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THE EFFECTS OF COUNTRY OF ORIGIN IMAGE AND PATRIOTISM ON
CONSUMER PREFERENCE FOR DOMESTIC VERSUS IMPORTED BEEF

THESIS

A thesis submitted in partial fulfillment of
the requirements for the degree of Master of Science in Agricultural Economics
in the College of Agriculture, Food and Environment
at the University of Kentucky

By

Thong Meas

Lexington, Kentucky

Director: Dr. Wuyang Hu, Professor of Agricultural Economics

Lexington, Kentucky

2014

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ABSTRACT OF THESIS

THE EFFECTS OF COUNTRY OF ORIGIN IMAGE AND PATRIOTISM ON CONSUMER PREFERENCE FOR DOMESTIC VERSUS IMPORTED BEEF

Country of origin (COO) effect is a well-researched topic in the international marketing literature. It is well recognized that consumers are biased against imports, due to consumer ethnocentrism or patriotism tendency. However, the research on COO effects also suggests that consumers form certain image of origin countries (COO image) and favorable image, be it associated with the countries, their people, or general product quality, improves the evaluation and acceptance of foreign imports.

The publications related to COO effects which focus on consumer durables are abundant. However, the contrasting COO effects on food products are much less investigated. This study surveys British consumers' preference for domestic versus imported beef. Like previous studies, a strong preference for domestic beef was found. Furthermore, individual characteristics which potentially influence such preference were examined. Using scores on consumer patriotism and COO image perception as interacting individual characteristics in the choice models, it was found that stronger preference against imports was linked to higher level of the respondents perceived patriotic sentiment toward their home country, while better COO image improved the likelihood of the foreign country's beef being selected. Marketing and policy implications are discussed.

KEYWORDS: Country of Origin Label, Country of Origin Image, Consumer Patriotism, Choice experiment, Willingness to Pay for Beef

Thong Meas

July 31, 2014

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*To my beloved parents
for their unconditional love and support to the family*

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS	iii
LIST OF TABLES	vi
LIST OF FIGURES	vii
CHAPTER 1: INTRODUCTION	1
1.1 Country of Origin Effects	1
1.2 Research Motivation and Thesis	3
CHAPTER 2: STUDY BACKGROUND	5
2.1 Consumption, Production and Imports of Beef in the United Kingdom	5
2.2 EU Country of Origin Labeling Regulations and Meat Standards	8
2.3 Other Important Beef Attributes	9
CHAPTER 3: LITERATURE REVIEW	10
3.1 Country of Origin Label	10
3.2 Consumer Ethnocentrism and Patriotism	11
3.3 Country of Origin Image	12
CHAPTER 4: THEORY AND MODEL	16
4.1 Theoretical Framework	16
4.2 Stated Preference Data and Discrete Choice Experiments	16
4.3 Econometric Models	18
4.4 Interaction Terms with Individual Choice Invariant Covariates	20
4.5 Marginal Willingness to Pay	21
CHAPTER 5: METHODOLOGY	22
5.1 Measuring Ethnocentrism and Patriotism and COO Image	22
5.2 Design of the Study	26
5.2.A Product Attribute Specifications	27
5.2.B Choice Experiment Design	31
5.2.C Survey Instrument Design	32
5.3 Data Collection	34
CHAPTER 6: RESULTS	35
6.1 Descriptive Statistics	35
6.2 Confirmatory Factor Analysis	38
6.3 Marginal Utilities	45
6.4 Marginal Willingness to Pay Measures	51

CHAPTER 7: CONCLUSIONS	56
7.1 Concluding Discussion	56
7.2 Implications.....	58
7.3 Limitations	59
7.4 Future Research	61
APPENDICES	62
Appendix 1: Tables.....	62
Appendix 2: Survey Instrument	68
BIBLIOGRAPHY.....	72
VITA.....	80

LIST OF TABLES

Table 5.1 Product Attributes and Levels.....	28
Table 6.1 Descriptive Statistics of the Sample	36
Table 6.2 Sample and Population Socio-demographic Statistics Comparison.....	37
Table 6.3 Summary Statistics for Country of origin Image Scales.....	39
Table 6.4 Confirmatory Model Fit Statistics	44
Table 6.5 Pearson Correlation Coefficients	45
Table 6.6 Utility Function Parameter Estimates Using PCI Factor Score.....	47
Table 6.7 Mean WTP Estimates (GBP/375g package).....	53

LIST OF FIGURES

Figure 2.1 Consumption Trend of Selected Meats in the U.K.....	6
Figure 2.2 Production and Trade of Beef and Veal in the U.K.	7
Figure 5.1 Conceptualization of the Effect of General Country Attribute (GCA)	24
Figure 5.2 Conceptualized Framework to Examine Country of Origin Effects	25
Figure 5.3 Sample Choice Set in the Choice Experiment.....	30
Figure 6.1 Two-Level Higher-Order Factor Model of General Country Attribute (GCA)	41
Figure 6.2 Two-Level Higher-Order Factor Model of Product Country Image (PCI)	43
Figure 6.3 Marginal WTP for Country of Origin Label	54

CHAPTER 1: INTRODUCTION

1.1 COUNTRY OF ORIGIN EFFECTS

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. Private firms constantly search for appealing attributes to add to their products and include information about these attributes on product labels (Golan, Kuchler and Mitchell 2001). Branding and labeling of food products is used as means to differentiate products in the market place (Altmann 1997) and thereby influence consumer decision making. The welfare effects of food labels are also of interest to policy makers.

One of the highly debated labels on food products is the country of origin label (COOL). Proponents of the COOL scheme often refer to consumers' right to know where their food comes from. Other supporters also refer to the use of COOL as an extrinsic cue for other quality information such as food safety (Becker 2000; Van Wezemaal et al. 2010). The support for COOL was particularly strong due to the increased concern over mad cow and foot-and-mouth diseases in the last decades. It has been argued that attaching such a label to food products is utility and welfare enhancing for consumers because without COOL and the information about where products come from consumers cannot properly assess their quality and safety (Lusk et al. 2006). COOL requirements have been mandated in the European Union (EU) member states since 2000. Renewed debate on this policy has come about as COOL mandate was recently started to be implemented in 2009 in 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 because products labeled as imports generally are biasedly rejected by some consumers due to their ethnocentrism or patriotism tendency. The terms are used synonymously to refer to consumers' tendency of supporting and choosing goods produced at their home countries and rejecting consumption of imports. Consumption of domestically produced products is promoted and encouraged as a patriotic act, while purchasing foreign made goods is deemed inappropriate, or even immoral (Shimp and Sharma 1987).

Although the implementation of COOL has a negative impact on consumption of foreign made products as mentioned, the marketing literature also suggests that country of origin (COO) bias against imports can be reversed. The relative quality evaluation effect works for the advantage of the origin countries when consumers view the overall products and services originating from certain countries to be of better quality than those from their own country. Past marketing research has also suggested that the COO bias against imports is not as strong for products and services originating from countries which the consumers view as having a high degree of development and economic, cultural and political similarity (Bannister and Saunders 1978; Wang and Lamb 1983). The concept is associated with a term called COO image, often defined as a consumer's perception about an origin country's people, development standards, and similarity to the consumers' own country and the general quality of products made in that origin country. Marketing researchers often argue that favorable COO images can be capitalized to improve preference for imports or reduce bias against foreign made products.

1.2 RESEARCH MOTIVATION AND THESIS

Abundant publications in the marketing literature have surveyed how consumer ethnocentrism or patriotism affects consumers' choice of domestic versus imported goods (e.g. Shimp and Sharma 1987; Lantz and Loeb 1996; Han 1998; Watson and Wright 2000; Pecotich and Rosenthal 2001). An equally large number of studies have investigated whether consumers develop certain COO images and how those images influence the acceptance of foreign made goods and services (e.g. Bannister and Saunders 1978; Han 1990; Laroche et al. 2005). Papadopoulos and Heslop's (2003) review put the number of publications related to COO effects at over 700. These two major topics, however, have been less examined on low-involvement goods such as food products.

COO effect on food products had not attracted much attention until the introduction of COOL requirement in the EU countries in 2000 and the recent start of implementation in the U.S. in 2009. Beef is a well-studied food product with respect to COOL since the early developed policy in the EU was proposed for this meat. Studies that investigated the effects of COOL have found strong consumer support for domestic beef across EU member states and the U.S. Consumers were all found to prefer domestic beef and were willing to pay significant, positive premiums for it (Alfnes and Rickertsen 2003; Loureiro and Umberger 2003, 2005 and 2007; Lim et al. 2013).

However, the literature is lacking with regard to the investigation of the factors which can potentially help explain such consumer preference. This study aims to contribute to filling the void in the literature by closing this gap. One of the two major objectives of this study is to investigate consumer patriotism as a possible factor influencing consumer preference for domestic beef revealed by COOLs. On the other

hand, the research on the effects of COO image on food products is also scarce.

Therefore, we also attempt to measure consumers' image of a foreign origin country and examine whether this variable influences consumers' product choice. Specifically, the study considers simultaneously the effects of consumer patriotism and COO image on British consumers' choice of domestic and imported beef, using a choice experiment.

The thesis proceeds with a brief background presented in Chapter 2 on beef consumption and industry regulations in the studied country, the United Kingdom (U.K.). In Chapter 3, relevant literature review begins with the debate about COOL, with subsections on how consumer patriotism and COO image are defined. Following that, the theoretical framework and econometric methods employed to conduct the research are briefly discussed in Chapter 4. Then, methodology including methods to quantify COO image, the design of the study and data collection are presented in Chapter 5. Chapter 6 presents and discusses the results from econometric model estimation. Finally, the thesis is concluded in Chapter 7 with a discussion of important findings, some implications, limitations and suggestions for future research. Appendices and references to the study are provided thereafter.

CHAPTER 2: STUDY BACKGROUND

Consumers in the U.K. were surveyed in this study. The U.K. has implemented the COOL mandate since its first became effective in 2002 in the EU. The country is also one of the largest beef importers among the EU countries. Therefore, the British people are more exposed to imported beef and familiar with COOL. On this basis the preference revealed in the study should be more reliable. Most studies on consumer preference related to COOL were conducted immediately following the implementation of the policy, when the support for COOL was strong due to the mad cow disease scare. Findings in this study can also serve as comparisons to those from studies conducted at the time of the policy's earlier implementation.

2.1 CONSUMPTION, PRODUCTION AND IMPORTS OF BEEF IN THE UNITED KINGDOM

Beef is one of the most important animal proteins consumed around the world. In the U.K., beef remains the third most consumed meat although its consumption has seen steady decline since the 1980s. 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, as shown in Figure 2.1 (Department of Environment, Food and Rural Affairs 2013). The declining trend is not only specific to the U.K. but is also a phenomenon observed in other high income countries like the U.S. Several factors may have contributed to such decline in beef consumption. For example, lower retail prices of chicken as a substitute, changes in demographics and income distribution, and the growing concerns about cholesterol and fat from red meat consumption (Moschini and Meilke 1989). Others,

however, have attributed the more recent global decline to food safety scare specific to cattle beef industry, particularly the Bovine Spongiform Encephalopathy (BSE) contamination, or commonly known as mad cow disease (Pennings, Wansink and Meulenberg 2002; Schroeder et al. 2007).

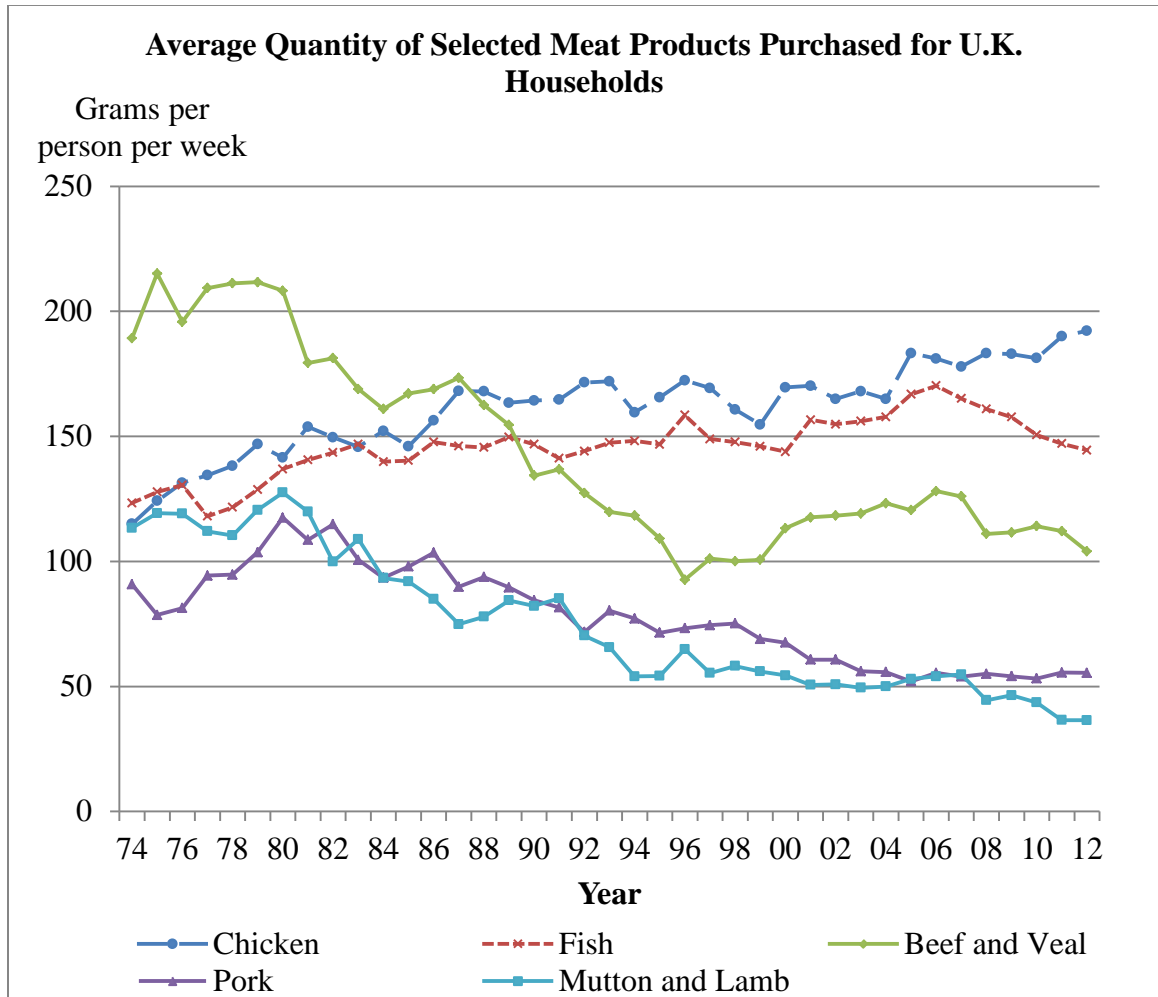


Figure 2.1 Consumption Trend of Selected Meats in the U.K.

