

Foreign Geographical Indications, Consumer Preferences, and the Domestic Market for Cheese*

Peter Slade^a, Jeffrey D. Michler^b, and Anna Josephson^b

^a*Department of Agricultural and Resource Economics, University of Saskatchewan*

^b*Department of Agricultural and Resource Economics, University of Arizona*

November 21, 2018

Abstract

The protection of geographical indications (GIs) is an important feature of modern trade agreements. In the recently passed Canada-European Union Comprehensive Economic and Trade Agreement (CETA), Canada agreed to stronger protections for GIs of certain European food products. Under this agreement, new Canadian producers can no longer refer to feta cheese as simply “feta” but must label it as “imitation feta,” “feta style,” or “feta type.” We use a choice experiment to determine the effect this policy will have on domestic producers. We find that consumer willingness-to-pay for Canadian cheese is generally reduced under the new trade agreement, however under certain marketing treatments the effect is insignificant. We further find that providing information about GIs to consumers increases their willingness-to-pay for both domestic and foreign cheese. Our results highlight the importance of policy details in trade agreements. In particular, the degree of latitude provided to food marketers can significantly moderate the effects of recognizing GIs. Overall, the results demonstrate that stronger protections for GIs can impact domestic producers, but this impact is moderated by information, marketing, and policy decisions.

JEL Classification: F13, F14

Keywords: Trade agreements, CETA, cheese, willingness-to-pay, mixed-logit model

*Special thanks to Brianna Groot for coding and administering the survey. Helpful comments were received from Rick Barichello, Jill Hobbs, Bill Kerr, and participants at the International Conference of Agricultural Economists in Vancouver.

1 Introduction

The protection of geographical indications (GIs) is an important feature of modern trade agreements. As their name suggests, GIs are symbols or labels that indicate a product has a relationship to a particular geographic region, through either a method of production used in that region, or the natural characteristics of the region. For example, “Champagne” is recognized as a GI in Europe because it corresponds to the sparkling wine produced in the French region of Champagne. Similarly, “Roquefort” identifies cheese made using milk from a specific breed of sheep and aged in natural caves in and around Roquefort-sur-Soulzon in France. Most GI products are known by their geographic location, which appears in their name. As such, “prosciutto” is not a GI but Prosciutto di Parma is, because it refers to a type of prosciutto made in Parma, Italy following traditional methods. However, there are a small number of products that enjoy GI recognition in Europe even though the product name does not refer to a specific location of production; examples include asiago, feta, fontina, gorgonzola, and munster.¹

The EU has continually advocated for stricter protections of GIs, both at the World Trade Organization (WTO) (Goldberg, 2001; Addor and Grazioli, 2002) and in bilateral and plurilateral trade agreements (Engelhardt, 2015). One demonstration of the EU’s success in obtaining stronger GI protections is the recently signed Comprehensive Economic and Trade Agreement (CETA) between Canada and the EU. As part of this agreement, Canada recognizes 171 GIs on European products.²

The majority of the GIs recognized under CETA are compound phrases that include the name of the region of production, as well as the name of the product itself. Few, if

¹While there is the Asiago Plateau and the towns of Gorgonzola and Muenster, the GI label is applied to products made outside of these locations. As such, asiago, gorgonzola, and munster do not refer to a product from that location in the way that Champagne or Roquefort do.

²The EU agreed to recognize GIs of Canadian products too. However, in the text of the agreement the table that lists the GIs originating in Canada contains zero entries (CETA, 2017).

any, Canadian products are impacted by the recognition of these phrases. Companies can continue to market cheese as “mozzarella” because the GI protects the term “Mozzarella di Bufala Campana.” For GIs that are simply the name of the region, Canadian producers must change the name of the product. Canadian companies can no longer label sparkling wine as Champagne nor can they label blue cheese as Roquefort. For GIs that do not refer to a specific region, the agreement specifies a middle-ground. New Canadian producers of asiago, feta, fontina, gorgonzola, and munster can use these GIs on their product labels if they are modified by terms such as “imitation,” “style,” or “type,” while existing Canadian producers can continue using the terms without any modification. For example, a new Canadian cheese producer could market “feta type” or “imitation feta” cheese, but not simply “feta.”

