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# Information Avoidance, Selective Exposure, and Fake(?) News—A Green Market Experiment

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## Abstract

We investigate if people exploit moral wiggle room in green markets when revelation is stochastic and the revealed information is potentially erroneous. In our laboratory experiment, subjects purchase products associated with co-benefits represented as a contribution to carbon offsets purchased by the experimenters. Information on the size of this contribution is unobservable at first, but can be actively revealed by the consumer. In seven treatments, we alter the information structure as well as the perceived revelation costs. We find strong evidence of self-serving information avoidance in treatments with simple stochastic revelation and reduced reliability of the information, representing potentially ‘fake’ news. The propensity to avoid information increases with the introduction of nominal information costs, which are in fact not payoff-relevant. We conclude that, generally, self-serving information avoidance can arise in green market situations if specific situational excuses are present, which could explain the demand for products associated with ‘green-washing’.

*Keywords:* Information avoidance, experiment, carbon offsets, moral wiggle room, green consumption, fake news

*JEL Classifications:* C91, D12, D64, D89, Q50

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# 1 Introduction

For many countries, researchers report a polarization of views concerning the existence and severity of anthropogenic climate change, which can be observed in particular along political party lines (e.g. Dunlap et al., 2016; Bolin and Hamilton, 2018 and McCright et al., 2016). To investigate the emergence of such polarized beliefs, in general and with respect to climate change in particular, an explanatory narrative has emerged which holds considerable intuitive appeal: It is based on the observation that people tend to avoid information that is incongruent with their established attitudes while disproportionately seeking information that is congruent—a tendency that is often referred to as selective exposure to information.<sup>1</sup>

According to this narrative, individuals with a disposition to selective exposure may form homogeneous clusters, often referred to as ‘echo chambers’. These echo chambers often form by use of social media where members reinforce their beliefs or attitudes via a mutual exchange of messages with like-minded individuals. The limited exposure to attitude-challenging information can then result in the perception of a false societal consensus (Allcott and Gentzkow, 2017; Del Vicario et al., 2016; Sasahara et al., 2019). Furthermore, social media allow content to be relayed without fact-checking or editorial judgment. Echo chambers in social media can thus lead to an increased receptivity to ‘fake news’, which in turn reinforces the polarization of beliefs (Allcott and Gentzkow, 2017; Barrera Rodriguez et al., 2017; Lazer et al., 2018; Pennycook and Rand, 2018, 2019).

These dynamics have been extensively analyzed in the context of information on climate change.<sup>2</sup> As it seems, the discourse on climate change is particularly susceptible to ‘fake news’ on the fundamentals of anthropogenic climate change, disseminated in the course of misinformation campaigns of particular interest groups (Swim and Bloodhart, 2018). Such efforts in influencing the public discourse often go beyond the simple denial of climate change itself and extend for example to the dismissal of specific climate policy instruments, like regulations creating environmental markets (Fisher et al., 2018).

The explanatory narrative based on echo chambers has a lot of intuitive appeal, in particular when it comes to explaining voter behavior. Yet, the above-cited literature is primarily concerned with explaining the—somewhat diffuse—individual ‘attitudes’ towards climate change, not mitigation-related decisions themselves. As a consequence, experimental studies which investigate the behavioral foundations of this nexus, are generally not based on incentivized decision situations.<sup>3</sup> Hence, the question remains if this type of

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<sup>1</sup>Initially, the concept of selective exposure was derived in social psychology (Festinger, 1957), where it has been examined across a multitude of experiments for decades (Hart et al., 2009; Knobloch-Westerwick et al., 2017).

<sup>2</sup>See e.g. Leviston et al. (2013), Bolin and Hamilton (2018), Walter et al. (2018), Jasny et al. (2015), Jasny et al. (2018) and Wagner and Ylä-Anttila (2018).

<sup>3</sup>See Golman et al. (2017) for an overview of this literature.

information avoidance also affects climate change-related decisions for which individual gains and losses are potentially well-defined, as in the context of green consumption. In this paper, we present the results of a first incentivized laboratory experiment on selective exposure and potentially ‘fake’ news in a climate change-relevant consumption situation.

Our analysis extends the experimental literature on information avoidance to exploit moral wiggle room, first established in Dana et al. (2007). A consistent finding in this literature is that, in a dictator game, a significant amount of players tend to avoid information on the effects of their choices on other subjects (Dana et al., 2007; Feiler, 2014; Fong and Oberholzer-Gee, 2011; Grossman, 2014; Grossman and van der Weele, 2017; Larson and Capra, 2009; Matthey and Regner, 2011; van der Weele, 2013). Hence, in contrast to the prediction in standard micro-economic theory, there is a tendency to not use all available information on the consequences of a decision. Instead, people seem to prefer to preserve some ‘moral wiggle room’, in order to behave selfishly without having to take into account potential harm imposed on others. This type of information avoidance is most often explained as a strategy to reduce cognitive dissonance.<sup>4</sup> Recently, efforts have been made to extend the analysis of such self-serving information avoidance beyond the dictator game-setup to situations involving contributions to charities or climate change mitigation (Felgendreher, 2018; Lind et al., 2019; Momsen and Ohndorf, 2019). Yet, for situations where information is costless, these studies did not provide evidence for the exploitation of moral wiggle room.

This lack of evidence for self-serving information avoidance for setups closer to real-world consumption decisions casts some doubt on the validity of the above-derived explanatory narrative in these contexts. Note, however, that this narrative relies on more sophisticated assumptions with respect to information avoidance, which have not yet been considered in the literature on moral wiggle room. Specifically, the concept of *selective* exposure goes beyond the simple avoidance of potential ‘bad news’ by also allowing individuals to seek ‘good news’ instead.<sup>5</sup> Furthermore, labeling news as being potentially ‘fake’ or unreliable provides a convenient excuse to disregard these sources of information. Such situational excuses seem to play a major role when it comes to self-serving information avoidance. For example, Felgendreher (2018) and Momsen and Ohndorf (2019) report that a significant amount of subjects tend to ignore information if revelation is associated with a very small cost. Momsen and Ohndorf (2019) conjecture that beyond their direct effect on payoffs, information costs can also serve as an additional situational excuse to avoid information that might be in conflict with an individual’s self-concept.

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<sup>4</sup>See, for example, Matthey and Regner (2011), Nyborg (2011), and Spiekermann and Weiss (2016).

<sup>5</sup>The human tendency to seek good news and avoid bad news has already been investigated in other economic contexts (Eil and Rao, 2011; Coutts, 2019). A prominent explanation for this phenomenon relates to considerations of motivated thinking (e.g. Bénabou and Tirole, 2016), treating beliefs as economic assets in which individuals can invest and from which they can gather psychological returns.

In this paper, we present a first experimental study on the effect of these various situational excuses on information avoidance in a green market context. Subjects make repeated purchase decisions choosing between two different virtual products which differ in prices and associated contributions to real-world carbon offsets. Subjects can choose to reveal information on the size of the contribution or remain ignorant. To investigate the effect of situational excuses on revelation behavior we implement three different treatment conditions. First, the provision of information is stochastic, i.e. the decision to reveal might not necessarily yield new information. Second, we introduce the possibility for selective exposure with subjects having the possibility to exclusively reveal good news.<sup>6</sup> Third, to reflect the effect of news being perceived as ‘fake’, we introduce the possibility of revealed information not being accurate. For each of these three treatment variations on information structure, we implement two additional variations with different conditions with respect to the costs of information. In the ‘costless information’ treatments, no information costs are associated with information revelation. The ‘costly information’ treatments include nominal information costs which are, however, not payoff-relevant. Note that for all treatments, rationality requires complete revelation of all available information. Hence, if subjects refrain from the use of a button this indicates either egoistic preferences or (partial or complete) information avoidance to exploit moral wiggle room. Which of the possible reasons applies is detected through a comparison to the full information treatment.

We find particularly robust evidence for the exploitation of moral wiggle room via information avoidance in the treatments with simple stochastic information, as well as in the case where news can be considered unreliable or ‘fake’. Furthermore, the existence of nominal information costs significantly increases the propensity to avoid information in all treatments. Also, in line with Momsen and Ohndorf (2019), information avoidance is more pronounced for decisions where the difference in prices is comparatively small. Hence, our results support the conjecture that information avoidance in climate change-related decisions significantly depends on the availability of situational excuses.

Interestingly, we do not find exploitation of moral wiggle room in the case where subjects can selectively reveal good news and information is presented as costless. Generally, the amount of decisions with subjects opting to reveal information selectively is rather small, with the largest amount of incomplete revelation arising in the treatment with nominal information costs (about 10% of all decisions). Hence, we conclude that selective exposure is not a wide-spread strategy to reduce cognitive dissonance in our green market context. Instead, information avoiders mostly opt for complete ignorance—a tendency that is more pronounced if information is perceived as unreliable or ‘fake’.

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<sup>6</sup>This treatment is similar to a setup investigated in Spiekermann and Weiss (2016). Yet, in their study, they do not consider selective exposure, as payoffs change according to revelation behavior.

Our results contribute to the literature in several ways. First, we further establish that information avoidance to exploit moral wiggle room is not an artefact of the standard dictator game setup, but can arise in a green market context. While evidence from previous studies was restricted to situations with positive information cost, we find that self-serving information avoidance arises in a variety of different treatment conditions even if information is costless. Such a purchasing behavior can have a significant impact on the market for eco-labeled products. If consumers avoid information on the actual co-benefits associated with a specific label, they willingly treat the green product component as a credence characteristic (Nyborg, 2011). As a consequence, such consumers can make their purchase decision exclusively based on price information, while sustaining the positive self-image associated with green consumption *per se*. As argued in Momsen and Ohndorf (2019), this way of ‘shopping for a good conscience’ can explain the demand side for products associated with ‘green-washing’.<sup>7</sup>

Second, our analysis represents a first step to investigate the behavioral foundations associated with the explanatory narrative laid out above. As this narrative informs the discussion on climate communication in general, it is interesting that in our incentivized setup, selective exposure plays only a marginal role. Information avoidance is either complete or does not arise within our treatments. This might hint to the fact that the ‘echo chamber’ effect, often brought forward as an explanation for polarized beliefs, might be less important than is generally believed. In contrast, our treatments where information is perceived as less reliable induce highly significant levels of information avoidance. Hence, disinformation campaigns labeling climate change information (e.g. on the effectiveness of mitigation options) as ‘fake’ do not only discredit the information source itself, but can also increase the disposition to remain entirely ignorant toward this topic.

