



The many aspects of voluntary sustainability governance: Unpacking consumers' support for tea standards in China and the UK

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ABSTRACT

Voluntary standards have become a promising mode of governance to promote sustainable production and consumption in global value chains. Despite a growing number of studies on consumers' preferences for sustainable products, insufficient attention has been paid to the heterogeneity of existing standard systems, which prioritize different issues (e.g., environment, labor, and health), have different origins and sponsors, imply different costs and stringency. How do these features affect consumer support across market contexts? By conducting a choice-based conjoint experiment with tea drinkers in China and the UK ($N = 1823$), we find that consumer support for sustainable tea standards in both countries is primarily driven by food safety concerns, to a lesser extent by concerns of environmental and labor issues. Moreover, Chinese consumers support highly stringent standards only, whereas British consumers also accept medium-level standards. Standard sponsor and origin matter for consumers in China only who favor government-designed, international standards. Consumers' preferences for key standard features are associated with individual values, the warm glow of giving, and sustainability concerns but such relationships vary in the two markets. Our findings have important implications for scaling-up sustainability standards in both emerging and developed markets.

1. Introduction

Over the last three decades, voluntary sustainability standards (VSS) have become a promising mode of regulatory governance in global value chains. VSS are not required by law, but are used in supply chains to recognize, track, and label products from environmentally and socially responsible businesses (Bernstein and Cashore, 2007; UNFSSS, o. J.).¹ With the proliferation of VSS, many researchers of food governance have turned their attention to relevant schemes and have assessed their rise and evolution (Auld, 2014; Fuchs et al., 2009; Fulponi, 2006). This strand of research has provided critical insights into the causes of major VSS schemes and the forces shaping key standard features such as transparency and credibility (Fuchs and Kalfagianni, 2010; Schleifer et al., 2019; van der Ven, 2019).

The role of consumers in driving the rise and expansion of VSS remains debatable. On one hand, the power of political consumerism has been deemed a critical underlying factor contributing to the emergence of sustainability governance such as standard and labelling schemes

(Boström et al., 2019; Stolle and Micheletti, 2013). On the other hand, research on specific governance initiatives has shown that the development of many VSS was primarily driven by the interests of powerful actors such as large businesses, environmental NGOs, and governments (Auld, 2014; Bartley, 2007; Vogel, 2010). Considering limited understanding of consumers about many standards and high variability of consumer support for sustainable products, one may suggest that consumers' opinion has little influence on the problem-solving effectiveness of standards (Grunert et al., 2014; Hainmueller et al., 2014). Furthermore, the so-called intention-behavior gap serves as an explanation for a small market share of products compliant with VSS despite the overall positive attitude and intention of consumers to purchase those (Grimmer and Miles, 2017; Lusk, 2018). That said, as pointed out by Bullock and van der Ven (2018), this view focuses too narrowly on individual consumers' purchasing decisions, without considering the broader influence that consumers can exert as an "imagined collective" on different stakeholders of VSS. From this perspective, consumers' opinion and their anticipated behavior should have a shadow over the strategies of VSS.

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¹ Different terms are used by researchers and practitioners to describe "VSS", including "sustainability (or eco-) labels", "sustainability certification", and "credence labels". We use these terms interchangeably in the paper.

Hence, it is crucial to investigate consumers' preferences with respect to the content and design features of VSS, even more so when taking into consideration that most standards have consumer-facing labels.

Consequently, different content and design features of VSS shape sustainable food governance. For instance, in the coffee sector several standards co-exist, but vary in many important aspects in order to target different niche markets (Grabs, 2020). Similar trends exist for other commodities such as cocoa and tea (Meier et al., 2020). It is, therefore, important to know how the content of standards, their origin, sponsors, and also cost influence consumer support for sustainable products. Our study builds on existing studies that have assessed consumers' preferences and willingness-to-pay (WTP) for various VSS (e.g., Grebitus et al., 2015; Van Loo et al., 2015; Weinrich and Spiller, 2016), and goes beyond by asking how specific features of VSS determine consumer support in different markets. More precisely our research asks three central questions: 1) which sustainability cause is favored by consumers when encountered with a trade-off? 2) whether stricter standards are valued more when consumers are faced with multi-tiered instead of binary standards, and 3) whether standards created by private actors are trusted more than those created by public actors? To complement past research primarily focusing on market dynamics in the Global North, we compare consumers in a developed market (UK) with those in an emerging market (China) to investigate how economic, sociopolitical, and cultural contexts influence consumers' support for VSS. We chose tea as the empirical focus due to the existence of several VSS for this product that have been widely adopted in the global market – as of 2020, VSS were used in between 16.1% and 21.7% of the global tea production area (Meier et al., 2020). Compared to other commodities like coffee and cocoa, tea is a less studied commodity in the VSS literature despite being the most consumed beverage in the world with high consumption rates in both the Global South and North (FAO, 2015).

In a choice experiment with 1823 respondents in the UK and China we assess how specific features of sustainable tea standards determine consumers' product choices. Participants are presented with products featuring multi-level standards as text varying in their cause (environmental, social, and food safety), key design features (origin and standard sponsor), and price. We also capture individual characteristics such as values, sustainability concerns, and the warm glow in our questionnaire in order to identify possible country-level differences in the links among those concepts and support for the various standards.

Our findings show that consumer support for sustainable tea standards is primarily driven by food safety concerns, to a lesser extent by concerns about environmental and labor issues. British and Chinese consumers derive most utility from the most stringent food safety standard. The picture differs with respect to environmental and social regulations: Chinese consumers value the highest standards only, whereas British consumers value the medium standards as well. Furthermore, unlike in the UK, the origin and sponsor of standards are important determinants of consumer support for VSS in China who favor government-made, international standards. Lastly, British consumers are highly price sensitive, whereas Chinese consumers are reluctant to buy cheap tea. Support for high and medium levels of environmental, social and food safety standards in the UK is linked to sustainability concerns regarding the food sector. In China, our findings suggest that consumer preferences for VSS are shaped by values, such as security, stimulation, and tradition.

In the rest of the paper, we first review the existing literature on consumer support for VSS to derive the hypotheses for our study. We then explain our research method and data. This is followed by the presentation of our empirical findings. We conclude by discussing the policy implications of our research.

