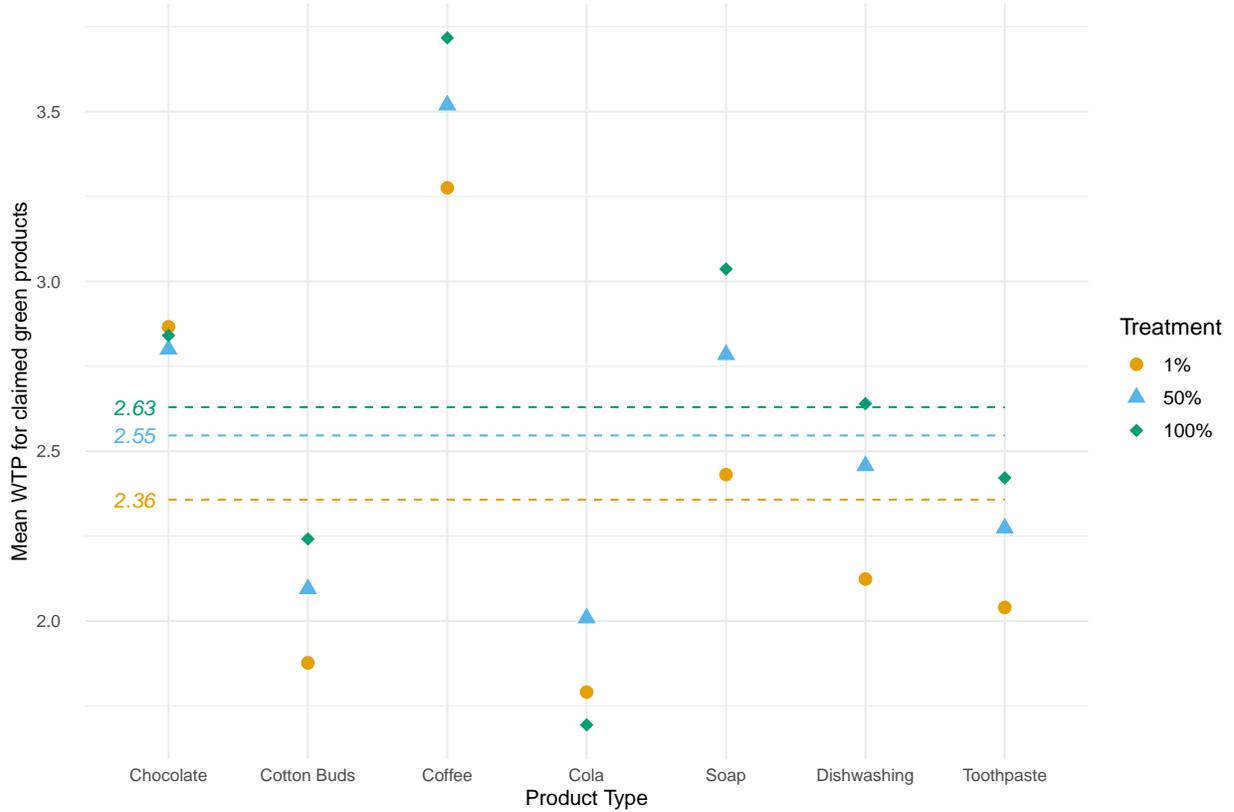


Note: This figure represents the simple means of buyers' willingness to pay for each product with green claims by treatment. The dashed lines represent means across product types for each treatment. Note that the number of observations for green-claimed products varies across treatments due to greenwashing behaviour. This implies that some product types have greater weight than others.

Table 4: Standardized means and test of differences across all products

| Treatment | mean std WTP | Diff | Lower | Upper | p-value |
|---|---|---|---|---|---|
| **1%** | -0.1035 | | | | |
| **50%** | 0.0529 | **50%-1%** | 0.1565 | -0.0180 | 0.0894* |
| **100%** | 0.0915 | **100%-1%** | 0.1950 | 0.0257 | 0.0190** |
| | | **100%-50%** | 0.0385 | -0.1476 | 0.8780 |

Note: Standardized means of the Willingness to Pay (mean std WTP) are obtained by subtracting the mean for each product type and treatment to the WTP and dividing for the relative standard deviation: $(WTP_{i,p,T}$ - mean $WTP_{p,T})$/standard deviation $WTP_{p,T}$. Then, the Tukey multiple comparisons of means are shown with 95% family-wise confidence level. *p<0.1; **p<0.05; ***p<0.01.

seeing the exact exploitable gap by sellers. Overall, the purchase rate of green-claimed products is 43.4% with low enforcement and 44% with high enforcement. This suggests substantial indifference between the two monitoring conditions (Hp B3 and B4: rejected). The context, regardless of the treatment, diminishes purchase rates of green products equally and significantly by six percentage points with respect to hypothesized 50%.

By looking at the product types separately, the green versions of cotton buds (46.8 vs 53.3%), coffee (35.8% vs 42.2%) and soap (50% vs 54.8%) display a greater purchase rate in separating treatment, while green dishwashing liquid (45.3% vs 38.6%) is purchased less with 50% enforcement. No specific reasons other than product-specificity can be attributed to this outlier, especially since the average WTP for green dishwashing liquid for those who purchased has a regular trend. The remaining products show identical rates for both treatments, as shown in Figure 7.

Figure 7: Purchase rate of products with a green claim by product type and treatment.
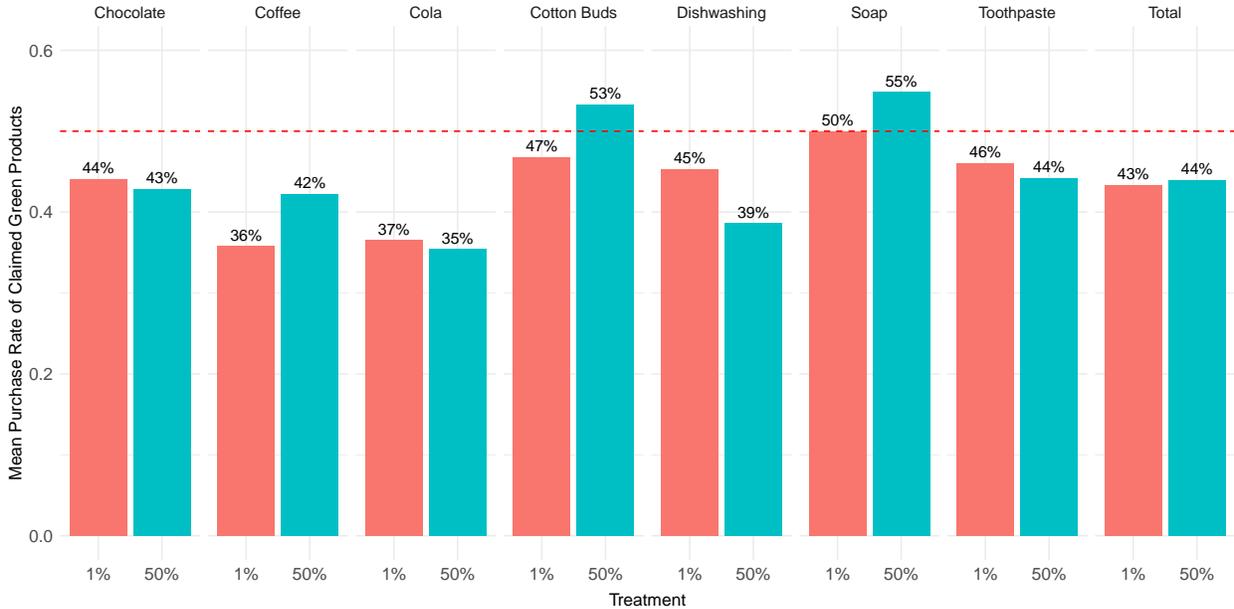


Note: This figure represents the mean purchase of green-claimed products. Purchase rates are displayed for both 1% and 50% treatments. For three products (coffee, cotton buds and soap) the purchase rate is higher with stronger enforcement, for dishwashing there is a higher propensity to buy green with lower enforcement and in the remainder there is no stark difference.

**Result 3:** *Buyers' beliefs on incentives to greenwash are accurate. Despite that, anticipating greenwashing does not automatically drop green consumption.*

Figure 8: Buyers' belief on seller's incentive to adopt claim B (do greenwashing)
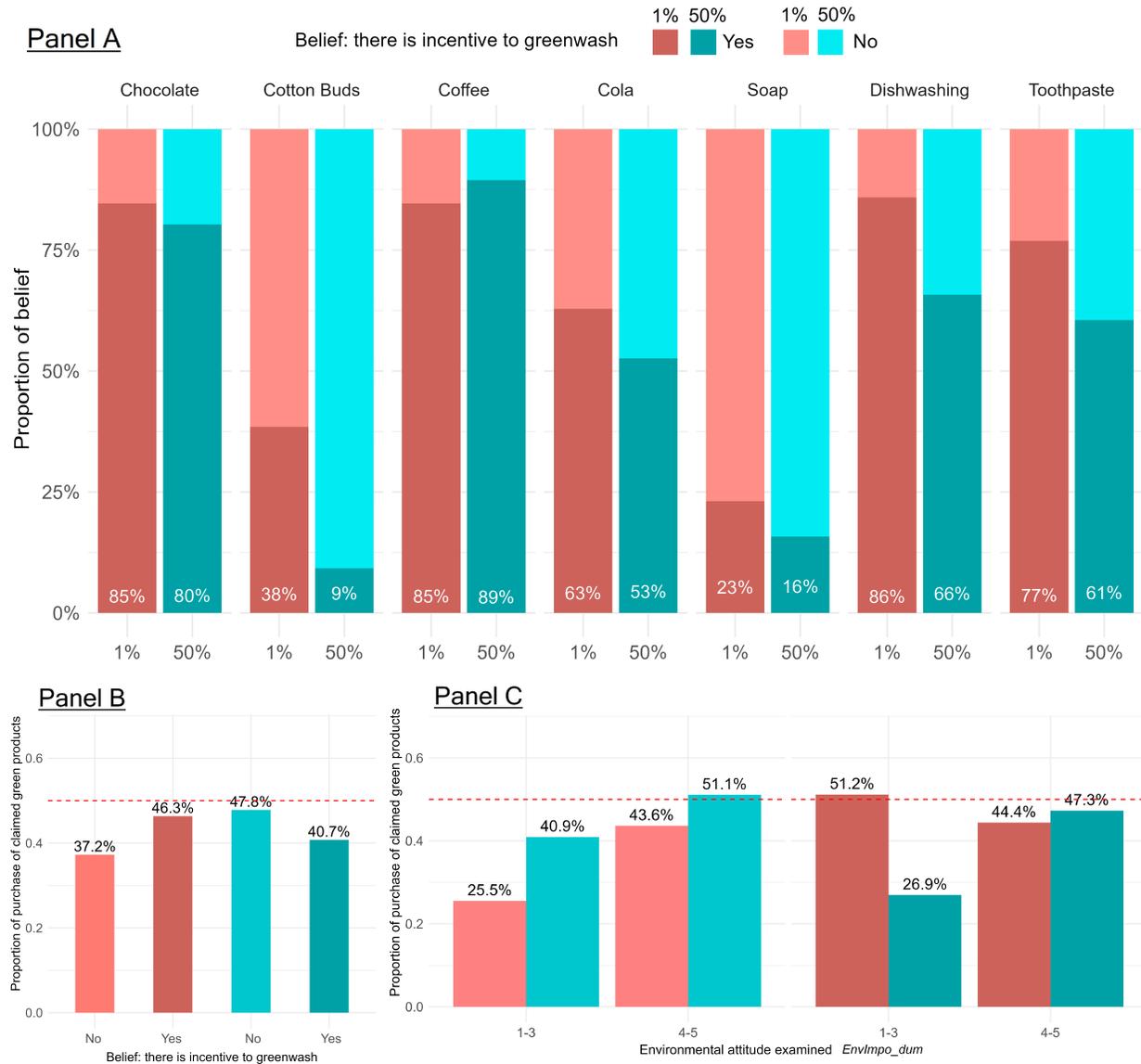


Note: (Panel A) This figure shows the replies to the question [here translated] "Do you think a conventional seller with such conditions would apply claim B?". (Panel B) The proportion of purchases of claimed green products across treatments (red vs blue) and belief on the presence of greenwashing (light vs dark). (Panel C) The proportion of purchases of claimed green products is disaggregated by environmental attitude (environmental importance).

Support for Result 3 can be found in Panel A of Fig. 8. The ex post questionnaire reveals that the buyers' first-order beliefs about greenwashing are quite heterogeneous across product types. Buyers' beliefs substantially match the actual, empirical sellers' behaviour. Indeed, buyers expect 9% more greenwashing than the actual level (Paired t-test at product and

treatment level, p-value = 0.05). As expected, separating condition leads buyers to expect lower levels of greenwashing than the pooling one ($\chi^2$ = 15.115; p < 0.001), despite these levels remaining higher than the predictions (Hp B5 and B6: rejected). Rather than extreme levels matching pooling and separating, we notice that the expected greenwashing strongly correlates with the gap between green and conventional product prices (Pearson's $\chi$-squared test, p-value < 0.001).

However, the ability to detect sellers' actual behavior is not rationally reflected in their consumption decisions, and eventually, beliefs on greenwashing hardly help predict green consumption. On the contrary, the interaction between treatment and beliefs highlights some unexpected patterns.

**Result 3.1:** *Anticipating absence of greenwashing determines a higher purchase rate of green-claimed products under strong enforcement.*

Support for Result 3.1 can be found in Panel B of Fig. 8 and the regression Table 21. Being exposed to a context with a strong enforcement results in a drop in consumption of those products believed to be false. This drop amounts to 7.1% points according to panel B, and this is statistically significant according to the contrast analysis from a Linear Mixed Model (50%-50%: No vs Yes, p-value=0.067) displayed in Table 21. This is not what happens in the presence of a weak enforcement regime, where the belief about the presence of greenwashing leads to more consumption of claimed green products compared to the absence of such a belief. While this is surprising, we can discern the determining factor leading to this counter-intuitive outcome as reported in Result 3.2.

**Result 3.2:** *Anticipating the presence of greenwashing under strong enforcement diminishes the purchase rate among environmentally inattentive participants, while weak enforcement increases it among this group.*

Support for this result can be found in Panel C of Fig. 8. We split the sample between individuals with strong environmental attitudes, which we can call eco-conscious people, as opposed to eco-inattentive ones. By doing so, we explored that while eco-conscious buyers purchase more green products when they believe there is the absence of greenwashing, eco-inattentive people greatly purchase green products when they claim there is greenwashing (51.2%) as opposed to when they this there is not greenwashing (25.3%). This outcome may demonstrate scarce knowledge of the enforcement dynamic and lead to confusion and ultimately losses. The result is robust when considering also other types of environmental attitudes between eco-conscious and eco-inattentive as presented in Fig. 13 in the Appendix.

## 5. Discussion and conclusions

To address and avoid negative consequences of greenwashing practices, it is imperative to gain a comprehensive understanding of the behavioral implications of relevant policies, which may either impede or facilitate the emergence and efficacy of a green and sustainable market. Conducting a laboratory experiment serves as the least intrusive and most cost-effective way to empirically assess the role of enforcement in addressing greenwashing, acknowledging that monitoring constitutes the most fundamental policy instrument. This experimental study aims to assess the propensity of sellers to engage in greenwashing and the corresponding preferences of buyers for products potentially misrepresented as sustainable, while considering the influence of beliefs and motivating factors. It implements a comparative analysis of two treatment conditions wherein sellers and buyers interact within a controlled environment. In this setup, the level of monitoring is set either as strong (50%) or weak (1%), thereby directly influencing the sellers' extrinsic incentives to deceive buyers.