The rest of the paper is organized as follows. In the following section, we present the experimental design. Section 3 derives behavioral predictions by taking known behavioral effects into account. The results are presented in section 4. Section 5 concludes. A translation of the instructions, screenshots of the decision screens and a detailed table of the implemented parameterizations are relegated to the supplementary material available online.

## 2 Experimental Design

The experiment extends the market setup presented in Momsen and Ohndorf (2019) where subjects were to take the role of buyers while the supply side was computerized. Subjects

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<sup>7</sup>Note that the environmental component in our experiment is not hypothetical but a contribution to offsets in the real world. Our study hence also contributes to the literature which uses carbon offsets to assess environmental preferences within economic experiments (e.g. Blasch and Ohndorf, 2015; Schwirplies and Ziegler, 2016; Lange et al., 2017).



needed to make 24 consecutive binary purchase decisions of virtual goods associated with a positive externality contributing to climate change mitigation. More precisely, each purchase decision consisted of choosing between products A and B, which differed in their prices as well as in a product-specific contribution to the purchase of real-world carbon offsets. In each of the 24 purchase decisions, the subject was endowed with 100 Experimental Currency Units (ECUs) which she could spend on one of the two goods available. The subject’s payoff in a round was calculated as the endowment minus the price of the selected product. Product prices varied between products within a round as well as over the different purchase situations. With prices ranging from 10 to 90 ECUs we exclusively implemented purchase decisions with a difference in prices of 10, 20 or 30 ECUs.<sup>8</sup> While the prices of both products were always disclosed, the observability of the externality on carbon abatement of product B varied between the different treatments. For product A, the contribution to the offset was always disclosed and equaled 20 ECUs throughout all 24 purchase situations. The contribution associated with product B was either 0 or 40 ECUs, with each amount being equally likely. For each purchase situation, the associated contribution was independent of the one realized in the previous round, such that subjects should consider each purchase decision separately. There existed, hence, two types of purchase situations. In the first type, the cheaper product was associated with the larger offset-contribution. In line with the literature on self-serving information avoidance, we refer to this type as aligned interests situation (AI). For the second type, referred to as conflicting interests situation (CI), the more expensive good was associated with the larger contribution to the carbon offset. Within the experiment we implemented 12 situations of each type, with the order of these 24 purchase decisions varying randomly between subjects.

## 2.1 Treatments

We implemented seven between-subjects treatments which differed with respect to the availability of information on the size of the externality associated with product B, the revelation process, the revelation costs and the reliability of the revealed information. In our baseline treatment, to which we refer as “Full Information” treatment, the associated investment in offsets for both products was immediately disclosed in all 24 purchase decisions. In all other treatments, the externality of product B was initially unknown in all rounds, but the subject could potentially reveal the offset-investment by clicking—depending on the treatment—one or two buttons on their decision screen. Hence, in all treatments with initially hidden information on product B, subjects could opt to remain uninformed and make their purchase decision without additional knowledge on the externality of product B. When opting to click a button, information about the true size of

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<sup>8</sup>For the full set of parameters, see Table V in the supplementary material.

the offset-investment was revealed with a certain treatment-dependent probability. This probability did not vary over the 24 rounds of purchase situations and was communicated clearly in the instructions.<sup>9</sup>

## Variations in Information Structure

In the “One Button”-treatments (1B), subjects could click a button labeled “Contribution: 0 or 40 ECUs?” to attempt to reveal the size of the contribution associated with product B. A button-click revealed the size of the contribution in 50% of all cases, with no additional information being revealed otherwise. This treatment hence diverges from the standard setups to test for self-serving information avoidance introduced in Dana et al. (2007) where information is generally revealed with certainty. Note, however, that even with the reduced chances to reveal the actual contribution, a rational agent with environmental preferences would always opt to reveal the information, at least as long as the costs for clicking the button remain negligible.

In the “Two Buttons with Reliable Info”-treatments (2BR), the contribution associated with product B was not disclosed upfront either, with the decision screen featuring two buttons. Button 1, labeled “Higher contribution than A?”, exclusively revealed the true contribution in 50% of all cases when the underlying contribution indeed amounted to 40 ECUs. Button 2 was labeled “Lower contribution than A?” and revealed the true externality in 50% of all cases when the underlying contribution indeed amounted to 0 ECUs. In all other cases, a button-click did not reveal any additional information. Hence, in terms of information structure, each button was associated with an imperfect signal with a one-sided error. Subjects were able to either click one button, both buttons or no button at all before taking the purchase decision. However, they could not click the same button twice. Note that, as both realizations for the true value of the contribution associated with product B were equiprobable, the *ex ante* probability of revealing the associated externality for one button was 0.25. Thus, *ex ante*, the probability to reveal the true value of the contribution when using both buttons was 0.5, i.e. the same probability as for the 1B treatments. Hence, with negligible costs of clicking, a rational individual with environmental preferences would always use both buttons if the true value of the contribution was not revealed with the first button-click.

The “Two Buttons with Unreliable Info”-treatments (2BU) were similar to the 2BR treatments, but included the possibility of the revealed information being false to represent potentially ‘fake’ news. Button 1, labeled “Higher contribution than A?” revealed an offset-contribution of 40 ECUs with a relative frequency of 0.33 across all 24 purchase situations, which corresponded to eight cases with revealed information. However, only for six of these cases the information was actually correct. On each decision screen,

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<sup>9</sup>A translation of the instructions is provided in the supplementary material available online.

the subjects were reminded of the corresponding probabilities which had already been explained in the instructions: A click of a button revealed information with a probability of  $1/3$ , but with a probability of 25% the revealed value was false. Button 2, labeled “Lower contribution than A?”, was introduced analogously for the value of the contribution being 0. Hence, in terms of information structure, each button was associated with an imperfect signal with a two-sided error. Note that, in this case, there existed the possibility that both buttons revealed information when clicked, in which case a rational individual would reach the conclusion of both values of the externality being equiprobable. The same holds for situations where both buttons revealed no information. In these two cases, clicking both buttons did not increase the subject’s knowledge on the actual value of the contribution. However, in cases where one button revealed information and the other did not, the probability of a correct guess was 75%. Hence, while the revealed information was less reliable than in treatment 2BR, a rational individual with green preferences would always opt to click both buttons.

### Variations in Nominal Information Costs

In addition to the above-described variations in the information structure, we varied the presentation of the costs to reveal information. For each treatment variation—1B, 2BR, and 2BU—we implemented a “costless” treatment in which the click of a button was not associated with any type of cost. In a second treatment variation, referred to as “costly”, the click of a button was associated with a very small nominal amount to be paid for clicking a button, which was, in fact, not payoff-relevant. In the 1B treatment with costly revelation, these nominal costs were 0.2 ECUs, while in the 2BR and 2BU treatments clicking *each* button was associated with 0.1 ECUs such that the nominal costs of clicking *both* buttons also amounted to 0.2 ECUs. Note that these amounts represent at most 2 ‰ (1 ‰ if just one button was clicked in the “Two Buttons”-treatments) of the subject’s endowment and could be considered particularly low. The exchange rate used to convert ECUs into Euros was 0.15, i.e. in monetary terms, the nominal cost amounted to 3 Cent, which by itself could be considered to be (almost) negligible. Yet, the subjects were also made aware that their final payoff would be rounded up to the next full 10 Cent amount. Hence, as only one randomly drawn purchase decision determined the payoff from the main experiment, the subjects could easily identify the information cost to be not payoff-relevant.<sup>10</sup>

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<sup>10</sup>Throughout this paper, we will refer to the treatments with negligible revelation costs as “costly revelation” treatments as opposed to the treatments with “costless revelation”. Hence, the wording might be misleading as in both treatment conditions, revelation was in fact costless, but it allows us to easily differentiate between the two treatment conditions.

## 2.2 Experimental Procedure

The experimental sessions were run in May and June 2019 in the Innsbruck EconLab. The experiment was programmed in zTree (Fischbacher, 2007) and subjects were invited through hroot (Bock et al., 2014). In total, 405 subjects—mainly undergraduate students from all fields—participated in seven between-subjects treatments earning on average €12.50. The total amount invested in carbon offsets projects was 1314 Euro. A session lasted approximately 45 minutes. We planned with two sessions à 24 participants for both the full information and the “One Button” treatments. Despite consistent overbooking of the lab capacity, the actual number of participants was slightly lower due to no-shows (see Table I). For each “Two Buttons” treatment we aimed at 72 participants per treatment, yet the actual number of participants was again slightly lower. In the “Two Buttons” treatments, we needed a larger number of participants as the design features allowed for more differentiated behavior (see Table I).

Table I: Treatments

	<b>Full Info</b>	<b>1B</b>	<b>2BR</b>	<b>2BU</b>
<b>Costless</b>	45	48	65	65
<b>Costly</b>		46	66	70

At the beginning of each session, subjects received the printed instructions which were also read out loud to create common knowledge. Afterwards, subjects received information on carbon offsets on their screens and needed to answer a quiz which ensured that they could only participate in the experiment if they had understood the instructions correctly. Each session was split into two parts. In the first part, we elicited our subjects’ risk preferences using the lottery selection task suggested by Eckel and Grossman (2002).<sup>11</sup> This rather untypical design choice was made in order to reduce potential experimental demand effects in the second part of the experiment which consisted of the above-described 24 purchase decisions. Once all subjects had selected their preferred lottery, the second part of the experiment started.

The total payoff for each participant of this experiment was the sum of the earnings from the lottery selection task and the earnings from the payoff-relevant purchase decision. From the 24 rounds of purchase decisions, one round was selected randomly at the end of the experiment by letting a subject draw a numbered card from an unsorted card deck. In this payoff-relevant round, subjects earned their initial endowment of 100 ECUs minus the price they paid for the selected product. The payoffs from the two parts of the experiment were added and multiplied by 0.15 to determine the payoff in Euros. Before subjects were paid out, they were asked to answer a questionnaire which elicited their demographics as well as their political and environmental preferences.

