The Effects of Country of Origin Image and Patriotism on British Consumers' Preference for Domestic and Imported Beef

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Abstract

This article surveys British consumers' preference for domestic and imported beef identified by country of origin labels (COOLs). Like previous studies related to COOL, we found a strong preference for domestic beef. Furthermore, the factors influencing such preference were examined. Using consumer patriotism and country of origin image perception, we found that stronger preference against imports was linked to higher perceived level of patriotism of the respondents toward their country, while better country of origin image improved the likelihood of the foreign country's beef being selected.

Keywords:

Country of Origin Label, Country of Origin Image, Consumer Patriotism, Choice experiment, Willingness-to-Pay for Beef, Mixed Logit model

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Introduction

Food labeling is a much researched area in the marketing and policy literature. Food labels do not only convey information about specific product characteristics but also serve as signals for certain quality and credence attributes. Branding and labeling of food products is also used a mean to differentiate products in the market place (Altmann 1997) and thereby influence consumer decision making. One such highly debated label is the country of origin label (COOL). Proponents of the COOL scheme often refer to consumers' right to know where their food comes from. Others suggest that COOL also serves as an extrinsic cue for other quality information (Bilkey and Nes 1982). It has been argued that attaching such a label to food products is utility and welfare enhancing. COOL requirements have been mandated in the European Union (EU) member states since 2000 and were also recently required by the United States (U.S.).

However, opponents of the policy, from a trade and competition perspective, argue that COOL is used as a disguise for protectionism policy. It contributes to the anti-free trade movement when products labeled as imports are subject to consumption bias due to consumer ethnocentrism or patriotism. While consumption of domestically produced products is promoted and encourage as being patriotic, foreign made goods are faced with disadvantage. Consumer's consumption decisions have been shown to be affected by their ethnocentrism preference (Han 1988). The term was adapted from the general concept which refers to the tendency of giving the superior value to things from one's own group and rejecting those of outgroups (Sumner, 1906). In consumer economics in particular, such belief can also shape "the appropriateness, indeed morality, of purchasing foreign-made products" (Shimp and Sharma 1987, p.280). The term 'consumer ethnocentrism' has also evolved in the marketing literature to describe consumer preference based on loyalties or patriotism to their own country.

Although COOL exerts influence in consumers' product choice through ethnocentrism and/or patriotism, the marketing literature also suggests that country of origin (COO) can be capitalized to improve preference for foreign products, through relative quality evaluation effect. Often termed COO images in the international marketing literature, they refer to consumer's perceptions of relative quality of foreign produced goods as opposed to domestic products (Bilkey 1993). It is argued that exporting countries can make good use of desirable COO images to boost preference for goods made abroad.

Recent studies in the agricultural economic literature have investigated the effects of COOL and confirmed the preference for domestic beef in the presence of COOL across countries. Consumers in the EU and the U.S. were found to be willing to pay significant and positive premiums for COO labeled domestic beef (Alfnes and Rickertsen 2003; Loureiro and Umberger 2003, 2005 and 2007). However, the literature is lacking with regard to the investigation of the factors which influence such consumer preference. This article aims to contribute to the literature by closing this gap. The objective of this study is to investigate some of the possible factors influencing consumer preference for food product bearing COOL. Specifically, we examine the effects of patriotism and COO images on British consumers' choice preference for domestic and imported beef, using a choice experiment.

The article proceeds with a brief background on beef consumption and industry regulation in the U.K. and relevant literature review on the importance of country of origin label. Following that, the econometric method is briefly discussed. Then, survey and experimental design is presented. Description of the collected data is provided next, before the discussion of model estimation results. Finally, the article is concluded with a discussion of the important findings.

U.K. Beef Consumption and Imports

The British consume an average 104g of beef and veal per week per person in 2012, substantially down from the 189g weekly average in 1974 (Department of Environment, Food and Rural Affairs, 2013b). Although its consumption has seen steady decline since the 1980s, beef remains the second most consumed animal protein in the United Kingdom (U.K.). In recent years, U.K. has remained one of the largest beef importing countries in the EU. Domestic beef industry was hard hit by the Bovine Spongiform Encephalopathy (BSE) crisis which began in March 1996 when the Minister of Health admitted a probable link between BSE and variant Creutzfeldt-Jakob disease (vCJD). The crisis has sharply reduced British domestic beef production, which remained below its pre-crisis level. From 2000 to 2012, the country produced on average about 800 thousand tons[1] of beef compared to about 973.4 thousand tons before the BSE shock. Over the years import has risen steadily, averaging 232.8 thousand tons. In 2012, total imports recorded 236.2 thousand tons, valued at £866.7 million (Department of Environment, Food and Rural Affairs, 2013a).