Source: Department of Environment, Food and Rural Affairs, U.K., 2013.

In recent years, the U.K. has remained one of the largest beef importing countries in the EU. The domestic beef industry was hard hit by the BSE crisis which began in March 1996 when the Minister of Health admitted a probable link between BSE and a variant of human degenerative brain disorder, Creutzfeldt-Jakob disease (vCJD). The crisis sharply reduced British domestic beef production, which in recent years remained below its pre-crisis level (Figure 2.2).

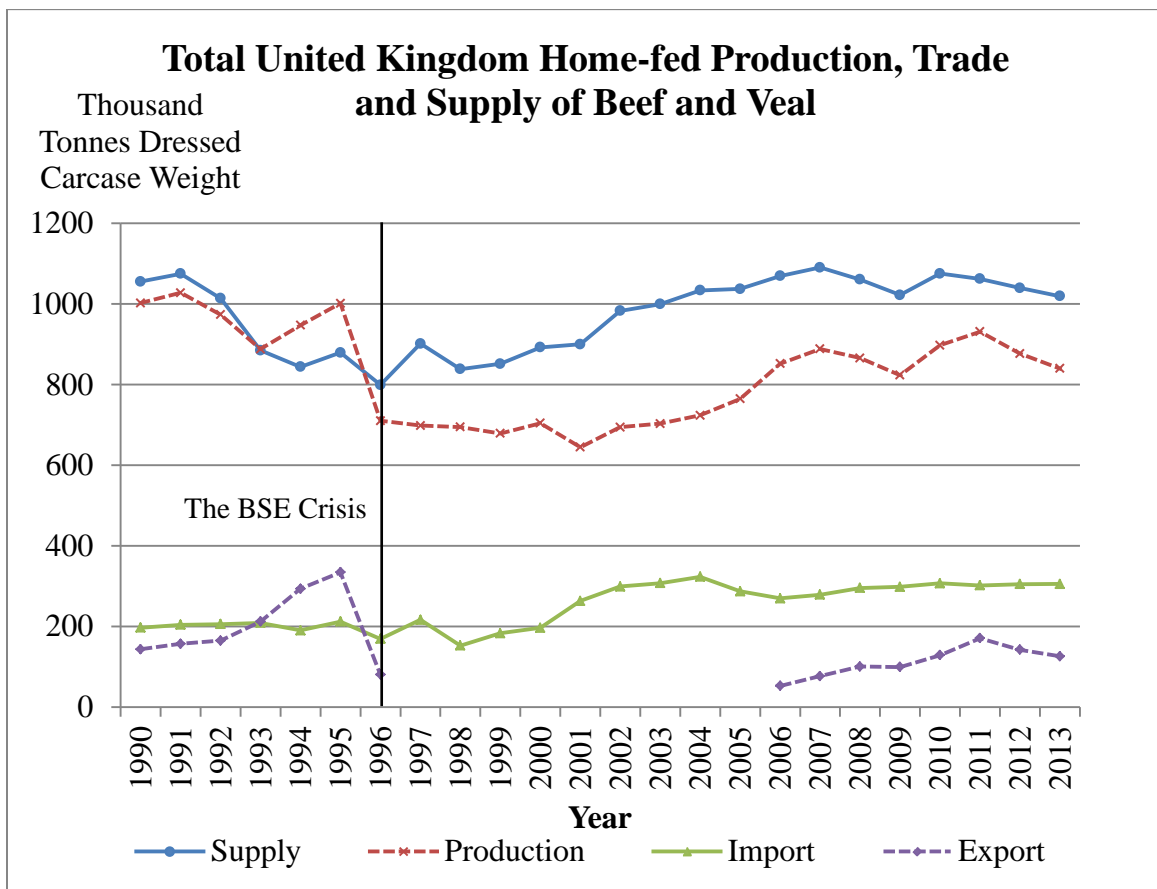


Figure 2.2 Production and Trade of Beef and Veal in the U.K.

Source: Department of Environment, Food and Rural Affairs, U.K., 2014.

From 1996 to 2005, the country produced on average about 700 thousand tons¹ of beef compared to about 973 thousand tons before the BSE shock. Production in recent year was only about 870 thousand tons on average. Since the BSE crisis in 1996, imports have risen steadily, averaging 290 thousand tons. In 2013, total gross imports were recorded at 305 thousand tons (Department of Environment, Food and Rural Affairs 2014). Imports in 2012 were 305 thousand tons and valued at £866 million (Department of Environment, Food and Rural Affairs 2012).

2.2 EU COUNTRY OF ORIGIN LABELING REGULATIONS AND MEAT STANDARDS

In the wake of the BSE crisis came a European Community (EC) wide beef labeling system, which is also adopted by the U.K. The industry regulation 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 involving traceability of beef product from retail level to supply origin. Along with the regulation is the required labeling of the specific country of birth, rearing and slaughtering 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).

Besides mandatory COOL, another controversial policy in the EU livestock industry is that related to growth hormone. Domestic use of growth-hormones has been phased out in the EU since 1985 (Lusk, Rosen and Fox 2003). Citing public health concerns, the EU has also imposed an import ban on hormone-treated beef since 1989. In meat production growth hormones are mostly administered to beef cattle (Tosun 2013).

¹ In dressed carcass weight

The justification based on consumer health and safety of consuming meat treated with growth enhancers has been challenged by major exporting countries, particularly the U.S., in the World Trade Organization (WTO). Even though no solid scientific evidence demonstrating the health hazard from consuming hormone-treated beef existed, in general EU consumers were concerned about human hormone balance disruption caused by hormone residue in meat, which was believed to harm reproductive health system and cause cancers (European Food Safety Authority 2007).

2.3 OTHER IMPORTANT BEEF ATTRIBUTES

Besides hormone contamination in beef, numerous other desirable attributes, such as food safety assurance, no contamination and chemical residues, tenderness, and price, are among the most important characteristics consumers take into account when choosing beef (Loureiro and Umberger 2007; Lusk, Roosen and Fox 2003). Roosen, Lusk and Fox (2003) found that British consumers reported high levels of concerns related to food safety issue such as bacterial and pesticide residue contamination.

Another primary determinant beef attribute which influences consumer choice is quality label. Dransfield, Zamora and Bayle (1998) showed that beef steaks labeled with quality descriptions such as 'Tender' increase the likelihood of them being selected compared to when no label was used. Several other studies also found that consumers were willing to pay a premium for guarantee tenderness (Lusk et al. 2001; Lusk, Feldkamp and Schroeder 2004; Loureiro and Umberger 2007).

CHAPTER 3: LITERATURE REVIEW

3.1 COUNTRY OF ORIGIN LABEL

The mad cow disease scare in 1996 in the U.K. caused severe loss of confidence in the safety of beef among the EU consumers. Following this, the country of origin label (COOL) requirements were proposed along with the traceability system in Regulation 1760/2000/EC. The policy was intended to restore public confidence in the bovine industry following the market instability caused by the BSE crisis. As a public policy instrument, it is welfare enhancing if consumers gain confidence and derive additional benefit from more information of meat safety through product origin label (Lusk et al. 2006).

A consumer study by Becker (2000) across six EU countries found that COO was one of the most helpful extrinsic cues for consumers to predict safety of fresh meat. Similar results are found by Van Wezemael et al. (2010). By implicitly labeling where the beef comes from, consumers can make more informed decision in their beef purchase. Therefore, mandatory COO labeling helps to correct information asymmetry in the market. Following the EC regulation, the U.S. also started to enact their own COOL madates. The COOL provision was included in the 2002 and 2008 Farm Bills and the final rule published by U.S. Department of Agriculture took effect in 2009 (U.S. Department of Agriculture-Agricultural Marketing Service 2009).

In response to COOL regulations in both major markets, numerous studies have surveyed consumer preference for COO labeled beef (see Alfnes and Rickertsen 2003 and Alfnes 2004 for studies in EU countries; Loureiro and Umberger 2003, 2005 and

2007 and Lim et al. 2013 for studies in the U.S.). Strong preference for domestic beef has been consistently reported. Nonetheless, the studies seem to focus more on whether consumers favor domestic beef more than imported beef, but less so as to why they may have such preference. The reasons why consumers form such desire for domestic products and how COOL was used have been inadequately addressed. As Lusk et al. (2006) argued, COOL may be welfare detrimental if consumers' decisions are affected by consumer ethnocentrism and they use the label to identify and reject imports, rather than using it to gauge safety or quality of meat.

3.2 CONSUMER ETHNOCENTRISM AND PATRIOTISM

Consumer ethnocentrism is one of the factors to explain why consumers support domestic products and reject those imported. The term 'ethnocentrism,' first introduced by Sumner (1906), refers to the tendency of giving the superior value to things from one's own group and rejecting those of the outgroups. In international marketing literature, 'consumer ethnocentrism' is used to denote the tendency of strongly support goods produced in one's home country. It is said to shape "the appropriateness, indeed morality, of purchasing foreign-made products" (Shimp and Sharma 1987, p.280). The concept of 'consumer ethnocentrism' has also been synonymously used to refer to the consumption habits which are influenced by loyalties or patriotism to one's own country. Consumers' variability in preference has been shown to be affected by their ethnocentrism preference (Balabanis and Diamantopoulos 2004).

Previous research also showed that high national loyalty and pride was an important factor which makes consumers to favor goods produced at the home country

more than imports (Darling and Kraft 1977). Consumers' patriotic emotions were found to be influential on their perceptions and choice of domestic products (Han 1988). Shimp and Sharma (1987) found that patriotism was positively related to consumers' ethnocentrism tendency. Consumers' high patriotic emotions often trigger consumption bias against imports when qualities of the products are comparable to those produced domestically. In the extreme, domestic products, even with lower quality, are chosen over foreign imports (Wall and Heslop 1986; Sharma, Shimp and Shin 1995). The experimental design by Pecotich and Rosenthal (2001) found no main effect on COO effect on average among all of their respondents. However, the effect was strong for highly patriotic respondents.

This train of thought is cited by opponents of the policy as an argument against the use of COOL. The reason is that COOL provides a means for consumers to differentiate domestic products and imports. Under the influence of patriotic sentiment of consumer ethnocentrism tendency, domestic goods may always be chosen over imports. In this sense, the label only indirectly contributes to protectionism and antitrade. It is not a welfare optimizing policy since it prevents the realization of a maximum welfare outcome which would have otherwise been generated from the free market regime.

3.3 COUNTRY OF ORIGIN IMAGE

Although COOL appears to work against products made abroad, a rich stream of marketing literature has also researched how consumers respond to the COO cue in terms of perceived quality of goods produced at certain origin countries. Perceived quality differences between products made at home and goods produced abroad (i.e. higher

quality imports) induce consumers to prefer foreign made products. Besides, the preference for foreign imports is also found to be influenced by consumers' perception of the economic development, technology standards and cultural and political similarity of the origin countries to those of their home country. The research in this area advocates for better understanding of how consumers form those perceptions, or images, of different origin countries (COO image) and how they affect goods selection. The knowledge, as most researchers argued, can help the exporting countries to capitalize on favorable images and improve negative images.

Schooler (1965) provides the first known study which empirically demonstrated that products identical in every aspect except COO appearing on the label are evaluated differently by consumers. Later on, one of the earliest and most credited conceptualizations of COO image 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.” The literature related to COO effect and COO image have since sprung in number. The number of related publications was estimated to be over 700 (Papadopoulos and Heslop 2003) and 1,000 (Usunier 2006).