We report three main results from the pre-registered analysis and additional exploratory nuances. First, as expected, the propensity of sellers to greenwash is mainly led by expected profitability, while the separation (holding conventional and to do not greenwash) is not as sharp as hypothesized. Stronger enforcement should deter greenwashing, yet some sellers continue due to an expected higher demand for green products. Others refrain from greenwashing despite profitability, though some persist even when citing ethical reasons.

Second, the revealed willingness to pay for green products gets smaller with weaker enforcement. The drop is significant but not large. However, we report that, when buyers are informed about the sellers' exploitable gap, thereby having all conditions to infer greenwashing, they register identical rates of green consumption between the two treatments. Despite some heterogeneity across products, we cannot identify a difference between the purchase rate of green products under weak and strong enforcement, in both cases 6% lower than the predicted level.

Third, we report the ability of buyers to infer the prevalence of greenwashing. Revealed beliefs are very accurate, even slightly exceeding the actual level. Despite that, as reported in Results 3.1 and 3.2, the beliefs only partially explain green consumption patterns. Only eco-conscious individuals, with high levels of stated environmental attitudes, seem to incorporate the combination of beliefs and enforcement in their preferences. The stronger the enforcement, the more credible a green product and, therefore, the higher the green consumption. On the contrary, eco-inattentive buyers purchased more green products with weak enforcement, and when admitting that the seller had an incentive to cheat. This result may demonstrate the importance of policies aiming at enhancing attitudes, together with

policies to deter misleading behavior.

Any experimental study on green markets makes selective assumptions and restricts the range of factors to identify causal mechanisms. While acknowledging the role of endogenous production and pricing and how these factors may shape individuals' beliefs, we limited the framework to a partial equilibrium to directly study the trade-off between preferences for green consumption and the risk of fraud in the presence of human sellers. Leaving from predictions based on rational players, we study departures and directional hypotheses that cannot provide a generalizable result, but contribute to a wider understanding of the phenomenon. For instance, we selected only two levels of monitoring, in percentage points, to make them easily understandable by all participants. Future studies can exploit different setups, either by varying the market composition or by endogenizing the production. In addition, we set the sanction to be relevant but not insurmountable for sellers in a laboratory context. What we can surely claim is that, even with seemingly a small fine size, which makes greenwashing more prominent, buyers still trust and purchase green products.

This study makes a contribution by highlighting the unresponsiveness of buyers to easily detectable misleading green advertising. In our context, the demand does not adjust depending on the beliefs and the credibility of the green market. The policy implication of this empirical result is the need for some positive and deterring level of monitoring, without expectation about buyers willingness to punish violators. Consumers are *de facto* unable to protect themselves, even when they hold all the information necessary to make the optimal decision. In the pooling treatment, buyers eventually purchased a total of 70 greenwashed products (compared to 20 in the separating treatment), paying on average an extra euro per false green product purchased. This figure is quite relevant in terms of producer and consumer surpluses when scaling up to the actual market size. The weight placed on both surpluses is a typical problem for social planners, which can shape institutions towards one or the other direction. In this case, careful considerations should take into account that the producer surplus is obtained through misleading practices and at the potential disadvantage of competition and the environment.

Following this logic, the study suggests an authority intervention with a thorough and smart monitoring system to target the sectors with the most likely presence of greenwashing: where the gap between green and conventional product prices is large enough to encourage cheating opportunities, such as for chocolate and coffee, in this experimental work. Such enforcement, with a high detection probability focused on a specific sector, should discourage sellers' cheating activities, while it might spuriously affect the credibility of the market and achieve reductions in buyers' losses.

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# Supplementary Material

# 'Fool me if you want: A Laboratory Experiment on Greenwashing and Enforcement"

September 29, 2025

*A.1. Model features*

Figure 9: Game represented in extensive form
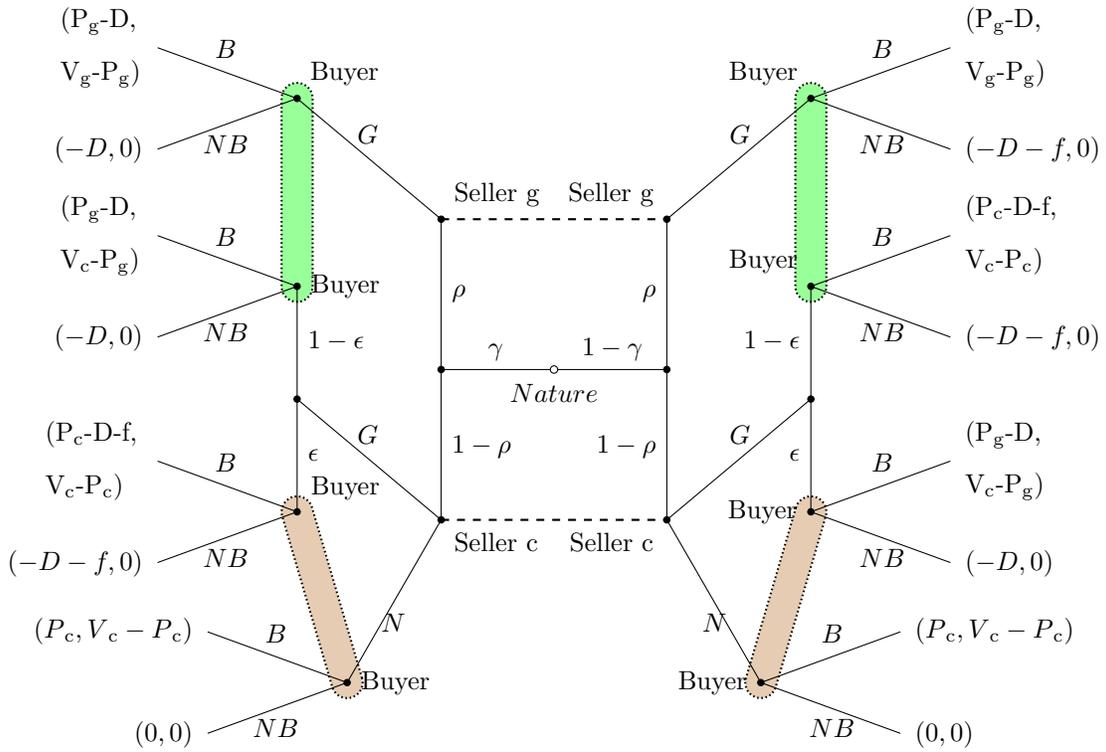


The game displays symmetry between the left and right branches of its representation. The left branch corresponds to a buyer with a high value of $\gamma$, whereas the right branch represents a buyer with a low value of $\gamma$. The assignment of buyer types to the left or right branch is determined by a random draw from the distribution $\mathcal{F}(\gamma)$, which follows a uniform distribution $\mathcal{U}(0,1)$. The dotted lines highlight information asymmetry on the realization of $\gamma$. The payoffs are identical between the two parts with the crucial exception that the utility of the buyer with low $\gamma$ is smaller. Sellers possess information regarding the environmental performance of the good. The performance can either be a high type with a probability of $\rho$. Subsequently, the green seller sends a signal G, while the conventional seller has the option to choose between signals G and N.

All products in the market undergo verification with a probability of $\epsilon$. However, the enforcement mechanism only impacts the payoff if the seller chooses the strategy $G^c$, therefore we depict only those branches. Shaded information sets highlight buyer-seller information asymmetry about the product type.

### A.1.1. Analytical derivation

Predictions are determined through the following steps: (1) Determination of the seller's expected payoffs under the hypothetical separating equilibrium condition for sellers' strategies $(G^g, N^c)$; (2) Determination of the expected payoff of the deviation when the seller chooses strategy $G^c$; (3) Comparison between seller's hypothetical separating equilibrium and deviation payoffs to determine the cutoff level $\epsilon^*$; (4) Definition of buyers' strategy given first-order beliefs about seller's type; (5) Definition of the seller's second-order beliefs and then optimal strategy conditional on buyer's first-order beliefs.
Buyer's first-order beliefs: what the buyer thinks the seller would do; Seller's second-order beliefs: what the seller thinks the buyer thinks about the seller's best action.

(1) The expected payoff of the seller in the hypothetical separating condition is:

$$\pi(G^g; N^c) = \Big[(\mathcal{F}(\gamma)(P_g - D) - (\mathcal{F}(1-\gamma)D); (\mathcal{F}(\sigma)P_c)\Big] \tag{2}$$

The seller's hypothetical payoff under strategy $G^g$ (left) is the expected profit obtained when a seller meets a $\gamma$-buyer with probability $\mathcal{F}(\gamma)$ who purchases the product with the green claim minus the expected losses obtained when the seller meets a $(1-\gamma)$-buyer. The seller's hypothetical payoff for strategy $N^c$ (right) is the product of price $P_c$ times the probability of meeting a buyer $\sigma$[17].

(2) In this setup, the seller's only possible deviation is to adopt a green claim despite possessing a conventional good and the corresponding strategy is denoted as $(G^g, G^c)$. The expected payoff from strategy $G^c$ is the deviation payoff of a conventional seller and is computed as in equation 3:

$$\pi(G^c) = \Bigg[(1-\epsilon)\Big[(\mathcal{F}(\gamma)(P_g - D) - (\mathcal{F}(1-\gamma))D\Big] +$$
$$+ \epsilon\Big[(P_c - D - f)\mathcal{F}(\sigma) - (D+f)(\mathcal{F}(1-\sigma))\Big]\Bigg] \tag{3}$$

(3) The seller is indifferent between doing and not doing greenwashing when $\pi(G^g)$ equals

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[17]If the seller is matched with a type $(1-\sigma)$, the buyer never purchases and seller's payoff is zero.

$\pi(G^c)$. Therefore, we determine the cutoff level $\epsilon^*$ which satisfies the following equation:

$$\epsilon^* : \quad \pi(G^g) = \pi(G^c) \tag{4}$$

$$(1-\epsilon)\Big[\mathcal{F}(\gamma)(P_g-D)-\mathcal{F}(1-\gamma)D\Big]+\epsilon\Big[(P_c-D-f)\mathcal{F}(\sigma)-(D+f)\mathcal{F}(1-\sigma)\Big] = \mathcal{F}(\sigma)P_c \tag{5}$$

The resulting $\epsilon^*$, i.e. the detection probability, shown in equation 1, is positive and smaller than 1 when the profitability of the green product market compared to the conventional product market justifies at least the expense for the claim D. This reasonable condition must hold: $\mathcal{F}(\gamma)P_g - \mathcal{F}(\sigma)P_c > \max(D, -f)$.

(4) Provided with a set of information the buyer can rationally infer the probability of receiving a truly green product. With the possession of the *a priori* probability $\rho$ of green products in the market and the detection probability $\epsilon$, the buyer can adopt Bayes' rule such that the posterior $P(g|G) = \frac{\rho}{1+\epsilon(\rho-1)}$ as shown in Figure 10a. Moreover, the buyer possesses the price gap between green and conventional products and the sanction size, therefore he/she can anticipate separating conditions, where cheating is not incentivized. The resulting $P(g|G)$ is displayed in Figure 10b.

Figure 10: Plots on the probability of receiving a truly green product



(a) Application of the Bayes' rule  (b) Bayes' rule and use of the information set
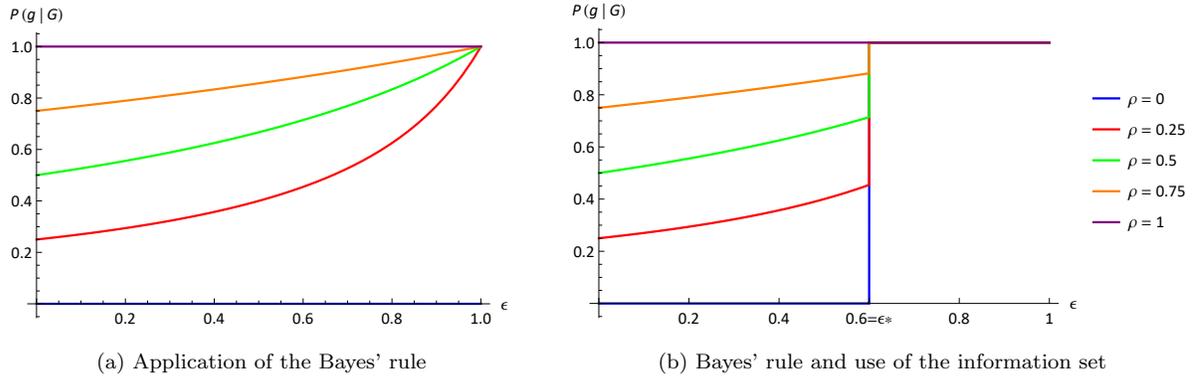
(5) In the pooling region the demand for green products is adjusted downward resulting in less profitable conditions since $\mathcal{F}(\gamma)$ gets smaller. Therefore, second-order beliefs increase the separating area, reducing greenwashing, as displayed in the following diagram.



iii
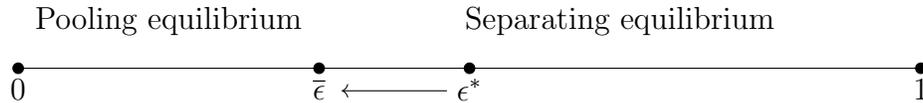
*A.2. Tables*

Table 5: Each value contained is the solution of equation 1

| Sanction size | 0.20 € | 0.40 € | 0.60 € | 0.80 € | 1 € |
|---|---|---|---|---|---|
| **Cotton buds** | $\epsilon^* = 44\%$ | 31% | 24% | 19% | 16% |
| **Chocolate** | 69% | 55% | 46% | 39% | 34% |
| **Coffee** | 75% | 63% | 54% | 47% | 42% |
| **Cola** | 55% | 40% | 32% | 26% | 22% |
| **Dish. liquid** | 55% | 40% | 32% | 26% | 22% |
| **Soap Bar** | 33% | 22% | 16% | 13% | 11% |
| **Toothpaste** | 55% | 40% | 32% | 26% | 22% |
| **Mean**[*] | 55% | 41% | 33% | 28% | 24% |

Note: This table shows the $\epsilon^*$ computed for each product type's set of median prices, for various levels of sanction size $f$ and assuming a demand of 50%. The selected sanction size level is 0.60€ because $\epsilon^*$ ranges between 16% and 54%. This allows additionally to check whether the 50% enforcement threshold is determinant while confronting chocolate- and coffee-related behaviour.