Country of Origin Label

Britain adopts an European Community (EC) wide beef labeling system, which was passed by the European Parliament and the Council of Agricultural Ministers in 2000 (Regulation 1760/2000/EC). The regulation, effective since January 2002, has obliged the beef industry to a compulsory system that requires labeling of the specific country of birth, rearing and slaughter of the animal, and also the specific country where the meat was cut, on all pre-packaged beef (except cooked and processed beef) on sales in the EC (Rural Payment Agency 2014).

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[1] In dressed carcass weight

COOL was proposed along the traceability system as a policy instrument to correct market inefficiency by restoring public confidence in the bovine industry following the instability caused by the BSE crisis across the EU countries. It is welfare enhancing if consumers derive utilities directly from the information of product origin. Numerous past studies have documented consumer preference for labeled domestic beef across countries (Alfnes and Rickertsen 2003; Loureiro and Umberger 2003, 2005 and 2007). Nonetheless, the reasons why consumers form such desire for COOL have been inadequately addressed. As Lusk et al (2006) argued, COOL may in contrast harms society welfare if other factors, such as consumer ethnocentrism, are the driving force for the supports of the label. The reason is that such sentiment contributes to protectionism and antitrade, which prevent the maximum welfare outcome which would have otherwise generated from the free market regime.

COOL creates competitive advantage for domestically produced product because consumer tends to be influenced by nationalism effects, a synonymous term to consumer ethnocentrism tendency. Consumers who have high national loyalty and pride in their nation biasedly favor goods produced at home country (Darling and Kraft 1977; Han 1988). Consumers' high patriotism often subject imported products to disadvantage when their qualities are comparable to those produced domestically. To the extreme, domestic products, even with lower quality, is chosen over foreign imports (Wall and Heslop 1986; Sharma, Shimp and Shin 1995). Previous research has also provided evidence of the positive link between the effectiveness COOL and consumer patriotism (Pecotich and Rosenthal 2001).

Although COO appears to put products made abroad at a disadvantage, another stream of marketing literature has advocated for better understanding of COO image and improving and capitalizing it to the exporters' benefit. One of the earliest conceptualizations of the COO image

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was that of Nagashima (1970, p. 68), which defined it as "the picture, the reputation, the stereotype" attached to products of a specific country and "created by such variables as representative products, national characteristics, economic and political background, history, and traditions". Recent review by Roth and Diamantopoulos (2009) has categorized the abundant definitions of COO image in the literature into three distinct groups: (1) general country images, (2) product-country images (the image of both countries *and* their products), and (3) product images.

The general country image class of definitions focuses chiefly on the role of the image of origin countries. It was proposed that COO images are influenced by the consumers' perceptions of the similarity between home and the origin countries (Han 1990). Papadopoulos, Heslop, and Bamosy (1989) also suggested that the cognitive, affective to conative responses to people from the origin countries shape COO images. However, there has been no one universally consensus measure to quantify consumers' COO perception.

For the arguably important role of COO images in consumers' product evaluation, previous research has attempted to dissect their formation and develop refined measures to conceptualize and quantify them. Parameswaran and Yaprak (1987) proposed measuring COO images as a multifaceted construct. They identified General Country Attribute (GCA) as one of the most important facets, which is related to the overall perceptions about a particular origin country. Parameswaran and Pisharodi (1994; 2002) developed and validated a more refined identification of the construct. They have shown that GCA image evaluation can be decomposed further into two sub-dimensions. One can be represented by cognition and affect—people facet, and the other by conation—similarity facet (economic, political, and cultural similarity between their home country and the origin country).

Another class of the definitions of COO image—product-country images (PCI)—considers not only the effects of origin countries but also those of representative products (Knight and Calantone 2000; Papadopoulos and Heslop 2003). Li, Fu, and Murray (1998) defined the COO effect as both country and product images. Papadopoulos and Heslop (2003) summarized seven PCI constructs along which consumers form their views about a product. These include a nation's level of advancement, feelings about its people, desire for closer links with the country, product quality, price, the level of availability of the country's products, and overall satisfaction with the products. The third class of definition is not discussed here as it focuses more on product rather than country image.

Previous research in the marketing literature has shown positive and significant effect of COO image on purchase intention (Han 1990). Peterson and Jolibert (1995) provided a meta-analysis of COO. After accounting for 15 different study characteristics, they showed that COO effect size existed on product quality perception and also purchase intention. However, the majority of the studies on the impact of COO image have so far only focused on high-involvement and non-food products. This same is also true regarding the studies of consumer ethnocentrism or patriotism. This study, therefore, aims to fill the void by investigating both the effects of patriotism and COO image on a food product. Using a stated preference study, consumer's preference for beef with the presence of COOL was investigated. The effects of patriotism and COO image were examined as two potential factors shaping such preference. We briefly establish the theoretical framework and economic foundation in the succeeding section, before describing the experimental and survey design and the collected data.