<sup>11</sup>Table VI depicts the available lotteries. It can be found in the supplementary material.

### 3 Behavioral Predictions

The main objective of this paper is to investigate whether self-serving information avoidance arises under different conditions which might represent situational excuses in the context of purchase decisions on markets related to climate change mitigation. In this context, note that the underlying distributive decisions in our *full information* treatments could just as well be framed as a choice between two dictator games with an abatement investment as the recipient, similar to the standard setup on moral wiggle room first presented in Dana et al. (2007).

In order to provide explanations for information avoidance arising in a moral wiggle room context, the approach that is most often brought forward is based on the theory of cognitive dissonance (Festinger, 1957).<sup>12</sup> Cognitive dissonance arises when a person holds two psychologically conflicting cognitions, resulting in a feeling of discomfort. To avoid this discomfort, the individual can either try to adjust one of the cognitions (e.g. attitudes) in favor of the other (each of which is associated with psychological barriers of its own), or selectively only seek information that does not contradict the consistency of both cognitions. This latter strategy is often referred to as ‘selective exposure’ to information (e.g. Knobloch-Westerwick and Jingbo Meng, 2009a).

In the context of situations with potential moral wiggle room, a cognitive dissonance arises if the distributive decisions an individual considers appropriate may diverge from the choices she actually intends to make. The person can resolve this dissonance by adjusting either her expectation of appropriate behavior, her intended choice, or avoid the type of information which might reveal the inconsistency between choice and behavior that is considered appropriate. The theory of cognitive dissonance can hence provide an explanation for the three types of behavior that are observed in moral wiggle room situations with hidden but revealable information: First, individuals with negligible levels of social preferences will choose the self-serving option independent of the effect of their choice on others. Typically, such a ‘homo economicus’-type (Type 1) would be indifferent with respect to information revelation, as it has no value to her. Second, a subject with sufficiently strong other-regarding preferences would always choose to reveal the effect of her decision on others and then act according to her preference (Type 2). The third type has green preferences of intermediate strength and hence avoids information that might reveal a divergence between the self-interested choice and the other-regarding preference while choosing the self-serving option. Thus, this Type 3-individual exploits the moral wiggle room provided by hidden information. Matthey and Regner (2011) provide some

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<sup>12</sup>See, for example, Matthey and Regner (2011), Nyborg (2011), and Spiekermann and Weiss (2016). An alternative explanation for self-serving information avoidance is based on the theory of self perception in social psychology (Bem, 1967, 1972), which has been formalized within economic models of self-signaling (Grossman and van der Weele, 2017). While the hypotheses derived below are to a large part also consistent with self-signaling models, we focus here rather on predictions made by cognitive dissonance theory, as our focus lies on situational excuses.

theoretical background for the behavior of these three types based on the economic model of cognitive dissonance presented in Konow (2000).

In our treatment variations with respect to the information structure (1B, 2BR, and 2BU), note first that, while revelation is associated with imperfect signals, a completely rational individual with environmental preferences would always choose to completely reveal all information available. Hence, an individual failing to reveal all available information is either of Type 1 (no environmental preferences) or of Type 3 (information avoider). If, in these cases, the amount of self-serving decisions is larger than in the full information treatment, the existence of information avoidance to exploit moral wiggle room is established (Dana et al., 2007). We hence derive our first hypothesis as follows:

*Hypothesis 1: Exploitation of moral wiggle room arises in all treatments where information on the size of co-benefits of product 2 is initially hidden.*

Note that the existence of such Type 3-behavior could not be confirmed within experimental studies extending the standard setup presented in Dana et al. (2007) to situations involving contributions to charities or climate change mitigation (Felgendreher, 2018; Lind et al., 2019; Momsen and Ohndorf, 2019). Information avoidance does arise, however, if information is associated with a small cost, as Felgendreher (2018) and Momsen and Ohndorf (2019) report. In these studies, even very small information costs seem to induce a significant amount of information avoidance, which is inconsistent with standard microeconomic theory. Momsen and Ohndorf (2019) conjecture that beyond their direct effect on payoffs, information costs can also serve as an additional situational excuse to avoid information that might be in conflict with an individual’s self-concept.<sup>13</sup>

In an economic cognitive dissonance model, as described in Matthey and Regner (2011), situational excuses represent a device which reduces the costs of self-deception. As a consequence, individuals with weaker green preferences are more likely to display Type 3-behavior in setups with information costs. In order to further investigate this conjecture, we vary the revelation costs as a between-subjects treatment condition. Yet, the information costs in our ‘costly’ treatments are, as laid out above, not payoff-relevant. Hence, observed differences in revelation behavior between the ‘costly’ and ‘costless’ treatments cannot be explained by differences in corresponding payoffs. If we observe a larger amount of selfish choices in the ‘costly’ treatments, the conjecture of information costs functioning as a situational excuse for information avoidance is confirmed. We can hence establish our second hypothesis as follows:

*Hypothesis 2: In aggregate, information avoidance to exploit moral wiggle room is more frequent in the ‘costly’ information treatments compared to the corresponding ‘costless’ treatments.*

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<sup>13</sup>This is in line with research in social psychology that identifies information costs as one situational factor which seems to reduce the acquisition of information that might be in conflict with an individual’s self-concept (Frey, 1981, 1986; Smith et al., 2008).

If the price difference between the two options is sufficiently high, strategic information avoidance will not arise in a model of cognitive dissonance. Instead, Type 3-individuals will resolve their potential cognitive dissonance by adjusting their beliefs over their own level of altruism downwards and choose the cheaper option under hidden as well as under full information. To analyze if this rationale applies, we vary the price difference between the two products in a within-subject manner. Building on the findings of Momsen and Ohndorf (2019) we should thus detect lower levels of strategic information avoidance when considering purchase situations with a relatively high difference between the prices of the two options compared to situations with a relatively low price difference. We can hence state the following hypothesis:

*Hypothesis 3: The frequency of self-serving information avoidance increases for smaller differences in prices.*

Generally, it is plausible that the fact that information revelation is stochastic represents a situational excuse for information avoidance. An individual reluctant to learn the actual environmental co-benefits associated with product B might be even less inclined to click an information button if the acquisition of information is uncertain. Hence, we expect to observe moral wiggle room exploitation in the 1B treatments.

Yet, while our 1B treatments can be conceived as a simple stochastic extension of the setup introduced by Dana et al. (2007), the treatments featuring two buttons (2BR and 2BU) go beyond the simple avoidance of information, as they enable the subject to selectively only reveal potential information which is congruent to self-interest. More precisely, subjects have the possibility to exclusively click Button 1 ‘Lower contribution than A?’ if product B is more expensive than product A, or to click Button 2 ‘Higher contribution than A?’ in the inverse case. In terms of social psychology, the setup allows for selective exposure to information, i.e. the tendency to disproportionately acquire information that is consistent with established individual attitudes and self-image. Selective exposure constitutes one of the most effective strategies to reduce cognitive dissonance and has been studied in a large set of situations (Festinger, 1957; Knobloch-Westerwick and Jingbo Meng, 2009b; Knobloch-Westerwick et al., 2017). As laid out in the introduction, the phenomenon has recently also come under increased scrutiny in the context of social media, where a tendency for selective exposure is prone to induce the formation of homogeneous clusters, referred to as ‘echo chambers’, in which its members mutually reinforce their beliefs or attitudes via an exchange of messages from like-minded individuals (Allcott and Gentzkow, 2017; Del Vicario et al., 2016; Sasahara et al., 2019). Selective exposure and echo chambers have been identified in particular in the context of climate change information, where they were found to amplify the polarization of beliefs about

the existence and severity of climate change, as well as the viability of specific climate policy instruments, like regulations creating environmental markets.<sup>14</sup>

Within the literature on moral wiggle room, a comparison of simple information avoidance and selective exposure to information has not been attempted yet. It is hence, *a priori*, unclear which of these strategies to avoid cognitive dissonance would lead to a larger amount of self-serving information avoidance within our experiment. To investigate this, it is useful to differentiate between complete and incomplete revelation, defined as follows:

**Definition 1** *We define situations in which all available information has been revealed as “complete” revelations. This corresponds to the following for the different treatment conditions:*

- *For 1B: A revelation is considered complete if a subject chooses to click the single information revelation button. Hence, in this case, revelation is complete independent of whether the externality could actually be revealed.*
- *For 2BR: Revelation is considered complete if the subject chooses to click both buttons. If clicking the first button already leads to the disclosure of the size of the offset-investment associated with product B, the revelation in this situation is considered as complete as well.*
- *For 2BU: As information associated with any single button is unreliable, revelation is only considered complete if subjects choose to click both buttons.*

In addition to complete revelation, in the “Two Buttons” treatments, information can also be incompletely revealed. This is the case if a subject clicks one button, which does not reveal any information, and then does not continue to seek information by pressing the other button but instead proceeds with purchasing a product. Hence, incomplete revelation arises in situations of selective exposure.

Note that in the “Two Buttons” treatments, Type 3-individuals now have two different strategies at their disposal to reduce costs from cognitive dissonance. They can either continue to not click any button, or alternatively, choose to only reveal ‘good news’, which would correspond to selective exposure. As selective exposure has not yet been investigated in a moral wiggle room context, it is difficult to predict to what extent one of these strategies might be substituted by the other. However, note that the *ex ante* probability of revealing the actual contribution associated with product B is the same for clicking the button in the 1B treatment and clicking both buttons in the 2BR treatment. Hence, we can make a prediction with respect to the behavior of Type 2-individuals,

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<sup>14</sup>See, for example, Allcott and Gentzkow (2017), Lazer et al. (2018), and Pennycook and Rand (2018, 2019), or Barrera Rodriguez et al. (2017).



for which it is consistent to always completely reveal all available information in both treatments, 1B and 2BR, and choose the less selfish option where revealed. The expected behavior of Type 1- and Type 3-individuals is summarized in the following hypothesis:

*Hypothesis 4: The share of selfish purchases in conflict situations is identical in the 1B treatments and in the 2BR treatments.*

As laid out in the introduction, the issue of polarized beliefs with respect to climate change is often assumed to be amplified if ambiguity is created with respect to the information available (e.g. climate scientists’ competence or motives), a strategy effectively employed by misinformation campaigns on climate change, which can be viewed as a specific form of ‘fake news’ (Swim and Bloodhart, 2018). To reflect a situation where a subject would consider available information as less reliable, the signal associated with both buttons in the 2BU treatments is not only incomplete but associated with a two-sided error. Note that in this case, a rational individual would always choose to click both buttons, as there exists the possibility to rationally adjust beliefs with respect to the level of offset investment associated with product B. As laid out above, this will be the case if one button reveals information while the other does not. In all other cases, both investment levels are to be considered equiprobable.