Table 6: Demographic statistics of buyers across treatments

| Treatment | Pooling : 1% | | Separating: 50% | | BDM: 100% | | |
|---|---|---|---|---|---|---|---|
| Variable | N | % | N | % | N | % | Test |
| FEMALE | 78 | | 76 | | 85 | | X2= 1.516 |
| ... Male | 30 | 38% | 25 | 33% | 34 | 40% | |
| ... Female | 46 | 59% | 48 | 63% | 47 | 55% | |
| ... Other | 2 | 3% | 3 | 4% | 4 | 5% | |
| AGE | 78 | 23 | 76 | 23 | 85 | 24 | F= 0.236 |
| OCCUP | 78 | | 76 | | 85 | | X2= 4.662 |
| ... Student | 57 | 73% | 52 | 68% | 60 | 71% | |
| ... Worker and student | 12 | 15% | 17 | 22% | 17 | 20% | |
| ... Worker | 4 | 5% | 4 | 5% | 1 | 1% | |
| ... Unemployed | 5 | 6% | 3 | 4% | 7 | 8% | |
| SUSTAIN | 78 | | 76 | | 85 | | X2= 1.229 |
| ... No | 37 | 47% | 34 | 45% | 44 | 52% | |
| ... Partially | 28 | 36% | 30 | 39% | 27 | 32% | |
| ... Yes | 10 | 13% | 9 | 12% | 10 | 12% | |
| ... Prefer not to say | 3 | 4% | 3 | 4% | 4 | 5% | |

Statistical significance markers: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 7: Demographic statistics of sellers across treatments

| Treatment | Pooling : 1% | | Separating: 50% | | |
|---|---|---|---|---|---|
| Variable | N | % | N | % | Test |
| FEMALE | 78 | | 76 | | $\chi^2 = 2.25$ |
| ... Male | 27 | 35% | 28 | 37% | |
| ... Female | 51 | 65% | 46 | 61% | |
| ... Other | 0 | 0% | 2 | 3% | |
| AGE | 78 | 23 | 76 | 24 | $F = 0.905$ |
| OCCUP | 78 | | 76 | | $\chi^2 = 2.034$ |
| ... Student | 57 | 73% | 53 | 70% | |
| ... Worker and student | 15 | 19% | 20 | 26% | |
| ... Worker | 3 | 4% | 1 | 1% | |
| ... Unemployed | 3 | 4% | 2 | 3% | |
| SUSTAIN | 78 | | 76 | | $\chi^2 = 2.049$ |
| ... No | 40 | 51% | 39 | 51% | |
| ... Partially | 24 | 31% | 26 | 34% | |
| ... Yes | 12 | 15% | 7 | 9% | |
| ... Prefer not to say | 2 | 3% | 4 | 5% | |

Statistical significance markers: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 8: Study fields of buyers across treatments

| Treatment | **Pooling** : 1% | | **Separating: 50%** | | |
|---|---|---|---|---|---|
| Variable: STUDY_FIELD | N | % | N | % | Test |
| | 78 | | 76 | | X2= 23.463*** |
| Economics, Business Studies, and Statistics | 16 | 21% | 24 | 32% | |
| Engineering and Architecture | 2 | 3% | 8 | 11% | |
| Art, Humanities, and Cultural Heritage | 22 | 28% | 11 | 14% | |
| Sciences | 5 | 6% | 8 | 11% | |
| Political Science | 15 | 19% | 3 | 4% | |
| Law | 7 | 9% | 9 | 12% | |
| Foreign Languages, Interpretation, or Translation | 3 | 4% | 4 | 5% | |
| Pharmacy, Biotechnology, and Motor Sciences | 1 | 1% | 5 | 7% | |
| Agricultural and Veterinary Sciences | 2 | 3% | 3 | 4% | |
| Psychology and Educational Sciences | 5 | 6% | 1 | 1% | |

Statistical significance markers: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 9: Study fields of buyers across treatments

| Treatment | **Pooling** : 1% | | **Separating: 50%** | | |
|---|---|---|---|---|---|
| Variable: STUDY_FIELD | N | % | N | % | Test |
| | 78 | | 76 | | X2= 7.031 |
| Economics, Business Studies, and Statistics | 29 | 37% | 17 | 22% | |
| Engineering and Architecture | 7 | 9% | 8 | 11% | |
| Art, Humanities, and Cultural Heritage | 10 | 13% | 15 | 20% | |
| Sciences | 5 | 6% | 9 | 12% | |
| Political Science | 11 | 14% | 8 | 11% | |
| Law | 4 | 5% | 7 | 9% | |
| Foreign Languages, Interpretation, or Translation | 6 | 8% | 5 | 7% | |
| Pharmacy, Biotechnology, and Motor Sciences | 4 | 5% | 4 | 5% | |
| Agricultural and Veterinary Sciences | 1 | 1% | 1 | 1% | |
| Psychology and Educational Sciences | 1 | 1% | 2 | 3% | |

Statistical significance markers: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 10: Buyers' attitudes and stated behaviour towards environment across treatment

| Treatment | **Pooling** : 1% | | **Separating: 50%** | | **BDM: 100%** | | |
| Variable: | N | % | N | % | N | % | Test |
|---|---|---|---|---|---|---|---|
| Env. Importance | 78 | 3.8 | 76 | 3.8 | 85 | 3.7 | F= 1.108 |
| Env. Weight | 78 | 3.3 | 76 | 3.3 | 85 | 3.1 | F= 1.164 |
| Env. Knowledge | 78 | 0.59 | 76 | 0.57 | 85 | 0.62 | F= 0.519 |
| Env. Contribution | 78 | 3.9 | 76 | 4 | 85 | 3.8 | F= 0.744 |
| Env. Activism | 78 | | 76 | | 85 | | X2= 5.206 |
| ... Never | 29 | 37% | 26 | 34% | 37 | 44% | |
| ... 1 to 3 times/year | 39 | 50% | 40 | 53% | 41 | 48% | |
| ... 1/month | 4 | 5% | 7 | 9% | 4 | 5% | |
| ... 1+/month | 5 | 6% | 3 | 4% | 2 | 2% | |
| ... 1 or more/week | 1 | 1% | 0 | 0% | 1 | 1% | |

Statistical significance markers: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 11: Buyers' attitudes and stated behaviour towards environment across treatment

| Treatment | **Pooling** : 1% | | **Separating: 50%** | | |
| Variable | N | % | N | % | Test |
|---|---|---|---|---|---|
| Env. Importance | 78 | 3.7 | 76 | 3.8 | F= 0.369 |
| Env. Weight | 78 | 3.1 | 76 | 3.3 | F= 3.541* |
| Env. Knowledge | 78 | 0.6 | 76 | 0.55 | F= 1.344 |
| Env. Contribution | 78 | 3.9 | 76 | 4 | F= 0.887 |
| Env. Activism | 78 | | 76 | | X2= 7.713 |
| ... Never | 24 | 31% | 28 | 37% | |
| ... 1 to 3 times/year | 46 | 59% | 32 | 42% | |
| ... 1/month | 7 | 9% | 9 | 12% | |
| ... 1+/month | 1 | 1% | 5 | 7% | |
| ... 1 or more/week | 0 | 0% | 2 | 3% | |

Statistical significance markers: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Figure 11: Average WTP by the most common motivations in Greenwashing game
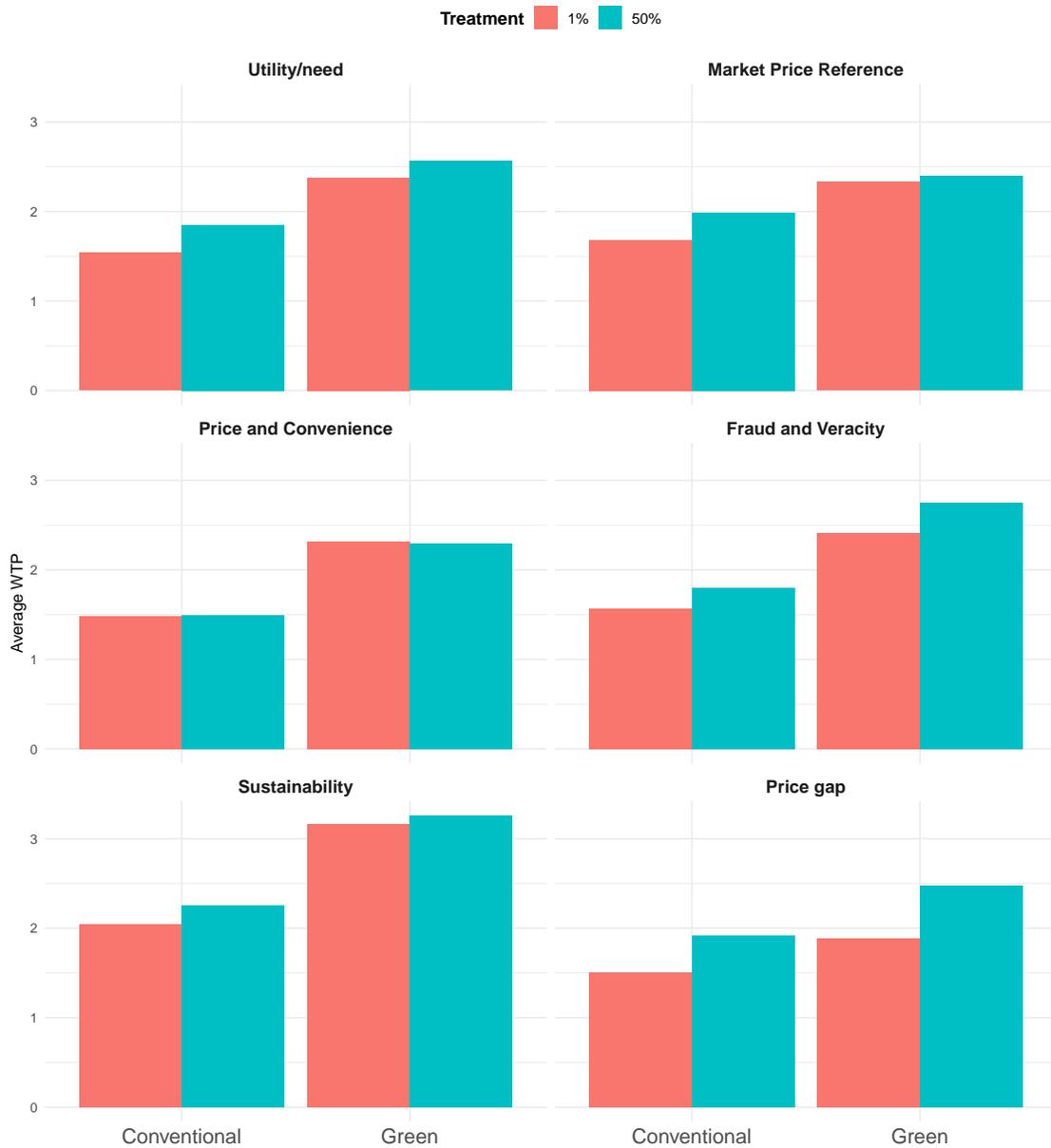


Note: The figure shows the average WTP across the most commonly stated motivating factors during the Greenwashing Sender Receiver Game. Each participant is associated with 1 or more motivating factors. Frequencies: Utility/need 28.6%, Market Price 27.9%, Price and Convenience 23.4%, Fraud and Veracity 20.1%, Sustainability 13.6%, Price Gap 9.1%, Quality 6.5%, Real value 1.9%, others unidentified 13.0%.

Figure 12: Average purchase rate by the most common motivations in Greenwashing game
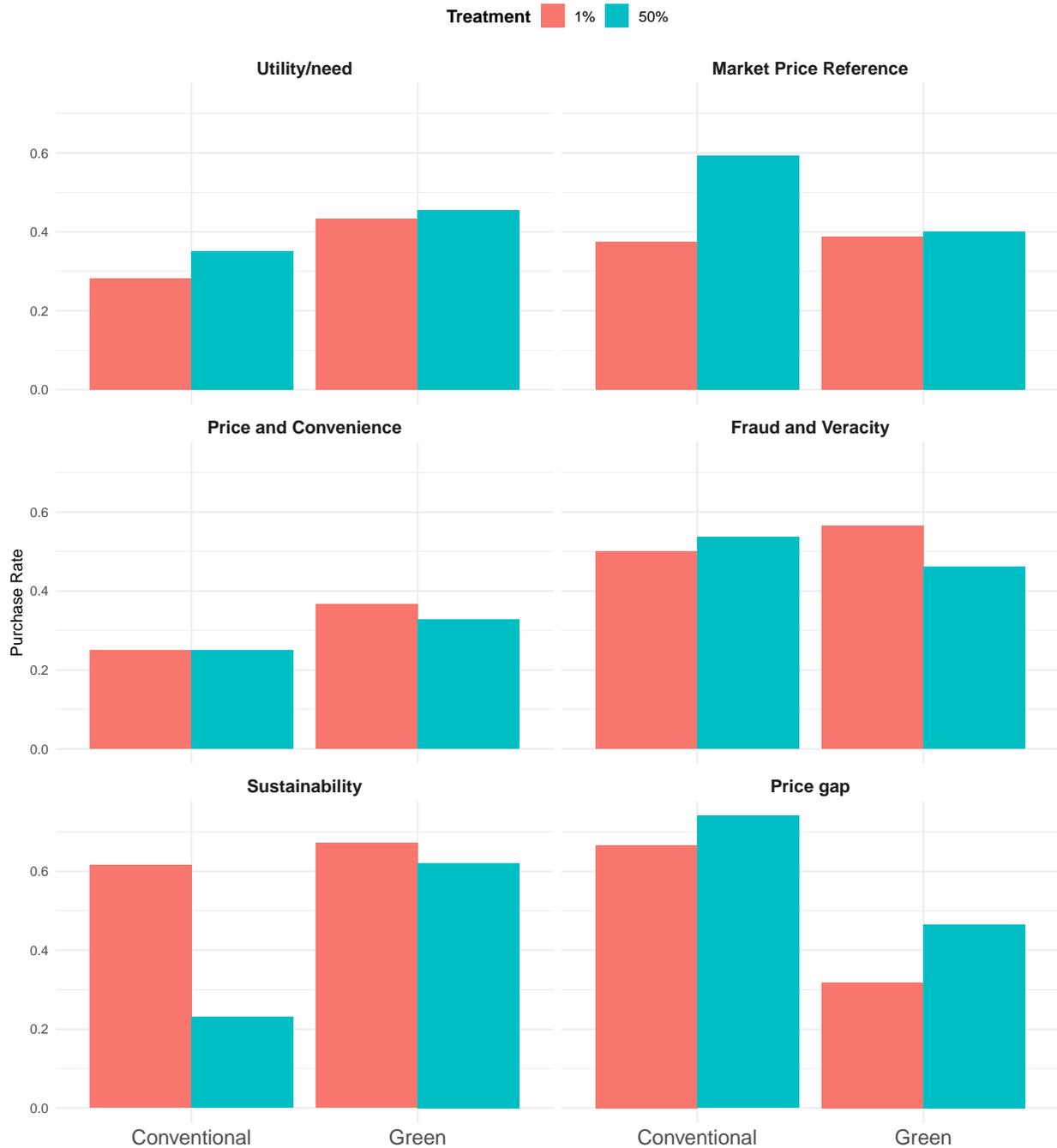
Note: The figure shows the average purchase rate across the most commonly stated motivating factors during the Greenwashing Sender Receiver Game. Each participant is associated with 1 or more motivating factors. Frequencies: Utility/need 28.6%, Market Price 27.9%, Price and Convenience 23.4%, Fraud and Veracity 20.1%, Sustainability 13.6%, Price Gap 9.1%, Quality 6.5%, Real value 1.9%, Others unidentified/vague 13.0%.

