Asymmetric information within the corporate social responsibility market: Impacts of signalling on consumer decisions

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1 Introduction

This thesis consists of three papers on the economics of corporate social responsibility (CSR). The papers study different aspects of CSR from the perspectives of consumers and firms. The first paper looks at how consumers value CSR and their willingness to pay for ethical attributes in a product. We include a CSR signal to examine how information on CSR affects individuals' preferences and willingness to pay. The second paper builds on the study in the first paper, however, we also include a CSR nudge and the Big Five Inventory on personality to examine the interaction between information and personality traits on the willingness to pay for CSR. Finally, in the third paper we look at how firms' CSR signal can influence their financial performance.

In the first paper we investigate consumers' willingness to pay for CSR and whether they are ethical consumers. We use incentivised discrete choice experiments and include two informational treatments on CSR, which we refer to as uninformed and informed. We designed the experiment incentivisation based on Induced Value Theory (Smith, 1976), using a random lottery mechanism and to the best of our knowledge this is a new development in discrete choice experiments. We find that participants are willing to pay more for ethical product attributes, regardless of whether they are informed or uninformed on CSR. However, participants who received the CSR signal exhibited decreasing price sensitivity and increasing willingness to pay for CSR.

The second paper extends the study in our first paper and again we use an incentivised discrete choice experiment. However, we also include an additional CSR informational treatment, which we refer to as a nudge and the Big Five Inventory on personality. Again we find that participants are willing to pay for CSR, however, increasing the availability of information on CSR does not result in increasing willingness to pay for all the ethical product attributes. Participants do not value all CSR practices equally and increasing the availability of information results in participants prioritising the CSR practices differently. The nudge is strongly associated with participants increasing their willingness to pay for good CSR practices on human rights. We also find the personality traits; open mindedness, extraversion and agreeableness to be associated with participants increasing willingness to pay for good CSR practices on human rights.

Finally, in the third paper we investigate the relationship between firms' corporate social performance (CSP) and corporate financial performance (CFP). From our first two papers we find that individuals are willing to pay for good CSR practices. This is important, as firms need individuals to be aware of their CSR and be willing to pay the marked up price, if their CSR signal is to be successful and yield increased CFP. The theory on the relationship between CFP and CSP suffers from both misspecification and misestimation problems. We deal with these issues directly and conclude that a generalised method-of-moments panel data estimator is the most efficient and unbiased estimator to use when analysing the CFP-CSP relationship. We find, that overall the relationship between CFP and CSP is insignificant and negative, suggesting that firms are unable to signal their CSR practices. However, the interaction between CSP and industry is important and we find that firms' ability to signal is industry dependent.

We use the EIRIS dataset in all three papers to standardise and quantify CSR into a measurable variable, which we refer to as CSP. Any limitations and gaps of the papers and ideas for future work are described within the papers themselves.

2 Do we really put our money where our mouth is? The ethics of aware consumers: An incentivised discrete choice experiment.

2.1 Abstract

We conducted a discrete choice laboratory experiment to quantify participants' preferences and willingness to pay (WTP) for different types of socially responsible product attributes. Social attributes, functional attributes and price changed in periods. We included two informational treatments on product related corporate social responsibility (CSR) practices; participants were either uninformed or informed. Participants had the opportunity to purchase a product, their decisions determined their final payment. Incentive aligned discrete choice experiments provide more information on the participants' propensity to consume ethically.

The CSR literature identifies a difference in individuals' attitudes and purchasing behaviours of products with social attributes, it is suggested that this discrepancy may be in part due to a lack of awareness. Our experiment controls for awareness and provides estimates of the participants' utility and WTP for the product attributes. The results show that participants' awareness regarding product related CSR affects both an individual's likelihood of purchasing and the utility and WTP associated with the social attributes of the product. We find distinctive segments of socially responsible individuals in both the informational treatments.

2.2 Introduction

Do individuals value ethical consumerism? Are individuals aware of firms' corporate social responsibility (CSR) practices and product related CSR and how does this influence their purchasing behaviours? CSR is not a new concept and yet there is no agreed standard on what it means. In the literature it is frequently mentioned that CSR is going beyond compliance (McWilliams et al., 2006; McWilliams and Siegel, 2001, 2000) and can include economic, legal, ethical and discretionary responsibilities (Carroll, 1979). We define CSR as the principles and practices a firm adopts to address its perceived societal obligations. Corporate social performance (CSP) is the measurement of CSR (Wood, 2010, 1991).

In the CSR literature it is suggested that consumers' perceptions of firms can be influenced by their CSR practices (Du et al., 2010; Luo and Bhattacharya, 2006; Sen et al., 2006; Bhattacharya and Sen, 2004; Sen and Bhattacharya, 2001). CSR can influence a firm's market share, financial performance and stakeholder satisfaction, more specifically consumer satisfaction, all of which can impact the competitive position of the firm (Stanaland et al., 2011; Du et al., 2010; Du et al., 2007; Bhattacharya and Sen, 2004).

Studies suggest that consumers who have favourable associations with a firm's CSR practices experience superior product evaluations (Brown and Dacin, 1997) and this enriched product evaluation positively influences consumers' purchasing behaviours and benefits the firm's financial performance and market value (Luo and Bhattacharya, 2006; Bhattacharya and Sen, 2004). The choice and focus of a firm's CSR practices influences consumer behaviour, not all policies and practices are perceived or valued equally. Consumers associate and respond more positively to

product driven CSR initiatives rather than process driven CSR initiatives (Gilley et al., 2000; Brown and Dacin, 1997). If consumers experience personal attachment with an initiative this can also enrich their perceptions of firms. Grau and Folse (2007) suggest that firms which practice and emphasise the locality of its CSR initiatives like local donations are more likely to positively enrich consumers' perceptions of the firms.

An attitude behaviour gap has been observed in the literature (Carrington et al., 2010; Auger and Devinney, 2007; Carrigan and Attalla, 2001). Whilst consumers indicate in questionnaires and polls that firms' CSR initiatives positively influence their decisions and more specifically purchasing behaviour, in practice consumers' purchases do not reflect this (Du et al., 2010, 2007; Devinney et al., 2006; Luo and Bhattacharya, 2006; Sen et al., 2006; Bhattacharya and Sen, 2004; Sen and Bhattacharya, 2001; Cooper et al., 1997). Recent studies suggest that consumers' awareness of CSR maybe low and it is this lack of awareness which prevents consumers purchasing socially responsible, ethical, products and services (Du et al., 2010, 2007; Devinney et al., 2006; Luo and Bhattacharya, 2006; Sen et al., 2006; Bhattacharya and Sen, 2004; Sen and Bhattacharya, 2001; Cooper et al., 1997). If this is the case the implication is that consumers are unable or have limited ability to correctly detect signals on firms' CSP.

The function of a signal is to inform stakeholders, CSP can signal and inform consumers about the quality of firms' CSR practices. The price of a product or service can also act as a signal, but more importantly a budget constraint which acts as a choice constraint when consumers' decide on which products to purchase (Völckner, 2008). We use incentivised discrete choice experiments to derive individuals' willingness to pay (WTP) for the different product attributes. The value (in terms of

utility) and the WTP individuals associate with the different product attributes can be determined from the choices participants make in the incentivised discrete choice experiments (Auger et al., 2010, 2008; Auger and Devinney, 2007; Gustafsson et al., 2007; Auger et al., 2003; Louviere et al., 2000; Louviere, 1988; Louviere and Woodworth, 1983). We test in two treatments whether the participants' behaviour differs when more information is provided; we refer to these informational treatments as informed and uninformed. The inclusion of these two treatments directly addresses the questions on whether consumers are really aware of CSR and do they actually value ethical product features.

Luo and Bhattacharya (2006) find that firms perceived favourably for CSR enjoy greater customer satisfaction and favourable market values. This finding suggests that firms can signal their CSP to stakeholders, more specifically consumers. Signalling theory studies tend to assume that quality is exogenously given and therefore quality is unmeasured (Arrow, 1973). It is assumed that a high quality product offers 'superiority' and 'reliability' over a low quality product (Boulding and Kirmani, 1993; Zeithaml, 1988). However, to empirically test signalling theory in the context of CSR we require proxies for the quality of the ethical product attributes being signalled. We use EIRIS to select ethical product attributes and quantify their associated signal.[1]

[1] We have used the Ethical Investment Research Information Services (EIRIS) database to provide guidance in selecting ethical product attributes and also in quantifying these ethical product features in terms of CSR signals. EIRIS is a global leader in environmental, social and governance (ESG) research and collects data on approximately 10,000 companies globally. EIRIS collects on approximately 100 ESG variables for more than 3,000 companies globally. EIRIS research data is collected from publically available information, company information, regulators and NGO reports. EIRIS data is used in the responsible investment services, including UK and international financial indices, for example the FTSE4Good index. Academics like Slager and Chapple (2016), Slager (2015) and Slager, Gond and Moon (2012) have also used the EIRIS dataset as a way to explore company and financial indices social performance.

To understand ethical consumerism there is a need to look deeper at how consumers identify with firms. Individuals' preferences for ethical consumerism is directly linked with firms' CSR initiatives. The manner in which individuals identify with firms is dependent on the utility individuals attribute to firms' products and the associated ethical product attributes. Not all products provide consumers with the same level of satisfaction. Consumers may differ in how they evaluate product attributes; some consumers may find attributes like eco-friendly production to be very important whilst others may be more interested in employees' working conditions. Some consumers may show little or no interest in the ethical attributes. We use an incentivised discrete choice experiment to understand how the participants appraise the product attributes - the product washing up liquid is used to measure individuals' preferences for ethical consumerism and this is done by calculating the utility and WTP associated with various product attributes and the corresponding attribute levels.[2] In this study we measure individuals' preferences and WTP for ethical consumerism rather than simply looking at individuals' beliefs on ethical consumerism and purchase intentions.

2.3 Ethical consumerism

In recent years news stories concerning numerous firms' ethical mismanagement have made the press. Primark has frequented the media; in 2008 it was reported that child

[2] We selected the product washing up liquid since it is a consumable (experience) good which the majority of consumers use on a daily basis. This product is therefore a good product to use when investigating consumers' propensity to consume ethically on a frequent basis. However, we acknowledge that how consumers value product attributes, specifically ethical attributes, in durable goods may differ. The comparison of consumable and durable goods, whilst interesting, was outside the scope of this research project.

labour was used in the supply chain (Urry, 2008), then in 2013 reports of forced labour and unsafe working conditions after 1000 workers perished in a Bangladesh factory fire (Dearden, 2014; Hollinger, 2014). Organisations like Amazon, Apple, Fiat and Starbucks made the headlines for UK corporation tax avoidance with an EU ruling recently finding the tax arrangements of Fiat and Starbucks to be illegal and socially irresponsible (Oliver et al., 2015). The concept of ethical consumerism has grown beyond environmentally friendly consumerism to include multiple socially responsible product attributes which embody a firm's CSR practices.

Whilst mixed results on firms' CSP and financial performance have been found, the common finding and message in the CSR literature is that a positive relationship exists between firms' CSP and financial performance (Orlitzky et al., 2011; Orlitzky, 2008; Margolis and Walsh, 2003; Orlitzky et al., 2003; Orlitzky, 2001). Stakeholders expect firms to be socially responsible and have a CSR agenda. The experience individuals have with firms and their products can significantly influence how individuals perceive firms' CSR practices. Firms' reputations can be linked with their CSR practices and therefore impact individuals' purchasing behaviours. How these CSR practices are signalled to and perceived by individuals can therefore impact firms' reputations and financial performance (Brammer and Millington, 2008; Brammer and Pavelin, 2006; McWilliams et al., 2006; Brammer and Millington, 2005; Milgrom and Roberts, 1986).

Brown and Dacin (1997) advise that an individual's ability to perceive a firm's corporate abilities and CSR practices can influence their perceptions of the firm's expertise, reputation and product attributes.[3] The degree to which individuals identify

[3] Brown and Dacin (1997) define corporate abilities as a company's ability to produce products and a company's perceived CSR capabilities. The authors detail that CSR capabilities can be both process and product related.

with firms' CSR practices will influence their attitudes and behaviours with regard to ethical consumerism (Grau and Folse, 2007; Gilley et al., 2000; Brown and Dacin, 1997). Bhattacharya & Sen (2004, 2003) theorise that a good corporate reputation will result in individuals experiencing more favourable attitudes towards firms' CSR initiatives. This is supported by the findings of Ahearne, Bhattacharya & Gruen (2005), Luo and Bhattacharya (2006) which indicate that individuals who positively identify with firms purchase more of the firms' products and positively endorse the firms.

A recurrent theme in the CSR literature is that firms will be rewarded financially if individuals (consumers) positively identify with the firms' CSR practices. Firms will be rewarded through positive behavioural outcomes: Increased purchase intentions, loyalty, and good reputations (Stanaland et al., 2011; Du et al., 2010, 2007; Sen et al., 2006; Bhattacharya and Sen, 2004; Sen and Bhattacharya, 2001; Lafferty and Goldsmith, 1999; Murray and Vogel, 1997). However, there is doubt over whether the favourable attitudes individuals indicate they have with regard to CSR and ethical consumerism is actually reflected in their purchasing behaviours.

2.4 Attitude behaviour gap

Individuals' awareness of CSR has come into question as has the importance of ethical consumerism. Studies indicate that whilst consumers may indicate in polls and questionnaires that they favour and will reward socially responsible behaviour, the reality is that consumer awareness of firms' CSR initiatives is generally low (Du et al., 2010, 2007; Devinney et al., 2006; Sen et al., 2006; Bhattacharya and Sen, 2004; Auger et al., 2003). Consequently, consumers' actual purchasing behaviours may not

reflect the attitudes they indicate in polls and questionnaires and their ethical consumerism may be lacking.

An attitude behaviour gap in relation to ethical consumerism could be a direct result of consumers lacking awareness about CSR and ethical product features. Previous research speculates that asymmetric information in the market regarding firms' CSR practices and product related CSR is problematic.[4] A lack of awareness by individuals is a contributing factor to the attitude behaviour gap (Du et al., 2010, 2007; Luo and Bhattacharya, 2006; Sen et al., 2006; Bhattacharya and Sen, 2004; Sen and Bhattacharya, 2001). According to the seminal work of Akerlof (1970) asymmetric information concerning a product in the market will result in no demand for the product and no price at which trade will occur since the buyers will not be able to determine the quality of the products until after purchasing them. Whilst we do not claim that asymmetric information regarding ethical consumerism will result in no demand, it does help understand the attitude behaviour gap identified in the CSR literature. An additional consideration is previous studies have heavily utilised questionnaires and polls to measure consumers' preferences for ethical consumerism (Du et al., 2010, 2007; Sen et al., 2006; Bhattacharya and Sen, 2004). These methodologies do not require individuals to trade-off various product features (including ethical product features) therefore individuals' preferences for ethical consumerism may be overstated and an unrealistic representation of the purchasing behaviours they actually display when they consume.

Dealing with the awareness issue first - asymmetric information concerning firms' CSR practices and related product attributes is problematic in the market. Applying

[4] We take asymmetric information to mean not all parties in a transaction have the same information on a company's CSR. Therefore, consumers are unlikely to be as fully informed about a companies' CSR practices in comparison to the companies and therefore consumers can be said to lack awareness about a companies' CSR practices.

the work of Akerlof (1970) to ethical consumerism - if individuals cannot differentiate between the varying quality of firms' CSR practices and related product attributes there is an incentive for sellers to be dishonest and 'greenwash' their products (Chatterji and Richman, 2008), which in turn could lead to no demand for ethical consumerism and individuals attributing no value to the ethical attributes of a product.[5]

In this study we control for asymmetric information. Participants in the experiment are allocated equally to the two informational treatments, the uninformed and the informed. All participants in the experiment are presented with identical choice sets, however, the information provided to the participants about the product attributes differs. The participants allocated to the informed treatment are provided with extra information on all the product attributes and in particular the CSR attributes are explained. Conversely, the participants allocated to the uninformed treatment are only provided additional information on the functional attributes e.g. colour and the CSR attributes are not explained to the participants, even though they have to make decisions on these attributes in the choice sets presented to them.[6] Following the work of Akerlof (1970) the uninformed individuals will value and trade off the price and functional washing up liquid attributes in their purchasing decisions, the ethical attributes will be insignificant in their valuation and purchasing decisions. Without signalling in place to help individuals differentiate between the varying qualities of

[5] The term 'greenwashing' was coined by Jay Westerveld in 1986 in an essay he published in his university's newspaper (The Global Fool, 2015).

[6] In section 2.10 Appendix B all the information provided to the participants is included. All participants received a booklet containing instructions and the choice sets. The instructions were also explained to participants in full verbally before the experiment commenced. The participants allocated to the informed informational treatment, which can be regarded as the participants with high awareness of CSR, received the sheet titled Information Sheet A. The participants allocated to the uninformed informational treatment, which can be regarded as the participants with low awareness of CSR, received the sheet titled Information Sheet B.

firms' CSP individuals' purchasing behaviours will not reflect positively on ethical attributes.

Hypothesis 1: Consumers value ethical product attributes and are willing to pay a higher price for products with a higher quality of associated CSP.

The seminal work of Spence (1974, 1973) on signalling theory details how signalling can be used to overcome asymmetric information in the market. Spence argues that signalling can result in a signalling equilibrium, which separates the varying product qualities into their respective groups. In terms of ethical consumerism, if individuals are informed about the quality of CSR and the ethical attributes associated with a product via a market signal, the 'greenwashing' problem is removed. Consequently, if individuals value ethical consumerism the attitude behaviour gap should cease to exist.

Recent studies suggest that individuals indicate in polls and questionnaires that they are positively influenced by CSR initiatives and value socially responsible products however, in practice their purchasing behaviours do not reflect these claims suggesting that individuals have low awareness and do not detect the signals (Du et al., 2010, 2007; Luo and Bhattacharya, 2006; Sen et al., 2006; Bhattacharya and Sen, 2004; Sen and Bhattacharya, 2001). The firms' policies and practices influence individuals with individuals responding more positively to product driven CSR initiatives rather than process driven initiatives (Gilley et al., 2000; Brown and Dacin, 1997). Therefore, if individuals do not detect the signals and or the signals are not about product related CSR, individuals' purchasing behaviours may not demonstrate

ethical consumerism despite indicating that they positively value ethical consumerism.

> *Hypothesis 2: Informed consumers have a higher awareness about the ethical attributes of the product and will therefore be willing to pay more for a product with a higher quality of associated CSP compared to uninformed consumers which have a lower awareness about the ethical attributes of the product.*

However, it is important to note that the attitude behaviour gap described in the CSR literature could be a result of using inappropriate data collection instruments to record attitudes and intentions rather than actual behaviours. To quote LaPiere (1934)

> *'It is impossible to make direct comparison between the reactions secured through questionnaires and from actual experience (p.29).'*

To understand the attitude behaviour gap and the implications for research methodology it is useful to draw on the social psychology literature. Fishbein (1967) identified that an individual's beliefs consist of two types of beliefs. These being the individual's personal beliefs and also the individual's beliefs on what society expects (accepted social norms). From this the theory of reasoned action emerged in that an individual's beliefs (which comprise of the individual's attitudes and social norms) influence the individual's intentions which in turn influence the individual's behaviours (Ajzen and Fishbein, 1980; Fishbein and Ajzen, 1975). However, whilst a relationship exists between individuals' beliefs, intentions and behaviours, Ajzen and Fishbein (1980) suggest that only a small amount of individuals' salient beliefs are reflected in their behaviours. This idea is supported by Glac (2009) who suggests that

when individuals are presented with information they organise them into decision frames and then use the decision frames to make decisions that maximise their preferences, however, not all available information, decision frames, will be acted upon. Linking this to the attitude behaviour gap identified in ethical consumerism, individuals may indicate preferences for products with ethical attributes in questionnaires because they actually hold positive individual beliefs with respect to CSR and ethical consumerism. Alternatively individuals may indicate positive preferences for CSR and ethical consumerism as they believe this is what society believes (Ajzen and Fishbein, 1980; Fishbein and Ajzen, 1975) and therefore feel pressure to conform and indicate this as their belief too (Zizzo, 2010; Cialdini, 1999; Asch, 1956). If the latter is true this would certainly explain the attitude behaviour gap identified in ethical consumerism, since to purchase and consume ethically is a voluntary individual action. This combined with only a few beliefs influencing behaviours would explain why functional attributes and price of a product are more likely to influence purchasing behaviours with CSR related attributes becoming important when the functional attributes and price do not need to be traded off in relation to CSR.

Recently in the literature a small number of researchers have used discrete choice experiments to elicit individuals' preferences for ethical consumerism. Auger et al (2010), Auger et al (2008) and Auger & Devinney (2007) compared the relationship between data collected using two different methods: Ethical disposition survey (EDS) based on Market & Opinion Research International (MORI) survey (Ipsos MORI); stated choice experiment. They found a lack of relationship between the two instruments data supporting the attitude-behaviour gap. The choice experiments involved trade-offs of traditional (tangible) and social (intangible) attributes and

corresponding levels. Auger et al (2008) conclude that individuals will not sacrifice traditional features specifically product functionality for social features.

The use of discrete choice experiments is a positive advancement in trying to understand ethical consumerism. Aligning participants' decisions to their payment allows us to address the speculation on an attitude behaviour gap existing in ethical consumerism and answer the questions on whether consumers value ethical attributes and the role information plays in this valuation. If we rely on the data collected through surveys, questionnaires and polls we risk overstating the valuation individuals place on ethical attributes when purchasing goods since individuals are not required to trade-off ethical attributes against functional attributes such as price, quality (Auger et al., 2008; Auger and Devinney, 2007; Auger et al., 2003). Data collection methods like surveys do not motivate or incentivise individuals to state their innate preferences and the individuals do not experience any negative consequences from stating preferences which differ from those displayed in their behaviours.

However, it is important to realise that whilst stated preference discrete choice experiments require individuals to trade-off product attributes and price is included as a product attribute since substitute consumable goods are not always priced identically. If the discrete choice experiments are not incentivised appropriately they too can be criticised on the grounds of hypothetical bias. The trade-offs that occur in the discrete choice experiments disclose individuals' stated preferences for attributes which result in the product utility, product attributes and levels utilities, product attributes and corresponding levels WTP being calculated. If the discrete choice experiments are not incentivised appropriately then it too can be argued that the product utility and derived WTP for attributes are inflated. The discrete choice experiments referenced above provided the participants with a fixed participation

payment. Whilst the fixed payment acted as an incentive to recruit participants, the payment did not incentivise these individuals to make product choices honestly and trade-off the product attributes and levels in line with their preferences. Consequently, the attitude behaviour gap identified in these papers may be due to social pressure influencing choices (Zizzo, 2010; Cialdini, 1999; Asch, 1956), inappropriate methodology and lack of incentivisation.

Many questions arise from this. Do individuals value ethical consumerism? Is asymmetric information and a lack of awareness problematic and what is the impact on individuals' purchasing behaviours? Do informational signals on CSR increase utility experienced from ethical consumerism and increase WTP for product related ethical attributes? Or rather is this attitude behaviour gap a reflection of flawed methodology? In the following sections an incentivised stated preference discrete choice experiment will be detailed which addresses the hypothetical bias criticisms detailed in this section. The analysis of the incentivised discrete choice experiment will allow for the product utility and WTP for product attributes and levels to be analysed to determine whether individuals value ethical consumerism and whether an attitude behaviour gap really exists.

2.5 Method

In this chapter we investigate how differently informed subject groups trade-off product attributes in an incentivised stated preference discrete choice experiment. The attributes can be classified as price, functional attributes and ethical (social) attributes. In the discrete choice experiment individuals trade-off washing up liquid attributes and their associated levels to choose whether to purchase, or not to purchase washing

up liquid. We selected washing up liquid as the product for our experiment because it is a household good and a product which the participants will be familiar with and repeatedly purchase. The discrete choice experiment is an incentivised stated preference laboratory experiment conducted at the Centre for Research in the Behavioural Sciences (CRIBS), University of Nottingham (UK).

2.5.1 Discrete choice experiment design

Attributes were initially selected from a review of the EIRIS dataset and a review of the CSR and business ethics literature. EIRIS compile data on approximately 3,500 firms globally on approximately 100 environmental, social and governance (ESG) practices and is a leading provider of ESG research. Market research was undertaken to select realistic attribute levels in terms of washing up liquid readily available to individuals. Focus groups confirmed the adequacy of the washing up liquid attributes and levels included in the design and that individuals were familiar with and consumed washing up liquid frequently. Finally, a pilot study demonstrated that individuals understood the choice set context and the incentivisation mechanism, and that a discrete choice experiment consisting of thirty choice sets and socio-demographic questionnaires was handled without difficulty.

Attribute		Levels
X_1	Price	£0.50, £1.00, £1.50, £2.00, £2.50
X_2	Colour	green, yellow, other
X_3	Fragrance	citrus, floral, other
X_4	Antibacterial Formulation	yes, no
X_5	Eco-friendly Production	yes, no
X_6	Health & Safety	little or no evidence, some evidence, clear evidence
X_7	Human Rights	low risk, medium risk, high risk
X_8	Equal Opportunities & Diversity	little or no evidence, some evidence, clear evidence
X_9	Community & Charity Involvement	little or no evidence, some evidence, clear evidence
X_{10}	Environmental Impact	little or no evidence, some evidence, clear evidence

Table 2.1: Washing up liquid attributes and levels used in the discrete choice experiment

We constructed the discrete choice experiment using a *D-optimality* algorithm to achieve a *D-efficient* design with a low D_p*-error* (ChoiceMetrics, 2012) on the basis that a full factorial design has 43,740 combinations of attribute levels and that a choice set with three unlabelled alternatives (washing up liquid: A, B, C) and a baseline alternative (referred to as the no purchase option) has in excess of 83 trillion combinations of attribute levels.[7] Clearly using the attributes and levels detailed in table 2.1 means the use of a full factorial design would be unrealistic as individuals would not be able to complete the discrete choice experiment. However, prior parameter information is available from EIRIS, literature reviews, market research and focus groups, and this prior parameter information is used to optimise the *D-efficient* design and minimise the D_p*-error*. An optimised *D-efficient design* outperforms a full factorial orthogonal design (ChoiceMetrics, 2012) and is the

[7] Refer to table 2.1 a bottle of washing up liquid has one attribute with five levels, seven attributes with three levels, and two attributes with two levels: $5^1x3^7x2^2$=43,740 attribute level combinations. Each choice set has four products of which three of the products have one attribute with five levels, seven attributes with three levels, and two attributes with two levels, the fourth product has zero attributes (no purchase option): $5^{3x1}x3^{3x7}x2^{3x2}x10^0$=83,682,825,624,000 attribute level combinations.

preferred design. The discrete choice experiment design used in the experiment has a low D_p-*error* of 0.0747.

Choice Set 4

	Product A	Product B	Product C
Health & Safety Involvement	Clear evidence of this	Some evidence of this	Some evidence of this
Human Rights	Low risk	Medium risk	Medium risk
Environmental Impact	Clear evidence of this	Some evidence of this	Little or no evidence of this
Equal Opportunities & Diversity	Little or no evidence of this	Some evidence of this	Some evidence of this
Community & Charity Involvement	Little or no evidence of this	Some evidence of this	Some evidence of this
Price	£2.50	£1.50	£0.50
Colour	Yellow	Yellow	Other
Fragrance	Other	Floral	Citrus
Antibacterial Formulation	Yes	Yes	No
Ecologically Friendly Production	Yes	No	Yes

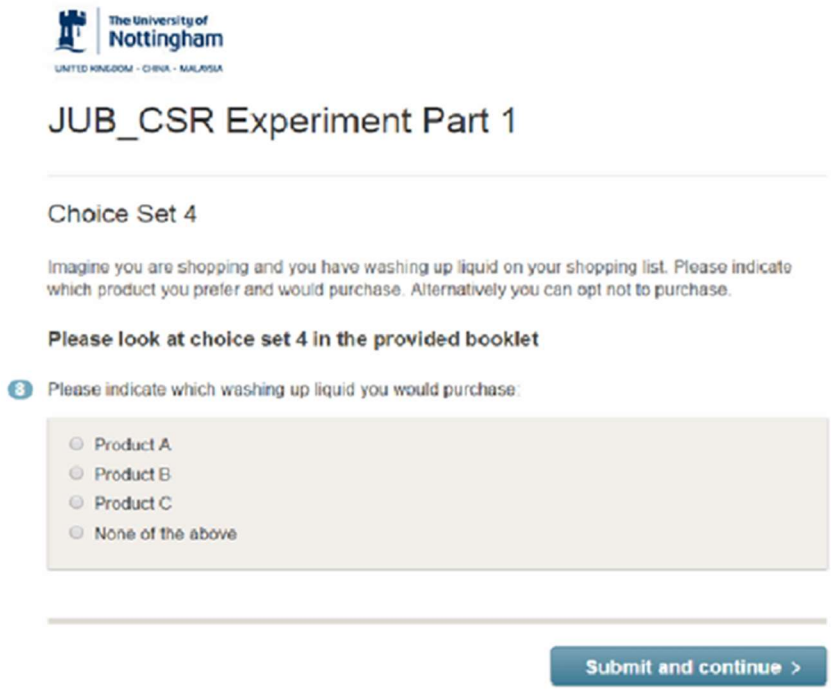


Figure 2.1: A sample choice set from the discrete choice experiment

In the experiment we have two informational treatments referred to as uninformed and informed. Participants were divided into two equal groups. The information provided to the participants can be found in section 2.10 Appendix B. The uninformed participants, which can be regarded as the participants with low awareness of CSR, received the sheet titled Information Sheet B. Even though they had to make decisions on all ten product attributes they were only provided with additional information on the price and functional features (e.g. colour, fragrance) to control for individuals' awareness regarding CSR and ethical consumerism. Conversely the participants in the group with the informed treatment, which can be regarded as the participants with high awareness of CSR, received the sheet titled Information Sheet A. The informed participants also had to make decisions on all ten product attributes, however, they were provided with full information on all the product attributes and levels detailed in table 2.1. This was to control for the CSR signal about the CSR practices and attributes integral to the washing up liquid and to allow the impact of the CSR on ethical consumerism to be quantified in terms of utility and WTP.

2.5.2 Random utility theory

Random utility theory developed by Thurstone (1927), Marschak (1960) and McFadden (1973) provides the theoretical foundation for discrete choice modelling. Let U_{in} be the utility individual *n* achieves from purchasing washing up liquid *i* defined as:

$$U_{in} = V_{in} + \varepsilon_{in} \tag{2.1}$$

where the utility comprises of both a systematic component V_{in} (which is a construct of washing up liquid *i* attributes and levels), and a random error ε_{in}.

Louviere (1983), Louviere and Hensher (1983) and Louviere and Woodworth (1983) developed discrete choice models to study how individuals use functional measurement to choose between multiple products. If a choice set consists of products and some or all of these products have multiple attributes and levels, the individual can make a choice based on competing alternative products.

In each of the thirty choice tasks the individual is required to choose between four different alternatives *i*.[8] The utility individual *n* receives from alternative *i* in choice set *s* is defined by the systematic component (V_{ni}) and a random error (ε_{ni}) (Train, 2009; Louviere et al., 2000; Ben-Akiva and Lerman, 1985). In the discrete choice experiment the systematic component of the utility is defined by:

$$V_{ni} = -\beta_{1ni}X_{1nis} + \beta_{2ni}X_{2nis} + \beta_{3ni}X_{3nis} + \beta_{4ni}X_{4ni} + \beta_{5ni}X_{5nis} + \beta_{6n}X_{6nis} - \beta_{7ni}X_{7nis} + \beta_{8ni}X_{8nis} + \beta_{9ni}X_{9nis} + \beta_{10ni}X_{10nis}$$

when

$$i = A, B, C, No\ purchase \tag{2.2}$$

It is assumed the individual makes the decision so that his or her utility is maximised. The attributes and corresponding levels included within the selected product can be compared to the competing alternatives offered to the individual. The differences in

[8] The choice sets were made available to participants in a printed booklet (in appendix B) and responses collected online using Bristol Online Surveys.

the attributes and levels indicate the trade-offs the individual made between the attributes and the corresponding levels when selecting one of the products from the choice set. When price is an attribute in the choice set, the utilities derived from trading-off the different product attributes can be used to calculate the WTP. Following Ben-Akiva & Lerman (1985) in a choice set *s* with *i* alternatives individual *n* will choose washing up liquid *A* over *i* alternatives if the utility individual *n* experiences from washing up liquid *A* is greater than the utility the *i* alternatives can provide to individual *n*:

$$P_n(A) = \Pr(U_{nA} \geq U_{ni}, \forall i \in s_n)$$

when

$$i = A, B, C, No\ purchase \tag{2.3}$$

In the discrete choice experiment design, a choice set consists of three unlabelled alternatives (products *A, B* and *C*) and a baseline alternative which is the no purchase option (product *NP*). The utility individual *n* receives from alternative *i* in choice set *s* is defined by the systematic component (V_{ni}) and a random error (ε_{ni}) (Train, 2009; Louviere et al., 2000; Ben-Akiva and Lerman, 1985). Based on table 2.1 and the prior knowledge obtained on the washing up liquid parameters the utility functions of the washing up liquid alternatives (*i*) in a choice set (*s*) are defined by:

$$V_{ni} = -\beta_{1ni}X_{1nis} + \beta_{2ni}X_{2nis} + \beta_{3ni}X_{3nis} + \beta_{4ni}X_{4nis} + \beta_{5ni}X_{5nis} + \beta_{6n}\,X_{6nis} - \beta_{7ni}X_{7ni} + \beta_{8ni}X_{8nis} + \beta_{9ni}X_{9n} + \beta_{10ni}X_{10nis}$$

when

$$i = A, B, C, No\ purchase \tag{2.4}$$

If individual *n* were to choose washing up liquid *A,* from the choice set *s,* then the utility individual *n* experiences from washing up liquid *A* is greater than the utility the washing up liquid *B*, washing up liquid *C* and the no purchase option can provide to individual *n*:

$$U_n = U_n(A, B, C, NP) = U_n(1,\ 0,\ 0,\ 0) \tag{2.5}$$

only if

$$U_{nA} > U_{ni}\ \forall\ i \neq A\ \in \{A, B, C, NP\} \tag{2.6}$$

2.5.3 Econometrics of discrete choice experiments

In discrete choice modelling the multinomial logit (MNL) model is often used to design and model the expected utilities. The expected utility comprises of a systematic component (v_{ni}) and a random error (ε_{ni}), as detailed in equation 2.1. When individual n chooses alternative A from a choice set s_n containing i alternatives the MNL is defined by:

$$P_n(A) = \frac{e^{V_{nA}}}{\sum_{i \in s_n} e^{V_{ni}}}$$

when

$$i = A, B, C, No\ purchase \tag{2.7}$$

when the error terms are assumed to be identically and independently distributed (Ben-Akiva and Lerman, 1985) and the coefficients (β) are assumed to be fixed for all the selected individuals. The decision the individual makes is also assumed to be independent of irrelevant alternatives, (IIA property), (Train, 2009).
McFadden (1973) proposed an extension to the MNL model known as the conditional logit model in which the expected utilities were calculated in terms of all the alternatives i available to individuals. Using conditional logit the systematic utility is defined by:

$$V_{ni} = \beta X'_{ni} + \gamma Z'_{ni} \tag{2.8}$$

where this represents the systematic utility that individual *n* receives from alternative *i* when X_i represents a vector of the ith alternative attributes and Z_i represents a vector of the attributes of *i* alternatives in choice set *s*. Assuming the error terms are independently and identically distributed and that they follow a Gumbel distribution with location parameter η and scale parameter $\mu > 0$ the conditional logit model can be defined by:

$$P_n(A) = \frac{e^{\mu V_{nA}}}{\sum_{i \in s_n} e^{\mu V_{ni}}}$$

when

$$i = A, B, C, No\ purchase \tag{2.9}$$

and WTP for the attributes and their respective levels (*k*) is defined by:

$$E(WTP^K) = -\frac{E(\beta^K)}{\beta^{Price}} \tag{2.10}$$

where *k* represents the attribute level. We use the nlcom command in Stata to calculate the WTP (StataCorp, 2013a; WHO, 2012; Hole, 2007a).

After each conditional logit model is estimated we will check that the model is appropriately specified using a form of the Hausman specification test, the seemingly unrelated estimation (SUEST) test (StataCorp, 2013a). If the specification test finds evidence that the conditional logit model is incorrectly specified, the mixed logit

model should be considered. The mixed logit model can approximate the conditional logit model since it is a random utility model however, it extends the conditional logit model by relaxing the assumptions. Error terms are not required to be identically and independently distributed and individuals' decisions are not assumed to be independent of irrelevant alternatives. The coefficients (β) are treated as random, therefore allowing individuals to display preference heterogeneity (Train, 2009; Hole, 2008; Hole, 2007b).

2.5.4 Incentivisation

Previously discrete choice experiments that have been used to elicit individuals' preferences and WTP for ethical consumerism have incentivised individuals to participate in the experiments by paying them a fixed participation fee (Auger et al., 2010, 2008; Auger and Devinney, 2007). A criticism of these experiments is that they suffer from hypothetical bias and the calculated product utility and derived WTP for attributes may be inflated.

For the individuals to be incentivised to choose honestly in the choice tasks the incentivisation in the experiment design needs to be task related (Bardsley et al., 2010; Grether and Plott, 1979) and follow the principles of Smith (1976) Induced Value Theory. If the incentivisation is designed in a manner which satisfies the three conditions monotonicity, salience and dominance, then an individual's characteristics can be controlled for in an experiment (Friedman and Sunder, 1994; Smith, 1976). To incentivise individuals to choose honestly in all thirty of the choice tasks the final payoff individuals receive in the discrete choice experiment is based on a random lottery mechanism. Individuals were provided with a fund of £18.00 and they had to

complete thirty choice tasks. When all thirty choice tasks were completed one of the choice tasks was randomly selected and the choice made in this task determined the individuals' final payoffs. If individuals had decided to purchase washing up liquid in the randomly selected choice task the price of the washing up liquid was deducted from the fund of £18.00 and the individuals were given the washing up liquid they had bought in the choice task plus the remainder of their fund.

2.5.5 Discrete choice experiment implementation

The experiment was conducted in 2014 at the Centre for Research in the Behavioural Sciences (CRIBS), University of Nottingham. The experiment was organised and run by research assistants, who were not informed about the research questions. 100 students from the University of Nottingham were recruited as participants through the Ben Greiner's Online Recruitment System for Economic Experiments (Greiner, 2015). The experiment was completed online with 100% completion rate and the duration of the experiment was approximately one hour.

Upon arrival participants were lead into the laboratory and allocated to private workstations. The instructions were distributed and read aloud. After the research assistants asked control questions the experiment began. Participants had to complete thirty choice sets and upon completion a single choice set was randomly selected to determine participants' final payoffs. Thereafter a questionnaire including socio-demographics was distributed and whilst participants completed the questionnaire their final payoffs were calculated and paid upon completion of the questionnaire.[9] The inclusion of socio-demographics is of particular interest as research by Auger et

[9] The questionnaire is included in section 2.10 Appendix B.

al (2010) found some evidence using a discrete choice experiment in a multi-country study to support their hypothesis that ethical product attributes have a larger impact on consumers from developed economies compared to consumers from emerging economies. From this it is reasonable to suggest that nationality will interact and influence individuals' purchasing decisions.

2.6 Results

In this section we present our results and reflect on the hypotheses and the primary research questions from which the hypotheses emerged:

1. Do individuals value ethical consumerism?
2. Is asymmetric information on firms CSR practices and product related CSR, and a lack of awareness by individuals problematic and what is the impact on individuals purchasing behaviours?
3. Do informational signals on CSR increase utility experienced from ethical consumerism and increase WTP for product related ethical attributes?
4. Or rather, is this attitude behaviour gap a result of earlier studies using methods (e.g. surveys) which were not incentive aligned and did not require individuals to trade off product attributes?

In subsection 2.6.1 we present the results from the discrete choice experiment; in subsection 2.6.2 we include the CSR informational treatment and report on the impact awareness has on the attribute utilities and WTP. Finally, in subsection 2.6.3 we report on the influence nationality and religion has on participants' utility and WTP.

100 individuals completed the thirty choice sets. The dataset collected from the discrete choice experiment consists of 100 independent participants making repeated choices. The choice sets all include four alternatives (products), with one of the alternatives being the option not to purchase. All of the participants made a decision in each of the thirty choice sets, therefore, resulting in 12000 observations, of which 3000 observations are choice observations and 9000 non choice observations.[10] Johnson et al (2013) in the ISPOR task force report find that the increase in statistical efficiency and precision levels out at approximately 300 observations. We have a dataset of 12000 observations; a large dataset like ours will allow for the product utilities and WTP for product attributes to be calculated precisely. The models are estimated using Stata version 13 (StataCorp, 2013b). We find on average that 74% of the participants choose to purchase washing up liquid, therefore, 26% of the participants exhibited no preferences and were not WTP for any of the washing up liquid attributes.

2.6.1 Mixed logit

We present the results from the analysis of the mixed logit model (model 1) in table 2.2. In this model the data collected from all 100 participants is included without the inclusion of the awareness interaction effect. Omitting the awareness interaction is representative of the current market for washing up liquid in which asymmetric information will be present and consumers' knowledge of CSR and ethical product

[10] In each of the thirty choice sets there are four alternative products. Each alternative represents an observation whether it is selected or not and we had 100 participants who completed the discrete choice experiment: 30x4x100=12000 observations. In each choice set participants had to select one of the alternatives: 30x1x100=3000 choice observations (9000 non choice observations).

attributes will be mixed. Initially we estimated the data in the conditional logit model, however, the Hausman specification test via the seemingly unrelated estimation (SUEST) test indicated that we should reject the assumption that the coefficients are equal and fixed for all the selected individuals (StataCorp, 2013a). We therefore proceeded to estimate model 1 using the mixed logit model to allow for individuals' preference heterogeneity and to relax the assumptions of identically and independently distributed error terms, and individuals' decisions are not assumed to be independent of irrelevant alternatives.

We find, with the exception of environmental impact, all the ethical product attributes to be positively significant at $p < 0.05$ or better. We report the WTP for all the product attributes and corresponding levels in table 2.3. Again we find that all the ethical attributes with the exception of environmental impact are positively significant at $p < 0.05$ or better. The participants are willing to pay more for the ethical product attributes.

If we look at table 2.3 and figure 2.2 it is evident that whilst the majority of the ethical attributes are significantly valued by participants, they do not all achieve the same WTP. We report a strong relationship between the selected individuals' utility, WTP and the ethical attributes: Eco-friendly production, human rights, health and safety. Participants' place significant importance on decreasing the risk of human rights violations to low risk (baseline risk in the model is high risk), demonstrating clear evidence of health and safety, and eco-friendly production.

Variable	Model 1	
	Coefficient	t-statistic
Price	-2.01***	-9.63
Health & Safety: Some Evidence	0.50**	3.09
Health & Safety: Clear Evidence	0.73***	6.10
Human Rights: Low Risk	1.23***	7.05
Human Rights: Medium Risk	0.85***	6.21
Environmental Impact: Some Evidence	-0.06	-0.37
Environmental Impact: Clear Evidence	0.06	0.35
Equal Opportunities & Diversity: Some Evidence	0.29*	2.56
Equal Opportunities & Diversity: Clear Evidence	0.43***	3.66
Community & Charity Involvement: Some Evidence	0.26*	2.35
Community & Charity Involvement: Clear Evidence	0.28*	2.09
Colour: Other	-0.08	-0.74
Colour: Yellow	-0.34**	-3.18
Fragrance: Floral	0.20	1.74
Fragrance: Other	0.05	0.34
Antibacterial Formulation	1.38***	7.92
Eco-friendly Production	0.74***	5.55
Log-likelihood	-2811.60	
AIC	5689.20	
Number of participants	100	
Number of observations	12000	

Note: The attribute levels detailed in table 2.1 not included in this results table are the baseline attribute levels upon which the trade-offs are compared to.
** p<0.05, ** p<0.01, *** p<0.001*

Table 2.2: Mixed logit estimation, Model 1

Variable	WTP (£/bottle)	t-statistic
Health & Safety: Some Evidence	0.25**	3.21
Health & Safety: Clear Evidence	0.36***	6.63
Human Rights: Low Risk	0.61***	7.56
Human Rights: Medium Risk	0.42***	6.84
Environmental Impact: Some Evidence	-0.03	-0.36
Environmental Impact: Clear Evidence	0.03	0.35
Equal Opportunities & Diversity: Some Evidence	0.15**	2.62
Equal Opportunities & Diversity: Clear Evidence	0.21***	3.85
Community & Charity Involvement: Some Evidence	0.13*	2.49
Community & Charity Involvement: Clear Evidence	0.14*	2.22
Colour: Other	-0.04	-0.74
Colour: Yellow	-0.17**	-3.41
Fragrance: Floral	0.10	1.74
Fragrance: Other	0.02	0.34
Antibacterial Formulation	0.68***	7.56
Eco-friendly Production	0.37***	6.00

Note: The attribute levels detailed in table 2.1 not included in this results table are the baseline attribute levels upon which the WTPs are compared to.
** $p<0.05$, ** $p<0.01$, *** $p<0.001$*

Table 2.3: Model 1 WTP

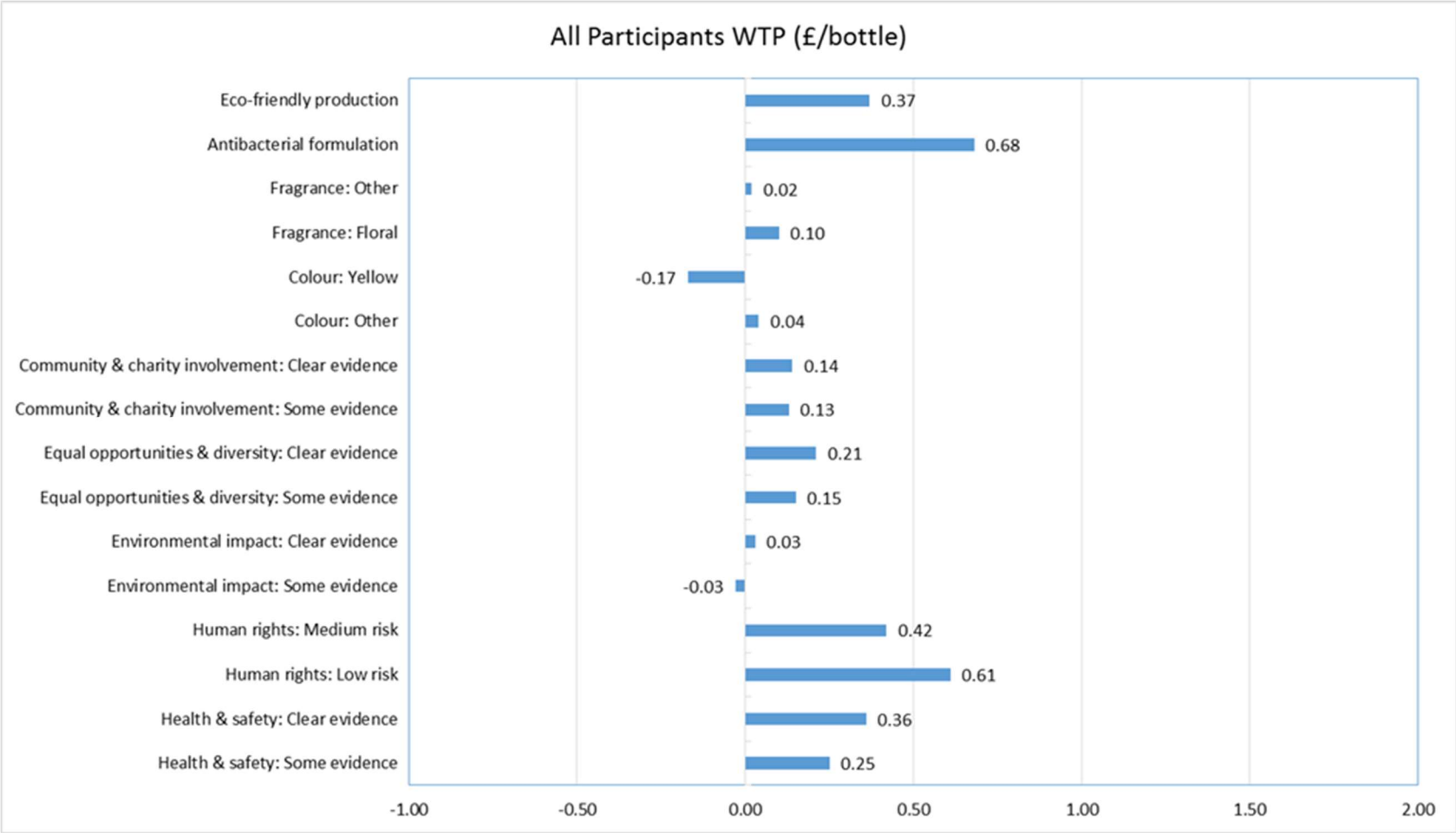


Figure 2.2: Model 1 WTP

2.6.2 Uninformed individuals versus informed individuals

In model 2 we included an interaction effect for the CSR informational signal, table 2.7 in appendix A compares the results of the mixed logit models.[11] Again we find, with the exception of environmental impact and community and charity involvement (clear evidence), all the ethical product attributes to be positively significant at $p < 0.05$ or better. An important finding here is that the individuals in the uninformed treatment group are willing to pay more for ethical product attributes in the absence of firms signalling their CSP. We report that the uninformed individuals find more of the ethical attributes and levels positively significant at $p < 0.05$, therefore whilst the uninformed participants receive no additional information on CSR it does not prevent them from consuming ethically. Limiting information on CSR does not appear to hinder ethical consumerism.

It is interesting to look at the t-statistics for both the attributes and their corresponding levels, and the CSR signal interaction effect. The individuals who were in the informed treatment group and intentionally provided with the informational CSR signal demonstrate different preferences, utility and WTP for the attributes. From the attribute and awareness interaction effect we report both a stronger and positively significant result for eco-friendly production and lowering the risk of human rights violations compared to the uninformed individuals. The informed individuals are less price sensitive and we see this reflected in the WTP for eco-friendly production and lowering the risk of human rights violations (see table 2.4 and figure 2.3). We report the majority of the ethical product attributes to be positively significant at $p < 0.05$ or

[11] The impact of the CSR informational signal is represented by the awareness interaction in tables 2.7 and 2.8 in appendix A.

better in the tables 2.4 and 2.7 however, the CSR signal does not strengthen the informed individuals' preferences or WTP for the majority of product ethical attributes. The CSR signal serves as a tool to refocus the informed individuals' preferences for ethical consumerism and when the individuals are informed they are less price sensitive and focus their attention on eco-friendly production and reducing the risk of human rights violations.

Variable	Informed		Uninformed	
	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic
Health & Safety: Some Evidence	0.16	1.60	0.38***	3.82
Health & Safety: Clear Evidence	0.32**	2.81	0.31***	5.16
Human Rights: Low Risk	0.58***	4.07	0.49***	5.91
Human Rights: Medium Risk	0.62***	5.66	0.23**	3.01
Environmental Impact: Some Evidence	-0.08	-0.51	0.06	0.55
Environmental Impact: Clear Evidence	0.00	0.02	0.02	0.20
Equal Opportunities & Diversity: Some Evidence	0.18*	2.13	0.14*	2.09
Equal Opportunities & Diversity: Clear Evidence	0.19*	2.16	0.20*	2.15
Community & Charity Involvement: Some Evidence	0.12	1.73	0.17*	2.18
Community & Charity Involvement: Clear Evidence	0.09	1.07	0.15	1.39
Colour: Other	-0.14	-1.69	0.05	0.84
Colour: Yellow	-0.24*	-4.01	-0.14	-1.92
Fragrance: Floral	0.12	1.47	0.05	0.58
Fragrance: Other	-0.09	-0.61	0.05	0.52
Antibacterial Formulation	0.58***	4.61	0.59***	5.28
Eco-friendly Production	0.48***	4.01	0.31***	4.29

Note: The attribute levels detailed in table 2.1 not included in this results table are the baseline attribute levels upon which the WTPs are compared to.
** $p<0.05$, ** $p<0.01$, *** $p<0.001$*

Table 2.4: Model 2 WTP

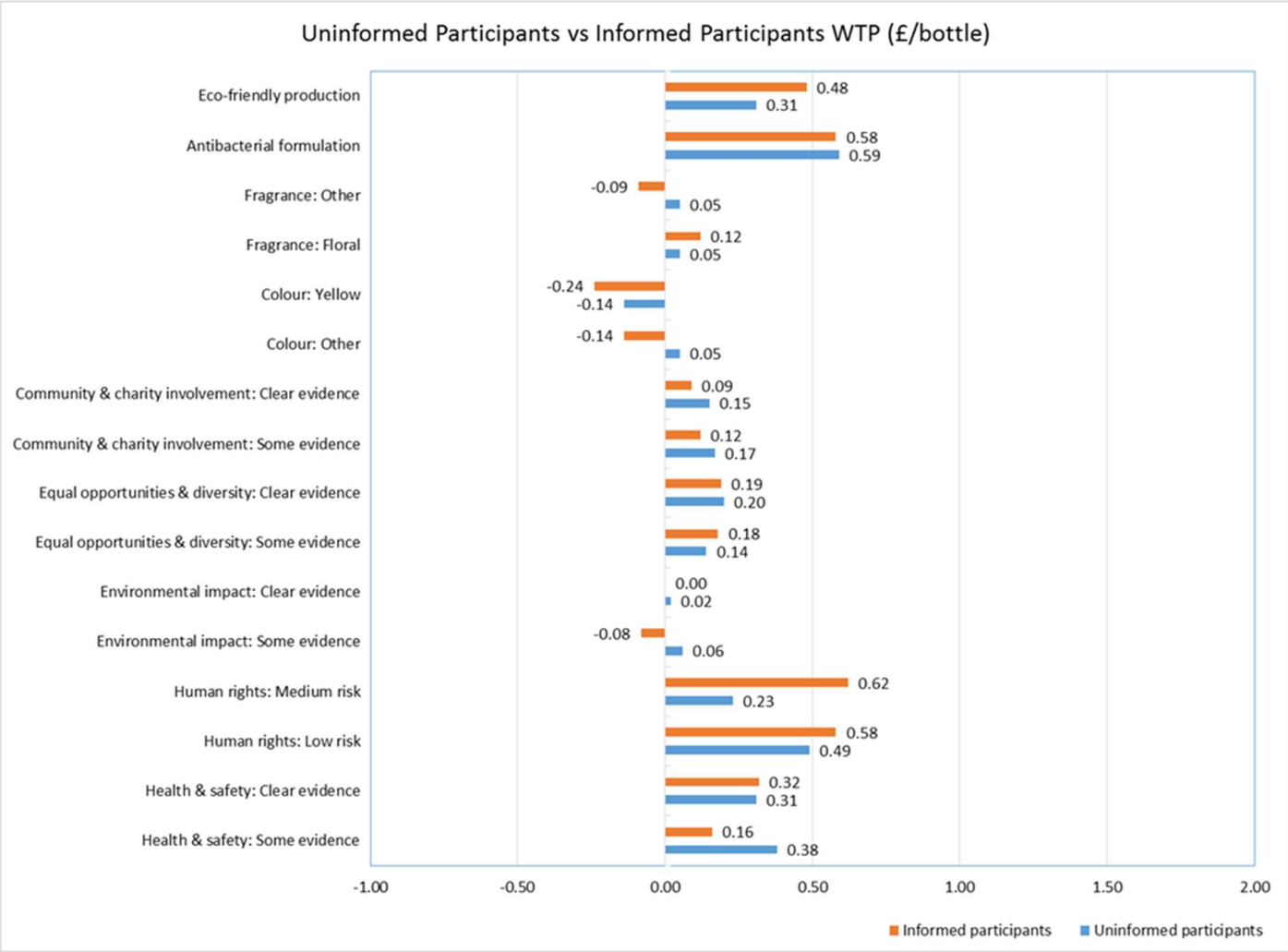


Figure 2.3: Model 2 WTP

2.6.3 The influence of nationality and religion

In model 3 we include interaction effects for the awareness of CSR, nationality and religion. We present the results from the conditional logit model analysis in table 2.8 (appendix A). The Hausman specification test via the seemingly unrelated estimation (SUEST) test did not provide evidence that the assumption on the coefficients being equal and fixed for all the selected individuals was violated (StataCorp, 2013a). The inclusion of multiple interaction effects is one way to model for heterogeneity in the individuals, however, to analyse the influence of awareness, nationality and religion we could not continue with the mixed logit model. Despite using a high performance computing facility the mixed logit models failed to report the model statistics. In light of the specification test indicating that the conditional logit model is appropriate when multiple interaction effects are included, we complete our analysis using the conditional logit model.