2. Literature review and hypotheses

The growth of studies on consumer preferences for VSS matches the growth of VSS in the past decade.² The majority of empirical studies focus on food products, organic standards and consumers in a single country, mostly in the Global North (Bangsa and Schlegelmilch, 2020). Coffee stands out as one of the earliest commodities targeted by VSS and a sector having a high rate of certified production.³

In comparison consumer preferences towards VSS in the tea sector remain underexplored despite the large numbers of tea drinkers globally. In fact, due to reported labor (e.g., low wages, hard working conditions, child labor) and environmental issues (e.g., abundant application of pesticide, land use changes) associated with global tea supply chains, tea has been among the first agricultural commodities targeted by VSS (Henderson and Nellemann, 2012; van der Wal, 2008). Today, at least 16% of the global tea production area is compliant with some VSS (Meier et al., 2020). Moreover, unlike other cash crops such as coffee and cocoa, tea has the unique feature of being largely consumed in both Northern and Southern markets; China and the UK representing large markets for each. Yet, for consumers in the UK tea is purely an imported commodity from Southern producing countries whereas for Chinese consumers, most teas in the market are domestically produced (FAOSTAT, 2019).⁴ Accordingly, consumers' expectations in VSS are likely to differ in both markets.

Food safety issues are highly salient in China due to several food scandals over the last decade (Kendall et al., 2019; Pei et al., 2011; Yan, 2012). Studies find food safety to be the main driver of Chinese consumers' support for VSS in the food sector, especially in respect to organic food⁵ (Liu et al., 2013; Thøgersen et al., 2015; Yin et al., 2010). We expect no exception in our study.

H1. Chinese tea consumers are willing to support VSS schemes setting high food safety standards.

In comparison, the rise of VSS in Northern markets has been driven more by environmental and labor issues. This is especially the case for tea where labor rights violation is a salient issue reported by media (LeBaron, 2018; Rowlatt, 2016). Research on certified tea products in the German market reveals a larger price premium that consumers are willing to pay for fairly traded than for organic products (Bissinger and Leufkens, 2017). Considering that the UK is the largest market for Fairtrade certified products (Lernoud and Willer, 2017) we expect a similar pattern in the UK market. Moreover, the Carbon Trust in the UK introduced the first carbon footprint consumer-facing label and the British retailer Tesco used it on numerous of its products. Even though Tesco dropped this labeling scheme, studies find that a majority of consumers in the UK have a stated preference for carbon labels (e.g., Gadema and Oglethorpe, 2011).

H2. British tea consumers are willing to support VSS schemes setting high environmental and labor standards.

Past research indicates that consumers' willingness to buy sustainable products depends on the extent to which they perceive the relevant standard is credible and trustful (Ricci et al., 2018). It is expected that this trust is closely connected to the source of the VSS including who

² On the latest uptake of VSS in food and agricultural sectors see Meier et al., (2020).

³ To date, at least 21% of the global coffee production is compliant with at least one VSS (Meier et al., 2021).

⁴ In terms of trade, the UK is the 4th largest tea importer in the world, with a world share of 4.6%; China is the largest tea exporting country, providing 22.2% of total world exports in 2019 (UN Department for Economic and Social Affairs, 2021).

⁵ In China often the term safe food is used. It comprises hazard free, organic and green food, see for example Liu et al. (2013).

creates and implements the relevant standards. UK consumers trust the government and environmental NGOs to provide credible information, but business-sponsored eco-labels would need to be third-party certified (Darnall et al., 2018). Chinese consumers tend to value government certification programs to signal food safety, followed by third-party certification, a traceability system, and a product-specific information label (Ortega et al., 2012). Trust in food safety information by consumers in China is largely derived from the government and less from the market such as private certifications or other civil society arrangements (Bai et al., 2013; Zhang et al., 2016). Hence, we expect:

H3. Chinese tea consumers are more willing to support VSS schemes sponsored by governments compared to those sponsored by businesses and NGOs.

Relatedly, given that most transnational VSS are new to Chinese consumers and led by non-state actors, Chinese consumers are likely to support domestic standards more than foreign standards. In fact, VSS schemes originating from the Global North have been introduced to China only recently, and remain unknown to most consumers (Li et al., 2016). The governance model of certification and labelling remains a relatively new concept in China for many supply chain stakeholders and consumers (Schleifer and Sun, 2018, 2020; Sun and van der Ven, 2020). It is hence not surprising that Chinese tea consumers prefer the Chinese organic label although Japanese and US organic labels exist in the market (Yang et al., 2021). This leads us to expect:

H4. Chinese tea consumers are more willing to support domestic VSS schemes compared to international schemes.

Price may play different roles in influencing consumers' support for VSS. While tea is a popular beverage in the UK, the commodity has a special cultural meaning in China and therefore can be considered a luxury product such that the average market price of tea in the Chinese market is much higher than in Northern markets (CTMA, 2019). Also, household spending on food is relatively low in the UK, and so are overall food prices.⁶

H5. British tea consumers are more price sensitive than Chinese consumers when choosing products compliant with VSS.

With respect to the impact of consumer characteristics on support for VSS, past research has drawn mixed pictures. We, therefore, did not hypothesize relational directions but were simply interested in identifying possible differences at the individual level between our country samples. For that purpose, we included the following concepts: 1) Values, which are found to be more stable than preferences and important predictors of sustainable practices (Doran, 2009; Lusk and Briggeman, 2009; Vermeir and Verbeke, 2008). 2) The warm glow of giving, a concept describing the positive utility people derive when doing good, which has been found to be positively linked to pro-environmental behavior (Hartmann et al., 2017; van der Linden, 2018) and sustainable consumption (Iweala et al., 2019). 3) Sustainability concerns as proposed by Grunert et al. (2014), which are tailored towards the food sector, and are, therefore, closely connected to the different VSS encountered by our survey participants.