Abundant definitions of COO image are offered in the literature. Different definitions share a great degree of similarity, though. It is frequently referred to as the perception of an origin country and its overall product offering. A recent review by Roth and Diamantopoulos (2009) has categorized the abundant definitions of COO image in the literature into three distinct groups: (1) overall country image, (2) product-country

image (the image of both the country *and* its representative products), and (3) (country related) product image.

The overall country image class of definitions focuses chiefly on the influence of the general perception of the origin countries. It was proposed that COO images are influenced by consumers' perceptions of the similarity between home and the origin countries (Han 1990). Papadopoulos, Heslop and Bamossy (1989) summarized the influence as the cognitive, affective, and conative responses to people from the origin countries which shape COO images. Yaprak and Parameswaran (1986) called this image component General Country Attribute (GCA). Verlegh (2001, p.25) also defined it as "A mental network of affective and cognitive associations connected to the country." In general, these various definitions focus on the economic, cultural and political similarity between the home and the origin countries.

Another class of the definitions of COO image—product-country image (PCI)—considers not only the overall country effect but also that of representative products originating for the country (Li, Fu and Murray 1998; Papadopoulos and Heslop 2003). Knight and Calantone (2000, p.17) defined it as "a consumer's perceptions about the quality of products made in a particular country and the nature of people from that country". Similarly, Nebenzahl, Jaffe and Usunier (2003, p.388) referred it to "attributes of products", "emotions toward the country" and "resulted perceptions about the social desirability of owning products made in the country." Early work by Papadopoulos, Heslop and Beracs (1990) used national stereotypes and product evaluations to assess consumers' view on different origin countries.

The third class of definition is focuses only on country-related product image rather than country image. As in Bilkey (1993, p. xix), the image represents “Buyers' opinions regarding the relative qualities of goods and services produced in various countries.” Nevertheless, the rather abstract concept of COO image means there is no one universally consensus measure to quantify consumers' COO 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 effect. After accounting for 15 different study characteristics, they showed that COO affect both product quality perception and purchase intention. However, the majority of the studies on the impact of COO image have mostly focused on high-involvement (i.e. automobiles, household appliance) and non-food products. The same is also true regarding the studies of consumer ethnocentrism or patriotism. Therefore, this study adds to the literature of COO effect studies, particular those related to food products, by providing an investigation of both the effects of patriotism and COO image on a food product.

Using a stated preference study, British 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 influencing such preference. The study also contributes to the limited investigation of why consumers preferred domestic food products over imports when domestic and imported goods can be identified through COOL. We briefly establish the theoretical foundation in the succeeding chapter, before describing the methodology employed to conduct the study.

CHAPTER 4: THEORY AND MODEL

4.1 THEORETICAL FRAMEWORK

Lancaster's (1966) seminal paper laid out a new framework to assess the utilities derived from consumer goods. Since then the new concept has been widely used, that goods are not direct objects of utility but that from its bundle of characteristics (attributes) that utility is derived. This concept has served as a strong foundation for later developed consumer utility theory. Utilities generated from goods can be assumed to be ordered by values of collections of characteristics. In analyzing a consumer's selection of a product when facing a number of choices, the random utility theory proposed by McFadden (1974) can be used as a framework. 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) can be modeled as a linear function of product attributes (X_{ijn}), as follows:

$$(4.1) \quad U_{ijn} = X_{ijn}\boldsymbol{\beta} + \varepsilon_{ijn},$$

where $\boldsymbol{\beta}$ denotes a vector of unknown marginal (or part-worth) utilities generated from product attributes X_{ijn} of the alternative j in choice situation n , and ε_{ijn} represents the random error component of the utilities. Rational consumers maximize their utilities by choosing alternatives j in the n -choice situation only when j provides the highest utilities compared to the other options available (McFadden 1974).

4.2 STATED PREFERENCE DATA AND DISCRETE CHOICE EXPERIMENTS

Two major categories of data can be used to study consumer preference and choice decision: data collected from observations of what consumers *actually* do

(Revealed Preference ‘RP’) and what consumers say they *will* do (Stated Preference ‘SP’). The use of RP data has its root in the classical paper by Samuelson (1948) which advocated for the estimation of consumption demand and market behavior from observed market data. On the other end of the preference data continuum are SP data which are collected through controlled experiments that yield hypothetical choices rather than observed actual choices. The use of this type of data has seen increased popularity, especially when dealing with new product attributes or non-market goods and services, and when it is difficult, expensive or time consuming to collect RP data.

Two major SP data collection methods commonly employed include contingency evaluation (CV) and discrete choice experiment (DCE). CV mostly relies on asking the respondents directly to assess the values of goods or their attributes, including method such as single and double-bounded dichotomous choice questions. DCE, on the other hand, is a less direct method which exposes consumers to simple or complex alternatives of goods or services, which require consumers to make trade-off between attributes and prices. The method also has strong theoretical underpinnings based on Lancaster’s (1966) concept of utility maximization based on characteristics or attributes of goods and services and McFadden’s (1974) random utility theory (Louviere, Hensher and Swait 2000). SP data collected using this technique are appealing in terms of its richness in attribute and attribute-bundle spaces, controlled by designs, which enable researchers to more robustly estimate each attribute’s value.

However, skepticism also remains as to their hypothetical nature. Specifically, whether the preference stated in the hypothetical scenarios in the survey reflects consumers’ actual consumption behaviors when confronted with real payments. The issue

is commonly referred to as hypothetical bias. It is particularly of significant interest to the researchers when inference is to be made about willingness to pay (WTP) measures, as is often the case. Nonetheless, marginal WTP measures generated from studies employing such method have also been found to be considerably reliable and comparable to results from those using other methods. Some studies have shown that hypothetical responses collected in DCE were similar to revealed preference (e.g. Adamowicz et al. 1997). Past studies also suggested that marginal WTP measures calculated in DCEs were close to those estimated from actual field experiment data (Lusk and Schroeder 2004; List, Sinha and Taylor 2006). Owing to its popularity due to agribusiness firms' growing interest in producing and marketing differentiated goods whose values have not been established in the market (Lusk and Huddson 2004), the experimental technique has been widely used to assess consumer preference for food attributes (e.g. Burton et al. 2001; Loureiro and Hine 2002; Lusk and Schroeder 2004).

4.3 ECONOMETRIC MODELS

Conditional logit (CL) choice model is the most commonly used econometric method to analyze data collected in discrete choice experiments. Given that the independently and identically distribution (*iid*) of the error term (ε_{ijn}) in (4.1) and the Independence of Irrelevant Alternatives (IIA) assumptions hold, the probability of the j -th option being selected can be modeled as:

$$(4.2) \quad P(Y_{in} = j) = \frac{\exp(X_{ijn}\beta)}{\sum_{j=1}^J \exp(X_{ijn}\beta)} \quad \text{for } j = 1, 2, \dots, J,$$

where Y_{in} is an indicator variable indicating the option chosen by consumer i in the n -choice situation. With a closed-form probability function, the CL model can be estimated using Maximum Likelihood method (McFadden 1974).

Albeit its simplicity in modeling and estimation, the CL model generally suffers from its inherent property of IIA assumption. The mixed logit (ML) or random parameter logit (RPL) model proposed by Train (1998) provides a popular alternative to approximate random utility model. This more flexible model fully relaxes the IIA assumption, which is especially useful when analyzing data from choice experiment in which the alternative presented are similar, since in that case the IIA assumption becomes too restrictive.

Another advantage of employing the ML model is that parameter estimates of the marginal utilities can be specified to vary across individuals in the sample. Unlike in CL model where the parameter estimates are assumed to be fixed across the sample, this permits researchers to examine the heterogeneity in preference or variation in taste (Revelt and Train 1998; Hensher, Rose and Greene 2005; Train 2009). The choice probability is specified under the ML model is modeled as:

$$(4.3) \quad P(Y_{in} = j) = \int \frac{\exp(x_{ijn}\boldsymbol{\beta})}{\sum_{j=1}^J \exp(x_{ijn}\boldsymbol{\beta})} f(\boldsymbol{\beta}) d\boldsymbol{\beta}.$$

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

$$(4.4) \quad \boldsymbol{\beta} \sim f(\boldsymbol{\beta}_0, \mathbf{G}),$$

with $\boldsymbol{\beta}_0$ as the means of $\boldsymbol{\beta}$, and \mathbf{G} as the variance matrix.

The ML model does not have a closed-form probability function but can be estimated using simulation. A simulated maximum likelihood approach that approximates the likelihood function (Train 2009) is used to estimate the model.

4.4 INTERACTION TERMS WITH INDIVIDUAL CHOICE INVARIANT COVARIATES

Often stated preference studies do not only attempt to measure the evaluation of product attributes but also investigate attribute effects across demographic segments or individual characteristics. In this case, the utility function can be augmented to incorporate such interaction effects, as follows:

$$(4.5) \quad U_{ijn} = X_{ijn}\boldsymbol{\beta} + X_{ijn}(Z_i\boldsymbol{\gamma}) + \varepsilon_{ijn},$$

where Z_i denotes the individual specific covariates which can vary across the sample but are invariant to the choice each individual faces, and $\boldsymbol{\gamma}$ represent the parameter estimates of the interaction effects.

The effects provide additional measure for assessing preference heterogeneity around the mean estimates of marginal utilities, on the basis of the observed demographic covariates (Hensher and Greene 2003). These individual choice invariant interaction terms can be used in the CL model to reveal preference heterogeneity. In the ML model, preference heterogeneity due to individual taste is revealed by the distribution of the random parameter. In addition to that, the individual characteristics covariate can also be added to the model.

4.5 MARGINAL WILLINGNESS TO PAY

Marginal willingness to pay (WTP) measures approximate the monetary values of product attributes. WTP for an attribute k can be calculated as the marginal utility estimate for the attribute divided by the negative of the marginal utility of price (Louviere, Hensher and Swait 2000):

$$(4.6) \quad WTP_k = -\frac{\beta_k}{\beta_{price}}.$$

CHAPTER 5: METHODOLOGY

5.1 MEASURING ETHNOCENTRISM AND PATRIOTISM AND COO IMAGE

Several measures have been developed to assess consumers' ethnocentric attitude (Shimp and Sharma 1987; Neuliep and McCroskey 1997). One of the widely used validated scales is the *Consumer Ethnocentric Tendencies* scale (CETSCALE). The scale was first formulated by Shimp and Sharma (1987) based on research on American consumers, consisting of 17 scale items. They found a significant negative correlation between consumer ethnocentricity and the evaluation of foreign made products. The scale was also later tested and validated in cross-nation studies (e.g. Netemeyer, Durvasula and Lichtenstein 1991) and studies in various countries (Sharma, Shimp and Shin 1995; Durvasula, Andrews and Netemeyer 1997; Watson and Wright 2000; Javalgi et al. 2005). Shimp and Sharma (1987) also found a positive relationship between consumer ethnocentric attitude and patriotism.

The measurement of consumer patriotism, on the other hand, is less standardized. Juric and Worsley's (1998) used patriotism as a scale to measure ethnocentrism. Han (1998) measured consumer patriotism using statements such as: 'I should buy domestic products because I am a citizen of the country'; 'Foreign imports are and will be hurting domestic industry'; 'Foreign imports are and will be replacing domestic jobs'; and 'I feel guilty if I choose to buy foreign products'. In this study patriotism was measured using only a direct self-evaluated scale 'how patriotic do you consider yourself?' (see Appendix 2.) This is due to our research focus on measuring COO image. Although multiple scales

can be easily devised, adding more items may cause survey fatigue since a large of number of items were already used to measure COO image.

Previous research has attempted to develop and refine measures to conceptualize and quantify COO image. Roth and Diamantopoulos (2009) provided a summary of over 30 studies featuring different measures of COO image. Several of the scales proposed have been validated in different studies and on different consumer groups. Two measures were adopted in this study. Parameswaran and Yaprak (1987) proposed measuring COO image using multiple constructs. They identified General Country Attribute (GCA) as one of the most important constructs, together with General Product Attribute (GPA) and Specific Product Attribute (SPA). Building upon that work, Parameswaran and Pisharodi (1994) developed and validated a refined set of items to measure the proposed constructs. The scales were also tested in their subsequent study (Parameswaran and Pisharodi 2002) and similar results to the initial study were found. As a broad conceptualized framework, GCA has a strong direct influence on consumers' intention to purchase and also indirect influence through GPA and SPA, as illustrated in Figure 5.1.

According to Parameswaran and Yaprak (1987) and Parameswaran and Pisharodi (1994; 2002), GCA was measured as the overall perceptions about a particular origin country through its people and their overall knowledge and capacity. They argued that GCA image evaluation can further be decomposed into two sub-dimensions. One can be represented by cognition and affect—*people* facet, and the other by conation—*similarity* facet (i.e., economic, political, and cultural similarity between their home country and the origin country).