Figure 13: Environmental attitudes, Beliefs on Greenwashing and Purchase Decisions
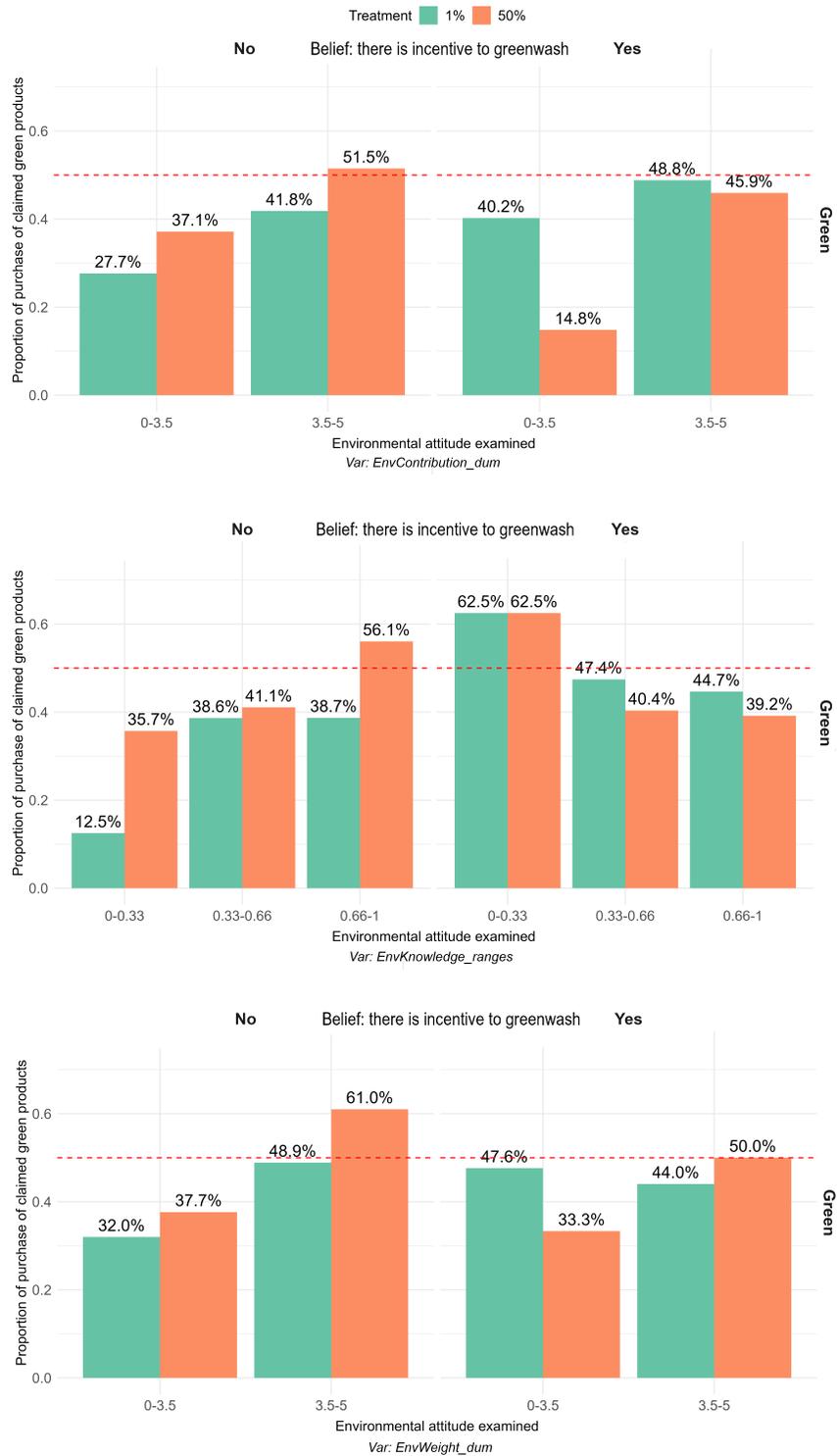


Note: (Top) Environmental contribution below and above 3.5. (Middle) Environmental knowledge, i.e, percentage of correct answers to the relevant questions. (Bottom) Environmental weight below and above 3.5. All three graphs show that once the environmental variable has low values, the consumption of green products considered to be false is high.

## A.4. Regressions

Table 12: Linear Mixed Models on WTP and Purchase according to stated Interest

| | Dependent variable: | |
|---|---|---|
| | WTP | PURCHASE |
| | (1) | (2) |
| TREAT50% | 0.177 | −0.105 |
| | (0.238) | (0.088) |
| TREAT100% | 0.091 | |
| | (0.229) | |
| GREENGreen | 0.465*** | −0.071 |
| | (0.160) | (0.075) |
| INTER1 | 0.247 | 0.029 |
| | (0.214) | (0.100) |
| INTER2 | 0.646** | 0.062 |
| | (0.299) | (0.138) |
| TREAT50%:GREENGreen | −0.049 | 0.090 |
| | (0.209) | (0.098) |
| TREAT100%:GREENGreen | 0.116 | |
| | (0.202) | |
| TREAT50%:INTER1 | −0.144 | 0.216* |
| | (0.259) | (0.120) |
| TREAT100%:INTER1 | 0.043 | |
| | (0.245) | |
| TREAT50%:INTER2 | −0.392 | 0.277* |
| | (0.348) | (0.161) |
| TREAT100%:INTER2 | −0.077 | |
| | (0.332) | |
| GREENGreen:INTER1 | −0.026 | 0.109 |
| | (0.238) | (0.111) |
| GREENGreen:INTER2 | −0.191 | 0.032 |
| | (0.325) | (0.151) |
| TREAT50%:GREENGreen:INTER1 | 0.333 | −0.199 |
| | (0.307) | (0.143) |
| TREAT100%:GREENGreen:INTER1 | 0.076 | |
| | (0.293) | |
| TREAT50%:GREENGreen:INTER2 | 0.784** | −0.179 |
| | (0.399) | (0.186) |
| TREAT100%:GREENGreen:INTER2 | 0.329 | |
| | (0.382) | |
| Constant | 1.669*** | 0.423*** |
| | (0.248) | (0.071) |
| Observations | 1,758 | 1,078 |
| Log Likelihood | −2,641.976 | −733.701 |
| Akaike Inf. Crit. | 5,325.952 | 1,497.401 |
| Bayesian Inf. Crit. | 5,440.863 | 1,572.144 |
| Note: | *p<0.1; **p<0.05; ***p<0.01 | |

Table 13: Logistic Regression Results Predicting the Log-odds of GW = 1

| | Dependent variable: | |
| --- | --- | --- |
| | Greenwashing | |
| | (1) | (2) |
| TREAT: 50% | −0.789*** | −1.490*** |
| | (0.207) | (0.429) |
| EPROFIT | 0.665*** | |
| | (0.226) | |
| TREAT50% × EPROFIT | 0.046 | |
| | (0.426) | |
| GAP | | 1.080*** |
| | | (0.348) |
| TREAT50% × GAP | | 0.442 |
| | | (0.469) |
| ERRORS | 0.036 | 0.042 |
| | (0.034) | (0.034) |
| ROUND | −0.059 | −0.002 |
| | (0.045) | (0.047) |
| Constant | 1.292 | 0.517 |
| | (1.006) | (1.071) |
| Demographics | ✓ | ✓ |
| Observations | 545 | 545 |
| Log Likelihood | −350.127 | −339.745 |
| *Note:* | *p<0.1; **p<0.05; ***p<0.01 | |

 Note: This table presents the results from two logistic regression models estimating the probability of the binary outcome Greenwashing = 1. The dataset refers to the observations when the seller held a conventional product and could practically do greenwashing. Estimates show the log-odds meaning the logarithm of the ratio of the occurrence probabilities. Demographic variables are gender, age, employment status and ability to sustain themselves and they are not statistically significant.

Table 14: Logistic Regression and Mixed-Effect model

| | _Dependent variable:_ | |
| --- | --- | --- |
| | Greenwashing | |
| | _linear mixed-effects_ | _GLM_ |
| | (1) | (2) |
| TREAT: 50% | −0.218*** | −0.225*** |
| | (0.041) | (0.042) |
| ERRORS | 0.008 | 0.005 |
| | (0.008) | (0.008) |
| GUESS A | −0.002** | −0.002* |
| | (0.001) | (0.001) |
| GUESS B | 0.002** | 0.002** |
| | (0.001) | (0.001) |
| EARNINGS | 0.027 | 0.013 |
| | (0.051) | (0.054) |
| SANCTIONS | −0.068 | −0.062 |
| | (0.054) | (0.056) |
| PRICE GAP | −0.123** | −0.118** |
| | (0.057) | (0.058) |
| MARKET PRICE | −0.039 | −0.019 |
| | (0.105) | (0.115) |
| DEMAND | −0.157*** | −0.170*** |
| | (0.060) | (0.061) |
| SPECS | −0.068 | −0.069 |
| | (0.080) | (0.081) |
| ETHICS | −0.353*** | −0.375*** |
| | (0.066) | (0.068) |
| Other | −0.044 | −0.075 |
| | (0.088) | (0.091) |
| Constant | 0.804*** | 0.934*** |
| | (0.101) | (0.242) |
| Demographics | ✓ | ✓ |
| Observations | 545 | 545 |
| Log Likelihood | −391.270 | −348.453 |
| Akaike Inf. Crit. | 816.540 | 744.905 |
| Bayesian Inf. Crit. | 889.654 | |

| _Note:_ | *p<0.1; **p<0.05; ***p<0.01 |
| --- | --- |

 Note: This table presents the results from a logistic regression model and a mixed-effect model estimating the probability of the binary outcome Greenwashing = 1. The dataset refers to the observations when the seller held a conventional product and could practically do greenwashing. Estimates show the likelihood of doing greenwashing. Demographic variables are gender, age, employment status and ability to sustain themselves and they are not statistically significant.

Table 15: OLS regression of absolute WTP. Sample: green claimed products only.

| | | | *Dependent variable:* | | |
|---|---|---|---|---|---|
| | | | Willingness to Pay | | |
| | (1) | (2) | (3) | (4) | (5) |
| TREAT50% | 0.167 | 0.150 | 0.133 | 0.138 | 0.119 |
| | (0.111) | (0.108) | (0.108) | (0.109) | (0.113) |
| TREAT100% | 0.330*** | 0.286*** | 0.285*** | 0.246** | 0.255** |
| | (0.108) | (0.105) | (0.106) | (0.114) | (0.123) |
| FEMALEFemale | 0.618*** | 0.604*** | 0.538*** | 0.536*** | 0.552*** |
| | (0.094) | (0.092) | (0.102) | (0.103) | (0.105) |
| FEMALEOther | −0.122 | −0.087 | −0.097 | −0.108 | −0.148 |
| | (0.260) | (0.254) | (0.260) | (0.260) | (0.265) |
| AGE | −0.025 | −0.031* | −0.027 | −0.025 | −0.024 |
| | (0.017) | (0.017) | (0.017) | (0.017) | (0.018) |
| SUSTAINPartially | −0.022 | −0.007 | 0.015 | 0.010 | 0.022 |
| | (0.108) | (0.105) | (0.106) | (0.106) | (0.106) |
| SUSTAINYes | −0.150 | −0.137 | −0.154 | −0.163 | −0.160 |
| | (0.163) | (0.159) | (0.160) | (0.160) | (0.162) |
| SUSTAINPrefer not to say | −0.114 | −0.069 | −0.039 | −0.036 | −0.065 |
| | (0.225) | (0.219) | (0.220) | (0.220) | (0.221) |
| OCCUPWorker and student | 0.032 | 0.003 | 0.035 | 0.049 | 0.056 |
| | (0.124) | (0.120) | (0.122) | (0.123) | (0.123) |
| OCCUPWorker | 0.450* | 0.356 | 0.457* | 0.453* | 0.441* |
| | (0.269) | (0.262) | (0.266) | (0.267) | (0.267) |
| OCCUPUnemployed | 0.329* | 0.371** | 0.338* | 0.340* | 0.339* |
| | (0.187) | (0.182) | (0.183) | (0.183) | (0.184) |
| INTER1 | | 0.334*** | 0.336*** | 0.336*** | 0.333*** |
| | | (0.105) | (0.104) | (0.105) | (0.105) |
| INTER2 | | 1.026*** | 0.994*** | 0.987*** | 0.991*** |
| | | (0.137) | (0.136) | (0.136) | (0.137) |
| EXPER1 | | −0.016 | −0.044 | −0.046 | −0.045 |
| | | (0.102) | (0.101) | (0.102) | (0.102) |
| EXPER2 | | −0.282 | −0.242 | −0.238 | −0.221 |
| | | (0.210) | (0.209) | (0.210) | (0.210) |
| ALLERGIC | | −0.182 | −0.260 | −0.278 | −0.355 |
| | | (0.508) | (0.506) | (0.507) | (0.509) |
| BOXES | | | −0.001 | −0.001 | −0.0003 |
| | | | (0.003) | (0.003) | (0.003) |
| EIMPO | | | 0.013 | 0.015 | 0.039 |
| | | | (0.068) | (0.069) | (0.071) |
| EKNOW | | | 0.276* | 0.260 | 0.270 |
| | | | (0.163) | (0.164) | (0.166) |
| EWEIGHT | | | 0.041 | 0.045 | 0.058 |
| | | | (0.078) | (0.079) | (0.080) |
| TRUST_AGENCIES | | | 0.151** | 0.154*** | 0.131** |
| | | | (0.059) | (0.059) | (0.061) |
| TRUST_ADS | | | 0.156*** | 0.153*** | 0.094 |
| | | | (0.057) | (0.057) | (0.066) |
| ERRORS | | | | −0.017 | −0.019 |
| | | | | (0.020) | (0.020) |
| DIFF | | | | −0.014 | −0.005 |
| | | | | (0.049) | (0.049) |
| GW_OUT | | | | | −0.005* |
| | | | | | (0.003) |
| ENFPERC | | | | | 0.001 |
| | | | | | (0.002) |
| SANPERC | | | | | 0.00005 |
| | | | | | (0.002) |
| Constant | 2.558*** | 2.413*** | 1.174** | 1.208** | 1.406*** |
| | (0.404) | (0.397) | (0.501) | (0.512) | (0.528) |
| Observations | 1,074 | 1,074 | 1,074 | 1,074 | 1,074 |
| R² | 0.056 | 0.113 | 0.134 | 0.135 | 0.138 |
| Adjusted R² | 0.046 | 0.099 | 0.116 | 0.115 | 0.115 |
| Residual Std. Error | 1.462 (df = 1062) | 1.421 (df = 1057) | 1.408 (df = 1051) | 1.408 (df = 1049) | 1.408 (df = 1046) |
| F Statistic | 5.747*** (df = 11; 1062) | 8.375*** (df = 16; 1057) | 7.397*** (df = 22; 1051) | 6.810*** (df = 24; 1049) | 6.186*** (df = 27; 1046) |

*Significance level:*      *p<0.1; **p<0.05; ***p<0.01

Table 16: OLS regression of Standardised WTP. Sample: green claimed products only.