We present our WTP results from the conditional logit model analysis in tables 2.5-2.6 and figures 2.4-2.7.[12] In contrast to our earlier findings, we do not find the majority of ethical product attributes to be positively significant at $p < 0.05$. Individuals' nationality and religion significantly influence their preferences. If we consider participants of European origin first in both the informed and uniformed treatments, when the individuals indicate they have no stated religion we find that they demonstrate stronger preferences and greater WTP across a wider range of ethical product attributes compared to the individuals who indicate they have a religion. We find the individuals who state they have a religion experience reduced price sensitivity and demonstrate stronger preferences for specific ethical product

[12] The conditional logit model 3 results are presented in table 2.8 in appendix A.

attributes, those being eco-friendly production and reducing the risk of human rights violations.

If we now consider participants of Asian origin, when the individuals state they have no religion regardless of whether they are in the informed or uninformed, they do not demonstrate significant preferences or WTP at $p < 0.05$ for any of the ethical product attributes and we find, albeit insignificant, that these individuals decrease their willingness to pay for several of the ethical product attributes. When we look at the results for the participants of Asian origin that state they have a religion, in both the informed and uninformed treatments they demonstrate a positive significant preference for eco-friendly production at $p < 0.05$ or better. Now if we look more closely at those who state they have a religion and are uninformed, participants also demonstrate positive significant preferences for evidence of good health and safety and reducing the risk of human rights violations to low risk at $p < 0.01$. However, the individuals who state they have a religion and are in the informed treatment group, they do not demonstrate a positive significant preference for health and safety at $p < 0.05$, but rather focus their attention on minimising the risk of human rights violations and we find a strong positive preference for this at $p < 0.001$.

Interestingly these results suggest that ethical consumerism is strongly influenced by an individual's nationality and religion and it is not simply to do with lack of awareness as suggested in earlier studies (Du et al., 2010, 2007; Devinney et al., 2006; Luo and Bhattacharya, 2006; Sen et al., 2006; Bhattacharya and Sen, 2004; Auger et al., 2003; Sen and Bhattacharya, 2001).

Variable	European nationality							
	Informed				Uninformed			
	Stated a religion		No stated religion		Stated a religion		No stated religion	
	WTP(£/bottle)	t-statistic	WTP(£/bottle)	t-statistic	WTP(£/bottle)	t-statistic	WTP(£/bottle)	t-statistic
Health & Safety: Some Evidence	-0.11	-0.86	0.11	1.01	0.13	1.08	0.28**	2.90
Health & Safety: Clear Evidence	0.00	0.02	0.20*	2.36	0.16	1.53	0.31***	3.81
Human Rights: Low Risk	0.66***	6.28	0.69***	8.88	0.52***	5.48	0.59***	7.93
Human Rights: Medium Risk	0.49***	3.51	0.46***	4.01	0.21	1.64	0.24*	2.22
Environmental Impact: Some Evidence	-0.01	-0.08	0.17	1.34	0.16	1.14	0.30**	2.63
Environmental Impact: Clear Evidence	-0.04	-0.34	0.13	1.55	0.04	0.38	0.18*	2.24
Equal Opportunities & Diversity: Some Evidence	0.26	1.85	0.13	1.14	0.24	1.76	0.12	1.09
Equal Opportunities & Diversity: Clear Evidence	0.15	1.27	0.35***	4.02	0.22	2.07	0.39***	4.56
Community & Charity Involvement: Some Evidence	-0.01	-0.10	0.22*	2.26	0.17	1.39	0.35***	3.61
Community & Charity Involvement: Clear Evidence	0.01	0.07	0.39***	4.35	0.19	1.74	0.51***	5.69
Colour: Other	-0.01	-0.06	-0.04	-0.38	0.07	0.59	0.03	0.31
Colour: Yellow	0.10	0.68	-0.26*	-2.39	0.12	0.89	-0.22*	-2.10

Table 2.5: Model 3 WTP of participants of European origin

Variable	European nationality							
	Informed				Uninformed			
	Stated a religion		No stated religion		Stated a religion		No stated religion	
	WTP(£/bottle)	t-statistic	WTP(£/bottle)	t-statistic	WTP(£/bottle)	t-statistic	WTP(£/bottle)	t-statistic
Fragrance: Floral	0.08	0.52	-0.07	-0.56	0.01	0.08	-0.12	-0.98
Fragrance: Other	-0.05	-0.42	0.15	1.76	0.05	0.48	0.21*	2.59
Antibacterial Formulation	0.59***	5.92	0.42***	5.59	0.73***	7.53	0.55***	7.65
Eco-friendly Production	0.26**	2.74	0.33***	4.49	0.20*	2.24	0.27***	3.90

Note: The attribute levels detailed in table 2.1 not included in this results table are the baseline attribute levels upon which the WTPs are compared to.
** p<0.05, ** p<0.01, *** p<0.001*

Table 2.5: Model 3 WTP of participants of European origin

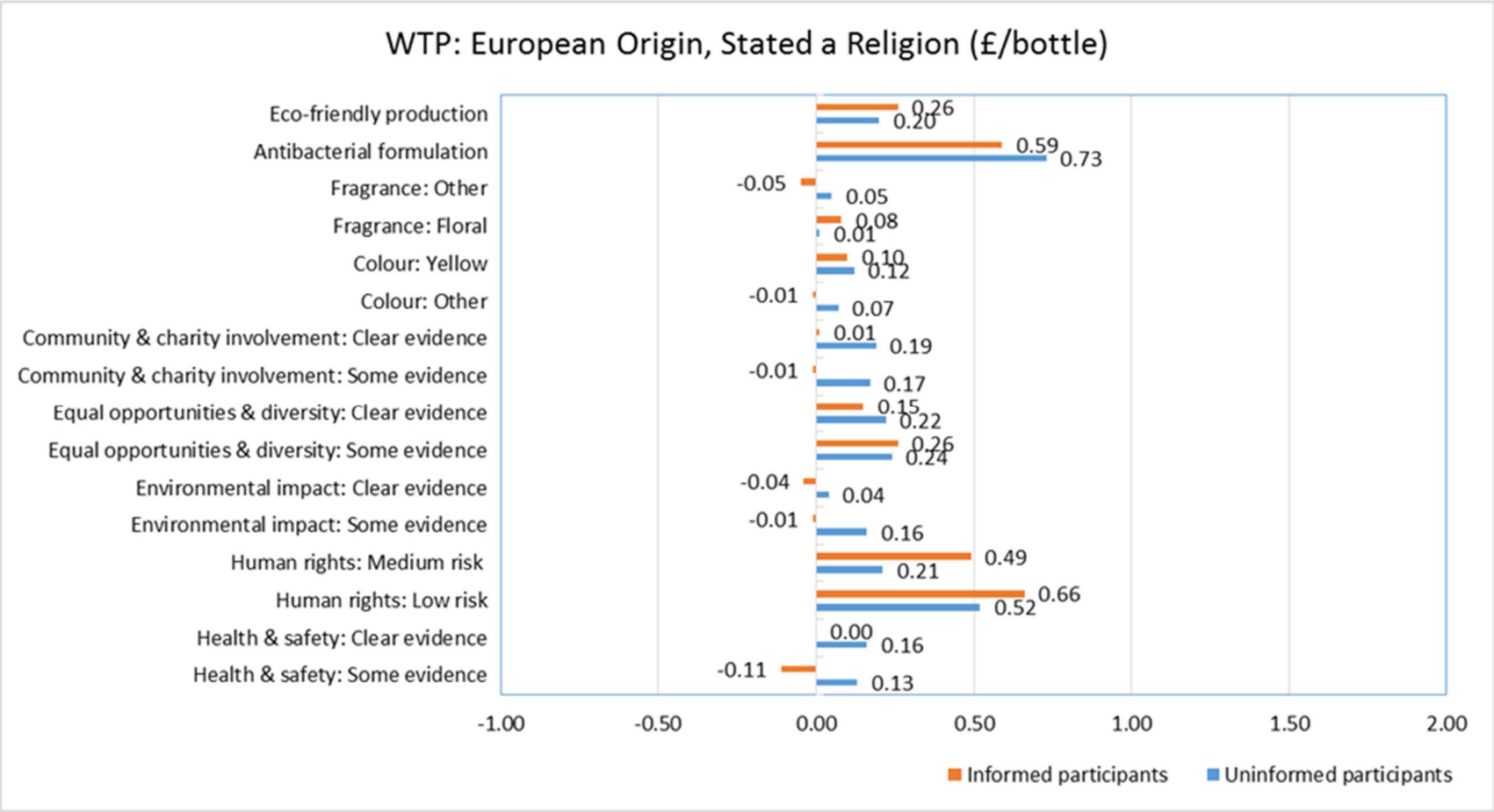


Figure 2.4: Model 3 European participants' WTP

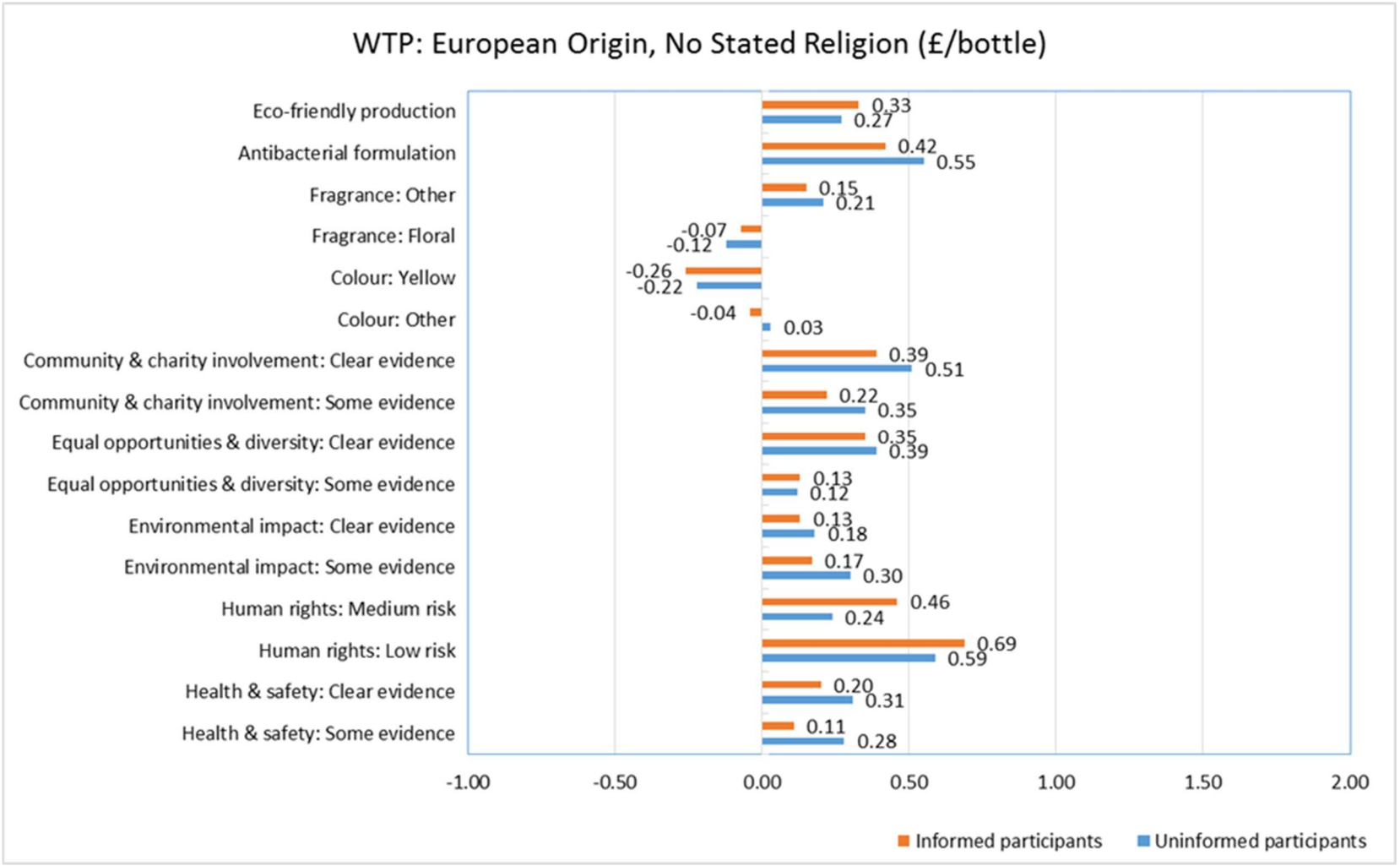


Figure 2.5: Model 3 European participants' WTP

Variable	Asian nationality							
	Informed				Uninformed			
	Stated a religion		No stated religion		Stated a religion		No stated religion	
	WTP(£/bottle)	t-statistic	WTP(£/bottle)	t-statistic	WTP(£/bottle)	t-statistic	WTP(£/bottle)	t-statistic
Health & Safety: Some Evidence	0.18	1.14	-0.52	-0.77	0.41**	2.89	-0.01	-0.02
Health & Safety: Clear Evidence	0.25	1.91	0.25	0.46	0.40**	3.42	0.51	1.07
Human Rights: Low Risk	0.47***	3.76	0.94	1.67	0.34**	3.22	0.65	1.44
Human Rights: Medium Risk	0.43**	2.64	1.30	1.70	0.14	0.92	0.65	1.11
Environmental Impact: Some Evidence	-0.32	-1.61	-0.48	-0.55	-0.11	-0.62	-0.08	-0.12
Environmental Impact: Clear Evidence	-0.14	-1.03	-0.33	-0.57	-0.05	-0.44	-0.15	-0.31
Equal Opportunities & Diversity: Some Evidence	-0.03	-0.18	1.08	1.37	-0.03	-0.21	0.91	1.39
Equal Opportunities & Diversity: Clear Evidence	0.01	0.08	-0.48	-0.74	0.10	0.87	-0.25	-0.47
Community & Charity Involvement: Some Evidence	0.03	0.23	-0.68	-0.94	0.22	1.71	-0.25	-0.44
Community & Charity Involvement: Clear Evidence	-0.17	-1.08	-0.75	-1.00	0.04	0.34	-0.29	-0.53
Colour: Other	-0.17	-1.06	0.08	0.12	-0.07	-0.50	0.22	0.38

Table 2.6: Model 3 WTP of participants of Asian origin

Variable	Asian nationality							
	Informed				Uninformed			
	Stated a religion		No stated religion		Stated a religion		No stated religion	
	WTP(£/bottle)	t-statistic	WTP(£/bottle)	t-statistic	WTP(£/bottle)	t-statistic	WTP(£/bottle)	t-statistic
Colour: Yellow	-0.22	-1.36	1.21	1.25	-0.17	-1.21	1.08	1.35
Fragrance: Floral	0.29	1.58	0.30	0.39	0.20	1.23	0.14	0.21
Fragrance: Other	-0.13	-0.96	-0.51	-0.82	-0.03	-0.22	-0.26	-0.51
Antibacterial Formulation	0.77***	6.13	1.20	1.96	0.91**	7.95	1.38*	2.36
Eco-friendly Production	0.61***	4.99	-0.09	-0.19	0.51*	5.01	-0.16	-0.37

Note: The attribute levels detailed in table 2.1 not included in this results table are the baseline attribute levels upon which the WTPs are compared to.

** p<0.05, ** p<0.01, *** p<0.001*

Table 2.6: Model 3 WTP of participants of Asian origin

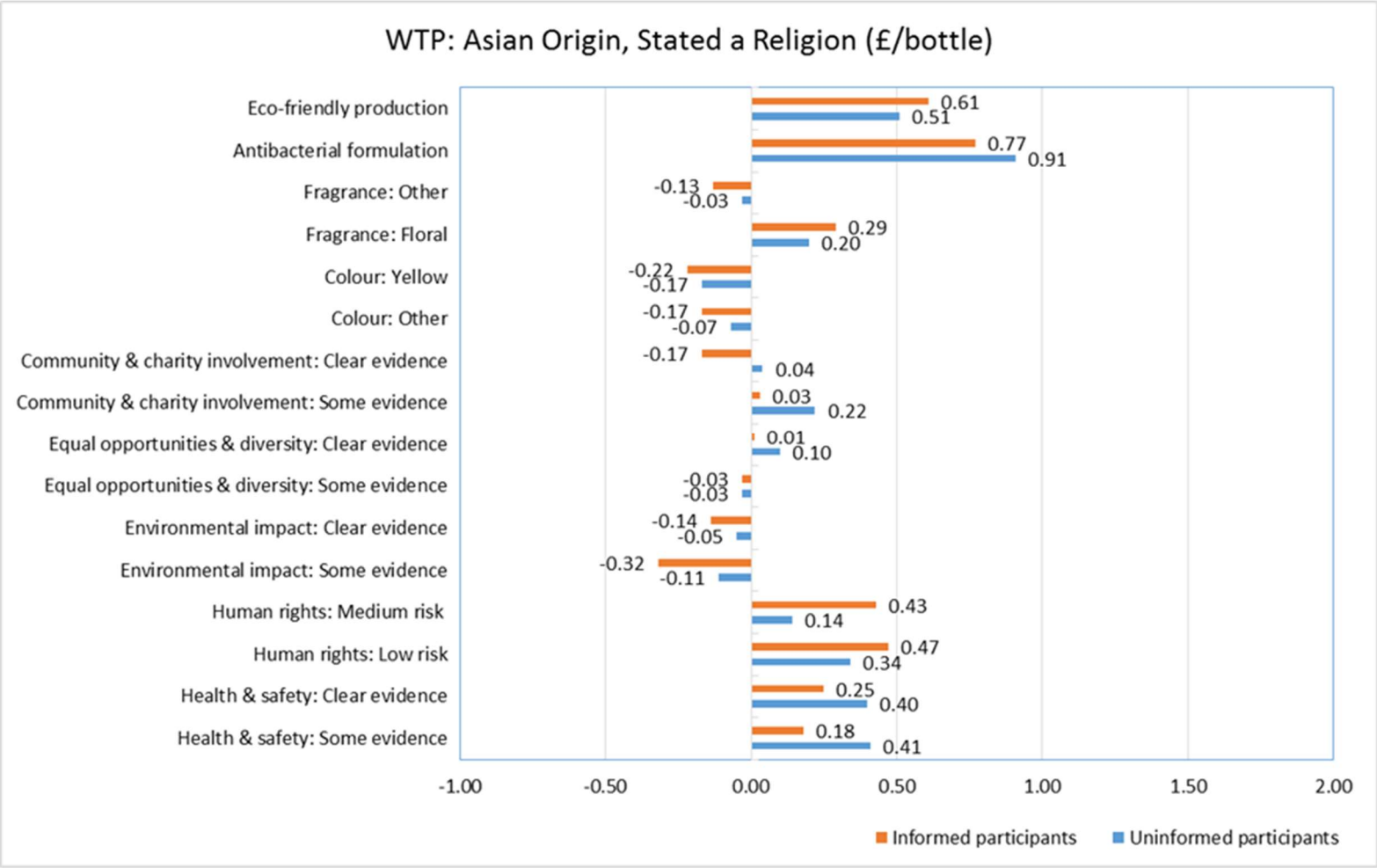


Figure 2.6: Model 3 Asian participants' WTP

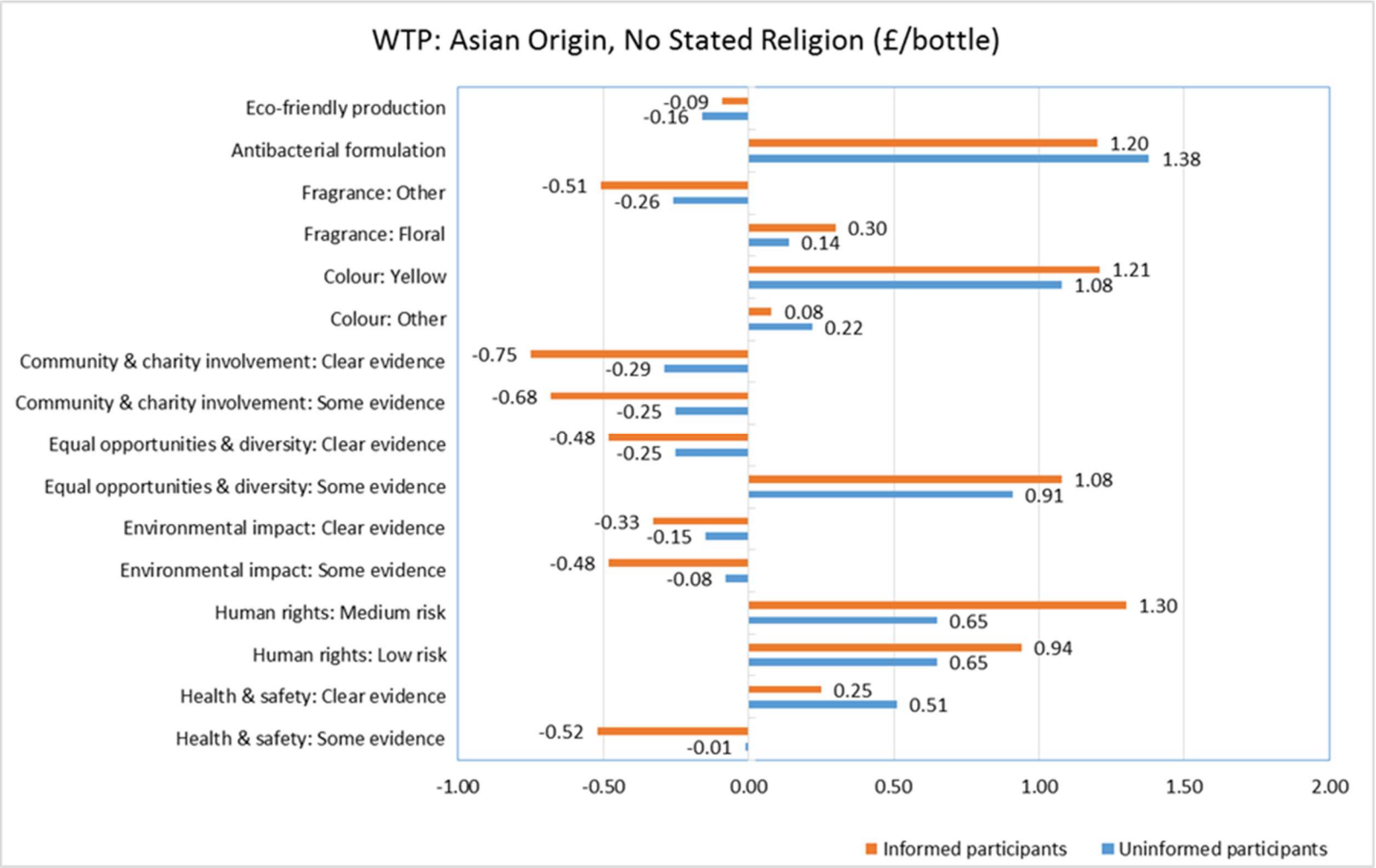


Figure 2.7: Model 3 Asian participants' WTP

2.7 Discussion and conclusions

The primary objective of this study was to determine whether individuals demonstrate preferences for ethical consumerism and how a signal containing information on CSR influences individuals' preferences and WTP for ethical product attributes. If we first reflect on model 1 in which the awareness interaction effect was omitted to represent the state of the current market for washing up liquid in which asymmetric information is present and consumers' knowledge of CSR and ethical product attributes mixed. We find the majority of the ethical product attributes to be positively significant at $p < 0.05$ or better. Participants demonstrate that even when there is asymmetric information in the market concerning CSR and ethical product attributes, the sample population express preferences for ethical consumerism and are willing to pay more for the majority of the ethical product attributes at $p < 0.05$ or better.

When we controlled for the CSR signal in model 2 we again find that the participants exhibit positive significant preferences for the majority of the ethical product attributes at $p < 0.05$ or better. A key finding here is that the uninformed individuals are willing to pay for ethical product attributes. Asymmetric information in the market does not appear to be problematic as the work by Akerlof (1970) and earlier studies in the CSR literature (Du et al., 2010, 2007; Devinney et al., 2006; Luo and Bhattacharya, 2006; Sen et al., 2006; Bhattacharya and Sen, 2004; Auger et al., 2003; Sen and Bhattacharya, 2001) would suggest. However, our results suggest that it is overly simplistic and incorrect to make statements like consumers' lack of awareness prevents ethical consumerism. We find that the individuals who are informed via a CSR signal demonstrate different preferences, utility and WTP for the ethical product attributes. Whilst these individuals also demonstrate positive and significant

preferences for the majority of the ethical product attributes at $p < 0.05$ they use the additional CSR information to focus their attention on eco-friendly production and reducing the risk of human rights violations. We report that the informed individuals are less price sensitive and find both a stronger and positively significant result for eco-friendly production and lowering the risk of human rights violations compared to the uninformed individuals, which is reflected in their WTP. An important consideration here arises for firms that plan to signal or already do signal their CSP to stakeholders. The individuals in this study indicate that not all ethical attributes are equal and that a CSR signal does not simply increase the individuals' preferences and WTP for all ethical product attributes. In this study we find the informed individuals focus their attention on eco-friendly production and minimising the risk of human rights violations, it is these attributes which benefit from a significant increase in WTP.

When we controlled for awareness, nationality and religion in model 3 we found some very interesting results and differences. The general finding is that participants of European origin demonstrated higher preferences and WTP for ethical attributes compared to participants of Asian origin. When we focus on the interaction with religious beliefs we find that participants of European origin with no stated religion demonstrate WTP for the majority of the ethical attributes, however, participants of Asian origin did not demonstrate significant preferences or WTP for any of the ethical attributes. Participants of European origin and Asian origin who stated they had a religion, both displayed positive and significant preferences for eco-friendly production and reducing the risk of human rights violations at $p < 0.05$ or better. Model 3 is important as nationality and religious beliefs strongly influence ethical

consumerism. Ignoring these interactions overstates certain segments of consumers' preferences and WTP for ethical product attributes.

Overall the results indicate that individuals do value ethical consumerism and are WTP for ethical attributes. Asymmetric information in the market does not appear to be problematic as the work by Akerlof (1970) would suggest. CSR signals do influence individuals' preferences for ethical attributes and impact their WTP, however, rather than simply increasing the impact and significance levels of all the ethical attributes the CSR signal appears to change the preference order in which the ethical attributes are traded off. Further work on informational nudges in the context of ethical consumerism would be interesting to understand how the framing of the CSR signal, the informational nudge impacts the preferences for the ethical attributes and the associated WTP.

Previous studies have suggested that whilst individuals indicate they are ethical consumers their purchasing behaviours contradict this. These studies suggest that consumers lack awareness on CSR and ethical consumerism (Du et al., 2010, 2007; Devinney et al., 2006; Luo and Bhattacharya, 2006; Sen et al., 2006; Bhattacharya and Sen, 2004; Auger et al., 2003; Sen and Bhattacharya, 2001). Our findings do not support this and we suggest the attitude behaviour gap is not a consequence of asymmetric information in the market but rather a result of inappropriate methods being used without incentive aligned decisions. We find that when the participants' decisions are incentive aligned they do value ethical consumerism. Even the uninformed participants in this experiment demonstrated that they valued the ethical attributes of the product and were WTP for the attributes when their decisions were incentive aligned. Looking back to our question is the attitude behaviour gap a product of flawed methodology used in earlier studies? Our results provide evidence

that both questionnaires (polls) and discrete choice experiments, which are not incentive aligned in accordance with Induced Value Theory (Smith, 1976), may be the primary cause of the ethical consumerism attitude behaviour gap identified in the CSR literature. Finally, future studies on ethical consumerism need to appreciate the significance of an individual's nationality and religion on how they value ethical attributes. Whilst our general finding from our experiment is that individuals are WTP for ethical product attributes, we did not find this result to hold for all consumer segments. Future research needs to control for this. Applying this finding to practice it demonstrates the importance of firms knowing the consumer segments they are targeting when they provide information on their CSP.

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2.9 Appendix A: Additional results tables

Variables	Model 1		Model 2	
	Coefficient	t-statistic	Coefficient	t-statistic
Price	-2.01***	-9.63	-2.16***	-6.43
Health & Safety: Some Evidence	0.50**	3.09	0.83***	4.16
Health & Safety: Clear Evidence	0.73***	6.10	0.67***	4.15
Human Rights: Low Risk	1.23***	7.05	1.06***	5.37
Human Rights: Medium Risk	0.85***	6.21	0.51*	2.56
Environmental Impact: Some Evidence	-0.06	-0.37	0.14	0.53
Environmental Impact: Clear Evidence	0.06	0.35	0.04	0.20
Equal Opportunities & Diversity: Some Evidence	0.29*	2.56	0.30*	2.06
Equal Opportunities & Diversity: Clear Evidence	0.43***	3.66	0.42*	2.16
Community & Charity Involvement: Some Evidence	0.26*	2.35	0.37*	2.03
Community & Charity Involvement: Clear Evidence	0.28*	2.09	0.32	1.36
Colour: Other	-0.08	-0.74	0.11	0.84
Colour: Yellow	-0.34**	-3.18	-0.30	-1.78
Fragrance: Floral	0.20	1.74	0.11	0.57
Fragrance: Other	0.05	0.34	0.10	0.52
Antibacterial Formulation	1.38***	7.92	1.27***	5.32
Eco-friendly Production	0.74***	5.55	0.67***	3.64
Awareness Interaction:				
Price			0.25	0.62
Health & Safety: Some Evidence			-0.52	-1.90
Health & Safety: Clear Evidence			-0.06	-0.21
Human Rights: Low Risk			0.06	1.15
Human Rights: Medium Risk			0.68*	2.38
Environmental Impact: Some Evidence			-0.29	-0.71

Table 2.7: Mixed logit models 1 and 2

Variables	Model 1		Model 2	
	Coefficient	t-statistic	Coefficient	t-statistic
Environmental Impact: Clear Evidence			-0.04	-0.10
Equal Opportunities & Diversity: Some Evidence			0.04	0.16
Equal Opportunities & Diversity: Clear Evidence			-0.06	-0.24
Community & Charity Involvement: Some Evidence			-0.14	-0.55
Community & Charity Involvement: Clear Evidence			-0.15	-0.54
Colour: Other			-0.39	-1.81
Colour: Yellow			-0.16	-0.83
Fragrance: Floral			0.13	0.56
Fragrance: Other			-0.27	-0.87
Antibacterial Formulation			-0.16	-0.54
Eco-friendly Production			0.25	0.95
Log-likelihood	-2811.60		-2803.81	
AIC	5689.20		5707.62	
Number of participants	100		100	
Number of observations	12000		12000	

Note: The attribute levels detailed in table 2.1 not included in this results table are the baseline attribute levels upon which the trade-offs are compared to.
** $p<0.05$, ** $p<0.01$, *** $p<0.001$*

Table 2.7: Mixed logit models 1 and 2

Variables	Model 3	
	Coefficient	t-statistic
Price	-1.38***	-12.35
Health & Safety: Some Evidence	0.18	1.08
Health & Safety: Clear Evidence	0.22	1.49
Human Rights: Low Risk	0.72***	5.27
Human Rights: Medium Risk	0.29	1.59
Environmental Impact: Some Evidence	0.22	1.11
Environmental Impact: Clear Evidence	0.05	0.37
Equal Opportunities & Diversity: Some Evidence	0.33	1.72
Equal Opportunities & Diversity: Clear Evidence	0.30*	2.04
Community & Charity Involvement: Some Evidence	0.23	1.39
Community & Charity Involvement: Clear Evidence	0.26	1.70
Colour: Other	0.10	0.60
Colour: Yellow	0.16	0.90
Fragrance: Floral	0.02	0.08
Fragrance: Other	0.07	0.47
Antibacterial Formulation	1.01***	8.00
Eco-friendly Production	0.27*	2.21
Awareness Interaction:		
Price	0.11	1.08
Health & Safety: Some Evidence	-0.32*	-2.09
Health & Safety: Clear Evidence	-0.22	-1.66
Human Rights: Low Risk	0.11	0.87
Human Rights: Medium Risk	0.33	1.94
Environmental Impact: Some Evidence	-0.24	-1.29
Environmental Impact: Clear Evidence	-0.10	-0.78
Equal Opportunities & Diversity: Some Evidence	0.01	0.03
Equal Opportunities & Diversity: Clear Evidence	-0.12	-0.88

Table 2.8: Conditional logit model 3

Variables	Model 3	
	Coefficient	t-statistic
Community & Charity Involvement: Some Evidence	-0.24	-1.68
Community & Charity Involvement: Clear Evidence	-0.25	-1.79
Colour: Other	-0.11	-0.73
Colour: Yellow	-0.04	-0.24
Fragrance: Floral	0.09	0.48
Fragrance: Other	-0.13	-0.98
Antibacterial Formulation	-0.27*	-2.26
Eco-friendly Production	0.06	0.52
Nationality & Religion Interactions		
No Stated Religion Interactions:		
Price	-0.35*	-2.39
Health & Safety: Some Evidence	0.31	1.49
Health & Safety: Clear Evidence	0.32	1.77
Human Rights: Low Risk	0.29	1.67
Human Rights: Medium Risk	0.13	0.54
Environmental Impact: Some Evidence	0.29	1.11
Environmental Impact: Clear Evidence	0.25	1.46
Equal Opportunities & Diversity: Some Evidence	-0.12	-0.48
Equal Opportunities & Diversity: Clear Evidence	0.37*	2.03
Community & Charity Involvement: Some Evidence	0.37	1.81
Community & Charity Involvement: Clear Evidence	0.62**	3.17
Colour: Other	-0.05	-0.25
Colour: Yellow	-0.54*	-2.35
Fragrance: Floral	-0.21	-0.86
Fragrance: Other	0.30	1.71
Antibacterial Formulation	-0.06	-0.38
Eco-friendly Production	0.19	1.27

Table 2.8: Conditional logit model 3

Variables	Model 3	
	Coefficient	t-statistic
Asian Origin Interaction:		
Price	0.09	0.57
Health & Safety: Some Evidence	0.35	1.59
Health & Safety: Clear Evidence	0.29	1.51
Human Rights: Low Risk	-0.28	-1.57
Human Rights: Medium Risk	-0.11	-0.45
Environmental Impact: Some Evidence	-0.36	-1.34
Environmental Impact: Clear Evidence	-0.12	-0.64
Equal Opportunities & Diversity: Some Evidence	-0.37	-1.49
Equal Opportunities & Diversity: Clear Evidence	-0.17	-0.90
Community & Charity Involvement: Some Evidence	0.06	0.26
Community & Charity Involvement: Clear Evidence	-0.21	-0.99
Colour: Other	-0.19	-0.85
Colour: Yellow	-0.38	-1.62
Fragrance: Floral	0.24	0.93
Fragrance: Other	-0.10	-0.53
Antibacterial Formulation	0.17	0.98
Eco-friendly Production	0.39*	2.38
No Stated Religion & Asian Origin Interaction:		
Price	0.64**	3.08
Health & Safety: Some Evidence	-0.19	-0.61
Health & Safety: Clear Evidence	0.15	0.57
Human Rights: Low Risk	-0.25	-0.97
Human Rights: Medium Risk	0.19	0.57
Environmental Impact: Some Evidence	-0.28	-0.76
Environmental Impact: Clear Evidence	-0.16	-0.63
Equal Opportunities & Diversity: Some Evidence	0.34	0.99

Table 2.8: Conditional logit model 3

Variables	Model 3	
	Coefficient	t-statistic
Equal Opportunities & Diversity: Clear Evidence	-0.48	-1.78
Community & Charity Involvement: Some Evidence	-0.41	-1.40
Community & Charity Involvement: Clear Evidence	-0.48	-1.68
Colour: Other	0.06	0.19
Colour: Yellow	0.63	1.91
Fragrance: Floral	0.08	0.23
Fragrance: Other	-0.26	-0.97
Antibacterial Formulation	0.01	0.02
Eco-friendly Production	-0.39	-1.70
Pseudo R^2	0.207	
Log-likelihood	-3297.087	
AIC	6832.173	
Number of participants	100	
Number of observations	12000	

Notes:

1. *The attribute levels detailed in table 2.1 not included in this results table are the baseline attribute levels upon which the trade-offs are compared to.*
2. *For the nationality and religion interactions the baseline measure is European origin and the interactions refer to Asian origin. Other nationality origins have not been included due to the segments being too small to provide meaningful results. Results can be provided upon request.*

* p<0.05, ** p<0.01, *** p<0.001

Table 2.8: Conditional logit model 3

2.10 Appendix B: Participant material for the experiment

- Participant instructions and choice sets information
- Information sheet A (informed participants)
- Information sheet B (uninformed participants)
- Questionnaire

CSR_JUB Experiment

Instructions for Participants

You will now participate in an experiment on individual decision-making. The experiment will last approximately 90 minutes. You will be paid after the experiment. Your payoffs will depend partly on your decisions and partly on chance. It will not depend on the decisions of the other participants in the experiments. Your participation in the experiment and any information about your payoffs will be kept strictly confidential. You will never be asked to reveal your identity to any of the participants during the course of the experiment. In order to keep your decisions private, please do not reveal your choices to any other participant. Please do not talk with anyone during the experiment. We ask everyone to remain silent until the end of the experiment.

The experiment is split into two parts and you will be paid for both parts. The decisions you make in part 1 do not affect your payment in part 2. The tasks in part 1 and 2 are fully independent. After the tasks in part 1 and 2 are completed you will be paid out anonymously.

Part 1

Online you will be presented with thirty decisions. Each decision is a choice set with the options: Product A, Product B, Product C, None of the above. You will make thirty choices and these will be recorded by the computer. Only one of your decisions will be used at the end of part 1 to determine your earnings for part 1. Please let me explain how these choices will affect your earnings in part 1 of the experiment.

You will be presented with choice sets. Each choice set will include three different types of washing up liquid profiles. For each choice set you will need to indicate which of the three washing up liquid products in the choice set you would purchase or alternatively you can select not to purchase any of the products in the choice set.

You start with a fund of £10.00 and at the end of the experiment you will use part of this fund to purchase a bottle of washing up liquid. At the end of the experiment one of your choice sets will be randomly selected and the choice you made in that choice set will determine which washing up liquid you receive and the cost of the washing up liquid to be deducted from the fund, if you chose to purchase a washing up liquid in that selected choice set. If you have any questions on how the payment for part 1 is calculated, please raise your hand now.

Part 2

In part 2 you will be presented with a questionnaire covering personality traits, socio-demographics and CSR awareness. Part 2 has a fixed participation fee of £8.00.

Please raise your hand if you have any questions. If you are happy you understand the instructions, please sign the consent form and commence part 1 of the experiment at:

https://www.survey.bris.ac.uk/nottingham/experiments122014_part1

The online instructions will guide you through all parts of the experiment. You will need to hand this booklet with the signed consent form and any workings you did during the course of the experiment into the lab assistants at the end of the experiment when claiming your payment.

Choice Set A

	Product A	Product B	Product C
Health & Safety Involvement	Clear evidence of this	Some evidence of this	Some evidence of this
Human Rights	Medium risk	Medium risk	Low risk
Environmental Impact	Little or no evidence of this	Some evidence of this	Clear evidence of this
Equal Opportunities & Diversity	Some evidence of this	Some evidence of this	Clear evidence of this
Community & Charity Involvement	Clear evidence of this	Some evidence of this	Little or no evidence of this
Price	£2.00	£1.50	£1.00
Colour	Yellow	Green	Other
Fragrance	Other	Floral	Citrus
Antibacterial Formulation	Yes	No	No
Ecologically Friendly Production	Yes	No	No

Choice Set B

	Product A	Product B	Product C
Health & Safety Involvement	Little or no evidence of this	Little or no evidence of this	Clear evidence of this
Human Rights	Low risk	Medium risk	High risk
Environmental Impact	Clear evidence of this	Some evidence of this	Little or no evidence of this
Equal Opportunities & Diversity	Some evidence of this	Little or no evidence of this	Little or no evidence of this
Community & Charity Involvement	Clear evidence of this	Some evidence of this	Little or no evidence of this
Price	£2.00	£1.00	£1.00
Colour	Yellow	Green	Other
Fragrance	Floral	Floral	Other
Antibacterial Formulation	No	Yes	Yes
Ecologically Friendly Production	Yes	No	Yes

Choice Set 1

	Product A	Product B	Product C
Health & Safety Involvement	Clear evidence of this	Some evidence of this	Little or no evidence of this
Human Rights	Low risk	High risk	High risk
Environmental Impact	Clear evidence of this	Little or no evidence of this	Little or no evidence of this
Equal Opportunities & Diversity	Little or no evidence of this	Some evidence of this	Clear evidence of this
Community & Charity Involvement	Little or no evidence of this	Little or no evidence of this	Clear evidence of this
Price	£0.50	£1.00	£2.50
Colour	Green	Green	Green
Fragrance	Citrus	Citrus	Other
Antibacterial Formulation	No	Yes	Yes
Ecologically Friendly Production	No	Yes	Yes

Choice Set 2

	Product A	Product B	Product C
Health & Safety Involvement	Little or no evidence of this	Clear evidence of this	Some evidence of this
Human Rights	High risk	Low risk	Low risk
Environmental Impact	Clear evidence of this	Little or no evidence of this	Some evidence of this
Equal Opportunities & Diversity	Clear evidence of this	Clear evidence of this	Some evidence of this
Community & Charity Involvement	Some evidence of this	Clear evidence of this	Little or no evidence of this
Price	£1.00	£2.00	£1.50
Colour	Other	Yellow	Yellow
Fragrance	Floral	Floral	Floral
Antibacterial Formulation	No	Yes	No
Ecologically Friendly Production	Yes	No	Yes

Choice Set 3

	Product A	Product B	Product C
Health & Safety Involvement	Little or no evidence of this	Clear evidence of this	Some evidence of this
Human Rights	High risk	Low risk	Medium risk
Environmental Impact	Clear evidence of this	Little or no evidence of this	Some evidence of this
Equal Opportunities & Diversity	Little or no evidence of this	Clear evidence of this	Some evidence of this
Community & Charity Involvement	Clear evidence of this	Some evidence of this	Little or no evidence of this
Price	£1.00	£2.00	£1.50
Colour	Green	Green	Yellow
Fragrance	Other	Citrus	Floral
Antibacterial Formulation	Yes	No	No
Ecologically Friendly Production	No	Yes	Yes

Choice Set 4

	Product A	Product B	Product C
Health & Safety Involvement	Clear evidence of this	Some evidence of this	Some evidence of this
Human Rights	Low risk	Medium risk	Medium risk
Environmental Impact	Clear evidence of this	Some evidence of this	Little or no evidence of this
Equal Opportunities & Diversity	Little or no evidence of this	Some evidence of this	Some evidence of this
Community & Charity Involvement	Little or no evidence of this	Some evidence of this	Some evidence of this
Price	£2.50	£1.50	£0.50
Colour	Yellow	Yellow	Other
Fragrance	Other	Floral	Citrus
Antibacterial Formulation	Yes	Yes	No
Ecologically Friendly Production	Yes	No	Yes

Choice Set 5

	Product A	Product B	Product C
Health & Safety Involvement	Some evidence of this	Clear evidence of this	Little or no evidence of this
Human Rights	High risk	Low risk	Medium risk
Environmental Impact	Little or no evidence of this	Clear evidence of this	Some evidence of this
Equal Opportunities & Diversity	Little or no evidence of this	Some evidence of this	Clear evidence of this
Community & Charity Involvement	Clear evidence of this	Little or no evidence of this	Some evidence of this
Price	£0.50	£2.50	£2.00
Colour	Green	Other	Yellow
Fragrance	Floral	Citrus	Other
Antibacterial Formulation	Yes	No	No
Ecologically Friendly Production	Yes	No	No

Choice Set 6

	Product A	Product B	Product C
Health & Safety Involvement	Some evidence of this	Clear evidence of this	Little or no evidence of this
Human Rights	High risk	Low risk	High risk
Environmental Impact	Some evidence of this	Clear evidence of this	Little or no evidence of this
Equal Opportunities & Diversity	Some evidence of this	Little or no evidence of this	Clear evidence of this
Community & Charity Involvement	Some evidence of this	Little or no evidence of this	Clear evidence of this
Price	£1.50	£1.00	£1.00
Colour	Green	Yellow	Other
Fragrance	Floral	Floral	Floral
Antibacterial Formulation	No	No	Yes
Ecologically Friendly Production	No	Yes	No

Choice Set 7

	Product A	Product B	Product C
Health & Safety Involvement	Clear evidence of this	Little or no evidence of this	Clear evidence of this
Human Rights	Medium risk	High risk	Low risk
Environmental Impact	Little or no evidence of this	Clear evidence of this	Little or no evidence of this
Equal Opportunities & Diversity	Clear evidence of this	Little or no evidence of this	Clear evidence of this
Community & Charity Involvement	Little or no evidence of this	Clear evidence of this	Little or no evidence of this
Price	£1.00	£2.00	£1.00
Colour	Yellow	Other	Green
Fragrance	Citrus	Other	Citrus
Antibacterial Formulation	No	Yes	No
Ecologically Friendly Production	Yes	No	Yes

Choice Set 8

	Product A	Product B	Product C
Health & Safety Involvement	Clear evidence of this	Some evidence of this	Little or no evidence of this
Human Rights	Medium risk	Medium risk	Low risk
Environmental Impact	Some evidence of this	Some evidence of this	Some evidence of this
Equal Opportunities & Diversity	Little or no evidence of this	Some evidence of this	Clear evidence of this
Community & Charity Involvement	Clear evidence of this	Some evidence of this	Little or no evidence of this
Price	£2.00	£1.50	£1.00
Colour	Other	Yellow	Yellow
Fragrance	Citrus	Floral	Other
Antibacterial Formulation	No	No	Yes
Ecologically Friendly Production	Yes	No	No

Choice Set 9

	Product A	Product B	Product C
Health & Safety Involvement	Some evidence of this	Clear evidence of this	Little or no evidence of this
Human Rights	Low risk	High risk	Medium risk
Environmental Impact	Some evidence of this	Some evidence of this	Some evidence of this
Equal Opportunities & Diversity	Clear evidence of this	Little or no evidence of this	Some evidence of this
Community & Charity Involvement	Clear evidence of this	Little or no evidence of this	Some evidence of this
Price	£2.50	£0.50	£1.00
Colour	Green	Other	Yellow
Fragrance	Citrus	Other	Floral
Antibacterial Formulation	No	Yes	Yes
Ecologically Friendly Production	Yes	No	No

Choice Set 10

	Product A	Product B	Product C
Health & Safety Involvement	Clear evidence of this	Little or no evidence of this	Some evidence of this
Human Rights	High risk	Low risk	High risk
Environmental Impact	Clear evidence of this	Little or no evidence of this	Some evidence of this
Equal Opportunities & Diversity	Clear evidence of this	Little or no evidence of this	Some evidence of this
Community & Charity Involvement	Little or no evidence of this	Clear evidence of this	Some evidence of this
Price	£2.50	£0.50	£1.50
Colour	Yellow	Other	Green
Fragrance	Other	Other	Citrus
Antibacterial Formulation	Yes	No	Yes
Ecologically Friendly Production	Yes	No	No

Choice Set 11

	Product A	Product B	Product C
Health & Safety Involvement	Some evidence of this	Some evidence of this	Clear evidence of this
Human Rights	High risk	Medium risk	Low risk
Environmental Impact	Clear evidence of this	Some evidence of this	Clear evidence of this
Equal Opportunities & Diversity	Clear evidence of this	Little or no evidence of this	Little or no evidence of this
Community & Charity Involvement	Little or no evidence of this	Clear evidence of this	Some evidence of this
Price	£0.50	£1.50	£2.50
Colour	Green	Green	Green
Fragrance	Citrus	Floral	Other
Antibacterial Formulation	Yes	No	No
Ecologically Friendly Production	Yes	No	No

Choice Set 12

	Product A	Product B	Product C
Health & Safety Involvement	Little or no evidence of this	Clear evidence of this	Some evidence of this
Human Rights	Medium risk	High risk	Low risk
Environmental Impact	Clear evidence of this	Little or no evidence of this	Clear evidence of this
Equal Opportunities & Diversity	Some evidence of this	Clear evidence of this	Little or no evidence of this
Community & Charity Involvement	Little or no evidence of this	Clear evidence of this	Some evidence of this
Price	£1.50	£0.50	£2.50
Colour	Green	Other	Yellow
Fragrance	Floral	Citrus	Other
Antibacterial Formulation	No	No	Yes
Ecologically Friendly Production	Yes	No	Yes

Choice Set 13

	Product A	Product B	Product C
Health & Safety Involvement	Little or no evidence of this	Clear evidence of this	Little or no evidence of this
Human Rights	High risk	High risk	Low risk
Environmental Impact	Some evidence of this	Clear evidence of this	Little or no evidence of this
Equal Opportunities & Diversity	Little or no evidence of this	Some evidence of this	Some evidence of this
Community & Charity Involvement	Some evidence of this	Little or no evidence of this	Clear evidence of this
Price	£1.50	£0.50	£2.50
Colour	Other	Yellow	Other
Fragrance	Floral	Other	Citrus
Antibacterial Formulation	No	No	Yes
Ecologically Friendly Production	Yes	No	Yes

Choice Set 14

	Product A	Product B	Product C
Health & Safety Involvement	Some evidence of this	Clear evidence of this	Little or no evidence of this
Human Rights	Medium risk	High risk	Low risk
Environmental Impact	Some evidence of this	Little or no evidence of this	Clear evidence of this
Equal Opportunities & Diversity	Little or no evidence of this	Clear evidence of this	Clear evidence of this
Community & Charity Involvement	Little or no evidence of this	Clear evidence of this	Some evidence of this
Price	£2.00	£2.50	£0.50
Colour	Other	Green	Yellow
Fragrance	Other	Other	Citrus
Antibacterial Formulation	Yes	No	Yes
Ecologically Friendly Production	No	Yes	No

Choice Set 15

	Product A	Product B	Product C
Health & Safety Involvement	Little or no evidence of this	Clear evidence of this	Little or no evidence of this
Human Rights	Medium risk	Low risk	Medium risk
Environmental Impact	Some evidence of this	Little or no evidence of this	Clear evidence of this
Equal Opportunities & Diversity	Some evidence of this	Little or no evidence of this	Clear evidence of this
Community & Charity Involvement	Some evidence of this	Clear evidence of this	Little or no evidence of this
Price	£1.50	£1.00	£2.00
Colour	Green	Yellow	Other
Fragrance	Floral	Citrus	Other
Antibacterial Formulation	No	Yes	No
Ecologically Friendly Production	No	Yes	No

Choice Set 16

	Product A	Product B	Product C
Health & Safety Involvement	Clear evidence of this	Little or no evidence of this	Clear evidence of this
Human Rights	High risk	Low risk	High risk
Environmental Impact	Little or no evidence of this	Clear evidence of this	Some evidence of this
Equal Opportunities & Diversity	Clear evidence of this	Clear evidence of this	Some evidence of this
Community & Charity Involvement	Some evidence of this	Clear evidence of this	Some evidence of this
Price	£0.50	£2.50	£1.50
Colour	Other	Green	Yellow
Fragrance	Other	Citrus	Floral
Antibacterial Formulation	No	Yes	Yes
Ecologically Friendly Production	No	Yes	Yes

Choice Set 17

	Product A	Product B	Product C
Health & Safety Involvement	Little or no evidence of this	Little or no evidence of this	Clear evidence of this
Human Rights	Medium risk	Low risk	Medium risk
Environmental Impact	Some evidence of this	Some evidence of this	Clear evidence of this
Equal Opportunities & Diversity	Some evidence of this	Clear evidence of this	Little or no evidence of this
Community & Charity Involvement	Some evidence of this	Little or no evidence of this	Clear evidence of this
Price	£1.50	£2.50	£0.50
Colour	Other	Other	Yellow
Fragrance	Citrus	Other	Other
Antibacterial Formulation	Yes	Yes	No
Ecologically Friendly Production	Yes	Yes	No

Choice Set 18

	Product A	Product B	Product C
Health & Safety Involvement	Little or no evidence of this	Some evidence of this	Clear evidence of this
Human Rights	Low risk	Medium risk	High risk
Environmental Impact	Little or no evidence of this	Clear evidence of this	Clear evidence of this
Equal Opportunities & Diversity	Clear evidence of this	Little or no evidence of this	Little or no evidence of this
Community & Charity Involvement	Little or no evidence of this	Clear evidence of this	Clear evidence of this
Price	£0.50	£1.50	£2.50
Colour	Green	Yellow	Other
Fragrance	Other	Citrus	Floral
Antibacterial Formulation	Yes	No	No
Ecologically Friendly Production	No	Yes	Yes

Choice Set 19

	Product A	Product B	Product C
Health & Safety Involvement	Some evidence of this	Clear evidence of this	Some evidence of this
Human Rights	Low risk	High risk	Medium risk
Environmental Impact	Little or no evidence of this	Clear evidence of this	Some evidence of this
Equal Opportunities & Diversity	Some evidence of this	Clear evidence of this	Some evidence of this
Community & Charity Involvement	Clear evidence of this	Little or no evidence of this	Some evidence of this
Price	£0.50	£2.50	£1.50
Colour	Yellow	Other	Green
Fragrance	Floral	Citrus	Floral
Antibacterial Formulation	No	Yes	No
Ecologically Friendly Production	Yes	Yes	No

Choice Set 20

	Product A	Product B	Product C
Health & Safety Involvement	Some evidence of this	Little or no evidence of this	Clear evidence of this
Human Rights	High risk	Low risk	High risk
Environmental Impact	Some evidence of this	Some evidence of this	Some evidence of this
Equal Opportunities & Diversity	Some evidence of this	Little or no evidence of this	Clear evidence of this
Community & Charity Involvement	Some evidence of this	Little or no evidence of this	Clear evidence of this
Price	£1.00	£1.00	£2.00
Colour	Green	Other	Yellow
Fragrance	Citrus	Other	Floral
Antibacterial Formulation	Yes	Yes	No
Ecologically Friendly Production	No	No	Yes

Choice Set 21

	Product A	Product B	Product C
Health & Safety Involvement	Little or no evidence of this	Some evidence of this	Clear evidence of this
Human Rights	Low risk	High risk	Medium risk
Environmental Impact	Clear evidence of this	Some evidence of this	Little or no evidence of this
Equal Opportunities & Diversity	Clear evidence of this	Some evidence of this	Little or no evidence of this
Community & Charity Involvement	Some evidence of this	Some evidence of this	Some evidence of this
Price	£1.00	£2.00	£2.50
Colour	Yellow	Yellow	Other
Fragrance	Citrus	Other	Other
Antibacterial Formulation	Yes	No	No
Ecologically Friendly Production	No	Yes	Yes

Choice Set 22

	Product A	Product B	Product C
Health & Safety Involvement	Clear evidence of this	Little or no evidence of this	Clear evidence of this
Human Rights	Low risk	High risk	Low risk
Environmental Impact	Some evidence of this	Clear evidence of this	Little or no evidence of this
Equal Opportunities & Diversity	Little or no evidence of this	Clear evidence of this	Little or no evidence of this
Community & Charity Involvement	Little or no evidence of this	Some evidence of this	Clear evidence of this
Price	£2.00	£0.50	£2.00
Colour	Other	Yellow	Other
Fragrance	Citrus	Other	Citrus
Antibacterial Formulation	Yes	No	Yes
Ecologically Friendly Production	No	Yes	No

Choice Set 23

	Product A	Product B	Product C
Health & Safety Involvement	Some evidence of this	Some evidence of this	Some evidence of this
Human Rights	Medium risk	Medium risk	Medium risk
Environmental Impact	Clear evidence of this	Little or no evidence of this	Little or no evidence of this
Equal Opportunities & Diversity	Little or no evidence of this	Clear evidence of this	Some evidence of this
Community & Charity Involvement	Clear evidence of this	Little or no evidence of this	Some evidence of this
Price	£2.50	£0.50	£1.50
Colour	Other	Green	Green
Fragrance	Other	Floral	Floral
Antibacterial Formulation	No	Yes	No
Ecologically Friendly Production	No	Yes	No

Choice Set 24

	Product A	Product B	Product C
Health & Safety Involvement	Some evidence of this	Some evidence of this	Some evidence of this
Human Rights	Medium risk	High risk	Low risk
Environmental Impact	Little or no evidence of this	Clear evidence of this	Little or no evidence of this
Equal Opportunities & Diversity	Little or no evidence of this	Clear evidence of this	Little or no evidence of this
Community & Charity Involvement	Some evidence of this	Clear evidence of this	Little or no evidence of this
Price	£1.50	£2.50	£0.50
Colour	Yellow	Green	Green
Fragrance	Floral	Citrus	Other
Antibacterial Formulation	Yes	Yes	No
Ecologically Friendly Production	Yes	No	Yes

Choice Set 25

	Product A	Product B	Product C
Health & Safety Involvement	Little or no evidence of this	Little or no evidence of this	Clear evidence of this
Human Rights	Low risk	Medium risk	High risk
Environmental Impact	Little or no evidence of this	Some evidence of this	Clear evidence of this
Equal Opportunities & Diversity	Clear evidence of this	Some evidence of this	Little or no evidence of this
Community & Charity Involvement	Clear evidence of this	Some evidence of this	Little or no evidence of this
Price	£2.50	£1.50	£0.50
Colour	Other	Yellow	Other
Fragrance	Other	Floral	Citrus
Antibacterial Formulation	No	Yes	Yes
Ecologically Friendly Production	No	Yes	Yes

Choice Set 26

	Product A	Product B	Product C
Health & Safety Involvement	Some evidence of this	Little or no evidence of this	Little or no evidence of this
Human Rights	High risk	Low risk	High risk
Environmental Impact	Some evidence of this	Little or no evidence of this	Clear evidence of this
Equal Opportunities & Diversity	Some evidence of this	Little or no evidence of this	Clear evidence of this
Community & Charity Involvement	Some evidence of this	Little or no evidence of this	Clear evidence of this
Price	£2.00	£1.00	£2.00
Colour	Yellow	Other	Green
Fragrance	Floral	Other	Citrus
Antibacterial Formulation	Yes	No	Yes
Ecologically Friendly Production	No	Yes	No

Choice Set 27

	Product A	Product B	Product C
Health & Safety Involvement	Clear evidence of this	Some evidence of this	Little or no evidence of this
Human Rights	Medium risk	Medium risk	High risk
Environmental Impact	Little or no evidence of this	Little or no evidence of this	Clear evidence of this
Equal Opportunities & Diversity	Clear evidence of this	Some evidence of this	Little or no evidence of this
Community & Charity Involvement	Little or no evidence of this	Some evidence of this	Clear evidence of this
Price	£2.50	£2.00	£0.50
Colour	Other	Green	Green
Fragrance	Other	Citrus	Citrus
Antibacterial Formulation	No	Yes	Yes
Ecologically Friendly Production	No	No	Yes

Choice Set 28

	Product A	Product B	Product C
Health & Safety Involvement	Clear evidence of this	Little or no evidence of this	Some evidence of this
Human Rights	Low risk	Medium risk	Medium risk
Environmental Impact	Little or no evidence of this	Clear evidence of this	Some evidence of this
Equal Opportunities & Diversity	Some evidence of this	Some evidence of this	Some evidence of this
Community & Charity Involvement	Clear evidence of this	Some evidence of this	Little or no evidence of this
Price	£1.00	£2.00	£2.00
Colour	Yellow	Other	Green
Fragrance	Citrus	Floral	Floral
Antibacterial Formulation	Yes	No	Yes
Ecologically Friendly Production	No	Yes	No

Information Sheet A

Washing up liquid is a necessity good in most households that is used several times a day and exists in a variety of forms to meet the various needs of billions of different people.