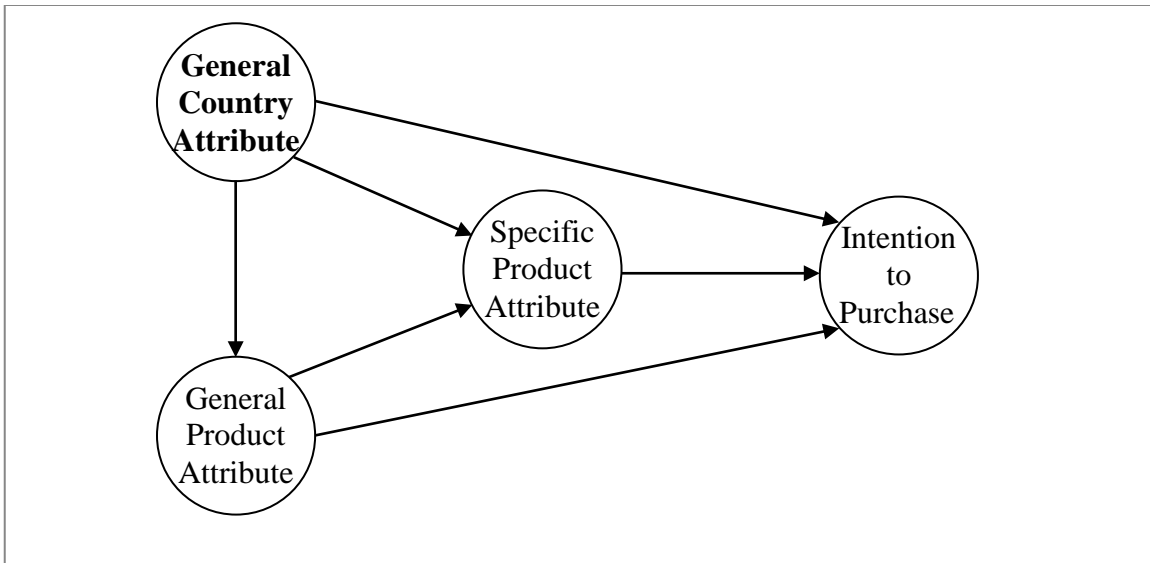


Figure 5.1 Conceptualization of the Effect of General Country Attribute (GCA)

Source: Parameswaran and Pisharodi (2002)

On the other hand, other scholars define COO image according to the Product Country Image (PCI) definition, which includes both *country* and *product* evaluations. Based on their previous work and the review of the publications in the COO literature, Papadopoulos and Heslop (2003) summarized seven key constructs on which consumers form their views about an origin country. These include “a nation’s level of advancement, their feelings about its people, their desire for closer links with the country, the quality, price, and level of market presence of its products, and their overall satisfaction with these products” (Papadopoulos and Heslop 2003, p.422). The seven dimensions correspond to both country and product evaluation.

Based on these two measures of COO image, the following conceptualized framework is examined in the study. Two different models are proposed: a Product Country Image (PCI) model, in which COO image is modeled as consisting of two

components (*Country* and *Product*) and a General Country Attribute (GCA) model, in which the country component of COO image is further decomposed into two facets:

People and *Similarity*.

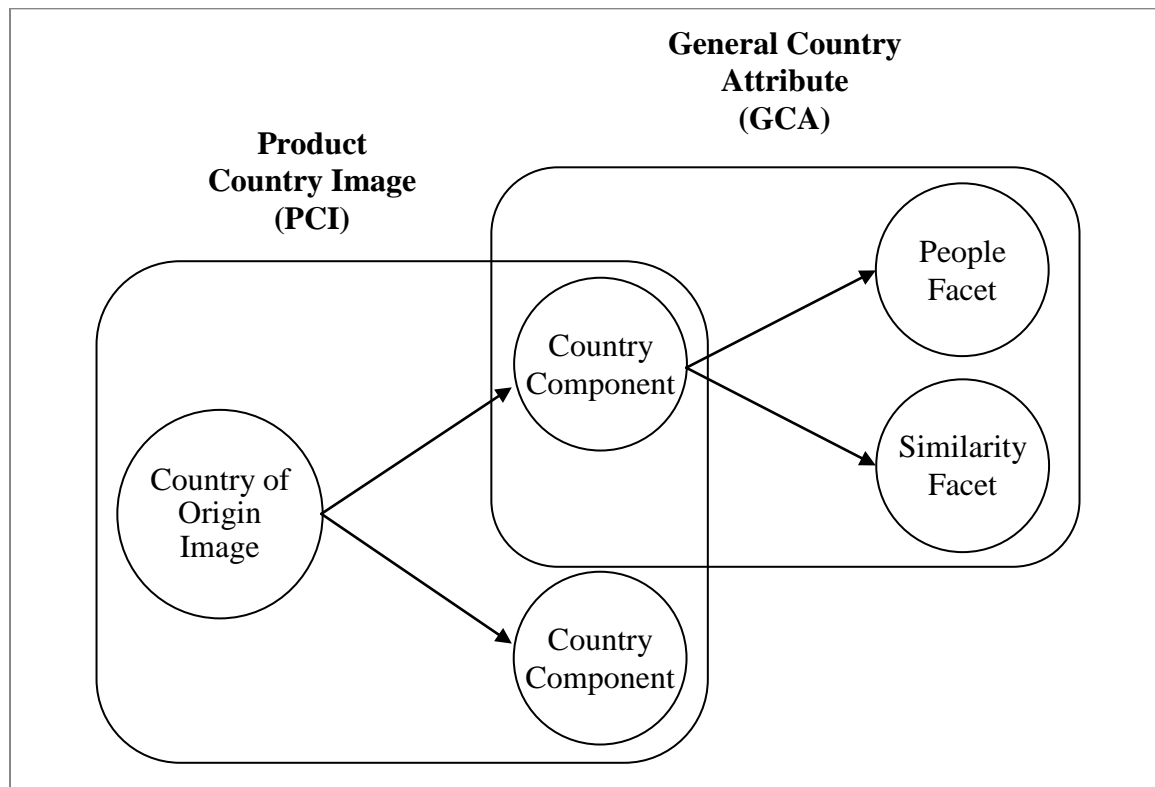


Figure 5.2 Conceptualized Framework to Examine Country of Origin Effects

Often, the measurement of COO image involves using several individual scales which are then used together to extract the underlying constructs of the image. Factor Analysis (FA) is a technique used to identify latent constructs from observable indicators. It serves the purpose of evaluating factorial score validity and summarizing factor relationship into parsimonious factor scores which can be more conveniently used in further data analysis (Bollen (1989) and Thompson (2004) provide excellent references to

the method). FA is different from simple Principle Component Analysis in that the latter is simply used as a variable reduction technique to extract a few variables to account for the total variance existing in the data. FA, on the other hand, is employed to examine data containing measurement scales which are believed to be influenced by certain latent constructs.

FA is broadly defined into two major branches, depending on theoretical beliefs or expectations about the underlying constructs of the factors under investigation: Explanatory (EFA) and Confirmatory (CFA). EFA can be used when there is no any prior expectation about the data. The method can be used to aid researchers in developing model and theory. CFA, on the other hand, requires that the researchers have more specific expectations about the data, such as the number of factors, the structure of the latent constructs (which individual scores belong to which latent factors), and their relationship (i.e. correlation).

Commonly first-order FA models are used to analyze the underlying latent variables. That is, a few latent variables are believed to directly influence a large number of observable indicators. However, higher-order FA model can also be specified, in which case the first-order latent variables may be specified to be influenced by even fewer higher-order latent variables (Bollen 1989).

5.2 DESIGN OF THE STUDY

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. The

choice experiment was delivered in an online survey to shoppers in the Great Britain. The following subsections provide detailed information about the design of this study.

5.2.A PRODUCT ATTRIBUTE SPECIFICATIONS

Although the primary objective concerns the investigation of consumer preference for beef with different countries of origin, several other import beef attributes were included. This is appropriate because consumers usually evaluate products using combined information on multiple product attributes (Green and Srinivasan 1978). It also helps avoid the single-cue bias generally associated with studies which evaluate COOL's effects (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 5.1 presents the attributes used and their levels and provides the description for each respective level label.

Based on the prevailing market prices observed in local groceries in a number of major cities at the time of the study, a price range of [£4.88, £8.82] was determined for a steak portion of 0.375 kilograms net weight. The range was based on a mean price of £6.46 and its standard deviation of £0.78. This price range reflects the low-end and high-end prices of less and more 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 features up to four other different labels.

Table 5.1 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	2	No growth hormone [No label]
Quality	2	Gourmet (premium quality) [No label]
Country of origin	6	Great Britain, France, Germany, Argentina, USA, Canada

The Red Tractor Assurance is an independent food assurance scheme, launched by the National Farmers’ Union of England and Wales (NFU) in June 2000 in the wake of the BSE crisis. It is only implemented in the Britain. Food safety labels are used as a measure to counteract public concerns and loss of confidence. Christensen et al. (2003) found that consumers in U.K. value the role of private sector (companies, producers, and retailers) when it comes to food safety assurance. Large-scale retailers such as Sainsbury, Marks and Spencer and Tesco whose images had suffered in the wake of the beef safety scare, developed their own procedures to provide safety guarantees (Fearne 1998). Collective producer labels such as “Label Rouge” for poultry in France (Westgren 1999) and “Red Tractor” for food in the U.K. (Assured Food Standards 2014) have also later emerged as alternative food safety labels to meet demand in quality and safety assurance in the European member states. The visual logo “Red Tractor” used in this study is used in Britain to signal 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 use of growth hormones is also a controversy in livestock production in the EU countries. To a certain extent, the EU ban on hormone-treated beef was largely driven by consumer pressure as opposed to industry lobbies (Hobbs and Kerr 2006). EU consumers, including British, on average reported that they were more concerned about use of growth hormones in livestock production, compared to U.S. consumers (Lusk, Rosen and Fox 2003). Through a stated preference study, Alfnes (2004) showed that Norwegian consumers perceived U.S. hormone-treated beef as the most inferior, while U.S. hormone-free beef was considered as good as beef from a nearby EU country. Lusk, Rosen and Fox (2003) also found that consumers across EU countries were similarly willing to pay positive and sizable premiums for non-hormone-treated beef. Considering this, the second descriptive label containing the words 'No growth hormones' was used. The label signifies that no growth hormones of any kind have been used in cattle rearing production. Although under the EU rules livestock products from its member states are not allowed to contain growth hormones, the beef profiles were designed such that some beef packages from the U.K., France and Germany were also presented without the 'No growth hormones' label. Although unrealistic, the design allows the study to fully assess the respondents' reaction to this attribute and more accurately evaluate the impact of COOL.

The third 'Gourmet' label is purely a marketing instrument used on beef products in some EU countries, e.g., in Germany. It serves as a claim that the beef is guaranteed to be of high quality, although without being formally certified. Hence, it is a purely

promotional label. Each of these three aforementioned labels has only two attribute levels: either presence or absence (no label).

On the other hand, for a diversified geographical representation, six countries of origin, both European and non-European nations and the U.K., were incorporated as labels to indicate product origin. Except Germany, the other four foreign countries (France, Argentina, the U.S., and Canada) are not major exporters of beef and veal to the U.K.² However, they were chosen for this study in order to assess the British consumers' evaluation of beef from these other less familiar origin countries. Unlike the other three labels, there is no 'No label' level for this attribute. This is to accommodate for the mandatory country of origin requirement enforced in the U.K. and EU in general. A sample of beef packages is presented in Figure 5.3.

Alternative A	Alternative B	Alternative C
		None of these
I choose ___	I choose ___	I choose ___

Figure 5.3 Sample Choice Set in the Choice Experiment

² The major importers of beef and veal to the U.K. in 2012 were Irish Republic (68%), Netherlands (9%), Germany (5%), Poland (3%) and Others (15%). Source: Department for Environment, Food and Rural Affairs, Department of Agriculture and Rural Development (Northern Ireland), Welsh Assembly Government, The Department for Rural Affairs and Heritage, and The Scottish Government, Rural and Environment Research and Analysis Directorate (2014).

5.2.B CHOICE EXPERIMENT DESIGN

The reliability of parameter estimates for the choice attributes is generally dependent on the design of the choice experiment. Revelt and Train (1998) introduced the ML model which does not only relax the IIA assumption but also accounts for correlation in unobserved utility over repeated choices made by each respondent. When designing choice situations to collect data which are to be estimated by a ML model, an efficient experiment is designed such that: (1) preference heterogeneity can be captured, (2) correlation between multiple choice observations within each respondent can be accounted for, and (3) *iid* assumption can be relaxed (see Bliemer and Rose (2010) for a discussion and references). The second issue is of great interest when multiple choice situations are to be presented to a single respondent. In many studies, frequently initial study design may be based on cross-sectional data structure assumption. This means that m observations collected from each respondent are instead treated as one observation from m respondents. Random parameter efficient panel design was used in this study since multiple choice sets were presented to each respondent. As Bliemer and Rose (2010) argued, the design can fully address the three important considerations, especially the second issue. The design also ensures that the subsequent ML model estimation generate reliable parameter estimates.

Choice design software Ngene 1.1.1 (Choice Metrics 2012) was used to aid the design. Efficient random parameter panel design was adopted, which optimizes the efficiency of data collected for panel ML model estimation. Bliemer and Rose (2010) showed that the efficiency of specific model estimation is dependent on the underlying design tailored to it. The d-error scores of all designs generated were compared and the

design producing the lowest error score was chosen. To ensure its effectiveness, the preliminary design was pre-tested with about 100 online respondents and inputs from the pre-test were used to refine the final design.