| | Dependent variable: | | | | |
|---|---|---|---|---|---|
| | Standardized Willingness to Pay | | | | |
| | (1) | (2) | (3) | (4) | (5) |
| TREAT50% | 0.138* | 0.128* | 0.116 | 0.123* | 0.115 |
| | (0.073) | (0.072) | (0.073) | (0.073) | (0.075) |
| TREAT100% | 0.240*** | 0.217*** | 0.215*** | 0.172** | 0.186** |
| | (0.071) | (0.070) | (0.071) | (0.077) | (0.083) |
| FEMALEFemale | 0.444*** | 0.435*** | 0.391*** | 0.385*** | 0.397*** |
| | (0.062) | (0.062) | (0.068) | (0.069) | (0.070) |
| FEMALEOther | −0.067 | −0.052 | −0.060 | −0.074 | −0.098 |
| | (0.172) | (0.170) | (0.174) | (0.174) | (0.177) |
| AGE | −0.019* | −0.022* | −0.019* | −0.018 | −0.017 |
| | (0.012) | (0.011) | (0.012) | (0.012) | (0.012) |
| SUSTAINPartially | −0.004 | 0.004 | 0.019 | 0.016 | 0.023 |
| | (0.071) | (0.070) | (0.071) | (0.071) | (0.071) |
| SUSTAINYes | −0.089 | −0.081 | −0.098 | −0.109 | −0.111 |
| | (0.108) | (0.106) | (0.107) | (0.107) | (0.108) |
| SUSTAINPrefer not to say | −0.124 | −0.102 | −0.077 | −0.073 | −0.095 |
| | (0.149) | (0.147) | (0.147) | (0.147) | (0.148) |
| OCCUPWorker and student | 0.039 | 0.026 | 0.050 | 0.064 | 0.067 |
| | (0.082) | (0.081) | (0.081) | (0.082) | (0.082) |
| OCCUPWorker | 0.367** | 0.310* | 0.392** | 0.385** | 0.377** |
| | (0.178) | (0.176) | (0.178) | (0.179) | (0.178) |
| OCCUPUnemployed | 0.193 | 0.217* | 0.191 | 0.191 | 0.187 |
| | (0.124) | (0.122) | (0.122) | (0.122) | (0.123) |
| INTER1 | | 0.197*** | 0.198*** | 0.196*** | 0.194*** |
| | | (0.071) | (0.070) | (0.070) | (0.070) |
| INTER2 | | 0.518*** | 0.496*** | 0.487*** | 0.490*** |
| | | (0.092) | (0.091) | (0.091) | (0.091) |
| EXPER1 | | 0.002 | −0.016 | −0.015 | −0.015 |
| | | (0.068) | (0.068) | (0.068) | (0.068) |
| EXPER2 | | −0.107 | −0.074 | −0.067 | −0.053 |
| | | (0.141) | (0.140) | (0.140) | (0.141) |
| ALLERGIC | | 0.051 | −0.013 | −0.034 | −0.088 |
| | | (0.341) | (0.339) | (0.339) | (0.340) |
| BOXES | | | −0.0004 | −0.001 | −0.0003 |
| | | | (0.002) | (0.002) | (0.002) |
| EIMPO | | | 0.006 | 0.012 | 0.030 |
| | | | (0.046) | (0.046) | (0.047) |
| EKNOW | | | 0.232** | 0.217** | 0.225** |
| | | | (0.109) | (0.110) | (0.111) |
| EWEIGHT | | | 0.030 | 0.033 | 0.042 |
| | | | (0.053) | (0.053) | (0.053) |
| TRUST_AGENCIES | | | 0.109*** | 0.110*** | 0.093** |
| | | | (0.039) | (0.040) | (0.041) |
| TRUST_ADS | | | 0.105*** | 0.104*** | 0.061 |
| | | | (0.038) | (0.038) | (0.044) |
| ERRORS | | | | −0.021 | −0.023* |
| | | | | (0.014) | (0.014) |
| DIFF | | | | −0.003 | 0.003 |
| | | | | (0.033) | (0.033) |
| GW_OUT | | | | | −0.004* |
| | | | | | (0.002) |
| ENFPERC | | | | | 0.0004 |
| | | | | | (0.001) |
| SANPERC | | | | | −0.0001 |
| | | | | | (0.002) |
| Constant | 0.069 | −0.026 | −0.913*** | −0.903*** | −0.751** |
| | (0.268) | (0.267) | (0.335) | (0.343) | (0.353) |
| Observations | 1,074 | 1,074 | 1,074 | 1,074 | 1,074 |
| R² | 0.066 | 0.099 | 0.123 | 0.125 | 0.128 |
| Adjusted R² | 0.056 | 0.085 | 0.105 | 0.105 | 0.106 |
| Residual Std. Error | 0.968 (df = 1062) | 0.953 (df = 1057) | 0.943 (df = 1051) | 0.943 (df = 1049) | 0.942 (df = 1046) |
| F Statistic | 6.785*** (df = 11; 1062) | 7.254*** (df = 16; 1057) | 6.698*** (df = 22; 1051) | 6.249*** (df = 24; 1049) | 5.711*** (df = 27; 1046) |

*Significance level:*        *p<0.1; **p<0.05; ***p<0.01

Table 17: Logit regression of Purchase (binary). Sample: green claimed products only.

| | _Dependent variable:_ | | | | |
|---|---|---|---|---|---|
| | Purchase rate (binary variable) | | | | |
| | (1) | (2) | (3) | (4) | (5) |
| TREAT50% | −0.006 | −0.009 | −0.014 | −0.016 | −0.027 |
| | (0.037) | (0.037) | (0.037) | (0.038) | (0.040) |
| FEMALEFemale | 0.112*** | 0.110*** | 0.066 | 0.069* | 0.076* |
| | (0.038) | (0.038) | (0.041) | (0.042) | (0.043) |
| FEMALEOther | 0.256** | 0.283** | 0.213* | 0.221* | 0.206* |
| | (0.113) | (0.113) | (0.118) | (0.119) | (0.122) |
| AGE | 0.015** | 0.015** | 0.015** | 0.014** | 0.015** |
| | (0.007) | (0.007) | (0.007) | (0.007) | (0.007) |
| SUSTAINPartially | −0.116*** | −0.116*** | −0.103** | −0.101** | −0.095** |
| | (0.043) | (0.043) | (0.043) | (0.043) | (0.044) |
| SUSTAINYes | −0.149** | −0.155** | −0.158** | −0.152** | −0.142** |
| | (0.069) | (0.069) | (0.070) | (0.071) | (0.072) |
| SUSTAINPrefer not to say | 0.018 | 0.024 | 0.059 | 0.055 | 0.042 |
| | (0.095) | (0.095) | (0.096) | (0.096) | (0.097) |
| OCCUPWorker and student | −0.055 | −0.052 | −0.057 | −0.064 | −0.069 |
| | (0.052) | (0.052) | (0.053) | (0.053) | (0.054) |
| OCCUPWorker | 0.085 | 0.061 | 0.127 | 0.127 | 0.114 |
| | (0.099) | (0.099) | (0.100) | (0.100) | (0.101) |
| OCCUPUnemployed | −0.075 | −0.059 | −0.105 | −0.102 | −0.101 |
| | (0.082) | (0.081) | (0.082) | (0.082) | (0.083) |
| INTER1 | | 0.147*** | 0.139*** | 0.140*** | 0.141*** |
| | | (0.043) | (0.043) | (0.043) | (0.043) |
| INTER2 | | 0.184*** | 0.159*** | 0.164*** | 0.174*** |
| | | (0.057) | (0.057) | (0.057) | (0.058) |
| EXPER1 | | −0.048 | −0.048 | −0.048 | −0.049 |
| | | (0.042) | (0.042) | (0.042) | (0.042) |
| EXPER2 | | −0.054 | −0.041 | −0.044 | −0.048 |
| | | (0.089) | (0.089) | (0.089) | (0.089) |
| ALLERGIC | | −0.102 | −0.148 | −0.142 | −0.166 |
| | | (0.174) | (0.173) | (0.174) | (0.175) |
| BOXES | | | −0.0001 | −0.00004 | 0.0002 |
| | | | (0.001) | (0.001) | (0.001) |
| EIMPO | | | −0.005 | −0.007 | 0.003 |
| | | | (0.030) | (0.031) | (0.032) |
| EKNOW | | | 0.104 | 0.111 | 0.108 |
| | | | (0.069) | (0.071) | (0.072) |
| EWEIGHT | | | 0.096*** | 0.094*** | 0.100*** |
| | | | (0.035) | (0.036) | (0.036) |
| TRUST_AGENCIES | | | 0.039 | 0.038 | 0.031 |
| | | | (0.024) | (0.024) | (0.025) |
| TRUST_ADS | | | 0.053** | 0.053** | 0.033 |
| | | | (0.024) | (0.024) | (0.027) |
| ERRORS | | | | 0.006 | 0.005 |
| | | | | (0.007) | (0.007) |
| DIFF | | | | 0.003 | 0.007 |
| | | | | (0.021) | (0.022) |
| GW_OUT | | | | | −0.001 |
| | | | | | (0.001) |
| ENFPERC | | | | | 0.001 |
| | | | | | (0.001) |
| SANPERC | | | | | 0.001 |
| | | | | | (0.001) |
| Constant | 0.092 | 0.018 | −0.546** | −0.543** | −0.528** |
| | (0.162) | (0.163) | (0.214) | (0.222) | (0.227) |
| Observations | 743 | 743 | 743 | 743 | 743 |
| Log Likelihood (AIC) | −519.492 (1,061.0) | −511.469 (1,054.9) | −499.082 (1,042.2) | −498.632 (1,045.3) | −497.253 (1,048.5) |

_Significance level:_ *p<0.1; **p<0.05; ***p<0.01

Table 18: Logit regression of Greenwashing (binary). Sample: sellers holding a conventional product.

| | *Dependent variable:* | | | |
|---|---|---|---|---|
| | Greenwashing done | | | |
| | (1) | (2) | (3) | (4) |
| TREAT50% | −0.259*** | −0.279*** | −0.283*** | −0.273*** |
| | (0.043) | (0.044) | (0.044) | (0.048) |
| FEMALEFemale | −0.013 | −0.007 | −0.004 | −0.004 |
| | (0.045) | (0.048) | (0.048) | (0.049) |
| FEMALEOther | 0.065 | 0.174 | 0.183 | 0.180 |
| | (0.169) | (0.182) | (0.183) | (0.186) |
| AGE | −0.007 | −0.008 | −0.007 | −0.006 |
| | (0.010) | (0.010) | (0.010) | (0.010) |
| SUSTAINPartially | −0.037 | −0.034 | −0.034 | −0.036 |
| | (0.050) | (0.050) | (0.051) | (0.051) |
| SUSTAINYes | −0.061 | −0.060 | −0.053 | −0.063 |
| | (0.079) | (0.079) | (0.080) | (0.080) |
| SUSTAINPrefer not to say | 0.159 | 0.102 | 0.103 | 0.137 |
| | (0.107) | (0.112) | (0.112) | (0.117) |
| OCCUPWorker and student | 0.020 | 0.019 | 0.022 | 0.014 |
| | (0.056) | (0.058) | (0.058) | (0.058) |
| OCCUPWorker | −0.099 | −0.032 | −0.032 | −0.066 |
| | (0.162) | (0.167) | (0.167) | (0.169) |
| OCCUPUnemployed | −0.046 | −0.005 | 0.008 | −0.009 |
| | (0.129) | (0.133) | (0.133) | (0.136) |
| BOXES | | −0.001 | −0.001 | −0.0004 |
| | | (0.001) | (0.001) | (0.001) |
| EIMPO | | 0.033 | 0.032 | 0.029 |
| | | (0.029) | (0.030) | (0.031) |
| EKNOW | | −0.162* | −0.170* | −0.180** |
| | | (0.086) | (0.087) | (0.088) |
| EWEIGHT | | −0.009 | −0.015 | −0.013 |
| | | (0.035) | (0.035) | (0.035) |
| TRUST_AGENCIES | | 0.010 | 0.010 | 0.012 |
| | | (0.026) | (0.026) | (0.027) |
| TRUST_ADS | | 0.025 | 0.019 | 0.032 |
| | | (0.026) | (0.026) | (0.030) |
| ERRORS | | | 0.006 | 0.006 |
| | | | (0.008) | (0.008) |
| DIFF | | | 0.021 | 0.024 |
| | | | (0.020) | (0.021) |
| GW_OUT | | | | 0.001 |
| | | | | (0.001) |
| ENFPERC | | | | −0.0004 |
| | | | | (0.001) |
| SANPERC | | | | −0.001 |
| | | | | (0.001) |
| Constant | 0.817*** | 0.776*** | 0.714** | 0.668** |
| | (0.225) | (0.284) | (0.288) | (0.301) |
| Observations | 545 | 545 | 545 | 545 |
| Log Likelihood | −376.411 | −372.595 | −371.661 | −370.401 |
| Akaike Inf. Crit. | 774.821 | 779.191 | 781.321 | 784.802 |

*Note:* $^{*}$p<0.1; $^{**}$p<0.05; $^{***}$p<0.01

Table 19: Results from Linear Mixed Model. Dependent variable: Willingness to pay.

| Fixed Effects | | | | |
|---|---|---|---|---|
| **Term** | **Estimate** | **Std. Error** | **t value** | **p value** |
| (Intercept) | 2.1275 | 0.2419 | 8.795 | <0.001*** |
| TREAT: 50% | 0.3882 | 0.2091 | 1.857 | 0.0647. |
| BELIEF: Yes | 0.2726 | 0.1145 | 2.381 | 0.0176* |
| TREAT: 50%:BELIEF: Yes | -0.1236 | 0.1634 | -0.757 | 0.4495 |

| Random Effects | | | | |
|---|---|---|---|---|
| **Groups** | **Name** | **Variance** | | **Std. Dev.** |
| Participant id | (Intercept) | 1.1074 | | 1.0523 |
| Product type | (Intercept) | 0.2550 | | 0.5050 |
| Residual | | 0.8588 | | 0.9267 |

Number of obs: 743; Participant id: 154; Product type: 7

Table 20: Contrast Analysis Results

| TREAT | BELIEF | Contrast | 95% CI | p-value |
|---|---|---|---|---|
| 1%-50% | No-No | -0.39 | [-0.80, 0.02] | 0.064. |
| 1%-1% | No-Yes | -0.27 | [-0.50, -0.05] | 0.018* |
| 1%-50% | No-Yes | -0.54 | [-0.96, -0.12] | 0.012* |
| 50%-1% | No-Yes | 0.12 | [-0.29, 0.52] | 0.572 |
| 50%-50% | No-Yes | -0.15 | [-0.42, 0.12] | 0.278 |
| 1%-50% | Yes-Yes | -0.26 | [-0.65, 0.12] | 0.178 |

Note: Observations represent the case when the buyer received a product with a green claim. Significance levels: '***' 0.001, '**' 0.01, '*' 0.05, '.' 0.1.

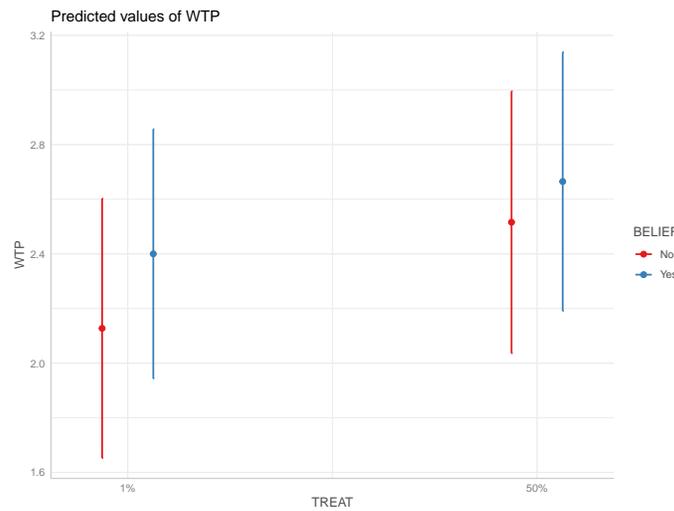Figure 14: Predicted probabilities from Linear Mixed Model in Table 19.