The advancements made in washing up liquid mean that consumers are presented with more than just fragrance and colour characteristics to choose between, but also different cleaning properties and production characteristics like those produced in an eco-friendly process.

Companies today typically have a focus on their corporate social responsibility practices. These practices can be assessed by independent third parties on their ability to treat their employees fairly and provide them with a safe environment to work in. The countries companies operate in can be assessed to check the likelihood of human rights violations occurring since some developing countries can be lax about labour standards and the standard of working and living conditions can be of an inadequate standard.

There is a pressure on companies today to improve their environmental impact. In the case of washing up liquid this may be through reducing carbon dioxide emissions in production or using recyclable materials in the packaging.

It's not unusual today to hear about companies supporting charities and or helping communities. Anything from donating money for school books to helping install fresh water systems in developing countries.

The variety of characteristics associated with washing up liquid are plentiful, however, the variety on offer to the consumer should satisfy most consumers' dishwashing needs.

Information Sheet B

Washing up liquid is a necessity good in most households that is used several times a day and exists in a variety of forms to meet the various needs of billions of different people.

The advancements made in washing up liquid mean that consumers are presented with more than just fragrance and colour characteristics to choose between, but also different cleaning properties and production characteristics.

The variety of characteristics associated with washing up liquid are plentiful, however, the variety on offer to the consumer should satisfy most consumers' dishwashing needs.

Questionnaire

Q1

	Option A				*Option B*	
	Winnings	Winnings			Winnings	Winnings
Row	**£2.10**	**£1.60**	**A**	**B**	**£3.80**	**£0.10**
1	Prob 10%	Prob 90%	X		Prob 10%	Prob 90%
2	Prob 20%	Prob 80%			Prob 20%	Prob 80%
3	Prob 30%	Prob 70%			Prob 30%	Prob 70%
4	Prob 40%	Prob 60%			Prob 40%	Prob 60%
5	Prob 50%	Prob 50%			Prob 50%	Prob 50%
6	Prob 60%	Prob 40%			Prob 60%	Prob 40%
7	Prob 70%	Prob 30%			Prob 70%	Prob 30%
8	Prob 80%	Prob 20%			Prob 80%	Prob 20%
9	Prob 90%	Prob 10%			Prob 90%	Prob 10%
10	Prob 100%	Prob 0%		X	Prob 100%	Prob 0%

In the diagram above Options A and B detail lottery payoffs. You start with Option A and end with Option B. Please read through the pairs of lottery payoffs and indicate the one point at which you would switch from Option A to Option B:

- Row 1
- Row 2
- Row 3
- Row 4
- Row 5
- Row 6
- Row 7
- Row 8
- Row 9
- Row 10

Q2

How do you see yourself? Are you generally a person who is fully willing to take risks or do you try to avoid taking risks?

On the scale below, 0 means "risk averse"; and 10 means "fully prepared to take risks"

o	o	o	o	o	o	o	o	o	o	o
0	1	2	3	4	5	6	7	8	9	10

Q3

The Ethics Position Questionnaire

Please indicate if you agree or disagree with the following items. Each represents a commonly held opinion and there are no right or wrong answers. We are interested in your reaction to such matters of opinion. Rate your reaction to each statement by writing a number to the left of each statement where:

1 = Completely disagree
2 = Largely disagree
3 = Moderately disagree
4 = Slightly disagree
5 = Neither agree nor disagree
6 = Slightly agree
7 = Moderately agree
8 = Largely agree
9 = Completely agree

1. People should make certain that their actions never intentionally harm another even to a small degree.

2. Risks to another should never be tolerated, irrespective of how small the risks might be.

3. The existence of potential harm to others is always wrong, irrespective of the benefits to be gained.

4. One should never psychologically or physically harm another person.

5. One should not perform an action which might in any way threaten the dignity and welfare of another individual.

6. If an action could harm an innocent other, then it should not be done.

7. Deciding whether or not to perform an act by balancing the positive consequences of the act against the negative consequences of the act is immoral.

8. The dignity and welfare of the people should be the most important concern in any society.

9. It is never necessary to sacrifice the welfare of others.

10. Moral behaviors are actions that closely match ideals of the most “perfect” action.

11. There are no ethical principles that are so important that they should be a part of any code of ethics.

12. What is ethical varies from one situation and society to another.

13. Moral standards should be seen as being individualistic; what one person considers to be moral may be judged to be immoral by another person.

14. Different types of morality cannot be compared as to "rightness."

15. Questions of what is ethical for everyone can never be resolved since what is moral or immoral is up to the individual.

16. Moral standards are simply personal rules that indicate how a person should behave, and are not be be applied in making judgments of others.

17. Ethical considerations in interpersonal relations are so complex that individuals should be allowed to formulate their own individual codes.

18. Rigidly codifying an ethical position that prevents certain types of actions could stand in the way of better human relations and adjustment.

19. No rule concerning lying can be formulated; whether a lie is permissible or not permissible totally depends upon the situation.

20. Whether a lie is judged to be moral or immoral depends upon the circumstances surrounding the action.

Q4

Here are a number of characteristics that may or may not apply to you. Please indicate please indicate the extent to which you, as an individual, agree or disagree with each statement:
Likert Scale (1= disagree strongly, 2= disagree a little, 3= neither agree nor disagree, 4= agree a little, 5= agree strongly)

Is talkative	○	○	○	○	○
Tends to find fault with others	○	○	○	○	○
Does a thorough job	○	○	○	○	○
Is depressed, blue	○	○	○	○	○
Is original, comes up with new ideas	○	○	○	○	○
Is reserved	○	○	○	○	○

Is helpful and unselfish with others					
Can be somewhat careless					
Is relaxed, handles stress well					
Is curious about many different things					
Is full of energy					
Starts quarrels with others					
Is a reliable worker					
Can be tense					
Is ingenious, a deep thinker					
Generates a lot of enthusiasm					
Has a forgiving nature					
Tends to be disorganized					
Worries a lot					
Has an active imagination					
Tends to be quiet					
Is generally trusting					
Tends to be lazy					
Is emotionally stable, not easily upset					
Is inventive					
Has an assertive personality					
Can be cold and aloof					
Perseveres until the task is finished					
Can be moody					
Values artistic, aesthetic experiences					
Is sometimes shy, inhibited					
Is considerate and kind to almost everyone					
Does things efficiently					
Remains calm in tense situations					
Prefers work that is routine					
Is outgoing, sociable					
Is sometimes rude to others					
Makes plans and follows through with them					

Gets nervous easily	○	○	○	○	○
Likes to reflect, play with ideas	○	○	○	○	○
Has few artistic interests	○	○	○	○	○
Likes to cooperate with others	○	○	○	○	○
Is easily distracted	○	○	○	○	○
Is sophisticated in art, music, or literature	○	○	○	○	○

Q5

"It is imperative to take immediate action to limit potential catastrophic consequences from changes in global climate, even if such action may be costly". Please indicate on the scale below the extent to which you agree with this statement:

- Disagree strongly
- Disagree
- Disagree a little
- Neither agree nor disagree
- Agree a little
- Agree
- Agree strongly

Q6

Please consider the following statement: "Man-induced climate change is a serious danger that could threaten our way of life". Please indicate on the scale below the extent to which you agree with this statement:

- Disagree strongly
- Disagree
- Disagree a little
- Neither agree nor disagree
- Agree a little
- Agree
- Agree strongly

Q7

An independent corporation collects data on thousands of corporations and assesses corporations on their corporate social responsibility practices. In this next question you will need to indicate how you think specific corporations rank in terms of their corporate social responsibility practices. A score of 1 is bottom of the scale and used to indicate who you think is the worst performer whilst a score of 11 is the top of the scale used to indicate who you think is the best performer. For more information on the companies click on the more info button.

- Barclays
- BP
- Cineworld
- HSBC
- JD Sports Fashion
- Marks & Spencer
- Restaurant Group
- Sainsburys
- Sky
- Tesco
- Vodafone

Q8

In what year were you born? ----------

Q9

What is your gender?

- Female
- Male
- Prefer not to say

Q10

What is your religion?

- No religion
- Christian (including Church of England, Catholic, Protestant and all other Christian denominations)
- Buddhist
- Hindu
- Jewish
- Muslim
- Sikh
- Other ----------

Q11

What is your ethnic group? Choose one option that best describes your ethnic group or background? (Office of National Statistics)



Q12

Please state the country you were raised ----------

Q13

What is your marital status?

- Married
- Single
- Divorced
- Widowed
- Other ----------

Q14

How would you best describe your current employment situation?

- Full-time employment
- Part-time employment
- Unemployed
- Homemaker
- Full-time student
- Part-time student
- Other ----------

Q15

What is the highest level of education you have completed?

- None
- High/secondary school
- Bachelor
- Master
- PhD
- Other ----------

Q16

Who in the household would you consider to be primarily in charge of expenses and budget decisions?

- Self
- Spouse
- Parent
- Do not know
- Other ----------

Q17

How do you receive your income?

- Fixed source (salary, pension)
- Hourly rate
- Hourly rate plus tips
- Loans/scholarships
- Parents
- Other ----------

Q18

Please indicate your gross income (before taxes) from all sources (including loans/scholarships):

- < £5,000
- £5,001 - £15,000
- £15,001 - £25,000
- £25,001 - £40,000
- £40,001 - £65,000
- £65,000+

Q19

How tall are you (in cm)? ----------

3 Nudging ethical consumerism: An incentivised discrete choice experiment.

3.1 Abstract

We used discrete choice models to conduct laboratory preference experiments to measure participants' willingness to pay (WTP) for different types of corporate social responsibility (CSR) practices incorporated within a product. Our experiment included both uninformed and informed participants. Incentive aligned discrete choice experiments evaluate participants' preferences for ethical consumerism. In the previous chapter we found participants demonstrate a WTP for the social product attributes and that a corporate social performance (CSP) signal is associated with participants' WTP and prioritisation of social product attributes. In this chapter we include a CSP nudge in addition to a signal to determine the impact CSR information has on how participants trade off product attributes.

We used the Big Five Inventory to explore the relationship between signal, nudge and the participants' WTP for product attributes. Uninformed participants are willing to pay to minimise human rights violations and this is associated with the personality trait openness. Those participants which are nudged demonstrate stronger preferences and increased willingness to pay for minimising the risk of human rights violations and this is associated with multiple personality traits: Openness, extraversion, agreeableness. We find distinctive segments of uninformed and informed socially responsible individuals.

3.2 Introduction

Can we nudge individuals to be more ethical consumers? Are corporate social performance (CSP) signals and nudges associated with stronger preferences and increased willingness to pay (WTP) for social product attributes? Much has been written about corporate social responsibility (CSR) and yet no standard definition of CSR is agreed on. The conceptual model of corporate performance suggested by Carroll (1979) includes CSR and identifies social responsibilities to include economic, legal, ethical and discretionary responsibilities. It is thought stakeholders, more specifically consumers, can distinguish between these four categories of social responsibilities (Maignan, 2001) and that CSR is going beyond compliance (McWilliams et al., 2006; 2001, 2000). We define CSR as the principles and practices a firm adopts to address its perceived societal obligations, (as defined in chapter 2). CSP, therefore, is a quantifiable measure of the firm's CSR (2010, 1991).

We assume when consumers purchase products they experience satisfaction and this satisfaction is measured in terms of utility. Consumers' utility is linked to more than money and the price of products. Consumer satisfaction can be influenced by several attributes, for example: Price; quality, functionality; firms' CSR practices, current trends. We assume when consumers purchase products they look at the information available to them on different products and make a selection by trading off the different product attributes, which includes the price of the product. It is important to understand that consumers' purchasing decisions can involve price, functional (tangible) attributes and social (intangible) attributes (Auger et al., 2010, 2008; Auger and Devinney, 2007; Auger et al., 2007; Devinney et al., 2006; Auger et al., 2003).

CSR practices can influence stakeholders, more specifically consumers' perceptions and purchasing decisions (Du et al., 2010; Luo and Bhattacharya, 2006; Sen et al., 2006; Bhattacharya and Sen, 2004; Sen and Bhattacharya, 2001). A firm's competitive position can be influenced by different stakeholder groups' satisfaction or dissatisfaction as the case may be. The practices and societal obligations a firm decides to focus its attention on can influence stakeholders' perceptions and consequently a firm's market share and financial performance (Du et al., 2007; Bhattacharya and Sen, 2004).

When consumers have favourable associations with a firm's societal commitments a firm can benefit from improved product evaluations (Brown and Dacin, 1997) and increased purchasing behaviours (Luo and Bhattacharya, 2006; Bhattacharya and Sen, 2004). Consumers do not value all societal commitments firms decide to undertake equally. It has been suggested that the locality of these commitments is important (Grau and Folse, 2007) and that consumers are more supportive of product driven CSR initiatives rather than process driven CSR initiatives (Gilley et al., 2000; Brown and Dacin, 1997).

It has been suggested in the literature that consumers behave differently to their indicated intentions; consumers do not appear to consume as ethically as they indicate they do in questionnaires and polls (Carrington et al., 2010; Du et al., 2010; Auger and Devinney, 2007; Du et al., 2007; Devinney et al., 2006; Luo and Bhattacharya, 2006; Sen et al., 2006; Bhattacharya and Sen, 2004, 2003; Carrigan and Attalla, 2001; Sen and Bhattacharya, 2001). Studies speculate that consumers lack awareness on firms' societal commitments and this hinders ethical consumerism (Du et al., 2010, 2007; Devinney et al., 2006; Luo and Bhattacharya, 2006; Sen et al., 2006; Bhattacharya and Sen, 2004; Sen and Bhattacharya, 2001; Cooper et al., 1997). A lack

of information on CSR can make it difficult for stakeholders to assess companies' CSR practices (Chatterji and Richman, 2008; Crane et al., 2008; Siegel and Vitaliano, 2007). However, in the previous chapter we find that the individuals are willing to pay for ethical product attributes both when they are uninformed on CSR practices and also upon receiving a signal.

Following the seminal work of Spence (1974, 1973) a firm can signal its CSP through its activities (e.g. providing information, advertising) and or attributes (e.g. ethical product features, CSR practices). Signalling theory studies tend to assume that quality is exogenously given and therefore quality is unmeasured (Arrow, 1973). However, observable CSR practices have been measured and used as signals (Wood, 2010; Brammer and Pavelin, 2006; Brammer and Millington, 2005). CSP is a measurement of CSR (Wood, 2010) and recent experiments have applied CSP measurement to product attributes, to study firms' abilities to signal CSR and measure the effect on ethical consumerism (Auger et al., 2010, 2008; Auger and Devinney, 2007; Auger et al., 2007; Devinney et al., 2006; Auger et al., 2003). We assume that a high quality product is preferred to a low quality product on the basis that the high quality product is superior and more reliable (Boulding and Kirmani, 1993; Zeithaml, 1988). To empirically test the impact of the signal and compare it to the effect of the CSP nudge we use EIRIS to select ethical product attributes and quantify the associated signal.[13] EIRIS compile data on approximately 3500 firms globally on approximately 100 CSR practices covering environmental, social and governance (ESG) issues. This data can be used to create benchmarks and CSP indices to measure firms' performance. The

[13] We have used the Ethical Investment Research Information Services (EIRIS) database to provide guidance in selecting ethical product attributes and also in quantifying these ethical product features in terms of CSR signals. EIRIS is a global leader in environmental, social and governance research and their research is used in the responsible investment services. Some of their clients include major index providers.

Ethical Consumer organisation provided a product rating system which in conjunction with EIRIS formed the basis of the nudge we include in our experiment.

The way choices are structured and presented to individuals (Glac, 2009; Levin et al, 1998; Thaler, 1987, 1980; Kahneman and Tversky, 1979), the format information is framed in and provided to individuals can nudge the decisions they make (Sunstein and Thaler, 2012; Tversky and Kahneman, 1981). In our experiment we provide some of the participants with both a signal and a nudge.[14] The nudge improves the availability of information on CSR in terms of what it means to have low and high CSP respectively, in order to see whether we can nudge the participants to consume more ethically and increase their WTP for the social attributes.

To understand the effect signals and nudges can have on ethical consumerism it is important to understand how consumers identify with firms and their initiatives. Fundamentally the significance of the CSP signal and nudge will be dependent on the satisfaction consumers experience from ethical product attributes. We use an incentivised discrete choice experiment to measure this satisfaction and calculate the participants' WTP.

3.3 Ethical consumerism

[14] Like the study in the previous chapter, in section 3.10 Appendix B all the information provided to the participants is included. All participants received a booklet containing instructions and the choice sets. The instructions were also explained to participants in full verbally before the experiment commenced. The participants allocated to the informed informational treatment, which can be regarded as the participants with high awareness of CSR, received the sheet titled Information Sheet A. The participants allocated to the uninformed informational treatment, which can be regarded as the participants with low awareness of CSR, received the sheet titled Information Sheet B. The participants which were regarded as nudged received both the sheet titled Information Sheet A and additional information on the impacts of CSR in a poster (the nudge) and were therefore considered to have the highest awareness of CSR.

In recent years news stories concerning numerous firms' ethical mismanagement have made the press. The New York Times has reported on how consumers should consider the human costs built into products like Apple's iPad. In China human rights are violated in Apple's supply chain and death by a work related accident or suicide is not uncommon (Duhigg and Barboza, 2012). More recently The New York Times and Nestlé have reported on labour and human rights violations in Thailand's seafood industry which is important as many European and American consumers purchase seafood which can be directly sourced to this supply chain (Urbina, 2015). With this in mind what are consumers willing to pay to minimise these human rights violations? Will increasing information on these CSR practices encourage individuals to pay the higher price frequently associated with ethical products?

CSR practices and ethical consumerism have evolved in recent years. To be an ethical consumer is no longer primarily focused on being green and environmentally friendly; several societal obligations can be considered (e.g. human rights, health and safety, firms' code of ethics and board practices). Firms are expected to be socially responsible and how these practices are signalled to stakeholders can influence firms' financial performance, reputations and consumers' purchasing behaviours (Brammer and Millington, 2008; Brammer and Pavelin, 2006; McWilliams et al., 2006; Brammer and Millington, 2005; Milgrom and Roberts, 1986). Good CSP is frequently associated with improved financial performance (Orlitzky et al., 2011; Orlitzky, 2008; Margolis and Walsh, 2003; Orlitzky et al., 2003; Orlitzky, 2001).

The degree to which individuals identify with firms' CSR practices will influence their attitudes and behaviours with regard to ethical consumerism (Grau and Folse, 2007; Gilley et al., 2000; Brown and Dacin, 1997). Ahearne, Bhattacharya & Gruen (2005), Luo and Bhattacharya (2006) find that individuals who positively identify

with firms' societal commitments positively endorse the firms, demonstrate loyalty and increase their transactions with these firms. In the previous chapter we find that both uninformed and informed individuals demonstrate increased WTP for ethical product attributes. Assuming participants detect the signal, we anticipate that the participants who receive both the signal and nudge will demonstrate greater ethical consumerism and increased WTP for social product attributes compared to those participants who are either uninformed or informed with just the signal.

3.4 Ethical attitudes, behaviours and personality

How ethical are consumers really? It has been suggested that consumers are ill-informed on firms' societal commitments and consequently their purchasing behaviours do not reflect the purchase intentions they indicate in polls and questionnaires (Du et al., 2010, 2007; Devinney et al., 2006; Luo and Bhattacharya, 2006; Sen et al., 2006; Bhattacharya and Sen, 2004; Auger et al., 2003; Sen and Bhattacharya, 2001). However, in the previous chapter we find that both uninformed and informed individuals are WTP for ethical product attributes. This finding contradicts earlier studies that speculate that consumers lack awareness and therefore behave less ethically than their attitudes and stated intentions suggest. The study does not support the conclusion of Auger et al (2008), that individuals will not sacrifice traditional product attributes (e.g. functionality) for ethical attributes, but rather finds individuals are WTP for ethical attributes. This suggests that the attitude behaviour gap previously identified in ethical consumerism is the result of using non-incentive aligned methods and or failing to make the participants trade off product attributes.

Hypothesis 1: The utilities associated with the ethical attributes of the product will be significantly positive in the individuals' purchasing decisions. All participants, regardless of the CSR information (or lack of information) they are presented with, will be willing to pay for ethical attributes.

The seminal work of Spence (1973, 1974) on signalling theory details how signalling can be used to overcome asymmetric information in the market. The studies by Milgrom and Roberts (1987) and McWilliams et al (2006) both suggest that a firm's CSP can be used as a signal. In the previous chapter we find that individuals who receive a signal are less price sensitive and focus their attention on specific social attributes, eco-friendly production and minimising the risk of human rights violations. A nudge is included in our experiment to see if participants will further decrease their price sensitivity and pay more for social attributes.

An individual's beliefs are comprised of personal beliefs and societal expectations (Fishbein, 1967). These beliefs can influence an individual's choices and behaviours (Zizzo, 2010; Cialdini, 1999; Ajzen and Fishbein, 1980; Fishbein and Ajzen, 1975). However, the availability and organisation of information made available to an individual means only a small amount of salient beliefs directly influence behaviour (Glac, 2009; Ajzen and Fishbein, 1980). Often consumers do not behave as economists and therefore to improve their wellbeing and the wellbeing of society a nudge can be used (Sunstein and Thaler, 2012). The way choices are structured and presented to individuals, the 'choice architecture' (i.e. choice information format and framing) provided to individuals can nudge the decisions they make (Sunstein and Thaler, 2012; Thaler, 1987; Tversky and Kahneman, 1981; Thaler, 1980; Kahneman and Tversky, 1979). In our experiment the nudge is designed to improve the

availability of information on CSR in terms of what it means to have low and high CSP. If the nudge is successful we anticipate that the participants will demonstrate a higher WTP for ethical attributes.

> *Hypothesis 2: Participants provided with a nudge will have reduced price sensitivity and increased WTP for ethical product attributes compared to the participants which received no information on CSR (uninformed participants) and the participants which received a CSP signal (informed participants).*

Individuals' personality traits may influence their behaviours. The Big Five Inventory developed by John et al (1991) is a multidimensional personality taxonomy which classifies personality into five broad dimensions: Openness, conscientiousness, extraversion, agreeableness, and neuroticism. John et al (2008) find that the Big Five personality dimensions are associated with behaviours and can predict behaviours; for example they find low conscientiousness is a predictor of engaging in risky behaviours. The personality dimensions are said to be generalisable across different cultures (Kalshoven et al, 2011; Benet-Martinez and John, 1998; McCrae and Costa, 1997). The Big Five Inventory has previously been used to analyse ethical leader behaviour. Kalshoven et al (2011) find, the personality traits conscientiousness and agreeableness to be significantly associated with ethical leadership. Saadullah and Bailey (2014) apply the inventory to accountants, they find that accountants' ethical intentions are significantly associated with the personality traits conscientiousness and openness. We include the inventory in our experiment to examine the personality dimensions and interactions with ethical consumerism and awareness to provide a more complete explanation on how and why individuals consume social attributes.

3.5 Method

In this chapter we examine the impact a signal and a nudge has on the WTP for ethical product attributes in an incentivised stated preference discrete choice experiment. The attributes can be classified as price, functional attributes and ethical (social) attributes. In the discrete choice experiment individuals trade-off washing up liquid attributes and their associated levels to choose whether to purchase, or not to purchase washing up liquid. The discrete choice experiment is an incentivised stated preference laboratory experiment conducted at the Centre for Research in the Behavioural Sciences (CRIBS), University of Nottingham (UK).

3.5.1 Experiment design

In the experiment participants make decisions on washing up liquid attributes. We reviewed the EIRIS dataset, literature – the study in the previous chapter, and conducted focus groups to finalise the product attributes and levels to include in the experiment design.

Attribute		Levels
X_1	Price	£0.50, £1.00, £1.50, £2.00, £2.50
X_2	Colour	green, yellow, other
X_3	Fragrance	citrus, floral, other
X_4	Antibacterial Formulation	yes, no
X_5	Eco-friendly Production	yes, no
X_6	Health & Safety	little or no evidence, some evidence, clear evidence
X_7	Human Rights	low risk, medium risk, high risk
X_8	Equal Opportunities & Diversity	little or no evidence, some evidence, clear evidence
X_9	Community & Charity Involvement	little or no evidence, some evidence, clear evidence
X_{10}	Environmental Impact	little or no evidence, some evidence, clear evidence

Table 3.1: Washing up liquid attributes and levels used in the experiment

Market research and the focus groups confirmed the experiment design was appropriate and that individuals are familiar with the product. Washing up liquid is a product which is frequently consumed and repeatedly purchased. A pilot study confirmed that the individuals understood the experiment and the incentivisation mechanism. The individuals completed the thirty choice sets and the questionnaires without difficulty.

We use Ngene to design an experiment with a low D_p-*error* of 0.0747. Ngene uses a *D-optimality* algorithm to achieve a *D-efficient* design by minimising the D_p-*error* (ChoiceMetrics, 2012). For the attributes and levels included in the design (see table 3.1) a full factorial design has in excess of 40,000 different combinations of attribute levels. A choice set with three unlabelled alternatives (washing up liquid: A, B, C) and a baseline alternative (referred to as the no purchase option) has in excess of 83 trillion combinations of washing up liquid attribute levels, with this in mind we use a

D-efficient design to reduce the number of choice sets an individual has to select from to avoid participant fatigue.[15]

When prior parameter information is available on the product attributes an optimised *D-efficient design* outperforms a full factorial orthogonal design (ChoiceMetrics, 2012). We have prior information on the product attributes using market research, the EIRIS dataset, focus groups and the literature. This information is used to optimise the *D-efficient design* and minimise the D_p*-error*.

In the experiment we divide the participants into three groups. Group 1 we refer to as the uninformed participants; these individuals are only provided with additional information on the price and the functional product attributes (e.g. colour). All the participants in all the treatments were provided with identical choice sets, however, the uninformed participants did not have the CSR attributes explained to them. In group 2 the participants are informed with a CSP signal; the signal provides full information on all the product attributes and levels detailed in table 1. In group 3 the participants are informed with a CSP signal and nudge; the nudge provides additional information on the ethical attributes and provides information on what it means to have good CSR practices and a high CSP rating. The nudge also provides information on what it means to have poor CSR practices and have a low CSP rating. All the participant information including the nudge is detailed in section 3.10 Appendix B. All participants in group 3 received the same information, however, the order in

[15] Refer to table 3.1 a bottle of washing up liquid has one attribute with five levels, seven attributes with three levels, and two attributes with two levels: $5^1x3^7x2^2$=43,740 attribute level combinations. Each choice set has four products of which three of the products have one attribute with five levels, seven attributes with three levels, and two attributes with two levels, the fourth product has zero attributes (no purchase option): $5^{3x1}x3^{3x7}x2^{3x2}x10^0$=83,682,825,624,000 attribute level combinations.

which the attribute information was provided to the participants was different for each participant. Appendix B details all the choice sets, the CSP signal and the CSP nudge.

3.5.2 Random utility theory

Random utility theory developed by Thurstone (1927), Marschak (1960) and McFadden (1973) provides the theoretical foundation for discrete choice modelling in that it is assumed that individuals make a decision that maximises his/her utility. Discrete choice models are used to examine how individuals' trade off multiple product attribute levels and select a product from a choice set of competing alternatives (Louviere, 1983; Louviere and Hensher, 1983; Louviere and Woodworth, 1983). The choices the individuals make demonstrate the trade-offs they make between the attributes and levels; these trade-offs allow the utility and WTP to be calculated for all the attributes.

Discrete choice experiments are derived from random utility theory (McFadden, 1973; Marschak, 1960; Thurstone, 1927). Individuals were presented with thirty choice sets. In each choice set each individual was required to choose between four different alternatives i.[16] The utility individual n receives from alternative i in choice set s is defined by the systematic component (V_{ni}) and a random error (ε_{ni}) (Train, 2009; Louviere et al., 2000; Ben-Akiva and Lerman, 1985):

[16] The choice sets were made available to participants in a printed booklet (in appendix B) and responses collected online in the CRIBS laboratory at the University of Nottingham.

$$U_{ni} = V_{ni} + \varepsilon_{ni} \quad (3.1)$$

The systematic component of the utility is defined by:

$$V_{ni} = -\beta_{1ni}X_{1nis} + \beta_{2ni}X_{2nis} + \beta_{3ni}X_{3nis} + \beta_{4ni}X_{4nis} + \beta_{5ni}X_{5nis} + \beta_{6ni}X_{6nis} - \beta_{7ni}X_{7nis} + \beta_{8n}X_{8nis} + \beta_{9ni}X_{9nis} + \beta_{10ni}X_{10nis}$$

when

$$i = A, B, C, No\ purchase \quad (3.2)$$

Following Ben-Akiva & Lerman (1985) in a choice set with *i* alternatives (in our experiment there are four products in a choice set, $i = A, B, C, No\ purchase$) individual *n* will choose washing up liquid *A* over *i* alternatives if the utility individual *n* experiences from washing up liquid *A* is greater than the utility the *i* alternatives can provide to individual *n*:

$$P_n(A) = \Pr(U_{nA} \geq U_{ni},\ \forall i \in s_n) \quad (3.3)$$

Extending the experiment in the previous chapter, the experiment consists of thirty choice sets with each choice set consisting of three unlabelled washing up liquid

alternatives (products A, B and C) and a baseline alternative which is the no purchase option (product NP). The utility individual *n* receives from alternative *i* in choice set *s* is defined by the systematic component (V_{ni}) and a random error (ε_{ni}) (Train, 2009; Louviere et al., 2000; Ben-Akiva and Lerman, 1985). It is assumed that individuals make choices that maximise their utility. Therefore, if an individual chooses product A from a choice set it is assumed that washing up liquid A provides the individual with the greatest amount of satisfaction out of all the alternatives included in the choice set:

$$U_n = U_n(A, B, C, NP) = U_n(1,\ 0,\ 0,\ 0) \tag{3.4}$$

only if

$$U_{nA} > U_{ni}\ \forall\ i \neq A \in \{A, B, C, NP\} \tag{3.5}$$

The utility functions of the washing up liquid alternatives in a given choice set are defined by:

$$V_{ni} = -\beta_{1ni}X_{1nis} + \beta_{2ni}X_{2nis} + \beta_{3ni}X_{3nis} + \beta_{4ni}X_{4nis} + \beta_{5ni}X_{5nis} + \beta_{6ni}X_{6nis} - \beta_{7ni}X_{7nis} + \beta_{8ni}X_{8nis} + \beta_{9ni}X_{9nis} + \beta_{10ni}X_{10nis}$$

when

$$i = A, B, C, No\ purchase \tag{3.6}$$

3.5.3 Econometrics of discrete choice modelling

We use the multinomial logit (MNL) model to design our experiment and the extensions of the MNL known as the conditional logit and mixed logit to model and estimate the expected utilities. When individual *n* chooses alternative *A* from a choice set *s* containing *i* alternatives the MNL is defined by:

$$P_n(A) = \frac{e^{V_{nA}}}{\sum_{i \in s_n} e^{V_{ni}}}$$

when

$$i = A, B, C, No\ purchase \tag{3.7}$$

when the random error terms (ε_{ni}), as detailed in equation 3.1., are assumed to be identically and independently distributed (Ben-Akiva and Lerman, 1985) and the coefficients (β) are assumed to be fixed for all the selected individuals. The decision the individual makes is also assumed to be independent of irrelevant alternatives, (IIA property), (Train, 2009).

Since our experiment involves choice sets we use the extension of the MNL model developed by McFadden (1973) known as the conditional logit model. The conditional logit model estimates the expected utilities by calculating them with respect to all the alternatives *i* in the choice sets available to the individuals. In the conditional logit model the systematic utility individual *n* receives from alternative *i* is defined by:

$$V_{ni} = \beta X'_{ni} + \gamma Z'_{ni}$$

when

$$i = A, B, C, No\ purchase \tag{3.8}$$

when X_i represents a vector of the ith alternative attributes and Z_i represents a vector of the attributes of *i* alternatives in choice set *s*. A standard requirement for the conditional logit model is to assume the error terms are independently and identically distributed and that they follow a Gumbel distribution with location parameter η and scale parameter $\mu > 0$. The conditional logit model can be defined by:

$$P_n(i) = \frac{e^{\mu V_{ni}}}{\sum_{i \in C_n} e^{\mu V_{ni}}}$$

when

$$i = A, B, C, No\ purchase \tag{3.9}$$

and WTP for the attributes and their respective levels is defined by:

$$E(WTP^K) = -\frac{E(\beta^K)}{\beta^{Price}} \tag{3.10}$$

where *k* represents the attribute level. We have calculated WTP in Stata using the nlcom command (StataCorp, 2013a; WHO, 2012; Hole, 2007a).

We use a form of the Hausman specification test each time we estimate using the conditional logit model to check that the estimators are consistent, efficient and that the assumption of independence of irrelevant alternatives is upheld (Hausman and McFadden, 1984; Hausman, 1978). When we use the MNL model and extensions of this model, like the conditional logit and mixed logit models, the standard Hausman test has restrictive limitations and it is more appropriate to use the seemingly unrelated estimation (SUEST) test (StataCorp, 2013a) . We start our estimation with the conditional logit model, however, if the SUEST specification test finds evidence that the model is incorrectly specified the mixed logit model will be used. The mixed logit model is a random utility model and like the conditional logit model it is an extension of the MNL model, however, the mixed logit model relaxes restrictive assumptions. Error terms are not required to be identically and independently distributed and individuals' decisions are not assumed to be independent of irrelevant alternatives. The coefficients (β) are treated as random therefore allowing individuals to display preference heterogeneity (Train, 2009; Hole, 2008; Hole, 2007b).

3.5.4 Experiment incentivisation

In the previous chapter we state that whilst a few studies on ethical consumerism using discrete choice modelling have been undertaken (Auger et al., 2010, 2008; Auger and Devinney, 2007) the fixed payment incentivisation can result in hypothetical bias. Consequently, the estimated utilities and WTP for attributes may be inflated as a result of the participants making choices which were not incentive aligned. In this experiment, which is an extension of the study in the previous chapter, we follow the incentivisation mechanism which is task related (Bardsley et al., 2010; Grether and Plott, 1979) and based on Induced Value Theory (Smith, 1976). The participants started the experiment with a fund of £18.00 and had to make a decision in thirty choice sets. Once all the choice tasks had been completed one of the choice tasks was randomly selected to determine the final payment. In the randomly selected choice task, if a participant had decided to purchase washing up liquid, the price of the washing up liquid was deducted from the fund of £18.00 and the participant was given the washing up liquid they had bought in the choice task plus the remainder of their fund.

3.5.5 Experiment implementation

The experiment was conducted in several sessions between December 2014 to June 2015 at the Centre for Research in the Behavioural Sciences (CRIBS), University of Nottingham. The experiment was organised and run by research assistants. 150 students from the University of Nottingham were recruited using Ben Greiner's

Online Recruitment System for Economic Experiments (Greiner, 2015). The experiment was completed online with 100% completion rate and the duration of the experiment was approximately one hour.

Participants were allocated to private workstations and completed the experiment in the laboratory using an online platform.[17] The instructions were read aloud by the research assistants and also distributed in print to the participants.[18] After control questions were completed and all queries answered the experiment commenced. Participants were provided with thirty choice sets to complete and upon completion of the choice sets and questionnaires the final payoffs were calculated and paid.

3.6 Results

150 participants completed the thirty choice sets. The dataset is compiled from the discrete choice experiment, this consists of 150 independent participants making repeated choices. The choice sets all include four products, with one of the alternatives being the option not to purchase. All of the participants made a decision in each of the thirty choice sets, therefore, resulting in 18000 observations, of which 4500 observations are choice observations and 13500 non choice observations.[19] Johnson et al (2013) in the ISPOR task force report find that the increase in statistical efficiency and precision levels out at approximately 300 observations. We have a dataset of 18000 observations; a large dataset like ours will allow for the product

[17] Bristol Online Surveys was used as the platform for delivering and collecting the experiment data.
[18] The instructions are included within the participant information which can be found in section 3.10 Appendix B.
[19] In each of the thirty choice sets there are four alternative products. Each alternative represents an observation whether it is selected or not and we had 150 participants which completed the discrete choice experiment: 30x4x150=18000 observations. In each choice set participants had to select one of the alternatives: 30x1x150=4500 choice observations (13500 non choice observations).

utilities and WTP for product attributes to be calculated precisely. The models are estimated using Stata version 13 (StataCorp, 2013b). We find on average that 71% of the participants choose to purchase washing up liquid, therefore, 29% of the participants exhibit no preferences for the product attributes and were not WTP for any of the washing up liquid attributes. The models are estimated using Stata version 13 (StataCorp, 2013b). In the subsections that follow we present our results. The baseline attributes which utility and WTP changes are compared to are detailed in table 3.2.

Attribute		Levels
X_2	Colour	green
X_3	Fragrance	citrus
X_4	Antibacterial Formulation	no
X_5	Eco-friendly Production	no
X_6	Health & Safety	little or no evidence
X_7	Human Rights	high risk
X_8	Equal Opportunities & Diversity	little or no evidence
X_9	Community & Charity Involvement	little or no evidence
X_{10}	Environmental Impact	little or no evidence

Table 3.2: Baseline washing liquid attributes and levels

3.6.1 The market for ethical consumerism

We initially estimated the utilities and WTP without the inclusion of any interaction effects. We did this since we know asymmetric information is present in markets and not only is the information between buyers and sellers asymmetrically distributed, different buyers also have differing amounts of information on products too. We present the results from the analysis (model 1) in tables 3.3 and 3.4 and figure 3.1. In

this model the data collected from all 150 participants is included without the inclusion of the awareness interaction effect.

We initially estimated model 1 in the conditional logit model, however, the specification test (SUEST) indicated that the assumptions on identically and independently distributed error terms, fixed coefficients and decisions, are independent of irrelevant alternatives and may potentially be violated (Train, 2009; Hole, 2008; Hole, 2007b). We therefore estimated a mixed logit model.

Like the study in the previous chapter, we find both the utilities and WTP for all the ethical product attributes to be positively significant at $p < 0.05$ or better with the exception of environmental impact. Participants are willing to pay more for the ethical product attributes, however, they do not value all the ethical attributes equally. We find that the participants demonstrate stronger preferences and prioritise specific CSR practices more strongly than others. The participants increase their WTP for decreasing the risk of human rights violations, demonstrating health and safety practices and eco-friendly production. Whilst we know there is asymmetric information in the market on the ethical attributes, like the study in the previous chapter, we do not find this to be problematic. All participants, including the participants which had low awareness of CSR, did purchase the product and demonstrate an increased WTP for these attributes.

Variables	Model 1	
	Coefficient	t-statistic
Price	-1.95***	-10.67
Health & Safety: Some Evidence	0.43***	4.15
Health & Safety: Clear Evidence	0.69***	5.60
Human Rights: Low Risk	1.16***	8.03
Human Rights: Medium Risk	0.79***	5.99
Environmental Impact: Some Evidence	-0.02	-0.19
Environmental Impact: Clear Evidence	-0.10	-0.80
Equal Opportunities & Diversity: Some Evidence	0.22*	2.42
Equal Opportunities & Diversity: Clear Evidence	0.35**	3.38
Community & Charity Involvement: Some Evidence	0.18*	2.12
Community & Charity Involvement: Clear Evidence	0.25*	2.34
Colour: Other	-0.24**	-2.61
Colour: Yellow	-0.31***	-3.50
Fragrance: Floral	0.19	1.95
Fragrance: Other	0.01	0.05
Antibacterial Formulation	1.35***	9.58
Eco-friendly Production	0.66***	8.19
Log-likelihood	-4200.09	
AIC	8466.18	
Number of participants	150	
Number of observations	18000	

Note: The attribute levels detailed in table 2 not included in this results table are the baseline attribute levels upon which the trade-offs are compared to.
** p<0.05, ** p<0.01, *** p<0.001*

Table 3.3: Mixed logit estimation, Model 1

Variable	WTP (£/bottle)	t-statistic
Health & Safety: Some Evidence	0.22***	4.23
Health & Safety: Clear Evidence	0.35***	5.84
Human Rights: Low Risk	0.59***	8.20
Human Rights: Medium Risk	0.41***	7.65
Environmental Impact: Some Evidence	-0.01	-0.19
Environmental Impact: Clear Evidence	-0.05	-0.78
Equal Opportunities & Diversity: Some Evidence	0.11*	2.52
Equal Opportunities & Diversity: Clear Evidence	0.18***	3.54
Community & Charity Involvement: Some Evidence	0.09*	2.24
Community & Charity Involvement: Clear Evidence	0.13*	2.31
Colour: Other	-0.12**	-2.40
Colour: Yellow	-0.16***	-3.63
Fragrance: Floral	0.10*	1.98
Fragrance: Other	0.00	0.05
Antibacterial Formulation	0.69***	11.02
Eco-friendly Production	0.34***	7.99

Note: The attribute levels detailed in table 2 not included in this results table are the baseline attribute levels upon which the WTPs are compared to.
** $p<0.05$, ** $p<0.01$, *** $p<0.001$*

Table 3.4: Model 1 WTP

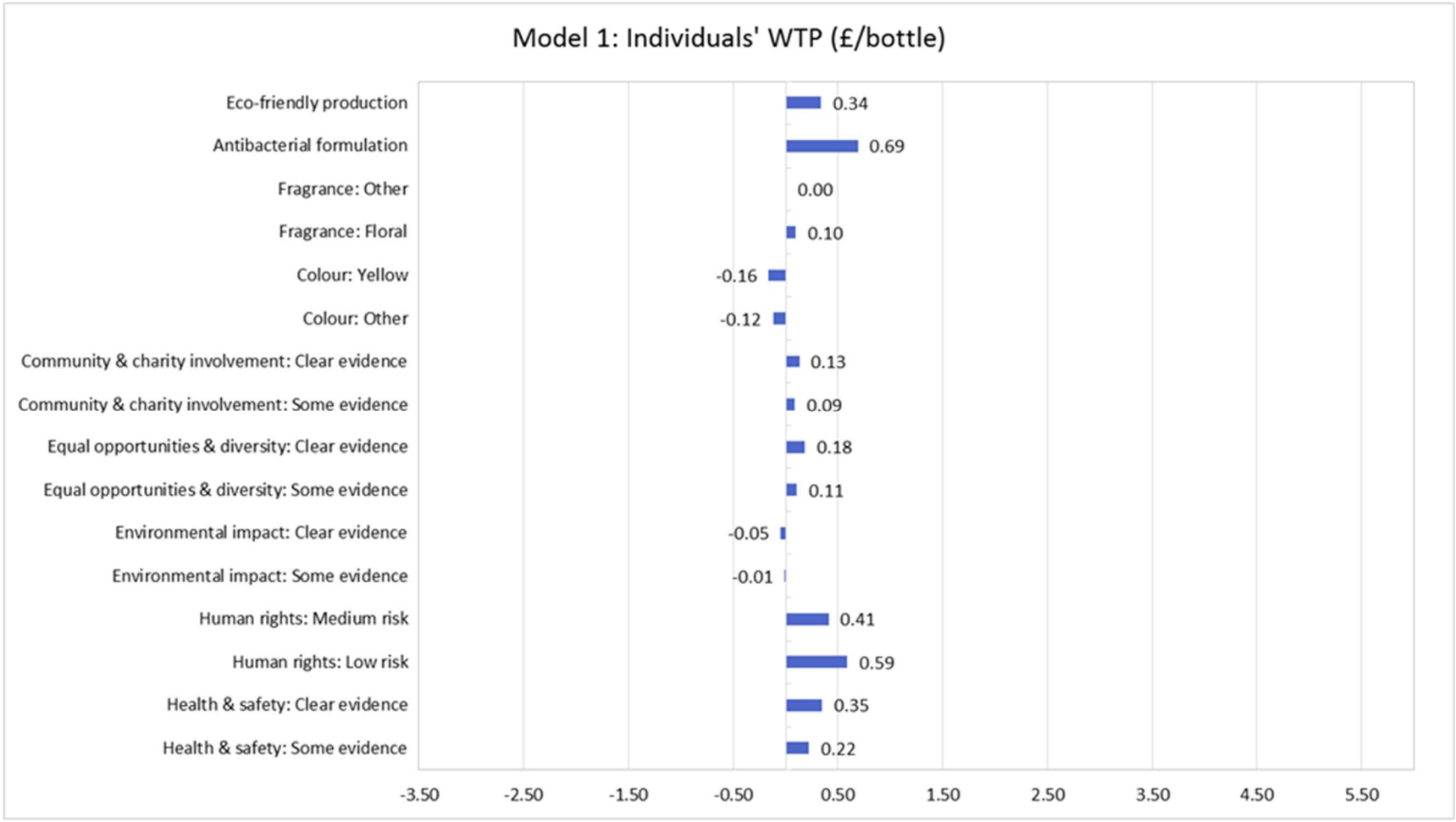


Figure 3.1: Model 1 WTP

3.6.2 The role of information

We now model the utilities and WTP with informational interactions. The results are presented in the conditional logit model. With the inclusion of the informational interactions the specification test (SUEST) provides no evidence of the conditional logit model assumptions being violated.[20]

We present the results for model which includes an interaction effect for the CSP informational treatments (model 2) in tables 3.5 and 3.14.[21] For the uninformed participants we find all the ethical product attributes to be positively significant at $p < 0.05$ or better with the exception of environmental impact and equal opportunities and diversity (some evidence). These individuals demonstrate a WTP for a wider variety of ethical attributes in the absence of a CSP signal and nudge. Whilst we know the participants are provided with different CSR informational treatments and that the awareness of CSR is varied in the experiment, low awareness of CSR does not appear to be problematic. Participants still chose to purchase washing up liquid with enhanced ethical attributes and demonstrated that they were willing to pay a higher price for the product to be more socially responsible.

When we look at the results for the informed participants we find that they have different preferences, utilities and WTP for the attributes. We find an association with increasing the informational content on CSP and decreasing the price sensitivity (table

[20] We prefer to use the conditional logit model when appropriate as the model is quicker to compute and deliver results. As the number of interaction effects included in the model increases the number of replications needed in a mixed logit model also increases significantly to deliver a model with a good fit. This then requires a supercomputer to be used. When we used the High Performance Computing Facility at the University of Nottingham a complete mixed logit model could not be found after 20000 replications (which took a week).

[21] The impact of the CSP informational treatments is represented by the awareness interaction in table 3.14 in appendix A.

3.14). We also find that the informed participants demonstrate stronger preferences for specific ethical attributes. Unlike the uninformed participants the informed participants are not WTP for the majority of the ethical attributes at $p < 0.05$ or better (see table 3.5). Participants informed with a CSP signal demonstrate stronger preferences and increased WTP for clear evidence of health and safety practices, lowering the risk of human rights violations and eco-friendly production. CSR practices like community and charity involvement are insignificant in these individuals' purchasing decisions. Providing participants with additional information in the form of a CSP nudge is associated with these individuals focusing their attention on lowering the risk of human rights violations and eco-friendly production. When we look at the t-statistics and the WTP, nudged individuals demonstrate the strongest preference for minimising human rights violations, however, the nudge does not demonstrate a further increase in WTP for eco-friendly production. This provides evidence that whilst eco-friendly production is important when the participants are provided with a signal and a nudge their preferences and sensitivity to CSR attributes are refined. These individuals are primarily concerned with minimising human rights violations, more so than the participants in the other two informational treatments.