Given the six categories of attributes and their levels as reported in Table 5.1, a total of 36 product profiles were generated. The total profiles were equally split into three blocks, each containing 12 choice sets each. In addition to orthogonality, the design also achieved attribute level balance (Appendix 1, Table A.1), a desirable property which ensures that the parameters can be estimated well on the whole range of levels (Rose, Bain and Bliemer 2011). Although it would be ideal to assign the complete set of 36 choice sets, it can cause fatigue effect (Swait and Adamowicz 2001). Hence, 12 choice sets were assigned to each respondent because the choice profiles were not very complex. To ensure the collection of reliable choice data, the presentation of the choice sets to the respondents was further randomized to reduce ordering bias (Carson et al. 1994).

Two choice profiles were paired in each choice situation. The two alternative packages of beef were equally weighted at 0.375 kilograms. As suggested by Louviere, Hensher and Swait (2000), a third option—buying none of the two packages (Figure 5.3), was also presented in the choice set, in order to avoid making the choice set conditional. This allows the estimation of true demand models, rather than conditional models.

5.2.C SURVEY INSTRUMENT DESIGN

The survey instrument was designed in three major parts. Each respondent was first presented with 12 choice scenarios. The consumers were asked to make selection as if they were shopping in their usual grocery store. 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 (see Appendix 2).

After the choice experiment questions were completed, patriotism and COO image were measured using a number of scales. Patriotism was measured using only a simple self-evaluated scale. Specifically, the respondent were asked to rate their perceived level of patriotism to their country—Great Britain, on a seven-point Likert scale, ranging from 1 (Not at all) to 7 (Very much). In a separate question, they were asked to evaluate a number of statements concerning their belief and feeling about one of the origin countries—Canada. The country was chosen as the objective of the study was to assess the market potential of Canadian products in the EU market. Specifically, we intended to measure how EU consumers may relate themselves to Canada (through the evaluation of COO image of Canada) and how this may influence the preference for Canadian products. The findings of the study aim to contribute to the development of more successful marketing strategies for Canadian products in the EU market in general.

There are no unique scales available to accurately measure the abstract concept of COO image. The statements used to assess British consumers' COO image of Canada in this study are some of the validated scales in the COO image literature. All statements were measured on a Likert scale from 1 (Not at all appropriate) to 10 (Most appropriate). A total of 19 statements were used in the survey. Among them, the first 12 items were the validated scales measuring General Country Attribute (GCA) construct of COO image, adapted from Parameswaran and Pisharodi (1994). These validated scales only measure the country aspect of COO image. On the other hand, the seven constructs summarized by Papadopoulos and Heslop (2003) were also used. This second group of statements is

only a general summary of the Product Country Image (PCI) concept, which covers both country and general product aspects of COO image. The two groups of statements provide the study two alternative measures to assess the impacts of COO image on COOL preference. 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.

5.3 DATA COLLECTION

Data collected in this study was part of the project "Meeting European Consumers' Demand for Canadian Beef: Analysis of Canadian Beef from a European Perspective – The Role of Country-of-Origin Labelling." Funding for the project was granted by Consumer and Market Demand (CMD) Network, with Professor Carola Grebitus, Arizona State University as Principal Investigator (PI), together with Professor Gregory Colson, University of Georgia, and Co-PI Professor Wuyang Hu, University of Kentucky. The Sub-grant Number is CMD-560 (C\$ 66,000) 2012-2013.

A preliminary survey was carried out to pre-test the survey instrument before it was finalized. The final questionnaire was delivered in an online survey format in fall 2013, administered by a reputable international market research company, Taylor Nelson Sofres (TNS). TNS has a presence in over 80 countries across the world, having a vast consumer panel of more than five million individual in their data bank. Adult household members (aged 18 and over) in the Great Britain who were most familiar with the grocery purchase were the target of the study. In the online survey, shoppers were randomly selected from a representative distribution of household income level.

CHAPTER 6: RESULTS

A total of 402 respondents completed the survey. The quality of the choice experiment data collection was controlled by the inclusion of one quality control choice in the 12 choices sets. This choice set was designed such that two steak packages have all the same attributes but differ in price. We expect that consumers who pay attention to the choice sets presented would either choose the lower priced alternative or the not purchasing option. Therefore, on this logical basis, data from the seven respondents who instead chose the higher priced alternative were eliminated to ensure data quality. As a result, data from 395 eligible respondents were retained.

6.1 DESCRIPTIVE STATISTICS

Descriptive statistics are presented in Table 6.1. The sample has a good representation of both sexes (52.7% of female respondents), with a mean age of 48 years. The median education attainment was a technical school diploma, and the median households earned an annual income of slightly over £25,000. About 20% of the sampled respondents have children under 12 years old living with them, and 94% were native born British.

Table 6.1 Descriptive Statistics of the Sample

Variable	Mean
Female (%)	52.7
Age	47.98 (15.30)
Education ^a	Technical school diploma
Household income ^a	£25,000
Household size	2.45
Having children under 12 years old (%)	20.4
Born in Britain (%)	94.3

Note: () denotes standard deviation.

^a Median value

Table 6.2 provides a comparison of the sample demographic statistics to the Great Britain 2011 population census distribution with respect to gender, age, education and annual household income. Overall, the sample has a slightly greater, but insignificantly different, female proportions (p -value = 0.81). However, the sample displays significant departure from the population in terms of age, education and annual household income distributions, as indicated by the χ^2 statistics on the comparison of sample and population proportions. The youngest (18 to 29 years old) and oldest (70 years and over) age groups were considerably under-sampled. On the other hand, the sample proportions closely resemble those of the population for almost all income levels, except that the sample includes substantially more respondents in the £30,000 to £34,999 income bracket but largely underrepresents family with annual income over £50,000.

Table 6.2 Sample and Population Socio-demographic Statistics Comparison

	Sample	Population
Number	402	46,751,824
Sex (%)^a		
Female	53.2	50.9
	$\chi^2 = 0.81, df=1, P =0.37$	
Age (%)^a		
18 to 29 years	14.4	21.3
30 to 39 years	17.0	17.3
40 to 49 years	21.0	19.3
50 to 59 years	19.0	16.0
60 to 69 years	22.3	14.2
70 years and over	6.3	11.9
	$\chi^2 = 40.81, df=5, P <0.0001$	
Educational attainment (%)^a		
UK Level 2 (High school diploma)	21.8	26.3
UK Apprenticeship (Technical school diploma)	17.4	5.7
UK Level 3 (Some college)	25.7	21.0
UK Level 4 (College and graduate degree)	35.1	46.9
	$\chi^2 = 104.32, df=3, P <0.0001$	
Annual household income (%)^b		
Less than £9,999	10.6	12.0
£10,000 to £14,999	16.2	15.0
£15,000 to £19,999	10.6	13.0
£20,000 to £24,999	12.2	10.0
£25,000 to £29,999	9.4	8.0
£30,000 to £34,999	13.2	7.0
£35,000 to £39,999	8.6	6.0
£40,000 to £44,999	6.1	5.0
£45,000 to £49,999	4.1	4.0
£50,000 and more	9.2	19.0
	$\chi^2 = 52.61, df=9, P <0.0001$	

^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, the United Kingdom

To achieve better representation for the population, sample weight was calculated to be included in subsequent choice data analysis. In the absence of multilevel cross-tabulation in the British census data, sample weight for the econometric model estimation was calculated based only on sample and population income distribution.

The final dataset consists of 395 observations. Before estimating the empirical econometric models, factor analysis was performed on the scale items measuring COO image, in order to extract latent COO image variables. The extraction of latent factors is not only for reducing the number of variables but also for providing easily interpretable variables. Confirmatory Factor Analysis (CFA) was performed in order to evaluate the COO image constructs. Factor scores were then calculated and used, along with the patriotism score, in the estimation of the choice models. The succeeding section present results from the CFA.

6.2 CONFIRMATORY FACTOR ANALYSIS

Table 6.3 provides summary statistics for the 19 items used to assess British consumers' COO image on Canada. The first twelve scale items are the validated measures of General Country Attribute (GCA) from Parameswaran and Pisharodi (1994; 2002). These items are used to gauge only the respondents' perception about the origin country in term of the country aspect. The last seven items are the general constructs proposed by Papadopoulos and Heslop (2003). As previously argued, these items are less standardized descriptions and have not been previously used as formal scales to measure COO image. These last seven items, however, cover both country and product aspects of the COO image.

Table 6.3 Summary Statistics for Country of origin Image Scales

Scale	Item Description	Mean	SD
General Country Attribute (GCA) Scales			
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
Cronbach Coefficient Alpha			
	Raw	0.96	
	Standardized	0.96	
Product Country Image (PCI) Scales			
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 those 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	0.89	
	Standardized	0.89	

Source: Scales S1-S12 were adapted from Parameswaran and Pisharodi (1994; 2002); Scales S13-S19 were adapted from Papadopoulos and Heslop (2003).

The overall reliability and internal consistency of the scale items was very high for both groups of scales, as reflected by Cronbach's Alpha (Cronbach 1951) shown in Table 6.3. The Cronbach's Alpha measures internal consistency, the extent of individual scales' correlation with one another and the entire set of scale. It can be used as indication of whether the scales are valid measures for the proposed constructs. A value of 0.89 to 0.96 is very high as compared to the suggested acceptable reliability coefficient value of 0.70 (Nunnally and Bernstein 1994).

In general, the respondents indicated a slightly high agreement with the 19 statements describing Canada. The statements corresponding to the evaluation of country (and people) were comparatively agreed to be more appropriately describe their views than those of products. For instance, the friendliness and likability of the Canadians (S1) and having positive feelings toward the people from Canada (S14) were the most strongly agreed statements. The last three items measuring Product Country Image (PCI), which are related to the evaluation of products from Canada in terms of prices (S17), availability (S18) and prior satisfaction (S19), were the lowest agreed statements on average. This reflects British consumers' low exposure to Canadian. This is not surprising given that leading Canadian exports to the U.K. are mineral resources (i.e. gold, nickel) (BCStats 2014).

The data on the 12 and 7 COO image items collected in this study, measuring General Country Attribute (GCA) and Product Country Image (PCI), respectively, were analyzed separately using two two-level higher-order CFA models. As demonstrated in Parameswaran and Pisharodi (1994; 2002), we model the GCA component of the COO image which influences the 12 individual items as having two facets. The original

terminologies used by the authors: *People* and *Similarity* facets were also used here. Although potentially these two facets may include eight and four scale items, respectively, an alternative model (hereafter referred as the GCA Model) with the two facets containing seven and three items exhibits a more superior fit in terms of accounting for the underlying relationships in the dataset. This is consistent with results from the original authors. Like in their work, the fifth and twelfth items were dropped because the two items did not conform well to the specified latent variables *People* and *Similarity* facets. The structure of GCA model is illustrated in Figure 6.1.

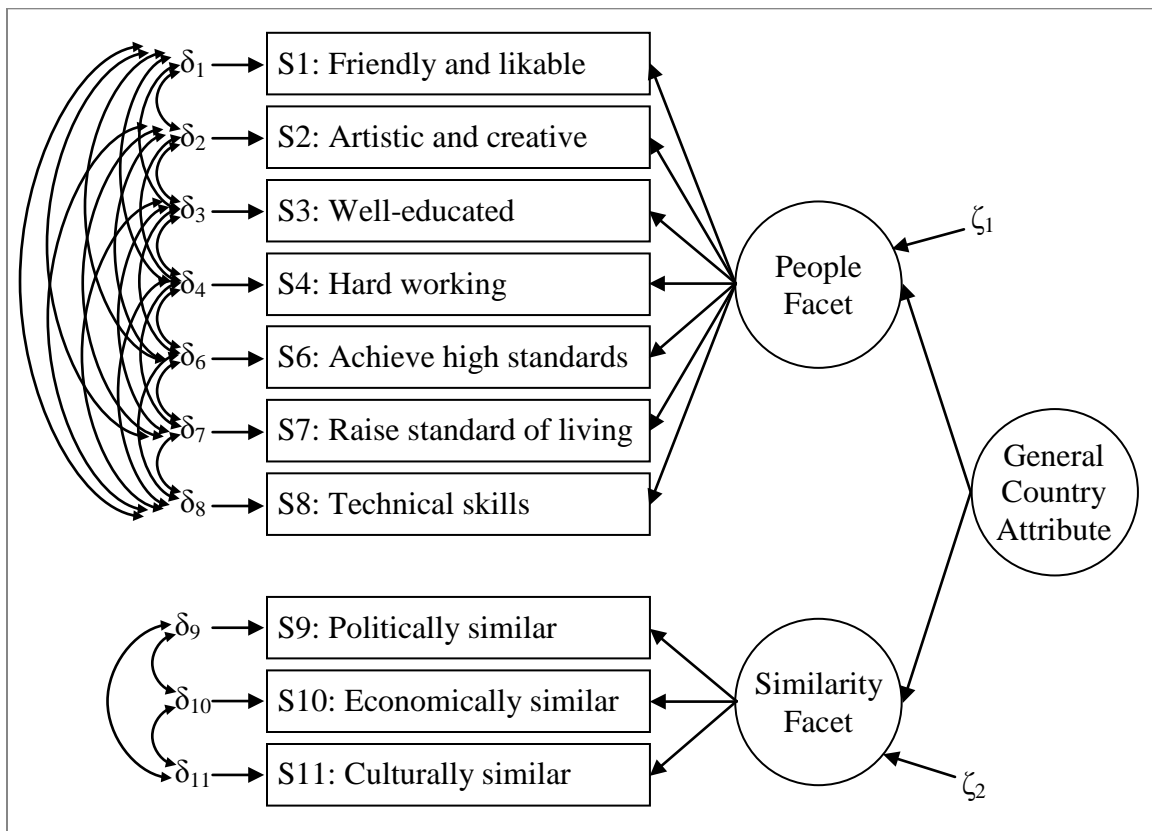


Figure 6.1 Two-Level Higher-Order Factor Model of General Country Attribute (GCA)

Note: ζ denotes correlation. \rightarrow denotes influence. δ denotes error terms of observed variables and ζ denotes error terms of latent variables.