Table 21: Results from Linear Mixed Model. Dependent variable: Purchase choice to buy (binary variable).

| Fixed Effects | | | | |
|---|---|---|---|---|
| **Term** | **Estimate** | **Std. Error** | **t value** | **p-value** |
| (Intercept) | 0.37022 | 0.04648 | 7.966 | <0.001*** |
| TREAT: 50% | 0.12485 | 0.06711 | 1.860 | 0.0637. |
| BELIEF: Yes | 0.08714 | 0.04658 | 1.871 | 0.0618. |
| TREAT: 50%:BELIEF: Yes | -0.18894 | 0.07253 | -2.605 | 0.0094** |

| Random Effects | | | |
|---|---|---|---|
| **Groups** | **Name** | **Variance** | **Std. Dev.** |
| Participant id | (Intercept) | 0.05728 | 0.2393 |
| Residual | | 0.18857 | 0.4342 |

Number of obs: 743; Participant id: 154

Table 22: Contrast Analysis Results

| **TREAT** | **BELIEF** | **Contrast** | **95% CI** | **p value** |
|---|---|---|---|---|
| 1%-50% | No-No | -0.12 | [-0.26, 0.01] | 0.063. |
| 1%-1% | No-Yes | -0.09 | [-0.18, 0.00] | 0.062. |
| 1%-50% | No-Yes | -0.02 | [-0.15, 0.10] | 0.723 |
| 50%-1% | No-Yes | 0.04 | [-0.08, 0.16] | 0.537 |
| 50%-50% | No-Yes | 0.10 | [-0.01, 0.21] | 0.067. |
| 1%-50% | Yes-Yes | 0.06 | [-0.05, 0.18] | 0.277 |

Note: Observations represent the case when the buyer received a product with a green claim. Significance levels: '***' 0.001, '**' 0.01, '*' 0.05, '.' 0.1.

Figure 15: Predicted probabilities from Linear Mixed Model in Table 21.
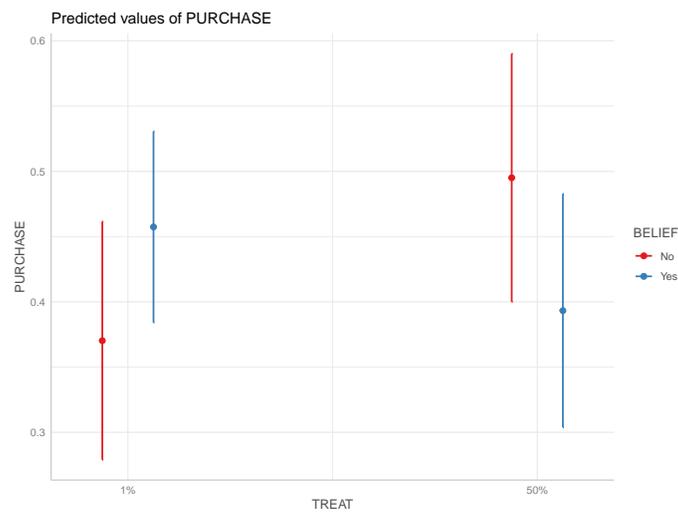
*A.5. Preliminary work and protocols*

The present study is also the endpoint of a sequence of preliminary works to establish a calibrated design that considers all the multiple factors affecting individual purchasing decisions. This section reports a summary of the goals and outcomes of the online survey held in March 3$^{rd}$ 2023 and the laboratory auctions on products held between October 24$^{th}$ and November 3$^{rd}$ 2023.

*A.5.1. Online survey*

The initial step in our research involved conducting an online survey (n=178) to examine the stated willingness to pay (WTP) for both conventional and green versions of a diverse set of products. This set included dark chocolate, coffee, avocado, cola, dishwashing liquid, cotton buds, toothpaste, soap, and basmati rice.

The online experiment allowed us to pilot-test the role of image, the potential presence of order effect and, finally, pre-test the role of the verification of the products on WTP. Most of the results from this pilot are statistically insignificant by design: the 2x2x2 design scaled down the sample size. Despite that, the online survey allowed us to understand the saliency of images and the presence of an order effect (between green and conventional) in the elicitation of preferences. As a consequence, in the following study products' images were removed, leaving only simple text descriptions. We additionally decided to show one of the two versions of the products to the participants (green or conventional) in the following laboratory auctions. Moreover, the online survey enabled us to establish the maximum WTP that students would pay for these products, laying the groundwork for the later Becker-Degroot-Marshak analysis during laboratory practices. This step clarified and solidified our understanding of participants' financial thresholds for the products in question.

*A.5.2. Laboratory auctions with BDM*

After the online survey, a series of laboratory auctions (n=85) were deployed to elicit in real terms the WTP for green and conventional products in similar conditions as in the Greenwashing game.

The methodology adopted is the Becker-Degroot-Marshak following the approach supported by Bohm et al. (1997): participants (as buyers) must elicit a bid for each product without knowing its price which is contained in an envelope. The price has been drawn from a uniform distribution taking values from € 0.05 to the maximum WTP elicited during a "previous study" (i.e. the online survey). Bidders are informed of how the upper bound is generated but they do not know the amount.

These auctions had a single treatment where participants were informed that 100% of sustainability claims had been verified and they were correct, providing the upper bound for WTP for such products conditional on verification.

Each participant, endowed with € 10 for each round, expresses his/her WTP for the randomly displayed product. Only one round's decision was valid for the payment and the distribution of the product at the end of the study. The payoff is € 10 minus the envelope price and the product if the WTP is greater or equal to the product envelope price or € 10 otherwise.

The reported Table 1 displays the mean and median of the WTP both for conventional and

green products. Overall we observe a green premium for most products in both statistics with the single exception of basmati rice which displays only a minor premium among the observed population. As a consequence, basmati rice has been removed from the list of products of the Greenwashing Game given the lack of monetary incentives for sellers to greenwash.

### A.5.3. Greenwashing game protocol and instructions

The greenwashing game was deployed following the scheme in figure 16. Instructions are available in section A.6.

Figure 16: Protocol Greenwashing Game
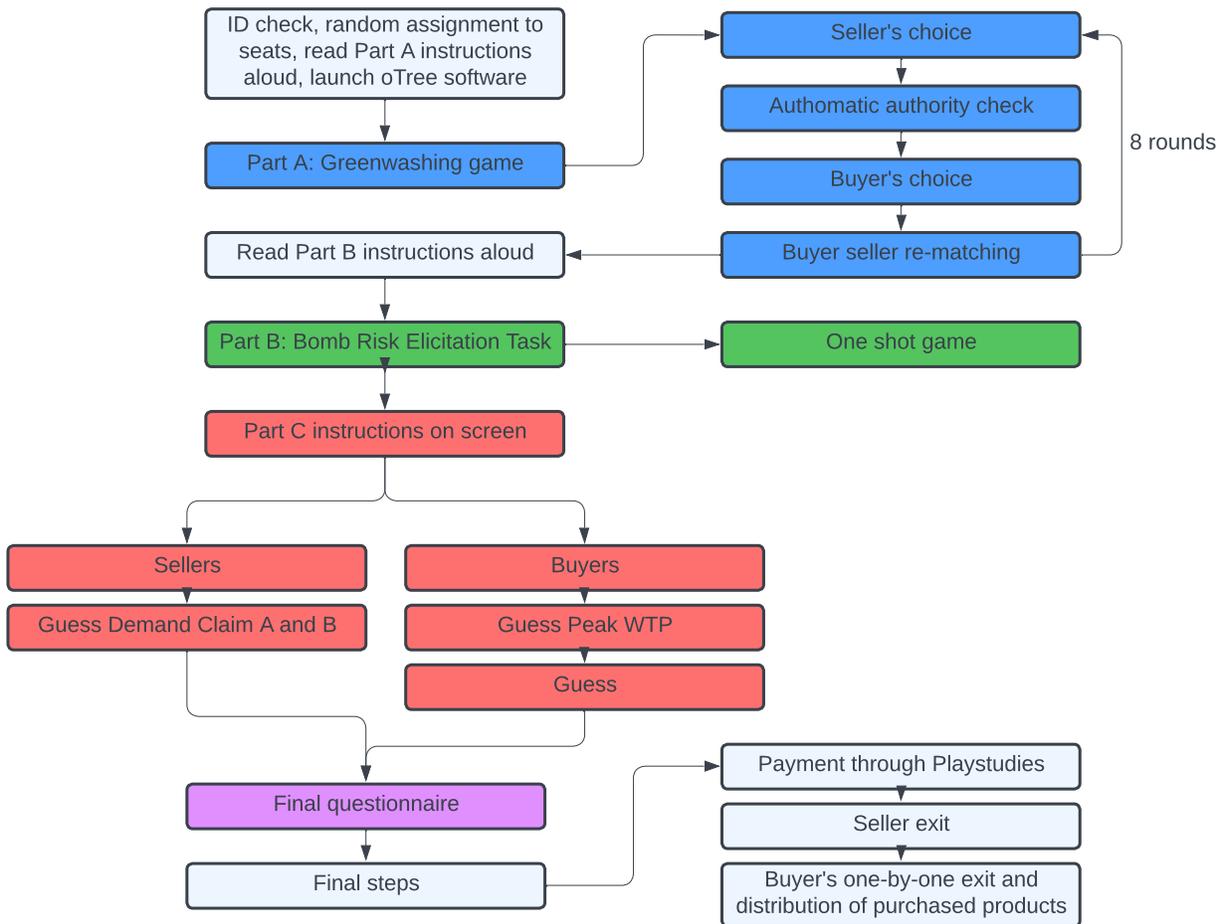
## A.5.4. Claims and product types

Figure 17: (Traslated) Conventional (Claim A) and Green (Claim B) claims

| **Ground coffee arabica** | **Ground coffee arabica** |
|---|---|
| 250 grams | 250 grams |
| Organic and ecological production | Packaging: aluminum |
| This coffee is grown by small cooperatives in the Global South respecting nature and labor | |
| Packaging: aluminum | |

| **Cotton buds** | **Cotton buds** |
|---|---|
| Pack of 300 recycled paper sticks | Pack of 300 sticks |
| 100% biodegradable and compostable cotton sticks | Packaging: carton |
| Packaging: carton | |

| **Dark chocolate** | **Dark chocolate** |
|---|---|
| 100 grams | 100 grams |
| At least 70% dark | At least 70% dark |
| Organic production | |
| The farmers' cooperative ensures a fair price for their work, protects the environment and supports local communities | |

| **Active gel dishwashing detergent** | **Active gel dishwashing detergent** |
|---|---|
| 500 ml | 500 ml |
| Lemon scent | Lemon scent |
| Derived from natural elements, without hazardous substances | Packaging: plastic |
| Produced by plant-derived surfactants from renewable sources, readily biodegradable | |
| Packaging: plastic | |

| **Marseille soap** | **Marseille soap** |
|---|---|
| 150 ml | 150 ml |
| Containing olive oil | Containing olive oil Container: |
| Made with ingredients of natural origin (98.8%) No dyes or petrochemical derivatives | paper wrapper |
| Tracking the supply chain to ensure dignity for workers and protection of the environment and animals | |
| Container: paper wrapping | |

| **Mint toothpaste** | **Mint toothpaste** |
|---|---|
| 75 ml | 75 ml |
| Eco and organic | Packaging: aluminum |
| Biosustainable products from plant extracts | |
| Packaging: aluminum | |

| **Cola-flavored beverage** | **Cola-flavored beverage** |
|---|---|
| 33 cl | 33 cl |
| Organic | Container: aluminum |
| Committed to reforestation projects Container: aluminum | |

Figure 18: Chocolate bars and dishwashing liquid bottles.



Note: Every product reports exactly the claim which was shown during the experiment. The top picture shows three chocolate bars for which the cardboard boxes were removed. The bars are, from left to right, conventional, conventional with green claim (greenwashed) and green. The bottom picture shows three dishwashing liquid bottles, which were repackaged in new identical 500ml bottles. From left to right, conventional with green claim, conventional and green. In this case, for the greenwashed version which has no green features, we picked the same colour (transparent) as for the green. *De facto* greenwashed and green are indistinguishable.

*A.5.6. Sessions*

Table 23: Summary of participant numbers across sessions and treatments

| Session # | Date and time | Treatment | # Buyers |
|---|---|---|---|
| 1 | 24-10-2023 — 9:00 AM | 100 | 25 |
| 2 | 25-10-2023 — 9:00 AM | 100 | 21 |
| 3 | 26-10-2023 — 9:00 AM | 100 | 21 |
| 4 | 03-11-2023 — 10:00 AM | 100 | 18 |
| Total | | | 85 |

| Session # | Date and time | Treatment | # Buyers | # Sellers |
|---|---|---|---|---|
| 1 | 08-01-2024 — 9:30 AM | 1 | 8 | 8 |
| 2 | 08-01-2024 — 11:30 AM | 1 | 10 | 10 |
| 3 | 08-01-2024 — 2:30 PM | 1 | 10 | 10 |
| 4 | 09-01-2024 — 11:00 AM | 50 | 10 | 10 |
| 5 | 09-01-2024 — 2:00 PM | 50 | 10 | 10 |
| 6 | 09-01-2024 — 3:30 PM | 50 | 10 | 10 |
| 7 | 15-01-2024 — 12:30 PM | 1 | 10 | 10 |
| 8 | 16-01-2024 — 2:00 PM | 1 | 10 | 10 |
| 9 | 16-01-2024 — 4:30 PM | 1 | 10 | 10 |
| 10 | 17-01-2024 — 11:00 AM | 50 | 8 | 8 |
| 11 | 17-01-2024 — 2:30 PM | 50 | 10 | 10 |
| 12 | 18-01-2024 — 10:30 AM | 50 | 8 | 8 |
| 13 | 13-02-2024 — 10:30 AM | 1 | 10 | 10 |
| 14 | 13-02-2024 — 2:00 PM | 1 | 10 | 10 |
| 15 | 14-02-2024 — 10:30 AM | 50 | 10 | 10 |
| 16 | 14-02-2024 — 2:00 PM | 50 | 10 | 10 |
| Total | | | 154 | 154 |

Note: (Above) The table displays the sessions for the Becker-DeGroot-Marshack auctions where participants were told that 100% of sustainability claims had been verified and they were correct. The duration of these sessions is approximately 60 minutes. (including welcome reception and final payment) (Below) The table displays the sessions for the interactive game. The mean duration of these sessions is approximately 80 minutes (including welcome reception and payment).

*A.6. Instructions*

The experimental personnel managing the session provided a consent form as agreed with the Bioethics Committee of the University of Bologna (Protocol No. 146120, approved on 1 July 2022). Participation is allowed only after participants have signed it before taking their seats in the cubicles. Instructions are here translated from Italian to English.

———————————— *Beginning* ————————————

# Welcome!

Dear Participant. Thank you for choosing to participate in this study.

This study consists of three parts. Your participation will be rewarded: you will receive a fixed compensation of € 5, regardless of your choices. In **PART A**, you will be able to buy or sell everyday consumer products, and the outcome of the transaction will determine your earnings. In **PART B** and **PART C**, you can earn up to an additional € 6 on top of what you have already received. We will explain each part in detail before it begins.