3. Experimental design & methods

We conducted a hypothetical choice-based conjoint experiment with tea drinkers in China (N = 918) and the UK (N = 905) between October and December 2019. We designed our experiment and questionnaire in

the software Sawtooth. A panel provider recruited participants from their pool of registered participants. They were filtered by their tea consumption to only include frequent tea drinkers (3 or more times per week). To reflect the age and gender structure of each population, we set quotas for each in line with the latest census data. The data cleaning process resulted into a sample with the characteristics as presented in Table A1.⁷

The first part of our survey covered socio-demographic questions; followed by eight choice tasks. In each task, the respondents were asked to imagine themselves purchasing their favorite tea. Each choice situation consisted of two tea products randomly varying in six attributes and a no-buying option. The six attributes and their levels are presented in Fig. 1. The selection of attributes and levels was guided by existing VSS in the market, relevant tea production factors, and insights from existing studies. For instance, the different levels of the food safety standard are in accordance to the classification in China of organic agriculture (high), green food (medium) and hazard-free food (low) (Scott et al., 2014).⁸ Similarly, we manipulated the levels of environmental and social standards to reflect different criteria used by existing ecolabels (e.g., high social standard imitating Fairtrade). Insights from sustainability governance motivated the inclusion of the sponsor and origin of VSS as they have been suggested as important features that can influence consumers' trust in VSS. The experiment was designed via the balanced overlap method. Hence, levels repeat within the same choice task sometimes in order to increase the precision of interaction effects of levels.

To measure the value system of participants, we employed the Portrait Values Questionnaire (PVQ-21) as developed and validated by Schwartz et al. (2001). It captures ten distinct values that are recognized across cultures (Schwartz, 1992), namely power, achievement, hedonism, stimulation, self-direction, universalism, benevolence, tradition, conformity, and security. We captured the feeling of the warm glow of participants via established items (Hartmann et al., 2017; van der Linden, 2018) that were adjusted previously to match our context (Iweala et al., 2019). We measured sustainability concerns related to the food sector via seven out of originally 14 items (Grunert et al., 2014).⁹ Our main data analysis is based on the hierarchical bayes (HB) estimation technique to estimate the average as well as individual part-worth utilities for each attribute and its corresponding levels and to identify the key determinants of consumer support for VSS-compliant products. Modelling of individual level parameters is based on each individual's choice behaviour in combination with the information from the entire sample. Each respondent's utilities are estimated in relation to the estimates of the average utilities of the sample. This process is repeated for thousands of iterations as the individual and average utilities update each other until the estimates stabilize. The estimation was performed via the software Sawtooth, which employs the HB Multinomial Logit model using a Monte Carlo Markov Chain algorithm (Sawtooth Software Inc, 2021). The method also allows us to use the individual part worth utilities in a subsequent OLS regression to investigate which consumer characteristics are associated with a higher valuation of the various attribute levels. For that purpose, the dimensionality of the aforementioned concepts was reduced via principal component analysis (Jolliffe and Cadima, 2016).

⁷ The data cleaning process involved identifying and removing participants, that (a) finished the questionnaire in less than 1/3 of the median completion time and (b) that showed monotone answering behavior in more than three statement batteries. This data cleaning strategy resulted in excluding 84 participants from the China sample and 94 participants from the UK sample.

⁸ From a production perspective, the use of pesticides and fertilizers in farming are relevant for environmental factors. By enlisting it as a separate standard, we intended to disentangle consumers' motivations that are based on personal benefits as opposed to public benefits.

⁹ Please see the Supplementary Material (S1) for a list of all items.

⁶ See official statistics <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20181204-1> and https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Comparative_price_levels_of_consumer_goods_and_services#Price_levels_for_food.2C_beverages.2C_tobacco.2C_clothing_and_footwear.

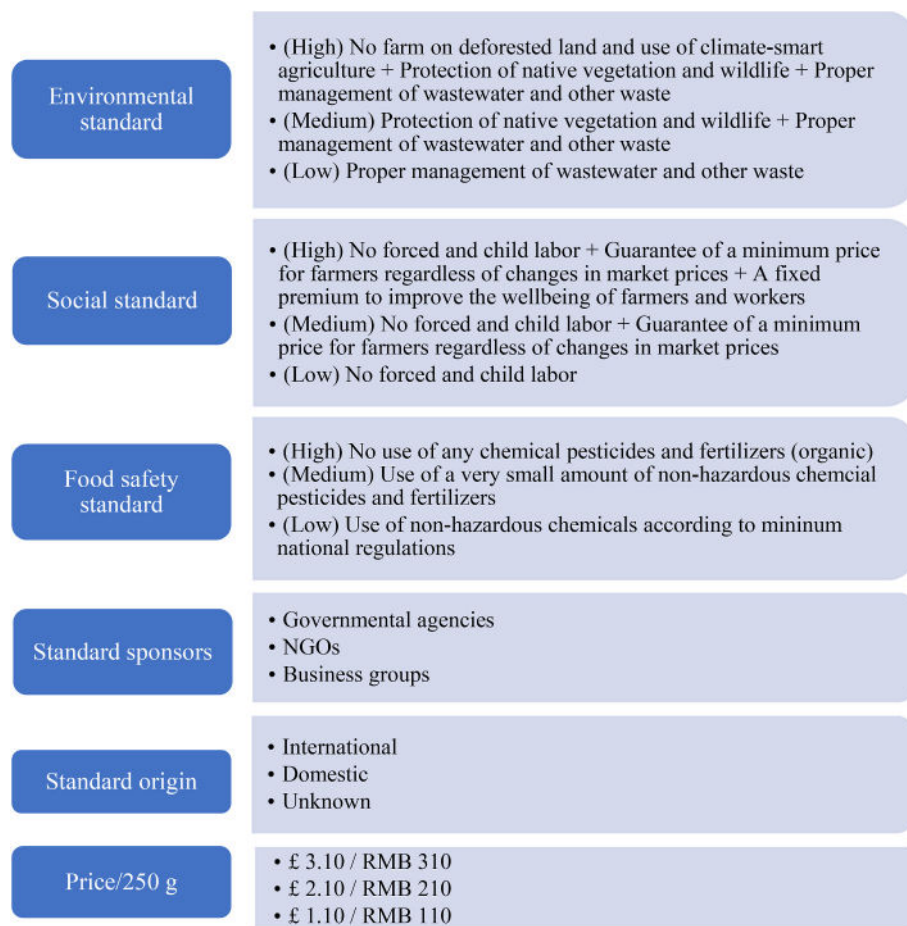


Fig. 1. Attributes used in the choice-based conjoint experiment

Note: Price levels were chosen based on the average market prices in each market.