In the two-level General Country Attribute (GCA) factor model, *People* and *Similarity* facets were specified as the first-order latent variables which directly influence the scores on the seven and three retained statements, respectively. GCA was further specified as a second order latent variable, which only has direct influence on the first order latent facets. Error components of the individual scales measuring each latent construct were also specified to be correlated with each other. The correlated specification also improved model fit to the data.

Similarly, as with Papadopoulos and Heslop's (2003) seven general constructs, two first order latent variables were also specified, namely *Country* and *Product* components, in the Product Country Image (PCI) model. Initially four items (S13-S16) were specified to load on the *Country* component, and three items (S17-S19) for the *Product* component. Likewise item S15 (desire for closer link with the origin country) did not conform well to the model and was eliminated from the final model. Thus, the final model (hereafter referred to as the PCI Model) was specified with three items loaded on each first order component. This is shown in Figure 6.2.

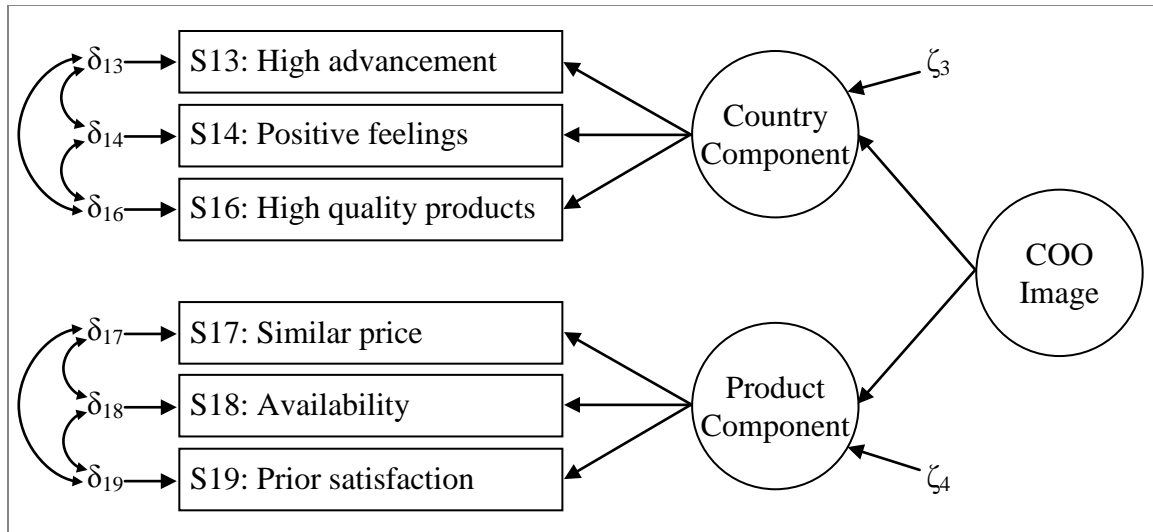


Figure 6.2 Two-Level Higher-Order Factor Model of Product Country Image (PCI)

Note: \curvearrowright denotes correlation. \rightarrow denotes influence. δ denotes error terms of observed variables and ζ denotes error terms of latent variables.

Model fit can be assessed based on several commonly referred fit indices (Schreiber et al. 2006), as reported in Table 6.4. The Chi-Square test statistics reported for both models indicate relatively poor fit. However, as commonly known, the test is sensitive to large sample and is less practical. Other commonly cited fit statistics all indicate otherwise very good fits. The Standardized RMR (SRMR) and RMSEA were both below the suggested cut-off values of 0.05 and 0.08, respectively, except RMSEA in the PCI Model. The GFI and AGFI also show acceptably good fit. Furthermore, most (all in the GCA Model) of the incremental fit indices are 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 and Jöreskog and Sörbom 1993). Overall, the relationship between observed indicators and latent variables explained by the PCI Model was not as good that explained by the GCA model. The reason being, unlike the items used in the GCA Model, those used in the PCI Model are more aggregate and less similar

across scales. Nonetheless, the fit statistics for the PCI Model are considered acceptable. Summary statistics for the extracted latent variables are presented in Appendix 1 Table A.4.

Table 6.4 Confirmatory Model Fit Statistics

	GCA Model	PCI Model
Total number of scales	10	6
Chi-Square (χ^2)	30.00	23.40
Degree of freedom	13	4
<i>P</i> value	0.005	<0.001
Standardized Root Mean Residual (SRMR)	0.014	0.021
Root Mean Square Error of Approximation (RMSEA)	0.052	0.111
Goodness of Fit Index (GFI)	0.986	0.981
Adjusted GFI (AGFI)	0.939	0.901
Bentler Comparative Fit Index (CFI)	0.995	0.986
Bentler-Bonett Normed Fit Index (NFI)	0.992	0.983
Bentler-Bonett Non-normed Index (NNFI) (also known as Tucker–Lewis index TLI)	0.984	0.947
Bollen Normed Index Rho1 (also known as RFI)	0.972	0.936

Correlation between the latent variables measuring COO image and patriotism score was also examined. Surprisingly a weak but positive correlation is shown in Table 6.5. This suggests that the respondents the sample who rated themselves as being more patriotic may also evaluate the origin country favorably. This implies that even with highly patriotic consumers it is possible to build favorable image of origin countries. Such positive COO image may help to lessen the bias against imports due to patriotism.

Table 6.5 Pearson Correlation Coefficients

	People facet	Similarity facet	GCA	Country component	Product component	PCI	Patriotism
People facet	1.00						
Similarity facet	0.67	1.00					
GCA	0.77	0.99	1.00				
Country component	0.86	0.53	0.62	1.00			
Product component	0.47	0.49	0.51	0.67	1.00		
PCI	0.57	0.53	0.56	0.78	0.99	1.00	
Patriotism	0.27	0.23	0.25	0.18	0.14	0.15	1.00

Note: all correlation coefficients were significant at 1% level.

6.3 MARGINAL UTILITIES

Finally, choice data collected from the 395 eligible respondents containing a total of 4,696 choice sets were estimated for both the CL and ML models. All marginal utility parameters in the ML model, except price, were assumed to be random and normally distributed. The coefficient of price variable was specified as fixed parameter to avoid any potential unrealistic positive values arisen from the normal distribution specification. The other attractive property of a nonrandom price variable specification is the convenience in calculating WTP measures. Each calculated WTP measure's distribution in that case can be assumed to have the same distribution as that of the attribute variable it is computed from (Train 2009).

The models were estimated using *Nlogit 5* (Econometric Software, Inc. 2012). Halton draws were utilized for the ML model simulation since they produce more evenly distributed points in the simulation space. The final ML model was estimated with 500 draws. The stability of the estimation was also confirmed by using other numbers of

draws. Panel ML model was estimated, taking into account repeated choice situations faced by each respondent (Revelt and Train 1998). Furthermore, the sample weight calculated based on income distribution was incorporated in the estimation of both models to make the results more representative to the U.K. population. The COO image scores (represented by the second order factor scores of the General Country Attribute 'GCA' and Product Country Image 'PCI') were included in the choice models, together with patriotism score, as interaction terms with COOL variables. The scores for GCA and PCI were examined separately, however. Therefore, the choice models were estimated twice. Highly similar results were obtained from the estimation using GCA and PCI scores. The results from the models estimated by using PCI factor score is reported in Table 6.6. Similar results from the GCA model are provided in Appendix 1, Table A.5.

The results from CL and ML models are provided alongside form comparison. The estimates for marginal utilities all had signs as expected and were also consistent across the two models. However, Table 6.6 shows that the ML model had a superior fit to the data, as indicated by McFadden's pseudo R^2 of 0.426 (Louviere, Hensher and Swait 2000). The proceeding discussion will be based on estimates from the ML model, as they reveal more information about heterogeneity in consumer tastes. Preference heterogeneity can be assessed through the standard deviation estimates (Hensher, Rose and Greene 2005), which indicate how valuation of the entire sample spreads around the estimated means (β_i). With normal distribution specification the proportion of the population having positive or negative valuation on each attribute can also be inferred from the estimated means and standard deviations (Train 2009).

Table 6.6 Utility Function Parameter Estimates Using PCI Factor Score

Variable	CL		ML			
	Coef	S.E	Mean estimate		S.D estimate	
			Coef	S.E	Coef	S.E
Price	-0.489 ***	0.022	-0.850 ***	0.039		
Buy None	-4.361 ***	0.169	-8.978 ***	0.401	4.095 ***	0.231
Red Tractor	0.237 ***	0.050	0.415 ***	0.091	0.838 ***	0.115
Gourmet	0.118 **	0.051	0.048	0.079	0.279	0.170
No Growth Hormone	0.618 ***	0.053	1.192 ***	0.119	1.474 ***	0.126
Country of Origin						
France	-1.100 ***	0.220	-1.215 **	0.515	1.289 ***	0.214
Germany	-0.490 **	0.211	-0.071	0.510	1.866 ***	0.248
Argentina	-0.925 ***	0.218	-0.714	0.596	2.429 ***	0.251
United States	-1.286 ***	0.229	-1.406 ***	0.491	1.277 ***	0.174
Canada	-2.016 ***	0.261	-2.092 ***	0.474	0.709 ***	0.238
Interaction Effect-Patriotism						
France*Patriotism	-0.166 ***	0.040	-0.481 ***	0.098		
Germany*Patriotism	-0.257 ***	0.039	-0.649 ***	1.000		
Argentina*Patriotism	-0.261 ***	0.040	-0.738 ***	0.119		
United States*Patriotism	-0.120 ***	0.042	-0.442 ***	0.094		
Canada*Patriotism	-0.238 ***	0.041	-0.508 ***	0.083		
Interaction Effect-PCI						
Canada*PCI	0.438 **	0.061	0.366 ***	0.103		
Number of respondents	395		395			
Number of choice sets	4,740		4,740			
Log-likelihood function	-4,277		-2,952			
McFadden's Pseudo R ²	0.168		0.426			

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

The coefficient of price was negative and highly significant as expected, indicating that the consumers generated lower utility from beef with higher price, all else equal. A binary variable 'Buy_none' was included in the model, representing the choice situation of choosing none of the two alternative beef packages presented in each choice set. The mean estimate of this variable was also negative and highly significant. This suggests that consumers derived higher utility from being able to choose any of the beef packages as compared to not buying at all. However, the estimated standard deviation was also 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 British consumers viewed beef assured by this label to have higher utility level, all else equal. Strong preference for food safety labels has also been documented in previous research in the U.S. (Dickinson and Bailey 2002; Loureiro and Umberger 2007). However, the preference for this label was not homogeneous, as revealed by the significant 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 (31%) of the respondents did not value the 'Red Tractor' label.

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. Furthermore, the marginal utility generated by the hormone-free attribute was considerably higher than that by the safety label, suggesting that the U.K. consumers strongly preference beef not

treated with growth hormones. This is consistent with findings from other studies. Survey by Miles et al. (2004) 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, followed by the use of antibiotics and pesticides. The result in this study is also very similar to those by Lusk, Roosen and Fox (2003) and Alfnes (2004), which similarly documented strong consumer sentiment to avoid hormone treated beef among the European consumers. Preference for hormone-free beef was also heterogeneous among the respondent. Again, it can be imputed for the normal distribution assumption that about 21% of respondents were indifferent toward hormone-free beef.

The 'gourmet' label in this study was the only insignificant attribute among all. The standard deviation estimate for this variable is also insignificant, implying that approximately the respondents did not value this label. This result is perhaps due to the confusion of what quality this label signifies.

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 their coefficient estimates were negative, except for Germany and Argentina labels. This is not surprising given that previous research on consumer's preference for beef with COOL has found strong preference for domestic beef (Alfnes and Rickertsen 2003; Loureiro and Umberger 2003; 2005 and 2007; Lim et al. 2013). Although the estimates for Germany and Argentina labels were not statistically significant, the coefficients of these labels cannot be directly interpreted, as individual interaction variables for the labels were present in the models

and were shown to be statistically negative. The preference for COOL label was also not homogenous, as can be seen from the significant standard deviation estimates.

As suggested in the literature of COO effects, patriotism, or ethnocentrism, is an important driving factor for consumer's support of domestic goods. Such influence was examined in this study using the self-reported patriotic score. About 94.3% of the respondents identified themselves as native born British in the survey, as reported in Table 6.1. The self-reported level of patriotism, which was measured on a scale of 1 to 7, had a mean score of 5.08 (see Appendix 1, Table A.4). Using this variable, five interaction variables were created with the foreign origin countries and included in the models for estimation. These variables provide a measure of how preference departs from the mean values of the COOL variables, based on the individual characteristic covariate—patriotism level.