Variable	Uninformed		Informed			
			CSP Signal		CSP Nudge	
	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic
Health & Safety: Some Evidence	0.33***	4.19	0.12	1.37	0.08	0.79
Health & Safety: Clear Evidence	0.37***	5.62	0.28***	4.08	0.10	1.09
Human Rights: Low Risk	0.47***	7.86	0.63***	9.21	0.73***	8.72
Human Rights: Medium Risk	0.20*	2.47	0.56***	6.07	0.39***	3.64
Environmental Impact: Some Evidence	0.03	0.36	-0.10	-0.94	-0.13	-0.99
Environmental Impact: Clear Evidence	0.03	0.47	-0.01	-0.16	-0.26**	-2.79
Equal Opportunities & Diversity: Some Evidence	0.10	1.09	0.15	1.56	-0.07	-0.57
Equal Opportunities & Diversity: Clear Evidence	0.18**	2.74	0.14	1.94	-0.02	-0.19
Community & Charity Involvement: Some Evidence	0.21**	2.79	0.07	0.84	-0.10	-0.99
Community & Charity Involvement: Clear Evidence	0.22**	3.15	0.08	1.04	-0.08	-0.86
Colour: Other	0.03	0.40	-0.06	-0.77	-0.33**	-3.06

Table 3.5: Model 2 WTP

Variable	Uninformed		Informed			
			CSP Signal		CSP Nudge	
	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic
Colour: Yellow	-0.06	-0.71	-0.11	-1.24	-0.03	-0.29
Fragrance: Floral	0.01	0.10	0.10	0.96	-0.01	-0.08
Fragrance: Other	0.05	0.85	-0.01	-0.11	-0.06	-0.67
Antibacterial Formulation	0.75***	12.45	0.62***	9.55	0.75***	9.11
Eco-friendly Production	0.30***	5.37	0.40***	6.40	0.39***	5.05

Note: The attribute levels detailed in table 3.2 not included in this results table are the baseline attribute levels upon which the WTPs are compared to.
** p<0.05, ** p<0.01, *** p<0.001*

Table 3.5: Model 2 WTP

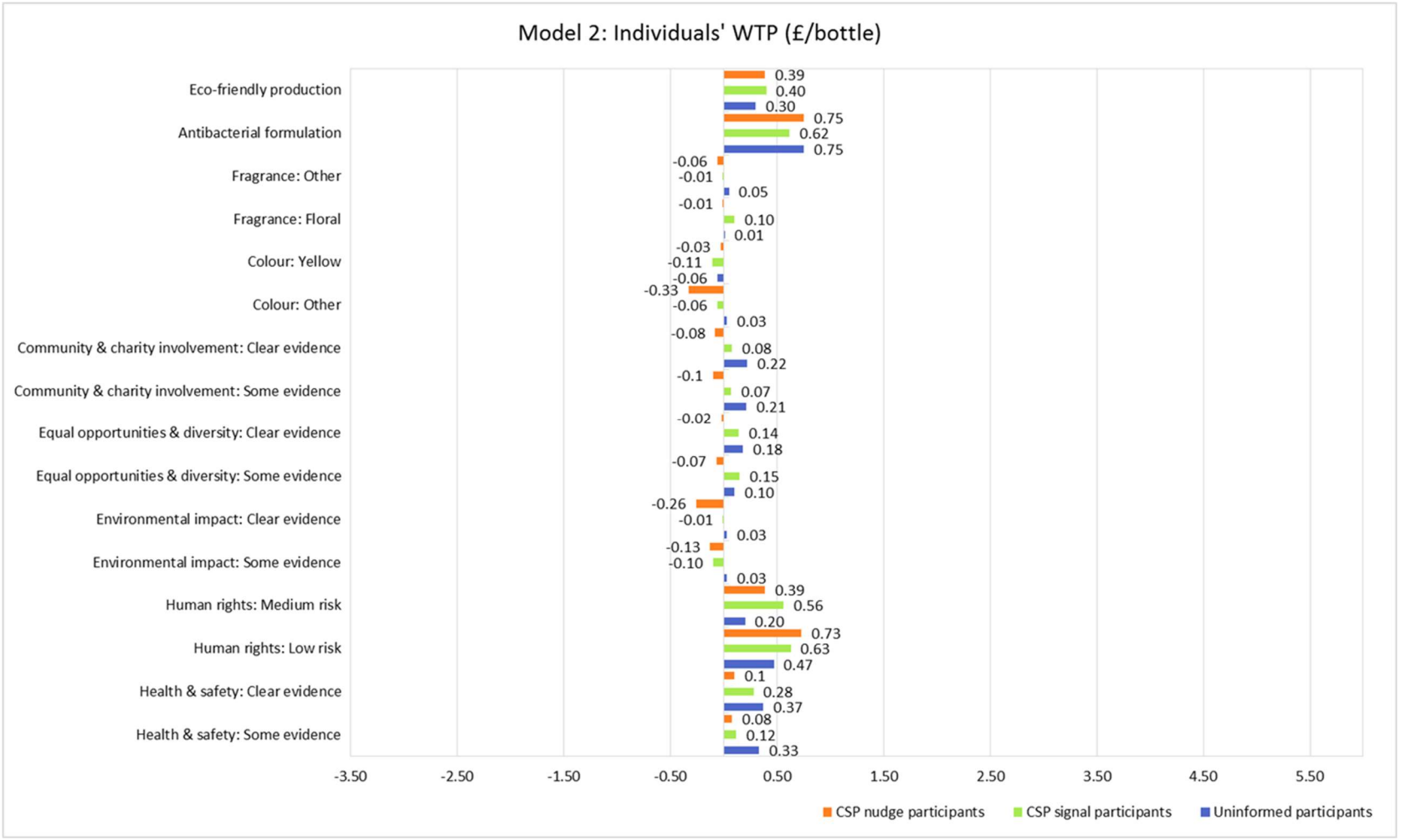


Figure 3.2: Model 2 WTP

3.6.3 The influence of information, nationality and religion

We present our results from the conditional logit model analysis in tables 3.6-3.9 and 3.15 (see appendix A) and figures 3.3-3.6. Like the study in the previous chapter we find the participants' information, nationality and religion significantly influence their preferences. Looking at the results of participants of European origin, informed individuals are less price sensitive than uninformed individuals. There is an association between increasing the amount of information available to these individuals and decreasing their price sensitivity. Participants who stated they have a religion were less price sensitive than those participants who stated they did not have a religion.

Another interesting finding is at $p < 0.05$ participants of European origin who stated they have a religion demonstrated strong preferences and increased WTP for reducing the risk of human rights violations and eco-friendly production. As the information available on CSP increased in this segment of the participants they demonstrated that their main priority in terms of ethical consumerism was to minimise the risk of human rights violations and they would pay more for the product when they were nudged. These participants were still WTP more for the product if they knew it was produced in an eco-friendly way, however, the nudge did not further increase this WTP, therefore indicating that whilst this attribute is preferred by these individuals minimising human rights violations is their main priority.

We find participants of European origin who stated they did not have a religion exhibited positively significant preferences at $p < 0.05$ or better for several ethical product attributes. In this segment of participants, the informed individuals showed an increased WTP for reducing the risk of human rights violations and eco-friendly

production and whilst attributes like community and charity involvement still remained important to these individuals, their WTP was reduced compared to the uninformed participants. The nudge was also associated with a switch in priorities. Again whilst several ethical attributes were significant and WTP increased compared to the uninformed and signalled participants, the main priority and increased WTP is for minimising the risk of human rights violations. The nudge did not appear to further increase WTP for the other types of CSR practices.

Looking at the results of participants of Asian origin, informed individuals are less price sensitive than uninformed individuals. There is an association between increasing the amount of information available to these individuals and decreasing their price sensitivity. However, unlike the participants of European origin the participants of Asian origin who stated they have no religion were less price sensitive than those participants who stated they did have a religion.

We find at $p < 0.05$ the participants of Asian origin who stated they have a religion demonstrated preferences and increased WTP for several ethical attributes rather than just focusing on reducing the risk of human rights violations and eco-friendly production like the participants of European origin did. However, as the information available on CSP increased in this segment of participants these individuals also exhibited a change in preferences and priorities with regard to CSR practices. Like the participants of European origin, they indicated that their main priorities in terms of ethical consumerism were to minimise the risk of human rights violations and eco-friendly production and they would pay more for these CSR practices. The participants who were nudged exhibited increased WTP to minimise human rights violations further, however, whilst these participants were still WTP more for the

product if they knew it was produced in an eco-friendly way the nudge did not further increase this WTP.

An interesting finding is at $p < 0.05$ the non-religious participants of Asian origin find one product attribute to be positively significant; they are WTP more to reduce the risk of human rights violations. An unexpected finding is that as the information on CSP is made more readily available to the participants of Asian origin with no stated religion no product attributes are found to be significant. For these individuals providing more information does not appear to be associated with improving ethical consumerism.

Overall our findings suggest that ethical consumerism is strongly influenced by information availability, nationality and religion. Our findings contradict earlier studies - the majority of the participants did decide to consume and pay more for ethical product attributes. A lack of awareness on CSR practices did not prevent the participants from consuming more socially responsible products as previously suggested (Du et al., 2010, 2007; Devinney et al., 2006; Luo and Bhattacharya, 2006; Sen et al., 2006; Bhattacharya and Sen, 2004; Auger et al., 2003; Sen and Bhattacharya, 2001). The majority of the nudged participants' preferences are focused on human rights and they demonstrated an increased WTP for minimising the risk of human rights violations.

Variable	Uninformed		CSP signal		CSP nudge	
	WTP(£/bottle)	t-statistic	WTP(£/bottle)	t-statistic	WTP(£/bottle)	t-statistic
Health & Safety: Some Evidence	0.17	1.47	-0.09	-0.74	-0.17	-1.23
Health & Safety: Clear Evidence	0.19	1.89	0.05	0.52	-0.19	-1.46
Human Rights: Low Risk	0.57***	6.27	0.70***	7.23	0.87***	7.02
Human Rights: Medium Risk	0.29*	2.47	0.56***	4.42	0.43**	2.84
Environmental Impact: Some Evidence	0.05	0.37	-0.12	-0.82	-0.09	-0.47
Environmental Impact: Clear Evidence	0.00	0.04	-0.06	-0.61	-0.28*	-2.12
Equal Opportunities & Diversity: Some Evidence	0.15	1.21	0.20	1.54	0.02	0.12
Equal Opportunities & Diversity: Clear Evidence	0.11	1.10	0.05	0.42	-0.05	-0.41
Community & Charity Involvement: Some Evidence	0.20	1.78	0.03	0.26	-0.10	-0.68
Community & Charity Involvement: Clear Evidence	0.18	1.76	0.00	0.02	-0.07	-0.50
Colour: Other	-0.01	-0.10	-0.10	-0.86	-0.35*	-2.27
Colour: Yellow	0.07	0.57	0.03	0.23	0.11	0.69
Fragrance: Floral	0.00	0.01	0.09	0.64	-0.05	-0.28
Fragrance: Other	0.02	0.21	-0.08	-0.81	-0.10	-0.78
Antibacterial Formulation	0.84***	8.91	0.70***	7.46	0.80***	6.69
Eco-friendly Production	0.20*	2.40	0.29**	3.25	0.22*	2.09

Note: The attribute levels detailed in table 3.2 not included in this results table are the baseline attribute levels upon which the WTPs are compared to.
** p<0.05, ** p<0.01, *** p<0.001*

Table 3.6: Model 3 WTP of participants of European origin with a stated religion

Variable	Uninformed		CSP signal		CSP nudge	
	WTP(£/bottle)	t-statistic	WTP(£/bottle)	t-statistic	WTP(£/bottle)	t-statistic
Health & Safety: Some Evidence	0.32**	3.23	0.11	1.11	0.07	0.53
Health & Safety: Clear Evidence	0.34***	4.24	0.24**	2.96	0.07	0.63
Human Rights: Low Risk	0.53***	7.22	0.64***	8.35	0.76***	7.77
Human Rights: Medium Risk	0.20	1.91	0.43***	3.79	0.30*	2.19
Environmental Impact: Some Evidence	0.23*	2.08	0.10	0.79	0.15	1.02
Environmental Impact: Clear Evidence	0.14	1.78	0.09	1.13	-0.07	-0.63
Equal Opportunities & Diversity: Some Evidence	0.11	0.95	0.14	1.25	-0.01	-0.07
Equal Opportunities & Diversity: Clear Evidence	0.42***	5.00	0.39***	4.53	0.35**	3.16
Community & Charity Involvement: Some Evidence	0.32**	3.33	0.18	1.91	0.10	0.79
Community & Charity Involvement: Clear Evidence	0.52***	6.03	0.39***	4.52	0.38**	3.44
Colour: Other	0.04	0.39	-0.04	-0.39	-0.22	-1.84
Colour: Yellow	-0.25*	-2.39	-0.30**	-2.81	-0.27*	-2.05
Fragrance: Floral	-0.11	-0.94	-0.04	-0.34	-0.17	-1.14
Fragrance: Other	0.21**	2.61	0.13	1.61	0.15	1.40
Antibacterial Formulation	0.57***	8.07	0.44***	6.00	0.49***	5.30
Eco-friendly Production	0.27***	3.90	0.34***	4.83	0.29**	3.26

Note: The attribute levels detailed in table 3.2 not included in this results table are the baseline attribute levels upon which the WTPs are compared to.
** p<0.05, ** p<0.01, *** p<0.001*

Table 3.7: Model 3 WTP of participants of European origin with no stated religion

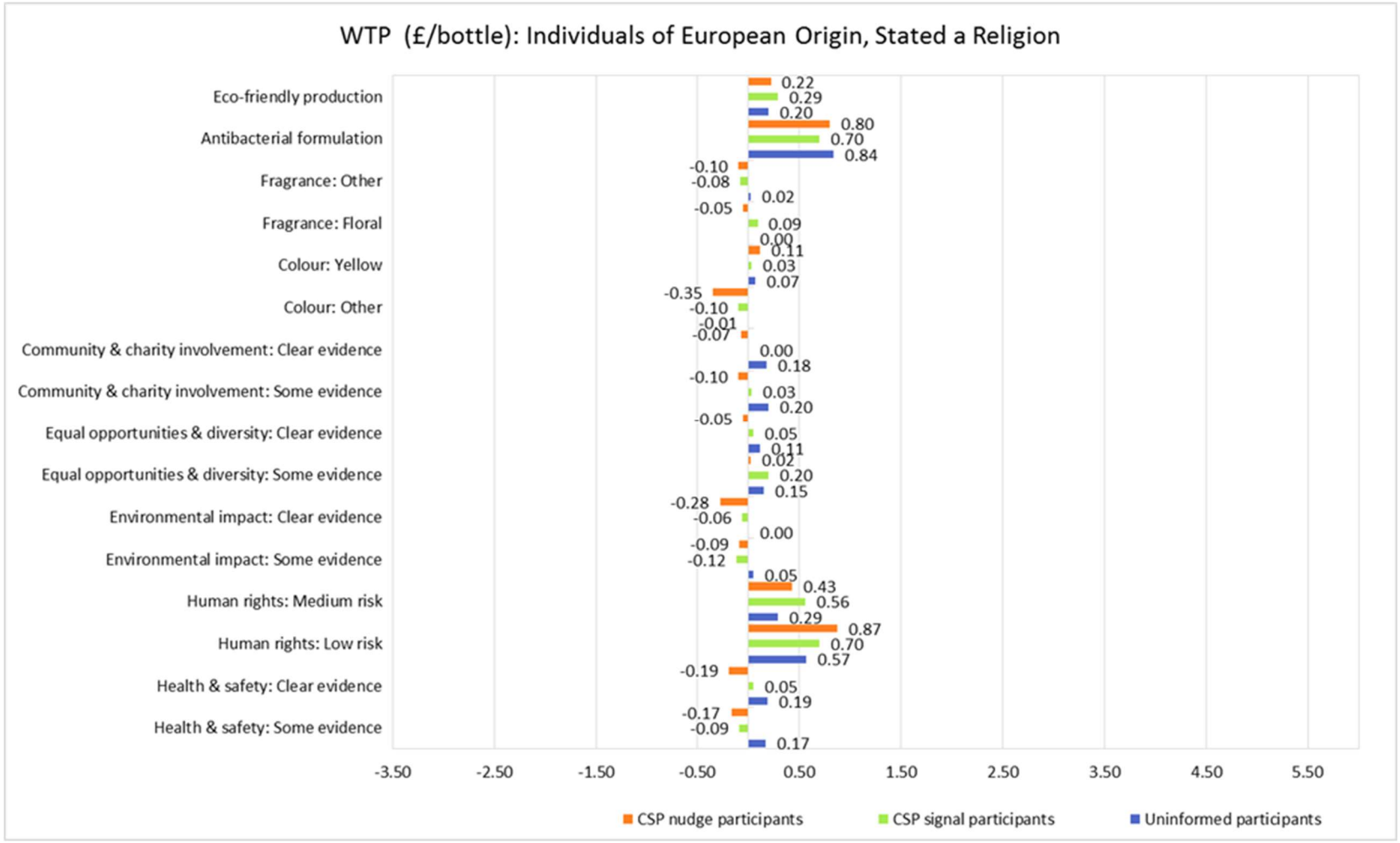


Figure 3.3: Model 3 European participants' WTP

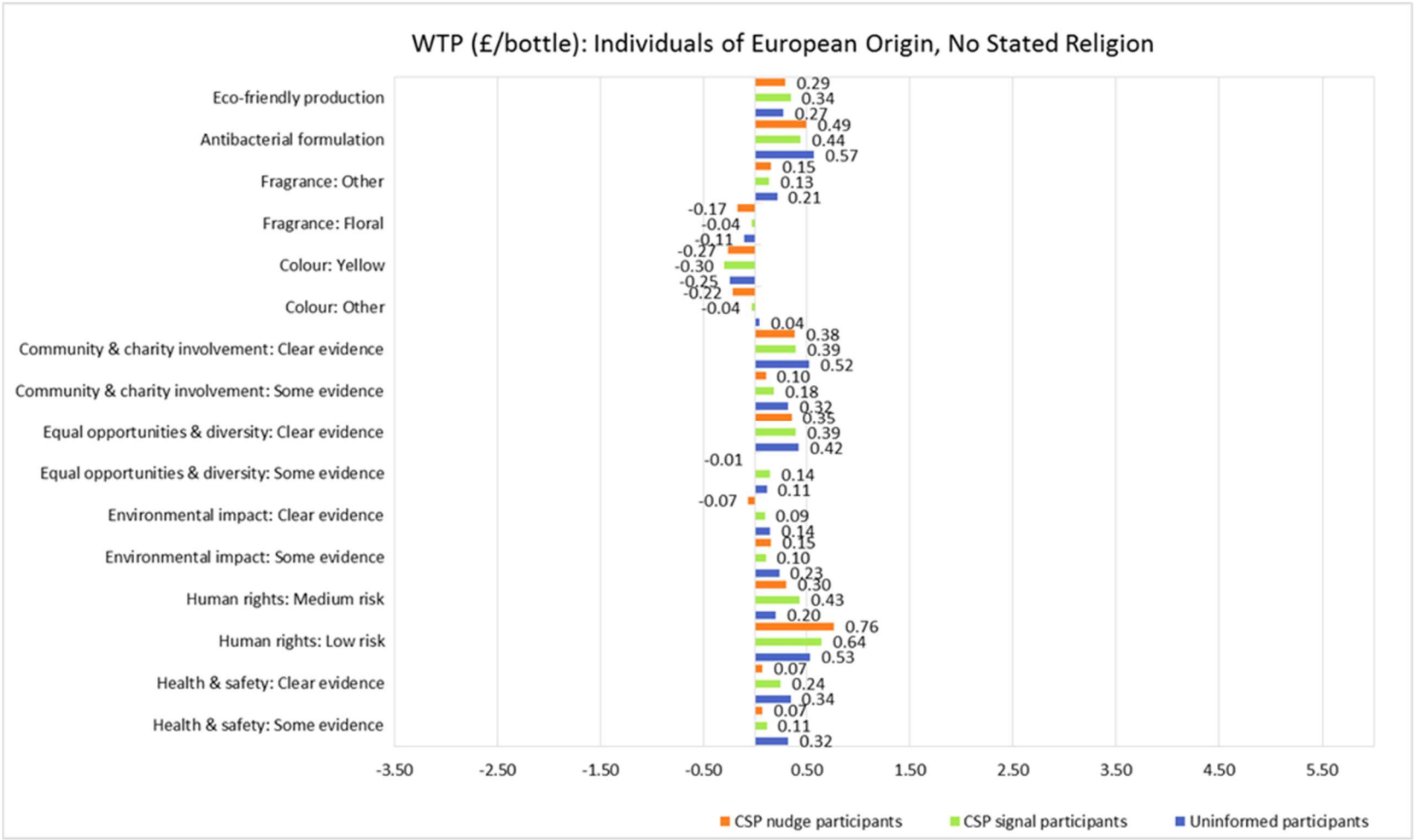


Figure 3.4: Model 3 European participants' WTP

Variable	Uninformed		CSP signal		CSP nudge	
	WTP(£/bottle)	t-statistic	WTP(£/bottle)	t-statistic	WTP(£/bottle)	t-statistic
Health & Safety: Some Evidence	0.29**	2.72	0.08	0.73	0.03	0.26
Health & Safety: Clear Evidence	0.35***	3.87	0.24**	2.60	0.06	0.65
Human Rights: Low Risk	0.22**	2.66	0.31***	3.54	0.40***	4.53
Human Rights: Medium Risk	0.02	0.19	0.24*	2.04	0.09	0.72
Environmental Impact: Some Evidence	-0.04	-0.29	-0.19	-1.37	-0.17	-1.21
Environmental Impact: Clear Evidence	0.02	0.21	-0.04	-0.38	-0.21*	-2.10
Equal Opportunities & Diversity: Some Evidence	0.09	0.77	0.13	1.05	-0.03	-0.25
Equal Opportunities & Diversity: Clear Evidence	0.09	1.03	0.04	0.36	-0.05	-0.49
Community & Charity Involvement: Some Evidence	0.22*	2.15	0.07	0.70	-0.03	-0.27
Community & Charity Involvement: Clear Evidence	0.04	0.42	-0.12	-1.10	-0.19	-1.74
Colour: Other	-0.03	-0.24	-0.10	-0.91	-0.30**	-2.63
Colour: Yellow	-0.12	-1.11	-0.17	-1.42	-0.12	-1.06
Fragrance: Floral	0.15	1.24	0.23	1.81	0.14	1.06
Fragrance: Other	0.00	0.04	-0.09	-0.88	-0.10	-0.97
Antibacterial Formulation	0.80***	9.39	0.69***	7.72	0.77***	8.52
Eco-friendly Production	0.42***	5.41	0.51***	5.90	0.48***	5.59

Note: The attribute levels detailed in table 3.2 not included in this results table are the baseline attribute levels upon which the WTPs are compared to.
** p<0.05, ** p<0.01, *** p<0.001*

Table 3.8: Model 3 WTP of participants of Asian origin with a stated religion

Variable	Uninformed		CSP signal		CSP nudge	
	WTP(£/bottle)	t-statistic	WTP(£/bottle)	t-statistic	WTP(£/bottle)	t-statistic
Health & Safety: Some Evidence	0.33	0.42	-0.51	-0.52	-1.29	-0.58
Health & Safety: Clear Evidence	0.45	0.69	0.06	0.08	-1.23	-0.54
Human Rights: Low Risk	2.18*	2.00	3.02	1.66	5.65	0.91
Human Rights: Medium Risk	2.26	1.90	3.66	1.64	5.31	0.92
Environmental Impact: Some Evidence	-0.35	-0.34	-1.04	-0.70	-1.54	-0.49
Environmental Impact: Clear Evidence	-0.43	-0.59	-0.75	-0.75	-2.42	--0.72
Equal Opportunities & Diversity: Some Evidence	0.46	0.54	0.69	0.66	0.12	0.06
Equal Opportunities & Diversity: Clear Evidence	-0.96	-1.06	-1.44	-1.08	-3.10	-0.76
Community & Charity Involvement: Some Evidence	-0.19	-0.24	-0.86	-0.76	-2.24	-0.70
Community & Charity Involvement: Clear Evidence	-0.49	-0.61	-1.27	-0.96	-2.61	-0.71
Colour: Other	-0.07	-0.09	-0.40	-0.41	-1.91	-0.68
Colour: Yellow	1.72	1.29	1.97	1.12	3.87	0.75
Fragrance: Floral	-0.00	-0.00	0.30	0.28	-0.27	-0.13
Fragrance: Other	-0.38	-0.54	-0.83	-0.84	-1.47	-0.63
Antibacterial Formulation	2.19	1.94	2.04	1.59	3.58	0.90
Eco-friendly Production	-0.37	-0.58	-0.20	-0.28	-0.93	-0.53

Note: The attribute levels detailed in table 3.2 not included in this results table are the baseline attribute levels upon which the WTPs are compared to.
** p<0.05, ** p<0.01, *** p<0.001*

Table 3.9: Model 3 WTP of participants of Asian origin with no stated religion

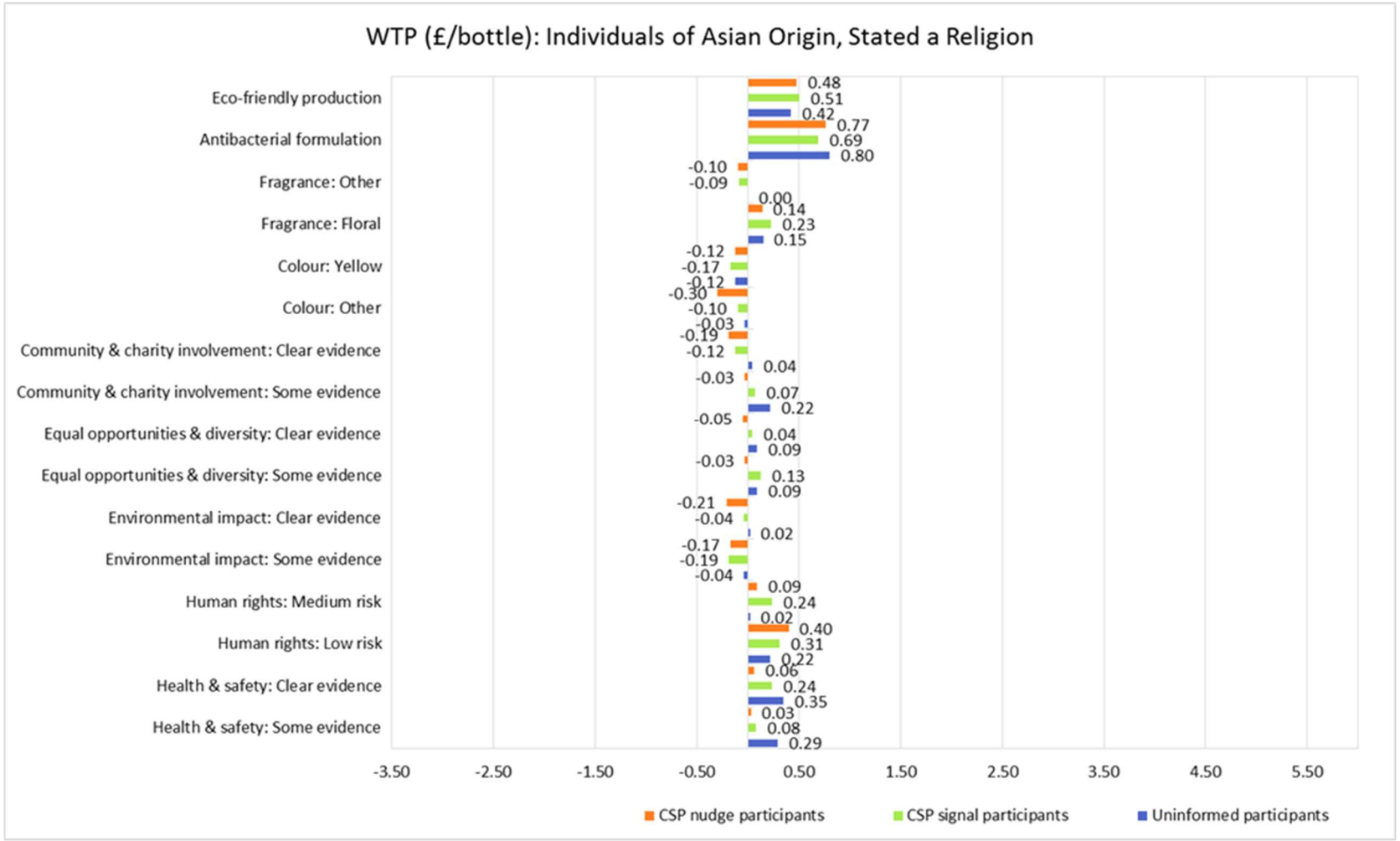


Figure 3.5: Model 3 Asian participants' WTP

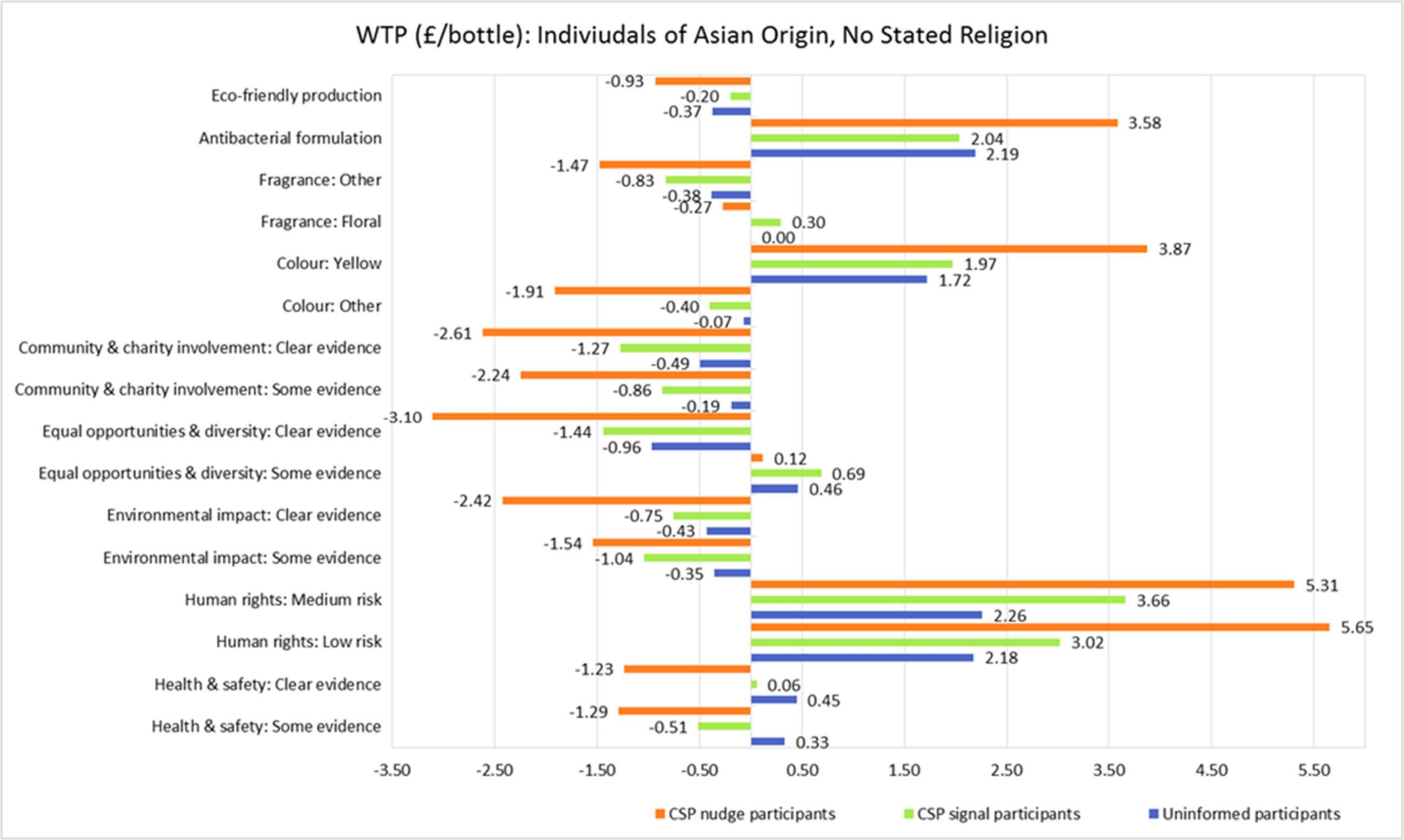


Figure 3.6: Model 3 Asian participants' WTP

3.6.4 Personality traits: Big Five Inventory

In our experiment we included the Big Five Inventory developed by John et al (1991), John et al (2008). The personality model represents personality in five broad dimensions: Openness to new experience; Conscientiousness; Extraversion; Agreeableness; and Neuroticism (John et al., 2008; Benet-Martínez and John, 1998; John et al., 1991). Table 3.10 details a descriptive analysis of the participants in our experiment in terms of the Big Five Inventory model.

Big Five Inventory traits	Mean	Standard deviation
Openness	3.48	0.48
Conscientiousness	3.48	0.65
Extraversion	3.42	0.67
Agreeableness	3.71	0.60
Neuroticism	2.92	0.67

Table 3.10: Descriptive analysis of the participants' personality traits

We present our results from the conditional logit model analysis in tables 3.11-3.13 and 3.16 (see appendix A) and figures 3.7-3.9. In subsections 3.6.1-3.6.3 we reported that the majority of participants demonstrated a strong preference for minimising the risk of human rights violations and as information became more available to participants a stronger preference and increased WTP was exhibited for this ethical attribute. Personality traits can be associated with the decisions individuals make (John et al., 2008), therefore we include the Big Five Inventory in the analysis to see

if it can provide a more detailed explanation behind the choices the participants made in our experiment. We find a positive significant interaction at $p < 0.001$ between the personality trait openness and low risk of human rights violations. Uninformed participants and informed participants all demonstrate a strong interaction and preference between the personality trait openness and minimising the risk of human rights violations. As the information available to participants increased this was associated with a stronger interaction and increased WTP between openness and the ethical attribute. This finding suggests that the personality trait openness influences ethical consumerism. Individuals who score highly in the openness trait are generally open to new experiences and emotion (John et al., 2008; Benet-Martínez and John, 1998) therefore to see openness associated with ethical consumerism in the majority of participants is an interesting result which fits with the characteristics of the personality trait openness.

In the tables 3.11-3.13 we report the WTP for ethical attributes when the Big Five Inventory personality traits are interacted in conjunction with the participants' awareness. We find that as the information on CSR practices is made more readily available and we nudge the participants that in addition to openness the personality traits extraversion and agreeableness also demonstrate significant interactions at $p < 0.05$ and result in increased WTP for reducing the risk of human rights violations. To summarise Benet-Martínez and John (1998) the personality trait extraversion includes areas of the personality like sociability and positive emotions, whereas agreeableness has been found to include characteristics; like altruism and compassion. Again our findings are both interesting and fitting with the psychology behind the personality traits, as more information is made available to the participants this is associated with

heightened emotion and altruism towards individuals' human rights and therefore the participants increase their WTP to minimise the risk of human rights violations.

We find that some of the personality traits significantly influence participants' WTP for minimising the risk of human rights violations. Whilst the majority of participants demonstrate a WTP for a wider variety of ethical attributes, the results are mostly positive and insignificant. This said open minded participants, regardless of the informational treatment, exhibit a strong preference and WTP for reducing human rights violations. Our results support the findings of Saadullah and Bailey (2014) and Kalshoven et al (2011) that the personality trait openness significantly influences ethical decision making. When we informed participants, the personality traits extraversion and agreeableness also significantly influenced participants WTP, however, this was again for minimising human rights violations. Whilst these individuals did demonstrate a WTP for a wider variety of ethical attributes, the results were again insignificant. We did not find any significant interactions with the personality traits conscientiousness and neuroticism.

Variable	Openness		Conscientiousness		Extraversion		Agreeableness		Neuroticism	
	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic
Health & Safety: Some Evidence	0.32	1.46	0.37	1.50	0.39	1.58	0.38	1.48	0.33	1.33
Health & Safety: Clear Evidence	0.27	1.40	0.34	1.60	0.32	1.51	0.28	1.25	0.30	1.40
Human Rights: Low Risk	0.43*	2.42	0.25	1.24	0.35	1.79	0.38	1.85	0.27	1.33
Human Rights: Medium Risk	0.44	1.85	0.35	1.35	0.47	1.81	0.52	1.90	0.42	1.58
Environmental Impact: Some Evidence	0.25	0.96	0.17	0.60	0.29	1.04	0.27	0.90	0.24	0.82
Environmental Impact: Clear Evidence	0.35	1.93	0.43*	2.10	0.43*	2.14	0.36	1.67	0.37	1.79
Equal Opportunities & Diversity: Some Evidence	-0.24	-0.94	-0.30	-1.05	-0.29	-1.03	-0.31	-1.03	-0.30	-1.01
Equal Opportunities & Diversity: Clear Evidence	0.21	1.08	0.14	0.65	0.18	0.86	0.15	0.67	0.18	0.82
Community & Charity Involvement: Some Evidence	-0.11	-0.51	-0.07	-0.28	-0.11	-0.47	-0.15	-0.59	-0.17	-0.68

Table 3.11: Model 4 Big 5 WTP of uninformed participants

Variable	Openness		Conscientiousness		Extraversion		Agreeableness		Neuroticism	
	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic
Community & Charity Involvement: Clear Evidence	-0.21	-0.98	-0.20	-0.83	-0.18	-0.79	-0.28	-1.11	-0.25	-1.03
Colour: Other	0.06	0.25	0.08	0.32	0.01	0.03	-0.04	-0.14	0.03	0.13
Colour: Yellow	-0.00	-0.01	-0.04	-0.16	-0.03	-0.12	0.04	0.14	0.01	0.02
Fragrance: Floral	0.09	0.34	0.12	0.41	0.07	0.26	0.04	0.14	0.06	0.21
Fragrance: Other	-0.09	-0.50	-0.11	-0.50	-0.10	-0.45	-0.21	-0.91	-0.15	-0.67
Antibacterial Formulation	0.31	1.88	0.47*	2.52	0.40*	2.20	0.38	1.96	0.43*	2.28
Eco-friendly Production	0.05	0.32	-0.00	-0.03	0.01	0.03	0.10	0.51	0.03	0.16

Note: The attribute levels detailed in table 3.2 not included in this results table are the baseline attribute levels upon which the WTPs are compared to.
** p<0.05, ** p<0.01, *** p<0.001*

Table 3.11: Model 4 Big 5 WTP of uninformed participants

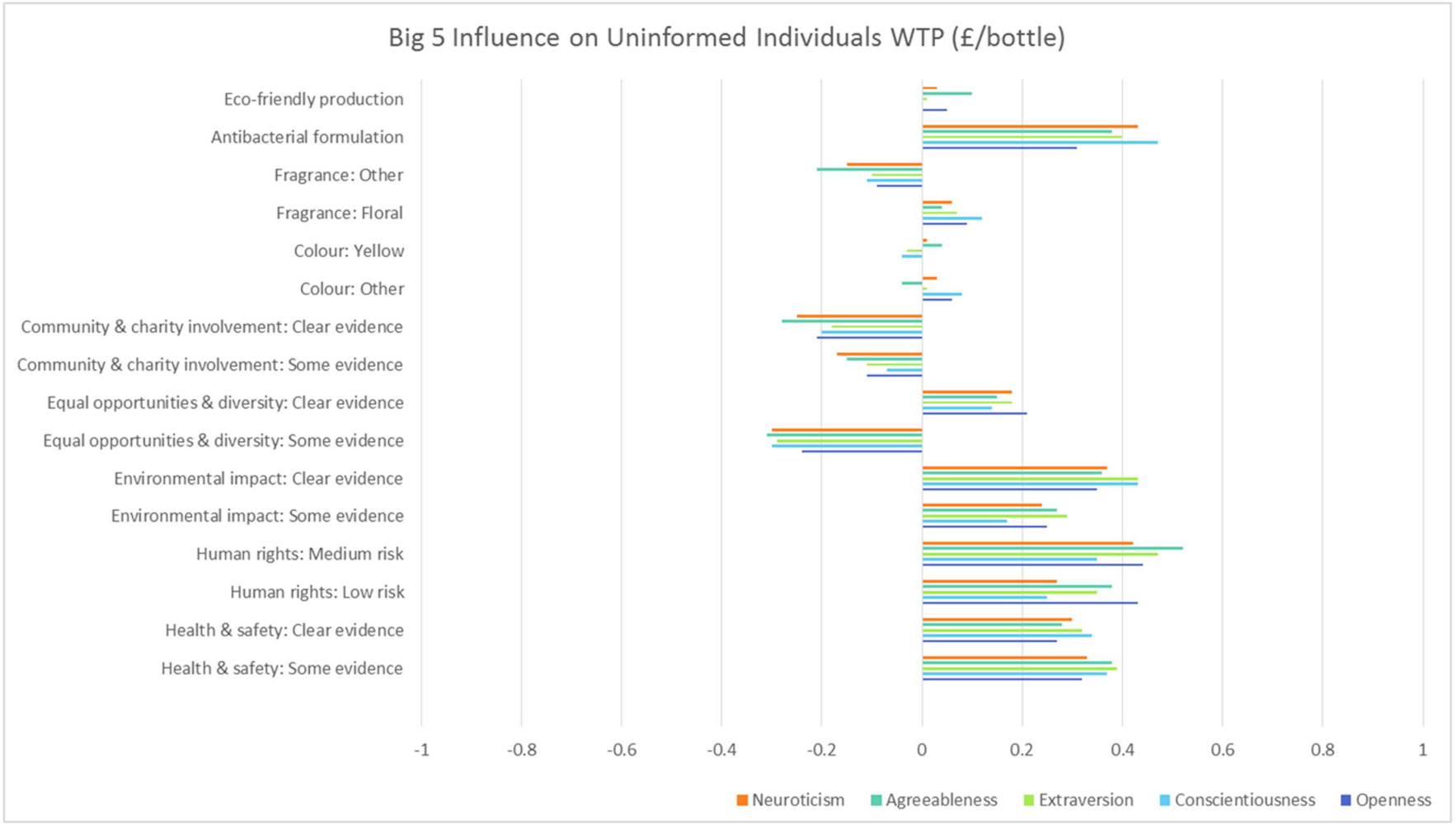


Figure 3.7: Model 4 Big Five Inventory uninformed participants' WTP

Variable	Openness		Conscientiousness		Extraversion		Agreeableness		Neuroticism	
	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic
Health & Safety: Some Evidence	0.24	1.06	0.28	1.11	0.30	1.20	0.30	1.09	0.24	0.92
Health & Safety: Clear Evidence	0.24	1.20	0.31	1.39	0.29	1.32	0.24	1.04	0.27	1.19
Human Rights: Low Risk	0.47*	2.53	0.28	1.32	0.39	1.89	0.43	1.95	0.31	1.42
Human Rights: Medium Risk	0.56*	2.26	0.48	1.74	0.60*	2.22	0.67*	2.30	0.57*	1.99
Environmental Impact: Some Evidence	0.18	0.68	0.10	0.32	0.22	0.75	0.19	0.61	0.17	0.53
Environmental Impact: Clear Evidence	0.34	1.79	0.42	1.96	0.43*	2.01	0.35	1.53	0.36	1.65
Equal Opportunities & Diversity: Some Evidence	-0.23	-0.88	-0.30	-0.99	-0.29	-0.97	-0.31	-0.96	-0.30	-0.94
Equal Opportunities & Diversity: Clear Evidence	0.18	0.90	0.11	0.46	0.15	0.68	0.12	0.48	0.15	0.63
Community & Charity Involvement: Some Evidence	-0.16	-0.70	-0.12	-0.46	-0.17	-0.65	-0.22	-0.78	-0.24	-0.87
Community & Charity Involvement: Clear Evidence	-0.28	-1.21	-0.27	-1.05	-0.26	-1.01	-0.37	-1.33	-0.34	-1.25

Table 3.12: Model 4 Big 5 WTP of participants provided with a CSP signal

Variable	Openness		Conscientiousness		Extraversion		Agreeableness		Neuroticism	
	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic
Colour: Other	0.03	0.11	0.05	0.18	-0.03	-0.11	-0.08	-0.28	-0.00	-0.01
Colour: Yellow	-0.02	-0.09	-0.06	-0.24	-0.05	-0.20	0.02	0.07	-0.02	-0.06
Fragrance: Floral	0.13	0.47	0.16	0.54	0.11	0.39	0.08	0.27	0.10	0.34
Fragrance: Other	-0.13	-0.65	-0.15	-0.64	-0.13	-0.60	-0.26	-1.06	-0.19	-0.82
Antibacterial Formulation	0.27	1.54	0.43*	2.22	0.36	1.89	0.34	1.63	0.39	1.95
Eco-friendly Production	0.09	0.49	0.03	0.13	0.04	0.19	0.14	0.68	0.07	0.33

Note: The attribute levels detailed in table 3.2 not included in this results table are the baseline attribute levels upon which the WTPs are compared to.
** p<0.05, ** p<0.01, *** p<0.001*

Table 3.12: Model 4 Big 5 WTP of participants provided with a CSP signal

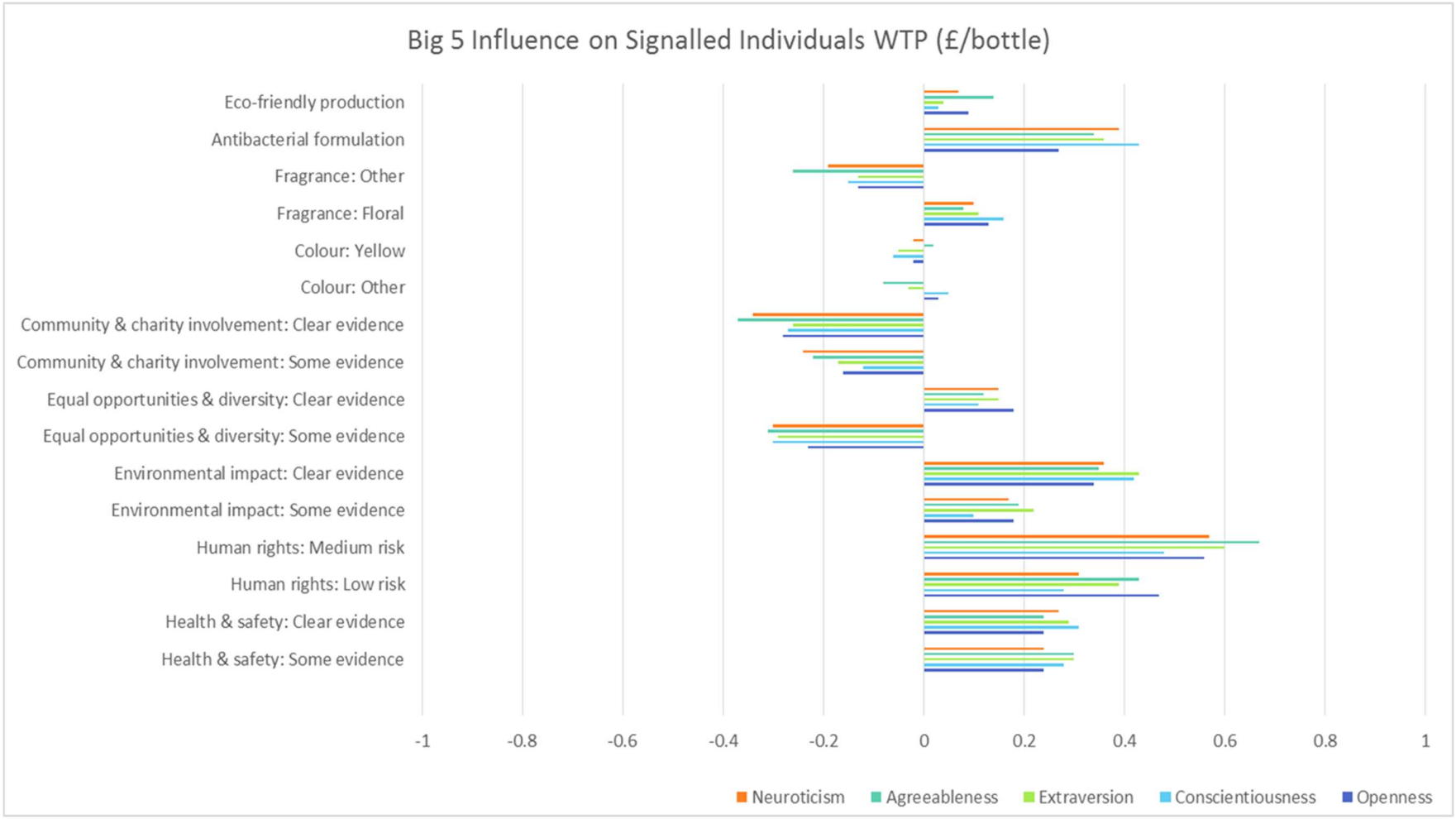


Figure 3.8: Model 4 Big Five Inventory signalled participants' WTP

Variable	Openness		Conscientiousness		Extraversion		Agreeableness		Neuroticism	
	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic
Health & Safety: Some Evidence	0.25	1.02	0.29	1.07	0.31	1.15	0.30	1.04	0.24	0.88
Health & Safety: Clear Evidence	0.17	0.79	0.24	1.01	0.22	0.93	0.16	0.64	0.19	0.79
Human Rights: Low Risk	0.53**	2.70	0.33	1.51	0.45*	2.06	0.50*	2.12	0.36	1.61
Human Rights: Medium Risk	0.54*	2.08	0.45	1.56	0.58*	2.03	0.65*	2.11	0.54	1.81
Environmental Impact: Some Evidence	0.22	0.78	0.13	0.42	0.27	0.86	0.24	0.71	0.21	0.64
Environmental Impact: Clear Evidence	0.28	1.43	0.37	1.63	0.37	1.67	0.28	1.17	0.30	1.30
Equal Opportunities & Diversity: Some Evidence	-0.33	-1.15	-0.41	-1.24	-0.39	-1.21	-0.42	-1.21	-0.41	-1.21
Equal Opportunities & Diversity: Clear Evidence	0.14	0.67	0.06	0.24	0.11	0.46	0.06	0.25	0.10	0.40
Community & Charity Involvement: Some Evidence	-0.24	-0.98	-0.20	-0.74	-0.26	-0.92	-0.32	-1.04	-0.33	-1.13
Community & Charity Involvement: Clear Evidence	-0.35	-1.45	-0.35	-1.28	-0.34	-1.24	-0.46	-1.53	-0.43	-1.47

Table 3.13: Model 4 Big 5 WTP of participants provided with a CSP nudge

Variable	Openness		Conscientiousness		Extraversion		Agreeableness		Neuroticism	
	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic	WTP (£/bottle)	t-statistic
Colour: Other	-0.07	-0.29	-0.06	-0.20	-0.14	-0.48	-0.20	-0.66	-0.12	-0.40
Colour: Yellow	0.01	0.06	-0.03	-0.09	-0.02	-0.06	0.06	0.21	0.03	0.09
Fragrance: Floral	0.08	0.30	0.12	0.38	0.07	0.22	0.03	0.10	0.06	0.17
Fragrance: Other	-0.15	-0.72	-0.17	-0.72	-0.16	-0.66	-0.29	-1.12	-0.22	-0.89
Antibacterial Formulation	0.27	1.47	0.44*	2.16	0.37	1.81	0.34	1.56	0.40	1.89
Eco-friendly Production	0.06	0.35	0.00	0.00	0.01	0.06	0.12	0.55	0.04	0.19

Note: The attribute levels detailed in table 3.2 not included in this results table are the baseline attribute levels upon which the WTPs are compared to.
** p<0.05, ** p<0.01, *** p<0.001*

Table 3.13: Model 4 Big 5 WTP of participants provided with a CSP nudge

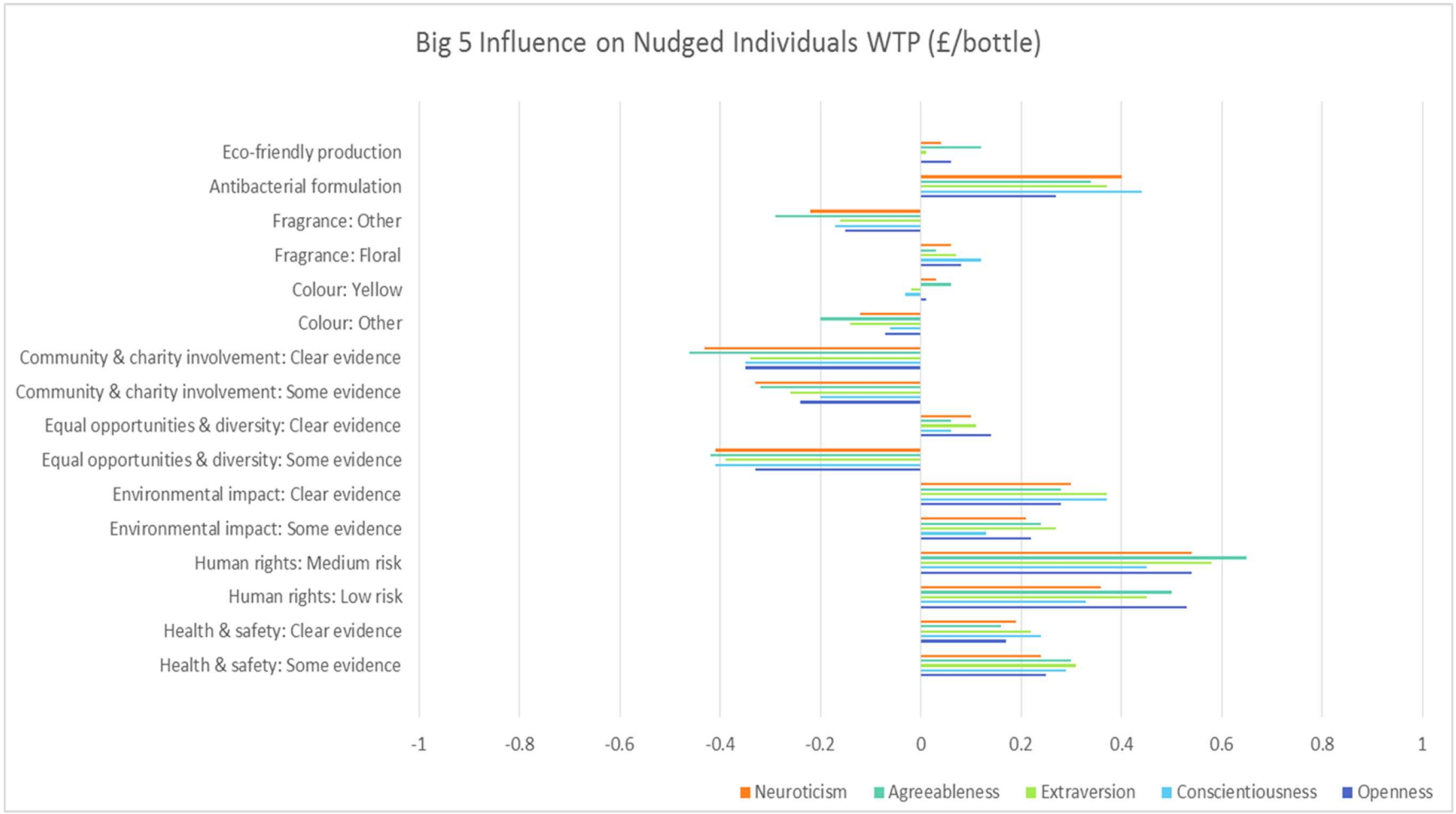


Figure 3.9: Model 4 Big Five Inventory nudged participants' WTP

3.7 Discussion

This study was designed to extend the work of the study in the previous chapter to determine whether individuals' preferences could be nudged to become more ethical consumers by increasing their WTP for ethical attributes. Like the previous study we find that lack of awareness in the market is not problematic as suggested in earlier studies (Du et al., 2010, 2007; Devinney et al., 2006; Luo and Bhattacharya, 2006; Sen et al., 2006; Bhattacharya and Sen, 2004; Auger et al., 2003; Sen and Bhattacharya, 2001). We find support for hypothesis 1; all participants demonstrate preferences and increased WTP for ethical product attributes. However, it is overly simplistic to make statements like all the participants are ethical consumers. What we actually find is that uninformed participants (see model 2) exhibit a WTP for a wider variety of ethical attributes. However, when more information about the CSR practices is made available, the signal and the nudge are associated with participants preferring different attributes and mainly focusing their attention and WTP on reducing the risk of human rights violations and eco-friendly production. When we look at the nudged participants we find evidence that the nudge is effective at increasing the participants' WTP for minimising the risk of human rights violations. Whilst these participants also demonstrate a WTP for eco-friendly production the nudge does not further increase this WTP compared to the participants who receive only the signal.

We find significant differences between the type of ethical attributes participants prefer and are WTP more for when nationality and religion are included in the model in conjunction with awareness (see model 3). An interesting finding is that participants of European origin with no stated religion prefer a wider variety of ethical attributes and exhibit increased WTP for these attributes (e.g. human rights, eco-friendly production, community and charity, health and safety, equal opportunities) compared to participants of European origin with a

stated religion (e.g. human rights, eco-friendly production). The converse is found in the participants of Asian origin and these participants who state they have a religion primarily focus on human rights and eco-friendly production. Again when we consider the impact of the nudge for the majority of the participants (with the exception of participants of Asian origin with no stated religion) the nudge is associated with a stronger preference and increased WTP for minimising the risk of human rights violations.

Reflecting on hypothesis 2 we do find some support for this hypothesis. The CSP nudge is associated with decreasing price sensitivity and participants do demonstrate an increased WTP for an ethical product, however, the nudge does not increase the WTP for all ethical attributes, but rather it increases participants WTP for reducing the risk of human rights violations. Other ethical attributes are shown to be strongly preferred (e.g. eco-friendly production) and individuals are WTP for these attributes, however, the nudge does not further increase this WTP compared to the WTP of participants who receive the signal without the nudge. Future work could involve different types of nudges. It would be interesting to see if CSR practices were nudged in isolation, whether human rights practices would still be the dominant preference amongst participants.