In respect to the validity and reliability of our collected survey data, we assume the resulting measurements of participants' value system, warm glow and sustainability concerns to be valid because we employ scales that were tested previously in multiple settings (e.g., [Schwartz, 1992](#)). Moreover, these previous studies serve as the basis for comparison of results and, therefore, of the reliability of our measurements. On a very broad level, findings of the choice experiment can be compared to other choice experiments or market diffusion of comparable products; yet, findings are ideally be analyzed and interpreted within the very combination of attributes employed in our choice experiment. As the exact combination of attributes is non-existent, testing for this so-called criterion validity ([Mariel et al., 2021](#)) can be done approximately only via comparable studies.

Moreover, due to the hypothetical setting of our choice experiment, the measured consumer support of VSS features are stated preferences. We can, therefore, not ignore the possibility that the stated support for certain features is inflated due to hypothetical as well as social desirability bias. Both affect the external validity of participants' choices in experiments as they might differ from actual choices. While social desirability bias is often named as a factor contributing to the intention-behavior gap in sustainable consumption ([Lusk, 2018](#)), anonymous data collection without direct contact with an interviewer can reduce social desirable answering behavior ([Grimm, 2010](#)). To increase the internal validity of our experimental results, we also applied a "cheap talk script" by adding a sentence before the start of the experiment to remind respondents to make their choices as when they buy groceries for themselves or their families in a real store ([Tonsor and Shupp, 2011](#)).

Considering that our participants in both country samples chose price as the most important attribute, we believe that such biases are

unlikely to play a major role and are, therefore, unlikely to change the ensuing order of support for VSS attributes. The role of price in both samples, moreover, is in line with expectation-based validity that can, for instance, be manifested in economic theory. According to theory, the marginal utility of income is positive. As high prices reduce income more than low prices, participants should be less likely to choose them, resulting into a negative utility or a smaller utility gain as compared to low prices ([Mariel et al., 2021](#)). On sampling, we were only able to set quota for gender and age, in respect to education and income. Hence, our samples are less reflective of the given structure in the population, especially for China where the low-income group is underrepresented. We take this into account when interpreting the results of the choice experiment.

4. Results

This section presents the key findings of our choice experiment. We first assess H1-H5 by comparing the attributes valued by respondents in the two countries. To explain the results observed, we then examine which individual covariates (including values, sustainability concerns, and the warm glow feeling) serve as mediators.

4.1. Relative importance of attributes and their levels

Based on the HB estimation, we derived the average importance for each attribute as well as average utilities for each level. [Fig. 2](#) illustrates the average importance of our six employed attributes. It must be noted that our results are dependent on this combination of attributes. In this combination, price makes the biggest difference in both samples. At

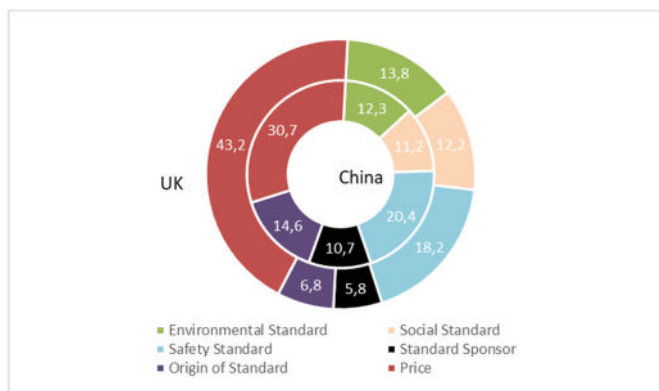


Fig. 2. Average importance (in %) of the six employed attributes.

43.2%, this relative importance is more pronounced in the UK than in China (30.7%). Among different standard types, it is the food safety standard that plays the biggest role for participants in both countries, followed by the environmental and social standard. Differences emerge regarding the origin and designer of standards. For Chinese consumers, the average importance of standard origin and standard sponsor is respectively at 14.6% and 10.7% – the former is even bigger than the importance of social and environmental standards. In the UK sample, these are the two least important attributes, contributing only 6.8% and 5.8% to the total utility of the imaginative tea product.

Figs. 3 and 4 illustrate the average utilities by level for each attribute.¹⁰ They capture the preference structure of the participants in each sample. The raw part-worth utilities are normalized so that their sum within an attribute equals to zero. For a more intuitive interpretation of results, we added the negative utility of the least preferred level to the utility of the other levels, so that the least valued level is 0.

The analysis of the China sample shows that participants derive the largest utility from the most stringent level of each VSS. The medium level of each standard results into moderate utility gains, which are more similar in size to the low as to the high level. Hence, the choices of participants are driven by the most stringent level of each standard. In respect of standard sponsor, participants derive the largest utility if the VSS is government-owned, followed by VSS set by businesses. VSS set by NGOs are the least preferred. In terms of the attribute origin, the level “international” induces the largest average utility, followed by the level “domestic”. It is preferred the least, if the origin is not indicated. All observed differences in the average utility of the respective levels are statistically significant, except for the attribute “price”. It is the medium price level that results into the largest average utility. Whereas the difference of this level is statistically different to the other two levels, the difference between the low and high price levels are not, suggesting that Chinese consumers are more willing to choose mid-range priced tea.

In the UK, the average utilities regarding the food safety levels are rather similar: respondents also derive the largest utility from the most stringent standard while the medium level only results into minor utility gains, with the low level preferred the least. Regarding the environmental and social standards, participants derive the largest utility from the most stringent VSS too; yet, the medium levels result into a positive average utility that is closer in size to the high as compared to the low level. UK participants pay little attention to standard sponsors as no level results into statistically significant increases in utility. In respect to standard origin, participants are more willing to choose VSS-compliant tea when the origin of standards is indicated, but it plays no role whether it is an international or domestic standard. The differences in the average utilities of the price levels are comparatively large and

significant. Participants derive on average most utility from the low price, to a slightly lesser extent from the medium price. They perceive the most expensive tea option as the least attractive – a result underlining the price sensitivity of British consumers.