It was found that patriotism was negatively related to the selection of all foreign beef. The estimated coefficients for the interaction effects of patriotism level with five countries were negative and statistically significant at 1% level. This suggests that, consumers who felt more patriotic toward their country were less likely to choose imported beef, *ceteris paribus*. Our results are also similar to Orth and Fırbasová's (2003) findings on Czech consumers' evaluation of domestically made yogurt, which showed that consumer ethnocentrism has a significant negative impact on the evaluation of foreign imports.

Finally, we also 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 latent variable representing COO image was represented by the last interaction variable in Table 6.6 for the PCI Model.

The variable in Table 6.6 corresponds to the Product Country Image (PCI) evaluation score. The coefficient was statistically significant and positive, suggesting that consumers who had positive image of Canada were more likely to select imported beef than those having less positive image. The impact of GCA score was also examined in an alternative model, reported in Appendix 1, Table A.5. However, the coefficient estimate for this interaction variable was not significant, implying that the country component (represented by GCA) of the COO image did not affect the likelihood of Canadian beef's selection.

On the other hand, it may be interesting to further investigate the effect of each PCI component (*Country* and *Product* components) and GCA facet (*People* and *Similarity* facets). This is impractical in this study, however, due to the high correlation between the scores of any one pair, as shown in Table 6.5. The presence of such high correlation is theoretically sound, because each pair of latent variables measure very similar concept related to COO image. Nonetheless, more disaggregated effects could not be examined.

6.4 MARGINAL WILLINGNESS TO PAY MEASURES

WTP measures are derived based on the change in price associated with a unit change in the respective attribute. The measures provide more convenient interpretation of dollar values for the various attributes. The calculated mean WTP measures are presented in Table 6.7. Standard errors of these measures were obtained following the

simulation procedure proposed by Krinsky and Robb (1986) with 10,000 iterations. The parameters were drawn 10,000 times from the multivariate normal distributions implied by the mean and variance covariance matrices estimated from the choice models. The WTP measures calculated from the simulated data formed empirical distributions, upon which standard errors can be estimated and confidence intervals can be constructed (see also Haab and McConnell (2002) for a more detailed explanation of this procedure). The technique is particularly useful because of the generally unknown properties of the WTP measures' distributions (Creel and Loomis 1991; Haab and McConnell 2002).

The estimates in Table 6.7 indicate that the U.K. consumers' WTP was the highest for the no growth hormone attribute. The average WTP was about £1.40 per the 375g of hormone-free beef, compared to only about £0.49 for the food safety label. On the other hand, the consumers were on average not willing to pay for the 'Gourmet' label.

Table 6.7 Mean WTP Estimates (GBP/375g package)

Variable	CL			ML		
	WTP	SE	95% Confidence Interval	WTP	SE	95% Confidence Interval
Red Tractor	0.49	0.10	(0.28, 0.69)	0.49	0.11	(0.28, 0.70)
Gourmet	0.24	0.10	(0.04, 0.44)	0.00 ^a	0.09	(-0.12, 0.24)
No Growth Hormone	1.26	0.11	(1.05, 1.48)	1.40	0.14	(1.12, 1.68)
Country of Origin						
France	-2.25	0.44	(-3.11, -1.39)	-1.43	0.60	(-2.60, -0.25)
Germany	-1.00	0.43	(-1.84, -0.17)	0.00 ^a	0.58	(-1.23, 1.06)
Argentina	-1.89	0.45	(-2.77, -1.02)	0.00 ^a	0.72	(-2.24, 0.56)
United States	-2.63	0.46	(-3.54, -1.72)	-1.65	0.56	(-2.75, -0.55)
Canada	-4.30	0.55	(-5.38, -3.21)	-2.46	0.55	(-3.54, -1.38)
Interaction Effect-Patriotism						
France*Patriotism	-0.34	0.08	(-0.49, -0.19)	-0.57	0.12	(-0.79, -0.34)
Germany*Patriotism	-0.53	0.08	(-0.68, -0.37)	-0.76	0.12	(-0.99, -0.54)
Argentina*Patriotism	-0.53	0.08	(-0.70, -0.37)	-0.87	0.14	(-1.15, -0.59)
United States*Patriotism	-0.25	0.08	(-0.41, -0.08)	-0.52	0.11	(-0.73, -0.31)
Canada*Patriotism	-0.49	0.09	(-0.65, -0.32)	-0.60	0.10	(-0.79, -0.41)
Interaction Effect-PCI						
Canada*PCI	0.90	0.13	(0.65, 1.14)	0.43	0.12	(0.20, 0.66)

^a The marginal utility estimate was not significantly different from zero.

As for the country of origin label, in the presence of the significant interaction effects from consumer patriotism and COO image variables, WTP for the overall label can be calculated using certain values of the interaction variables. The total price discount for imported beef shown in Figure 6.3 for each COOL is based on the consumer reporting a mean patriotic score (5.08) and average COO image scores for the Canada, as reported in Appendix 1, Table A.4.

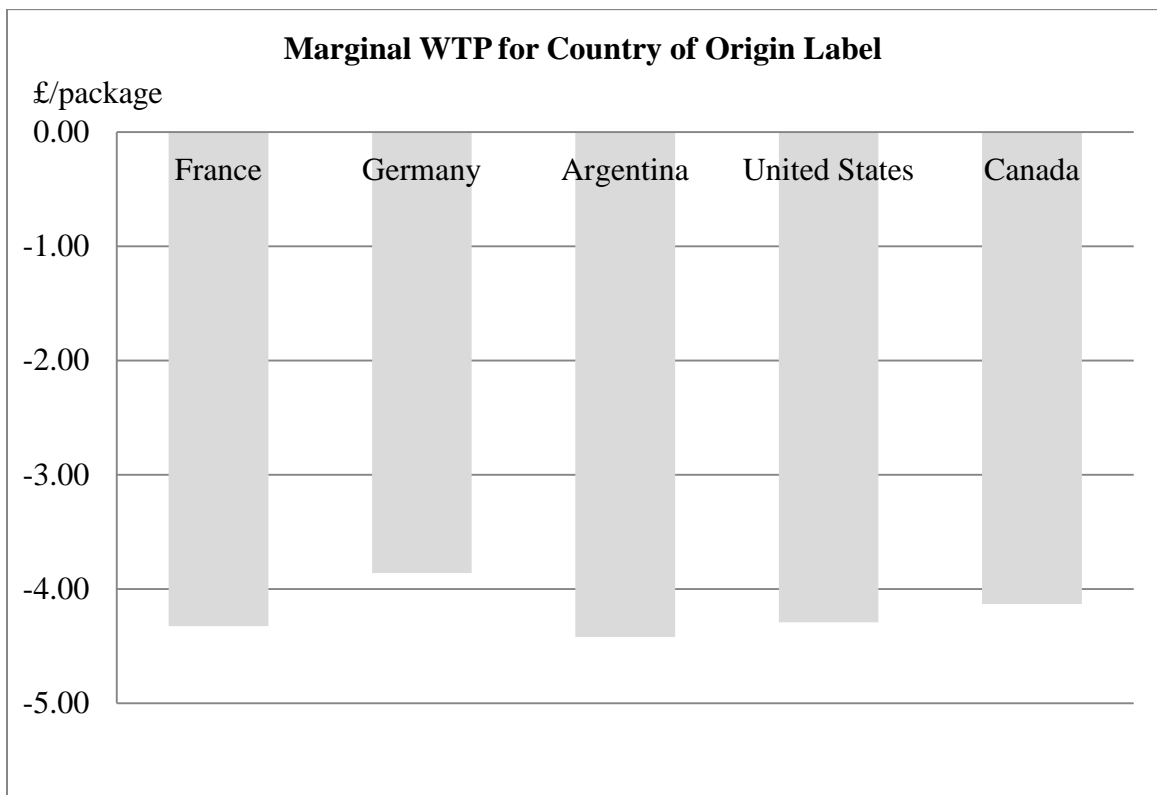


Figure 6.3 Marginal WTP for Country of Origin Label

* Based on results from the PCI Model.

For example, compared to U.K. domestic beef, the consumers were willing to pay $(-1.43) + (-0.57 \times 5.08)$ or 4.33 pound per package less for the beef imported from France.

Similarly, the discounts for German, Argentine and U.S. beef were also close to £4.00 per package. It is also worth notice that based on the overall WTP for the five COOLs, the discounts for neighboring EU countries of origin were not different from those for the more distant countries like the U.S. and Canada. However, beef from comparatively less developed country (Argentina) was discounted slightly more.

CHAPTER 7: CONCLUSIONS

7.1 CONCLUDING DISCUSSION

Using a choice experiment, British consumer preference for pre-packaged beef differentiated by price, food safety label, the indication of no growth hormone used in cattle production, and importantly COOL was studied. It was found that these labels have significant influence on consumers' choice of beef in the experiment. However, the results show that the majority of the respondent valued the food safety label. The preference for beef not treated with growth hormone is also strong.

Lusk, Roosen and Fox (2003) found that British and American consumers similarly preferred hormone-free beef. More recent studies, however, showed that the use of growth hormones was one of the least important factors for American consumers in choosing beef (Mennecke et al. 2007) and the American were not willing to pay any premium for beef not treated with hormones (Abidoye et al. 2011). Our result on British consumers' preference for this attribute indicates a contrast with the U.S. beef consumers' preference. This implies that the preference for hormone-free meat remains strong for the British beef consumers as compared to previous studies. It suggests that beef from countries where cattle are administered with growth hormones (i.e. Canada and the U.S.) is likely to be subject to low acceptance by consumers in the U.K.

Like previous studies, the results in this study also indicate very strong support for domestic beef. This is consistent with other preference studies on beef involving COOL (Alfnes and Rickertsen 2003; Alfnes 2004; Loureiro and Umberger 2003, 2005 and 2007; Lim et al. 2013). Similar results also found for other meats. Pouta et al. (2010) found that

Finish consumers preferred domestic broilers more than those from all other countries. Font i Furnols et al. (2011) found that consumers in the U.K. considered country of origin as the most important factor when choosing lamb. 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 across the sample. To a certain degree, the results also indicate that the support for domestic beef is strong among the U.K. consumers even though imported beef and veal already had a non-negligible share in the country's beef supply.

To disentangle some of the effects that influence consumer preference for domestic beef, the study also investigates British consumers' preference for COO using consumer patriotism and COO image. Our results further indicate that, in addition to personal difference in taste, the heterogeneity of preference for domestic beef over imports can also 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), who investigated consumers' perception of foreign food products, we found some results that show COO image is a significant variable affecting beef choice. Specifically, there is some evidence that favorable COO image has a positive effect on foreign product selection. However, the results show that the effect was not due to the general country image of the origin country. Rather, it was dependent on the general product evaluation associated with the COO image.

7.2 IMPLICATIONS

Most of the studies by agricultural economists related to COOL have so far only focused on examining the preference for domestic goods or imports and the economic premium for the label. Although evidence points to the strong support for domestic food products as compared to their imported counterparts, very little is known as to what may have influenced such preference. 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 serving as a tool to enable consumers to identify and reject foreign imports (Lusk et al. 2006).

As the results indicate, consumer patriotism or ethnocentrism was a significant explanatory variable for the strong preference against imports. This supports the skepticism held by many opponents that COOL is a disguised protectionist policy. Based on the result presented, COOL seems to act as a de facto barrier to trade because consumers are loyal to domestic goods. Such consumption habit is detrimental to international trade and it reduces the potential gains from trade which economists frequently advocate for. This result remains to be investigated more widely to further validate it. However, if true, it calls for the reconsideration of further implementing or tightening the COOL mandate, if achieving market or welfare efficiency is the utmost interest of policymakers.

For exporting countries, to overcome such bias the direct solution would be to price imported products more competitive than their domestic equivalence, as regularly suggested by other researchers (Mitchell and Groatorex 1990; Lantz and Loeb 1996). Another strategy is that an imported product can be arranged to be partially processed in

the destination countries. For example, live animals or cattle carcasses can be imported and slaughtered or cut in the destination countries. This would allow the meat to be labeled with both foreign and domestic origins. It is permitted under the current EU and U.S. COOL mandates. Such practices perhaps could lessen the patriotism bias, to some degree, and increase the acceptance of the imported meat. However, the effects from such practices remain to be investigated.

While the finding is discouraging for exporting countries, our study also suggests that negative effect on imports can be at least mitigated by raising the overall image of the origin country. Like Han and Terpstra (1988, p.24) claimed based on their review of the COO literature, “It has been found that all products originating in foreign countries are subject to country-of-origin effect”. The positive effect of Product Country Image on the likelihood of Canadian beef being selected suggests that exporting countries can improve the evaluation and acceptance of its exports, although the effect could not be further separately evaluated for the COO image subcomponents (*Country* and *Product* components) due to multicollinearity. Nonetheless, countries can raise their COO image in foreign markets through marketing and cultural campaigns to relate their country and people to the consumers in the destination nations. Overall product offering can also be improved by raising domestic production standards.