**Privacy During the Study**

Privacy and anonymity are fundamental priorities in this study. In accordance with the previously provided privacy notice, we assure you that you will never be asked to reveal your identity during the experiment. Your name will never be associated with any of the decisions you make. Please kindly keep your choices confidential and do not share them with other participants to preserve the privacy of your decisions.

———————————— *page break* ————————————

# - PART A -

## Role of participants

At the beginning of Part A, each participant will be randomly assigned a role that will remain fixed throughout today's study. Half of the participants will be **sellers**, and the other half will be **buyers**.

You will discover your role before making any important decisions.

Part A consists of a series of rounds, and in each round, you will be matched with another participant who has the opposite role. This means that if you are a seller, you will be paired with a buyer, and vice versa.

After each round, pairs will be randomly reshuffled, and you will be assigned a new partner. However, you will always keep your assigned role.

—————————————— *page break (previous page allowed)* ——————————————

## The products

During this study, you will be shown, one at a time, information about various everyday consumer products. Depending on your role, you will be able to sell or buy these products.

We would like to clarify upfront that the image of the product will not be shown to you, as it is not strictly relevant. What will be shown instead is a list of characteristics that distinguish each product, one product at a time.

**Please note:** In the set of products to be exchanged, there will be both products with characteristics related to environmental and/or social sustainability (called **green**) and products with low environmental consideration (called **conventional**).

In particular, in today's study, half of the products are green, while the other half are conventional. Despite this, the assignment of products to sellers will be completely random, so some sellers may have more green products than conventional ones, or vice versa.

———————— *page break (previous page allowed)* ————————

## The seller's task

For each round, the seller receives a product on their screen, where they can see the actual characteristics of the product. The seller thus knows whether it is a conventional product or a green product.

Once the actual product is displayed, the seller must choose which claim and price to apply.

- If the product is conventional, the seller can choose between the conventional claim (A) or the green claim (B).

- If the product is green, the seller can only apply the green claim (B).

By applying the 'green' claim, the seller sets a higher price compared to the price of the product with the conventional label. At the same time, applying the green claim costs the seller € 0.05, while the conventional claim costs nothing.

An example demonstrating the seller's choice:

**Product #0**
**This is your product.**

| Product Specifications |
| :---: |
| Handkerchiefs |
| Pack of 10 |
| Packaging: plastic |

**You can choose between:**

**Label A and price 1€:**

| Product Specifications |
| :---: |
| Handkerchiefs |
| Pack of 10 |
| Packaging: plastic |

**Label B and price €1.50:**

| Product Specifications |
| :---: |
| Handkerchiefs |
| Pack of 10 |
| Packaging: bioplastic |
| Attentive to the protection of forests |

Choose which label you want to use.
○ Label A   ○ Label B

Previous page

I have chosen, I want to continue!

————————— *page break (previous page allowed)* —————————

# The authority checks the products on sale

The transactions today are under the supervision of a market authority that checks whether the claim chosen by the sellers represents the actual characteristics of the products. The authority can only check a limited number of products circulating in the market and specifically checks [**enforcement level**]% of the products in the market at random.

After the seller has made their choice and before the buyer receives the product, the authority randomly checks [**enforcement level**]% of the products in the market.

In the case that the authority finds conventional products with green claims, **the authority imposes a penalty of € 0.60 on the seller.** At the same time, the authority automatically replaces the false claim with the true one, reducing the price to the level of the conventional claim.

In the previous example, if the seller chose claim B and the authority checks that product, the seller will be penalized € 0.60 and at the same time, the authority replaces claim B with claim A, setting the price to € 1. Therefore, the buyer will see claim A and the price of € 1.

**Please note!**

Sellers will not know whether the product has been checked by the authority or the outcome of the check until the end of the study.

Buyers, on the other hand, will never know whether the product has been checked by the authority or the result of the check.

——————————— *page break (previous page allowed)* ———————————

## The first choice of the buyer

After the potential intervention of the authority, it is the buyer's turn.

If you are a buyer, the choices you will need to make are two: the first concerns your maximum willingness to pay for the product, and based on this, you may choose to purchase it; the second, on the other hand, is an actual choice of whether or not to buy the product.

The buyer's first choice has no relevance for the seller, while the second choice does.

**First, we will explain how the first choice works and what it entails.**

For each round, <u>after only seeing the claim of the product</u>, we will ask you to express your maximum willingness to pay for the product, ranging from €0 to €10.

Throughout the study, the price of these products will be kept in a sealed envelope that will be affixed in a visible place and will not be touched in any way during the study.

If your willingness to pay is higher than the price in the sealed envelope, you will have purchased the product at the price written in the envelope.

If your willingness to pay is lower than the price written in the envelope, you will not have purchased the product.

Only at the end of the study will the envelope be opened, and the reference price for purchasing the product will be shown to everyone.

[This box is closed by default but can be opened by clicking on it.]

**↓ How is the price inside the sealed envelope determined? ↓**

In a previous study, we asked participants how much they would be willing to pay for each product. The highest amount that people were willing to pay is called the **maximum price**.

Today, for each product, the price inside the sealed envelope is randomly chosen from values between 0.1 and the maximum price, with an interval of €0.10. Here's an example:

*In a recent study, 10 people said they would pay €7 for a kilogram of apples, and 10 others said €4. The maximum price is therefore €7. To determine the price today, we randomly select a value between 0 and 7 (in increments of €0.10). If we randomly select €4.50, that's the price you'll find in the sealed envelope.*

The **maximum price** differs for each product based on the previous study results. Every value between 0 and the maximum price has an equal chance of being chosen and determining the price.

xxx

## The second choice of the buyer affects the seller

After making the first choice, the buyer will need to make the second choice.

For the second choice, the buyer will see both the product label and the price chosen by the seller. Additionally, the buyer will see the market conditions, meaning both the price of the conventional product and the price of the green product, thus observing the price difference between the two.

The buyer must then decide whether to purchase the product at the indicated price or not. This decision will directly affect the seller's earnings: if the product is purchased, the amount paid goes to the seller; otherwise, if the product is not purchased, the seller does not receive anything.

## Example of what the buyer sees

If the seller chooses Label B and <u>the authority does not verify the label of this product</u>, the buyer will see the product like this:

**Product #0 - First Choice**

**This is the product you can buy in this round.** Below you see the label chosen by the seller after **possible** authority control.

| Product Specifications |
| --- |
| Handkerchiefs |
| Pack of 10 |
| Packaging: bioplastic |
| Attentive to the protection of forests |

You have €10 and can spend the amount you want for this product. How much do you want to spend at most to buy this product?"

Move the cursor to say how much you would pay at most for this product. Then enter the figure in the space. The amount must match.

| 0 | | 10 |
| --- | --- | --- |

Please enter the amount you would pay below:

| | € |
| --- | --- |

After that, on the next page, the buyer is informed about the prices in the market and will have to make a second decision:

**Product #0 - Second choice**

**This is a product that you can buy in this round.** Below you can see the label and price chosen by the seller.

| Product Specifications |
| --- |
| Handkerchiefs |
| Pack of 10 |
| Packaging: bioplastic |
| Attentive to the protection of forests |

**Market prices are:**

| | |
| --- | --- |
| **Price of the product with conventional label in the market:** | **1,00€** |
| **Price of green label product in the market:** | **€1.50** |

The seller **chose or was obliged to choose** the green label and therefore the price of the product is €1.50.

The price is therefore: **€1.50**

Do you want to buy the product at this price?
○ Yes  ○ No

[Previous page]    [I have chosen, I want to continue!]

## Payment of Part A

**If you are a seller:**

Two rounds have been randomly selected and will be relevant for payment purposes. If you sell the products in the two selected rounds, you will receive the purchase price. For example, if you sell both products in those rounds, at the end of the study, you will receive the amount for the 2 products sold.

The total amount generated from the sale in the two selected rounds will be reduced by the cost of the green labels applied and any penalties if you are caught falsifying the information by the authority.

Thus, your earnings from Part A will be:

**Total sales in the two selected rounds – Cost of green labels in the selected rounds – Penalties in the two selected rounds.**

**If you are a buyer:**

For each product, you will have 10€ to purchase the products offered by the seller in the two described ways. After one of your two choices has been randomly selected, at the end of the study, you can take home one of the products.

Thus, your earnings from Part A will be:

**10€ + Product purchased in the selected round – Price paid.**

**If you are unable to continue, make sure you have completed both the seller and buyer examples.**

**Before discovering your role, a few comprehension questions:**

Question 1: How many conventional products are there in the market?

[*10% of the total; 25% of the total; 50% of the total; 100% of the total*]

Question 2: How many products are checked by the market authority?

[*1%; 25%; 50%; 100%*]

Question 3: What is the penalty for sellers who apply false claims?

[*None; 10 cents; The seller is excluded by the study; 60 cents*]

Question 4: In part A, the seller can earn...

[*The amount of the products they sell if purchased; Market prices; The amount of a product if purchased; The amount of the products they sell if purchased, net of any penalties incurred*]

Question 5: How many products can the buyer actually take home?

[*None; One; Half of the total; All*]

———————————— *page break* ————————————

[Displayed only to sellers, after random allocation of the roles]

## You are a seller.

**Some information that will be useful to you as a seller.**

The prices for each product have been **defined by previous studies.** Specifically, in a previous study, conducted in this lab, we asked participants how much they were willing to pay for each of the products you will sell today.

We then determined the price that half of the participants were willing to pay for that product, described exactly with those characteristics. This applies to both the product with the conventional label and the one with the green label.

Let's take an example with the tissues seen earlier:

*In the previous study, we collected the willingness to pay for the tissues and gathered all the evaluations. Half of the participants who rated the conventional tissues told us they would be willing to pay € 1 or more for the conventional tissues. The same applies to the green products: half of the participants who rated the green tissues were willing to pay € 1.50 or more for them.*

Therefore, based on the behavior of a similar group in a previous study, you can expect to sell the products at the set prices in equal measure.

**Answer these three questions to demonstrate your understanding:**

Question 1: How were the prices between which you can choose set?

[*From market prices; Randomly; Based on a previous study; By the personnel*]

Question 2: What was the reference for determining today's price? [*The average; The minimum; The maximum; The median*]

Question 3: If the set price for the green product is € 2.50 and the conventional product price is € 1.00, how much should I sell it for today?

[*To none; The conventional to everyone, the green to none; The green to everyone, the conventional to none; Half of the times for both types*]

——————————————— *page break* ———————————————

[Displayed only to buyers, after random allocation of the roles]

## You are a buyer.

**Summary of Instructions for Buyers**

- Half of the products in the market are conventional, and half are green.

- The seller, if they have a conventional product, can choose between two labels: conventional or green. If they have a green product, they can only apply the green label.
- If the seller applies the green label, they apply a higher price.
- **If the seller has a conventional product but applies a green label, they may be caught by the authority *[enforcement level]* times out of 100.**
- You cannot find out if the product has been checked by the authority.


- You must make two choices, one after the other.
- The first choice regards your maximum willingness to pay, and the reference price contained in the sealed envelope will be revealed at the end of the study.
- Before the second choice, you will learn the prices in the market, the price chosen by the seller, and you can decide whether to buy the product or not.
- **One of the two choices will be randomly drawn and will count towards the payment. Therefore, both choices are important.**
- At the end of the study, you will be able to take home **one product** if you actually purchased it. The type of product was randomly selected for you.

**Answer the following questions correctly:**

Question 1: If the seller has a product that is actually green, which label can they apply?
[*None; The Green; The Conventional; Both*]

Question 2: The seller can apply a false claim, but is it always beneficial (for the seller)?
[*No, it depends on the sanction size and the authority checks; No, this depends on whether the green price is too high; Yes, independently on the sanction; Yes, because the green costs more*]

Question 3: Suppose you receive a green label, which elements are important to you to determine if it could be genuine?

———————————— *page break* ————————————

[Displayed to both roles]

**Consider this case and try to answer correctly. It will help you during the subsequent phases.**

- Suppose the seller receives a **conventional pack of tissues** and can apply either a **Label A** with a price of **€ 1** or a **Label B** with a price of **€ 1.50**.

- Note that the penalty is 60 cents, but it is only applied if the authority checks the product. Remember that the authority checks 1% of the products being traded, whether they have a conventional or green label.

Which choice is the best for the seller?

[*Claim A; Claim B*]

Suppose instead that the price associated with **Label B** is **€ 2**, while Label A remains associated with the price of € 1.

And in this case, which choice is the best for the seller?

[*Claim A; Claim B*]

———————————— *page break* ————————————

## Start of the transactions!

———————————— *page break* ————————————

[Displayed only to sellers with a conventional version of the product (in this case chocolate)]

## Seller, the choice is yours!

We invite you to choose in: 147 seconds.

Participant #1
**Product #1**

**This is your product.**

| Product Specifications |
| :---: |
| Dark chocolate |
| 100 grams |

**Label A and price €1.80:**

| Product Specifications |
| :---: |
| Dark chocolate |
| 100 grams |

**Label B and price €3.00:**

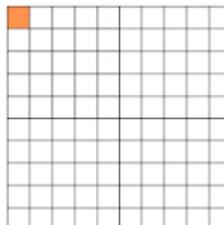| Product Specifications |
| :---: |
| Dark chocolate |
| 100 grams |
| Organic production |
| The farmers' cooperative ensures a fair price for their work, protects the environment and supports local communities. |

Choose which label you want to use.

○ Label A   ○ Label B

Remember that the fine is €0.60 and is applied only if the authority checks your product.

**1% dei prodotti sono verificati**

[Displayed only to sellers with a green version of the product (in this case chocolate)]

## Seller, the choice is yours!

We invite you to choose in: 140 seconds.

Participant #3
**Product #1**

**This is your product.**

| Product Specifications |
|---|
| Dark chocolate |
| 100 grams |
| Organic production |
| The farmers' cooperative ensures a fair price for their work, protects the environment and supports local communities. |

**Label B adopted at the price of €3.00:**

| Product Specifications |
|---|
| Dark chocolate |
| 100 grams |
| Organic production |
| The farmers' cooperative ensures a fair price for their work, protects the environment and supports local communities. |

The label you can use.
○ Label B

Remember that the fine is €0.60 and is applied only if the authority checks your product.

**1% dei prodotti
sono verificati**
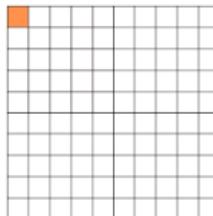
[Displayed to buyers which receives a green claimed product (in this case chocolate)]

# Buyer, the choice is yours!

We invite you to complete the assessment in: 118 seconds.

Participant #4
**Product #1 - First Choice**

**This is a product you can buy in this round. Below you see the label chosen by the seller after possible authority control.**

| Product Specifications |
| :---: |
| Dark chocolate |
| 100 grams |
| Organic production |
| The farmers' cooperative ensures a fair price for their work, protects the environment and supports local communities. |

## Now we ask you to write the price you would pay for this product

Imagine that you are given 10€ and you can spend as much as you want on this product. What is the maximum amount you would spend to buy this product?