In sum, the abovementioned findings provide general support to several hypotheses, and also show many nuances. The importance of high food safety standards for Chinese respondents supports H1, but British respondents also value food safety standards more than other standards. Similarly, while the attention to environmental and social standards by British respondents follow H2, Chinese respondents also show clear preferences for high environmental and social standards. On credibility of standards, our findings align with H3 as Chinese respondents show strong preferences for government-sponsored standards. However, unlike our expectation in H4, international standards receive more support than domestic standards in China – although the utilities derived from the two types of standards only have a small difference and are all significantly larger than the standards without indicting origin. Finally, as suggested by H5, British tea consumers are much more price sensitive than their counterparts in China where low-priced tea is even disadvantaged in the market.

4.2. Individual characteristics

We assessed the relationships between consumer characteristics and different standard features by using the individual part-worth utilities by attribute level as dependent variables in an OLS regression. Fig. 5 reports the regression coefficients of values, sustainability concerns and warm glow factor. Socio-demographics were included as covariates but are not reported here.¹¹

Starting with China, it becomes apparent that the food safety standard has most associations with the underlying value system of respondents. The value “security” has strong positive associations with the high food safety standard that turn negative for the medium and low levels. This relationship is flipped for “achievement”, “stimulation” and “tradition”, as those are negatively associated with the most stringent food safety standard but positively with the least stringent one.

Associations are fewer between participants’ value system and the social and environmental standards. The environmental standard appears like a slight mirror image of the food safety standard: “security” is negatively linked to the most stringent level but positively to the medium level. “Tradition” is positively linked to the low level but negatively to the medium level. Only participants’ sustainability concerns are positively linked to the high environmental standard. On the social standard, the stringent level is positively linked to “stimulation” whereas the low level links to “self-direction”. The more respondents experience the warm glow, the more they value the stringent social standard (10%-significance level) and the less they value the medium level. The warm glow is also positively linked to the high and medium price levels but negatively to the low level. Additionally, respondents who identify with the values of “hedonism”, “stimulation” and “benevolence” tend to choose high-priced tea products instead of low-priced ones.

Links between consumer characteristics and standard features follow a different pattern in the UK. The more respondents are concerned about sustainability issues in the food sector, the more they value high environmental, social and food safety standards. These positive links are also given for the medium level of the environmental and social standards. At the same time, the more participants are concerned, the less they value the low standard of all three dimensions.

Other links are standard specific and less consistent. The more participants experience the warm glow when doing good, the more they value the stringent environmental standard and the less the low environmental standard. The value system plays a minor role in our UK

¹⁰ We used multinomial logit regression as robustness check and found similar results (see Tables A2 and A3 in the appendix).

¹¹ Please see the online supplementary material for full regression tables.

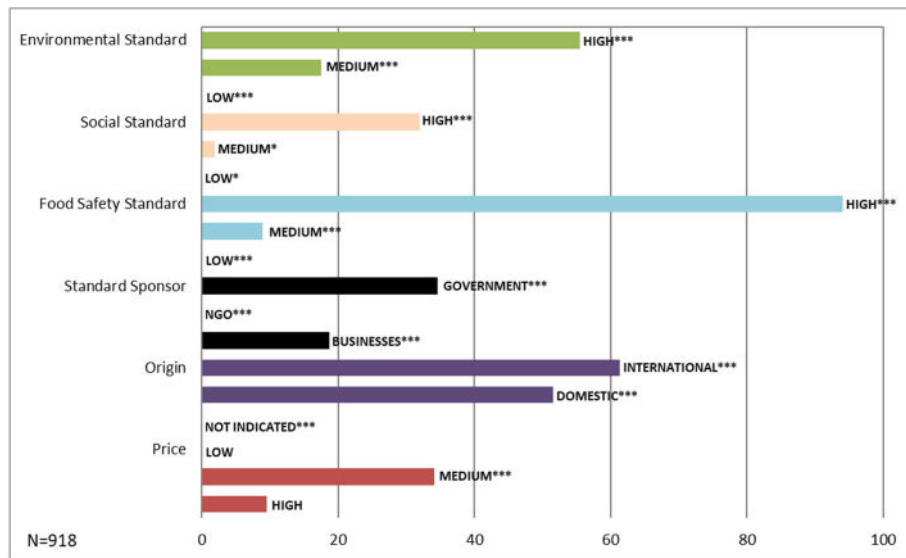


Fig. 3. Average Utilities by level in the China sample.

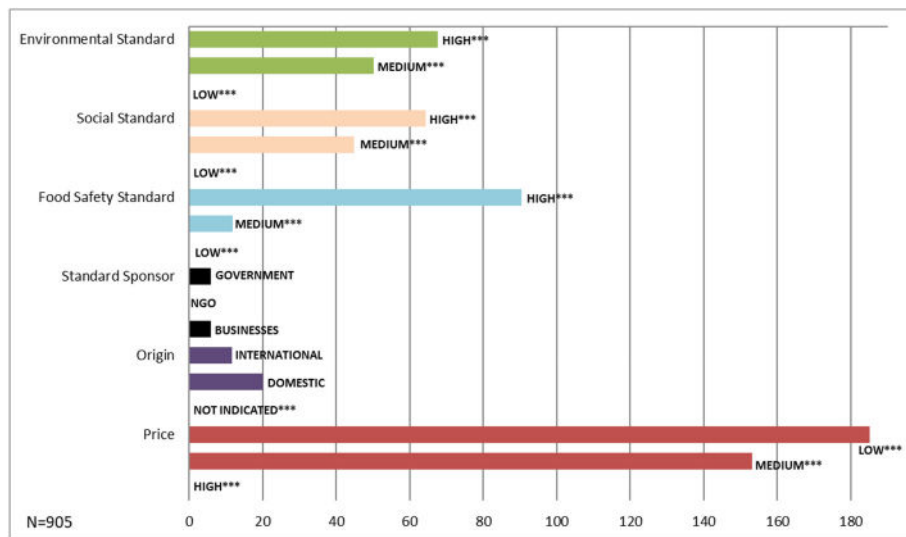


Fig. 4. Average Utilities by level in the UK sample.

sample. The medium social standard is positively associated with “stimulation” and its low level negatively. In turn, “benevolence” has a negative link with the medium level, but a positive one with the low social standard. “Stimulation” is also positively associated with the high food safety standard. Lastly, several links to consumers’ price preferences are given. “Stimulation” and “power” are positively associated with the high price level. The same holds for respondents with increased sustainability concerns. “Achievement” is linked negatively to the high price and positively to the low price.