Econometric Models

Following Lancaster (1966)'s concept that utilities of a product are derived from its bundle of attributes, a random utility theory can be used as a framework to analyze consumer's choice. A linear function of product attributes X_{ijn} can be used to model consumer i's utility (U_{ijn}), from choosing the j-th product (j=1, 2 or 3) in the n-choice situation (n=1, 2 or 3) as (McFadden 1974):

(1) $U_{ijn} = X_{ijn}\boldsymbol{\beta} + \varepsilon_{ijn}$,

where $\boldsymbol{\beta}$ denotes a vector of unknown part-worth utilities generated from product attributes X_{ijn} of the alternative j in choice situation n, and ε_{ijn} is the random error component of the utilities.

Rational consumer i maximize their utilities by choosing alternative j in the n-choice situation only when j provides the highest utilities compared to the other options available (McFadden, 1974). Given the independently and identically distribution (*iid*) of error term (ε_{ijn}) and the Independence of Irrelevant Alternatives (IIA) assumptions, the probability of the j-th option being selected can be modeled using a conditional logit (CL) choice model as follow:

(2) $P(Y_{in} = j) = \dfrac{\exp(X_{ijn}\boldsymbol{\beta})}{\sum_{j=1}^{J} \exp(X_{ijn}\boldsymbol{\beta})}$ for $j = 1, 2, \dots, J$,

where Y_{in} is an indicator variable indicating the option chosen by consumer i in the n-choice situation.

The mixed logit (ML) or random parameter logit (RPL) model proposed by Train (1998) provides another popular alternative to approximate random utility model. The more flexible model relaxes IIA assumption and allows parameter estimates to vary across individuals and thus permits the examination of the heterogeneity in preference (Hensher, Rose and Greene 2005; Train 2009). The choice probability is instead modeled as:

(3) $P(Y_{in} = j) = \int \frac{\exp(X_{ijn}\boldsymbol{\beta})}{\sum_{j=1}^{J}\exp(X_{ijn}\boldsymbol{\beta})} f(\boldsymbol{\beta})d\boldsymbol{\beta}.$

where the coefficients in vector $\boldsymbol{\beta}$ are defined as random variables following density function $\mathbf{f}$:

(4) $\boldsymbol{\beta} \sim f(\boldsymbol{\beta_0}, \mathbf{G}),$

with $\boldsymbol{\beta_0}$ as the means of $\boldsymbol{\beta}$, and $\mathbf{G}$ as the variance matrix.

The ML model is estimated using a simulated maximum likelihood approach that approximates the likelihood function (Train 2009). The models were estimated using *Nlogit 5* (Econometric Software, Inc. 2012) with the use of Halton draws with 500 simulations for the ML model. Willingness to pay measure for an attribute k can then be calculated as the part-worth utility estimate for the attribute divided by the negative of the marginal utility of price (Louviere, Hensher and Swait 2000):

(5) $WTP_k = -\frac{\beta_k}{\beta_{price}}.$

Experimental and Survey Design

The study employs a choice experiment to elicit consumer preference for a host of credence attributes of beef denoted by different labels attached to the retail packages. Its use is appropriate based on the assumption that consumers usually evaluate products using combined information on multiple product attributes (Green & Srinivasan 1978). The consumers in the study were presented with different choice scenarios and asked to make purchase of beef as if they were shopping in their usual grocery store. Each choice situation consists of two alternative packaged cuts of beef, equally weighted. As suggested by Hensher, Rose and Greene (2005) the consumers were also allowed to choose a third option—buying none of the two packages (Figure 1). Detailed instructions were given preceding the choice experiment, asking the consumers to

choose one of the three options provided in each scenario and not to compare options across situations.

Although the primary objective of the study concerns the investigation of consumer preference for beef with different country of origin, the other attributes important to beef consumers were also included in the design to avoid single-cue bias generally associated with the evaluation of COOL effect (Bilkey and Nes 1982; Peterson and Jolibert, 1995). The design of the beef package profiles were based on the following five characteristics: (a) Price, and the presence or absence of labels concerning (b) food standards and assurance, (c) growth hormones, and (d) quality and (e) a mandatory label of country of origin. Table 1 presents the attributes used and their levels and provides the description for each respective level label.

Based on the prevailing prices in the local groceries, six levels of prices were used in the design. The prices were calculated as per 0.375 kilograms net weight of the beef cut. The price range of £4.88 to £8.82 was used as the low-end price and high-end price of differentiated beef possibly observed in the U.K. groceries during the survey. For full reference, per kilogram prices were also printed alongside. Besides the price label, each package profile contains up to four other different labels.