Finally, we looked into how personality traits might explain our findings more fully. In all the models human rights and eco-friendly production were ethical attributes which were commonly preferred and participants exhibited increased WTP. As some participants were nudged human rights became their preferred ethical attribute. We included the Big Five Inventory in our experiment, which to our knowledge is a new extension to discrete choice modelling on ethical consumerism. On the theme of new approaches we also followed the incentive aligned discrete choice model detailed in study in the previous chapter, which again to our knowledge is a new approach to incentivisation and directly deals with hypothetical bias and the speculated attitude behaviour gap raised in earlier ethical consumerism studies

(Du et al., 2010, 2007; Devinney et al., 2006; Luo and Bhattacharya, 2006; Sen et al., 2006; Bhattacharya and Sen, 2004; Auger et al., 2003; Sen and Bhattacharya, 2001). We find that regardless of how informed or uninformed the participants are there is a strong association with the personality trait openness and reducing the risk of human rights violations. The personality trait openness is associated with openness to new experiences and emotion (John et al., 2008; Benet-Martínez and John, 1998). Therefore, this finding is both interesting and logical and fits well with the theory behind the personality traits.

When the participants were nudged we find additional personality traits exhibit significant interactions with the ethical attribute human rights and these participants demonstrated an increased WTP for minimising the risk of human rights violations. The personality traits extraversion and agreeableness become significant and again whilst this finding is interesting it is also quite fitting given the theory behind these personality traits (Benet-Martínez and John, 1998). Future work could look at how personality traits affect individuals' willingness to pay for luxury goods, to see whether personality trait interactions with willingness to pay for ethical attributes is associated with the type of product.

To conclude we do not find evidence to support that asymmetric information in the market hinders ethical consumerism, but rather that information, religion, nationality and personality traits affect how participants prioritise their preferences for ethical attributes. This said, for the majority of participants the ethical attributes human rights and eco-friendly production are influential and are associated with these participants increasing their expenditure on ethical attributes. We find a nudge to be associated with participants changing their preferences and WTP for ethical attributes - in our experiment the nudge is associated with the majority of the participants focusing their attention on human rights.

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3.9 Appendix A: Additional results tables

Variables	Model 2	
	Coefficient	t-statistic
Price	-1.33***	-18.58
Health & Safety: Some Evidence	0.44***	4.25
Health & Safety: Clear Evidence	0.49***	5.44
Human Rights: Low Risk	0.62***	7.45
Human Rights: Medium Risk	0.27*	2.38
Environmental Impact: Some Evidence	0.04	0.35
Environmental Impact: Clear Evidence	0.04	0.47
Equal Opportunities & Diversity: Some Evidence	0.13	1.08
Equal Opportunities & Diversity: Clear Evidence	0.24**	2.73
Community & Charity Involvement: Some Evidence	0.28**	2.77
Community & Charity Involvement: Clear Evidence	0.29**	3.07
Colour: Other	0.04	0.40
Colour: Yellow	-0.08	-0.70
Fragrance: Floral	0.01	0.10
Fragrance: Other	0.07	0.85
Antibacterial Formulation	0.99***	12.37
Eco-friendly Production	0.40***	5.30
Awareness Interactions		
CSP Signal:		
Price	0.12	1.23
Health & Safety: Some Evidence	-0.30*	-2.05
Health & Safety: Clear Evidence	-0.14	-1.15
Human Rights: Low Risk	0.14	1.14
Human Rights: Medium Risk	0.40*	2.45
Environmental Impact: Some Evidence	-0.17	-0.93
Environmental Impact: Clear Evidence	-0.05	-0.44

Table 3.14: Model 2 conditional logit estimation

Variables	Model 2	
	Coefficient	t-statistic
Equal Opportunities & Diversity: Some Evidence	0.05	0.32
Equal Opportunities & Diversity: Clear Evidence	-0.07	-0.55
Community & Charity Involvement: Some Evidence	-0.20	-1.39
Community & Charity Involvement: Clear Evidence	-0.19	-1.43
Colour: Other	-0.12	-0.82
Colour: Yellow	-0.06	-0.37
Fragrance: Floral	0.10	0.60
Fragrance: Other	-0.08	-0.67
Antibacterial Formulation	-0.24*	-2.15
Eco-friendly Production	0.08	0.78
CSP Nudge:		
Price	0.31**	3.13
Health & Safety: Some Evidence	-0.36*	-2.46
Health & Safety: Clear Evidence	-0.39**	-3.01
Human Rights: Low Risk	0.12	1.02
Human Rights: Medium Risk	0.13	0.81
Environmental Impact: Some Evidence	-0.18	-0.97
Environmental Impact: Clear Evidence	-0.30*	-2.46
Equal Opportunities & Diversity: Some Evidence	-0.19	-1.18
Equal Opportunities & Diversity: Clear Evidence	-0.26*	-2.02
Community & Charity Involvement: Some Evidence	-0.38**	-2.65
Community & Charity Involvement: Clear Evidence	-0.37**	-2.77
Colour: Other	-0.37*	-2.53
Colour: Yellow	0.04	0.28
Fragrance: Floral	-0.02	-0.13

Table 3.14: Model 2 conditional logit estimation

Variables	Model 2	
	Coefficient	t-statistic
Fragrance: Other	-0.13	-1.07
Antibacterial Formulation	-0.23*	-2.02
Eco-friendly Production	-0.00	-0.02
Pseudo R^2	0.17	
Log-likelihood	-5187.55	
AIC	10477.11	
Number of participants	150	
Number of observations	18000	

Note: The attribute levels detailed in table 3.2 not included in this results table are the baseline attribute levels upon which the trade-offs are compared to.
** p<0.05, ** p<0.01, *** p<0.001*

Table 3.14: Model 2 conditional logit estimation

Variables	Model 3	
	Coefficient	t-statistic
Price	-1.34***	-13.07
Health & Safety: Some Evidence	0.22	1.47
Health & Safety: Clear Evidence	0.25	1.84
Human Rights: Low Risk	0.76***	6.01
Human Rights: Medium Risk	0.39*	2.35
Environmental Impact: Some Evidence	0.07	0.37
Environmental Impact: Clear Evidence	0.00	0.04
Equal Opportunities & Diversity: Some Evidence	0.20	1.19
Equal Opportunities & Diversity: Clear Evidence	0.15	1.09
Community & Charity Involvement: Some Evidence	0.27	1.77
Community & Charity Involvement: Clear Evidence	0.24	1.73
Colour: Other	-0.02	-0.10
Colour: Yellow	0.09	0.58
Fragrance: Floral	0.00	0.01
Fragrance: Other	0.03	0.21
Antibacterial Formulation	1.13***	9.59
Eco-friendly Production	0.27*	2.37
Awareness interactions		
CSP Signal:		
Price	0.09	0.84
Health & Safety: Some Evidence	-0.33*	-2.21
Health & Safety: Clear Evidence	-0.18	-1.40
Human Rights: Low Risk	0.12	0.97
Human Rights: Medium Risk	0.32	1.89
Environmental Impact: Some Evidence	-0.22	-1.21
Environmental Impact: Clear Evidence	-0.08	-0.65

Table 3.15: Model 3 conditional logit estimation

Variables	Model 3	
	Coefficient	t-statistic
Equal Opportunities & Diversity: Some Evidence	0.05	0.29
Equal Opportunities & Diversity: Clear Evidence	-0.09	-0.69
Community & Charity Involvement: Some Evidence	-0.23	-1.59
Community & Charity Involvement: Clear Evidence	-0.24	-1.74
Colour: Other	-0.11	-0.76
Colour: Yellow	-0.06	-0.35
Fragrance: Floral	0.11	0.63
Fragrance: Other	-0.13	-1.05
Antibacterial Formulation	-0.24*	-2.11
Eco-friendly Production	0.09	0.83
CSP Nudge:		
Price	0.24*	2.35
Health & Safety: Some Evidence	-0.41**	-2.74
Health & Safety: Clear Evidence	-0.46**	-3.40
Human Rights: Low Risk	0.19	1.46
Human Rights: Medium Risk	0.08	0.48
Environmental Impact: Some Evidence	-0.16	-0.86
Environmental Impact: Clear Evidence	-0.31*	-2.39
Equal Opportunities & Diversity: Some Evidence	-0.18	-1.06
Equal Opportunities & Diversity: Clear Evidence	-0.21	-1.53
Community & Charity Involvement: Some Evidence	-0.38*	-2.54
Community & Charity Involvement: Clear Evidence	-0.32*	-2.26
Colour: Other	-0.36*	-2.36
Colour: Yellow	0.03	0.16
Fragrance: Floral	-0.05	-0.30

Table 3.15: Model 3 conditional logit estimation

Variables	Model 3	
	Coefficient	t-statistic
Fragrance: Other	-0.13	-1.03
Antibacterial Formulation	-0.25*	-2.10
Eco-friendly Production	-0.03	-0.23
Nationality & Religion Interactions		
No Stated Religion Interactions:		
Price	-0.25*	-2.03
Health & Safety: Some Evidence	0.28	1.55
Health & Safety: Clear Evidence	0.30	1.93
Human Rights: Low Risk	0.08	0.51
Human Rights: Medium Risk	-0.07	-0.32
Environmental Impact: Some Evidence	0.30	1.36
Environmental Impact: Clear Evidence	0.21	1.44
Equal Opportunities & Diversity: Some Evidence	-0.04	-0.17
Equal Opportunities & Diversity: Clear Evidence	0.53**	3.26
Community & Charity Involvement: Some Evidence	0.24	1.32
Community & Charity Involvement: Clear Evidence	0.59***	3.49
Colour: Other	0.07	0.41
Colour: Yellow	-0.49*	-2.44
Fragrance: Floral	-0.18	-0.82
Fragrance: Other	0.30*	2.01
Antibacterial Formulation	-0.21	-1.54
Eco-friendly Production	0.16	1.17
Asian Origin Interactions:		
Price	-0.22	-1.75
Health & Safety: Some Evidence	0.23	1.26
Health & Safety: Clear Evidence	0.30	1.81

Table 3.15: Model 3 conditional logit estimation

Variables	Model 3	
	Coefficient	t-statistic
Human Rights: Low Risk	-0.43**	-2.81
Human Rights: Medium Risk	-0.36	-1.78
Environmental Impact: Some Evidence	-0.13	-0.57
Environmental Impact: Clear Evidence	0.02	0.16
Equal Opportunities & Diversity: Some Evidence	-0.06	-0.30
Equal Opportunities & Diversity: Clear Evidence	-0.00	-0.03
Community & Charity Involvement: Some Evidence	0.07	0.38
Community & Charity Involvement: Clear Evidence	-0.18	-1.02
Colour: Other	-0.02	-0.12
Colour: Yellow	-0.28	-1.44
Fragrance: Floral	0.23	1.09
Fragrance: Other	-0.02	-0.14
Antibacterial Formulation	0.13	0.93
Eco-friendly Production	0.39**	2.84
No Stated Religion & Asian Origin Interactions:		
Price	0.89***	5.26
Health & Safety: Some Evidence	-0.08	-0.31
Health & Safety: Clear Evidence	-0.04	-0.20
Human Rights: Low Risk	0.22	1.06
Human Rights: Medium Risk	0.63*	2.24
Environmental Impact: Some Evidence	-0.22	-0.72
Environmental Impact: Clear Evidence	-0.20	-0.94
Equal Opportunities & Diversity: Some Evidence	0.00	0.01
Equal Opportunities & Diversity: Clear Evidence	-0.58**	-2.61
Community & Charity Involvement: Some Evidence	-0.36	-1.45
Community & Charity Involvement: Clear Evidence	-0.47*	-1.99

Table 3.15: Model 3 conditional logit estimation

Variables	Model 3	
	Coefficient	t-statistic
Colour: Other	-0.02	-0.06
Colour: Yellow	0.68*	2.52
Fragrance: Floral	-0.00	-0.01
Fragrance: Other	-0.20	-0.92
Antibacterial Formulation	-0.13	-0.69
Eco-friendly Production	-0.43*	-2.32
Pseudo R^2	0.20	
Log-likelihood	-4998.94	
AIC	10269.87	
Number of participants	150	
Number of observations	18000	

Notes:

1. *The attribute levels detailed in table 3.2 not included in this results table are the baseline attribute levels upon which the trade-offs are compared to.*
2. *For the nationality and religion interactions the baseline measure is European origin and the interactions refer to Asian origin. Other nationality origins have not been included due to the segments being too small to provide meaningful results. Results can be provided upon request.*

** p<0.05, ** p<0.01, *** p<0.001*

Table 3.15: Model 3 conditional logit estimation

Variables	Model 4	
	Coefficient	t-statistic
Price	-3.30***	-5.15
Health & Safety: Some Evidence	1.19	1.48
Health & Safety: Clear Evidence	0.99	1.37
Human Rights: Low Risk	1.11	1.61
Human Rights: Medium Risk	1.47	1.60
Environmental Impact: Some Evidence	0.82	0.84
Environmental Impact: Clear Evidence	1.31	1.88
Equal Opportunities & Diversity: Some Evidence	-0.98	-1.07
Equal Opportunities & Diversity: Clear Evidence	0.57	0.79
Community & Charity Involvement: Some Evidence	-0.43	-0.53
Community & Charity Involvement: Clear Evidence	-0.78	-1.02
Colour: Other	0.09	0.11
Colour: Yellow	-0.02	-0.02
Fragrance: Floral	0.26	0.28
Fragrance: Other	-0.44	-0.63
Antibacterial Formulation	1.28*	1.97
Eco-friendly Production	0.10	0.16
Awareness interactions		
CSP Signal:		
Price	0.22*	2.16
Health & Safety: Some Evidence	-0.33*	-2.20
Health & Safety: Clear Evidence	-0.15	-1.17
Human Rights: Low Risk	0.04	0.35
Human Rights: Medium Risk	0.31	1.82
Environmental Impact: Some Evidence	-0.26	-1.44
Environmental Impact: Clear Evidence	-0.10	-0.82

Table 3.16: Big 5 conditional logit estimation

Variables	Model 4	
	Coefficient	t-statistic
Equal Opportunities & Diversity: Some Evidence	0.07	0.40
Equal Opportunities & Diversity: Clear Evidence	-0.13	-1.00
Community & Charity Involvement: Some Evidence	-0.14	-0.97
Community & Charity Involvement: Clear Evidence	-0.18	-1.28
Colour: Other	-0.11	-0.74
Colour: Yellow	-0.06	-0.39
Fragrance: Floral	0.11	0.60
Fragrance: Other	-0.09	-0.74
Antibacterial Formulation	-0.21	-1.78
Eco-friendly Production	0.09	0.85
CSP Nudge:		
Price	0.36***	3.56
Health & Safety: Some Evidence	-0.35*	-2.41
Health & Safety: Clear Evidence	-0.41**	-3.13
Human Rights: Low Risk	0.15	1.24
Human Rights: Medium Risk	0.15	0.91
Environmental Impact: Some Evidence	-0.17	-0.95
Environmental Impact: Clear Evidence	-0.33**	-2.61
Equal Opportunities & Diversity: Some Evidence	-0.19	-1.10
Equal Opportunities & Diversity: Clear Evidence	-0.29*	-2.16
Community & Charity Involvement: Some Evidence	-0.37*	-2.52
Community & Charity Involvement: Clear Evidence	-0.37**	-2.67
Colour: Other	-0.42**	-2.78
Colour: Yellow	0.05	0.33
Fragrance: Floral	-0.04	-0.23
Fragrance: Other	-0.14	-1.13

Table 3.16: Big 5 conditional logit estimation

Variables	Model 4	
	Coefficient	t-statistic
Antibacterial Formulation	-0.25*	-2.15
Eco-friendly Production	0.02	0.15
Big 5 Interactions		
Openness Interaction:		
Price	-0.17*	-1.99
Health & Safety: Some Evidence	-0.07	-0.57
Health & Safety: Clear Evidence	-0.06	-0.56
Human Rights: Low Risk	0.38***	3.62
Human Rights: Medium Risk	0.04	0.30
Environmental Impact: Some Evidence	0.04	0.25
Environmental Impact: Clear Evidence	-0.10	-0.90
Equal Opportunities & Diversity: Some Evidence	0.15	1.05
Equal Opportunities & Diversity: Clear Evidence	0.15	1.41
Community & Charity Involvement: Some Evidence	0.04	0.29
Community & Charity Involvement: Clear Evidence	0.06	0.49
Colour: Other	0.10	0.77
Colour: Yellow	0.01	0.07
Fragrance: Floral	0.04	0.29
Fragrance: Other	0.11	1.08
Antibacterial Formulation	-0.20*	-2.12
Eco-friendly Production	0.08	0.88
Conscientiousness Interaction:		
Price	0.09	1.24
Health & Safety: Some Evidence	-0.01	-0.06
Health & Safety: Clear Evidence	0.10	1.10
Human Rights: Low Risk	-0.32***	-3.54

Table 3.16: Big 5 conditional logit estimation

Variables	Model 4	
	Coefficient	t-statistic
Human Rights: Medium Risk	-0.34**	-2.83
Environmental Impact: Some Evidence	-0.26*	-2.03
Environmental Impact: Clear Evidence	0.06	0.71
Equal Opportunities & Diversity: Some Evidence	0.01	0.05
Equal Opportunities & Diversity: Clear Evidence	-0.12	-1.26
Community & Charity Involvement: Some Evidence	0.21*	2.03
Community & Charity Involvement: Clear Evidence	0.14	1.43
Colour: Other	0.16	1.49
Colour: Yellow	-0.11	-0.98
Fragrance: Floral	0.11	0.93
Fragrance: Other	0.10	1.07
Antibacterial Formulation	0.23**	2.75
Eco-friendly Production	-0.12	-1.48
Extraversion interaction:		
Price	0.06	1.01
Health & Safety: Some Evidence	0.06	0.67
Health & Safety: Clear Evidence	0.05	0.57
Human Rights: Low Risk	0.03	0.34
Human Rights: Medium Risk	0.04	0.40
Environmental Impact: Some Evidence	0.12	1.09
Environmental Impact: Clear Evidence	0.09	1.12
Equal Opportunities & Diversity: Some Evidence	0.04	0.35
Equal Opportunities & Diversity: Clear Evidence	0.03	0.32
Community & Charity Involvement: Some Evidence	0.06	0.69
Community & Charity Involvement: Clear Evidence	0.18*	2.19
Colour: Other	-0.07	-0.77

Table 3.16: Big 5 conditional logit estimation

Variables	Model 4	
	Coefficient	t-statistic
Colour: Yellow	-0.08	-0.86
Fragrance: Floral	-0.02	-0.19
Fragrance: Other	0.13	1.76
Antibacterial Formulation	0.03	0.38
Eco-friendly Production	-0.08	-1.23
Agreeableness Interaction:		
Price	0.32***	4.62
Health & Safety: Some Evidence	-0.04	-0.40
Health & Safety: Clear Evidence	-0.16	-1.68
Human Rights: Low Risk	0.04	0.40
Human Rights: Medium Risk	0.08	0.62
Environmental Impact: Some Evidence	-0.02	-0.19
Environmental Impact: Clear Evidence	-0.25**	-2.73
Equal Opportunities & Diversity: Some Evidence	0.06	0.48
Equal Opportunities & Diversity: Clear Evidence	-0.12	-1.28
Community & Charity Involvement: Some Evidence	-0.03	-0.29
Community & Charity Involvement: Clear Evidence	-0.07	-0.72
Colour: Other	-0.20	-1.87
Colour: Yellow	0.13	1.14
Fragrance: Floral	-0.14	-1.10
Fragrance: Other	-0.18*	-1.97
Antibacterial Formulation	-0.14	-1.74
Eco-friendly Production	0.19*	2.47
Neuroticism Interaction:		
Price	0.27***	4.25
Health & Safety: Some Evidence	-0.18	-1.91

Table 3.16: Big 5 conditional logit estimation

Variables	Model 4	
	Coefficient	t-statistic
Health & Safety: Clear Evidence	-0.06	-0.77
Human Rights: Low Risk	-0.29***	-3.67
Human Rights: Medium Risk	-0.19	-1.75
Environmental Impact: Some Evidence	-0.09	0.80
Environmental Impact: Clear Evidence	-0.18*	-2.23
Equal Opportunities & Diversity: Some Evidence	0.08	0.72
Equal Opportunities & Diversity: Clear Evidence	-0.02	-0.24
Community & Charity Involvement: Some Evidence	-0.10	-1.01
Community & Charity Involvement: Clear Evidence	0.01	0.07
Colour: Other	0.01	0.10
Colour: Yellow	0.03	0.31
Fragrance: Floral	-0.07	-0.64
Fragrance: Other	-0.01	-0.09
Antibacterial Formulation	0.03	0.39
Eco-friendly Production	-0.01	-0.10
Pseudo R^2	0.19	
Log-likelihood	-5084.44	
AIC	10440.87	
Number of participants	150	
Number of observations	18000	

Notes:

1. *The attribute levels detailed in table 3.2 not included in this results table are the baseline attribute levels upon which the trade-offs are compared to.*
2. *For the nationality and religion interactions the baseline measure is European origin and the interactions refer to Asian origin. Other nationality origins have not been included due to the segments being too small to provide meaningful results. Results can be provided upon request.*

** p<0.05, ** p<0.01, *** p<0.001*

Table 3.16: Big 5 conditional logit estimation

3.10 Appendix B: Participant materials for the experiment

- Participant instructions and choice sets information
- Information sheet A (informed participants)
- Information sheet B (uninformed participants)
- The nudge (the poster)
- Questionnaire

CSR_JUB Experiment

Instructions for Participants

You will now participate in an experiment on individual decision-making. The experiment will last approximately 90 minutes. You will be paid after the experiment. Your payoffs will depend partly on your decisions and partly on chance. It will not depend on the decisions of the other participants in the experiments. Your participation in the experiment and any information about your payoffs will be kept strictly confidential. You will never be asked to reveal your identity to any of the participants during the course of the experiment. In order to keep your decisions private, please do not reveal your choices to any other participant. Please do not talk with anyone during the experiment. We ask everyone to remain silent until the end of the experiment.

The experiment is split into two parts and you will be paid for both parts. The decisions you make in part 1 do not affect your payment in part 2. The tasks in part 1 and 2 are fully independent. After the tasks in part 1 and 2 are completed you will be paid out anonymously.

Part 1

Online you will be presented with thirty decisions. Each decision is a choice set with the options: Product A, Product B, Product C, None of the above. You will make thirty choices and these will be recorded by the computer. Only one of your decisions will be used at the end of part 1 to determine your earnings for part 1. Please let me explain how these choices will affect your earnings in part 1 of the experiment.

You will be presented with choice sets. Each choice set will include three different types of washing up liquid profiles. For each choice set you will need to indicate which of the three washing up liquid products in the choice set you would purchase or alternatively you can select not to purchase any of the products in the choice set.

You start with a fund of £10.00 and at the end of the experiment you will use part of this fund to purchase a bottle of washing up liquid. At the end of the experiment one of your choice sets will be randomly selected and the choice you made in that choice set will determine which washing up liquid you receive and the cost of the washing up liquid to be deducted from the fund, if you chose to purchase a washing up liquid in that selected choice set. If you have any questions on how the payment for part 1 is calculated, please raise your hand now.

Part 2

In part 2 you will be presented with a questionnaire covering personality traits, socio-demographics and CSR awareness. Part 2 has a fixed participation fee of £8.00.

Please raise your hand if you have any questions. If you are happy you understand the instructions, please sign the consent form and commence part 1 of the experiment online. The web address details are by your computer attached to your booth partition.

The online instructions will guide you through all parts of the experiment. You will need to hand this booklet with the signed consent form and any workings you did during the course of the experiment into the lab assistants at the end of the experiment when claiming your payment.

Choice Set A

	Product A	Product B	Product C
Health & Safety Involvement	Clear evidence of this	Some evidence of this	Some evidence of this
Human Rights	Medium risk	Medium risk	Low risk
Environmental Impact	Little or no evidence of this	Some evidence of this	Clear evidence of this
Equal Opportunities & Diversity	Some evidence of this	Some evidence of this	Clear evidence of this
Community & Charity Involvement	Clear evidence of this	Some evidence of this	Little or no evidence of this
Price	£2.00	£1.50	£1.00
Colour	Yellow	Green	Other
Fragrance	Other	Floral	Citrus
Antibacterial Formulation	Yes	No	No
Ecologically Friendly Production	Yes	No	No

Choice Set B

	Product A	Product B	Product C
Health & Safety Involvement	Little or no evidence of this	Little or no evidence of this	Clear evidence of this
Human Rights	Low risk	Medium risk	High risk
Environmental Impact	Clear evidence of this	Some evidence of this	Little or no evidence of this
Equal Opportunities & Diversity	Some evidence of this	Little or no evidence of this	Little or no evidence of this
Community & Charity Involvement	Clear evidence of this	Some evidence of this	Little or no evidence of this
Price	£2.00	£1.00	£1.00
Colour	Yellow	Green	Other
Fragrance	Floral	Floral	Other
Antibacterial Formulation	No	Yes	Yes
Ecologically Friendly Production	Yes	No	Yes

Choice Set 1

	Product A	Product B	Product C
Health & Safety Involvement	Clear evidence of this	Some evidence of this	Little or no evidence of this
Human Rights	Low risk	High risk	High risk
Environmental Impact	Clear evidence of this	Little or no evidence of this	Little or no evidence of this
Equal Opportunities & Diversity	Little or no evidence of this	Some evidence of this	Clear evidence of this
Community & Charity Involvement	Little or no evidence of this	Little or no evidence of this	Clear evidence of this
Price	£0.50	£1.00	£2.50
Colour	Green	Green	Green
Fragrance	Citrus	Citrus	Other
Antibacterial Formulation	No	Yes	Yes
Ecologically Friendly Production	No	Yes	Yes

Choice Set 2

	Product A	Product B	Product C
Health & Safety Involvement	Little or no evidence of this	Clear evidence of this	Some evidence of this
Human Rights	High risk	Low risk	Low risk
Environmental Impact	Clear evidence of this	Little or no evidence of this	Some evidence of this
Equal Opportunities & Diversity	Clear evidence of this	Clear evidence of this	Some evidence of this
Community & Charity Involvement	Some evidence of this	Clear evidence of this	Little or no evidence of this
Price	£1.00	£2.00	£1.50
Colour	Other	Yellow	Yellow
Fragrance	Floral	Floral	Floral
Antibacterial Formulation	No	Yes	No
Ecologically Friendly Production	Yes	No	Yes

Choice Set 3

	Product A	Product B	Product C
Health & Safety Involvement	Little or no evidence of this	Clear evidence of this	Some evidence of this
Human Rights	High risk	Low risk	Medium risk
Environmental Impact	Clear evidence of this	Little or no evidence of this	Some evidence of this
Equal Opportunities & Diversity	Little or no evidence of this	Clear evidence of this	Some evidence of this
Community & Charity Involvement	Clear evidence of this	Some evidence of this	Little or no evidence of this
Price	£1.00	£2.00	£1.50
Colour	Green	Green	Yellow
Fragrance	Other	Citrus	Floral
Antibacterial Formulation	Yes	No	No
Ecologically Friendly Production	No	Yes	Yes

Choice Set 4

	Product A	Product B	Product C
Health & Safety Involvement	Clear evidence of this	Some evidence of this	Some evidence of this
Human Rights	Low risk	Medium risk	Medium risk
Environmental Impact	Clear evidence of this	Some evidence of this	Little or no evidence of this
Equal Opportunities & Diversity	Little or no evidence of this	Some evidence of this	Some evidence of this
Community & Charity Involvement	Little or no evidence of this	Some evidence of this	Some evidence of this
Price	£2.50	£1.50	£0.50
Colour	Yellow	Yellow	Other
Fragrance	Other	Floral	Citrus
Antibacterial Formulation	Yes	Yes	No
Ecologically Friendly Production	Yes	No	Yes

Choice Set 5

	Product A	Product B	Product C
Health & Safety Involvement	Some evidence of this	Clear evidence of this	Little or no evidence of this
Human Rights	High risk	Low risk	Medium risk
Environmental Impact	Little or no evidence of this	Clear evidence of this	Some evidence of this
Equal Opportunities & Diversity	Little or no evidence of this	Some evidence of this	Clear evidence of this
Community & Charity Involvement	Clear evidence of this	Little or no evidence of this	Some evidence of this
Price	£0.50	£2.50	£2.00
Colour	Green	Other	Yellow
Fragrance	Floral	Citrus	Other
Antibacterial Formulation	Yes	No	No
Ecologically Friendly Production	Yes	No	No

Choice Set 6

	Product A	Product B	Product C
Health & Safety Involvement	Some evidence of this	Clear evidence of this	Little or no evidence of this
Human Rights	High risk	Low risk	High risk
Environmental Impact	Some evidence of this	Clear evidence of this	Little or no evidence of this
Equal Opportunities & Diversity	Some evidence of this	Little or no evidence of this	Clear evidence of this
Community & Charity Involvement	Some evidence of this	Little or no evidence of this	Clear evidence of this
Price	£1.50	£1.00	£1.00
Colour	Green	Yellow	Other
Fragrance	Floral	Floral	Floral
Antibacterial Formulation	No	No	Yes
Ecologically Friendly Production	No	Yes	No

Choice Set 7

	Product A	Product B	Product C
Health & Safety Involvement	Clear evidence of this	Little or no evidence of this	Clear evidence of this
Human Rights	Medium risk	High risk	Low risk
Environmental Impact	Little or no evidence of this	Clear evidence of this	Little or no evidence of this
Equal Opportunities & Diversity	Clear evidence of this	Little or no evidence of this	Clear evidence of this
Community & Charity Involvement	Little or no evidence of this	Clear evidence of this	Little or no evidence of this
Price	£1.00	£2.00	£1.00
Colour	Yellow	Other	Green
Fragrance	Citrus	Other	Citrus
Antibacterial Formulation	No	Yes	No
Ecologically Friendly Production	Yes	No	Yes

Choice Set 8

	Product A	Product B	Product C
Health & Safety Involvement	Clear evidence of this	Some evidence of this	Little or no evidence of this
Human Rights	Medium risk	Medium risk	Low risk
Environmental Impact	Some evidence of this	Some evidence of this	Some evidence of this
Equal Opportunities & Diversity	Little or no evidence of this	Some evidence of this	Clear evidence of this
Community & Charity Involvement	Clear evidence of this	Some evidence of this	Little or no evidence of this
Price	£2.00	£1.50	£1.00
Colour	Other	Yellow	Yellow
Fragrance	Citrus	Floral	Other
Antibacterial Formulation	No	No	Yes
Ecologically Friendly Production	Yes	No	No

Choice Set 9

	Product A	Product B	Product C
Health & Safety Involvement	Some evidence of this	Clear evidence of this	Little or no evidence of this
Human Rights	Low risk	High risk	Medium risk
Environmental Impact	Some evidence of this	Some evidence of this	Some evidence of this
Equal Opportunities & Diversity	Clear evidence of this	Little or no evidence of this	Some evidence of this
Community & Charity Involvement	Clear evidence of this	Little or no evidence of this	Some evidence of this
Price	£2.50	£0.50	£1.00
Colour	Green	Other	Yellow
Fragrance	Citrus	Other	Floral
Antibacterial Formulation	No	Yes	Yes
Ecologically Friendly Production	Yes	No	No

Choice Set 10

	Product A	Product B	Product C
Health & Safety Involvement	Clear evidence of this	Little or no evidence of this	Some evidence of this
Human Rights	High risk	Low risk	High risk
Environmental Impact	Clear evidence of this	Little or no evidence of this	Some evidence of this
Equal Opportunities & Diversity	Clear evidence of this	Little or no evidence of this	Some evidence of this
Community & Charity Involvement	Little or no evidence of this	Clear evidence of this	Some evidence of this
Price	£2.50	£0.50	£1.50
Colour	Yellow	Other	Green
Fragrance	Other	Other	Citrus
Antibacterial Formulation	Yes	No	Yes
Ecologically Friendly Production	Yes	No	No

Choice Set 11

	Product A	Product B	Product C
Health & Safety Involvement	Some evidence of this	Some evidence of this	Clear evidence of this
Human Rights	High risk	Medium risk	Low risk
Environmental Impact	Clear evidence of this	Some evidence of this	Clear evidence of this
Equal Opportunities & Diversity	Clear evidence of this	Little or no evidence of this	Little or no evidence of this
Community & Charity Involvement	Little or no evidence of this	Clear evidence of this	Some evidence of this
Price	£0.50	£1.50	£2.50
Colour	Green	Green	Green
Fragrance	Citrus	Floral	Other
Antibacterial Formulation	Yes	No	No
Ecologically Friendly Production	Yes	No	No

Choice Set 12

	Product A	Product B	Product C
Health & Safety Involvement	Little or no evidence of this	Clear evidence of this	Some evidence of this
Human Rights	Medium risk	High risk	Low risk
Environmental Impact	Clear evidence of this	Little or no evidence of this	Clear evidence of this
Equal Opportunities & Diversity	Some evidence of this	Clear evidence of this	Little or no evidence of this
Community & Charity Involvement	Little or no evidence of this	Clear evidence of this	Some evidence of this
Price	£1.50	£0.50	£2.50
Colour	Green	Other	Yellow
Fragrance	Floral	Citrus	Other
Antibacterial Formulation	No	No	Yes
Ecologically Friendly Production	Yes	No	Yes

Choice Set 13

	Product A	Product B	Product C
Health & Safety Involvement	Little or no evidence of this	Clear evidence of this	Little or no evidence of this
Human Rights	High risk	High risk	Low risk
Environmental Impact	Some evidence of this	Clear evidence of this	Little or no evidence of this
Equal Opportunities & Diversity	Little or no evidence of this	Some evidence of this	Some evidence of this
Community & Charity Involvement	Some evidence of this	Little or no evidence of this	Clear evidence of this
Price	£1.50	£0.50	£2.50
Colour	Other	Yellow	Other
Fragrance	Floral	Other	Citrus
Antibacterial Formulation	No	No	Yes
Ecologically Friendly Production	Yes	No	Yes

Choice Set 14

	Product A	Product B	Product C
Health & Safety Involvement	Some evidence of this	Clear evidence of this	Little or no evidence of this
Human Rights	Medium risk	High risk	Low risk
Environmental Impact	Some evidence of this	Little or no evidence of this	Clear evidence of this
Equal Opportunities & Diversity	Little or no evidence of this	Clear evidence of this	Clear evidence of this
Community & Charity Involvement	Little or no evidence of this	Clear evidence of this	Some evidence of this
Price	£2.00	£2.50	£0.50
Colour	Other	Green	Yellow
Fragrance	Other	Other	Citrus
Antibacterial Formulation	Yes	No	Yes
Ecologically Friendly Production	No	Yes	No

Choice Set 15

	Product A	Product B	Product C
Health & Safety Involvement	Little or no evidence of this	Clear evidence of this	Little or no evidence of this
Human Rights	Medium risk	Low risk	Medium risk
Environmental Impact	Some evidence of this	Little or no evidence of this	Clear evidence of this
Equal Opportunities & Diversity	Some evidence of this	Little or no evidence of this	Clear evidence of this
Community & Charity Involvement	Some evidence of this	Clear evidence of this	Little or no evidence of this
Price	£1.50	£1.00	£2.00
Colour	Green	Yellow	Other
Fragrance	Floral	Citrus	Other
Antibacterial Formulation	No	Yes	No
Ecologically Friendly Production	No	Yes	No

Choice Set 16

	Product A	Product B	Product C
Health & Safety Involvement	Clear evidence of this	Little or no evidence of this	Clear evidence of this
Human Rights	High risk	Low risk	High risk
Environmental Impact	Little or no evidence of this	Clear evidence of this	Some evidence of this
Equal Opportunities & Diversity	Clear evidence of this	Clear evidence of this	Some evidence of this
Community & Charity Involvement	Some evidence of this	Clear evidence of this	Some evidence of this
Price	£0.50	£2.50	£1.50
Colour	Other	Green	Yellow
Fragrance	Other	Citrus	Floral
Antibacterial Formulation	No	Yes	Yes
Ecologically Friendly Production	No	Yes	Yes

Choice Set 17

	Product A	Product B	Product C
Health & Safety Involvement	Little or no evidence of this	Little or no evidence of this	Clear evidence of this
Human Rights	Medium risk	Low risk	Medium risk
Environmental Impact	Some evidence of this	Some evidence of this	Clear evidence of this
Equal Opportunities & Diversity	Some evidence of this	Clear evidence of this	Little or no evidence of this
Community & Charity Involvement	Some evidence of this	Little or no evidence of this	Clear evidence of this
Price	£1.50	£2.50	£0.50
Colour	Other	Other	Yellow
Fragrance	Citrus	Other	Other
Antibacterial Formulation	Yes	Yes	No
Ecologically Friendly Production	Yes	Yes	No

Choice Set 18

	Product A	Product B	Product C
Health & Safety Involvement	Little or no evidence of this	Some evidence of this	Clear evidence of this
Human Rights	Low risk	Medium risk	High risk
Environmental Impact	Little or no evidence of this	Clear evidence of this	Clear evidence of this
Equal Opportunities & Diversity	Clear evidence of this	Little or no evidence of this	Little or no evidence of this
Community & Charity Involvement	Little or no evidence of this	Clear evidence of this	Clear evidence of this
Price	£0.50	£1.50	£2.50
Colour	Green	Yellow	Other
Fragrance	Other	Citrus	Floral
Antibacterial Formulation	Yes	No	No
Ecologically Friendly Production	No	Yes	Yes

Choice Set 19

	Product A	Product B	Product C
Health & Safety Involvement	Some evidence of this	Clear evidence of this	Some evidence of this
Human Rights	Low risk	High risk	Medium risk
Environmental Impact	Little or no evidence of this	Clear evidence of this	Some evidence of this
Equal Opportunities & Diversity	Some evidence of this	Clear evidence of this	Some evidence of this
Community & Charity Involvement	Clear evidence of this	Little or no evidence of this	Some evidence of this
Price	£0.50	£2.50	£1.50
Colour	Yellow	Other	Green
Fragrance	Floral	Citrus	Floral
Antibacterial Formulation	No	Yes	No
Ecologically Friendly Production	Yes	Yes	No

Choice Set 20

	Product A	Product B	Product C
Health & Safety Involvement	Some evidence of this	Little or no evidence of this	Clear evidence of this
Human Rights	High risk	Low risk	High risk
Environmental Impact	Some evidence of this	Some evidence of this	Some evidence of this
Equal Opportunities & Diversity	Some evidence of this	Little or no evidence of this	Clear evidence of this
Community & Charity Involvement	Some evidence of this	Little or no evidence of this	Clear evidence of this
Price	£1.00	£1.00	£2.00
Colour	Green	Other	Yellow
Fragrance	Citrus	Other	Floral
Antibacterial Formulation	Yes	Yes	No
Ecologically Friendly Production	No	No	Yes

Choice Set 21

	Product A	Product B	Product C
Health & Safety Involvement	Little or no evidence of this	Some evidence of this	Clear evidence of this
Human Rights	Low risk	High risk	Medium risk
Environmental Impact	Clear evidence of this	Some evidence of this	Little or no evidence of this
Equal Opportunities & Diversity	Clear evidence of this	Some evidence of this	Little or no evidence of this
Community & Charity Involvement	Some evidence of this	Some evidence of this	Some evidence of this
Price	£1.00	£2.00	£2.50
Colour	Yellow	Yellow	Other
Fragrance	Citrus	Other	Other
Antibacterial Formulation	Yes	No	No
Ecologically Friendly Production	No	Yes	Yes

Choice Set 22

	Product A	Product B	Product C
Health & Safety Involvement	Clear evidence of this	Little or no evidence of this	Clear evidence of this
Human Rights	Low risk	High risk	Low risk
Environmental Impact	Some evidence of this	Clear evidence of this	Little or no evidence of this
Equal Opportunities & Diversity	Little or no evidence of this	Clear evidence of this	Little or no evidence of this
Community & Charity Involvement	Little or no evidence of this	Some evidence of this	Clear evidence of this
Price	£2.00	£0.50	£2.00
Colour	Other	Yellow	Other
Fragrance	Citrus	Other	Citrus
Antibacterial Formulation	Yes	No	Yes
Ecologically Friendly Production	No	Yes	No

Choice Set 23

	Product A	Product B	Product C
Health & Safety Involvement	Some evidence of this	Some evidence of this	Some evidence of this
Human Rights	Medium risk	Medium risk	Medium risk
Environmental Impact	Clear evidence of this	Little or no evidence of this	Little or no evidence of this
Equal Opportunities & Diversity	Little or no evidence of this	Clear evidence of this	Some evidence of this
Community & Charity Involvement	Clear evidence of this	Little or no evidence of this	Some evidence of this
Price	£2.50	£0.50	£1.50
Colour	Other	Green	Green
Fragrance	Other	Floral	Floral
Antibacterial Formulation	No	Yes	No
Ecologically Friendly Production	No	Yes	No

Choice Set 24

	Product A	Product B	Product C
Health & Safety Involvement	Some evidence of this	Some evidence of this	Some evidence of this
Human Rights	Medium risk	High risk	Low risk
Environmental Impact	Little or no evidence of this	Clear evidence of this	Little or no evidence of this
Equal Opportunities & Diversity	Little or no evidence of this	Clear evidence of this	Little or no evidence of this
Community & Charity Involvement	Some evidence of this	Clear evidence of this	Little or no evidence of this
Price	£1.50	£2.50	£0.50
Colour	Yellow	Green	Green
Fragrance	Floral	Citrus	Other
Antibacterial Formulation	Yes	Yes	No
Ecologically Friendly Production	Yes	No	Yes

Choice Set 25

	Product A	Product B	Product C
Health & Safety Involvement	Little or no evidence of this	Little or no evidence of this	Clear evidence of this
Human Rights	Low risk	Medium risk	High risk
Environmental Impact	Little or no evidence of this	Some evidence of this	Clear evidence of this
Equal Opportunities & Diversity	Clear evidence of this	Some evidence of this	Little or no evidence of this
Community & Charity Involvement	Clear evidence of this	Some evidence of this	Little or no evidence of this
Price	£2.50	£1.50	£0.50
Colour	Other	Yellow	Other
Fragrance	Other	Floral	Citrus
Antibacterial Formulation	No	Yes	Yes
Ecologically Friendly Production	No	Yes	Yes

Choice Set 26

	Product A	Product B	Product C
Health & Safety Involvement	Some evidence of this	Little or no evidence of this	Little or no evidence of this
Human Rights	High risk	Low risk	High risk
Environmental Impact	Some evidence of this	Little or no evidence of this	Clear evidence of this
Equal Opportunities & Diversity	Some evidence of this	Little or no evidence of this	Clear evidence of this
Community & Charity Involvement	Some evidence of this	Little or no evidence of this	Clear evidence of this
Price	£2.00	£1.00	£2.00
Colour	Yellow	Other	Green
Fragrance	Floral	Other	Citrus
Antibacterial Formulation	Yes	No	Yes
Ecologically Friendly Production	No	Yes	No

Choice Set 27

	Product A	Product B	Product C
Health & Safety Involvement	Clear evidence of this	Some evidence of this	Little or no evidence of this
Human Rights	Medium risk	Medium risk	High risk
Environmental Impact	Little or no evidence of this	Little or no evidence of this	Clear evidence of this
Equal Opportunities & Diversity	Clear evidence of this	Some evidence of this	Little or no evidence of this
Community & Charity Involvement	Little or no evidence of this	Some evidence of this	Clear evidence of this
Price	£2.50	£2.00	£0.50
Colour	Other	Green	Green
Fragrance	Other	Citrus	Citrus
Antibacterial Formulation	No	Yes	Yes
Ecologically Friendly Production	No	No	Yes

Choice Set 28

	Product A	Product B	Product C
Health & Safety Involvement	Clear evidence of this	Little or no evidence of this	Some evidence of this
Human Rights	Low risk	Medium risk	Medium risk
Environmental Impact	Little or no evidence of this	Clear evidence of this	Some evidence of this
Equal Opportunities & Diversity	Some evidence of this	Some evidence of this	Some evidence of this
Community & Charity Involvement	Clear evidence of this	Some evidence of this	Little or no evidence of this
Price	£1.00	£2.00	£2.00
Colour	Yellow	Other	Green
Fragrance	Citrus	Floral	Floral
Antibacterial Formulation	Yes	No	Yes
Ecologically Friendly Production	No	Yes	No

Information Sheet A

Washing up liquid is a necessity good in most households that is used several times a day and exists in a variety of forms to meet the various needs of billions of different people.

The advancements made in washing up liquid mean that consumers are presented with more than just fragrance and colour characteristics to choose between, but also different cleaning properties and production characteristics like those produced in an eco-friendly process.

Companies today typically have a focus on their corporate social responsibility practices. These practices can be assessed by independent third parties on their ability to treat their employees fairly and provide them with a safe environment to work in. The countries companies operate in can be assessed to check the likelihood of human rights violations occurring since some developing countries can be lax about labour standards and the standard of working and living conditions can be of an inadequate standard.

There is a pressure on companies today to improve their environmental impact. In the case of washing up liquid this may be through reducing carbon dioxide emissions in production or using recyclable materials in the packaging.

It's not unusual today to hear about companies supporting charities and or helping communities. Anything from donating money for school books to helping install fresh water systems in developing countries.

The variety of characteristics associated with washing up liquid are plentiful, however, the variety on offer to the consumer should satisfy most consumers' dishwashing needs.

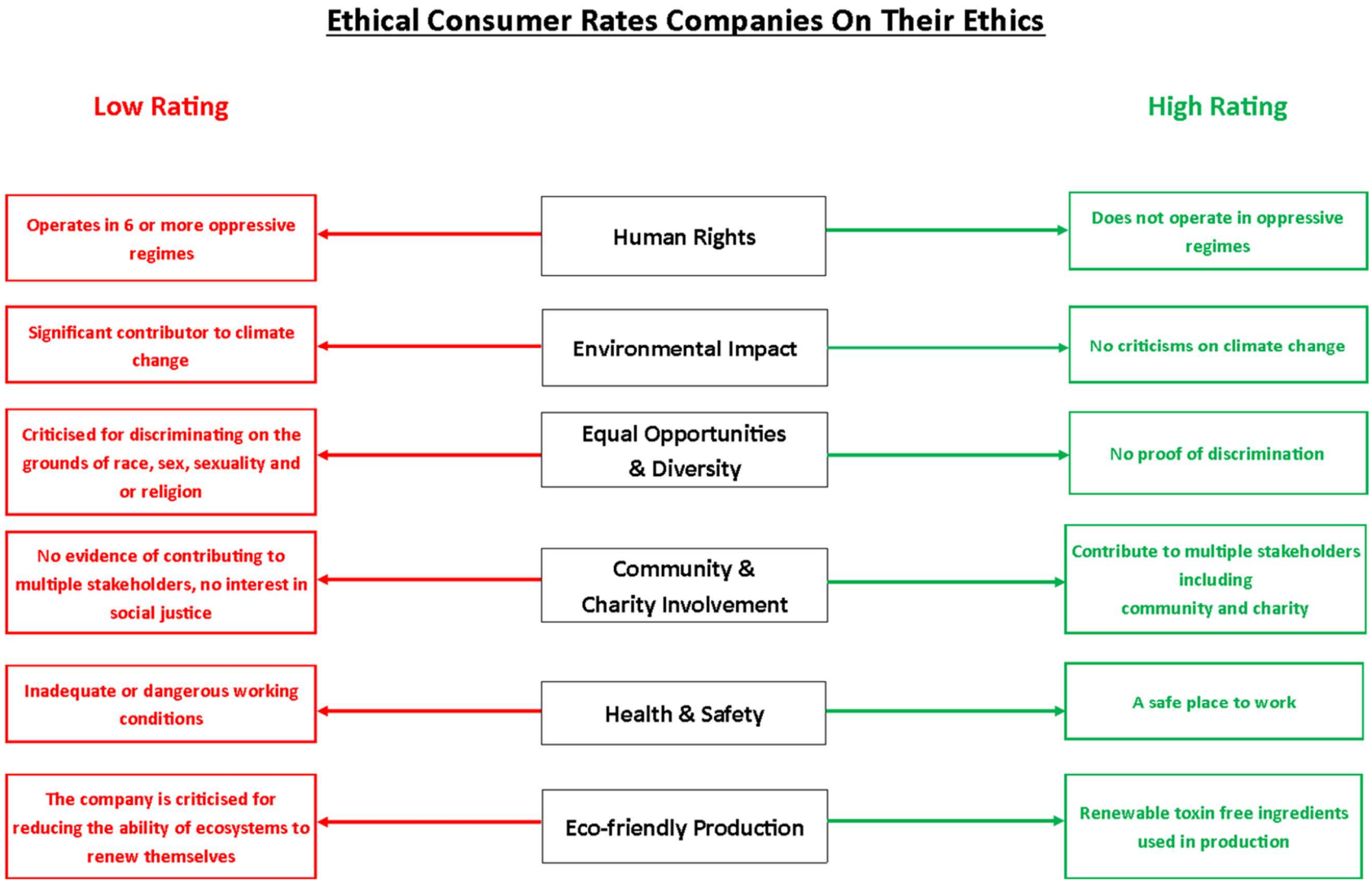
Information Sheet B

Washing up liquid is a necessity good in most households that is used several times a day and exists in a variety of forms to meet the various needs of billions of different people.

The advancements made in washing up liquid mean that consumers are presented with more than just fragrance and colour characteristics to choose between, but also different cleaning properties and production characteristics.

The variety of characteristics associated with washing up liquid are plentiful, however, the variety on offer to the consumer should satisfy most consumers' dishwashing needs.

The Nudge


Ethical Consumer Rates Companies On Their Ethics
Low Rating
High Rating
Operates in 6 or more oppressive regimes
Human Rights
Does not operate in oppressive regimes
Significant contributor to climate change
Environmental Impact
No criticisms on climate change
Criticised for discriminating on the grounds of race, sex, sexuality and or religion
Equal Opportunities & Diversity
No proof of discrimination
No evidence of contributing to multiple stakeholders, no interest in social justice
Community & Charity Involvement
Contribute to multiple stakeholders including community and charity
Inadequate or dangerous working conditions
Health & Safety
A safe place to work
The company is criticised for reducing the ability of ecosystems to renew themselves
Eco-friendly Production
Renewable toxin free ingredients used in production

Questionnaire

Q1

	Option A				*Option B*	
	Winnings	Winnings			Winnings	Winnings
Row	**£2.10**	**£1.60**	**A**	**B**	**£3.80**	**£0.10**
1	Prob 10%	Prob 90%	X		Prob 10%	Prob 90%
2	Prob 20%	Prob 80%			Prob 20%	Prob 80%
3	Prob 30%	Prob 70%			Prob 30%	Prob 70%
4	Prob 40%	Prob 60%			Prob 40%	Prob 60%
5	Prob 50%	Prob 50%			Prob 50%	Prob 50%
6	Prob 60%	Prob 40%			Prob 60%	Prob 40%
7	Prob 70%	Prob 30%			Prob 70%	Prob 30%
8	Prob 80%	Prob 20%			Prob 80%	Prob 20%
9	Prob 90%	Prob 10%			Prob 90%	Prob 10%
10	Prob 100%	Prob 0%		X	Prob 100%	Prob 0%

In the diagram above Options A and B detail lottery payoffs. You start with Option A and end with Option B. Please read through the pairs of lottery payoffs and indicate the one point at which you would switch from Option A to Option B:

- o Row 1
- o Row 2
- o Row 3
- o Row 4
- o Row 5
- o Row 6
- o Row 7
- o Row 8
- o Row 9
- o Row 10

Q2

How do you see yourself? Are you generally a person who is fully willing to take risks or do you try to avoid taking risks?

On the scale below, 0 means "risk averse"; and 10 means "fully prepared to take risks"

o	o	o	o	o	o	o	o	o	o	o
0	1	2	3	4	5	6	7	8	9	10

Q3

The Ethics Position Questionnaire

Please indicate if you agree or disagree with the following items. Each represents a commonly held opinion and there are no right or wrong answers. We are interested in your reaction to such matters of opinion. Rate your reaction to each statement by writing a number to the left of each statement where:

1 = Completely disagree
2 = Largely disagree
3 = Moderately disagree
4 = Slightly disagree
5 = Neither agree nor disagree
6 = Slightly agree
7 = Moderately agree
8 = Largely agree
9 = Completely agree

1. People should make certain that their actions never intentionally harm another even to a small degree.

2. Risks to another should never be tolerated, irrespective of how small the risks might be.

3. The existence of potential harm to others is always wrong, irrespective of the benefits to be gained.

4. One should never psychologically or physically harm another person.

5. One should not perform an action which might in any way threaten the dignity and welfare of another individual.

6. If an action could harm an innocent other, then it should not be done.

7. Deciding whether or not to perform an act by balancing the positive consequences of the act against the negative consequences of the act is immoral.

8. The dignity and welfare of the people should be the most important concern in any society.

9. It is never necessary to sacrifice the welfare of others.

10. Moral behaviors are actions that closely match ideals of the most “perfect” action.

11. There are no ethical principles that are so important that they should be a part of any code of ethics.

12. What is ethical varies from one situation and society to another.

13. Moral standards should be seen as being individualistic; what one person considers to be moral may be judged to be immoral by another person.

14. Different types of morality cannot be compared as to "rightness."

15. Questions of what is ethical for everyone can never be resolved since what is moral or immoral is up to the individual.

16. Moral standards are simply personal rules that indicate how a person should behave, and are not be be applied in making judgments of others.

17. Ethical considerations in interpersonal relations are so complex that individuals should be allowed to formulate their own individual codes.

18. Rigidly codifying an ethical position that prevents certain types of actions could stand in the way of better human relations and adjustment.

19. No rule concerning lying can be formulated; whether a lie is permissible or not permissible totally depends upon the situation.

20. Whether a lie is judged to be moral or immoral depends upon the circumstances surrounding the action.

Q4

Here are a number of characteristics that may or may not apply to you. Please indicate please indicate the extent to which you, as an individual, agree or disagree with each statement:
Likert Scale (1= disagree strongly, 2= disagree a little, 3= neither agree nor disagree, 4= agree a little, 5= agree strongly)

Is talkative	○	○	○	○	○
Tends to find fault with others	○	○	○	○	○
Does a thorough job	○	○	○	○	○
Is depressed, blue	○	○	○	○	○
Is original, comes up with new ideas	○	○	○	○	○
Is reserved	○	○	○	○	○

Is helpful and unselfish with others					
Can be somewhat careless					
Is relaxed, handles stress well					
Is curious about many different things					
Is full of energy					
Starts quarrels with others					
Is a reliable worker					
Can be tense					
Is ingenious, a deep thinker					
Generates a lot of enthusiasm					
Has a forgiving nature					
Tends to be disorganized					
Worries a lot					
Has an active imagination					
Tends to be quiet					
Is generally trusting					
Tends to be lazy					
Is emotionally stable, not easily upset					
Is inventive					
Has an assertive personality					
Can be cold and aloof					
Perseveres until the task is finished					
Can be moody					
Values artistic, aesthetic experiences					
Is sometimes shy, inhibited					
Is considerate and kind to almost everyone					
Does things efficiently					
Remains calm in tense situations					
Prefers work that is routine					
Is outgoing, sociable					
Is sometimes rude to others					
Makes plans and follows through with them					

Gets nervous easily	○	○	○	○	○
Likes to reflect, play with ideas	○	○	○	○	○
Has few artistic interests	○	○	○	○	○
Likes to cooperate with others	○	○	○	○	○
Is easily distracted	○	○	○	○	○
Is sophisticated in art, music, or literature	○	○	○	○	○

Q5

"It is imperative to take immediate action to limit potential catastrophic consequences from changes in global climate, even if such action may be costly". Please indicate on the scale below the extent to which you agree with this statement:

- Disagree strongly
- Disagree
- Disagree a little
- Neither agree nor disagree
- Agree a little
- Agree
- Agree strongly

Q6

Please consider the following statement: "Man-induced climate change is a serious danger that could threaten our way of life". Please indicate on the scale below the extent to which you agree with this statement:

- Disagree strongly
- Disagree
- Disagree a little
- Neither agree nor disagree
- Agree a little
- Agree
- Agree strongly

Q7

An independent corporation collects data on thousands of corporations and assesses corporations on their corporate social responsibility practices. In this next question you will need to indicate how you think specific corporations rank in terms of their corporate social responsibility practices. A score of 1 is bottom of the scale and used to indicate who you think is the worst performer whilst a score of 11 is the top of the scale used to indicate who you think is the best performer. For more information on the companies click on the more info button.