We hence conjecture, again, that Type 2-individuals will be interested in using all available information and choose complete revelation in the 2BU treatments. In situations with conflicting interests they will then choose the less selfish option if revealed as such. Type 3- and Type 1-individuals, in contrast, will remain (at least partially) uninformed and choose the cheaper product. While it is plausible that the ambiguity of the revealable information could serve as an additional situational excuse to avoid information, the strength of this effect compared to treatments 1B and 2BR is *a priori* undetermined. In order to investigate this, we formulate our last hypothesis:

*Hypothesis 5: The share of selfish decisions in situations with conflicting interests is identical in the 2BR treatments and in the 2BU treatments.*

## 4 Results

### Exploiting Moral Wiggle Room

In order to determine if subjects remain strategically ignorant, we follow the approach suggested by Dana et al. (2007) and compare the share of selfish choices in conflict situations in the treatments with hidden information to the baseline treatment with full information. Note that only subjects in the full information treatment are immediately aware if a situation is associated with aligned interests (AI) or conflicting interests (CI).

Subjects in the hidden information treatments, in contrast, need to actively reveal information in order to (potentially) gain information on the nature of the decision situation. Since revelation is stochastic, we focus in this part of the analysis on decision situations in which the externalities can be revealed.<sup>15</sup>

Figure 1 and Table II summarize the results of this comparison for all decision situations, as well as for the special case of a price difference of 10 ECU. We observe that the share of selfish purchase decisions varies greatly between treatments: It is lowest in the full information treatment as well as in the 2BR treatment with costless revelation. As listed in Table II, the share of selfish choices in the 2BR treatment with *costly* revelation for all data is about 9 percentage points larger than in the full information treatment, yet this difference lacks statistical significance with a p-value of 0.113 in a  $\chi^2$ -test adjusted for correlated data.<sup>16</sup> Interestingly, in the remaining four treatments the share is significantly higher in all binary comparisons to the full information treatment which each comparison at least significant at the 5% level (see Table II). Even with a Bonferroni-Holm correction, these four results remain significant at the same level. We hence find quite robust evidence for the exploitation of moral wiggle room in the treatments with one button as well as in the treatments with two buttons and potentially ‘fake’ news. Thus, our *first hypothesis* of moral wiggle room exploitation can be accepted for the 1B and the 2BU treatments, while it has to be rejected for the 2BR treatments.

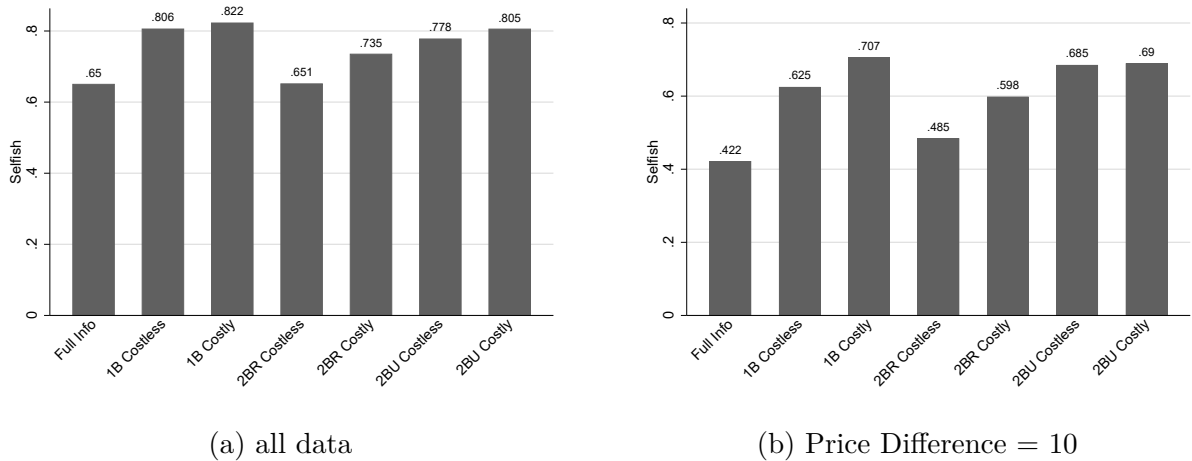


Figure 1: Share of selfish choices in revealable conflict situations across treatments

<sup>15</sup>Including situations where no information could be revealed would pollute our results, because in these cases even altruists would choose the cheaper product, as they do not know the actual contribution levels associated with product B.

<sup>16</sup>For details on this test, see Donner (1989) If not explicitly stated otherwise, the following reported p-values result from  $\chi^2$ -tests for clustered data.

Table II: Share of selfish choices in revealable conflict situations

Treatment	All Data			Price Difference = 10		
	N	Selfish Choices	<i>p-value</i>	N	Selfish Choices	<i>p-value</i>
Full Info	540	0.650		180	0.422	
1B Costless	288	0.806	0.006	96	0.625	0.016
1B Costly	276	0.822	0.004	92	0.707	0.001
2BR Costless	390	0.651	0.982	130	0.485	0.414
2BR Costly	396	0.735	0.113	132	0.598	0.020
2BU Costless	454	0.778	0.015	162	0.685	<0.001
2BU Costly	488	0.805	0.002	174	0.690	<0.001

Considering the effect of our nominal revelation costs on the share of selfish choices within each treatment condition, the shares appear relatively similar in all but the 2BR treatments. In fact, the only result of the binary comparisons that reaches marginal significance is the comparison of the 2BR treatments with a price difference of 10 ECUs ( $p = 0.096$ ). In all other comparisons, revelation costs do not affect the share of selfish decisions. We thus find only limited support for our *second hypothesis*.

Figure 1b indicates that the results with respect to moral wiggle room exploitation are more pronounced when exclusively considering choice situations featuring our “smallest” price difference of 10 ECUs.<sup>17</sup> Limiting the analysis to these situations our results indeed increase in significance, as is summarized on the right hand side of Table II. For these situations, we also find significant evidence ( $p = 0.020$ ) for the exploitation of moral wiggle room in the 2BR treatment with costly revelation, but not for the corresponding ‘costless’ revelation condition. Again, all significant comparisons easily survive a Bonferroni-Holm correction for multiple hypothesis testing. Our results thus lend support for our *third hypothesis* that moral wiggle room exploitation is more pronounced when the difference in prices is smaller.

As argued before, it seems that cognitive dissonance will be resolved in favor of the less expensive product option if the relative costs of taking the pro-social action are high. In these cases, the individual feels less obliged to behave altruistically. Hence, strategic ignorance seems to be only a viable strategy to resolve cognitive dissonance if price differences are small enough.

We do not observe a significant difference in selfish choices between the 1B treatments and the 2BU treatments, both for situations with costly ( $p = 0.779$ ) and costless ( $p = 0.509$ ) revelation. Furthermore, it can be seen in Table III that the share of selfish purchases in the 2BR treatments is significantly smaller than the share of selfish purchases in the other two treatment conditions, 1B and 2BU. We can hence explicitly reject our

<sup>17</sup>As price differences range from 10 to 30 ECUs, differences of 10 ECUs are the smallest implemented here.

*Hypotheses 4 and 5* which hypothesized identical shares of selfish choices in the 1B and the 2BR treatments as well as in the 2BR and the 2BU treatments, respectively.<sup>18</sup>

Table III: p-values: Comparison of Selfish Choices across Treatments

	<b>2BR</b>	
	Costless	Costly
1B	0.006	0.079
2BU	0.013	0.081

The fact that moral wiggle room is exploited in the 1B treatment, but is absent in the 2BR treatment, is particularly interesting. Note that *ex ante* the probability to reveal the offset-investment when clicking the one button in the 1B treatment is the same as with clicking both buttons in the 2BR treatment. The conditions for complete revelation are hence, in principle, the same for both treatments. Yet, although the number of available buttons should be irrelevant for rational decision makers, who would always choose complete revelation, it has a significant effect on our subjects' behavior. A potential reason for this phenomenon may be that two buttons are more salient, as they occupy more space on the decision screen and are hence less easy to avoid than one button.

Another interesting finding is that exploitation of moral wiggle room occurs again when potentially revealed information is declared to be unreliable, which is the only difference between treatments 2BR and 2BU. Again, as explained above, a rational decision-maker would still choose complete revelation in 2BU. We conjecture that the lower reliability of the signals associated with both buttons in treatment 2BU is used as a situational excuse to remain uninformed.

The robust evidence of moral wiggle room exploitation in the 1B treatments is even more surprising when compared to the results presented in Momsen and Ohndorf (2019) which is also based on a green market setting, but implemented a revelation probability of 100%. In the absence of revelation costs, Momsen and Ohndorf (2019) find no evidence of self-serving information avoidance, which is in stark contrast to our results for the 1B treatment. Again, a rational decision maker would choose complete revelation in both cases. Hence, it seems that, in our 1B treatment, Type 3-individuals use the fact that revelation is stochastic as a situational excuse to refrain from revelation and choose the self-serving product option.

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<sup>18</sup>Note that only the comparisons of treatments with costless revelation are significant at conventional levels.

## Revelation Decisions

### Complete Revelation

In order to gain a deeper understanding of the phenomenon of information avoidance, it is useful to take a closer look at the decisions to reveal information in the different treatments. To structure our analysis, we use the notions of complete and incomplete revelations as defined in section 3.<sup>19</sup> In this subsection we focus on ‘complete’ revelations, while incomplete revelations are analyzed in the subsequent subsection.

Figure 2 presents the average share of complete revelations for each treatment, differentiating again between the aggregate data (Figure 2a) and choices with a 10 ECU price difference (Figure 2b).