The Red Tractor Assurance is an independent food assurance scheme implemented in Britain, launched by the National Farmers' Union of England and Wales (NFU) in June 2000 in the wake of the BSE crisis. The logo covers a wide range of production standards, including safety and traceability, hygiene, animal welfare and environment protection related (Assured Food Standards 2014).The package bearing the logo indicates that the food product is certified by the assurance organization. The second label containing the words 'No growth hormones' is a label signifies that no growth promotants of any kind have been used in cattle rearing production.

The third 'Gourmet' label is used on some beef products, e.g., in Germany. It serves as a claim that the beef is guaranteed to be of premium quality, although without being certified. Hence, it is a purely promotional label. On the other hand, for a diversified geographical representation, six countries of origin, both European and non-European nations, were incorporated into the product origin label. Unlike other labels, the 'No label' level was not used. This is to accommodate for the compulsory country of origin system enacted in the U.K. and EU in general. A sample of beef packages is presented in figure 1.

Given the six categories of attributes and their levels as reported in table 1, a total of 36 product profiles were generated using a random parameter efficient panel design with 3 blocks containing 12 choice sets each. The survey instrument was designed in three major parts. In part one of the questionnaire, the respondents were presented with 12 choice scenarios, each with three choice alternatives (figure 1). The presentation of the choice sets was randomized. Following the choice experiment questions, in the second part the respondents were asked to rate their level of patriotism to their country—Great Britain, on a seven-point Likert scale, ranging from 1 (Not at all) to 7 (Very much). Furthermore, they were asked to evaluate a number of statements concerning their attitudes and feeling toward one of the origin countries—Canada. All statements were measured on a Likert scale from 1 (Not at all appropriate) to 10 (Most appropriate). Among them, 12 validated scales were adapted from the General Country Attribute (GCA) measures proposed by Parameswaran and Pisharodi (1994) as a proxy for COO image. In addition, the seven dimensions proposed by Papadopoulos and Heslop (2003) were also assessed. The two groups of statement made up a total of 19 items. The last part of the questionnaire records the respondents' socio-demographic information, including gender, age, household size, education and annual household income level before tax.

Data

A preliminary survey was pre-tested before the final survey was conducted. The choice

experiment was delivered in an online survey in the fall of 2013, administered by a reputable

international marketing research company TNS. Frequent beef shoppers aged 18 and over in the

Great Britain were randomly selected and surveyed. A total of 402 respondents completed the

survey. Table 2 compares the sample demographic statistics to the Great Britain 2011 population

census distribution with respect to gender, age, education and income. The sample has 52.7% of

female respondents, with a mean age of 48 years old. Most had at least a technical college

diploma, having an average annual household income of slightly less than £26,000.

Overall, the sample includes insignificantly more female respondents ($P = 0.46$).

However, the sample displayed significant departure from the population in terms of age,

education and annual household income distribution, as indicated by the χ^2 statistics. The

youngest age group (18 to 29 years old) was considerably under-sampled, while people aged 70

years and over were over represented. On the other hand, the sample also largely underrepresents

family with annual income over £50,000. To achieve better representation for the population in

the absence of multilevel cross-tabulation of the census data, the data estimation was weighted

only against income, since it is more relevant with consumption of goods and has higher

potential implication for WTP estimates.

Results

The data collected consist of 402 observations. Before estimating the empirical econometric

models, a Confirmatory Factor Analysis (CFA) was performed in order to evaluate the constructs

of the COO image. The COO image score, along with the patriotism level, were then

incorporated into the final choice models. Finally, the choice data containing a total of 4,696 choice sets were estimated for both the CL and ML models. The succeeding subsections present results from the CFA, the econometric model estimation, and the derived WTP measures.

Confirmatory Factor Analysis

Table 3 provides summary statistics for the 19 items used to assess British consumers' COO image on Canada. The first twelve scale items are the refined and validated measures of GCA from Parameswaran and Pisharodi (1994), and the last seven items are the dimensions proposed by Papadopoulos and Heslop (2003). The overall reliability and internal consistency of the scale measurement is acceptably high, as reflected by a Cronbach Alpha of 0.965 (Cronbach 1951). In general, the respondents expressed only slightly above average evaluation across the measures. The friendliness and likability of the Canadians and having positive feelings toward the people from Canada were the most strongly agreed statements. The last three items, related to the evaluation of products from Canada in terms of prices, availability and prior satisfaction, were the lowest rated. This seems to reflect a low exposure to Canadian products among the consumers in the U.K.