5. Discussion & policy implications

While our results suggest similarities at a general level between consumers’ preferences for sustainable tea standards in China and the UK, several underlying distinctions emerge when analyzing attribute-levels and individual characteristics more in detail. Thus, our findings have important implications for the design and promotion of VSS in different market contexts.

5.1. Support for strong food safety standard due to private benefits

Independent of price, participants in both countries value the food safety standard most, precisely the most stringent level that prevents the use of chemical pesticides and fertilizers. This finding is in support of H1, demonstrating that food safety concern is a key driver of consumer support for sustainable tea standards in China. The link between the value “security” and the valuation of the stringent standard supports the idea that this preference is driven by personal health safety reasons in China (Thøgersen et al., 2015; Yin et al., 2010). “Security” is operationalized as a preference towards living in secure surroundings and avoiding dangers to personal safety. Hence, the association between “security” and the organic standard illustrates the strong intention of Chinese consumers to protect their personal safety. Emphasizing personal (health) benefits through links to security is, therefore, a useful strategy to promote organic food consumption.

Strong support for the food safety standard by consumers in the UK is rather surprising when comparing it to the relatively weaker support for the environmental and social standards. Previous studies in the UK also

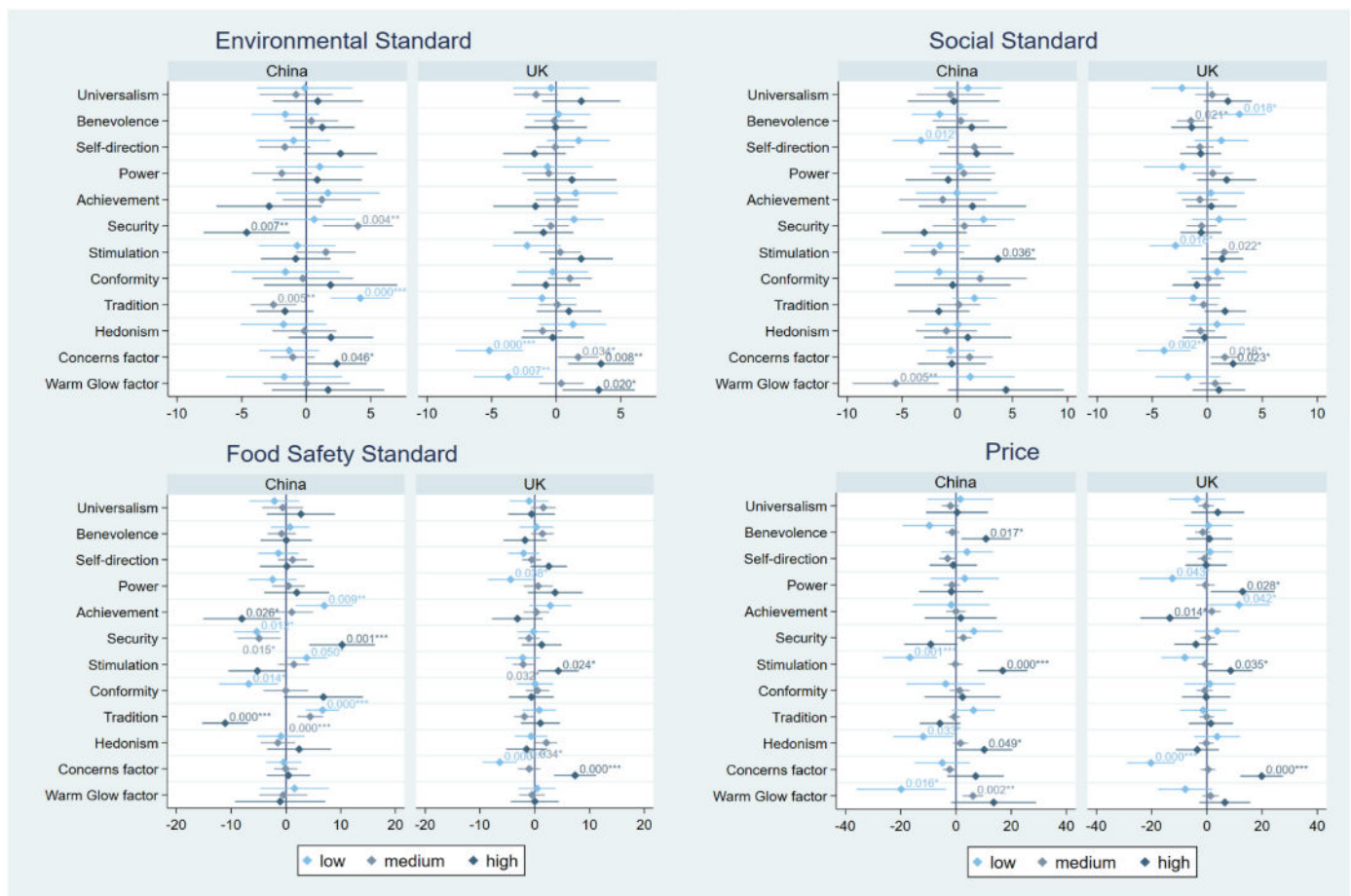


Fig. 5. OLS regression coefficients of consumer characteristics (dependent variable: individual part worth utilities by attribute level).

report that the preference for organic food is motivated by personal health reasons (Padel and Foster, 2005; Rana and Paul, 2017). However, we do not find a link between “security” and the food safety standard; instead, such support is driven by sustainability concerns in the UK.

Regardless of the underlying motivation, our findings highlight that consumers of both imported (UK) and domestically produced (China) tea perceive the use of chemical pesticides and fertilizers as a major food safety concern in the global tea industry, which indicates a policy problem. Data of official checks on pesticide residues by public food safety agencies often support this perception by recording non-compliance with regulations on maximum residue levels: in 2016 the EU found that 11.4% of the imported tea from China was non-compliant (European Food Safety Authority, 2018). From an environmental perspective, research has shown that a reduction of chemical pesticide and fertilizer application in tea production without a complete ban can largely mitigate land and water pollution, such as nutrient inputs to runoff water (Xie et al., 2019). Yet, for consumers being driven by personal health motives, a simple reduction of chemical pesticide and fertilizer application is not sufficient, as illustrated in the very low valuation of the medium and low levels of the food safety standard. Overall, our findings on the food safety standard suggest that framing standards as private opposed to public benefits can gather more support by consumers, but only if the standard is high. In combination with the smaller average importance of the environmental and social standards, our results align with studies showing that egoistic motives influence sustainable choices more than altruistic ones (Birch et al., 2018; Van Loo et al., 2021).