To date, there is little economic research on the effect that stronger protections of foreign GIs have on domestic consumers and producers. In this paper, we examine this relationship using a choice experiment that elicits consumer preferences for three different specialty cheeses: asiago, feta, and gorgonzola. We find that the protections for GIs contained in CETA generally reduce consumers’ willingness-to-pay (WTP) for domestic cheese. However, this effect is moderated by the label’s terminology and the information provided regarding the labeling change. Consumers place a high discount on cheese with the label “imitation,” but a small, and in some cases statistically insignificant, discount on cheese with the label “type.” Providing consumers with information about GIs increases willingness-to-pay for both domestic and European cheese. Interestingly, when imports are restricted (as they are under CETA) and information is provided to consumers, the introduction of GIs could benefit both domestic and European producers. We also find that consumer preferences for GIs are heterogeneous, and some of this heterogeneity is explained by product characteristics, socio-demographics, and the food values of consumers. In sum, our results demonstrate that stronger protections for GIs can negatively impact domestic producers, but this impact is moderated by information, marketing, and policy decisions.

The protection of GIs is a contentious policy issue, with both sides of the issue claiming large economic losses if their position does not prevail.³ The more stringent GI protections in CETA has caused significant hand-wringing among Canadian dairy producers (Dairy Farmers of Canada, 2017). This consternation is shared by producers in other countries, namely the US, who believe that stronger recognition of GIs will limit their ability to market their products (Goldberg, 2001). These concerns are underscored by the voluminous literature documenting the importance of food labels in consumer decision making. Previous papers have found consumers WTP for food products was enhanced by terms such as “natural” (Syrengelas et al., 2017), “traditional” (Balogh et al., 2016), or “organic” (Batte et al., 2007; Urena, Bernebeu, and Olmeda, 2008). One may presume that a label with an inauthentic connotation – such as “imitation,” “style,” or “type,” – would decrease consumers’ WTP. However, there is little in the existing literature that directly speaks to the concerns domestic producers have about the recognition of GIs.

The few papers that have examined the impact of GIs, have analyzed how WTP for European products is affected by adding a GI label. Menapace et al. (2011) find that a GI label increases Canadian consumers WTP for European olive oil. However, they do not examine the effect that recognizing GIs would have on domestic producers. This is not surprising given that Canadian olive production is, to a first approximation, zero. Aprile, Caputo, and Nayga (2012) also examine the effect of labeling European olive oil with a GI, finding that American consumers have a positive WTP for the designation. However, the GI label was less salient than other product characteristics such as organic labels, quality cues, and country of origin labels. In this study, we add to the literature on consumer preferences for GIs by considering the effect of GI recognition on domestic producers.

We also look beyond the labeling of imported products, and examine how GIs affect

³From the popular press, see Jeffries (2015), Behsudi (2015), and New (2015). For opposing policy positions regarding US recognition of GIs, see Baldwin et al. (2015), and Watson (2016).

consumer demand for domestic products. While consumers may find terms like “imitation,” “style,” and “type” off-putting, it is also possible that providing more information about GIs will serve to highlight the origin of products. If this were the case, then domestic producers may be able to mitigate the effects of GI recognition by highlighting the local aspects of their own products.⁴ A wide body of literature has found that consumers are willing to pay more for locally produced food (Loureiro and Hine, 2002; Alfnes and Richertsen, 2003; Gracia, de Magistris, and Nayga, 2012; Lim et al., 2013). This preference for local food comes from a variety of motivations, including environmental concerns (reducing “food miles”), quality signals (i.e., local food may be fresher than food from farther away), or a desire to support the local economy.