- Barclays
- BP
- Cineworld
- HSBC
- JD Sports Fashion
- Marks & Spencer
- Restaurant Group
- Sainsburys
- Sky
- Tesco
- Vodafone

Q8

In what year were you born? ----------

Q9

What is your gender?

- Female
- Male
- Prefer not to say

Q10

What is your religion?

- No religion
- Christian (including Church of England, Catholic, Protestant and all other Christian denominations)
- Buddhist
- Hindu
- Jewish
- Muslim
- Sikh
- Other ----------

Q11

What is your ethnic group? Choose one option that best describes your ethnic group or background? (Office of National Statistics)



Q12

Please state the country you were raised ----------

Q13

What is your marital status?

- Married
- Single
- Divorced
- Widowed
- Other ----------

Q14

How would you best describe your current employment situation?

- Full-time employment
- Part-time employment
- Unemployed
- Homemaker
- Full-time student
- Part-time student
- Other ----------

Q15

What is the highest level of education you have completed?

- None
- High/secondary school
- Bachelor
- Master
- PhD
- Other ----------

Q16

Who in the household would you consider to be primarily in charge of expenses and budget decisions?

- Self
- Spouse
- Parent
- Do not know
- Other ----------

Q17

How do you receive your income?

- Fixed source (salary, pension)
- Hourly rate
- Hourly rate plus tips
- Loans/scholarships
- Parents
- Other ----------

Q18

Please indicate your gross income (before taxes) from all sources (including loans/scholarships):

- < £5,000
- £5,001 - £15,000
- £15,001 - £25,000
- £25,001 - £40,000
- £40,001 - £65,000
- £65,000+

Q19

How tall are you (in cm)? ----------

4 Unpicking the 'virtuous circle' that is corporate financial performance and corporate social performance.

4.1 Abstract

Researchers have reported mixed results on the relationship between corporate financial performance (CFP) and corporate social performance (CSP) and questioned the direction of causality. Using the EIRIS dataset on UK registered firms to construct a CSP index we use panel data analysis to shed light on whether firms can signal CSP and consequently enhance their CFP. We find that CFP is typically negatively dependent on CSP for most industry sectors. However, for some sectors the relationship is insignificant. Firms in these sectors fail to signal CSP but reassuringly for these firms the impact on CFP is insignificant.

4.2 Introduction

Can firms effectively signal their corporate social performance (CSP) in order to yield extra revenue and is the relationship between corporate financial performance (CFP) and CSP consequently positive? Or are the signals undetected and CFP is therefore negatively related to CSP due to the costs of investing in CSP? For years the CFP and CSP relationship has been debated. Friedman (1970) argued the responsibility of business is profit maximisation and that investing in CSP is inefficient and detracts from CFP (Brammer and Millington, 2008; McWilliams and Siegel, 2001; Friedman,

1970). If Friedman (1970) was correct then we should always see a negative relationship between CFP and CSP, however, numerous studies have challenged Friedman (1970) arguing that firms are answerable to multiple stakeholders including society and that managing multiple stakeholders' needs can promote profit maximisation (McWilliams and Siegel, 2001; Freeman, 1984). Recent experiments find that both uninformed and informed participants do purchase products with ethical attributes and these individuals exhibited a willingness to pay for these attributes. When the participants were informed on CSR practices, via a CSP signal, these participants demonstrated a decrease in price sensitivity and increasing willingness to pay for a variety of ethical attributes (see chapters 2 and 3). Whilst the experiments only involved participants purchasing one type of household product, the CSR practices included in the product description and experiment design are standard CSR practices. EIRIS evaluate all the UK companies in their dataset against these CSR practices, regardless of the industry sector they belong to.

Much has been written on how firms' reputations are linked with how their corporate social responsibility (CSR) practices are signalled to and perceived by stakeholders (Brammer and Pavelin, 2006; Brammer and Millington, 2005). CSP is usually defined within the context of a performance measurement of the outcomes of this socially responsible (or irresponsible) behaviour (Wood, 2010). Therefore, observable CSP can be used as a signal to infer CSR quality (Milgrom and Roberts, 1986) and has been used as a signal in the studies in the previous chapters. Higher quality CSR practices were linked to individuals increasing their willingness to pay for these attributes and decreasing their price sensitivity.

The presence of asymmetric information regarding firms' CSP can make it difficult for stakeholder groups to differentiate between firms with different levels of CSP and this can hinder the market competitiveness by negatively influencing the quality and volume of transactions that occur (Akerlof, 1970), resulting in a negative relationship between CFP and CSP. Firms which have minimal CSR practices will have an incentive to be dishonest and market themselves as being socially responsible, (often referred to as greenwashing) (Orlitzky, 2013). This behaviour causes an adverse selection problem which prevents the firms which are socially responsible from differentiating themselves. Consequently their investment in CSP is financially detrimental. The imbalance of information between stakeholder groups can result in firms engaging in activities such as signalling and reputation building (Milgrom and Roberts, 1987; 1986). In the seminal work of Spence (1974, 1973) it is demonstrated that when a cost is associated with signalling the asymmetric information problem can be overcome, resulting in signalling equilibria in the market. Signalling can therefore provide firms with an opportunity to separate themselves from the crowd in terms of their CSP; by this we mean firms which have good CSR practices can mark-up their prices, to yield additional revenue, which exceeds the costs associated with investing in CSP.

Meta-analyses have found that whilst some empirical studies have mixed and ambiguous findings, overall empirically a positive relationship between CFP and CSP exists (Orlitzky, 2011; Margolis and Walsh, 2003; Orlitzky et al., 2003; 2001). Whilst this finding may seem to be encouraging, it is premature to suggest that these studies indicate that socially responsible firms can signal their performance to multiple stakeholder groups and that the CFP is positively influenced by CSP. We should not conclude that empirical studies which did not find a positive association between CFP

and CSP indicate a signalling problem, when issues like; CFP-CSP model misspecification (McWilliams and Siegel, 2001), endogeneity (Surroca et al., 2010; Waddock and Graves, 1997), CSP measurement and finally we add model misestimation require further research.

In the research of Waddock and Graves (1997) and McWilliams and Siegel (2000) the problems of causality and model misspecification are identified. We have drawn on this research as a foundation, on which to address the problems and questions on endogeneity and omitted variables, identified in CFP-CSP modelling and estimation. We use an estimation strategy which includes, but is not limited to, the generalised method-of-moments (GMM) panel data estimators. GMM estimators with orthogonal deviations allow us to directly test for an endogenous relationship between CFP and CSP and therefore unpick what Waddock and Graves (1997) describe as the 'virtuous circle'.

4.3 CSP signalling

Asymmetric information surrounding firms' CSR practices and their CSP makes it difficult for stakeholders external to the firms, primarily consumers, to differentiate between firms with differing CSP and this can hinder the market competitiveness by negatively influencing the quality and volume of transactions that occur (Akerlof, 1970). Firms with no or minimal CSP have an incentive to be dishonest and market themselves as being socially responsible (Orlitzky, 2013). This behaviour causes an adverse selection problem which prevents the firms which are socially responsible

from differentiating themselves on CSP and recovering the costs related with CSP in CFP.

> *Hypothesis 1: When stakeholders cannot differentiate between firms' CSP, firms will be adversely selected and the relationship between CFP-CSP will be negative, as the firms will not yield additional revenue to cover the costs associated with investing in CSP.*

A lot has been written in the CSR literature about socially responsible firms experiencing enhanced performance (Du et al., 2010, 2007; Luo and Bhattacharya, 2006; Sen et al., 2006; Bhattacharya and Sen, 2004; Sen and Bhattacharya, 2001; Lafferty and Goldsmith, 1999; Brown and Dacin, 1997). CSR studies have found that consumers' which are aware of firms' CSR initiatives result in positive behavioural outcomes such as increased purchase intentions (Du et al., 2010, 2007; Sen et al., 2006; Ahearne et al., 2005; Bhattacharya and Sen, 2004; Sen and Bhattacharya, 2001; Lafferty and Goldsmith, 1999). Spence's seminal works on signalling theory (1973, 1974) states that when a cost is associated with a signal it is possible to overcome the adverse selection problem associated with asymmetric information. If firms can signal their CSP to stakeholders firms should be able to differentiate themselves based on their CSP and recover the costs of this differentiation through enhanced CFP.

> *Hypothesis 2: When stakeholders detect firms' CSP signal a positive relationship between CFP and CSP will exist if the firms can yield*

additional revenues which exceed the costs associated with investing in CSP.

4.4 CSP Measurement

Over the years much has been written about CSR and CSP being multidimensional constructs (Orlitzky et al., 2015; Surroca et al., 2010; Wood, 2010; Griffin and Mahon, 1997; Waddock and Graves, 1997; Ullmann, 1985; Carroll, 1979). Consider the work of Carroll (1979) in which CSR is defined as including economical, legal, ethical and discretionary responsibilities and the work of Wood (2010, 1991) in which CSP is defined as a measure of a firm's principles of social responsibility, processes of social responsiveness and outcomes and impacts of performance. Whilst there is no standard measurement for CSP using a database like EIRIS, which considers multiple stakeholders and assesses CSP on multiple features, allows for a robust proxy of CSP to be constructed.[22]

Many empirical studies have treated CSP as a one-dimensional measure for example charitable giving (Su and He, 2010; Brammer and Millington, 2008; Adams and Hardwick, 1998). However, such a measure cannot represent a firm's principles, processes and outcomes of CSR appropriately and as Wood (2010) pointed out using a single measure like charitable giving can be difficult to interpret in terms of a firm's CSP when charitable giving is highly correlated with CFP. Using the EIRIS database,

[22] We have used the Ethical Investment Research Information Services (EIRIS) database to construct a multidimensional proxy for CSP. EIRIS is a global leader in environmental, social and governance research and this research is used in the responsible investment services. Some of their clients include major index providers.

which is gathered independently and externally to the firms, addresses the weaknesses of the one-dimensional CSP proxies and provides the data for a multidimensional CSP index to be constructed. Empirical studies have previously used the KLD database to construct a proxy for CSP (Surroca et al., 2010; McWilliams and Siegel, 2000; Griffin and Mahon, 1997; Waddock and Graves, 1997).[23] We followed Waddock and Graves' (1997) approach to constructing a CSP index, however, as detailed in the results we furthered their work and compared the aggregated CSP index results to the disaggregated components of the CSP index to address the issue over which components of CSP exert more influence on CFP.

4.5 Model misspecification

Whilst recent meta-analyses have found that overall empirical studies suggest a positive relationship between CFP and CSP (Orlitzky, 2011; Margolis and Walsh, 2003; Orlitzky et al., 2003; 2001) we suggest that this result is prematurely optimistic. The findings are mixed and mistakes have been made in both modelling and estimating the CFP-CSP relationship. Empirical studies like the work undertaken by Wright & Ferris (1997) indicate a negative relationship between CFP and CSP, whilst the study by Aupperle et al (1985) suggests there is insufficient evidence to speculate that a relationship even exists and then the empirical studies like the work undertaken by Waddock and Graves (1997) find a synergistic, positive relationship.

[23] The Kinder, Lydenberg, Domini (KLD) database has been used in numerous studies to construct a multidimensional proxy for CSP. KLD was an independent rating service used to rate companies in the Standard and Poors 500 index however, in recent years has been subject to acquisitions. More recent studies have used Sustainalytics Platform database (formerly known as SiRi Pro) compiled by Sustainalytics Responsible Investment Services which comprises of ten independent research institutions including KLD.

Unsurprisingly the mixed findings have raised questions and research based view (RBV) scholars suggest these mixed findings may be a result of model misspecification, more specifically omitted variables (Surroca et al., 2010; McWilliams and Siegel, 2000).

Variables like research and development (R&D), advertising and intangibles have been included in subsequent models of CFP and CSP (Surroca et al., 2010; Brammer and Millington, 2008; McWilliams and Siegel, 2001, 2000). These types of variables are associated with product differentiation and strategy in the different industries (Su and He, 2010; Brammer and Millington, 2008; Brammer and Pavelin, 2006; McWilliams and Siegel, 2001, 2000; Griliches, 1990; Navarro, 1988) with RBV scholars warning that the CFP and CSP relationship is overestimated and biased when these type of variables are omitted due to these variables being positively associated with CFP (McWilliams and Siegel, 2000). For completeness we do estimate models that include R&D and intangibles in our empirical study, however it is interesting to refer back to Waddock and Graves (1997) in which they do not include R&D in their model on the basis that the differences in R&D investment exist between industries and it is sufficient to control for industry in the model to capture the effects on CFP. We further this point by suggesting that a misestimation problem can exist, in that if variables like R&D and intangibles are dependent on industry and industry is controlled for, if estimation techniques are used which include fixed effects then we argue industry independent variables like R&D and intangibles become fixed and may be omitted from the model. However, the inclusion of variables like R&D and intangibles have been promoted in recent years (Su and He, 2010; Surroca et al., 2010; Brammer and Millington, 2008; Brammer and Pavelin, 2006; McWilliams and Siegel, 2001, 2000; Griliches, 1990; Navarro, 1988). We do however, agree that there

are potential misestimation and misspecification problems if the estimation is limited to ordinary least squares without considering how variables like R&D and intangibles may impact the CFP-CSP model.

4.6 The endogeneity and misestimation problem

Waddock and Graves (1997) identify a potential endogeneity issue in that they suggest that CFP can be both dependent on CSP and also an independent predictor of CSP and they refer to this relationship as a 'virtuous circle'. The diverse empirical results identified in the meta-analyses (Orlitzky, 2011; Margolis and Walsh, 2003; Orlitzky et al., 2003; 2001) may in part be attributed to estimation problems caused by unobserved heterogeneity due to omitted observable variables but also omitted unobservable variables. The CFP-CSP relationship needs to be estimated in a model which can be dynamic but also needs to address the endogeneity issue surrounding CFP and CSP. Griffin & Mahon (1997) explain CSP involves compliance costs with CSR and often the costs of compliance are incurred upfront with the benefits of compliance being experienced in the long run. Stakeholders need time to learn and value firms' CSR practices (Lacey and Kennett-Hensel, 2010), therefore time lags need to be incorporated within a model of CSP to reflect the time this information takes to disseminate into the market (Surroca et al., 2010; Waddock and Graves, 1997). However, whilst directional causality between CFP and CSP may well be an issue, we suggest that models estimating the CFP and CSP relationship which only include time lags as a technique for addressing the endogeneity issue, are misestimated. Dynamic models and endogenous models are not equivalent. If

endogeneity and dynamic effects are both relevant then the most efficient, unbiased estimator would be a GMM estimator.

We propose that the CFP and CSP relationship should be estimated using a system GMM estimator like the Arellano–Bover/Blundell–Bond estimator (Roodman, 2009a; Blundell and Bond, 1998; Arellano and Bover, 1995). Using GMM estimators in addition to including time lags in the CFP and CSP model not only estimates the model dynamically, but also deals with the causality issue raised by Waddock and Graves (1997) since system GMM estimators are designed for independent variables which maybe predetermined and not strictly exogenous or endogenous (Roodman, 2009a).

4.7 Model and measures

In this section we draw on the CFP-CSP model presented in Waddock and Graves (1997). CFP is the dependent variable and a function of the independent variable CSP and control variables:

$$CFP_{it} = f(CSP_{it}, Size_{it}, Risk_{it}, Industry_{it}) \quad (4.1)$$

We have also drawn from the CFP-CSP models presented in McWilliams and Siegel (2000) and Surroca *et al.* (2010) in which they find research and development (R&D), advertising and intangibles to be independent variables which influence the

relationship between CFP and CSP to examine whether the model presented in Waddock and Graves (1997) is misspecified.

4.7.1 Corporate social performance

We mentioned earlier the measurement problems associated with CSP. Numerous studies recognise that CSP is a multidimensional construct (Orlitzky et al., 2015; Surroca et al., 2010; Wood, 2010; Griffin and Mahon, 1997; Waddock and Graves, 1997; Ullmann, 1985; Carroll, 1979). We use the EIRIS database to construct a multidimensional CSP index based on nine attributes:

- Health and safety
- Human rights
- Stakeholder engagement
- Customer and supplier relations
- Employee relations
- Community and charity involvement
- Environment
- Board practice
- Code of ethics.

These nine attributes are developed from twenty-five ESG practices analysed and rated by EIRIS. These ESG practices were selected primarily due to them being in

existence for the entire time period 2003-2013 with a hundred percent completion rate. In recent years EIRIS has expanded and refined the ESG practices it researches. Since the panel dataset is unbalanced it was preferable to have an unbalanced panel dataset without missing values. The hundred percent completion rate of the twenty-five ESG practices selected allowed the firms to be benchmarked against a standardised CSP index. We therefore selected these attributes for consistency and completeness.

EIRIS rates firms on their individual ESG practices. Each ESG practice is rated against a practice specific criteria. We adopted two coding systems for the EIRIS data which we used separately to construct two CSP indexes. The first approach we took to coding the twenty-five ESG practices was binary in nature and the values allocated to the ESG practices were aggregated (summed up) into one CSP index. Once the models had been estimated with this CSP index we then recoded the ESG practices on a scale which included negative, neutral and positive values. Again we aggregated (summed up) the values allocated to the ESG practices into one CSP index and estimated the models. Section 4.13 Appendix A provides details on the ESG practices coding. The later approach to coding was adopted to study how firms differentiated their CSP and how sensitive CFP is to CSP differentiation.

Arguably the ESG attributes and practices selected to construct a CSP index are of interest to multiple stakeholder groups including consumers. The CSP index will differentiate firms based on the quality of their CSP. If firms are accurately signalling their CSP we should see a positive relationship between CFP-CSP.

4.7.2 Corporate financial performance

Financial performance was measured using five accounting measures: return on assets (ROA), return on equity (ROE), return on sales (ROS), net profit margin (NP), and earnings per share (EPS). We used ROA, ROE and ROS to replicate Waddock and Graves (1997) approach to see if we could reproduce their results. Firms' management, executives and shareholders use a range of CFP measures to evaluate performance therefore we also used NP and EPS for completeness.

Accounting measures of CFP have to adhere to accounting and financial reporting standards, and tax legislation. Since our dataset comprises of UK registered firms only the impact of the accounting and financial reporting standards, and tax legislation is standardised and all CFP measures are comparable for all firms within the dataset.

4.7.3 Risk

Previous studies suggest that risk influences the CFP-CSP relationship (Surroca et al., 2010; Brammer and Millington, 2008; McWilliams and Siegel, 2000; Waddock and Graves, 1997; Ullmann, 1985). Managements' appetite for risk will influence the business decisions they make, including those with respect to CSR (Waddock and Graves, 1997). We measured risk using two leverage measures: debt-to-asset ratio (DR), and the debt-to-equity ratio (DER). Both leverage measures indicate the solvency of the firm. DER also provides information on a firm's capital structure. Since we use leverage and the financial solvency as a proxy for firms' risk we

included preference shares within equity when we calculated DER. We expect CFP and risk to be negatively correlated.

4.7.4 Size

Like previous research we control for firm size (Jayachandran et al., 2013; Barnett and Salomon, 2012; Surroca et al., 2010; Brammer and Millington, 2008; McWilliams and Siegel, 2000; Waddock and Graves, 1997; Ullmann, 1985). Firm size can influence both CFP and CSP. Waddock and Graves (1997) suggest that firm size and the change in firm size as a firm ages influences CSP, with some smaller firms limiting observable CSP. Following this the work of Brammer and Millington (2008) recommends that firm size is a necessary control and a proxy for a firm's visibility. We measured size using three measures: Employee numbers, total sales (TS), and total assets (TA).[24] We anticipate CFP and firm size will be positively correlated.

4.7.5 Industry

We identified and controlled for industry sectors using the primary standard industrial classification (SIC).[25] Earlier studies found that industry effects can influence both CFP and CSP (Brammer and Millington, 2008; Brammer and Pavelin, 2006;

[24] We took the natural logarithm of TS and TA.
[25] We used the 2007 SIC classification which came into effect 1 January 2008.

Brammer and Millington, 2005; McWilliams and Siegel, 2000; Adams and Hardwick, 1998; Waddock and Graves, 1997).

4.7.6 Research & Development

We draw heavily from the model of CFP-CSP proposed by Waddock and Graves (1997) in which they did not include an independent variable for R&D, but rather they suggested that controlling for industry satisfactorily controls for the industry specific differences in performance and R&D investment. Whilst we do not necessarily disagree we suggest that whether an industry variable controls for industry specific differences in R&D investment is dependent on the estimation technique implemented.

In recent studies RBV scholars typically include R&D as an independent variable when modelling the CFP-CSP relationship (Surroca et al., 2010; Brammer and Millington, 2008; Brammer and Pavelin, 2006; McWilliams and Siegel, 2001, 2000). Concern has been expressed that the omission of R&D results in a misspecified model which is overestimated and biased (McWilliams and Siegel, 2000). We control for R&D using three measures: R&D expenditure, natural logarithm of R&D expenditure, and R&D intensity.[26] The inclusion of the variable is however dependent on the estimation technique implemented and for completeness we report results on several estimated models.

[26] R&D intensity is defined as R&D expenditure divided by TS.

4.7.7 Intangibles

McWilliams and Siegel (2001, 2000) suggest that CSR comprises of intangible and tangible attributes and that firms may advertise their CSR to enhance their reputations as socially responsible firms. Advertising can be used strategically to differentiate between firms CSP (Navarro, 1988). In this sense advertising can be instrumental in signalling firms intangible attributes for example reputation, reliability and product quality (Milgrom and Roberts, 1986; Wilson, 1985; Nelson, 1974).

In a recent study by Surroca *et al.* (2010) four sources of intangible attributes were identified and included within a CFP-CSP model: Innovation, human capital, reputation, and culture. It can be said that intangibles include the goodwill associated with firms CSR practices and corresponding CSP. Therefore, we control for intangibles and use three different intangible measures in the modelling and estimation: intangibles, natural logarithm of intangibles, and intangibles intensity.[27]

Like R&D whether intangibles need to be controlled for independently or are controlled for within the industry variable may well be dependent on the estimation technique implemented and again for completeness we report results on several estimated models.

[27] Data on intangibles was obtained from DataStream. Intangibles intensity is defined as intangibles divided by TS.

4.8 Methods

4.8.1 Sample and data

We measure CSP using the EIRIS database. Our sample comprises 654 UK registered industrial firms included in at least one year in the period 2003-2013. EIRIS compile data on approximately 3500 firms globally on approximately 100 environmental, social and governance (ESG) practices and is a leading provider of ESG research. Like Sustainalytics Responsible Investment Services, EIRIS provides investors with independent ESG research and analysis tools to facilitate responsible investment decisions.

We used DataStream to extract financial data for the period 2003-2013 to construct an unbalanced panel dataset. We decided to focus our analysis on UK firms only even though EIRIS compiles data on firms globally. This decision was primarily due to different countries adopting different accounting and financial reporting standards. Restricting the panel dataset to UK registered industrial firms therefore meant all the financial data was subject to a standardised set of accounting and financial reporting standards.

4.8.2 Estimation

We seek to explain the CFP-CSP relationship for UK firms *i* in the year (time) *t*:

$$CFP_{it} = f(CSP_{it}, Size_{it}, Risk_{it}, Industry_{it}) \quad (4.1)$$

The unbalanced panel dataset we have constructed is a combination of time series and cross sectional data. It is therefore reasonable to expect some heterogeneity amongst the variables and this is indicated by the range of performance within CSP and the financial performance measures, see tables 4.1 and 4.2. Using panel data estimation allows for issues like heterogeneity to be controlled for by incorporating firm-specific variables (Gujarati, 2003).

Mixed approaches have been taken towards estimating the CFP-CSP model. We therefore adopt a multi-stage estimation strategy which includes: Robust ordinary least squares, fixed effects, lagged variables, and GMM estimators.

4.8.3 Ordinary least squares

In existing literature the relationship between CFP and CSP is usually assumed to be linear (Surroca et al., 2010; McWilliams and Siegel, 2000; Waddock and Graves, 1997). Since this study controls for time it is appropriate to use the individual-effects model with the one-way error term:

$$y_{it} = \alpha + \beta x'_{it} + \mu_{it} \tag{4.2}$$

where the individual firm dimension is $i = 1,\ldots, N$ and time dimension $t = 1,\ldots, T$. Also, where x_{it} are the regressors (CSP, size, risk and industry) and μ_{it} is the one-way error term which comprises of unobservable firm effects and the remainder of the stochastic disturbance. Which can also be described as:

$$y_{it} = \alpha + \beta x'_{it} + \mu_{it} + v_{it} \quad (4.3)$$

The significance of equation 4.3 is that the estimation techniques ordinary least squares, fixed effects and GMM estimators differ in their assumptions on the error term, slope and intercept. These differences are detailed in sections 4.8.4 and 4.8.6.

4.8.4 Fixed effects

When we estimate the CFP-CSP model using the fixed effects model we relax the assumptions regarding the intercept α detailed in equation 4.2 so that the intercept for each firm can vary. Therefore the one-way error term detailed in 4.2 can be reconsidered in the fixed effects model:

$$y_{it} = \alpha_1 D_1 + \alpha_2 D_2 + \cdots + \alpha_N D_N + \beta x'_{it} + \mu_{it} \quad (4.4)$$

where:

D_1 equals one if the firm number is one and equals zero otherwise.

D_N equals one if the firm number is N and equals zero otherwise.

The fixed effects model assumes that the slope coefficients β remain fixed across the different firms, (that is the β are time invariant), and the regressors (x_{it}) are independent of the stochastic element of the error term (v_{it}) as detailed in equation 4.3 (Gujarati, 2003). This allows for some endogeneity in the model to account for the firms' individualities (Cameron and Trivedi, 2010).

Whilst the fixed effects model allows for a degree of endogeneity amongst firms it is important to realise the inherent limitations of the fixed effects model. The inclusion of many variables in the model consumes degrees of freedom which can make it difficult to achieve an accurate estimation. Also the fixed effects model may not be able to identify with the time invariant independent variable, therefore the impact of industrial sector on CFP cannot be estimated in the fixed effects model.

Since the fixed effects model ignores time invariant variables like the industrial sector in the CFP-CSP model an alternative estimation model that can be used is the random effects model. However, for every model permutation that we pursued the Hausman specification test indicated that the fixed effects model is preferred.

4.8.5 Lagged variables

Empirical studies have included lagged variables for CFP (Barnett and Salomon, 2012; Roberts and Dowling, 2002; Waddock and Graves, 1997) on the basis that past CFP influences current CFP and the ability and inclination of a firm to invest resources in CSP. CSP is not costless, Griffin and Mahon (1997) explain that CSP involves compliance costs with CSR and often the costs of compliance are incurred upfront with the benefits of compliance being experienced in the long run.

Stakeholders', specifically consumers' ability to learn can affect performance (Horstmann and MacDonald, 2003). Stakeholders may perceive some signals and public information more quickly than others. Information on CSP can therefore take time to disseminate to stakeholders and consumers of socially responsible goods need to be provided with some learning time to correctly perceive firms' CSP (Lacey and Kennett-Hensel, 2010). Therefore a lagged CSP variable was included within the CFP-CSP model proposed by Waddock and Graves (1997). Interestingly in a meta-analysis conducted on CFP-CSP Orlitzky *et al* (2003) found a lagged CSP to have little impact on CFP however, for completeness we include a lagged CSP variable in some of the dynamic models to determine whether it influences the CFP, future CSP or has little or no impact on the CFP-CSP relationship.

However, an important consideration when including a lagged dependent variable, which in our study is a lagged CFP variable, is that the lagged CFP variable will be correlated with the error term and consequently result in inconsistent estimators (Cameron and Trivedi, 2005; Wooldridge, 2002; Blundell and Bond, 1998; Nickell, 1981). For this reason and the potential causality issue between CFP and CSP which Waddock and Graves refer to as a 'virtuous circle' the final stage of our estimation strategy uses GMM.

4.8.6 Generalised method-of-moments estimators

The inclusion of a lagged dependent variable CFP and also lagged independent variables like CSP create a potential endogeneity problem in the CFP-CSP relationship and result in inconsistent OLS and fixed effects estimators (Cameron and

Trivedi, 2005; Wooldridge, 2002; Blundell and Bond, 1998; Nickell, 1981). The GMM method developed by Hansen (1982) provides a framework for estimating models with endogenous and or predetermined (not strictly exogenous) variables. Waddock and Graves (1997) suggest that the CFP-CSP relationship is a 'virtuous circle', they allude to CSP being predetermined with respect to CFP and then CFP being predetermined with respect to CSP. To address the question raised on the direction of causality in the CFP-CSP relationship and whether the variables are strictly exogenous a dynamic model with instrumental variables is required, hence we use GMM estimators in the final part of our estimation strategy.

We use robust two-step GMM system estimators with orthogonal deviations. Since we have an unbalanced panel dataset we use orthogonal deviations to transform the variables (Roodman, 2009a; Arellano and Bover, 1995). This involves using the Arellano and Bover (1995) and Blundell and Bond (1998) estimator to transform the independent variables (Roodman, 2009a). A Potential problem with the two-step estimation is that as the number of instruments increases the standard errors can become downward biased (Roodman, 2009a; Arellano and Bond, 1991). We therefore use the robust two-step GMM system estimators with the Windmeijer (2005) standard error correction (Roodman, 2009a). Staying on the subject of instrument variables, as the number of instruments increase there is the potential to overfat endogenous regressors (Roodman, 2009a; 2009b). We therefore collapse the lags associated with the endogenous and predetermined variables to reduce the number of instruments in the models.

4.9 Analysis

Table 4.1 summarises the average CSP rating for the industries included in the dataset when the binary coding system is applied to the EIRIS dataset, (see appendix A for the EIRIS ESG coding). The industries in the EIRIS dataset were identified using the primary SIC. As the average industry CSP increases this indicates a higher, improved, CSP. In table 4.1 we can see the industry with the highest average CSP is the UK water supply, sewerage, waste management and remediation industry. However, the UK real estate industry has the lowest average CSP. These descriptive statistics indicate that CSP is highly variable between industries and demonstrates the importance of controlling for industry to capture the CSP-industry interaction.

Note that since the panel dataset is unbalanced the CSP index will not compare the same set of firms in each year in the time period 2003-2013.

Table 4.1: Industry summary on CSP

Industry	Observations	CSP (Mean)	Std.Dev.
Mining and quarrying	333	20.843	22.790
Manufacturing	961	18.349	20.529
Electricity, gas, steam and air conditioning supply	43	32.732	17.786
Water supply, sewerage, waste management and remediation activities	53	43.855	8.590
Construction	410	25.900	18.797
Wholesale and retail trade; repair of motor vehicles and motorcycles	624	17.839	20.029
Transportation and storage	203	21.172	18.398
Accommodation and food service activities	141	20.571	18.167
Information and communication	529	15.010	20.721
Financial and insurance activities	632	20.834	21.035
Real estate activities	148	3.280	16.830
Professional, scientific and technical activities	561	13.513	18.337
Administrative and support service activities	293	15.279	19.774
Public administration and defence, compulsory social security	43	14.884	11.410
Education	29	12.363	10.710
Human health and social work activities	18	5.346	10.217
Arts, entertainment and recreation	48	4.285	13.846
Other service activities	63	13.085	17.676
	5132	18.128	20.414

In our analysis we use multiple estimation techniques. We start with recreating the model proposed in Waddock and Graves (1997):

$$CFP_{it} = f(CSP_{it}, Size_{it}, Risk_{it}, Industry_{it}) \quad (4.1)$$

Table 4.2 provides descriptive statistics on all the variables used in the model detailed in equation (4.1).

Table 4.2 Descriptive statistics

Variable	Observations	Mean	Std.Dev.
Corporate social performance (CSP)	5132	18.13	20.41
Return on assets (ROA, £,000)	5132	0.03	0.15
Return on equity (ROE, £,000)	5132	0.01	4.39
Return on sales (ROS, £,000)	5132	-0.74	37.56
Net profit (NP, £,000)	5132	-0.90	37.46
Earnings per share (EPS, pence per share)	5132	46.14	432.16
Debt-to-asset ratio (DR, £,000)	5132	0.22	0.20
Debt-to-equity ratio (DER, £,000)	5132	1.00	12.46
Total sales (TS, £,000)	5132	3529974.00	16000000.00
Natural logarithm of total sales (lnTS, £,000)	5132	12.93	2.36
Total assets (TA, £,000)	5132	16900000.00	117000000.00
Natural logarithm of total assets (lnTA, £,000)	5132	13.48	2.21
Employee numbers (EN)	5132	15223	45016

4.10 Results

In this section we present our results. We report on both static and dynamic panel data models. We start with the static panel data analysis. In subsection 4.10.1 we provide the estimates for the CFP-CSP model proposed by Waddock and Graves (1997) (see equation 4.1) using robust ordinary least squares. In subsection 4.10.2 we extend the estimating strategy that Waddock and Graves (1997) used, reporting the estimates for the CFP-CSP using robust fixed effects. We also include variables for R&D and intangibles here to address the model misspecification issues raised by McWilliams and Siegel (2000). Subsections 4.10.3 and 4.10.4 then report on the dynamic panel data analysis. In subsection 4.10.3 we report on the inclusion of lagged variables in the fixed effect CFP-CSP model. Subsection 4.10.4 gives estimates for the CFP-CSP using GMM estimators. Finally in subsection 4.10.5, sticking with GMM estimation, we report on CSP industry interactions and the influence individual EIRIS ESG variables within the CSP index have on CFP.

4.10.1 Ordinary least squares

In table 4.3 the correlation matrices for key variables are provided. We include all the key financial performance variables, financial controls and CSP included in the study by Waddock and Graves (1997). We also include some additional financial performance and financial control variables for completeness. We find that CSP is positively correlated with all five financial performance measures with ROA, ROE,

NP and EPS all significant at $p < 0.1$ or better. However, unlike Waddock and Graves (1997) we do not find ROS to be significantly correlated with CSP at $p < 0.1$.

Table 4.3 Correlation matrices

	CSP	ROA	ROE	ROS	NP	EPS	DR	DER	TS	lnTS	TA	lnTA	EN
CSP	1.000												
ROA	0.075***	1.000											
ROE	0.025+	0.143***	1.000										
ROS	0.022	0.295***	0.193***	1.000									
NP	0.023+	0.294***	0.183***	0.983***	1.000								
EPS	0.054***	0.137***	0.011	0.003	0.004	1.000							
DR	0.120***	-0.082***	-0.035*	0.016	0.012	-0.007	1.000						
DER	0.010	-0.027+	-0.461***	0.001	0.001	0.002	0.111***	1.000					
TS	0.260***	0.020	0.007	0.005	0.006	0.037**	-0.016	0.011	1.000				
lnTS	0.522***	0.180***	0.042**	0.090***	0.099***	0.066***	0.136***	0.013	0.389***	1.000			
TA	0.205***	-0.021	0.002	0.003	0.004	-0.001	0.001	0.048***	0.390***	0.256***	1.000		
lnTA	0.586***	0.067***	0.030*	0.033*	0.033*	0.067***	0.196***	0.039**	0.417***	0.778***	0.408***	1.000	
EN	0.321***	0.024+	0.014	0.007	0.008	0.031*	0.063***	0.012	0.365***	0.412***	0.347***	0.417***	1.000

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4.4 summarises and compares the results of the regression with ROA as the dependent variable using the binary coded and scaled coded EIRIS dataset to replicate the study by Waddock and Graves (1997). Our first finding is that when the EIRIS variables are binary coded prior to constructing a CSP index the relationship between CFP and CSP is found to be negative and insignificant at $p < 0.1$. This contradicts the results reported by Waddock and Graves (1997) in which they report a positive relationship between CFP and CSP at $p < 0.01$ or better depending on the combination of financial controls included in the model. When the EIRIS variables are scale coded prior to constructing a CSP index we find the relationship between CFP and CSP to be positive and significant at $p < 0.001$. Our findings here replicate and support the study by Waddock and Graves (1997), CFP is dependent on CSP and the relationship between the two variables is positive and significant. Socially responsible firms can experience enhanced financial performance as a result of their CSR practices (Du et al., 2010, 2007; Luo and Bhattacharya, 2006; Sen et al., 2006; Bhattacharya and Sen, 2004; Sen and Bhattacharya, 2001; Lafferty and Goldsmith, 1999; Brown and Dacin, 1997). We therefore find support for hypothesis 2 that when stakeholders detect firms' CSP signal a positive relationship between CFP and CSP will exist, firms can successfully differentiate themselves based on their CSP.

We also find that scale coded EIRIS ESG variables result in a CSP index variable which is positively related to CFP and more significant than a CSP index constructed from binary coded EIRIS ESG variables. This finding supports the notion that firms can signal and differentiate themselves based on their CSP. It should be noted that when the EIRIS ESG variables are binary coded our results indicate this is overly simplistic and overlooks the fact that firms can differentiate on CSP. CFP is sensitive to CSP and when a binary coding strategy is implemented on the EIRIS ESG

variables within the index it is similar to the 'greenwashing' effect in that all firms which have any amount of socially responsible performance will be aggregated into one big group without recognising that firms vary on CSP quality within the variables.[28] Using a binary coding system on the CSP index variables can arguably exacerbate the adverse selection problem, if firms cannot adequately signal their CSP they will be adversely selected against in terms of CSP and fail to recover the costs of CSP in enhanced CFP resulting in a negative CFP-CSP relationship. For this reason we question the robustness of the studies like McWilliams and Siegel (2000) in which the CSP variable is a binary dummy variable.

Table 4.4 reports the CFP-CSP model with the best fit however, like Waddock and Graves (1997) we ran multiple model permutations using different proxies for CFP, size and risk, and also used both the binary and scale coded CSP index. The results from these estimations are included in appendix B.

In table 4.1 we see that CSP is influenced by the industry sector. We control for industry sector with the variable primary SIC in the OLS estimates however, unobserved firm-specific characteristics can influence the CSP and the resulting CFP. The OLS estimates reported in table 4.4 could therefore be overstating the relationship between CFP-CSP. It is therefore premature to conclude that a significant positive relationship exists between CFP and CSP without considering alternative econometric techniques designed to address the misspecification issues described above.

[28] The term 'greenwashing' was coined by Jay Westerveld in 1986 in an essay he published in his university's newspaper.

Table 4.4 Part one: Replication of Waddock and Graves (1997) study

Dependent variable:	ROA	ROA
	OLS regressions	
	Binary coding	Scale coding
	(21)	(44)
CSP	-0.000	0.001***
	(-0.911)	(6.267)
Risk:		
DR	-0.088***	-0.077***
	(-4.862)	(-4.266)
Size:		
lnTS	0.011***	0.011***
	(10.546)	(10.203)
Industry:		
Manufacturing	0.011	0.011
	(1.067)	(1.041)
Electricity, gas, steam and air conditioning supply	-0.011	-0.011
	(-0.389)	(-0.407)
Water supply, sewerage, waste management and remediation activities	0.018	0.017
	(1.405)	(1.349)
Construction	-0.004	-0.005
	(-0.375)	(-0.436)
Wholesale and retail trade; repair of motor vehicles and motorcycles	0.021*	0.021*
	(2.036)	(2.009)
Transportation and storage	0.007	0.007
	(0.655)	(0.616)
Accommodation and food service activities	0.009	0.009
	(0.787)	(0.751)
Information and communication	-0.015	-0.015
	(-1.181)	(-1.188)
Financial and insurance activities	-0.003	-0.004
	(-0.318)	(-0.346)
Real estate activities	0.008	0.008
	(0.580)	(0.574)
Professional, scientific and technical activities	-0.003	-0.003
	(-0.303)	(-0.301)

Table 4.4 Part two: Replication of Waddock and Graves (1997) study

Dependent variable:	ROA	ROA
	OLS regressions	
	Binary coding	Scale coding
	(21)	(44)
Administrative and support service activities	0.006 (0.491)	0.006 (0.475)
Public administration and defence; compulsory social security	0.017 (1.348)	0.029* (2.204)
Education	-0.008 (-0.394)	-0.007 (-0.332)
Human, health and social work activities	-0.007 (-0.203)	-0.009 (-0.245)
Arts, entertainment and recreation	0.010 (0.486)	0.010 (0.449)
Other service activities	0.017 (0.861)	0.019 (0.890)
Constant	-0.084*** (-4.677)	-0.028 (-1.528)
F	14.327	9.074
Prob>F	0.000	0.000
R^2	0.064	0.037
Root MSE	0.118	0.119
Observations	5107	5107

Note for this model 25 outliers were removed
t statistics in parentheses
$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.10.2 Fixed effects

In table 4.5 the correlation matrices for key variables are provided based on the preferred model reported in table 4.4:

$$CFP_{it} = f(CSP_{it}, Size_{it}, Risk_{it}, Industry_{it}) \quad (4.1)$$

$$ROA_{it} = f(CSP_{it}, lnTS_{it}, DR_{it}, SIC_{it}) \quad (4.5)$$

We find that CSP is significantly correlated with all the variables at $p < 0.05$ or better.

McWilliams and Siegel argue that the CFP-CSP model in the Waddock and Graves (1997) study is misspecified due to the omission of R&D and intangibles like advertising and suggest that the CSP coefficient is overestimated. In addition to using more advanced econometric techniques we also include some additional variables to control for R&D and intangibles for completeness to address the misspecification and misestimation issues.[29]

[29] We estimate R&D using three different measures: R&D expenditure, R&D intensity (R&D expenditure/TS), and lnR&D which is the natural logarithm of R&D expenditure. We also estimate intangibles using three different measures: Intangible assets (INT), intangibles intensity (INT intensity = intangible assets/TS), and lnINT which is the natural logarithm of intangible assets.

Table 4.5 Correlation matrices

	CSP	ROA	DR	lnTS	R&D	R&D intensity	lnR&D	INT	INT intensity	lnINT
CSP	1.000									
ROA	0.083***	1.000								
DR	0.120***	-0.110***	1.000							
lnTS	0.522***	0.193***	0.134***	1.000						
R&D	0.177***	0.065***	0.008	0.191***	1.000					
R&D intensity	-0.042**	-0.128***	-0.016	-0.133***	0.001	1.000				
lnR&D	0.161***	0.005	-0.078***	0.107***	0.329***	0.071***	1.000			
INT	0.242***	-0.005	0.017	0.293***	0.236***	-0.008	0.178***	1.000		
INT intensity	-0.035*	-0.073***	0.009	-0.102***	-0.000	0.774***	0.020	0.018	1.000	
lnINT	0.344***	0.083***	0.032*	0.562***	0.160***	-0.033*	0.250***	0.272***	0.041**	1.000

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4.6 summarises and compares the results of the regression with ROA as the dependent variable using the scale coded EIRIS dataset to replicate the studies by Waddock and Graves (1997) and McWilliams and Siegel (2000) using fixed effects estimation. We ran multiple model permutations using different proxies for CFP, size, risk, R&D and intangibles using the EIRIS scale coded CSP index. The results from these estimations are included in appendix B. Looking at tables 4.1 and 4.2 we can see that the effect of CSP is variable and interacts with the industry sector. Since the fixed effects estimation removes time invariant variables like the control variable industry we include an industry CSP interaction effect so that we control for firm level and industry level heterogeneity.

In table 4.6 model 55 replicates the study by Waddock and Graves (1997) however, we do not find a positive CFP-CSP relationship but rather a significant negative relationship between CFP and CSP at $p < 0.01$. Our finding supports hypothesis 1 and indicates that stakeholders struggle to detect firms' CSP signal firms. Firms are adversely selected against as a consequence of the CSP signal failure and the relationship between CFP-CSP is negative. We therefore suggest that unobserved firm-specific characteristics can exert significant influence on the CSP and the resulting CFP and studies which limit estimation to OLS may overstate the relationship between CFP-CSP.

McWilliams and Siegel (2000) also suggest that studies which model the CFP-CSP relationship without the inclusion of variables to proxy R&D and intangibles like industry advertising intensity are misspecified and overestimate the CSP coefficient. Whilst we do not disagree that the OLS estimates overestimate the CSP coefficient, we suggest that this is a consequence of using inappropriate estimation techniques which do not allow for heterogeneity in individual firms. For completeness we

included variables for R&D and intangibles (table 4.6 models 58 and 61) to address the issue on whether the CFP-CSP has previously been misspecified, misestimated or both.

In table 4.6 we report on the CFP-CSP with the inclusion of the additional variables R&D (model 58) and both R&D and intangibles (model 61). We find a significant negative relationship between CFP and CSP at $p < 0.01$. Again our study contradicts the findings of Waddock and Graves (1997). We do not suggest this indicates socially irresponsible actions of management and a competitive disadvantage (Waddock and Graves, 1997; Aupperle et al., 1985) but rather our finding supports hypothesis 1 and indicates that stakeholders struggle to detect firms' CSP signals. Firms are adversely selected against as a consequence of the CSP signal failure and the relationship between CFP-CSP is negative.

Our findings support the argument made by McWilliams and Siegel (2000) that the CFP-CSP relationship is overstated and the CSP coefficient is overestimated. However, whilst we report a significant negative relationship between CFP and CSP at $p < 0.01$ in table 4.6 the inclusion of R&D and intangibles variables (models 58 and 61) are insignificant and do not improve the model fit. We suggest that the differences in R&D and intangibles are largely industry dependent and captured within the time invariant fixed effects. Therefore we suggest that the CFP-CSP relationship is overstated due to unobserved heterogeneity rather than the omission of observable variables like R&D and intangibles. The unobserved firm-specific characteristics exert significant influence on the CFP-CSP relationship and studies which limit estimation to OLS are misestimating and overstating the relationship between CFP-CSP.

When we look at the industry CSP interaction in table 4.7 we find that some industries like wholesale and retail report an insignificant negative interaction.[30] This is encouraging as it indicates that whilst investing in CSP does not enhance CFP due to firms' inability to signal their CSP in that given industry the interaction is insignificant and therefore not harmful for firms in that industry to invest CSP. However, it is premature to focus on industry CSP interactions without addressing the causality issue raised by Waddock and Graves (1997) first.

Whilst the fixed effects estimation allows for some endogeneity in the model to account for the firms' individualities (Cameron and Trivedi, 2010) it is not capable of addressing the endogeneity issue between CFP and CSP referred to as the 'virtuous circle' by Waddock and Graves (1997). We considered incorporating random effects using the generalised least squares estimator, however, the Hausman specification test indicated that random effects cannot be assumed and that the fixed effects estimator is the preferred estimator. With this in mind in subsections 4.10.3 and 4.10.4 we now consider dynamic panel models to address potential endogeneity issues in the CFP-CSP model. In subsection 4.10.3 we use the fixed effects estimator with the inclusion of lagged variables, in subsection 4.10.4 we use the GMM estimators to create instrumental variables which can be assumed to be exogenous, predetermined or endogenous.

[30] To analyse the CSP industry interaction CSP is removed as a regressor and the CSP industry interaction effect is used as regressor.

Table 4.6 Part one: Replication of Waddock and Graves (1997) and McWilliams and Siegel (2000) studies

Dependent variable:	ROA	ROA	ROA
	Fixed effects regressions		
	(55)	(58)	(61)
CSP	-0.002**	-0.002**	-0.002**
	(-2.993)	(-2.917)	(-2.886)
Risk:			
DR	-0.229***	-0.229***	-0.230***
	(-4.147)	(-4.143)	(-4.133)
Size:			
lnTS	0.003	0.003	0.003
	(0.565)	(0.567)	(0.472)
Research & Development:			
lnR&D		-0.001	-0.001
		(-0.563)	(-0.679)
Intangibles:			
lnINT			0.002
			(1.212)
Year:			
2004	0.019**	0.019**	0.019**
	(3.132)	(3.135)	(3.136)
2005	0.027***	0.027***	0.026***
	(3.740)	(3.744)	(3.608)
2006	0.036***	0.036***	0.035***
	(4.733)	(4.737)	(4.386)
2007	0.044***	0.044***	0.042***
	(5.600)	(5.601)	(5.029)
2008	0.022*	0.022*	0.020+
	(2.248)	(2.263)	(1.944)
2009	-0.001	-0.001	-0.004
	(-0.114)	(-0.098)	(-0.321)
2010	0.028**	0.028**	0.025**
	(2.989)	(3.012)	(2.629)
2011	0.028**	0.028**	0.025*
	(2.903)	(2.929)	(2.563)

Table 4.6 Part two: Replication of Waddock and Graves (1997) and McWilliams and Siegel (2000) studies

Dependent variable:	ROA	ROA	ROA
	Fixed effects regressions		
	(55)	(58)	(61)
2012	0.025*	0.025*	0.022*
	(2.530)	(2.551)	(2.172)
2013	0.020*	0.020*	0.017
	(1.987)	(2.002)	(1.613)
Industry CSP interaction:			
Mining and quarrying	0.000	0.000	0.000
	(.)	(.)	(.)
Manufacturing	0.001	0.001	0.001
	(1.273)	(1.257)	(1.262)
Electricity, gas, steam and air conditioning supply	-0.000	-0.000	-0.001
	(-0.105)	(-0.136)	(-0.217)
Water supply, sewerage, waste management and remediation activities	-0.000	-0.000	-0.000
	(-0.205)	(-0.245)	(-0.315)
Construction	0.001	0.001	0.001
	(1.113)	(1.088)	(0.984)
Wholesale and retail trade; repair of motor vehicles and motorcycles	0.001	0.001	0.001
	(1.623)	(1.585)	(1.582)
Transportation and storage	0.001+	0.001	0.001+
	(1.681)	(1.637)	(1.681)
Accommodation and food service activities	0.002*	0.002*	0.002*
	(2.256)	(2.192)	(2.188)
Information and communication	0.002+	0.002+	0.002+
	(1.785)	(1.752)	(1.741)
Financial and insurance activities	0.002+	0.002+	0.002+
	(1.759)	(1.690)	(1.730)

Table 4.6 Part three: Replication of Waddock and Graves (1997) and McWilliams and Siegel (2000) studies

Dependent variable:	ROA	ROA	ROA
	Fixed effects regressions		
	(55)	(58)	(61)
Real estate activities	0.000 (0.450)	0.000 (0.416)	0.001 (0.516)
Professional, scientific and technical activities	0.001 (1.381)	0.001 (1.346)	0.001 (1.375)
Administrative and support service activities	0.000 (0.463)	0.000 (0.418)	0.000 (0.451)
Public administration and defence; compulsory social security	0.001 (1.181)	0.001 (1.147)	0.001 (1.180)
Education	0.006^{+} (1.880)	0.006^{+} (1.870)	0.006^{+} (1.892)
Human, health and social work activities	0.002^{+} (1.913)	0.002^{+} (1.872)	0.002^{+} (1.894)
Arts, entertainment and recreation	-0.001 (-0.219)	-0.001 (-0.229)	-0.001 (-0.248)
Other service activities	0.002^{+} (1.709)	0.002^{+} (1.660)	0.002^{+} (1.686)
Constant	0.041 (0.611)	0.044 (0.650)	0.033 (0.502)
F	5.077	4.915	4.771
Prob>F	0.000	0.000	0.000
R-Squared	0.081	0.081	0.082
Root MSE	0.081	0.081	0.081
Observations	5102	5102	5102

Note for this model 25 outliers were removed
t statistics in parentheses
$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4.7: CSP industry interaction

Industry sector	CSP industry interaction
Mining and quarrying	-**
Manufacturing	-
Electricity, gas, steam and air conditioning supply	-
Water supply, sewerage, waste management and remediation activities	-**
Construction	-*
Wholesale and retail trade; repair of motor vehicles and motorcycles	-
Transportation and storage	-*
Accommodation and food service activities	-
Information and communication	-
Financial and insurance activities	-
Real estate activities	-*
Professional, scientific and technical activities	-+
Administrative and support service activities	-*
Public administration and defence; compulsory social security	-*
Education	+
Human health and social work activities	-
Arts, entertainment and recreation	-
Other service activities	-

$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.10.3 Dynamic fixed effects: Lagged variables

Section 4.8.5 suggests that there is evidence that prior period CFP influences the current period CFP (Barnett and Salomon, 2012; Roberts and Dowling, 2002; Waddock and Graves, 1997). It is also suggested that the benefits of CSR in terms of CSP can be delayed (Griffin and Mahon, 1997) and that stakeholders need time for information regarding CSP to disseminate (Lacey and Kennett-Hensel, 2010; Horstmann and MacDonald, 2003). In appendix B tables 4.23 and 4.24 we report on the CFP-CSP model with lagged CFP and CSP variables. We find that the inclusion of a lagged CSP variable is insignificant and that the current period CSP variable remains negatively significant at $p < 0.10$. This is consistent with Orlitzky *et al* (2003) meta-analysis in which they find a lagged CSP variable to have little impact on CFP. In table 4.24 we find an independent variable for a one year time lagged CFP to be significant at $p < 0.05$. This is not a surprising result as intuitively we would

expect the prior period CFP to influence the current period CFP. However, including the lagged dependent variable CFP will mean the lagged CFP variable is endogenous and will be correlated with the error term resulting in inconsistent estimators (Cameron and Trivedi, 2005; Wooldridge, 2002; Blundell and Bond, 1998; Nickell, 1981). The dynamic fixed effects estimator we have used is not capable of addressing these endogeneity issues therefore the final part of our estimation strategy is to use GMM.

4.10.4 GMM

Table 4.8 compares the results of models using the robust two-step GMM system estimators with orthogonal deviations. As detailed in section 4.8.6 we use the Arellano and Bover (1995) and Blundell and Bond (1998) estimator to transform the independent variables with the Windmeijer (2005) standard error correction and collapsed lags of the endogenous and predetermined variables (Roodman, 2009a). We find that when the prior period CFP is treated as exogenous in model 82 the GMM estimator cannot return a Hansen of overidentification test result indicating that the instruments in the model are not valid. However, when prior period CFP is treated as endogenous (models 83-85) the GMM estimator returns a Hansen of overidentification test result which indicates the model instruments are valid. We report that the current period CSP is an insignificant negative regressor, therefore indicating that whilst investing in CSP does not enhance CFP, due to the firms' inability to signal their CSP, CSP is found to be insignificant and we suggest that it is not harmful for firms to invest CSP.

The difference-in-Hansen test of exogeneity also reject that the prior period CFP is exogenous. From this we suggest that the current period CFP is dependent on the prior period CFP and that prior period CFP is an endogenous variable in the CFP-CSP model. We also report in models 83-85 that the difference-in-Hansen test of exogeneity find the CSP variable to be exogenous, therefore we suggest that CFP is dependent on CSP rather than CSP being dependent on CFP. We do not find that causation runs in both directions or that a 'virtuous circle' exists as suggested by Waddock and Graves (1997).

In the models 86-88 we treat the prior period CFP as endogenous and include a variable for the prior period CSP. Again we report that the current period CSP is an insignificant regressor however, unlike models 83-85 we now find it to be neutral. Again we suggest that whilst investing in CSP does not enhance CFP it is also not harmful to invest in CSP. In the models 86 and 88 the difference-in-Hansen test of exogeneity cannot reject that the current or prior period CSP is exogenous. In model 87 (when prior period CSP is treated as predetermined) the difference-in Hansen test of exogeneity does reject that CSP is exogenous at $p < 0.05$ however, the Hansen of overidentification test result for this model questions the validity of the instruments in this model. This result should be viewed with caution especially when five other GMM estimated models indicate that CSP is exogenous. We therefore suggest that CSP is exogenous and that CFP is dependent on CSP. We do not find causation to run in both directions.