The data on COO image items were analyzed using a CFA, a commonly used method in Structural Equation Modelling (Bollen, 1989) to measure unobservable latent construct from observable variables. The motivation to use CFA as a modelling tool was two-fold. First, the desirable property of CFA over Exploratory Factor Analysis or Principal Component Analysis is its theoretical underpinnings. As demonstrated in Parameswaran and Pisharodi (1994), COO image can be modeled using smaller number of latent constructs from the many validated scales. Therefore, based on the theoretical foundation proposed, the relationship between the

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observed indicators and the latent constructs can be specified in advance and later tested through model specification. Second, representing the numerous items in less latent variables also reduces the complexity of the econometric models and yields more meaningful interpretation.

Two latent variables, denoted *People* and *Similarity* facets, were specified according to Parameswaran and Pisharodi (1994) to include seven and three items from the 12 items respectively. The third latent variable, *Product* facet, was specified using only two of Papadopoulos and Heslop (2003)'s seven dimensions. A few other items from the last seven scales were eliminated due to their high similarity with the other 12 items.

Results from the CFA reported in table 3 show a very good fit of the proposed model to the data. The standardized factor loadings range from 0.71 to 0.92, with most of the loadings being close to 0.84. Although the Chi-Square test statistic, which is sensitive to large sample, showed significant difference, other commonly used fit statistics all indicated otherwise. The Standardized RMR (SRMR) and RMSEA Estimate were both bellow the suggested cut-off values of 0.05 and 0.08, respectively. The GFI and AGFI also showed acceptably good fit. Furthermore, all of the incremental fit indices were above the recommended 0.95 cut-off value (CFI, Bentler, 1990; NFI and NNFI, Bentler and Bonett, 1980; TLI, Tucker and Lewis, 1973; RFI, Bollen, 1986; Jöreskog and Sörbom, 1993). Consistent with the measured single scales, the extracted latent variables also suggest an above average of evaluation on the Canadians' *People* facet, moderate on the *Similarity* facet, and below average on the *Product* facet.

Part-worth Utilities

All part-worth utility parameters in the ML model, except price, were assumed to be random and normally distributed. The coefficient of price variable is specified as fixed to avoid any

unrealistic positive value arose from the normal distribution. The other attractive property of a nonrandom price variable specification in the model is the convenience in calculating WTP measures. Each calculated WTP measure's distribution in that case simply has the same distribution as that of the variable it is computed from (Train 2009).

The result presented in table 4 shows that the ML model exhibited very good fit to the data, as indicated by McFadden's pseudo R^2 of 0.421 (Louviere, Hensher and Swait 2000). In comparison, the pseudo R^2 in the CL model is comparatively low. However, the estimates all had signs as expected and were also consistent across models. Nevertheless, the proceeding discussion will be based on the ML model, as it revealed more information about heterogeneity in consumer tastes.

The coefficient of price was negative and highly significant, which showed that the higher the price of the beef was, the lower the utility the consumer derived from the option and the less likely the beef would be selected. A binary variable 'Buy_none' was included in the model, representing the choice situation when option C 'I choose none of these' in the choice set was selected. The mean estimate of this variable was also negative and highly significant. This implies that the utility from purchasing none is lower compared to the utility levels from purchasing most of the beef packages. However, the estimated standard deviation was statistically significant, suggesting that some respondents valued the purchase of the beef much more than others.

The estimate for 'Red Tractor' label was positive and significant, indicating that beef assured with this label tended to be perceived as generating higher utility for the respondents. Strong preference for food safety labels has also been documented in previous research (Dickinson and Bailey 2002; Loureiro and Umberger 2007). The hormone free attribute was

found to have a positive influence on choice selection as well, as indicated by the positive and significant mean estimate. Miles et al. (2004)'s survey on British consumers' food safety concerns showed that among 18 most concerned issues, the use of growth hormone in food production was the foremost worry. The studies by Lusk, Roosen and Fox (2003) and Alfnes (2004) similarly documented strong consumer sentiment to avoid hormone treated beef among the European consumers.

However, the British consumers' preference for these two labels was not homogeneous, as revealed by the significant estimates for the standard deviation. Given the underlying normal distribution specification, the proportion of the respondent who preferred or were indifferent toward certain attributes can also be computed based on the mean and standard deviation estimates. It can be calculated that about one third (35%) of the respondents did not value the 'Red Tractor' label, while there was about 22% of respondents who were indifferent toward hormone free beef. The only insignificant attribute among all was the 'gourmet' claim of the beef. Nonetheless, the standard deviation estimate for this variable is statistically significant, implying that approximately 50% of the respondent preferred this characteristic in beef while the others did not value it.