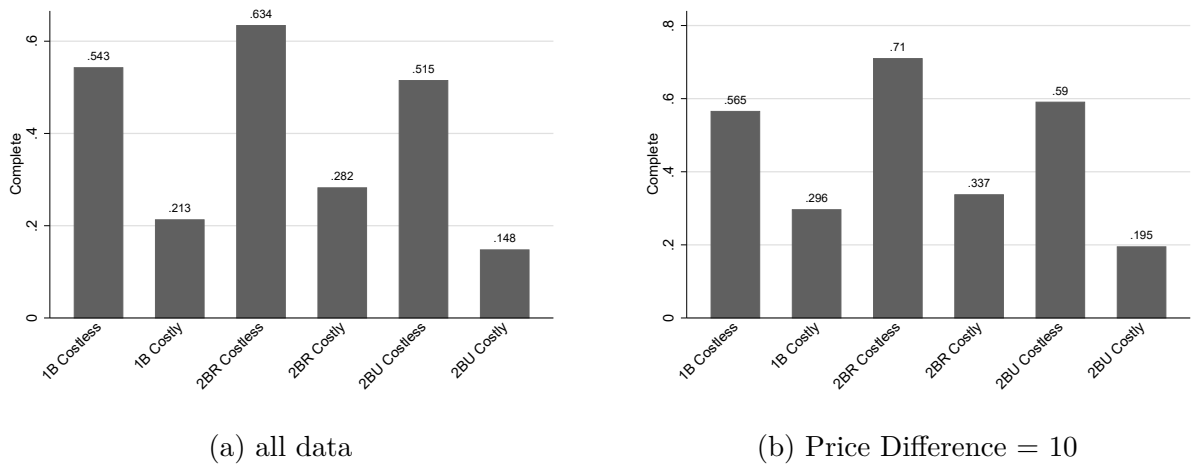


Figure 2: Share of complete revelations across treatments

From Figure 2 we immediately observe that our nominal revelation costs have a large impact on the subjects’ willingness to reveal information in each treatment condition. The differences compared to the ‘costless’ treatments are all highly significant, with the p-values for corresponding  $\chi^2$ -tests adjusted for correlated data being below 0.001 in all cases. This is particularly surprising, as these costs were not payoff-relevant. Interestingly, for the 1B and 2BU treatments this effect does not carry over to the tendency to exploit moral wiggle room, which does not differ significantly for the ‘costly’ treatments. Hence, we conjecture that, when revealing is costless, also curious egoists of Type 1 choose to reveal information but refrain from doing so when the notion of information costs is invoked. For the 2BR treatment, where a tendency to exploit moral wiggle room arises with the introduction of our payoff-irrelevant costs, one might argue that these costs indeed serve as an additional situational excuse for self-serving information avoidance.

Independent of the costs of revealing information, the share of complete revelations is always significantly larger in the 2BR treatments than in the 2BU treatments ( $p = 0.048$

<sup>19</sup>See Definition 1 above.

for costless and  $p = 0.002$  for costly revelation). This can be observed when considering all data, as well as for situations with price difference of 10 ECUs. This is consistent with our analysis of selfish choices in the previous subsection: The presence of two buttons seems indeed to induce a larger amount of revelation which, in turn, reduces or even eliminates the exploitation of moral wiggle room.

In order to identify individual factors which may influence the tendency to ignore or reveal information, we present the results of several regression analyses based on random effects estimations of simple linear probability models in Table IV.<sup>20</sup> Standard errors are clustered on subject level. In each regression, the dependent variable is the share of complete revelations, as defined in Definition 1. As subjects in the 1B treatments can only choose between clicking and remaining ignorant, while subjects in the “Two Buttons” treatments also have the option of a one-sided search for information, we analyze complete revelations for each treatment separately.

The set of explanatory variables used in these regressions are specified as follows. The variable ‘Period’ stands for the number of the decision situation and is to capture potential time trends in the subject’s decisions. ‘Lottery’ indicates the number of the selected lottery within our test for risk preferences, with risk-aversion increasing with a decreasing lottery number. To control for the subject’s political preferences we use four different variables. The variable ‘LeftRight’ represents the subject’s self-assessed position on the political left-right spectrum with increasing numbers indicating a position further to the right. The variables ‘SocPol’, ‘CultOpen’ and ‘EconPol’ are derived from questionnaire items used by the Austrian National Election Study (Kritzing et al., 2016).<sup>21</sup> We group the elicited attitudes into three categories, referring to social policy, economic policy and cultural openness. The variable ‘SocPol’ represents the subject’s opinion on topics from social politics. A higher value of the variable indicates a more conservative opinion. The subject’s opinion on economic policy is reflected in the variable ‘EconPol’, while ‘CultOpen’ is an indicator for her opinion on the influence of foreign cultures on society. Higher values of the explanatory variables indicate a more *laissez-faire* and a more isolationist view, respectively. The variable ‘GenHonesty’ captures the subject’s honesty preferences, as elicited via five questionnaire items.<sup>22</sup> The variables ‘ClimateChangeFear’ and ‘ClimateIndividual’ are constructed from questionnaire items eliciting the subject’s opinion on the existence of climate change and the danger of its consequences as well as the subject’s belief that individual actions can have an impact on the progression or mitigation of climate change. ‘OffsetUse’ indicates the frequency of past offset use with a higher value indicating more past purchases. The variable ‘OffsetNeg’ identifies if the

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<sup>20</sup>Note that the results provided here are robust to changes in the probability model and the estimation method.

<sup>21</sup>A translation of the statements can be found in the supplementary material.

<sup>22</sup>For an overview of the statements from which this variable is constructed consult the supplementary material.

subject believes that the purchase of offsets has a negative influence on the willingness to behave in an environmentally friendly manner with a higher value capturing a more negative opinion.

The results of the regression analysis are summarized in Table IV. In all treatment conditions the revelation costs and the price difference have a significant negative impact on the tendency to reveal completely, while past experience with offsets induces subjects to reveal more often. The only gender effect occurs in the 2BR treatment condition with females being less likely to reveal. Individuals who have more conservative views on the influence of foreign cultures on society are less likely to reveal in the 1B and in the 2BU treatments. Similarly, subjects with a more isolationist view on social politics reveal less often in the 2BR treatments, while subjects with a rather liberal opinion towards economic policy reveal more often in the 1B treatments. Subjects who consider themselves further to the right on the political spectrum tend to stay uninformed in the 1B treatments. Overall, the main characteristics of the decision situations—price difference and revelation costs—constitute the most important impact factors, while, mostly in the treatments with only one button, the subject’s political preferences also influence the revelation decisions significantly. Surprisingly, the subject’s assessment on the existence of climate change and the danger of its consequences does not play a role for the revelation decisions.

Table IV: Regressions: Complete Revelations by Revelation Condition

	(1) 1B	(2) 2BR	(3) 2BU
PriceDiff	-0.005*** (0.001)	-0.006*** (0.001)	-0.005*** (0.001)
Costly	-0.325*** (0.064)	-0.320*** (0.056)	-0.355*** (0.049)
Period	-0.003 (0.002)	-0.002 (0.002)	-0.002 (0.002)
Lottery	-0.025 (0.022)	-0.044 (0.027)	-0.005 (0.020)
Gender	-0.090 (0.059)	-0.128** (0.063)	-0.023 (0.049)
GenHonesty	-0.031 (0.021)	-0.009 (0.021)	-0.005 (0.018)
CultOpen	-0.097** (0.039)	0.006 (0.042)	-0.082*** (0.030)
EconPol	0.140*** (0.048)	-0.023 (0.039)	-0.048 (0.030)
SocPol	0.036 (0.053)	-0.128** (0.064)	-0.025 (0.044)
LeftRight	-0.049** (0.021)	0.012 (0.022)	0.016 (0.017)
ClimateChangeFear	0.022 (0.047)	0.036 (0.046)	-0.017 (0.038)
ClimateIndividual	0.015 (0.044)	-0.015 (0.044)	-0.038 (0.027)
OffsetUse	0.076** (0.033)	0.072** (0.029)	0.057* (0.032)
OffsetNeg	0.026 (0.025)	0.019 (0.021)	-0.015 (0.021)
Constant	0.672** (0.296)	0.907*** (0.304)	1.076*** (0.254)
R <sup>2</sup>	0.234	0.198	0.200
N	2160	3048	3120

\* p<0.1, \*\* p<0.05, \*\*\* p<0.01, clustered standard errors in parentheses

### Incomplete Revelation and Selective Exposure

We now turn towards the decision situations in the “Two Buttons” treatments in which subjects decided to reveal information incompletely. This is the case if the individual clicks one button, which does not reveal the externality of product B with certainty, and then proceeds with purchasing a product without clicking the second button. Figure 3 shows the share of incomplete revelations in the different treatments, differentiating again between all data and situations with a price difference of 10 ECU. While a relatively



small share of decisions exhibit a pattern of incomplete revelation, there are significant differences between treatments: In the 2BR treatment condition, we observe a significantly larger share of such situations when clicking is costly than with the same treatment condition with costless revelation ( $p = 0.016$  for all data and  $p = 0.007$  for price differences of 10 ECUs). For the 2BU treatments, in contrast, the revelation costs do not seem to influence the tendency to reveal incompletely. Comparing the two treatments with costly revelation, we find that more subjects reveal incompletely in the 2BR treatment than in the 2BU treatment ( $p = 0.088$ ).