7.3 LIMITATIONS

Several limitations are worth noting. First, the debate over the country of origin aspect of beef does not only rest purely on the origin of production itself, but also on interrelated issues such as quality, taste, freshness, emotional attachment and loyalty to

products from specific origin. For example, study of consumer preference for beef based on eating quality showed that the majority of British prefer local beef in terms of flavor and overall acceptability (Oliver et al. 2006). Second, although some other important attributes were together addressed in the choice experiment, the interaction between these attributes was not explicitly incorporated in the design. Hence, the results in our choice models were based on main effects only. The interaction effects may exist and may have been missed out in our study.

Third, the findings with respect to the impact of COO image are dependent on the measurement used. Measuring such abstract concept is difficult at best and there is no universally agreed scale in the literature. Furthermore, although there were a few origin countries included in the design, the study only assess the COO image for one country—Canada. This was aligned with the research project's interest and also in consideration of possible survey fatigue due to exposure to too many questions. Thus, it is difficult to generalize the results on whether positive COO image effect exists on the selection of beef from other origin countries in the study. On the other hand, comparison of the effect of COO image across countries was also not possible.

The choice of scale to measure consumer patriotism should also be re-considered. Multiple scales may be developed to gauge such tendency. Last but not least, the results with respect to COO image's effect on the choice of Canadian beef may also be limited to a certain degree by the British consumers' low exposure to Canadian products, as it would have been difficult for the respondents to evaluate on the scales measuring quality, price and overall satisfaction with Canadian products.

7.4 FUTURE RESEARCH

Future studies to investigate COO image effect should, in addition to the evaluation of General Country Attribute (GCA) of the origin countries, also consider asking respondents to evaluate General Product Attribute (GPA) and Specific Product Attribute (SPA). In the evaluation of food products, consumers may also have in mind other important issues which are different from general consumer durables. Thus, the scale items to measure product evaluation perhaps should also be modified to reflect such distinction.

APPENDICES

APPENDIX 1: TABLES

Table A.1 Summary Statistics of Product Attributes Appearing in the Product Profiles

Variable	Mean	S.D.
Price	6.845	1.338
Red Tractor	0.501	0.500
Gourmet	0.500	0.500
No Growth Hormone	0.500	0.500
Country of Origin		
Great Britain	0.165	0.371
France	0.173	0.378
Germany	0.168	0.374
Argentina	0.166	0.373
United States	0.161	0.367
Canada	0.167	0.373

Table A.2 Pearson Correlation Coefficients for General Country Attribute (GCA) Scales

	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
S1: Friendly and likable	1.00											
S2: Artistic and creative	0.65	1.00										
S3: Well-educated	0.78	0.73	1.00									
S4: Hard working	0.78	0.67	0.82	1.00								
S5: Receive technical education	0.67	0.73	0.77	0.70	1.00							
S6: Achieve high standards	0.76	0.72	0.84	0.82	0.78	1.00						
S7: Raise standard of living	0.70	0.71	0.78	0.75	0.71	0.78	1.00					
S8: Technical skills	0.74	0.72	0.79	0.77	0.79	0.78	0.71	1.00				
S9: Politically similar	0.47	0.53	0.58	0.48	0.56	0.56	0.57	0.52	1.00			
S10: Economically similar	0.47	0.51	0.56	0.46	0.55	0.53	0.54	0.51	0.71	1.00		
S11: Culturally similar	0.61	0.55	0.65	0.60	0.58	0.63	0.59	0.60	0.66	0.71	1.00	
S12: Participate in international affairs	0.54	0.67	0.66	0.59	0.66	0.63	0.65	0.63	0.56	0.60	0.58	1.00

Note: all correlation coefficients were significant at 1% level.

Table A.3 Pearson Correlation Coefficients for Product Country Image Scales

	S13	S14	S15	S16	S17	S18	S19
S13: High advancement	1.00						
S14: Positive feelings	0.82	1.00					
S15: Desire for closer links	0.77	0.70	1.00				
S16: High quality products	0.84	0.82	0.78	1.00			
S17: Similar price	0.78	0.75	0.71	0.78	1.00		
S18: Availability	0.79	0.77	0.79	0.78	0.71	1.00	
S19: Prior satisfaction	0.58	0.48	0.56	0.56	0.57	0.52	1.00

Note: all correlation coefficients were significant at 1% level.

Table A.4 Summary Statistics for Extracted Latent Variables and Patriotism Score

Latent Variable	Mean	SD	25th Percentile	75th Percentile
GCA Model				
People facet	5.03	1.29	4.01	5.86
Similarity facet	7.19	3.14	5.78	9.21
GCA score	3.35	1.24	2.85	4.16
PCI Model				
Country component	4.73	1.28	3.89	5.66
Product component	6.77	2.87	5.62	8.30
PCI score	3.20	1.16	2.77	3.87
Patriotism^a	5.08	1.62	4.00	6.00

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

Table A.5 Utility Function Parameter Estimates Using on GCA Factor Score

Variable	CL		ML			
	Coef	S.E	Mean estimate		S.D estimate	
			Coef	S.E	Coef	S.E
Price	-0.489 ***	0.022	-0.849 ***	0.039		
Buy None	-4.356 ***	0.168	-9.001 ***	0.406	4.124 ***	0.235
Red Tractor	0.237 ***	0.050	0.416 ***	0.091	0.833 ***	0.114
Gourmet	0.120 **	0.051	0.044	0.079	0.314 **	0.158
No Growth Hormone	0.617 ***	0.053	1.179 ***	0.118	1.475 ***	0.127
Country of Origin						
France	-1.100 ***	0.220	-1.221 **	0.517	1.273 ***	0.212
Germany	-0.492 **	0.211	-0.099	0.510	1.882 ***	0.251
Argentina	-0.923 ***	0.218	-0.702	0.589	2.406 ***	0.253
United States	-1.311 ***	0.228	-1.451 ***	0.493	1.263 ***	0.176
Canada	-1.107 ***	0.249	-1.384 ***	0.461	0.709 ***	0.233
Interaction Effect-Patriotism						
France*Patriotism	-0.165 ***	0.040	-0.483 ***	0.098		
Germany*Patriotism	-0.257 ***	0.039	-0.647 ***	1.000		
Argentina*Patriotism	-0.261 ***	0.040	-0.740 ***	0.118		
United States*Patriotism	-0.116 ***	0.042	-0.439 ***	0.095		
Canada*Patriotism	-0.213 ***	0.041	-0.467 ***	0.086		
Interaction Effect-GCA						
Canada*GCA	0.210 ***	0.056	0.077	0.098		
Number of respondents	395		395			
Number of choice sets	4,740		4,740			
Log-likelihood function	-4,297		-2,958			
McFadden's Pseudo R ²	0.164		0.425			

Note: Asterisks *, ** and *** denote significance at 10%, 5% and 1% level, respectively

Table A.6 Mean WTP Estimates (GBP/375g package)

Variable	CL			ML		
	WTP	SE	95% Confidence Interval	WTP	SE	95% Confidence Interval
Red Tractor	0.49	0.10	(0.28, 0.69)	0.49	0.11	(0.28, 0.70)
Gourmet	0.25	0.10	(0.04, 0.45)	0.00 ^a	0.09	(-0.13, 0.23)
No Growth Hormone	1.26	0.11	(1.05, 1.48)	1.39	0.14	(1.11, 1.67)
Country of Origin						
France	-2.25	0.44	(-3.11, -1.39)	-1.44	0.60	(-2.62, -0.26)
Germany	-1.01	0.43	(-1.84, -0.17)	0.00 ^a	0.58	(-1.26, 1.03)
Argentina	-1.89	0.45	(-2.77, -1.01)	0.00 ^a	0.71	(-2.22, 0.56)
United States	-2.68	0.46	(-3.59, -1.78)	-1.71	0.56	(-2.81, -0.61)
Canada	-3.09	0.52	(-4.10, -2.07)	-1.63	0.54	(-2.68, -0.58)
Interaction Effect-Patriotism						
France*Patriotism	-0.34	0.08	(-0.49, -0.19)	-0.57	0.12	(-0.80, -0.34)
Germany*Patriotism	-0.53	0.08	(-0.68, -0.37)	-0.76	0.12	(-0.99, -0.54)
Argentina*Patriotism	-0.54	0.08	(-0.70, -0.37)	-0.87	0.14	(-1.15, -0.59)
United States*Patriotism	-0.24	0.08	(-0.40, -0.07)	-0.52	0.11	(-0.73, -0.31)
Canada*Patriotism	-0.44	0.08	(-0.60, -0.27)	-0.55	0.10	(-0.74, -0.36)
Interaction Effect-GCA						
Canada*GCA	0.43	0.11	(0.21, 0.65)	0.00 ^a	0.11	(-0.13, 0.31)

^a The marginal utility estimate was not significantly different from zero.

APPENDIX 2: SURVEY INSTRUMENT

Part 1. Choice Experiment

We are interested in your product choices.

PLEASE TAKE TIME TO CAREFULLY READ THE FOLLOWING INSTRUCTIONS BEFORE PROCEEDING

Imagine you are in your usual grocery store and considering the purchase of beef. Following are 12 choice scenarios (decision situations). All features of the products in each decision situation are identical except that they vary with regard to country of origin, price, and some other characteristics.

The characteristics that you will see are based on real products. In each decision situation, please indicate the decision you would make based on your own preferences. Specifically, you are asked which product you would choose to purchase, compared to other products that will be visible to you on the screen. Alternatively, you may choose not to purchase either product. Please carefully examine each option before you make a decision and tick the decision that you would make based on your own preferences.

IMPORTANT

- CHOOSE one of the options on each page. Or you may choose NOT TO PURCHASE either product.
- Assume that the options on each page are the only ones available.
- Do NOT compare options on different pages.

You might see a few options that may seem counter-intuitive (e.g., a lower price but a higher quality in your personal opinion). Be assured that this is not an error but part of the design of the survey. Simply choose the option that you prefer most, based on its characteristics.

Now, let's start:

A. Imagine you are in a store and you would like to purchase the beef you usually buy:

Do you choose **Alternative A**, **Alternative B** or **Alternative C**?

Alternative A	Alternative B	Alternative C
		None of these
I choose ___	I choose ___	I choose ___

Part 2. Opinion Scales

2.1 On a scale from 1 to 7, with 1=Not at all and 7= Very much, how patriotic do you consider yourself?

Not at all						Very much
1	2	3	4	5	6	7

2.2 In the following we will ask you how you feel towards Canada. Please tell us on a scale from 1 to 10 (with 1=Not at all appropriate and 10=Most appropriate), how appropriate are the below statements in reflecting your beliefs?

		Not at all \longleftrightarrow Most appropriate											
		1	2	3	4	5	6	7	8	9	10		
1	Canada is friendly and likable.												
2	Canada is artistic and creative.												
3	Canadians are well-educated												
4	Canadians are hard working												
5	Canadians received technical education												
6	Canadians achieve high standards												
7	Canada raised standard of living												
8	Canadians have technical skills												
9	Canadians have similar political views to my country												
10	Canada is economically similar to my country												
11	Canada is culturally similar to my country												
12	Canada participates in international affairs.												
13	Canada has a high level of advancement.												
14	I have positive feelings about the people from Canada.												
15	I have a desire for closer links with Canada.												
16	Canada produces high quality products												
17	Products from Canada have prices similar to products from my country.												
18	You find products from Canada a lot in my country.												
19	I have been satisfied before with products from Canada.												

Part 3. Information about the Respondent

3.1 What is your gender? Male _____ Female _____

3.2 What is your age? _____ years

3.3 How many people live in your household, including yourself?
(If you are a student, do not include your parents or roommates): # _____

3.4 Are children under the age of 12 present in the household? YES ____ NO ____

3.5 Are you a student?
YES, graduate student _____ YES, undergraduate student _____ NO _____

3.6 Were you born in Great Britain? YES ____ NO ____

3.7 What is the highest level of education you have completed?

High School Diploma	_____	Bachelor’s Degree	_____
Some college	_____	Master’s Degree	_____
Technical School Diploma	_____	Doctorate	_____
Other:	_____		

2. Please indicate your approximate annual household income before taxes:

Under £2.000		£ 2.000 - £ 4.999		£ 5.000 - £ 6.999	
£ 7.000 - £ 9.999		£10.000 - £11.999		£12.000 - £14.999	
£15.000 - £19.999		£20.000 - £24.999		£25.000 - £29.999	
£30.000 - £34.999		£35.000 - £39.999		£40.000 - £44.999	
£45.000 - £49.999		£50.000 - £59.999		£60.000 - £74.999	
£75.000 - £89.999		£90.000 - £104.999		£105.000 and over	

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Forthcoming. "Substitutes or Complements? Consumer Preference for Local and Organic Food Attributes." *American Journal of Agricultural Economics*. (*Revised and Resubmitted.*)

Conference Proceedings and Presentation

"Local is the New Organic": Do Consumers Agree?
Paper presented at the Agricultural & Applied Economics Association's 2013 AAEA & CAES Joint Annual Meeting, Washington, DC, August 4–6, 2013.

Consumers' Willingness to Pay for Seafood Attributes: A Multi-species and Multi-state Comparison
Selected Paper prepared for presentation at the Southern Agricultural Economics Association Annual Meeting, Dallas, TX, February 1–4, 2014.

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Academic Excellence

- The Kentucky Economic Association, Mark Berger Best Paper Award
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- USAID Cambodia HARVEST Scholarship Program Recipient, Award for Master's Degree studies at University of Kentucky 2011
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