The five country of origin variables used in the model can be interpreted against the Great Britain as the reference label. In general, British domestic beef was preferred to all other beef imported from the five foreign countries, as the coefficient estimates were all negative. This is not surprising given previous research on consumer's preference related to food beef with COOL (Alfnes and Rickertsen 2003; Loureiro and Umberger 2003; 2005; 2007). The estimates for Germany and Argentina labels were not statistically significant, though. However, this should be cautiously interpreted, as the interaction variables for the labels were included in the models.

The preference for COOL label was not homogenous, as can be seen from the significant standard deviation estimates. However, the great majority are found to strongly prefer domestic beef. Specifically, based on the mean and standard deviation estimates for the variables France, USA, and Canada, it can be shown that only 16%, 0% and 1% of the respondents generated positive part-worth utilities from imports from these respectively countries when the options were compared to beef with U.K. origin.

As suggested in the literature of COOL, patriotism has been the main driving factor for consumer's support of domestic good. For this reason, we also further examine the influence of consumer patriotism on preference for domestic beef. Note that 94.3% of the respondents identified themselves as native born British in the survey. The self-reported level of patriotism, which was measured on a scale of 1 to 7, had a mean score of 5.08, a moderately above average score. Using this variable, five interaction variables were created with the foreign origin countries and included in the models for estimation. Patriotism was negatively related to the selection of all foreign beef. The coefficients for the five countries were negative and statistically significant at 1% level. This suggests that, the more patriotic the consumers felt toward their country, the less likely they were to choose imported beef. Our results are also paralleled with Orth and Firbasová (2003)'s findings, which showed that consumer ethnocentrism is a significant factor in Czech consumers' evaluation of domestically made yogurt.

The impact of patriotism on the COOL preference was also consistent across all origin countries. Interestingly, the effect was also heterogeneous across the sample, as indicated by three significant estimates out of five estimates of standard deviation. Nonetheless, based on the normal distribution specification, it can be shown that almost all (between 97% and 100%) of the respondents' negative preference toward imported beef can be explained by the patriotism effect.

Finally, we also attempt to examine whether, as suggested in the international marketing literature, favorable COO image exerts positive effect on the likelihood of foreign made goods being chosen. The COO image variable was represented by the three latent constructs measuring *People*, *Similarity*, and *Product* facets generated from the CFA presented earlier. However, due to high correlation among the three constructs, the final COO image score was calculated as an average value of the three derived latent variables. The final COO image score variable was introduced into the model as an interaction variable with the Canada country of origin variable only. The coefficient estimate for this variable was positive and significant, suggesting that people with more positive image about Canada tended to be more likely to choose its beef. The COO image effect was also strongly homogeneous across the sample, as the standard deviation estimate was insignificant.

Willingness-to-Pay Measures

To focus on the COOLs, table 5 presents only the mean WTP estimates for the partial and interaction COOL variables. The standard errors and 95% confidence interval were calculated following the simulation procedure described by Krinsky and Robb (1986) with 10,000 iterations. As for the country of origin label, in the presence of the significant interaction effects from consumer patriotism and COO image, the total WTP for each origin country labels were also presented. The total price discount for imported beef were calculated at the sample mean with the mean patriotism score of 5.08 and Canadian COO image score of 5.61[2]. For example, compared to U.K. domestic beef, the consumers were willing to pay (-1.24) + (-0.62*5.08) or -4.39 pound per package for the beef imported from France. In comparison, the WTP for Canadian beef was (-2.57) + (-0.62*5.08) + (0.29*5.61) which totals -4.09. Similarly, the

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[2] For Canada label only

discounts for German, Argentinian and U.S. beef were approximately -4.06, -4.67, and -4.34, respectively.

Conclusions

Using a choice experiment, we studied British consumer preference for pre-packaged beef differentiated by price, food safety label, the use of growth hormone, and importantly COOL. To contribute to better understanding about the effects of COOL, the primary objective was to investigate British consumers' preference for domestic and imported beef using consumer patriotism and COO image.

As revealed by the results, the overwhelming majority of British consumers were found to strongly support their domestic beef, although the preference was not totally homogenous. Our results further indicate that the magnitude of preference for domestic goods over imports can be explained by the respondents' perceived level of patriotism toward their country. This result is also in line with findings from previous research (e.g. Pecotich and Rosenthal 2001), which found that the effect of COO is dependent on consumer patriotism. On the other hand, like the study by Juric and Worsley (1998), one of the very few studies addressing the effect of country of origin image and ethnocentrism on consumers' perception of foreign food products, we found COO image to be a significant variable affecting beef choice. Specifically, this study provides empirical evidence on the positive effect of favorable COO image on foreign product evaluations, an area generally under-researched.