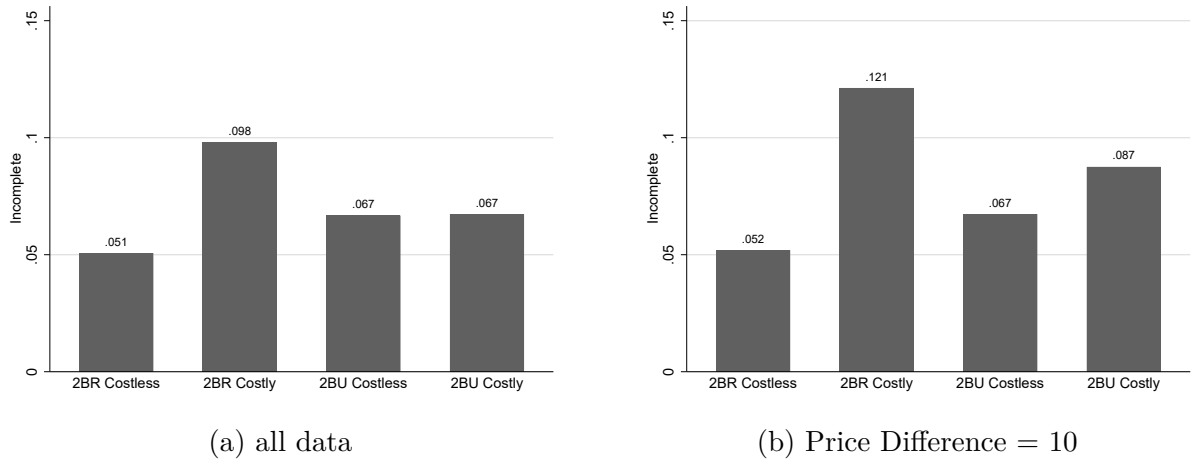


Figure 3: Incomplete revelation across treatments

A reason for avoiding the second click could be that subjects fear to detect a situation with conflicting interests, which would correspond to the phenomenon of selective exposure, as introduced above. In order to explore if this is the main driver behind the observed share of incomplete revelation, we have to identify the type of information sought by subjects who click once but refrain from using the second button. In principle, instead of exclusively seeking good news (aligned interests), they could also exclusively check for bad news (conflicting interests). Figure 4 depicts the share of situations where confirmatory information, i.e. good news, was sought for all “Two Buttons” treatments. First, note that for the 2BU treatments, the share is close to 50% and thus, according to binomial tests, not significantly different from random clicking behavior, which indicates that there is no systematic search for good news. This could be explained by the fact that if information is revealed in this treatment condition, it has only limited explanatory power. Recall that information revealed after clicking a button in this treatment can only be expected to be true in 75% of all cases. For many subjects this might be too low to warrant the resolution of a potential cognitive dissonance. Second, also for the 2BR treatment without information cost, we do not find evidence for a systematic search for good news. In fact, only for the ‘costly’ 2BR treatment, the frequency of exclusively seeking confirmatory information is significantly larger ( $p < 0.001$ ) than for seeking bad

news. This hints to the fact that information costs are not only a situational excuse for complete information avoidance, but also for selective exposure to information. Yet, even for the costly 2BR treatment, the share of incomplete revelation and, hence, selective exposure is rather small (See Figure 3).<sup>23</sup>

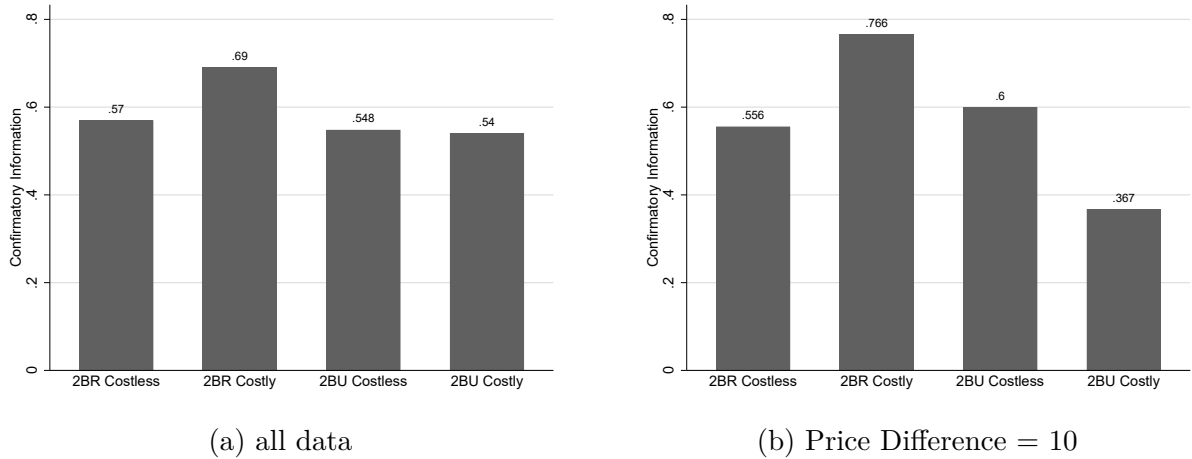


Figure 4: Selective search for confirmatory information

In summary, while we find particularly robust evidence for complete information avoidance in order to make use of the resulting moral wiggle room, the strategy to selectively look for confirmatory information does only play a minor role. In the “Two Buttons” treatments, Type 3-individuals make only rarely use of the possibility to selectively seek confirmatory information and instead opt for the same behavior exhibited in the 1B treatment: They refrain from trying to reveal any information and remain completely uninformed.

## 5 Conclusion and Discussion

In this paper, we report the results of an experimental study on specific forms of information avoidance to exploit moral wiggle room in the context of consumption choices involving environmental co-benefits. While avoiding information is not consistent with standard microeconomic theory, the existence of this phenomenon seems intuitive from the broader perspective of behavioral economics. By choosing to remain ignorant on the nature and scope of co-benefits associated with a product purchase, individuals can avoid the feeling of being morally obliged to buy more expensive products associated with a larger positive effect on the environment. Hence, staying willfully uninformed provides a justification for consumers to act in their narrow self-interest without suffering from

<sup>23</sup>To a certain extent, this is in contradiction with results presented in Spiekermann and Weiss (2016), where the share of incomplete revelation was significantly larger. However, in their experiment, the decision to reveal information directly affects the subjects’ payoff, such that the decision does not reflect selective exposure as defined here.

feelings of guilt or a negative self-image. Individuals actively avoiding information on the effect of their actions on others can hence exploit ‘moral wiggle room’, a phenomenon that has been established in a variety of experimental setups based on dictator games.<sup>24</sup> However, within consumption settings, experimental evidence for information avoidance is (at best) mixed, as reported by Felgendreher (2018), Lind et al. (2019), and Momsen and Ohndorf (2019). In particular for situations without information cost, these studies have failed to establish the existence of self-serving information avoidance in the context of purchase decisions. To our knowledge, the study presented in this paper is the first to provide evidence for the exploitation of moral wiggle room in a green market.

To derive our treatment conditions we base our approach on the theory of cognitive dissonance, which is the most frequently invoked to explain information avoidance.<sup>25</sup> In particular, we focus on situations where the individual might use additional situational excuses to justify non-disclosure of readily available information. For this, we focus on treatment conditions designed to reflect factors that are often brought forward to explain the increased polarization of opinions on climate change, namely a) the stochastic nature of knowledge revelation (1B), b) the possibility for selective exposure to information (2BR), and c) the possibility of the information being unreliable (2BU), as would be the case for news being ‘fake’. Additionally, we investigate for all of these conditions the possibility of nominal information costs (which are not payoff-relevant) acting as an additional situational excuse, as proposed in Momsen and Ohndorf (2019).

In our green market setting, we find robust evidence for the exploitation of moral wiggle room via information avoidance in the treatments with simple stochastic revelation (1B), as well as with potentially ‘fake’ news (2BU). Hence, the fact that information might either not be revealed or potentially erroneous reduces the subject’s willingness to gather information on a product’s actual co-benefits, even if it remains rational to do so. The effect is even more pronounced for a relatively small difference in product prices. Furthermore, the perception of information costs seems to increase the propensity to avoid information on the actual co-benefits associated with specific items of green consumption. Interestingly, this holds even if information costs are not payoff-relevant. Hence, in contrast to previous studies, we conclude that with the existence of these additional situational excuses, green consumption might indeed be subject to the exploitation of moral wiggle room via information avoidance.

Yet, in our 2BR treatment, which allows for separate revelation of good and bad news, no significant levels of information avoidance arise if information is not perceived as costly. We also find only very limited evidence for selective information revelation in general. In fact, the largest part of our subjects choose to either completely reveal all information

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<sup>24</sup>See Dana et al., 2007; Feiler, 2014; Fong and Oberholzer-Gee, 2011; Grossman, 2014; Grossman and van der Weele, 2017; Larson and Capra, 2009; Matthey and Regner, 2011; van der Weele, 2013.

<sup>25</sup>See, for example, Matthey and Regner (2011), Nyborg (2011), and Spiekermann and Weiss (2016).

or no information at all. The largest share of selective revelation was observed in the 2BR treatment with nominal information cost, amounting to only about 10 percent of all decisions. Hence, in our setting, *partial* information avoidance, or selective exposure, is not a widespread strategy to excuse selfish behavior. Instead, it seems that the availability of two separate sources of information increases our subjects' willingness to completely reveal all information.

Thus, as to the behavioral components of the explanatory narrative laid out in the introduction, our study yields mixed results. In our setup, selective exposure, which is generally cited as the main driver of 'echo chamber'-effects, does not arise in a significant manner. The existence of two separate sources of information seems to even decrease the probability of information avoidance. Consequently, in such a situation there would be no 'echo chamber' effect. Instead, the result is in line with the alternative hypothesis that the availability of diverse information and beliefs tends to improve individual and group judgment (Guilbeault et al., 2018). On the other hand, our results with respect to the 1B and 2BU treatments suggest that strategic ignorance increases significantly if information provision is perceived as uncertain or potentially flawed. Note here that information avoidance arises, although it would be rational to always choose to reveal the information. This indicates that misinformation campaigns that are designed to cast doubt on available information (e.g. by questioning climate scientists' competence or motives) have two different effects. First, such campaigns are obviously intended reduce the credibility of climate information itself (Swim and Bloodhart, 2018). Yet, second, our findings suggest that information that is successfully labeled as doubtful will often not even be revealed. In this case, voters or consumers will not even consider information from outlets that are perceived as a source of 'fake news', which contributes to the polarization of beliefs.

Our results also lend themselves to a more direct interpretation in the context of green markets. Consumers of products labeled as environmentally friendly who avoid information about the exact scope of the co-benefits advertised can be expected to be primarily motivated by the positive self-image associated with purchasing 'green' products. This type of consumer would have to treat the environmental component of 'green' goods as a credence good characteristic (Nyborg, 2011). This leads to the interesting case of an information asymmetry which is self-imposed on the part of the buyer. Hence, if frequent enough, information avoidance is likely to have an impact on the actual co-benefits of marketed products as well as their equilibrium prices. Thus, self-serving information avoidance provides an explanation for the existence of voluntary carbon offsets in the lower price range which are associated with relatively low levels of additionality (Hamrick and Gallant, 2017). Our results hence support calls for a stringent regulation of these markets (MacKenzie and Ohndorf, 2012; MacKenzie et al., 2012).