Our results also inform the literature on trade policy. It is well-known that the EU would like to write stricter protections for GIs into future trade agreements. The language in CETA may form a template for future agreements, including the Transatlantic Trade and Investment Partnership (TTIP) the EU is currently negotiating with the US. It is, therefore, important for policymakers to understand the impact that these regulations will have on markets, especially given that policy details (e.g., the language that must be used in labeling products, and the information provided), can significantly moderate the effect of GI recognition.

2 Geographical Indications

Geographical identifications have been recognized in international agreements dating back to the Paris Convention for the Protection of Industrial Property of 1883. Currently, a number of international agreements govern GIs. The agreements with the strictest protections of GIs are the Madrid Agreement for the Repression of False or Deceptive Indications of

⁴In the US, this is done through trademark protection for food products such as Idaho potatoes, Florida oranges, Vidalia onions, and Napa Valley wines.

Source on Goods and the Lisbon Agreement for the Protection of Appellations of Origin and their International Registration. The strictness of these agreements may explain the small number of signatories – just 34 and 28 for the Madrid and Lisbon Agreements, respectively. The absence of broad international agreements on GIs has led to large discrepancies in the treatment of GIs across countries.

In the EU, symbols and labels connecting a product to a specific place are protected through two different labels: *Protected Designation of Origin* (PDO) and *Protected Geographical Indication* (PGI) – Josling (2006) provides more detail about these definitions. Regardless of the designation, producers outside the region associated with a PGI or PDO are precluded from using the protected symbol or label even if it is employed in conjunction with terms such as “style” or “type.”

In contrast to the EU, the US and Canada (prior to CETA), have significantly weaker protections for GIs. Neither of these countries have extended GI protections beyond the mandate of the WTO agreement on Trade Related Aspects of International Property Rights (TRIPS). Goldberg (2001) argues that the US has been particularly reticent to recognize GIs, especially for terms that might be thought of as generic (such as champagne). The recognition of GIs have been a key issue in the negotiations between the EU and US over TTIP (Johnson, 2017). Throughout the negotiations, the US position has been that current laws governing patents and trademarks (15 U.S.C. §§1114, 1125) are sufficient to protect agricultural products with a credible claim to the GI designation (Babcock, 2015). Meanwhile, the EU has emphasized the relatively small number (five percent) of EU GIs that are problematic under current US law (Serra, 2015). The middle ground found in CETA regarding GIs may prove to be a template for TTIP negotiations.⁵

There are two primary economic arguments in favor of protecting GIs. The first argument

⁵A comprehensive discussion of GIs can be found in Goldberg (2001) and Josling (2006). These overviews outline the more detailed complications of protecting GIs, such as the conflict between GIs and registered trademarks, the treatment of homonyms terms, and policy enforcement.

is that GIs correct asymmetric information (Josling, 2006). By this argument, if consumers expect feta cheese to be Greek, then policymakers ought to ensure that only Greek cheese is labeled as such. However, one can question the validity of this argument, in the Canadian context. Currently, 90 percent of feta cheese that is consumed in Canada is of Canadian origin.⁶ It is, therefore, unlikely that the average Canadian consumer associates the term “feta” with cheese that is produced in Greece. Instead, they likely think that feta cheese is a crumbly, white-brined cheese, regardless of its origin. Forcing Canadian producers to use a modifier (such as “style” or “type”) when marketing what would have, heretofore, been labeled as feta cheese, will likely confuse consumers more than inform them. It seems probable that consumers would logically think that “imitation feta” is something other than the domestically produced feta cheese they have purchased in the past, or, perhaps, not even cheese at all.

The second economic argument in favor of GIs centers on product quality. Moschini, Menapace, and Pick (2008) show in a theoretical model that producers in a protected region have an incentive to enact quality standards in order to differentiate their product. These higher standards not only improve quality, but also welfare. Mérel and Sexton (2011) show that GIs could actually lead to quality standards that exceed the socially optimal level, as producers attempt to differentiate their products. These papers assume that regions are able to impose quality standards, and do not allow for differentiation through private branding. Again, this argument does not appear applicable to the protections of GIs in CETA. Prior to CETA, Canadian consumers could clearly tell the difference between Greek feta cheese and Canadian feta cheese through country of origin labels. These country of origin label provide Greek producers the ability to differentiate their product without restricting the use of the term “feta.”