5.2. Potentials and limits of multi-tier standards

The preference structures for environmental and social standards are different between our two country samples. Only respondents in the UK show support for the medium level of the environmental and social standards. In combination with the average attribute importance in the UK, this finding supports partially H2.

To understand this result better, we refer to the level specifications as listed in Fig. 1. The high and medium levels of the environmental and social standards differ respectively in “no farm on deforested land and the use of climate-smart agriculture (e.g., agroforestry)” and in the “fixed premium for farmers”. Despite the lack of those aspects, British consumers still value these standards, implying a potential market for sustainable labeling schemes that offer visibly different grades of stringency to consumers. Such multi-tier labels are already in use in the fields of nutrition and animal welfare (e.g., the EU-wide compulsory system of labelling table eggs).¹² With regard to animal welfare, Weinrich and Spiller (2016) find that multi-tier labels can gain higher market shares as compared to binary labels. Our results in the UK point to a similar direction for environmental and social standards. In fact, our analysis on individual characteristics suggest that the high and medium levels of these standards can address consumers’ sustainability concerns regarding the food sector (see respective coefficients in the top two panels in Fig. 5).

This finding must be seen in combination with our results on price:

¹² See more details on these labels at [https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/652028/EPRS_BRI\(2020\)652028_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/652028/EPRS_BRI(2020)652028_EN.pdf) and <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31999L0074>.

British consumers value the low price the most whereas Chinese consumers value it the least. We, therefore, find strong evidence to support our H5 suggesting that consumers in the UK are highly price-sensitive. This result aligns with past studies in Northern markets that find price as the core attribute when consumers state their preferences for different product attributes (e. g., [Tait et al., 2019](#)). It is also in accordance with the aforementioned low household spending on food in the UK. Hence, when designing new standards for this market, relevant stakeholders need to target price-sensitive consumers who are nevertheless concerned about sustainability issues. Based on the support for medium-level standards in connection with sustainability concerns, multi-tier sustainability standards might be a feasible approach to increase the demand for sustainable products and minimize the aforementioned intention-behavior gap. Stringent standards often occur high costs and consequently lead to low market penetration, medium-level standards thus have the advantage to improve practices of more producers at lower costs while also appealing to more price-sensitive consumers.

That said, consumers in both samples show no preference for such multi-tier standards with regard to food safety. Sustainability concerns in the UK are distinctively not associated with the medium food safety standard. Considering that our definition of food safety is essentially an organic production standard, binary organic labels, such as the ones in place in the UK and China, are in line with consumer preferences.

Grades of stringency of VSS are perceived differently in China: the medium level of each standard derives significantly less utility than the high level. Multi-tier labels are therefore not expected to result into positive feedback from Chinese consumers, who appear to have higher demands in VSS. Consumers in China might be less familiar with sustainability standards in general and multi-tier standards in particular. This finding might also be related to the domestic production of tea: environmental and labor issues hit closer to home, so consumers care more about the social and environmental impacts of tea production – a phenomenon predicted by the theory of psychological distance ([Trobe and Liberman, 2010](#); [Barnes, 2019](#)). However, this reasoning does not align with the average importance of the social and environmental standards, which are not significantly higher in China than in the UK.

An alternative explanation is the cultural importance of tea in China, which supports the preference for the medium price level and associated consumer characteristics. The high and medium prices are linked to the feeling of the warm glow and the high price is linked to the value of “hedonism”, “stimulation” and “benevolence”. All of these concepts generate either a personal benefit or a benefit to someone close (i.e. “benevolence”). In other words, the choice of expensive or medium-priced tea is associated more with this derived pleasure than the choice of cheaper tea. This might be due the phenomenon of conspicuous consumption (namely choosing the expensive product to signal status), which has become increasingly prominent in China ([Jin et al., 2015](#); [Jenkins, 2016](#); [Knight et al., 2008](#)). It is likely to apply to tea because of the product’s ceremonial character and traditional role in China. Additionally, high prices signal product quality and might constitute another mechanism for Chinese consumers to identify safe food and reduce risk ([Kendall et al., 2019](#)). Therefore, in respect to the design of VSS in the tea sector, price is not necessarily a limiting factor.¹³ From a consumer’s perspective, a combination of mid-ranged prices and stringent standards might signal product quality and result into added personal value that go beyond the ordinary use-value of the product.

¹³ It must be noted that the lack of low-income households in our China sample might have biased the results on price. Regression results confirm a positive relationship between income and the high price level (see [Table S4](#) in the Online Supplementary Material).

5.3. Relevant design features and market-specific communication

The standard sponsors play a marginal role in the UK consumers’ evaluation of VSS. In this respect, our results contrast with previous research showing that consumers in the UK prefer VSS led by the government and NGOs as compared to businesses ([Darnall et al., 2018](#)). This difference may be explained by the fact that past studies considered standard sponsors in isolation, without investigating the trade-off among different attributes that consumers face when making their choices. When more relevant attributes are included in the choice situation, consumers are forced to weigh different attributes against each other. Participants in China value government-designed VSS the most but derive no utility if a given VSS scheme is designed by NGOs. In supporting our H3, this finding lines up with previous research showing strong support of Chinese citizens for public regulation in the food sector ([Fesenfeld et al., 2020](#); [Zhang et al., 2016](#)).

In terms of standard origin, British consumers do not differentiate between international or domestic schemes, but the origin should be indicated. In China, the average importance of the VSS origin is larger in comparison. International and domestic VSS are valued, with the former being preferred. Here we do not find evidence to support H4. In fact, this finding differs to a previous study on tea in China that shows the preference of consumers for the domestic organic tea standard over the US and Japanese counterparts ([Yang et al., 2021](#)). The difference might be attributed to our use of the term “international”, which has the connotation of “multilateral” and can therefore contribute to the resulting valuation by our Chinese participants. Hence, our finding suggests that Chinese consumers believe international standard-setting processes are more trustful than those occurred domestically. In combination with the valuation of the standard sponsors, our study shows that Chinese consumers prefer international standards set by governments, namely rules set through intergovernmental processes. Although there is no such VSS in the tea sector, this finding sheds light on the credibility of intergovernmental standards perceived by Chinese consumers.