Similarly, self-serving information avoidance can, to some extent, explain the differentiated demand on a segmented market for eco-labeled products. In these markets, the level of environmental co-benefits reflected by different labels can vary significantly. For example, the difference in co-benefits between self-labeled products and those labeled by a third party can be substantial (Baksi and Bose, 2007). At the same time, for most items of everyday use, the price difference for products associated with different labels is relatively small compared to the budget of an average household. For such situations, our results suggest a comparatively high level of self-serving information avoidance, in particular if the search for information on the actual meaning of each label might not yield results. Hence, again in this case, avoiding the information altogether would serve as an excuse to choose the cheaper options from the set of available eco-labeled products from the outset, which provides an explanation for persistent demand of products associated with ‘green-washing’ rather than actual environmental benefits (Momsen and Ohndorf, 2019).

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# A Supplementary Material

## A.1 Instructions

To save space we have merged the instructions into one text highlighting the differences between the different treatment conditions in italics.

**Dear participants,**

Welcome to our experiment!

These instructions refer to the first part of our experiment.

Please read the instructions carefully. The information given in the instructions is true. Your payment at the end of the experiment also depends on how well you have understood the instructions. The experiment as well as the analysis of the data are anonymous.

Please do not use any technical devices. If you have any questions during the experiment, please raise your hand – the experimenters will answer your question privately. Please do not talk to the other participants.

All expressions in the instructions refer equally to men and women.

This experiment consists of two parts.

### Part 1

In the first part of the experiment you are offered five lotteries of which you need to select the one you want to play. Each lottery has possible payoffs which both occur with a probability of 50%. Which payoff materializes depends on a random number which lies between 1 and 100 and is determined by the computer at the end of the experiment. If the number is smaller than or equal to 50, the payoff depicted in the left column of the table is payoff-relevant. If the number exceeds 50, you receive the payoff listed in the right column.

After you have decided which lottery you want to play, the experiment continues. You will be informed about the random number at the end of the experiment. Your earnings from the lottery in ECUs will be multiplied by 0.15 to determine your earnings in Euros. You will receive your earnings from the lottery in addition to your earnings from the second part of the experiment at the end of the experiment.

### Part 2

The second part consists of 24 purchase decisions. For each purchase decision you have an endowment of 100 ECUs which you can use to purchase Product A or Product B. In

order to purchase, you need to click the red button with the name of the product you want to purchase. You do not have the option not to purchase.

Your purchase decisions affect the size of the a payment for carbon offsets made by the experimenters at the end of the experiment. You will receive detailed information on carbon offsets on your screens at the beginning of the experiment.

The products differ in their prices and in the size of their contributions towards carbon offsets.

#### **Full Information:**

Both the prices and the contributions towards carbon offsets are displayed on your screen.

Your earnings from a purchase decision will be computed as your initial endowment of 100 ECUs minus the price you paid for your purchase.

#### **1 Button without Costs (1B Costless):**

You know both the price and the contribution towards carbon offsets of Product A, but you know only the price of product B. The potential contributions to carbon offsets can either be 0 or 40 ECUs, yet you do not know which number is relevant in the respective round. Both are equally likely.

You can click the button “Contribution = 0 or 40 ECUs?” in order to identify the true contribution with a certain probability. However, you can also purchase without informing yourself using the button. Whether you click the button does not affect the actual contribution.

- If you click the button ‘Contribution = 0 or 40 ECUs?’ you will be informed about the true contribution in 50% of the cases. In the remaining 50% of all cases, you do not receive any information.

Clicking the button is costless. You can use the button at most once. Your earnings from a purchase decision are computed as your initial endowment of 100 ECUs minus the price you paid on the selected product.

### 1 Button with Costs (1B Costly):

You know both the price and the contribution towards carbon offsets of Product A, but you know only the price of product B. The potential contributions to carbon offsets can either be 0 or 40 ECUs, yet you do not know which number is relevant in the respective round. Both are equally likely. You can click the button “Contribution = 0 or 40 ECUs?” in order to identify the true contribution with a certain probability. However, you can also purchase without informing yourself using the button. Whether you click the button does not affect the actual contribution.

- If you click the button ‘Contribution = 0 or 40 ECUs?’ you will be informed about the true contribution in 50% of the cases. In the remaining 50% of all cases, you do not receive any information.

Clicking the button costs 0.2 ECUs. You can use the button at most once. Your earnings from a purchase decision are computed as your initial endowment of 100 ECUs minus the price you paid on the selected product minus the costs of clicking the button in case you decided to click.

## 2 Buttons with Reliable Information without Costs (2BR Costless):

You know both the price and the contribution towards carbon offsets of Product A, but you know only the price of product B. The potential contributions to carbon offsets can either be 0 or 40 ECUs, yet you do not know which number is relevant in the respective round. Both are equally likely. You can click the buttons “Lower contribution than A?” and “Higher contribution than A?” in order to identify the true contribution with a certain probability. However, you can also purchase without informing yourself using the buttons. Whether you click the buttons does not affect the actual contribution.

- If you click the button “Lower contribution than A?” and the contribution equals 0 ECUs, you will be informed about the true size of the contribution with a probability of 50%. With a probability of 50% you receive no further information. As contributions of 0 and 40 ECUs are equally likely, you will learn that the contribution is 0 with an overall probability of 25%.
- If you click the button “Higher contribution than A?” and the contribution equals 40 ECUs, you will be informed about the true size of the contribution with a probability of 50%. With a probability of 50% you receive no further information. As contributions of 0 and 40 ECUs are equally likely, you will learn that the contribution is 40 with an overall probability of 25%.

You can click both, one or no button(s), i.e. you can make your purchase decision without clicking or after clicking one or both button(s). Clicking a button is costless. You can use each button at most once. Your earnings from a purchase decision are computed as your initial endowment of 100 ECUs minus the price you paid on the selected product.

## 2 Buttons with Reliable Information with Costs (2BR Costly):

You know both the price and the contribution towards carbon offsets of Product A, but you know only the price of product B. The potential contributions to carbon offsets can either be 0 or 40 ECUs, yet you do not know which number is relevant in the respective round. Both are equally likely. You can click the buttons “Lower contribution than A?” and “Higher contribution than A?” in order to identify the true contribution with a certain probability. However, you can also purchase without informing yourself using the buttons. Whether you click the buttons does not affect the actual contribution.

- If you click the button “Lower contribution than A?” and the contribution equals 0 ECUs, you will be informed about the true size of the contribution with a probability of 50%. With a probability of 50% you receive no further information. As contributions of 0 and 40 ECUs are equally likely, you will learn that the contribution is 0 with an overall probability of 25%.
- If you click the button “Higher contribution than A?” and the contribution equals 40 ECUs, you will be informed about the true size of the contribution with a probability of 50%. With a probability of 50% you receive no further information. As contributions of 0 and 40 ECUs are equally likely, you will learn that the contribution is 40 with an overall probability of 25%.

You can click both, one or no button(s), i.e. you can make your purchase decision without clicking or after clicking one or both button(s). Clicking a button costs 0.1 ECUs each. You can use each button at most once. Your earnings from a purchase decision are computed as your initial endowment of 100 ECUs minus the price you paid on the selected product minus the costs of clicking the button(s) in case you decided to click.

## 2 Buttons with Unreliable Information without Costs (2BU Costless):

You know both the price and the contribution towards carbon offsets of Product A, but you know only the price of product B. The potential contributions to carbon offsets can either be 0 or 40 ECUs, yet you do not know which number is relevant in the respective round. Both are equally likely. You can click the buttons “Lower contribution than A?” and “Higher contribution than A?” in order to identify the true contribution with a certain probability. However, you can also purchase without informing yourself using the buttons. Whether you click the buttons does not affect the actual contribution.

- If you click the button “Lower contribution than A?” you will learn in one third of all cases that the contribution is 0. With a probability of 25%, this information is wrong. In two thirds of all cases the button “Lower contribution than A?” does not contain any information.
- If you click the button “Higher contribution than A?” you will learn in one third of all cases that the contribution equals 40 ECUs. With a probability of 25%, this information is wrong. In two thirds of all cases the button “Lower contribution than A?” does not contain any information.

You can click both, one or no button(s), i.e. you can make your purchase decision without clicking or after clicking one or both button(s). Clicking a button is costless. You can use each button at most once. Your earnings from a purchase decision are computed as your initial endowment of 100 ECUs minus the price you paid on the selected product.

## 2 Buttons with Unreliable Information with Costs (2BU Costly):

You know both the price and the contribution towards carbon offsets of Product A, but you know only the price of product B. The potential contributions to carbon offsets can either be 0 or 40 ECUs, yet you do not know which number is relevant in the respective round. Both are equally likely. You can click the buttons “Lower contribution than A?” and “Higher contribution than A?” in order to identify the true contribution with a certain probability. However, you can also purchase without informing yourself using the buttons. Whether you click the buttons does not affect the actual contribution.

- If you click the button “Lower contribution than A?” you will learn in one third of all cases that the contribution is 0. With a probability of 25%, this information is wrong. In two thirds of all cases the button “Lower contribution than A?” does not contain any information.
- If you click the button “Higher contribution than A?” you will learn in one third of all cases that the contribution equals 40 ECUs. With a probability of 25%, this information is wrong. In two thirds of all cases the button “Lower contribution than A?” does not contain any information.

You can click both, one or no button(s), i.e. you can make your purchase decision without clicking or after clicking one or both button(s). Clicking a button costs 0.1 ECUs each. You can use button at most once. Your earnings from a purchase decision are computed as your initial endowment of 100 ECUs minus the price you paid on the selected product minus the costs of clicking the button(s) in case you decided to click.

Only one of the 24 purchase decisions is payoff-relevant. Which purchase decision will be payoff-relevant will be determined by drawing a card from an unsorted card deck at the end of the experiment.

Your earnings from the experiment consist of the following parts:

- Your earnings from the lottery selection task
- Your earnings from the payoff relevant purchase decision

Your earnings will be multiplied by 0.15 to compute your payoff in Euros.

The amount of money spent on carbon offsets amounts to:

- The contribution of the product you purchased in the payoff-relevant round.