Move the cursor to say how much you would pay for this product **at most** .
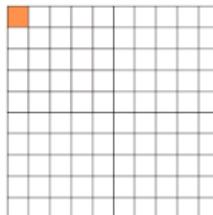
| 0 | | 10 |
|---|---|---|

Your maximum willingness to pay: **2.55**

Write the amount you would pay below: **If the price in the envelope is lower then you will buy the product.**

| 2.55 | € |
|---|---|

Remember that the fine imposed on the seller is €0.60 and is applied only if the authority checks the product.

**1% dei prodotti
sono verificati**

[Displayed to buyers which receives a green claimed product (in this case chocolate)]

# Buyer, the choice is yours!

We invite you to complete the assessment in: 162 seconds.

Participant #4
**Product #1 - Second choice**

**This is a product that you can buy in this round. Below you can see the label and price chosen by the seller.**

| Seller's chosen label: |
|:---:|
| Dark chocolate |
| 100 grams |
| Organic production |
| The farmers' cooperative ensures a fair price for their work, protects the environment and supports local communities. |

**Market prices are:**

| | |
|:---|:---:|
| **Price of the product with conventional label in the market:** | €1.80 |
| **Price of green label product in the market:** | €3.00 |

The seller **chose or was obliged to choose** the green label and therefore the price of the product is €3.00.
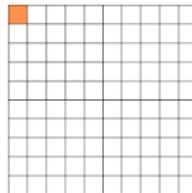
The price is therefore: **€3.00**

Do you want to buy the product at this price?

○ Yes   ○ No

Remember that the fine imposed on the seller is €0.60 and is applied only if the authority checks the product.

**1% dei prodotti sono verificati**

# End of the round

Now the pairs will be mixed and you will have a new partner, you will see a new product and you will be able to make new important decisions.

[**Note:** *after the first product (chocolate) a second product is assigned to the seller for the transaction. From the second product displayed to the last one (the seventh) the type of product is random (it might be soap as well as coffee, etc.).* ]

—————— *page break* ——————

## End of Part A

Below are the products and your choices.

| Round No. | Product | Label | First choice | Second choice |
|---|---|---|---|---|
| 1 | Dark chocolate | Green | €2.55 | YES |
| 2 | Cola flavored drink | Conventional | €0.95 | YES |
| 3 | Cotton buds | Conventional | €1.60 | YES |
| 4 | Ground Coffee | Conventional | €2.75 | NO |
| 5 | Toothpaste | Green | €4.95 | YES |
| 6 | Dish soap | Green | €5.70 | NO |
| 7 | Toothpaste | Green | €0.65 | NO |

You will find out which of the two choices counts and the randomly drawn turn at the end of the subsequent phases.

Now proceed to Part B. Click "Next" to proceed.

## End of Part A

| Round No. | Product | Quality | Label chosen | Verified by the authority | Sanction |
|---|---|---|---|---|---|
| 1 | Dark chocolate | Green | True | No | No |
| 2 | Dish soap | Conventional | True | No | No |
| 3 | Cotton buds | Conventional | True | No | No |
| 4 | Ground Coffee | Conventional | True | No | No |
| 5 | Cola flavored drink | Green | True | No | No |
| 6 | Soap | Conventional | False | No | No |
| 7 | Toothpaste | Green | True | No | No |

You will find out which rounds were drawn and whether you sold the product in those rounds at the end of the next parts.

Now proceed to Part B. Click "Next" to proceed.

—————————————— *page break* ——————————————

# - PART B -

In the following, you will see a 10x10-matrix containing 100 boxes on your screen.

As soon as you start the task by hitting the 'Start' button, one of the boxes is collected per 1 second at random. Once collected, the box is marked by a tick symbol. For each box collected you earn € 0.05.

Behind one of the boxes hides a bomb that destroys everything that has been collected. The remaining 99 boxes are worth € 0.05 each. You do not know where the bomb is located. You only know that the bomb can be in any place with equal probability.

Your task is to choose when to stop the collecting process. You do so by hitting 'Stop' at any time. If you collect the box where the bomb is located, the bomb will explode and you

will earn zero. If you stop before collecting the bomb, you gain the amount accumulated thus far.
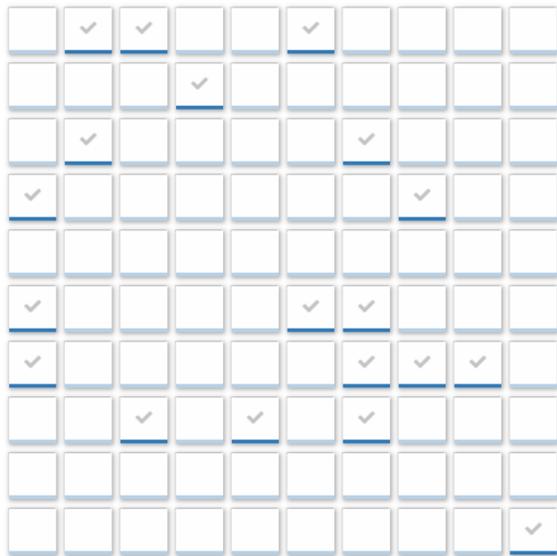
At the end of the task, boxes are toggled by hitting the 'Solve' button. A dollar sign or a fire symbol (for the bomb) will be shown on each of your collected boxes.

Enter the password provided by the staff:

—————————————————— *page break* ——————————————————

[***Note:*** *The matrix before the decision is taken (to the left) and after the decision is taken (to the right) without finding the bomb.* ]

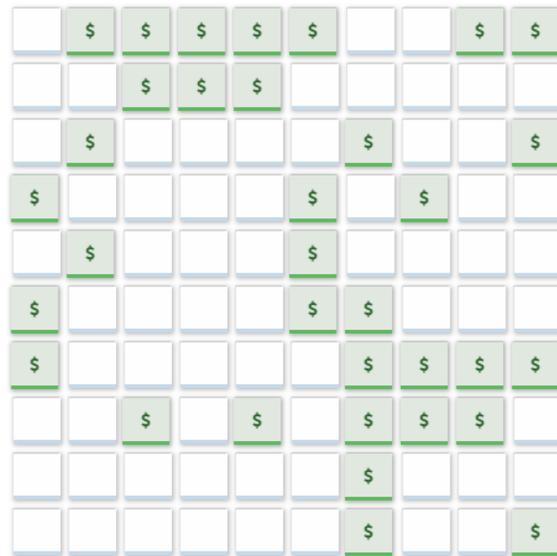## Your decision

Number of open boxes 19
Number of remaining boxes 81

Start  Stop  You discover

## Your decision

Number of open boxes 34
Number of remaining boxes 66

Next

—————————————————— *page break* ——————————————————

# Results

You choose to collect 34 out of 100 available boxes.

The bomb was hidden behind the box corresponding to row 2 and column 10.

The boxes you collected do not contain the bomb.

Therefore, you receive € 0.05 for each of the 34 boxes you collected so your payoff from this activity is € 1.70.

———————— *page break* ————————

# - PART C -

[Displayed to sellers]

During Part A, if you received a conventional product, we asked you to choose between two labels, A or B.

Now, we ask you **what you think the percentage of each product purchased was** with both labels in previous sessions identical to this one.

One of the products for which you will answer has been randomly selected, and **for each correct answer in this selected round, you will earn one euro**.

You will find out which round was selected once Part C is completed.

———————— *page break* ————————

*[This decision is displayed for each product type in the same order they received the product during Part A starting from chocolate.]*

## The demand for each product

We invite you to complete the assessment in: 49 seconds.

**Label A and price €1.80:**

| Product Specifications |
|---|
| Dark chocolate |
| 100 grams |

**Label B and price €3.00:**

| Product Specifications |
|---|
| Dark chocolate |
| 100 grams |
| Organic production |
| The farmers' cooperative ensures a fair price for their work, protects the environment and supports local communities. |

What percentage of products **labeled A** do you think were purchased during this type of study in sessions to date (excluding)?

○ 0-10%  ○ 11%-20%  ○ 21%-30%  ○ 31%-40%  ○ 41%-50%  ○ 51%-60%  ○ 61%-70%  ○ 71%-80%
○ 81%-90%  ○ 91%-100%

What percentage of products **labeled B** do you think were purchased during this type of study in sessions to date (excluding)?

○ 0-10%  ○ 11%-20%  ○ 21%-30%  ○ 31%-40%  ○ 41%-50%  ○ 51%-60%  ○ 61%-70%  ○ 71%-80%
○ 81%-90%  ○ 91%-100%

———————————————— *page break* ————————————————

## End of Part C

Now you have completed Part C, click "Next" to proceed.

| Round No. | Product | Attempt A | Question label A | Attempt B | Question label B | Result A | Result B |
|---|---|---|---|---|---|---|---|
| 1 | Dark chocolate | 11%-20% | 41%-50% | 0-10% | 61%-70% | Wrong | Wrong |
| 2 | Cotton buds | 11%-20% | 61%-70% | 91%-100% | 41%-50% | Wrong | Wrong |
| 3 | Ground coffee | 21%-30% | 61%-70% | 11%-20% | 51%-60% | Wrong | Wrong |
| 4 | Cola flavored drink | 0-10% | 91%-100% | 11%-20% | 51%-60% | Wrong | Wrong |
| 5 | Toothpaste | 21%-30% | 41%-50% | 0-10% | 31%-40% | Wrong | Wrong |
| 6 | Soap | 31%-40% | 0-10% | 91%-100% | 41%-50% | Wrong | Wrong |
| 7 | Dish soap | 41%-50% | 41%-50% | 31%-40% | 41%-50% | Correct | Wrong |

**The valid round is n° 5** so
- for Question A you earn €0.00
- for Question B you earn €0.00.

—————— *page break* ——————

# - PART C -

[*Displayed to buyers*]

During **Part A**, we asked you to evaluate some products. The price placed in the envelope, which you will discover at the end of the study, was randomly drawn from values obtained in past studies.

In this part, for each of the previously seen products, **we ask you to tell us what you think is the maximum** price that people were willing to pay in those past studies.

To do this, we provide you with price ranges, each spanning 50 cents: for example, between € 0 and € 0.49, between € 0.50 and € 0.99, between € 1.00 and € 1.49, and so on up to values between € 9.50 and € 10.

At the end of the study, one of the products will be randomly selected, and you will receive a **€ 1 increase** on the amount earned so far, but only if you answered correctly. Each evaluation for each product can be selected for payment purposes, so every choice matters.

———————— *page break* ————————

# Guess the maximum price

We invite you to complete the assessment in: 36 seconds.

**Product #1**

| Product Specifications |
|---|
| Dark chocolate |
| 100 grams |
| Organic production |
| The farmers' cooperative ensures a fair price for their work, protects the environment and supports local communities. |

What do you think is the **maximum** price a person can pay for this product?

[*Discrete choice: From 0 to 10 with intervals of 50 cents*]

———————— *page break* ————————

## Is there a profit in putting the green label?

We invite you to complete the assessment in: 84 seconds.

Label A and price €1.80:

| Product Specifications |
| --- |
| Dark chocolate |
| 100 grams |

Label B and price €3.00:

| Product Specifications |
| --- |
| Dark chocolate |
| 100 grams |
| Organic production |
| The farmers' cooperative ensures a fair price for their work, protects the environment and supports local communities. |

**Market prices are:**

| | |
| --- | --- |
| Price of the product with conventional label in the market: | €1.80 |
| Price of green label product in the market: | €3.00 |

Do you think that the seller with a conventional product and with these conditions has adopted the B label?

○ Yes  ○ No

—————————— *page break* ——————————

## About –product type– (for instance chocolate)

How interested are you in buying **dark chocolate** at this time in your life?

*[Not at all or very little; Somewhat; A lot]*

How much experience do you have buying **dark chocolate** in general?

*[Not at all or very little; Enough to recognize good products; I am an expert]*

Are you intolerant or allergic to this product?

[*Yes; No*]

––––––––––––––––––––––– *page break* –––––––––––––––––––––––

What products would you like to take home with you?

[For all product types: *No; Indifference; Yes*]

––––––––––––––––––––––– *page break* –––––––––––––––––––––––

**Some questions on the environmental topic:**

How much importance does environmental protection have in your life from 1 (not at all) to 5 (very much)?

[*Likert scale from 1 to 5*]

How much do you think your life is affected by environmental problems on a scale from 1 (not at all) to 5 (very much)?

[*Likert scale from 1 to 5*]

How much do you think the lives of people in your circle are affected by environmental issues from 1 (not at all) to 5 (very much)?

[*Likert scale from 1 to 5*]

How often do you think about environmental or climate issues during your working/study week?

[*Never; Max 1 time per week; Several times a week; Everyday; Day and night*]

How much would you be willing to contribute to fight environmental problems on a scale from 1 (not at all) to 5 (a lot)?

[*Likert scale from 1 to 5*]

Have you attended any events or meetings related to the environmental and climate issue in the last year?

[*Never; 1 to 3 times a year; 1 time per month; More times per month; Once per week*]

1

## Quiz:

What is the biggest contributor to global warming?

[*Emissions from waste; Emissions from CFC (chlorofluorocarbons); Emissions from the industrial sector; Emissions from the agricultural sector*]

What is the 'greenwashing' practice?

[*The act of coloring a green product; A technique to mislead consumers; The adoption of a green technology; The use of green products for cleaning*]

Which of these eco-labels is recognized by the European Union?

**Last questions about green advertising:**

In Italy there are institutions for the protection of consumers such as the Competition and Market Agency that verify the correctness of so-called 'misleading' advertising. How much do you trust these institutions from 1 (not at all) to 5 (very much)?

[*Likert scale from 1 to 5*]

How much do you trust green advertising for products in the market from 1 (not at all) to 5 (very much)?

[*Likert scale from 1 to 5*]

In your opinion, what is the % of products with false green advertising in the market?

[*Responses accept a figure between 0 and 100 (in integers)*]

Consider all the products sold in your country: what do you think is the % of products with green adversing verified by public authorities?

[*Responses accept a figure between 0 and 100 (in integers)*]

Considering the answer to the previous question: what do you think is the % of products with green advertising verified by the public authority that are sanctioned for misleading advertising?

[*Responses accept a figure between 0 and 100 (in integers)*]

—————————————————— *page break* ——————————————————

**A few last questions before leaving**

How old are you?

[*Responses accept a figure between 18 and 100 (in integers)*]

What is your gender?

[*Female; Male; Non-binary; Other*]

What do you do in your life?

[*I study; I work; I am looking for a job; I study and work; I don't study and I am not looking for a job*]

What is your field of study?

[*Agricultural and Veterinary Sciences; Political Science; Sciences; Psychology and Education Sciences; Pharmacy, Biotechnology, and Sports Sciences; Law; Foreign Languages, Literature, Interpreting, and Translation; Engineering and Architecture; Economics, Business Sciences, and Statistics; Arts, Humanities, and Cultural Heritage*]

Do you have a stable source of personal income that allows you to meet your daily expenses?

[*Yes; Only Partially; No; I prefer not to answer*]

What is your family's annual income?

*[0; € 1 - € 9,999; € 10,000 - € 19,999; € 20,000 - € 29,999; € 30,000 - € 39,999; € 40,000 - € 49,999; € 50,000+; I prefer not to answer.]*

———————————————— *page break* ————————————————

**Final questions for the benefit of this research:**

How difficult did you find the experimental procedure from 1 (not difficult at all) to 5 (very difficult)?

*[Likert scale from 1 to 5]*

**And sincere feedback will be highly appreciated.**

What did you consider the most when making decisions about buying or selling?

*[Open-ended question with a box.]*