Table 4.8 Part one: Unpicking the endogeneity in the CFP-CSP relationship

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA
	System GMM: Orthogonal deviations							
	(81)	(82)	(83)	(84)	(85)	(86)	(87)	(88)
CSP	-0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.000
	(-0.688)	(-1.073)	(-1.034)	(-1.043)	(-0.855)	(0.003)	(-0.223)	(0.337)
Risk:								
DR	-0.107***	-0.098***	-0.113***	-0.106***	-0.109***	-0.113***	-0.090***	-0.108***
	(-4.640)	(-4.475)	(-4.812)	(-4.821)	(-5.105)	(-4.810)	(-4.301)	(-5.086)
Size:								
lnTS	0.011***	0.006***	0.007***	0.007***	0.007***	0.007***	0.006***	0.007***
	(6.549)	(5.334)	(5.365)	(5.045)	(5.320)	(5.413)	(4.005)	(5.365)
Lagged variables:								
ROA		0.370***	0.305***	0.307***	0.314***	0.304***	0.347***	0.314***
		(8.765)	(5.184)	(5.376)	(5.383)	(5.187)	(5.546)	(5.405)
CSP						-0.000	-0.000	-0.000
						(-0.943)	(-0.834)	(-1.191)
Year:								
2004	0.022***	0.015*	0.007	0.007	0.007+	0.007	0.008+	0.007
	(3.848)	(2.362)	(1.394)	(1.541)	(1.649)	(1.329)	(1.840)	(1.504)
2005	0.029***	0.011+	0.006	0.002	0.004	0.006	0.000	0.004
	(4.211)	(1.791)	(1.076)	(0.359)	(0.867)	(1.024)	(0.079)	(0.774)
2006	0.039***	0.019**	0.016**	0.014**	0.015***	0.016**	0.013**	0.015***
	(5.440)	(2.991)	(2.893)	(3.193)	(3.467)	(2.832)	(2.867)	(3.394)

Table 4.8 Part two: Unpicking the endogeneity in the CFP-CSP relationship

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA
	System GMM: Orthogonal deviations							
	(81)	(82)	(83)	(84)	(85)	(86)	(87)	(88)
2007	0.045***	0.022***	0.020***	0.017***	0.019***	0.020***	0.016***	0.019***
	(6.587)	(3.640)	(3.765)	(3.779)	(4.318)	(3.720)	(3.494)	(4.247)
2008	0.019*	-0.011	-0.010+	-0.013**	-0.010*	-0.011+	-0.014**	-0.011*
	(2.369)	(-1.555)	(-1.701)	(-2.680)	(-2.133)	(-1.754)	(-2.865)	(-2.211)
2009	-0.005	-0.019*	-0.023***	-0.023***	-0.024***	-0.023***	-0.023***	-0.024***
	(-0.546)	(-2.559)	(-3.621)	(-4.228)	(-4.360)	(-3.593)	(-4.191)	(-4.386)
2010	0.027***	0.020**	0.017**	0.014***	0.015***	0.017**	0.015***	0.015***
	(3.497)	(3.176)	(3.081)	(3.369)	(3.597)	(3.103)	(3.359)	(3.595)
2011	0.030***	0.010+	0.008+	0.007*	0.007*	0.009*	0.005+	0.007*
	(4.325)	(1.912)	(1.934)	(2.092)	(2.260)	(1.978)	(1.695)	(2.271)
2012	0.027***	0.007	0.005	0.004	0.005	0.005	0.002	0.005
	(3.612)	(1.145)	(1.121)	(1.018)	(1.262)	(1.171)	(0.558)	(1.279)
2013	0.020*							
	(2.416)							
Industry CSP interaction:								
Manufacturing	0.001+	0.001*	0.001*	0.001**	0.001*	0.001*	0.001**	0.001*
	(1.847)	(2.469)	(2.214)	(2.640)	(2.214)	(2.238)	(3.121)	(2.228)
Electricity, gas, steam and air conditioning supply	-0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.000
	(-0.745)	(0.107)	(-0.178)	(-0.192)	(-0.438)	(-0.147)	(0.307)	(-0.409)

Table 4.8 Part three: Unpicking the endogeneity in the CFP-CSP relationship

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA
	System GMM: Orthogonal deviations							
	(81)	(82)	(83)	(84)	(85)	(86)	(87)	(88)
Water supply, sewerage, waste management and remediation activities	0.000 (1.350)	0.001* (2.131)	0.001* (2.234)	0.001* (2.197)	0.001* (2.164)	0.001* (2.295)	0.001* (2.164)	0.001* (2.219)
Construction	-0.000 (-1.310)	-0.000 (-0.713)	-0.000 (-1.125)	-0.000 (-1.207)	-0.000 (-1.517)	-0.000 (-1.094)	-0.000 (-0.864)	-0.000 (-1.483)
Wholesale and retail trade; repair of motor vehicles and motorcycles	0.000 (0.974)	0.000+ (1.696)	0.000 (1.423)	0.000 (1.378)	0.000 (1.214)	0.000 (1.438)	0.001+ (1.751)	0.000 (1.230)
Transportation and storage	-0.000 (-0.158)	0.000 (1.420)	0.000 (1.197)	0.000 (1.135)	0.000 (0.994)	0.000 (1.219)	0.000 (1.458)	0.000 (1.008)
Accommodation and food service activities	0.000 (0.632)	0.001+ (1.727)	0.001+ (1.696)	0.001 (1.645)	0.000 (1.477)	0.001+ (1.713)	0.001+ (1.842)	0.000 (1.490)
Information and communication	-0.000 (-0.462)	0.000 (0.830)	0.000 (0.828)	0.000 (0.810)	0.000 (0.668)	0.000 (0.846)	0.000 (0.965)	0.000 (0.694)
Financial and insurance activities	-0.001* (-2.287)	-0.000 (-0.904)	-0.000 (-1.236)	-0.000 (-1.334)	-0.000 (-1.502)	-0.000 (-1.212)	-0.000 (-0.906)	-0.000 (-1.473)
Real estate activities	-0.000 (-0.120)	0.000 (0.367)	0.000 (0.159)	0.000 (0.098)	-0.000 (-0.024)	0.000 (0.139)	0.000 (0.205)	-0.000 (-0.058)

Table 4.8 Part four: Unpicking the endogeneity in the CFP-CSP relationship

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA
	System GMM: Orthogonal deviations							
	(81)	(82)	(83)	(84)	(85)	(86)	(87)	(88)
Professional, scientific and technical activities	-0.000 (-0.662)	-0.000 (-0.010)	-0.000 (-0.435)	-0.000 (-0.653)	-0.000 (-0.805)	-0.000 (-0.445)	-0.000 (-0.090)	-0.000 (-0.810)
Administrative and support service activities	0.001^{+} (1.868)	0.000 (1.549)	0.000 (0.925)	0.000 (0.773)	0.000 (0.643)	0.000 (0.936)	0.000 (0.725)	0.000 (0.654)
Public administration and defence; compulsory social security	-0.000 (-0.547)	0.000 (0.155)	0.000 (0.091)	-0.000 (-0.117)	-0.000 (-0.207)	0.000 (0.053)	0.000 (0.007)	-0.000 (-0.249)
Education	0.000 (0.026)	0.000 (0.198)	0.000 (0.157)	0.000 (0.067)	0.000 (0.060)	0.000 (0.135)	0.000 (0.168)	0.000 (0.049)
Human health and social work activities	0.001 (0.717)	0.001* (2.343)	0.001* (2.106)	0.001^{+} (1.810)	0.001^{+} (1.938)	0.001* (2.005)	0.001 (1.614)	0.001^{+} (1.819)
Arts, entertainment and recreation	0.001 (0.553)	-0.002 (-1.111)	-0.002 (-0.960)	-0.002 (-1.110)	-0.002 (-1.109)	-0.002 (-0.985)	-0.001 (-0.954)	-0.002 (-1.134)
Other service activities	0.001 (0.874)	0.000 (1.436)	0.000 (1.273)	0.000 (1.149)	0.000 (1.082)	0.000 (1.291)	0.000 (1.229)	0.000 (1.091)
Constant	-0.100*** (-4.506)	-0.043** (-2.691)	-0.048** (-2.853)	-0.041* (-2.500)	-0.045** (-2.807)	-0.049** (-2.902)	-0.031^{+} (-1.790)	-0.046** (-2.858)

Table 4.8 Part five: Unpicking the endogeneity in the CFP-CSP relationship

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA
	System GMM: Orthogonal deviations							
	(81)	(82)	(83)	(84)	(85)	(86)	(87)	(88)
F	7.3330	16.1075	12.9183	12.9504	12.9695	12.4991	11.7036	12.5464
Prob>F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AR(1) test	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AR(2) test	0.1935	0.8298	0.9849	0.9870	0.9878	0.9810	0.9062	0.9918
Hansen test of overidentification	.	.	0.0373	0.1544	0.3109	0.0359	0.0079	0.3195
Hansen degrees of freedom	0	0	9	20	19	9	20	19
Difference-in-Hansen tests of exogeneity:								
GMM instruments for levels	.	.	0.834	0.901	0.863	0.826	0.002	0.870
GMM for lagged ROA				0.020	0.049		0.001	0.052
GMM for CSP				0.664	0.962		0.040	0.971
Instruments	31	31	40	51	50	41	52	51
Observations	5102	4235	4235	4235	4235	4235	4235	4235

EIRIS scale coding is used in the CSP index.
Note the default treatment for variables is to assume they are strictly exogenous.
In models 83-88 ROA is treated as endogenous.
In models 84 and 87 CSP is treated as predetermined.
In models 85 and 88 CSP is treated as endogenous.
t statistics in parentheses
$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.10.5 CSP industry interactions and EIRIS ESG variables

We reported in section 4.10.4 that we found CSP to be an insignificant regressor, indicating that whilst investing in CSP does not enhance CFP, due to the firms' inability to signal their CSP, it is not harmful for firms to invest in CSP. We reported in tables 4.1 and 4.2 that CSP was highly variable and interacted with industry sector. To extrapolate the CSP industry interaction we ran the GMM estimator again omitting the CSP regressor but including the CSP industry interaction effect. We find that the majority of industry sectors have insignificant CSP industry interactions, however, we find five industry sectors to have significant CSP industry interactions. In table 4.9 we report that the manufacturing and water supply industries have a significant positive CSP interaction at $p < 0.10$ or better. This is a promising result as it indicates that firms in these sectors are in a position to enhance their CFP by investing in CSP, they more than cover the costs associated with the CSP. Firms in these two industries are demonstrating an ability to correctly signal their CSP and differentiate themselves. However, we report that the electricity and gas, construction, financial and insurance industries have a significant negative CSP interaction at $p < 0.05$ or better. This indicates that firms in these three industry sectors are adversely selected against due to stakeholders not being able to detect the firms' CSP signals. It could also be said that consumers are unwilling to pay for CSP, however, in recent studies consumers express both favourable attitudes for companies with good CSR practices (Luo and Bhattacharya, 2006; Bhattacharya and Sen, 2004) and demonstrate increasing willingness to pay for good CSR practices (see chapters 2 and 3). Therefore, to find a reduced CFP means that firms with good CSP, in these three industry sectors, must

have been unable to signal their CSP to consumers. For firms in these three industry sectors the implication is that investment in CSP may be detrimental to their CFP.

Table 4.9: CSP industry interaction

Industry sector	CSP industry interaction
Mining and quarrying	-
Manufacturing	+**
Electricity, gas, steam and air conditioning supply	-*
Water supply, sewerage, waste management and remediation activities	++
Construction	-*
Wholesale and retail trade; repair of motor vehicles and motorcycles	+
Transportation and storage	+
Accommodation and food service activities	+
Information and communication	+
Financial and insurance activities	-**
Real estate activities	-
Professional, scientific and technical activities	-
Administrative and support service activities	+
Public administration and defence; compulsory social security	-
Education	-
Human health and social work activities	+
Arts, entertainment and recreation	-
Other service activities	+

$^{+}p < 0.1$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

A final issue which we wish to address regarding the CFP-CSP relationship is about the EIRIS ESG variables which the CSP regressor is a composite of. We are interested in how influential specific EIRIS ESG variables are on CFP. We reestimated the CFP-CSP model using GMM and replacing the CSP index variable with individual EIRIS ESG variables. In table 4.10 we find all but one of the EIRIS ESG variables to be insignificant. We report employee relations to be negative and significant at $p < 0.10$. We suggest that firms in all industry sectors need to be mindful of their employee relations as they may be adversely selected against due to stakeholders not being able to detect the firms' CSP signals when the signal makes reference to employee relations. The remainder of the EIRIS ESG variables were

insignificant therefore we suggest it is not harmful to invest in these areas of CSP even though we do not report enhanced CFP as a result of this investment.

Table 4.10: EIRIS ESG variables

CSP category	CSP coefficient	Hansen test of overidentification
Health and safety	-0.005	0.889
Human rights	0.004	0.004
Stakeholder relationships	-0.006	0.326
Customer and supplier relations	0.002	0.154
Employee relations	-0.005^{+}	0.126
Community and charity involvement	0.002	0.256
Environmental impact	0.000	0.090
Board practice	-0.005	0.007
Code of ethics	-0.001	0.099

$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.11 Discussion and conclusions

Previously there have been many studies done on the CFP-CSP model with mixed results and various combinations of financial and CSR variables used to proxy CFP and CSP respectively. Meta-analyses have found that whilst some empirical studies have mixed and ambiguous findings, overall empirically a positive relationship between CFP and CSP exists (Orlitzky, 2011; Margolis and Walsh, 2003; Orlitzky et al., 2003; 2001). We find that the meta-analyses are overly optimistic and the conclusion about a positive CFP-CSP relationship to be industry specific rather than generalisable across all firms in all industry sectors. The purpose of our study is not merely to add another CFP-CSP study to the pile but rather to address specific questions raised in some of these studies, deal with misspecification and

misestimation issues and answer the call for further research in these areas to adopt an economist's approach.

We draw on the model presented in Waddock and Graves (1997) and address the endogeneity, direction of causation issue raised in their study. When we limit our estimation to OLS we can replicate the relationship and results reported by Waddock and Graves (1997), we find a significant positive relationship exists between CFP and CSP, CFP is dependent on CSP. Our finding supports our hypothesis 2, a positive relationship between CFP and CSP exists as a result of stakeholders detecting firms' CSP signal. We also find the scale coded EIRIS ESG variables used to construct the CSP index do result in a more significant relationship; scale coding CSP allows firms to differentiate themselves. However, we seek to answer the question raised by Waddock and Graves (1997), is the relationship between CFP and CSP a 'virtuous circle'? To do this requires an estimation strategy which includes more advanced econometric techniques than OLS.

Using the fixed effects estimator, including lagged variables, we find a significant negative relationship between CFP and CPS contradicting the findings in the study by Waddock and Graves (1997). Our finding supports our hypothesis 1 and indicates that stakeholders struggle to detect firms' CSP signal. Firms are adversely selected against as a consequence of the CSP signal failure and the relationship between CFP-CSP is negative. This finding demonstrates the significance of the estimation method selected to analyse the CFP-CSP relationship. In our dataset unobserved firm-specific characteristics can exert significant influence on the CSP and the resulting CFP. We therefore suggest that studies which limit estimation to OLS may overstate the relationship between CFP-CSP.

In the study by McWilliams and Siegel (2000) they question whether previous studies on the CFP-CSP relationship have misspecified the model by omitting variables to proxy R&D and intangibles like industry advertising intensity. They suggest that the misspecification results in an overestimated CSP coefficient. Whilst we do not disagree that the OLS estimates overestimate the CSP coefficient, we suggest that this is consequence of using inappropriate estimation techniques which do not allow for heterogeneity in individual firms. Upon the inclusion of variables for R&D and intangibles we find a significant negative relationship between CFP and CSP continues to exist however, the R&D and intangibles variables are insignificant and do not improve the model fit. We therefore suggest that rather than the CFP-CSP model being misspecified the primary cause behind the CSP coefficient being overestimated is the CFP-CSP model being misestimated.

To address the question on the direction of causality in the CFP-CSP relationship we included lagged variables for both CFP and CSP, however, including the lagged dependent variable CFP results in the lagged CFP variable being endogenous and correlated with the error term resulting in inconsistent estimators (Cameron and Trivedi, 2005; Wooldridge, 2002; Blundell and Bond, 1998; Nickell, 1981). Therefore, simply including lagged variables into the CFP-CSP model using either OLS or fixed effects estimation, as earlier studies have done (Barnett and Salomon, 2012; Roberts and Dowling, 2002; Waddock and Graves, 1997), does not address the endogeneity issues raised and the question regarding whether the CFP-CSP relationship is a 'virtuous circle' remains unanswered using these estimation methods.

To address the issues on endogeneity directly we therefore suggest an estimator which includes instrumental variables needs to be used. We use a GMM estimator and report that the lagged CFP variable is endogenous which is to be expected with it being a

lagged dependent variable. We also report that the CSP regressor is exogenous and therefore our answer to the CFP-CSP 'virtuous circle' question is that we do not find causation to run in both directions as suggested in the study by Waddock and Graves (1997). We report that CFP is dependent on CSP and find no evidence to suggest that CSP is dependent on CFP. Interestingly when we use the GMM estimator we report that the CSP is an insignificant negative regressor, therefore indicating that whilst investing in CSP does not enhance CFP, due to the firms' inability to signal their CSP, CSP is found to be insignificant and we suggest that this indicates that it is not harmful for firms to invest CSP. This raises some questions, does it ever pay to be socially responsible? Should firms focus on specific elements of their CSP? Can firms in specific industries signal their CSP or are all firms regardless of industry sector unable to signal CSP?

To answer these questions we look to the CSP industry interactions (see table 4.9). We find that firms in the manufacturing and water supply industries have a significant positive CSP interaction and we interpret this as an indication that firms in these sectors are in a position to enhance their CFP by investing in CSP. Firms in these two industries are demonstrating an ability to correctly signal their CSP and differentiate themselves and it pays for them to be socially responsible through enhanced CFP. However, we find that firms in the electricity and gas, construction, financial and insurance industries have a significant negative CSP interaction and we interpret this as an indication that firms in these industries are adversely selected against due to stakeholders not being able to detect the firms' CSP signals. These three industry sectors have an average CSP index higher than the mean CSP index of the total dataset, with this in mind the implication for firms in these three industry sectors is that investment in CSP may be detrimental to their CFP. Stakeholders in these three

industries need to be made aware of the firms CSR practices and their corresponding CSP to remedy this problem.

We find the majority of the industry sectors report an insignificant CSP industry interaction (see table 4.9). For firms in industries like mining, which report an insignificant negative CSP industry interaction, we interpret this finding as the firms being unable to signal their CSP to the stakeholders. Therefore, these firms are unable to yield additional revenues and improve their CFP. However, due to the interaction being insignificant we suggest that whilst these firms do not enhance CFP through CSP they also do not harm their CFP by investing in CSP, firms can absorb the costs associated with CSP. Of course these firms should be mindful that CSP is not enhancing the CFP and look to increase awareness of stakeholders. Conversely, for firms in industries like wholesale and retail trade we report an insignificant positive CSP interaction. Again we interpret this finding to mean firms in these industries are not enhancing their CFP through CSP, however, these firms' CSP industry interactions are a promising find, if stakeholders were more aware of CSP they are indicating an ability to enhance their CFP as a consequence.

Finally, to address whether firms should focus on specific areas of CSP. We find that all but one of the nine CSP categories has an insignificant relationship with CFP, however, they do not all report a negative coefficient. CSP categories (e.g. community and charity involvement) which are arguably more visible to stakeholder groups like consumers, report a positive CSP coefficient, whereas CSP categories which are more internalised to specific firms (e.g. board practice) report a negative CSP coefficient. Firms may find it beneficial to consider this when trying to increase their stakeholders' awareness of their CSP signal.

4.12 References

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4.13 Appendix A: EIRIS ESG variable coding

ESG Sector	ESG Question	ESG Rating	Coding: Binary	Coding: Scale
H&S	How do the Company's fines for health and safety convictions compare with other companies' fines over the last three years? (UK only)	No convictions	1	0
		Fines in lower half	0	-1
		Fines in second quartile	0	-2
		Fines in top quartile	0	-3
H&S	How clear is the evidence of health & safety systems?	Little or no evidence	0	-1
		Some evidence	1	1
		Clear evidence	1	2
Human rights	In how many countries listed in EIRIS Category B does the Company have operations?	0	1	0
		1	0	-0.021276596
		2	0	-0.042553191
		3	0	-0.063829787
		4	0	-0.085106383
		5	0	-0.106382979
		6	0	-0.127659574
		7	0	-0.14893617
		8	0	-0.170212766
		9	0	-0.191489362
		10	0	-0.212765957
		11	0	-0.234042553
		12	0	-0.255319149
		13	0	-0.276595745
		14	0	-0.29787234
		15	0	-0.319148936
		16	0	-0.340425532
		17	0	-0.361702128
		18	0	-0.382978723
		19	0	-0.404255319
		20	0	-0.425531915
		21	0	-0.446808511
		22	0	-0.468085106
		23	0	-0.489361702
		24	0	-0.510638298
		25	0	-0.531914894
		26	0	-0.553191489

Human rights	In how many countries listed in EIRIS Category B does the Company have operations?	27	0	-0.574468085
		28	0	-0.595744681
		29	0	-0.617021277
		30	0	-0.638297872
		31	0	-0.659574468
		32	0	-0.680851064
		33	0	-0.70212766
		34	0	-0.723404255
		35	0	-0.744680851
		36	0	-0.765957447
		37	0	-0.787234043
		38	0	-0.808510638
		39	0	-0.829787234
		40	0	-0.85106383
		41	0	-0.872340426
		42	0	-0.893617021
		43	0	-0.914893617
		44	0	-0.936170213
		45	0	-0.957446809
		46	0	-0.978723404
		47	0	-1
Human rights	In how many countries listed in EIRIS Category A does the Company have operations?	0	1	0
		1	0	-0.083333333
		2	0	-0.166666667
		3	0	-0.25
		4	0	-0.333333333
		5	0	-0.416666667
		6	0	-0.5
		7	0	-0.583333333
		8	0	-0.666666667
		9	0	-0.75
		10	0	-0.833333333
		11	0	-0.916666667
		12	0	-1
		13	0	-1.083333333
		14	0	-1.166666667
		15	0	-1.25
		16	0	-1.333333333

Human rights	In how many countries listed in EIRIS Category A does the Company have operations?	17	0	-1.416666667
		18	0	-1.5
		19	0	-1.583333333
		20	0	-1.666666667
		21	0	-1.75
		22	0	-1.833333333
		23	0	-1.916666667
		24	0	-2
Customer/supplier relations	Does the Company have policies on maintaining good relations with customers and/or suppliers?	Little or no evidence of policy	0	-1
		Has adopted policy	1	1
		Clearly communicates policy	1	2
Customer/supplier relations	How clear is the evidence of systems to maintain good relations with customers and/or suppliers?	Little or no evidence	0	-1
		Some evidence	1	1
		Clear evidence	1	2
		Very clear evidence	1	3
Equal opportunities	How good is the Company's policy on equal opportunity and diversity issues?	Little or no evidence of	0	-1
		Basic	1	1
		Moderate	1	2
		Good	1	3
Equal opportunities	How clear is the evidence of systems and practices to support equal opportunities and diversity?	Little or no evidence	0	-1
		Some evidence	1	1
		Clear evidence	1	2
		Very clear evidence	1	3
Trade unions/employee participation	How clear is the evidence of systems to manage employee relations?	Little or no evidence	0	-1
		Some evidence	1	1
		Clear evidence	1	2

Training	How clear is the evidence of systems to support employee training and development?	Little or no evidence Some evidence Clear evidence	0 1 1	-1 1 2
Job creation & security	How clear is the evidence of systems and practices to advance job creation and security?	Little or no evidence Some evidence Clear evidence	0 1 1	-1 1 2
Community involvement	How clear is the Company's commitment to community or charitable work?	Little or no evidence of Some Clear Very clear	0 1 1 1	-1 1 2 3
Stakeholder engagement	What level of engagement with stakeholders is disclosed by the Company?	Little or no Basic Moderate Good	0 1 1 1	-1 1 2 3
Stakeholder policy	How good are the Company's policies towards its stakeholders overall?	Little or no Basic Moderate Good	0 1 1 1	-1 1 2 3
Stakeholder policy	How good are the Company's management systems for stakeholders overall?	Little or no Basic Moderate Good	0 1 1 1	-1 1 2 3
Responsibility for stakeholders	How many stakeholder issues have been allocated to board members?	No indication of One or more Four or more Five or more	0 1 1 1	-1 1 2 3

Stakeholder reporting	How good is the Company's quantitative reporting on stakeholder relationships?	Little or no	0	-1
		Some	1	1
		Moderate	1	2
		Good	1	3
Environmental management	How does EIRIS rate the Company's environmental management system?	Inadequate	0	-1
		Weak	1	-2
		Moderate	1	1
		Good	1	2
		Exceptional	1	3
Environmental policy	How does EIRIS rate the Company's environmental policy and commitment (high impact industries)?	Inadequate	0	-1
		Weak	1	-2
		Moderate	1	1
		Good	1	2
		Exceptional	1	3
Environmental reporting	How does EIRIS rate the Company's environmental reporting (high impact industries)?	Inadequate	0	-1
		Weak	1	-2
		Moderate	1	1
		Good	1	2
		Exceptional	1	3
Environmental performance	What level of improvements in environmental impact can the Company demonstrate (high impact industries)?	No data or inadequate data	0	0
		No improvement	1	-1
		Minor improvement	1	1
		Major improvement	1	2
		Significant improvement	1	3
Women on the board	How many of the Company's directors are women?	None	0	0
		One or more, but not 20%	1	1
		Between 20% and 33%	1	2
		More than 33%	1	3

Board practice	How many of the core elements of corporate governance does the Company have?	None One Some All	0 1 1 1	-1 1 2 3
Code of ethics	Does the Company have a code of ethics and, if so, how comprehensive is it?	No Limited Basic Intermediate Advanced	0 1 1 1 1	-1 1 2 3 4
Code of ethics	Does the Company have a system for implementing a code of ethics and, if so, how comprehensive is it?	No Limited Basic Intermediate Advanced	0 1 1 1 1	-1 1 2 3 4

4.14 Appendix B: Estimation results

Table 4.11 Part one: Replication of Waddock and Graves (1997) study using binary coding

Dependent variable:	ROA	ROA	ROA	ROE	ROE	ROE	ROS	ROS	ROS
	OLS regressions								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
CSP	0.002***	0.002***	0.002***	0.017	0.018	0.016	0.136	0.140	0.139
	(4.951)	(5.305)	(4.942)	(1.423)	(1.500)	(1.280)	(1.365)	(1.421)	(1.401)
Risk:									
DR	-0.069***	-0.068***	-0.069***	-0.892	-0.891	-0.900	2.451	2.461	2.455
	(-3.708)	(-3.682)	(-3.706)	(-1.334)	(-1.332)	(-1.343)	(0.897)	(0.897)	(0.894)
Size:									
TS	0.000			0.000			0.000		
	(0.096)			(0.563)			(0.297)		
TA		-0.000***			-0.000+			-0.000	
		(-8.105)			(-1.650)			(-1.123)	
EN			0.000			0.000			-0.000
			(0.526)			(1.604)			(-0.311)
Industry:									
Manufacturing	0.008	0.007	0.008	-0.099	-0.109	-0.101	1.580	1.505	1.518
	(0.689)	(0.659)	(0.729)	(-0.586)	(-0.672)	(-0.622)	(0.703)	(0.726)	(0.731)
Electricity, gas, steam and air conditioning supply	-0.008	-0.009	-0.008	0.017	0.006	0.024	1.413	1.341	1.355
	(-0.279)	(-0.318)	(-0.279)	(0.187)	(0.074)	(0.275)	(0.614)	(0.624)	(0.626)
Water supply, sewerage, waste management and remediation activities	0.002	0.000	0.002	0.271	0.255	0.288	0.406	0.293	0.314
	(0.159)	(0.034)	(0.178)	(1.218)	(1.169)	(1.267)	(0.137)	(0.107)	(0.113)

Table 4.11 Part two: Replication of Waddock and Graves (1997) study using binary coding

Dependent variable:	ROA	ROA	ROA	ROE	ROE	ROE	ROS	ROS	ROS
	OLS regressions								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Construction	-0.016 (-1.300)	-0.017 (-1.500)	-0.016 (-1.380)	0.047 (0.612)	0.033 (0.476)	0.057 (0.763)	1.555 (0.664)	1.460 (0.685)	1.473 (0.684)
Wholesale and retail trade; repair of motor vehicles and motorcycles	0.023^{+} (1.886)	0.022^{+} (1.910)	0.023* (1.981)	-0.263 (-1.110)	-0.274 (-1.103)	-0.276 (-1.097)	1.930 (0.868)	1.856 (0.902)	1.878 (0.918)
Transportation and storage	0.005 (0.368)	0.003 (0.294)	0.004 (0.384)	0.067 (0.572)	0.054 (0.475)	0.058 (0.512)	1.574 (0.672)	1.487 (0.693)	1.510 (0.707)
Accommodation and food service activities	0.007 (0.512)	0.005 (0.448)	0.006 (0.522)	-0.067 (-0.238)	-0.079 (-0.284)	-0.099 (-0.356)	1.395 (0.569)	1.307 (0.579)	1.347 (0.611)
Information and communication	-0.007 (-0.462)	-0.008 (-0.527)	-0.007 (-0.480)	-0.007 (-0.086)	-0.018 (-0.216)	-0.006 (-0.077)	2.134 (0.962)	2.062 (1.007)	2.070 (1.006)
Financial and insurance activities	-0.005 (-0.459)	-0.002 (-0.153)	-0.005 (-0.489)	0.032 (0.855)	0.036 (1.225)	0.027 (0.854)	2.022 (0.925)	2.062 (1.020)	1.976 (0.965)
Real estate activities	-0.011 (-0.780)	-0.012 (-0.859)	-0.011 (-0.813)	-0.156 (-0.476)	-0.167 (-0.507)	-0.154 (-0.467)	2.214 (0.976)	2.142 (1.026)	2.148 (1.022)

Table 4.11 Part three: Replication of Waddock and Graves (1997) study using binary coding

Dependent variable:	ROA	ROA	ROA	ROE	ROE	ROE	ROS	ROS	ROS
	OLS regressions								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Professional, scientific and technical activities	-0.021 (-1.504)	-0.022 (-1.630)	-0.021 (-1.579)	-0.284^{+} (-1.808)	-0.295^{+} (-1.888)	-0.286^{+} (-1.832)	-3.128 (-0.602)	-3.202 (-0.633)	-3.192 (-0.631)
Administrative and support service activities	-0.011 (-0.626)	-0.011 (-0.709)	-0.011 (-0.665)	0.515 (0.913)	0.503 (0.897)	0.496 (0.885)	1.935 (0.859)	1.854 (0.898)	1.878 (0.918)
Public administration and defence; compulsory social security	0.023^{+} (1.717)	0.022^{+} (1.729)	0.023^{+} (1.799)	0.206** (2.804)	0.194** (2.707)	0.205** (2.806)	1.930 (0.854)	1.849 (0.892)	1.863 (0.897)
Education	-0.018 (-0.844)	-0.019 (-0.903)	-0.018 (-0.860)	0.051 (0.558)	0.039 (0.430)	0.057 (0.631)	2.228 (0.999)	2.146 (1.050)	2.154 (1.045)
Human health and social work activities	-0.016 (-0.467)	-0.017 (-0.489)	-0.016 (-0.471)	0.184 (0.948)	0.173 (0.885)	0.184 (0.932)	1.938 (0.838)	1.866 (0.875)	1.874 (0.875)
Arts, entertainment and recreation	0.001 (0.065)	0.001 (0.036)	0.001 (0.066)	0.232 (1.558)	0.221 (1.470)	0.234 (1.543)	2.316 (1.031)	2.243 (1.084)	2.249 (1.081)

Table 4.11 Part four: Replication of Waddock and Graves (1997) study using binary coding

Dependent variable:	ROA	ROA	ROA	ROE	ROE	ROE	ROS	ROS	ROS
	OLS regressions								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Other service activities	0.010 (0.448)	0.009 (0.415)	0.010 (0.458)	0.167 (1.261)	0.155 (1.170)	0.170 (1.262)	-0.922 (-0.256)	-1.004 (-0.289)	-0.993 (-0.285)
Constant	0.022^{+} (1.646)	0.021 (1.608)	0.022^{+} (1.703)	-0.032 (-0.232)	-0.030 (-0.201)	-0.015 (-0.099)	-4.569 (-1.619)	-4.557 (-1.633)	-4.539 (-1.633)
F	.	.	6.953	.	.	1.717	1.948	.	1.914
Prob>F	.	.	0.000	.	.	0.024	0.007	.	0.008
R-Squared	0.021	0.022	0.021	0.004	0.004	0.004	0.003	0.003	0.003
Root MSE	0.147	0.147	0.147	4.387	4.387	4.386	37.583	37.583	37.584
Observations	5132	5132	5132	5132	5132	5132	5132	5132	5132

t statistics in parentheses
$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4.12 Part one: Replication of Waddock and Graves (1997) study using binary coding

Dependent variable:	NP	NP	NP	EPS	EPS	EPS
	OLS regressions					
	(10)	(11)	(12)	(13)	(14)	(15)
CSP	0.145 (1.494)	0.152 (1.592)	0.150 (1.557)	3.394* (2.330)	3.808** (2.627)	3.489* (2.384)
Risk:						
DR	1.705 (0.657)	1.712 (0.657)	1.701 (0.652)	-40.569 (-0.714)	-40.419 (-0.713)	-41.735 (-0.736)
Size:						
TS	0.000 (0.574)			0.000*** (3.538)		
TA		-0.000 (-1.046)			-0.000 (-0.381)	
EN			0.000 (0.010)			0.000+ (1.797)
Industry:						
Manufacturing	3.155 (0.908)	2.976 (0.928)	2.992 (0.930)	-15.633 (-1.348)	-26.179* (-2.258)	-24.838* (-2.176)
Electricity, gas, steam and air conditioning supply	2.905 (0.834)	2.746 (0.843)	2.767 (0.844)	-44.797*** (-4.771)	-54.012*** (-5.902)	-51.453*** (-5.645)
Water supply, sewerage, waste management and remediation activities	2.098 (0.521)	1.850 (0.501)	1.887 (0.505)	19.271 (1.074)	5.047 (0.276)	9.788 (0.536)
Construction	3.219 (0.903)	3.001 (0.924)	3.027 (0.922)	-54.519** (-2.742)	-67.254*** (-3.397)	-63.774** (-3.232)

Table 4.12 Part two: Replication of Waddock and Graves (1997) study using binary coding

Dependent variable:	NP	NP	NP	EPS	EPS	EPS
	OLS regressions					
	(10)	(11)	(12)	(13)	(14)	(15)
Wholesale and retail trade; repair of motor vehicles and motorcycles	3.586 (1.040)	3.413 (1.068)	3.431 (1.080)	-18.822* (-2.169)	-28.923** (-3.284)	-28.869*** (-3.328)
Transportation and storage	3.250 (0.914)	3.050 (0.934)	3.073 (0.944)	-10.240 (-1.044)	-21.932* (-2.194)	-21.023* (-2.153)
Accommodation and food service activities	3.043 (0.835)	2.843 (0.848)	2.865 (0.872)	-2.336 (-0.165)	-14.035 (-0.964)	-16.132 (-1.094)
Information and communication	3.738 (1.084)	3.562 (1.119)	3.575 (1.117)	-118.515* (-2.491)	-128.969** (-2.757)	-127.345** (-2.720)
Financial and insurance activities	3.586 (1.058)	3.538 (1.125)	3.458 (1.088)	-38.963*** (-4.116)	-44.013*** (-5.204)	-46.622*** (-5.401)
Real estate activities	3.723 (1.058)	3.544 (1.092)	3.556 (1.089)	-44.501** (-3.129)	-55.208*** (-3.736)	-53.387*** (-3.648)
Professional, scientific and technical activities	-1.079 (-0.193)	-1.260 (-0.235)	-1.246 (-0.232)	-12.797 (-1.116)	-23.500* (-2.032)	-22.199+ (-1.936)
Administrative and support service activities	3.456 (0.989)	3.262 (1.017)	3.279 (1.032)	11.862 (0.397)	0.422 (0.014)	-0.102 (-0.003)

Table 4.12 Part three: Replication of Waddock and Graves (1997) study using binary coding

Dependent variable:	NP	NP	NP	EPS	EPS	EPS
	OLS regressions					
	(10)	(11)	(12)	(13)	(14)	(15)
Public administration and defence; compulsory social security	3.591	3.399	3.418	-13.582	-24.870*	-23.279*
	(1.028)	(1.059)	(1.061)	(-1.414)	(-2.539)	(-2.422)
Education	3.801	3.603	3.620	-51.155***	-62.878***	-60.354***
	(1.096)	(1.134)	(1.130)	(-6.547)	(-8.018)	(-8.006)
Human health and social work activities	3.654	3.476	3.488	-4.474	-15.080	-13.577
	(1.027)	(1.058)	(1.057)	(-0.209)	(-0.689)	(-0.623)
Arts, entertainment and recreation	3.964	3.783	3.795	-10.643	-21.425	-19.699
	(1.137)	(1.178)	(1.175)	(-0.401)	(-0.801)	(-0.738)
Other service activities	-3.174	-3.370	-3.352	-24.836+	-36.343**	-34.205**
	(-0.418)	(-0.454)	(-0.451)	(-1.910)	(-2.698)	(-2.579)
Constant	-6.227+	-6.146+	-6.122+	28.818+	34.434*	36.680*
	(-1.665)	(-1.698)	(-1.699)	(1.732)	(2.006)	(2.122)
F	0.892	.	0.889	16.707	14.894	15.985
Prob>F	0.597	.	0.602	0.000	0.000	0.000
R-Squared	0.003	0.003	0.003	0.010	0.010	0.010
Root MSE	37.475	37.475	37.475	430.852	430.940	430.921
Observations	5132	5132	5132	5132	5132	5132

t statistics in parentheses
+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4.13 Part one: Replication of Waddock and Graves (1997) study using binary coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA
	OLS regressions					
	(16)	(17)	(3)	(18)	(19)	(20)
CSP	-0.000 (-0.552)	0.001** (2.877)	0.002*** (4.942)	-0.000 (-0.978)	0.001** (2.720)	0.002*** (4.147)
Risk:						
DR	-0.083*** (-4.445)	-0.077*** (-3.996)	-0.069*** (-3.706)			
DER				-0.000** (-3.273)	-0.000*** (-3.293)	-0.000** (-3.177)
Size:						
lnTS	0.012*** (7.373)			0.011*** (6.891)		
lnTA		0.005*** (3.918)			0.003** (2.898)	
EN			0.000 (0.526)			0.000 (0.034)
Industry:						
Manufacturing	0.012 (1.083)	0.015 (1.323)	0.008 (0.729)	0.008 (0.738)	0.010 (0.874)	0.005 (0.470)
Electricity, gas, steam and air conditioning supply	-0.013 (-0.472)	-0.007 (-0.240)	-0.008 (-0.279)	-0.017 (-0.636)	-0.011 (-0.411)	-0.012 (-0.428)
Water supply, sewerage, waste management and remediation activities	0.014 (1.111)	0.007 (0.523)	0.002 (0.178)	-0.015 (-1.381)	-0.020+ (-1.861)	-0.021* (-1.982)

Table 4.13 Part two: Replication of Waddock and Graves (1997) study using binary coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA
	OLS regressions					
	(16)	(17)	(3)	(18)	(19)	(20)
Construction	-0.004 (-0.386)	-0.011 (-0.910)	-0.016 (-1.380)	-0.011 (-0.958)	-0.018 (-1.488)	-0.021^{+} (-1.795)
Wholesale and retail trade; repair of motor vehicles and motorcycles	0.017 (1.511)	0.028* (2.422)	0.023* (1.981)	0.014 (1.276)	0.024* (2.060)	0.020^{+} (1.769)
Transportation and storage	0.006 (0.543)	0.010 (0.866)	0.004 (0.384)	-0.004 (-0.376)	-0.001 (-0.056)	-0.004 (-0.361)
Accommodation and food service activities	0.007 (0.608)	0.010 (0.786)	0.006 (0.522)	-0.012 (-1.038)	-0.008 (-0.719)	-0.009 (-0.808)
Information and communication	0.002 (0.122)	-0.000 (-0.005)	-0.007 (-0.480)	-0.001 (-0.079)	-0.004 (-0.291)	-0.009 (-0.618)
Financial and insurance activities	-0.004 (-0.333)	-0.006 (-0.571)	-0.005 (-0.489)	-0.003 (-0.309)	-0.006 (-0.511)	-0.005 (-0.455)
Real estate activities	0.010 (0.734)	-0.006 (-0.400)	-0.011 (-0.813)	-0.005 (-0.348)	-0.020 (-1.407)	-0.023 (-1.645)
Professional, scientific and technical activities	-0.013 (-1.029)	-0.014 (-1.051)	-0.021 (-1.579)	-0.018 (-1.449)	-0.020 (-1.550)	-0.025^{+} (-1.895)
Administrative and support service activities	-0.003 (-0.199)	-0.002 (-0.130)	-0.011 (-0.665)	-0.009 (-0.583)	-0.010 (-0.597)	-0.015 (-0.962)

Table 4.13 Part three: Replication of Waddock and Graves (1997) study using binary coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA
	OLS regressions					
	(16)	(17)	(3)	(18)	(19)	(20)
Public administration and defence; compulsory social security	0.015 (1.233)	0.028* (2.144)	0.023+ (1.799)	0.010 (0.786)	0.021 (1.622)	0.018 (1.406)
Education	-0.007 (-0.322)	-0.007 (-0.338)	-0.018 (-0.860)	-0.007 (-0.358)	-0.010 (-0.488)	-0.018 (-0.869)
Human health and social work activities	-0.006 (-0.187)	-0.009 (-0.269)	-0.016 (-0.471)	-0.027 (-0.813)	-0.029 (-0.853)	-0.033 (-0.952)
Arts, entertainment and recreation	0.012 (0.550)	0.010 (0.446)	0.001 (0.066)	0.002 (0.082)	-0.001 (-0.055)	-0.006 (-0.301)
Other service activities	0.017 (0.870)	0.018 (0.840)	0.010 (0.458)	0.004 (0.220)	0.004 (0.196)	-0.001 (-0.048)
Constant	-0.103*** (-4.417)	-0.032 (-1.524)	0.022+ (1.703)	-0.103*** (-4.417)	-0.024 (-1.132)	0.015 (1.181)
F	9.115	6.758	6.953	7.836	5.714	5.926
Prob>F	0.000	0.000	0.000	0.000	0.000	0.000
R-Squared	0.048	0.024	0.021	0.038	0.016	0.014
Root MSE	0.145	0.147	0.147	0.145	0.147	0.147
Observations	5132	5132	5132	5132	5132	5132

t statistics in parentheses
$^{+}p < 0.1$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 4.14 Part one: Replication of Waddock and Graves (1997) study using binary coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA
	OLS regressions					
	(16)	(17)	(3)	(21)	(22)	(23)
CSP	-0.000 (-0.552)	0.001** (2.877)	0.002*** (4.942)	-0.000 (-0.911)	0.001* (2.258)	0.002*** (4.826)
Risk:						
DR	-0.083*** (-4.445)	-0.077*** (-3.996)	-0.069*** (-3.706)	-0.088*** (-4.862)	-0.084*** (-4.458)	-0.075*** (-4.232)
Size:						
lnTS	0.012*** (7.373)			0.011*** (10.546)		
lnTA		0.005*** (3.918)			0.005*** (4.879)	
EN			0.000 (0.526)			0.000 (0.486)
Industry:						
Manufacturing	0.012 (1.083)	0.015 (1.323)	0.008 (0.729)	0.011 (1.067)	0.016 (1.371)	0.008 (0.751)
Electricity, gas, steam and air conditioning supply	-0.013 (-0.472)	-0.007 (-0.240)	-0.008 (-0.279)	-0.011 (-0.389)	-0.005 (-0.175)	-0.006 (-0.217)
Water supply, sewerage, waste management and remediation activities	0.014 (1.111)	0.007 (0.523)	0.002 (0.178)	0.018 (1.405)	0.012 (0.918)	0.007 (0.558)
Construction	-0.004 (-0.386)	-0.011 (-0.910)	-0.016 (-1.380)	-0.004 (-0.375)	-0.009 (-0.771)	-0.015 (-1.262)

Table 4.14 Part two: Replication of Waddock and Graves (1997) study using binary coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA
	OLS regressions					
	(16)	(17)	(3)	(21)	(22)	(23)
Wholesale and retail trade; repair of motor vehicles and motorcycles	0.017 (1.511)	0.028* (2.422)	0.023* (1.981)	0.021* (2.036)	0.033** (2.897)	0.027* (2.445)
Transportation and storage	0.006 (0.543)	0.010 (0.866)	0.004 (0.384)	0.007 (0.655)	0.012 (1.010)	0.006 (0.512)
Accommodation and food service activities	0.007 (0.608)	0.010 (0.786)	0.006 (0.522)	0.009 (0.787)	0.012 (0.978)	0.009 (0.711)
Information and communication	0.002 (0.122)	-0.000 (-0.005)	-0.007 (-0.480)	-0.015 (-1.181)	-0.015 (-1.197)	-0.022+ (-1.752)
Financial and insurance activities	-0.004 (-0.333)	-0.006 (-0.571)	-0.005 (-0.489)	-0.003 (-0.318)	-0.006 (-0.540)	-0.005 (-0.456)
Real estate activities	0.010 (0.734)	-0.006 (-0.400)	-0.011 (-0.813)	0.008 (0.580)	-0.005 (-0.378)	-0.011 (-0.808)
Professional, scientific and technical activities	-0.013 (-1.029)	-0.014 (-1.051)	-0.021 (-1.579)	-0.003 (-0.303)	-0.003 (-0.237)	-0.010 (-0.868)
Administrative and support service activities	-0.003 (-0.199)	-0.002 (-0.130)	-0.011 (-0.665)	0.006 (0.491)	0.008 (0.599)	-0.001 (-0.073)

Table 4.14 Part three: Replication of Waddock and Graves (1997) study using binary coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA
	OLS regressions					
	(16)	(17)	(3)	(21)	(22)	(23)
Public administration and defence; compulsory social security	0.015 (1.233)	0.028* (2.144)	0.023+ (1.799)	0.017 (1.348)	0.029* (2.204)	0.024+ (1.844)
Education	-0.007 (-0.322)	-0.007 (-0.338)	-0.018 (-0.860)	-0.008 (-0.394)	-0.007 (-0.332)	-0.018 (-0.873)
Human health and social work activities	-0.006 (-0.187)	-0.009 (-0.269)	-0.016 (-0.471)	-0.007 (-0.203)	-0.009 (-0.245)	-0.016 (-0.455)
Arts, entertainment and recreation	0.012 (0.550)	0.010 (0.446)	0.001 (0.066)	0.010 (0.486)	0.010 (0.449)	0.001 (0.054)
Other service activities	0.017 (0.870)	0.018 (0.840)	0.010 (0.458)	0.017 (0.861)	0.019 (0.890)	0.010 (0.493)
Constant	-0.103*** (-4.417)	-0.032 (-1.524)	0.022+ (1.703)	-0.084*** (-4.677)	-0.028 (-1.528)	0.028* (2.258)
F	9.115	6.758	6.953	14.327	9.074	8.961
Prob>F	0.000	0.000	0.000	0.000	0.000	0.000
R-Squared	0.048	0.024	0.021	0.064	0.037	0.032
Root MSE	0.145	0.147	0.147	0.118	0.119	0.120
Observations	5132	5132	5132	5107	5107	5107

Note models 21-23 have had outliers removed
t statistics in parentheses
$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

.