This contribution in ECUs will also be multiplied by 0.15 to compute the contribution in Euros.



The carbon offset has been selected by experts for climate policy at the University of Innsbruck and is certified according to the highest standards on the market. Certificates about the purchase of carbon offsets are available at the Institute of Public Finance at the University of Innsbruck.

This experiment will be closed with a questionnaire. Afterwards, you will receive your payment privately and in cash. In order to keep the process of payment as easy and time-efficient as possible, we will round your earnings towards the next higher 10 Cents. A brief overview of the course of the experiment:

1. Information on carbon offsets
2. Quiz to test the understanding of the instructions
3. Lottery selection task
4. 24 rounds of purchase decisions
5. Selection of the payoff-relevant purchase decision
6. Questionnaire
7. Payment

## **A.2 Addendum to the Experimental Design**

### **A.2.1 Screenshots of the Decision Screens**



Figure 6: 2BR

Periode

1 von 24

Verbleibende Zeit [sec]: 28

Sie müssen entweder Produkt A oder Produkt B kaufen.

Zusätzlich zu Ihrem privatem Nutzen beeinflusst Ihre Kaufentscheidung auch die Höhe Ihres Beitrags zu einem CO2-Offset. Der Beitrag beim Kauf von Produkt A beträgt **20 Taler**. Der Beitrag beim Kauf von Produkt B beträgt entweder **0 oder 40 Taler**.

Über die tatsächliche Höhe der Beiträge beim Kauf von Produkt B können Sie sich **optional** durch Klicken der Buttons "Niedrigerer Beitrag als A?" sowie "Höherer Beitrag als A?" informieren. Sie können einen, beide oder keinen Button(s) benutzen, bevor Sie Ihre Kaufentscheidung treffen.

Das Klicken eines Buttons ist **kostenlos**.

Sie verfügen über ein Budget von 100 Talern.

Bitte entscheiden Sie sich durch Klicken für EINES der beiden Produkte. Ihr Verdienst entspricht Ihrem Budget abzüglich des gezahlten Preises.

Produkt A		Produkt B	
Preis	70	Preis	40
Ihre Auszahlung:	30	Ihre Auszahlung:	60
Ihr Beitrag zum Offset:	20	Mögliche Beiträge zum Offset:	0
		Mit 50% Wahrscheinlichkeit:	40

Niedrigerer Beitrag als A?

Höherer Beitrag als A?

In allen Fällen, in denen der Beitrag tatsächlich **0 Taler** beträgt, wird Ihnen dies beim Klicken des Buttons "Niedrigerer Beitrag als A?" mit einer Wahrscheinlichkeit von 50% angezeigt. In allen anderen Fällen erhalten Sie keine zusätzlichen Informationen.

In allen Fällen, in denen der Beitrag tatsächlich **40 Taler** beträgt, wird Ihnen dies beim Klicken des Buttons "Höherer Beitrag als A?" mit einer Wahrscheinlichkeit von 50% angezeigt. In allen anderen Fällen erhalten Sie keine zusätzlichen Informationen.

Ihre Kaufentscheidung:

Produkt A

Produkt B



### A.2.2 Parameters

Table V: Parameters: Prices and Externalities of Product B

Price Difference	Price 1	Price 2	Externality 2	Conflict Situation
10	50	40	40	0
	60	50	40	0
	50	40	0	1
	30	20	0	1
	40	50	40	1
	50	60	40	1
	80	90	0	0
	40	50	0	0
20	70	50	40	0
	50	30	40	0
	90	70	0	1
	60	40	0	1
	40	60	40	1
	50	70	40	1
	20	40	0	0
	30	50	0	0
30	90	60	40	0
	60	30	40	0
	70	40	0	1
	40	10	0	1
	10	40	40	1
	40	70	40	1
	20	50	0	0
	60	90	0	0

### A.2.3 Risk Preferences: Lottery Selection Task

Table VI: Lottery selection task

Lottery	Payoff for random numbers:	
	1 – 50	51 – 100
1	24	24
2	20	32
3	16	40
4	12	48
5	2	58

#### **A.2.4 Questionnaire – Honesty**

The following questions were used to elicit the subject's self-stated honesty preferences. Subjects were asked to state to what extent (from 1 = not at all, to 5 = fully agree) they agree with the following questions.

- Suppose you know that you are not eligible for a certain form of public benefits: Is it okay to apply for this type of public benefits?
- Is it okay to free-ride in public transportation?
- Suppose you get the chance to commit tax evasion: Is it okay to do so?
- Suppose you have found money: Is it okay to keep it?
- Suppose you have accidentally damaged a car: Is it okay not to report the damage?

#### **A.2.5 Questionnaire – Political Preferences**

We used the following statements to elicit the subjects' political preferences. Subjects were asked to state to what extent (from 1 = not at all, to 5 = fully agree) they agree with the following statements.

- It is also important to protect the rights of criminals.
- Marriages of couples of the same sex deserve the same rights as marriages of heterosexual couples.
- We should be thankful for leading heads who tell us what to do and how to do it.
- Our society needs to take drastic measures against criminals.
- Our country would be better off if young people relied more strongly on values and traditions.
- Politics should not intervene in the economy.
- Politics should compensate differences between smaller and larger incomes.
- Unemployment should be fought, even if this provokes high public debt.
- The European lifestyle and the lifestyle of Muslims are easily compatible.
- Muslims should adapt in order to have fewer problems.
- Migration to my country should be stopped.

### **A.2.6 Questionnaire – Climate Change Consequences and Fear**

We used the following statements to assess the subjects' opinion on climate change and their fear regarding its consequences. Subjects were asked to state to what extent (from 1 = not at all, to 5 = fully agree) they agree with the following statements.

- There is no anthropogenic climate change. Observable changes of the climate are part of natural variations.
- The climate change will have a strong influence on people in Austria and its neighboring countries.
- I expect the climate change to have severe consequences on humans, animals and the environment.

### **A.2.7 Questionnaire – Climate Change Individual Responsibility**

We used the following statements to assess the subjects' perceived individual responsibility to mitigate climate change. Subjects were asked to state to what extent (from 1 = not at all, to 5 = fully agree) they agree with the following statements.

- Changes in private consumption (e.g. less meat, less air travel) are important instrument to mitigate climate change.
- Public administration, not the individual citizen is responsible for climate change mitigation.
- If I behave in a climate-friendly manner, it does not change anything.

### A.3 Addendum to the Results

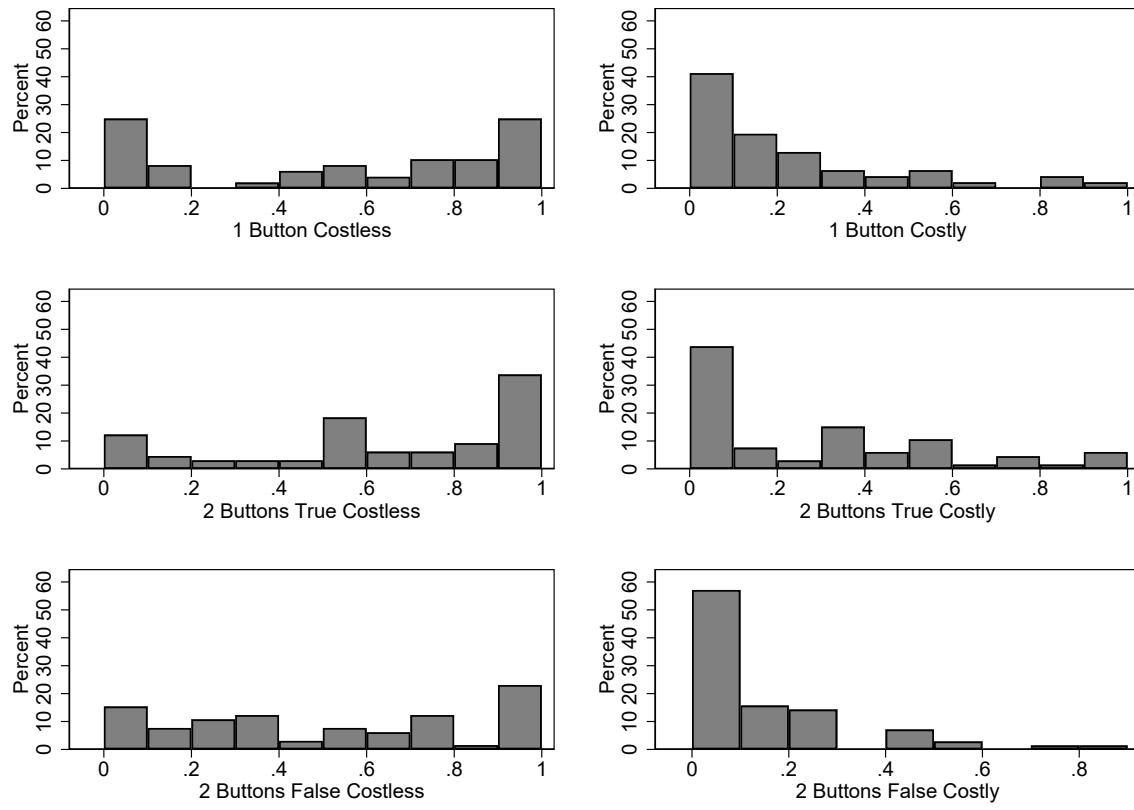


Figure 8: Distribution of Subjects by Share of Complete Revelations



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Information Avoidance, Selective Exposure, and Fake(?) News-A Green Market Experiment

**Abstract**

We investigate if people exploit moral wiggle room in green markets when revelation is stochastic and the revealed information is potentially erroneous. In our laboratory experiment, subjects purchase products associated with co-benefits represented as a contribution to carbon offsets purchased by the experimenters. Information on the size of this contribution is unobservable at first, but can be actively revealed by the consumer. In seven treatments, we alter the information structure as well as the perceived revelation costs. We find strong evidence of self-serving information avoidance in treatments with simple stochastic revelation and reduced reliability of the information, representing potentially 'fake' news. The propensity to avoid information increases with the introduction of nominal information costs, which are in fact not payoff-relevant. We conclude that, generally, self-serving information avoidance can arise in green market situations if specific situational excuses are present, which could explain the demand for products associated with 'greenwashing'.

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