Most of the studies by agricultural economics related to COOL have so far only focused on the preference and economic premium for the label. Although consistent and abundant evidence points to the strong support for domestic food products, very little is known as to why

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such preference might have been shaped. Answers to this question are important to COOL policy debate as they inform whether COOL policy is efficiency enhancing in its correcting for market failure (information asymmetry) or welfare reducing in its enabling consumers to biasedly reject foreign imports (Lusk et al 2006). As the results indicate, consumer patriotism or ethnocentrism was a significant driving factor for the strong preference against imports. While the finding is discouraging for exporting countries, our study also suggests that negative consumer preference can be improved by raising the overall country image, a much researched and well documented effect in the international literature.

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Alternative A	Alternative B	Alternative C
		None of these
I choose __	**I choose __**	**I choose __**

Figure 1. Sample choice set

Table 2. Product attributes and levels

Attribute	Level	Description
Price (GB pounds per 0.375 kg)	6	4.88, 5.67, 6.46, 7.24, 8.03, and 8.82
Food standard assurance	2	Red Tractor 'Assured Food Standards' label
		[No label]
Growth hormone free		No growth hormone
		[No label]
Quality	2	Gourmet (premium quality)
		[No label]
Country of origin	6	Great Britain, France, Germany, Argentina, USA, Canada

Table 2. Summary statistics of the sample's socio-demographic profiles

	Sample	Population
Number	402	46,751,824
Sex (%)[a]		
Female	52.7	50.9
χ^2 = 0.54, df=1, *P* =0.46		
Age (%)[a]		
18 to 29 years	14.7	21.3
30 to 39 years	16.7	17.3
40 to 49 years	21.6	19.3
50 to 59 years	18.9	16.0
60 to 69 years	21.9	14.2
70 years and over	6.2	11.9
Mean= 48 years		
χ^2 = 40.07, df=5, *P* <0.0001		
Educational attainment (%)[a]		
UK Level 2 (High school diploma)	21.5	26.3
UK Apprenticeship (Technical school Diploma)	17.1	5.7
UK Level 3 (Some college)	25.8	21.0
UK Level 4 (College and graduate degree)	35.6	46.9
χ^2 = 101.55, df=3, *P* <0.0001		
Annual household income (%)[b]		
Less than £5,000	4.2	2.0
£5,001 to £9,999	6.2	10.0
£10,000 to £14,999	15.9	15.0
£15,000 to £19,999	10.7	13.0
£20,000 to £24,999	11.9	10.0
£25,000 to £29,999	9.2	8.0
£30,000 to £34,999	12.9	7.0
£35,000 to £39,999	9.2	6.0
£40,000 to £44,999	6.0	5.0
£45,000 to £49,999	4.2	4.0
£50,000 and more	9.5	19.0
Mean=£26,000		
χ^2 = 67.05, df=10, *P* <0.0001		

[a] Source: 2011 Census: Key Statistics and Quick Statistics for local authorities in the United Kingdom, Office for National Statistics

[b] Source: Family Resources Survey 2008-2009, Department for Work and Pensions, United Kingdom

Table 3. Summary Statistics for Country of origin Image Scales and Patriotism (n=402)

Variable	Scale	Mean	St. Dev
S1	Canada is friendly and likable	7.02	1.99
S2	Canada is artistic and creative	6.14	1.97
S3	Canadians are well-educated	6.73	1.91
S4	Canadians are hard working	6.74	1.87
S5	Canadians received technical education	6.25	1.91
S6	Canadians achieve high standards	6.64	1.91
S7	Canada raised standard of living	6.41	1.89
S8	Canadians have technical skills	6.47	1.84
S9	Canadians have similar political views to my country	5.67	1.85
S10	Canada is economically similar to my country	5.78	1.89
S11	Canada is culturally similar to my country	6.12	1.99
S12	Canada participates in international affairs	5.99	1.92
S13	Canada has a high level of advancement	6.52	1.92
S14	I have positive feelings about the people from Canada	6.93	2.01
S15	I have a desire for closer links with Canada	5.61	2.12
S16	Canada produces high quality products	6.40	1.88
S17	Products from Canada have prices similar to products from my country	5.54	1.82
S18	You find products from Canada a lot in my country.	4.52	2.04
S19	I have been satisfied before with products from Canada.	5.56	2.11

Cronbach Coefficient Alpha

Raw		0.965	
Standardized		0.965	

Latent Variable

		Mean	St. Dev
People	→ S1, S2, S3, S4, S6, S7, S8	6.45	1.65
Similarity	→ S9, S10, S11	5.42	1.45
Product	→ S17, S18	4.97	1.31

Confirmatory Model Fit Statistics

χ^2 = 149.92, df=51, P <0.0001

Standardized RMR (SRMR)	0.037
RMSEA Estimate	0.070
Goodness of Fit Index (GFI)	0.933
Adjusted GFI (AGFI)	0.898
Bentler Comparative Fit Index (CFI)	0.976
Bentler-Bonett Normed Fit Index (NFI)	0.965
Bentler-Bonett Non-normed Index(NNFI) (also known as Tucker–Lewis index TLI)	0.969
Bollen Normed Index Rho1 (also known as RFI)	0.954

Patriotism[a]		5.08	1.61

[a] measured on a scale of 1 to 7; the other 19 items were measure on 1 to 10 scale.