Table 4.15 Part one: Replication of Waddock and Graves (1997) study using scale coding

Dependent variable:	ROA	ROA	ROA	ROE	ROE	ROE	ROS	ROS	ROS
	OLS regressions								
	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)
CSP	0.001***	0.001***	0.001***	0.006+	0.006+	0.005	0.033	0.035	0.034
	(6.003)	(6.444)	(5.971)	(1.789)	(1.894)	(1.599)	(1.368)	(1.464)	(1.431)
Risk:									
DR	-0.069***	-0.069***	-0.069***	-0.901	-0.899	-0.905	2.555	2.561	2.558
	(-3.731)	(-3.708)	(-3.718)	(-1.343)	(-1.342)	(-1.348)	(0.912)	(0.910)	(0.908)
Size:									
TS	-0.000			-0.000			0.000		
	(-0.964)			(-0.149)			(0.246)		
TA		-0.000***			-0.000*			-0.000	
		(-8.622)			(-2.298)			(-1.187)	
EN			-0.000			0.000			-0.000
			(-1.272)			(1.140)			(-0.480)
Industry:									
Manufacturing	0.008	0.008	0.009	-0.098	-0.099	-0.092	1.617	1.552	1.564
	(0.699)	(0.761)	(0.818)	(-0.590)	(-0.624)	(-0.585)	(0.720)	(0.750)	(0.754)
Electricity, gas, steam and air conditioning supply	-0.009	-0.009	-0.008	0.007	0.004	0.021	1.564	1.493	1.504
	(-0.303)	(-0.320)	(-0.288)	(0.089)	(0.052)	(0.254)	(0.686)	(0.703)	(0.703)

Table 4.15 Part two: Replication of Waddock and Graves (1997) study using scale coding

Dependent variable:	ROA	ROA	ROA	ROE	ROE	ROE	ROS	ROS	ROS
	OLS regressions								
	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)
Water supply, sewerage, waste management and remediation activities	0.000 (0.000)	-0.001 (-0.072)	0.001 (0.048)	0.245 (1.157)	0.239 (1.131)	0.271 (1.234)	0.572 (0.197)	0.455 (0.170)	0.472 (0.174)
Construction	-0.015 (-1.229)	-0.015 (-1.318)	-0.014 (-1.245)	0.054 (0.760)	0.052 (0.749)	0.071 (0.968)	1.766 (0.765)	1.681 (0.802)	1.688 (0.797)
Wholesale and retail trade; repair of motor vehicles and motorcycles	0.025* (2.042)	0.025* (2.152)	0.026* (2.231)	-0.247 (-1.010)	-0.248 (-0.971)	-0.250 (-0.962)	2.084 (0.943)	2.023 (0.986)	2.048 (1.006)
Transportation and storage	0.007 (0.550)	0.007 (0.586)	0.008 (0.676)	0.086 (0.725)	0.085 (0.704)	0.087 (0.721)	1.796 (0.781)	1.723 (0.817)	1.748 (0.834)
Accommodation and food service activities	0.009 (0.731)	0.009 (0.774)	0.011 (0.908)	-0.041 (-0.144)	-0.042 (-0.148)	-0.058 (-0.200)	1.636 (0.684)	1.564 (0.711)	1.615 (0.755)
Information and communication	-0.006 (-0.405)	-0.006 (-0.387)	-0.005 (-0.364)	0.001 (0.013)	0.001 (0.017)	0.008 (0.098)	2.190 (0.989)	2.131 (1.041)	2.135 (1.039)
Financial and insurance activities	-0.004 (-0.363)	0.001 (0.109)	-0.003 (-0.311)	0.042 (1.264)	0.063* (1.987)	0.043 (1.445)	2.159 (0.991)	2.223 (1.100)	2.122 (1.040)

Table 4.15 Part three: Replication of Waddock and Graves (1997) study using scale coding

Dependent variable:	ROA	ROA	ROA	ROE	ROE	ROE	ROS	ROS	ROS
	OLS regressions								
	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)
Real estate activities	-0.007 (-0.505)	-0.006 (-0.461)	-0.007 (-0.465)	-0.116 (-0.352)	-0.114 (-0.344)	-0.111 (-0.335)	2.328 (1.037)	2.282 (1.097)	2.278 (1.092)
Professional, scientific and technical activities	-0.020 (-1.449)	-0.020 (-1.481)	-0.019 (-1.449)	-0.276^{+} (-1.752)	-0.275^{+} (-1.747)	-0.271^{+} (-1.716)	-3.098 (-0.598)	-3.158 (-0.628)	-3.150 (-0.626)
Administrative and support service activities	-0.009 (-0.530)	-0.009 (-0.531)	-0.008 (-0.470)	0.530 (0.940)	0.530 (0.945)	0.524 (0.934)	2.052 (0.916)	1.986 (0.965)	2.015 (0.990)
Public administration and defence; compulsory social security	0.026^{+} (1.891)	0.026* (1.993)	0.027* (2.041)	0.229** (2.891)	0.229** (2.773)	0.234** (2.822)	2.095 (0.936)	2.031 (0.985)	2.043 (0.990)
Education	-0.015 (-0.725)	-0.015 (-0.715)	-0.014 (-0.701)	0.077 (0.854)	0.077 (0.842)	0.087 (0.955)	2.396 (1.078)	2.333 (1.139)	2.334 (1.132)
Human health and social work activities	-0.014 (-0.398)	-0.013 (-0.380)	-0.013 (-0.377)	0.209 (1.030)	0.210 (1.011)	0.213 (1.024)	1.952 (0.849)	1.901 (0.895)	1.902 (0.894)

Table 4.15 Part four: Replication of Waddock and Graves (1997) study using scale coding

Dependent variable:	ROA	ROA	ROA	ROE	ROE	ROE	ROS	ROS	ROS
	OLS regressions								
	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)
Arts, entertainment and recreation	0.005 (0.243)	0.006 (0.285)	0.006 (0.285)	0.271^{+} (1.704)	0.273^{+} (1.669)	0.275^{+} (1.685)	2.446 (1.098)	2.399 (1.160)	2.397 (1.157)
Other service activities	0.012 (0.543)	0.012 (0.572)	0.012 (0.592)	0.187 (1.344)	0.187 (1.307)	0.195 (1.357)	-0.818 (-0.228)	-0.882 (-0.255)	-0.877 (-0.253)
Constant	0.039** (3.253)	0.037*** (3.308)	0.038*** (3.335)	0.125 (1.606)	0.122 (1.520)	0.121 (1.530)	-3.128 (-1.353)	-3.089 (-1.406)	-3.080 (-1.402)
F	.	.	7.326	.	.	1.798	1.841	.	1.806
Prob>F	.	.	0.000	.	.	0.016	0.013	.	0.015
R-Squared	0.022	0.023	0.022	0.004	0.004	0.004	0.003	0.003	0.003
Root MSE	0.147	0.147	0.147	4.386	4.386	4.386	37.587	37.586	37.587
Observations	5132	5132	5132	5132	5132	5132	5132	5132	5132

t statistics in parentheses

$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4.16 Part one: Replication of Waddock and Graves (1997) study using scale coding

Dependent variable:	NP	NP	NP	EPS	EPS	EPS
	OLS regressions					
	(33)	(34)	(35)	(36)	(37)	(38)
CSP	0.035 (1.483)	0.038^{+} (1.651)	0.037 (1.592)	1.035* (2.369)	1.198** (2.756)	1.085* (2.442)
Risk:						
DR	1.818 (0.684)	1.818 (0.681)	1.812 (0.678)	-40.419 (-0.712)	-40.564 (-0.716)	-41.347 (-0.731)
Size:						
TS	0.000 (0.529)			0.000** (2.910)		
TA		-0.000 (-1.144)			-0.000 (-0.528)	
EN			-0.000 (-0.165)			0.000 (1.110)
Industry:						
Manufacturing	3.196 (0.920)	3.028 (0.944)	3.042 (0.947)	-15.181 (-1.309)	-24.289* (-2.122)	-23.232* (-2.053)
Electricity, gas, steam and air conditioning supply	3.070 (0.883)	2.908 (0.897)	2.929 (0.896)	-44.126*** (-4.676)	-52.744*** (-5.740)	-50.329*** (-5.522)
Water supply, sewerage, waste management and remediation activities	2.280 (0.569)	2.023 (0.555)	2.057 (0.556)	18.309 (1.043)	4.651 (0.256)	9.182 (0.511)
Construction	3.447 (0.972)	3.241 (1.004)	3.259 (0.999)	-51.307** (-2.601)	-62.417** (-3.174)	-59.746** (-3.049)

Table 4.16 Part two: Replication of Waddock and Graves (1997) study using scale coding

Dependent variable:	NP	NP	NP	EPS	EPS	EPS
	OLS regressions					
	(33)	(34)	(35)	(36)	(37)	(38)
Wholesale and retail trade; repair of motor vehicles and motorcycles	3.750 (1.092)	3.596 (1.127)	3.615 (1.142)	-15.283^{+} (-1.727)	-23.666** (-2.589)	-23.656* (-2.569)
Transportation and storage	3.488 (0.989)	3.307 (1.020)	3.329 (1.031)	-5.582 (-0.542)	-15.370 (-1.422)	-14.714 (-1.365)
Accommodation and food service activities	3.300 (0.916)	3.122 (0.941)	3.156 (0.974)	3.157 (0.205)	-6.477 (-0.402)	-7.892 (-0.471)
Information and communication	3.797 (1.103)	3.638 (1.143)	3.645 (1.141)	-116.986* (-2.490)	-125.702** (-2.744)	-124.723** (-2.717)
Financial and insurance activities	3.732 (1.103)	3.714 (1.182)	3.615 (1.140)	-36.369*** (-3.942)	-38.818*** (-4.576)	-42.918*** (-5.074)
Real estate activities	3.841 (1.101)	3.699 (1.143)	3.698 (1.139)	-38.853* (-2.421)	-46.737** (-2.751)	-46.392** (-2.750)
Professional, scientific and technical activities	-1.047 (-0.188)	-1.210 (-0.227)	-1.200 (-0.225)	-11.556 (-1.001)	-20.465^{+} (-1.734)	-19.703^{+} (-1.679)
Administrative and support service activities	3.580 (1.028)	3.407 (1.064)	3.428 (1.082)	14.886 (0.494)	5.418 (0.178)	4.989 (0.162)

Table 4.16 Part three: Replication of Waddock and Graves (1997) study using scale coding

Dependent variable:	NP	NP	NP	EPS	EPS	EPS
	OLS regressions					
	(33)	(34)	(35)	(36)	(37)	(38)
Public administration and defence; compulsory social security	3.767 (1.084)	3.599 (1.124)	3.612 (1.127)	-9.192 (-0.900)	-18.359^{+} (-1.715)	-17.511^{+} (-1.649)
Education	3.980 (1.152)	3.808 (1.199)	3.815 (1.193)	-46.445*** (-6.037)	-55.849*** (-6.979)	-54.513*** (-7.045)
Human health and social work activities	3.665 (1.037)	3.517 (1.074)	3.520 (1.073)	-1.581 (-0.071)	-9.762 (-0.422)	-9.355 (-0.406)
Arts, entertainment and recreation	4.100 (1.185)	3.956 (1.233)	3.956 (1.230)	-4.933 (-0.181)	-12.954 (-0.467)	-12.612 (-0.456)
Other service activities	-3.064 (-0.405)	-3.235 (-0.436)	-3.226 (-0.434)	-21.469 (-1.554)	-30.817* (-2.107)	-29.636* (-2.053)
Constant	-4.687 (-1.359)	-4.553 (-1.412)	-4.547 (-1.407)	62.215*** (7.526)	69.746*** (8.661)	69.774*** (8.709)
F	0.905	.	0.905	18.265	16.462	17.381
Prob>F	0.581	.	0.581	0.000	0.000	0.000
R-Squared	0.003	0.003	0.003	0.010	0.010	0.010
Root MSE	37.478	37.478	37.479	430.855	430.901	430.916
Observations	5132	5132	5132	5132	5132	5132

t statistics in parentheses
$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4.17 Part one: Replication of Waddock and Graves (1997) study using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA
	OLS regressions					
	(39)	(40)	(26)	(41)	(42)	(43)
CSP	-0.000 (-0.823)	0.000*** (3.606)	0.001*** (5.971)	-0.000 (-1.171)	0.000*** (3.646)	0.001*** (5.146)
Risk:						
DR	-0.082*** (-4.436)	-0.076*** (-3.958)	-0.069*** (-3.718)			
DER				-0.000** (-3.265)	-0.000*** (-3.301)	-0.000** (-3.214)
Size:						
lnTS	0.012*** (7.062)			0.011*** (6.593)		
lnTA		0.004*** (3.311)			0.003* (2.239)	
EN			-0.000 (-1.272)			-0.000 (-1.625)
Industry:						
Manufacturing	0.011 (1.068)	0.015 (1.316)	0.009 (0.818)	0.008 (0.717)	0.010 (0.859)	0.006 (0.547)
Electricity, gas, steam and air conditioning supply	-0.013 (-0.469)	-0.007 (-0.236)	-0.008 (-0.288)	-0.017 (-0.640)	-0.011 (-0.413)	-0.012 (-0.443)
Water supply, sewerage, waste management and remediation activities	0.015 (1.178)	0.006 (0.465)	0.001 (0.048)	-0.014 (-1.373)	-0.021* (-2.003)	-0.023* (-2.222)

Table 4.17 Part two: Replication of Waddock and Graves (1997) study using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA
	OLS regressions					
	(39)	(40)	(26)	(41)	(42)	(43)
Construction	-0.004 (-0.394)	-0.010 (-0.851)	-0.014 (-1.245)	-0.012 (-0.995)	-0.017 (-1.446)	-0.020^{+} (-1.694)
Wholesale and retail trade; repair of motor vehicles and motorcycles	0.016 (1.451)	0.029* (2.523)	0.026* (2.231)	0.013 (1.200)	0.025* (2.152)	0.023* (1.990)
Transportation and storage	0.006 (0.503)	0.012 (0.989)	0.008 (0.676)	-0.005 (-0.444)	0.001 (0.055)	-0.001 (-0.108)
Accommodation and food service activities	0.007 (0.558)	0.012 (0.954)	0.011 (0.908)	-0.012 (-1.117)	-0.006 (-0.544)	-0.005 (-0.452)
Information and communication	0.001 (0.106)	0.000 (0.017)	-0.005 (-0.364)	-0.001 (-0.102)	-0.004 (-0.273)	-0.007 (-0.515)
Financial and insurance activities	-0.004 (-0.357)	-0.005 (-0.451)	-0.003 (-0.311)	-0.004 (-0.349)	-0.004 (-0.393)	-0.003 (-0.302)
Real estate activities	0.010 (0.685)	-0.003 (-0.244)	-0.007 (-0.465)	-0.006 (-0.410)	-0.017 (-1.231)	-0.019 (-1.326)
Professional, scientific and technical activities	-0.013 (-1.044)	-0.014 (-1.037)	-0.019 (-1.449)	-0.018 (-1.467)	-0.020 (-1.537)	-0.024^{+} (-1.777)
Administrative and support service activities	-0.004 (-0.224)	-0.002 (-0.092)	-0.008 (-0.470)	-0.010 (-0.624)	-0.009 (-0.567)	-0.013 (-0.790)

Table 4.17 Part three: Replication of Waddock and Graves (1997) study using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA
	OLS regressions					
	(39)	(40)	(26)	(41)	(42)	(43)
Public administration and defence; compulsory social security	0.015 (1.163)	0.030* (2.259)	0.027* (2.041)	0.009 (0.703)	0.023+ (1.736)	0.021 (1.619)
Education	-0.007 (-0.345)	-0.006 (-0.293)	-0.014 (-0.701)	-0.008 (-0.393)	-0.009 (-0.450)	-0.015 (-0.727)
Human health and social work activities	-0.007 (-0.205)	-0.008 (-0.238)	-0.013 (-0.377)	-0.027 (-0.834)	-0.028 (-0.812)	-0.030 (-0.867)
Arts, entertainment and recreation	0.011 (0.511)	0.011 (0.531)	0.006 (0.285)	0.001 (0.034)	0.001 (0.036)	-0.002 (-0.103)
Other service activities	0.017 (0.846)	0.019 (0.882)	0.012 (0.592)	0.004 (0.187)	0.005 (0.239)	0.001 (0.072)
Constant	-0.107*** (-4.278)	-0.016 (-0.738)	0.038*** (3.335)	-0.109*** (-4.350)	-0.007 (-0.332)	0.028* (2.565)
F	9.305	7.092	7.326	7.958	6.061	6.294
Prob>F	0.000	0.000	0.000	0.000	0.000	0.000
R-Squared	0.048	0.024	0.022	0.038	0.016	0.015
Root MSE	0.145	0.146	0.147	0.145	0.147	0.147
Observations	5132	5132	5132	5132	5132	5132

t statistics in parentheses
+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4.18 Part one: Replication of Waddock and Graves (1997) study using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA
	OLS regressions					
	(39)	(40)	(26)	(44)	(45)	(46)
CSP	-0.000 (-0.823)	0.000*** (3.606)	0.001*** (5.971)	0.001*** (6.267)	-0.000 (-0.414)	0.000*** (3.589)
Risk:						
DR	-0.082*** (-4.436)	-0.076*** (-3.958)	-0.069*** (-3.718)	-0.077*** (-4.266)	-0.088*** (-4.856)	-0.083*** (-4.414)
Size:						
lnTS	0.012*** (7.062)			0.011*** (10.203)		
lnTA		0.004*** (3.311)			0.004*** (3.911)	
EN			-0.000 (-1.272)			-0.000+ (-1.712)
Industry:						
Manufacturing	0.011 (1.068)	0.015 (1.316)	0.009 (0.818)	0.011 (1.041)	0.015 (1.307)	0.009 (0.819)
Electricity, gas, steam and air conditioning supply	-0.013 (-0.469)	-0.007 (-0.236)	-0.008 (-0.288)	-0.011 (-0.407)	-0.006 (-0.201)	-0.007 (-0.255)
Water supply, sewerage, waste management and remediation activities	0.015 (1.178)	0.006 (0.465)	0.001 (0.048)	0.017 (1.349)	0.010 (0.755)	0.004 (0.336)
Construction	-0.004 (-0.394)	-0.010 (-0.851)	-0.014 (-1.245)	-0.005 (-0.436)	-0.009 (-0.791)	-0.014 (-1.185)

Table 4.18 Part two: Replication of Waddock and Graves (1997) study using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA
	OLS regressions					
	(39)	(40)	(26)	(44)	(45)	(46)
Wholesale and retail trade; repair of motor vehicles and motorcycles	0.016 (1.451)	0.029* (2.523)	0.026* (2.231)	0.021* (2.009)	0.033** (2.953)	0.030** (2.688)
Transportation and storage	0.006 (0.543)	0.010 (0.866)	0.004 (0.384)	0.007 (0.616)	0.012 (1.065)	0.009 (0.765)
Accommodation and food service activities	0.007 (0.608)	0.010 (0.786)	0.006 (0.522)	0.009 (0.751)	0.013 (1.099)	0.013 (1.073)
Information and communication	0.002 (0.122)	-0.000 (-0.005)	-0.007 (-0.480)	-0.015 (-1.188)	-0.015 (-1.203)	-0.021 (-1.620)
Financial and insurance activities	-0.004 (-0.333)	-0.006 (-0.571)	-0.005 (-0.489)	-0.004 (-0.346)	-0.005 (-0.442)	-0.003 (-0.306)
Real estate activities	0.010 (0.734)	-0.006 (-0.400)	-0.011 (-0.813)	0.008 (0.574)	-0.003 (-0.210)	-0.006 (-0.427)
Professional, scientific and technical activities	-0.013 (-1.029)	-0.014 (-1.051)	-0.021 (-1.579)	-0.003 (-0.301)	-0.003 (-0.235)	-0.008 (-0.702)
Administrative and support service activities	-0.003 (-0.199)	-0.002 (-0.130)	-0.011 (-0.665)	0.006 (0.475)	0.008 (0.609)	0.002 (0.173)

Table 4.18 Part three: Replication of Waddock and Graves (1997) study using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA
	OLS regressions					
	(39)	(40)	(26)	(44)	(45)	(46)
Public administration and defence; compulsory social security	0.015 (1.233)	0.028* (2.144)	0.023+ (1.799)	0.017 (1.331)	0.030* (2.284)	0.027* (2.071)
Education	-0.007 (-0.322)	-0.007 (-0.338)	-0.018 (-0.860)	-0.008 (-0.406)	-0.007 (-0.321)	-0.015 (-0.719)
Human health and social work activities	-0.006 (-0.187)	-0.009 (-0.269)	-0.016 (-0.471)	-0.006 (-0.194)	-0.007 (-0.207)	-0.012 (-0.343)
Arts, entertainment and recreation	0.012 (0.550)	0.010 (0.446)	0.001 (0.066)	0.007 (0.616)	0.012 (1.065)	0.006 (0.289)
Other service activities	0.017 (0.870)	0.018 (0.840)	0.010 (0.458)	0.010 (0.486)	0.011 (0.529)	0.013 (0.631)
Constant	-0.103*** (-4.417)	-0.032 (-1.524)	0.022+ (1.703)	-0.086*** (-4.702)	-0.012 (-0.654)	0.040*** (3.555)
F	9.115	6.758	6.953	14.379	9.524	9.620
Prob>F	0.000	0.000	0.000	0.000	0.000	0.000
R-Squared	0.048	0.024	0.021	0.064	0.038	0.035
Root MSE	0.145	0.147	0.147	0.118	0.119	0.119
Observations	5132	5132	5132	5102	5102	5102

Note models 44-46 have had outliers removed.
Model 44 replicates Waddock & Graves (1997) findings.
t statistics in parentheses
$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4.19 Part one: Replication of Waddock and Graves (1997) study using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA
	Fixed effects regressions				
	(47)	(48)	(49)	(50)	(51)
CSP	-0.001**	-0.001***	-0.001**	-0.001***	-0.001**
	(-3.282)	(-3.311)	(-3.271)	(-3.449)	(-3.081)
Risk:					
DR	-0.230***	-0.230***	-0.230***	-0.231***	-0.230***
	(-4.199)	(-4.211)	(-4.195)	(-4.207)	(-4.177)
Size:					
TS	-0.000				
	(-1.414)				
TA		-0.000**			
		(-2.841)			
EN			-0.000		
			(-0.669)		
lnTS				0.003	
				(0.513)	
lnTA					0.001
					(0.135)
Year:					
2004	0.019**	0.019**	0.019**	0.019**	0.019**
	(3.266)	(3.271)	(3.264)	(3.212)	(3.210)
2005	0.028***	0.028***	0.028***	0.027***	0.027***
	(3.955)	(3.978)	(3.955)	(3.827)	(3.788)
2006	0.038***	0.038***	0.038***	0.037***	0.037***
	(5.093)	(5.131)	(5.101)	(4.896)	(4.664)

Table 4.19 Part two: Replication of Waddock and Graves (1997) study using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA
	Fixed effects regressions				
	(47)	(48)	(49)	(50)	(51)
2007	0.046***	0.046***	0.046***	0.045***	0.045***
	(6.124)	(6.169)	(6.135)	(5.861)	(5.046)
2008	0.024*	0.025**	0.024*	0.023*	0.023*
	(2.576)	(2.625)	(2.575)	(2.415)	(2.261)
2009	0.001	0.001	0.000	-0.000	-0.000
	(0.062)	(0.092)	(0.047)	(-0.046)	(-0.029)
2010	0.030***	0.030***	0.029***	0.028**	0.029**
	(3.311)	(3.376)	(3.324)	(3.108)	(2.785)
2011	0.030***	0.030***	0.030***	0.029**	0.029**
	(3.387)	(3.464)	(3.407)	(3.029)	(2.712)
2012	0.027**	0.027**	0.026**	0.025**	0.025*
	(2.891)	(2.963)	(2.905)	(2.648)	(2.298)
2013	0.022*	0.022*	0.021*	0.020*	0.020+
	(2.276)	(2.341)	(2.279)	(2.026)	(1.754)
Constant	0.079***	0.079***	0.079***	0.044	0.061
	(5.360)	(5.353)	(5.402)	(0.650)	(0.505)
F	.	.	9.989	10.059	10.150
Prob>F	.	.	0.000	0.000	0.000
R-Squared	0.078	0.078	0.077	0.078	0.077
Root MSE	0.081	0.081	0.081	0.081	0.081
Observations	5102	5102	5102	5102	5102

t statistics in parentheses

$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4.20 Part one: Replication of Waddock and Graves (1997) study using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA
	Fixed effects regressions				
	(52)	(53)	(54)	(55)	(56)
CSP	-0.002**	-0.002**	-0.002**	-0.002**	-0.002**
	(-2.768)	(-2.773)	(-2.759)	(-2.993)	(-2.629)
Risk:					
DR	-0.228***	-0.229***	-0.228***	-0.229***	-0.228***
	(-4.138)	(-4.151)	(-4.136)	(-4.147)	(-4.118)
Size:					
TS	-0.000				
	(-1.322)				
TA		-0.000**			
		(-2.758)			
EN			-0.000		
			(-0.488)		
lnTS				0.003	
				(0.565)	
lnTA					0.002
					(0.233)
Year:					
2004	0.019**	0.019**	0.019**	0.019**	0.019**
	(3.188)	(3.195)	(3.185)	(3.132)	(3.123)
2005	0.027***	0.027***	0.027***	0.027***	0.027***
	(3.871)	(3.896)	(3.868)	(3.740)	(3.683)
2006	0.037***	0.037***	0.037***	0.036***	0.036***
	(4.928)	(4.968)	(4.932)	(4.733)	(4.470)

Table 4.20 Part two: Replication of Waddock and Graves (1997) study using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA
	Fixed effects regressions				
	(52)	(53)	(54)	(55)	(56)
2007	0.045***	0.045***	0.045***	0.044***	0.044***
	(5.860)	(5.907)	(5.865)	(5.600)	(4.761)
2008	0.023*	0.023*	0.023*	0.022*	0.022*
	(2.411)	(2.464)	(2.405)	(2.248)	(2.054)
2009	0.000	0.000	-0.000	-0.001	-0.001
	(0.000)	(0.033)	(-0.019)	(-0.114)	(-0.126)
2010	0.029**	0.029**	0.029**	0.028**	0.028**
	(3.194)	(3.263)	(3.201)	(2.989)	(2.620)
2011	0.030**	0.030***	0.029**	0.028**	0.028*
	(3.252)	(3.333)	(3.265)	(2.903)	(2.543)
2012	0.026**	0.026**	0.026**	0.025*	0.024*
	(2.771)	(2.847)	(2.778)	(2.530)	(2.140)
2013	0.022*	0.022*	0.021*	0.020*	0.020+
	(2.240)	(2.309)	(2.238)	(1.987)	(1.668)
Industry CSP interaction:					
Mining and quarrying	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)
Manufacturing	0.001	0.001	0.001	0.001	0.001
	(1.217)	(1.212)	(1.218)	(1.273)	(1.269)
Electricity, gas, steam and air conditioning supply	-0.000	-0.000	-0.000	-0.000	-0.000
	(-0.120)	(-0.121)	(-0.120)	(-0.105)	(-0.102)

Table 4.20 Part three: Replication of Waddock and Graves (1997) study using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA
	Fixed effects regressions				
	(52)	(53)	(54)	(55)	(56)
Water supply, sewerage, waste management and remediation activities	-0.000 (-0.232)	-0.000 (-0.231)	-0.000 (-0.237)	-0.000 (-0.205)	-0.000 (-0.192)
Construction	0.001 (1.000)	0.001 (0.996)	0.001 (1.001)	0.001 (1.113)	0.001 (1.029)
Wholesale and retail trade; repair of motor vehicles and motorcycles	0.001 (1.506)	0.001 (1.499)	0.001 (1.507)	0.001 (1.623)	0.001 (1.517)
Transportation and storage	0.001 (1.569)	0.001 (1.564)	0.001 (1.579)	0.001^{+} (1.681)	0.001 (1.563)
Accommodation and food service activities	0.002* (2.107)	0.002* (2.102)	0.002* (2.116)	0.002* (2.256)	0.002* (2.041)
Information and communication	0.002^{+} (1.719)	0.002^{+} (1.718)	0.002^{+} (1.718)	0.002^{+} (1.785)	0.002^{+} (1.728)
Financial and insurance activities	0.001^{+} (1.654)	0.002^{+} (1.695)	0.001^{+} (1.648)	0.002^{+} (1.759)	0.002^{+} (1.763)
Real estate activities	0.000 (0.339)	0.000 (0.336)	0.000 (0.344)	0.000 (0.450)	0.000 (0.407)
Professional, scientific and technical activities	0.001 (1.289)	0.001 (1.283)	0.001 (1.291)	0.001 (1.381)	0.001 (1.312)

Table 4.20 Part four: Replication of Waddock and Graves (1997) study using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA
	Fixed effects regressions				
	(52)	(53)	(54)	(55)	(56)
Administrative and support service activities	0.000 (0.400)	0.000 (0.397)	0.000 (0.423)	0.000 (0.463)	0.000 (0.448)
Public administration and defence; compulsory social security	0.001 (1.106)	0.001 (1.100)	0.001 (1.114)	0.001 (1.181)	0.001 (1.147)
Education	0.006^{+} (1.852)	0.006^{+} (1.852)	0.006^{+} (1.852)	0.006^{+} (1.880)	0.006^{+} (1.868)
Human, health and social work activities	0.002^{+} (1.817)	0.002^{+} (1.828)	0.002^{+} (1.815)	0.002^{+} (1.913)	0.002^{+} (1.780)
Arts, entertainment and recreation	-0.001 (-0.231)	-0.001 (-0.229)	-0.001 (-0.231)	-0.001 (-0.219)	-0.001 (-0.229)
Other service activities	0.002 (1.618)	0.002 (1.613)	0.002 (1.623)	0.002^{+} (1.709)	0.002 (1.596)
Constant	0.079*** (5.288)	0.079*** (5.283)	0.079*** (5.311)	0.041 (0.611)	0.048 (0.390)
F	.	.	4.976	5.077	5.041
Prob>F	.	.	0.000	0.000	0.000
R-Squared	0.081	0.081	0.081	0.081	0.081
Root MSE	0.081	0.081	0.081	0.081	0.081
Observations	5102	5102	5102	5102	5102

t statistics in parentheses
$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4.21 Part one: Replication of Waddock and Graves (1997) and McWilliams and Siegel (2000) studies using scale coding

Dependent variable:	ROA	ROA	ROA	ROA
	Fixed effects regressions			
	(55)	(56)	(57)	(58)
CSP	-0.002**	-0.002**	-0.002**	-0.002**
	(-2.993)	(-3.001)	(-2.991)	(-2.917)
Risk:				
DR	-0.229***	-0.229***	-0.229***	-0.229***
	(-4.147)	(-4.138)	(-4.146)	(-4.143)
Size:				
lnTS	0.003	0.003	0.003	0.003
	(0.565)	(0.567)	(0.554)	(0.567)
Research & Development:				
R&D		-0.000		
		(-0.275)		
R&D intensity			-0.000	
			(-0.199)	
lnR&D				-0.001
				(-0.563)
Year:				
2004	0.019**	0.019**	0.019**	0.019**
	(3.132)	(3.133)	(3.136)	(3.135)
2005	0.027***	0.027***	0.027***	0.027***
	(3.740)	(3.740)	(3.739)	(3.744)
2006	0.036***	0.037***	0.036***	0.036***
	(4.733)	(4.733)	(4.733)	(4.737)

Table 4.21 Part two: Replication of Waddock and Graves (1997) and McWilliams and Siegel (2000) studies using scale coding

Dependent variable:	ROA	ROA	ROA	ROA
	Fixed effects regressions			
	(55)	(56)	(57)	(58)
2007	0.044***	0.044***	0.044***	0.044***
	(5.600)	(5.597)	(5.602)	(5.601)
2008	0.022*	0.022*	0.022*	0.022*
	(2.248)	(2.255)	(2.246)	(2.263)
2009	-0.001	-0.001	-0.001	-0.001
	(-0.114)	(-0.103)	(-0.116)	(-0.098)
2010	0.028**	0.028**	0.028**	0.028**
	(2.989)	(3.000)	(2.989)	(3.012)
2011	0.028**	0.028**	0.028**	0.028**
	(2.903)	(2.916)	(2.902)	(2.929)
2012	0.025*	0.025*	0.025*	0.025*
	(2.530)	(2.541)	(2.530)	(2.551)
2013	0.020*	0.020*	0.020*	0.020*
	(1.987)	(2.001)	(1.987)	(2.002)
Industry CSP interaction:				
Mining and quarrying	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)
Manufacturing	0.001	0.001	0.001	0.001
	(1.273)	(1.273)	(1.268)	(1.257)
Electricity, gas, steam and air conditioning supply	-0.000	-0.000	-0.000	-0.000
	(-0.105)	(-0.104)	(-0.105)	(-0.136)

Table 4.21 Part three: Replication of Waddock and Graves (1997) and McWilliams and Siegel (2000) studies using scale coding

Dependent variable:	ROA	ROA	ROA	ROA
	Fixed effects regressions			
	(55)	(56)	(57)	(58)
Water supply, sewerage, waste management and remediation activities	-0.000 (-0.205)	-0.000 (-0.197)	-0.000 (-0.206)	-0.000 (-0.245)
Construction	0.001 (1.113)	0.001 (1.122)	0.001 (1.113)	0.001 (1.088)
Wholesale and retail trade; repair of motor vehicles and motorcycles	0.001 (1.623)	0.001 (1.624)	0.001 (1.622)	0.001 (1.585)
Transportation and storage	0.001^{+} (1.681)	0.001^{+} (1.683)	0.001^{+} (1.680)	0.001 (1.637)
Accommodation and food service activities	0.002* (2.256)	0.002* (2.255)	0.002* (2.256)	0.002* (2.192)
Information and communication	0.002^{+} (1.785)	0.002^{+} (1.787)	0.002^{+} (1.784)	0.002^{+} (1.752)
Financial and insurance activities	0.002^{+} (1.759)	0.002^{+} (1.759)	0.002^{+} (1.758)	0.002^{+} (1.690)
Real estate activities	0.000 (0.450)	0.000 (0.450)	0.000 (0.449)	0.000 (0.416)
Professional, scientific and technical activities	0.001 (1.381)	0.001 (1.382)	0.001 (1.366)	0.001 (1.346)
Administrative and support service activities	0.000 (0.463)	0.000 (0.462)	0.000 (0.462)	0.000 (0.418)

Table 4.21 Part four: Replication of Waddock and Graves (1997) and McWilliams and Siegel (2000) studies using scale coding

Dependent variable:	ROA	ROA	ROA	ROA
	Fixed effects regression			
	(55)	(56)	(57)	(58)
Public administration and defence; compulsory social security	0.001 (1.181)	0.001 (1.165)	0.001 (1.180)	0.001 (1.147)
Education	0.006^{+} (1.880)	0.006^{+} (1.880)	0.006^{+} (1.880)	0.006^{+} (1.870)
Human, health and social work activities	0.002^{+} (1.913)	0.002^{+} (1.915)	0.002^{+} (1.911)	0.002^{+} (1.872)
Arts, entertainment and recreation	-0.001 (-0.219)	-0.001 (-0.218)	-0.001 (-0.219)	-0.001 (-0.229)
Other service activities	0.002^{+} (1.709)	0.002^{+} (1.707)	0.002^{+} (1.709)	0.002^{+} (1.660)
Constant	0.041 (0.611)	0.041 (0.612)	0.042 (0.616)	0.044 (0.650)
F	5.077	4.919	4.953	4.915
Prob>F	0.000	0.000	0.000	0.000
R-Squared	0.081	0.081	0.081	0.081
Root MSE	0.081	0.081	0.081	0.081
Observations	5102	5102	5102	5102

t statistics in parentheses
$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4.22 Part one: Replication of Waddock and Graves (1997) and McWilliams and Siegel (2000) studies using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA
	Fixed effects regressions				
	(55)	(58)	(59)	(60)	(61)
CSP	-0.002**	-0.002**	-0.002**	-0.002**	-0.002**
	(-2.993)	(-2.917)	(-2.914)	(-2.947)	(-2.886)
Risk:					
DR	-0.229***	-0.229***	-0.229***	-0.229***	-0.230***
	(-4.147)	(-4.143)	(-4.149)	(-4.143)	(-4.133)
Size:					
lnTS	0.003	0.003	0.003	0.003	0.003
	(0.565)	(0.567)	(0.594)	(0.566)	(0.472)
Research & Development:					
ln(R&D)		-0.001	-0.001	-0.001	-0.001
		(-0.563)	(-0.531)	(-0.560)	(-0.679)
Intangibles:					
INT			-0.000*		
			(-1.975)		
INT intensity				-0.001	
				(-0.484)	
ln(INT)					0.002
					(1.212)
Year:					
2004	0.019**	0.019**	0.019**	0.019**	0.019**
	(3.132)	(3.135)	(3.132)	(3.134)	(3.136)
2005	0.027***	0.027***	0.027***	0.027***	0.026***
	(3.740)	(3.744)	(3.755)	(3.747)	(3.608)

Table 4.22 Part two: Replication of Waddock and Graves (1997) and McWilliams and Siegel (2000) studies using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA
	Fixed effects regressions				
	(55)	(58)	(59)	(60)	(61)
2006	0.036***	0.036***	0.037***	0.037***	0.035***
	(4.733)	(4.737)	(4.751)	(4.738)	(4.386)
2007	0.044***	0.044***	0.045***	0.044***	0.042***
	(5.600)	(5.601)	(5.632)	(5.607)	(5.029)
2008	0.022*	0.022*	0.023*	0.022*	0.020+
	(2.248)	(2.263)	(2.324)	(2.273)	(1.944)
2009	-0.001	-0.001	-0.000	-0.001	-0.004
	(-0.114)	(-0.098)	(-0.036)	(-0.089)	(-0.321)
2010	0.028**	0.028**	0.029**	0.028**	0.025**
	(2.989)	(3.012)	(3.081)	(3.019)	(2.629)
2011	0.028**	0.028**	0.029**	0.028**	0.025*
	(2.903)	(2.929)	(3.005)	(2.929)	(2.563)
2012	0.025*	0.025*	0.026**	0.025*	0.022*
	(2.530)	(2.551)	(2.629)	(2.559)	(2.172)
2013	0.020*	0.020*	0.021*	0.020*	0.017
	(1.987)	(2.002)	(2.075)	(1.999)	(1.613)
Industry CSP interaction:					
Mining and quarrying	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)
Manufacturing	0.001	0.001	0.001	0.001	0.001
	(1.273)	(1.257)	(1.240)	(1.276)	(1.262)

Table 4.22 Part three: Replication of Waddock and Graves (1997) and McWilliams and Siegel (2000) studies using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA
	Fixed effects regressions				
	(55)	(58)	(59)	(60)	(61)
Electricity, gas, steam and air conditioning supply	-0.000 (-0.105)	-0.000 (-0.136)	-0.001 (-0.146)	-0.000 (-0.131)	-0.001 (-0.217)
Water supply, sewerage, waste management and remediation activities	-0.000 (-0.205)	-0.000 (-0.245)	-0.000 (-0.215)	-0.000 (-0.221)	-0.000 (-0.315)
Construction	0.001 (1.113)	0.001 (1.088)	0.001 (1.063)	0.001 (1.111)	0.001 (0.984)
Wholesale and retail trade; repair of motor vehicles and motorcycles	0.001 (1.623)	0.001 (1.585)	0.001 (1.570)	0.001 (1.605)	0.001 (1.582)
Transportation and storage	0.001^{+} (1.681)	0.001 (1.637)	0.001 (1.620)	0.001^{+} (1.659)	0.001^{+} (1.681)
Accommodation and food service activities	0.002* (2.256)	0.002* (2.192)	0.002* (2.170)	0.002* (2.217)	0.002* (2.188)
Information and communication	0.002^{+} (1.785)	0.002^{+} (1.752)	0.002^{+} (1.733)	0.002^{+} (1.766)	0.002^{+} (1.741)
Financial and insurance activities	0.002^{+} (1.759)	0.002^{+} (1.690)	0.002^{+} (1.690)	0.002^{+} (1.701)	0.002^{+} (1.730)
Real estate activities	0.000 (0.450)	0.000 (0.416)	0.000 (0.396)	0.000 (0.434)	0.001 (0.516)

Table 4.22 Part four: Replication of Waddock and Graves (1997) and McWilliams and Siegel (2000) studies using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA
	Fixed effects regressions				
	(55)	(58)	(59)	(60)	(61)
Professional, scientific and technical activities	0.001 (1.381)	0.001 (1.346)	0.001 (1.335)	0.001 (1.368)	0.001 (1.375)
Administrative and support service activities	0.000 (0.463)	0.000 (0.418)	0.000 (0.404)	0.000 (0.439)	0.000 (0.451)
Public administration and defence; compulsory social security	0.001 (1.181)	0.001 (1.147)	0.001 (1.132)	0.001 (1.170)	0.001 (1.180)
Education	0.006+ (1.880)	0.006+ (1.870)	0.006+ (1.864)	0.006+ (1.875)	0.006+ (1.892)
Human, health and social work activities	0.002+ (1.913)	0.002+ (1.872)	0.002+ (1.868)	0.002+ (1.887)	0.002+ (1.894)
Arts, entertainment and recreation	-0.001 (-0.219)	-0.001 (-0.229)	-0.001 (-0.232)	-0.001 (-0.222)	-0.001 (-0.248)
Other service activities	0.002+ (1.709)	0.002+ (1.660)	0.002 (1.629)	0.002+ (1.680)	0.002+ (1.686)
Constant	0.041 (0.611)	0.044 (0.650)	0.042 (0.630)	0.044 (0.652)	0.033 (0.502)
F	5.077	4.915	4.963	5.007	4.771
Prob>F	0.000	0.000	0.000	0.000	0.000
R-Squared	0.081	0.081	0.082	0.081	0.082
Root MSE	0.081	0.081	0.081	0.081	0.081
Observations	5102	5102	5102	5102	5102

t statistics in parentheses
$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4.23 Part one: Dynamic fixed effects estimators using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA
	Fixed effects regressions									
	(62)	(63)	(64)	(65)	(66)	(67)	(68)	(69)	(70)	(71)
CSP	-0.002**	-0.002+	-0.003**	-0.003*	-0.003+	-0.002	-0.002	-0.002	-0.002	-0.005*
	(-2.993)	(-1.795)	(-2.710)	(-2.267)	(-1.703)	(-1.411)	(-1.020)	(-1.400)	(-0.688)	(-2.262)
CSP lagged:										
2003 CSP		-0.000								
		(-0.510)								
2004 CSP			-0.000							
			(-0.273)							
2005 CSP				-0.000						
				(-0.763)						
2006 CSP					-0.000					
					(-0.831)					
2007 CSP						-0.000				
						(-0.797)				
2008 CSP							-0.000			
							(-0.870)			
2009 CSP								-0.000		
								(-1.352)		
2010 CSP									-0.000	
									(-0.738)	
2011 CSP										0.000
										(1.450)

Table 4.23 Part two: Dynamic fixed effects estimators using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA
	Fixed effects regressions									
	(62)	(63)	(64)	(65)	(66)	(67)	(68)	(69)	(70)	(71)
Risk:										
DR	-0.229***	-0.255***	-0.263**	-0.217*	-0.204+	-0.312***	-0.343***	-0.280***	-0.258***	-0.354**
	(-4.147)	(-3.583)	(-3.096)	(-2.389)	(-1.876)	(-6.691)	(-6.887)	(-7.156)	(-5.223)	(-3.235)
Size:										
lnTS	0.003	0.008+	0.011**	0.013*	0.012+	0.005	0.008+	0.007*	0.009+	0.003+
	(0.565)	(1.931)	(2.622)	(2.511)	(1.785)	(1.504)	(1.856)	(2.577)	(1.942)	(1.681)
Year:										
2004	0.019**	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(3.132)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)
2005	0.027***	0.004	0.014+	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(3.740)	(0.984)	(1.892)	(.)	(.)	(.)	(.)	(.)	(.)	(.)
2006	0.036***	0.015*	0.021**	0.019**	0.000	0.000	0.000	0.000	0.000	0.000
	(4.733)	(2.557)	(3.100)	(2.613)	(.)	(.)	(.)	(.)	(.)	(.)
2007	0.044***	0.021***	0.030***	0.025***	0.025***	0.000	0.000	0.000	0.000	0.000
	(5.600)	(3.595)	(4.571)	(3.756)	(3.669)	(.)	(.)	(.)	(.)	(.)
2008	0.022*	-0.008	0.001	-0.005	-0.006	-0.000	0.000	0.000	0.000	0.000
	(2.248)	(-1.024)	(0.100)	(-0.663)	(-0.781)	(-0.022)	(.)	(.)	(.)	(.)
2009	-0.001	-0.025**	-0.020**	-0.025***	-0.027***	-0.026***	0.000	0.000	0.000	0.000
	(-0.114)	(-2.766)	(-3.013)	(-3.712)	(-3.837)	(-3.702)	(.)	(.)	(.)	(.)
2010	0.028**	-0.001	0.006	0.001	0.002	0.001	0.029***	0.000	0.000	0.000
	(2.989)	(-0.110)	(1.111)	(0.280)	(0.321)	(0.302)	(3.942)	(.)	(.)	(.)
2011	0.028**	0.001	0.006	0.005	0.002	0.001	0.027***	0.002	0.000	0.000
	(2.903)	(0.167)	(1.354)	(1.061)	(0.556)	(0.189)	(4.240)	(0.663)	(.)	(.)

Table 4.23 Part three: Dynamic fixed effects estimators using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA
	Fixed effects regressions									
	(62)	(63)	(64)	(65)	(66)	(67)	(68)	(69)	(70)	(71)
2012	0.025*	-0.001	0.006	0.005	0.005	0.002	0.030***	0.002	-0.001	0.000
	(2.530)	(-0.171)	(1.359)	(1.138)	(1.123)	(0.476)	(4.529)	(0.563)	(-0.216)	(.)
2013	0.020*	-0.008	0.000	0.000	0.000	0.000	0.028***	-0.001	-0.003	-0.004
	(1.987)	(-0.992)	(.)	(.)	(.)	(.)	(3.838)	(-0.326)	(-0.969)	(-1.252)
Mining and quarrying	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)
Manufacturing	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.003+	0.003	0.007**
	(1.273)	(1.135)	(1.621)	(1.293)	(1.110)	(1.272)	(0.917)	(1.703)	(1.072)	(3.121)
Electricity, gas, steam and air conditioning supply	-0.000	-0.002	0.001	0.000	-0.001	-0.004	0.009*	0.006**	0.004+	0.006**
	(-0.105)	(-1.062)	(0.259)	(0.234)	(-0.400)	(-1.103)	(2.533)	(3.009)	(1.679)	(2.980)
Water supply, sewerage, waste management and remediation activities	-0.000	-0.001	-0.000	-0.000	0.000	-0.000	-0.003	-0.003	-0.005+	-0.008
	(-0.205)	(-0.671)	(-0.172)	(-0.087)	(0.126)	(-0.122)	(-1.413)	(-1.072)	(-1.925)	(-0.628)
Construction	0.001	0.002	0.003*	0.003+	0.004	0.003	-0.003	0.002	0.003	0.007**
	(1.113)	(1.375)	(2.200)	(1.715)	(1.353)	(0.847)	(-0.694)	(1.168)	(1.323)	(3.177)
Wholesale and retail trade; repair of motor vehicles and motorcycles	0.001	0.002	0.003*	0.003*	0.003	0.002	0.001	0.002	0.001	0.008**
	(1.623)	(1.453)	(2.454)	(1.991)	(1.485)	(1.100)	(0.587)	(1.200)	(0.476)	(2.623)

Table 4.23 Part four: Dynamic fixed effects estimators using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA
	Fixed effects regressions									
	(62)	(63)	(64)	(65)	(66)	(67)	(68)	(69)	(70)	(71)
Transportation and storage	0.001^{+} (1.681)	0.001 (1.234)	0.003^{+} (1.811)	0.002 (1.288)	0.002 (0.982)	0.003 (1.349)	0.000 (0.268)	0.002 (0.800)	0.000 (0.093)	0.002 (0.321)
Accommodation and food service activities	0.002* (2.256)	0.003* (2.199)	0.004** (2.928)	0.004* (2.467)	0.003^{+} (1.729)	0.003 (1.614)	0.003 (1.509)	0.005* (2.139)	0.004 (1.459)	0.007** (2.680)
Information and communication	0.002^{+} (1.785)	0.002 (1.511)	0.003^{+} (1.701)	0.002 (1.174)	0.002 (0.866)	0.002 (0.901)	-0.001 (-0.364)	0.001 (0.452)	-0.002 (-0.561)	0.001 (0.442)
Financial and insurance activities	0.002^{+} (1.759)	0.002^{+} (1.830)	0.004** (2.968)	0.005* (2.548)	0.004* (2.215)	0.002 (1.217)	0.002 (0.970)	0.003^{+} (1.683)	0.002 (0.973)	0.005* (2.128)
Real estate activities	0.000 (0.450)	-0.000 (-0.103)	0.001 (0.660)	0.001 (0.707)	0.002 (0.769)	0.002 (0.524)	-0.004 (-0.761)	0.004^{+} (1.894)	0.002 (0.840)	0.006^{+} (1.959)
Professional, scientific and technical activities	0.001 (1.381)	0.001 (0.504)	0.002^{+} (1.700)	0.002 (1.302)	0.002 (1.216)	0.002 (1.310)	0.002 (1.098)	0.004^{+} (1.779)	0.006 (1.305)	0.004 (1.546)
Administrative and support service activities	0.000 (0.463)	0.000 (0.250)	0.001 (1.018)	0.001 (0.729)	0.001 (0.560)	0.001 (0.389)	0.000 (0.259)	0.001 (0.303)	0.000 (0.057)	0.004 (1.447)

Table 4.23 Part five: Dynamic fixed effects estimators using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA
	Fixed effects regressions									
	(62)	(63)	(64)	(65)	(66)	(67)	(68)	(69)	(70)	(71)
Public administration and defence; compulsory social security	0.001 (1.181)	0.001 (0.560)	0.002 (1.229)	0.001 (0.454)	0.001 (0.433)	-0.000 (-0.098)	-0.007 (-1.327)	0.001 (0.549)	0.004 (1.415)	0.007* (1.973)
Education	0.006+ (1.880)	0.006+ (1.701)	0.008+ (1.709)	0.012 (1.614)	0.012+ (1.679)	0.014* (1.985)	0.021*** (4.956)	0.042*** (13.414)	-0.013 (-0.693)	0.006* (2.455)
Human, health and social work activities	0.002+ (1.913)	0.003* (2.154)	0.003* (2.224)	0.003 (1.379)	0.005* (2.139)	0.035*** (9.316)	0.000 (.)			
Arts, entertainment and recreation	-0.001 (-0.219)	-0.002 (-0.996)	0.001 (0.338)	0.002 (0.772)	-0.002 (-1.138)	-0.005 (-1.301)	-0.005 (-0.678)	0.000 (.)	0.000 (.)	0.000 (.)
Other service activities	0.002+ (1.709)	0.001 (0.473)	0.003** (2.740)	0.002 (0.655)	-0.001 (-0.232)	0.000 (0.050)	-0.005 (-0.688)	0.007+ (1.866)	0.005 (0.473)	-0.003 (-1.028)
Constant	0.041 (0.611)	-0.001 (-0.014)	-0.035 (-0.628)	-0.068 (-0.968)	-0.059 (-0.638)	0.051 (0.968)	0.027 (0.471)	0.016 (0.426)	-0.011 (-0.187)	0.079* (2.449)
F	5.077	5.431	5.234	28.712	5.443	.	5.766	17.368	.	.
Prob>F	0.000	0.000	0.000	0.000	0.000	.	0.000	0.000	.	.
R-Squared	0.081	0.103	0.132	0.122	0.113	0.131	0.163	0.206	0.149	0.230
Root MSE	0.081	0.073	0.067	0.064	0.064	0.056	0.051	0.028	0.024	0.019
Observations	5102	4235	3497	2860	2362	1927	1505	1115	775	497

t statistics in parentheses
+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4.24 Part one: Dynamic fixed effects estimators using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA
	Fixed effects regressions									
	(62)	(72)	(73)	(74)	(75)	(76)	(77)	(78)	(79)	(80)
CSP	-0.002** (-2.993)	-0.002+ (-1.906)	-0.003** (-2.691)	-0.003* (-2.221)	-0.003+ (-1.753)	-0.002 (-1.446)	-0.002 (-1.001)	-0.003 (-1.429)	-0.001 (-0.596)	-0.005* (-2.232)
CSP lagged:										
2003 CSP		-0.000 (-0.323)								
2004 CSP			-0.000 (-0.310)							
2005 CSP				-0.000 (-0.805)						
2006 CSP					-0.000 (-0.902)					
2007 CSP						-0.000 (-0.921)				
2008 CSP							-0.000 (-0.934)			
2009 CSP								-0.000 (-1.310)		
2010 CSP									-0.000 (-0.825)	
2011 CSP										0.000 (1.475)

Table 4.24 Part two: Dynamic fixed effects estimators using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA
	Fixed effects regressions									
	(62)	(72)	(73)	(74)	(75)	(76)	(77)	(78)	(79)	(80)
ROA lagged:										
2003 ROA		0.112*								
		(2.577)								
2004 ROA			-0.038							
			(-0.962)							
2005 ROA				-0.033						
				(-1.271)						
2006 ROA					-0.053*					
					(-2.316)					
2007 ROA						-0.051				
						(-1.389)				
2008 ROA							-0.028			
							(-0.961)			
2009 ROA								0.016		
								(0.653)		
2010 ROA									-0.055+	
									(-1.744)	
2011 ROA										0.014
										(0.320)
Risk:										
DR	-0.229***	-0.243***	-0.261**	-0.216*	-0.201+	-0.308***	-0.340***	-0.280***	-0.256***	-0.352**
	(-4.147)	(-3.503)	(-3.116)	(-2.374)	(-1.855)	(-6.485)	(-6.751)	(-7.130)	(-5.218)	(-3.218)

Table 4.24 Part three: Dynamic fixed effects estimators using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA
	Fixed effects regressions									
	(62)	(72)	(73)	(74)	(75)	(76)	(77)	(78)	(79)	(80)
Size:										
lnTS	0.003	0.008^{+}	0.011**	0.013*	0.012^{+}	0.005	0.007^{+}	0.007*	0.009^{+}	0.003
	(0.565)	(1.924)	(2.645)	(2.575)	(1.814)	(1.432)	(1.834)	(2.569)	(1.894)	(1.649)
Year:										
2004	0.019**	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(3.132)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)
2005	0.027***	0.002	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(3.740)	(0.332)	(1.642)	(.)	(.)	(.)	(.)	(.)	(.)	(.)
2006	0.036***	0.011^{+}	0.021**	0.018*	0.000	0.000	0.000	0.000	0.000	0.000
	(4.733)	(1.839)	(3.006)	(2.471)	(.)	(.)	(.)	(.)	(.)	(.)
2007	0.044***	0.016**	0.030***	0.025***	0.025***	0.000	0.000	0.000	0.000	0.000
	(5.600)	(2.769)	(4.506)	(3.724)	(3.692)	(.)	(.)	(.)	(.)	(.)
2008	0.022*	-0.014^{+}	0.001	-0.005	-0.004	-0.001	0.000	0.000	0.000	0.000
	(2.248)	(-1.731)	(0.161)	(-0.656)	(-0.582)	(-0.180)	(.)	(.)	(.)	(.)
2009	-0.001	-0.028**	-0.019**	-0.024***	-0.025***	-0.025***	0.000	0.000	0.000	0.000
	(-0.114)	(-3.257)	(-2.875)	(-3.680)	(-3.694)	(-3.682)	(.)	(.)	(.)	(.)
2010	0.028**	0.000	0.005	0.002	0.004	0.002	0.030***	0.000	0.000	0.000
	(2.989)	(0.021)	(0.986)	(0.398)	(0.767)	(0.492)	(4.115)	(.)	(.)	(.)
2011	0.028**	-0.002	0.005	0.005	0.005	0.002	0.029***	0.001	0.000	0.000
	(2.903)	(-0.293)	(1.022)	(0.953)	(1.219)	(0.553)	(4.415)	(0.492)	(.)	(.)
2012	0.025*	-0.005	0.006	0.004	0.006	0.004	0.031***	0.002	0.001	0.000
	(2.530)	(-0.634)	(1.358)	(0.883)	(1.310)	(1.034)	(4.715)	(0.420)	(0.275)	(.)

Table 4.24 Part four: Dynamic fixed effects estimators using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA
	Fixed effects regressions									
	(62)	(72)	(73)	(74)	(75)	(76)	(77)	(78)	(79)	(80)
2013	0.020*	-0.011	0.000	0.000	0.000	0.000	0.029***	-0.002	-0.001	-0.004
	(1.987)	(-1.515)	(.)	(.)	(.)	(.)	(4.004)	(-0.476)	(-0.453)	(-1.335)
Industry CSP interaction:										
Mining and quarrying	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)
Manufacturing	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.004+	0.003	0.007**
	(1.273)	(1.131)	(1.633)	(1.281)	(1.159)	(1.277)	(0.913)	(1.711)	(1.050)	(3.082)
Electricity, gas, steam and air conditioning supply	-0.000	-0.002	0.001	0.000	-0.001	-0.005	0.009*	0.006**	0.005+	0.007**
	(-0.105)	(-1.099)	(0.272)	(0.131)	(-0.434)	(-1.343)	(2.467)	(3.047)	(1.945)	(2.827)
Water supply, sewerage, waste management and remediation activities	-0.000	-0.001	-0.000	-0.000	0.000	-0.000	-0.004	-0.003	-0.006*	-0.007
	(-0.205)	(-0.671)	(-0.138)	(-0.077)	(0.197)	(-0.055)	(-1.532)	(-0.972)	(-2.327)	(-0.606)
Construction	0.001	0.002	0.003*	0.003+	0.004	0.003	-0.003	0.002	0.003	0.008**
	(1.113)	(1.531)	(2.137)	(1.687)	(1.418)	(0.826)	(-0.733)	(1.208)	(1.255)	(3.131)
Wholesale and retail trade; repair of motor vehicles and motorcycles	0.001	0.002	0.003*	0.003+	0.003	0.002	0.001	0.002	0.001	0.008*
	(1.623)	(1.556)	(2.430)	(1.938)	(1.513)	(1.135)	(0.560)	(1.226)	(0.390)	(2.585)

Table 4.24 Part five: Dynamic fixed effects estimators using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA
	Fixed effects regressions									
	(62)	(72)	(73)	(74)	(75)	(76)	(77)	(78)	(79)	(80)
Transportation and storage	0.001^{+} (1.681)	0.002 (1.339)	0.003^{+} (1.814)	0.002 (1.264)	0.002 (0.957)	0.002 (1.288)	0.000 (0.234)	0.002 (0.848)	-0.000 (-0.013)	0.002 (0.304)
Accommodation and food service activities	0.002* (2.256)	0.003* (2.309)	0.004** (2.891)	0.004* (2.420)	0.003^{+} (1.775)	0.003^{+} (1.661)	0.002 (1.507)	0.005* (2.153)	0.004 (1.403)	0.007** (2.652)
Information and communication	0.002^{+} (1.785)	0.002 (1.412)	0.003^{+} (1.711)	0.002 (1.158)	0.002 (0.881)	0.003 (0.961)	-0.001 (-0.373)	0.001 (0.499)	-0.002 (-0.726)	0.001 (0.480)
Financial and insurance activities	0.002^{+} (1.759)	0.002* (1.966)	0.004** (2.929)	0.004* (2.523)	0.004* (2.266)	0.002 (1.265)	0.002 (0.982)	0.003^{+} (1.699)	0.002 (0.855)	0.005* (2.104)
Real estate activities	0.000 (0.450)	0.000 (0.051)	0.001 (0.644)	0.001 (0.683)	0.002 (0.774)	0.002 (0.523)	-0.004 (-0.752)	0.004^{+} (1.928)	0.002 (0.602)	0.006^{+} (1.961)
Professional, scientific and technical activities	0.001 (1.381)	0.001 (0.490)	0.002^{+} (1.685)	0.002 (1.271)	0.002 (1.268)	0.002 (1.341)	0.002 (1.089)	0.004^{+} (1.805)	0.006 (1.284)	0.004 (1.539)
Administrative and support service activities	0.000 (0.463)	0.000 (0.282)	0.001 (0.995)	0.001 (0.707)	0.001 (0.594)	0.001 (0.465)	0.000 (0.264)	0.001 (0.316)	0.000 (0.162)	0.004 (1.442)

Table 4.24 Part six: Dynamic fixed effects estimators using scale coding

Dependent variable:	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA
	Fixed effects regressions									
	(62)	(72)	(73)	(74)	(75)	(76)	(77)	(78)	(79)	(80)
Public administration and defence; compulsory social security	0.001 (1.181)	0.001 (0.535)	0.002 (1.222)	0.001 (0.434)	0.001 (0.477)	-0.000 (-0.112)	-0.007 (-1.342)	0.002 (0.589)	0.004 (1.360)	0.007* (1.979)
Education	0.006+ (1.880)	0.006+ (1.663)	0.008+ (1.720)	0.012 (1.627)	0.013+ (1.697)	0.014* (1.979)	0.021*** (4.920)	0.042*** (13.267)	-0.012 (-0.691)	0.006* (2.376)
Human, health and social work activities	0.002+ (1.913)	0.003* (2.162)	0.003* (2.136)	0.003 (1.324)	0.005* (2.134)	0.034*** (9.305)	0.000 (.)			
Arts, entertainment and recreation	-0.001 (-0.219)	-0.003 (-1.367)	0.001 (0.434)	0.002 (0.857)	-0.002 (-0.774)	-0.006 (-1.557)	-0.005 (-0.660)	0.000 (.)	0.000 (.)	0.000 (.)
Other service activities	0.002+ (1.709)	0.001 (0.483)	0.004** (2.731)	0.002 (0.682)	-0.001 (-0.215)	0.000 (0.101)	-0.005 (-0.683)	0.007+ (1.940)	0.005 (0.491)	-0.003 (-0.976)
Constant	0.041 (0.611)	0.001 (0.014)	-0.037 (-0.653)	-0.068 (-0.989)	-0.058 (-0.642)	0.057 (1.077)	0.028 (0.500)	0.018 (0.466)	-0.014 (-0.224)	0.077* (2.333)
F	5.077	6.829	5.295	18.885	4.917	.	5.676	16.615	.	.
Prob>F	0.000	0.000	0.000	0.000	0.000	.	0.000	0.000	.	.
R-Squared	0.081	0.115	0.133	0.123	0.116	0.135	0.164	0.206	0.159	0.231
Root MSE	0.081	0.072	0.067	0.064	0.064	0.056	0.051	0.028	0.024	0.019
Observations	5102	4235	3497	2860	2362	1927	1505	1115	775	497

t statistics in parentheses
+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$