Knowing what matters to consumers is not only important at the design stage of new VSS, but also at the marketing stage. Our findings suggest that it is not worthwhile to communicate all VSS specifications to consumers in the UK, only standard cause and price are crucial; in comparison, in China it is more valuable to communicate more information on sustainability labels and via government campaigns.

A nuanced and market-specific communication is also necessary if consumer characteristics are to be considered. The underlying abstract value system plays a minor role in determining consumer preferences in the UK. Instead, it is concrete sustainability concerns regarding the food sector that drive support for sustainability standards. The communication of specific sustainability issues related to a given food product is likely to be an effective strategy to increase the uptake of VSS in the UK. A more affective communication might be used when addressing environmental (UK) and social concerns (China) as in both countries the feeling of the warm glow is associated with the stringent level respectively.

Our study aims to develop a new agenda on consumer support for sustainability standards. Future studies need to further investigate consumers’ preferences for VSS in different subgroups of individual characteristics such as socio-demographics, value orientations, and even consumption habits. They might also explore potential mediators of consumers’ preferences such as trust in different types of information to identify hidden mechanisms through which consumer support for VSS are conditioned. Lastly, consumer research on VSS needs to extend its focus towards bulk commodities associated with significant sustainability impacts such as soy and palm oil.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.clrc.2022.100080>.

Appendix

Table 1

Socio - economic characteristics of sample (in %) compared to census data (in brackets)

	China		UK	
Gender				
Female	49	(49)	52	(51)
Male	51	(51)	48	(49)
Age groups				
16–24 years	14	(14)	13	(14)
25–39 years	30	(28)	24	(25)
40–64 years	48	(44)	41	(41)
65 years and above	8	(14)	22	(20)
Level of education				
Junior high school or below/No qualification	1		3	
High school or technical school/Lower secondary education	7		17	
Professional college/Upper secondary education	19		18	
Undergraduate/A-Level	66		23	
Master or PhD/University degree	6		39	
Income groups*				
Low income	6		27	
Middle income	21		32	
High-middle income	36		31	
High income	37		10	

*low income: < £18,999 (< RMB 90,000); middle income: £19,000–31,999 (RMB 90,000–125,999); high-middle income: £32,900–63,999 (RMB 126,000–198,999); high income: > £64,000 (> RMB 199,000).

Table A2

Multinomial Logit Result for the UK Sample

Number of Respondents	905		
Iteration	Chi-Square	Fit Statistic (RLH)	
1	1172,89076	0,36146	
2	1193,39891	0,36197	
3	1193,42810	0,36197	
4	1193,42810	0,36197	
Log-likelihood for this model	–7357,23892		
Log-likelihood for null model	–7953,95297		
Difference	596,71405		
Percent Certainty	7,50211		
Akaike Info Criterion	14740,47784		
Consistent Akaike Info Criterion	14843,01373		
Bayesian Information Criterion	14830,01373		
Adjusted Bayesian Info Criterion	14788,70262		
Chi-Square	1193,42810		
Relative Chi-Square	91,80216		
Variable	Effect	Std Error	t Ratio
ENV-LEV1	0,21576	0,03429	6,29155
ENV-LEV2	0,04493	0,02348	1,91381
ENV-LEV3	–0,26069	0,03394	–7,68155
SOC-LEV1	0,19227	0,03417	5,62610
SOC-LEV2	0,06658	0,02338	2,84811
SOC-LEV3	–0,25884	0,03381	–7,65526
SAF-LEV1	0,37156	0,03471	10,70378
SAF-LEV2	–0,13043	0,02363	–5,51874
SAF-LEV3	–0,24112	0,03392	–7,10911
SET-GOV	0,01142	0,02262	0,50481
SET-NGO	–0,01588	0,02256	–0,70385
SET-BUS	0,00446	0,02230	0,20012
ORI-INT	–0,00088	0,02256	–0,03916
ORI-DOM	0,05887	0,02248	2,61864

(continued on next page)

Table A2 (continued)

Number of Respondents	905		
ORI-NON	−0,05798	0,02252	−2,57510
PRI-LOW	0,55588	0,05374	10,34477
PRI-MED	0,15437	0,02462	6,26949
PRI-HIG	−0,71025	0,05399	−13,15493
NONE	−0,84504	0,03108	−27,18635

Table A3

Multinomial Logit Result for the China Sample

Number of Respondents	919		
Iteration	Chi-Square	Fit Statistic (RLH)	
1	3014,20252	0,40917	
2	3252,60558	0,41586	
3	3260,80043	0,41609	
4	3260,81966	0,41609	
5	3260,81966	0,41609	
Log-likelihood for this model	−6446,58772		
Log-likelihood for null model	−8076,99755		
Difference	1630,40983		
Percent Certainty	20,18584		
Akaike Info Criterion	12919,17544		
Consistent Akaike Info Criterion	13021,91089		
Bayesian Information Criterion	13008,91089		
Adjusted Bayesian Info Criterion	12967,59973		
Chi-Square	3260,81966		
Relative Chi-Square	250,83228		
Variable	Effect	Std Error	t Ratio
ENV-HIGH	0,20330	0,03342	6,08282
ENV-MED	−0,04886	0,02319	−2,10668
ENV-LOW	−0,15444	0,03355	−4,60300
SOC-HIGH	0,13247	0,03334	3,97326
SOC-MED	−0,05420	0,02329	−2,32737
SOC-LOW	−0,07827	0,03354	−2,33348
SAF-HIGH	0,40013	0,03356	11,92267
SAF-MED	−0,14911	0,02315	−6,44096
SAF-LOW	−0,25102	0,03376	−7,43546
GOV	0,08866	0,02206	4,01922
NGOs	−0,08850	0,02211	−4,00337
BUS	−0,00016	0,02200	−0,00734
INT	0,12816	0,02229	5,74908
NAT	0,07479	0,02204	3,39301
NOT	−0,20295	0,02237	−9,07314
HIGH	−0,14390	0,05244	−2,74413
MED	0,08465	0,02446	3,46092
LOW	0,05925	0,05250	1,12847
NONE	−1,77552	0,04387	−40,47409

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