Table 4. Utility Function Parameter Estimates

Variable	CL		ML Mean estimate		ML Standard Deviation Estimate	
	Coef	S.E	Coef	S.E	Coef	S.E
Price	-0.474 ***	0.022	-0.847 ***	0.040		
Buy None	-4.308 ***	0.170	-8.938 ***	0.394	4.345 ***	0.270
Red Tractor	0.213 ***	0.049	0.355 ***	0.092	0.929 ***	0.143
Gourmet	-0.157 **	0.050	0.062	0.079	0.426 ***	0.159
No Growth Hormone	0.613 ***	0.053	1.1175 ***	0.119	1.432 ***	0.130
Country of Origin						
France	-1.074 ***	0.220	-1.053 **	0.507	1.045 ***	0.288
Germany	-0.521 **	0.211	-0.107	0.552	1.802 ***	0.239
Argentina	-0.785 ***	0.226	-0.435	0.483	0.597	0.517
United States	-1.194 ***	0.225	-1.353 ***	0.438	0.252	0.301
Canada	-2.288 ***	0.300	-2.179 ***	0.588	0.869 ***	0.256
Interaction Effect-Patriotism						
France*Patriotism	-0.173 ***	0.040	-0.526 ***	0.100	0.175 ***	0.049
Germany*Patriotism	-0.245 ***	0.039	-0.661 ***	0.108	0.085	0.100
Argentina*Patriotism	-0.275 ***	0.042	-0.777 ***	0.104	0.393 ***	0.054
United States*Patriotism	-0.138 ***	0.041	-0.455 ***	0.086	0.224 ***	0.038
Canada*Patriotism	-0.245 ***	0.040	-0.524 ***	0.088	0.065	0.049
Interaction Effect-COO Image						
Canada* COO Image	0.300 ***	0.049	0.244 ***	0.090	0.022	0.058
Number of respondents	402		402			
Number of choice sets	4,696		4,696			
Log-likelihood function	-4,282		-2,956			
McFadden's Pseudo R^2	0.162		0.421			

Note: Asterisks *, ** and *** denote variables significant at 10%, 5% and 1% level, respectively.

Table 5. Mean WTP Estimates (GBP/375g package)

Variable	CL			ML		
	WTP	s.e	95% Confidence Interval	WTP	s.e	95% Confidence Interval
Country of Origin						
France	-2.26	0.49	(-3.23, -1.30)	-1.24	0.61	(-2.43, -0.05)
Germany	-1.10	0.42	(-1.92, -0.27)	0.00 [a]	0.65	(-1.40, 1.15)
Argentina	-1.66	0.17	(-2.57, -0.74)	0.00 [a]	0.56	(-1.62, 0.59)
United States	-2.52	0.50	(-3.50, -1.53)	-1.60	0.52	(-2.61, -0.58)
Canada	-4.83	0.66	(-6.13, -3.53)	-2.57	0.70	(-3.94, -1.21)
Interaction Effect-Patriotism						
France*Patriotism	-0.36	0.09	(-0.54, -0.19)	-0.62	0.12	(-0.86, -0.39)
Germany*Patriotism	-0.52	0.08	(-0.68, -0.36)	-0.80	0.13	(-1.03, -0.53)
Argentina*Patriotism	-0.58	0.09	(-0.76, -0.40)	-0.92	0.12	(-1.16, -0.67)
United States*Patriotism	-0.29	0.09	(-0.46, -0.12)	-0.54	0.11	(-0.74, -0.33)
Canada*Patriotism	-0.52	0.09	(-0.69, -0.34)	-0.62	0.10	(-0.81, -0.42)
Interaction Effect-COO Image						
Canada* COO Image	0.63	0.11	(0.42, 0.85)	0.29	0.11	(0.08, 0.50)
Total WTP for COOL at sample mean with Patriotism=5.08 and Canadian COO image score=5.61						
France	-4.09			-4.39		
Germany	-3.74			-4.06		
Argentina	-4.61			-4.67		
United States	-3.99			-4.34		
Canada	-3.94			-4.09		

[a] The part-worth utility estimate was not significantly different from zero.