The economic argument against protections of GIs is that they provide a monopoly to a

⁶Canada produced 7,927 tonnes of feta cheese in 2017, and imported only 807 tons (CanadaDairy, nd).

geographically limited set of producers, which brings with it higher prices and deadweight loss. The value of this monopoly is most visible on the border of the Champagne region in France. Land within the region of Champagne can sell for €1,000,000 per hectare, while similar tracts of land in neighboring regions fetch only €4,000 per hectare (Deconinck and Swinnen, 2014).

3 Survey and Methodological Background

The data used in this study were obtained through an online survey delivered by the survey company *Asking Canadians*. The pool of respondents was generated by random-digit dialing and stratified to mimic the age, gender, and geographic distribution of the Canadian census. The survey was offered in both English and French, however, in this paper we focus only on English language respondents. We drop the French observations because a major focus of our analysis is the terminology used on labels (i.e., “imitation,” “style,” and “type”), and this terminology is not comparable across the two languages.⁷

The survey screened out respondents who did not have the primary or shared responsibility for grocery shopping in their household. After passing the screening questions, respondents completed a hypothetical choice experiment in which they were asked to imagine that they were shopping for a particular type of cheese. Respondents were then queried about their past purchases of cheese, shopping habits, food values (following Lusk and Briggeman, 2009), familiarity with trade agreements, and socio-demographic characteristics.

3.1 Choice experiment

Each respondent completed five different choice tasks. In each choice task, respondents were told to imagine that they were in a grocery store and were shopping for a particular type of

⁷We provide results from the French language respondents to the survey in Appendix B.

cheese (asiago, feta, or gorgonzola). Respondents were then shown an image of two blocks of cheese (see Figure 1). They could choose to buy one of the two blocks or purchase nothing. Both blocks of cheese were 100g, and the two images were nearly, though not perfectly, identical in shape.⁸ The two cheeses differed by price, drawn randomly from a uniform distribution between two and six Canadian dollars. They also differed on place of origin, which was drawn randomly to be either (a) within the catchment area of the geographic indication (Italy for asiago and gorgonzola, and Greece for feta), (b) the United States, (c) Canada, or (d) the respondent’s province of residence. Henceforth, we shall refer to cheese produced in the catchment area of the GI as EU cheese.

Our survey had three different treatment levels: a cheese treatment level, a policy treatment level, and a label treatment level (see Figure 2). Each respondent was assigned to one, and only one, treatment at each level. At the cheese treatment level, respondents were assigned to one of the three cheeses: asiago, feta, or gorgonzola. At the policy treatment level, respondents were assigned to one of three policies: no GI, GI, and GI with information. The no GI treatment captures the types of labels consumers would observe prior to the signing of CETA. Cheese is simply labeled with the name of the cheese, the region or country of origin, and a PGI for EU cheese. In the GI treatment, which reflects labeling requirements post-CETA, cheese made outside of the catchment area of the GI (i.e., in the US or Canada) is labeled using a language modifier (“style,” “imitation,” or “type”). In the GI with information treatment, respondents are given information about GIs and CETA prior to completing the choice tasks. The information stated that if new Canadian producers manufactured a cheese that was covered by a GI they would be required to modify the language on their label.⁹ Finally, in the labeling treatment cheese produced outside the EU is given one of the three language modifiers: imitation, style, or type. Evidently, the labeling

⁸Controlling for differences in shape of the cheese had no impact on the results

⁹The information script, along with the entire survey, is contained in Appendix A.

treatment is irrelevant for respondents assigned to the no GI policy treatment.

To recap by example, one particular respondent might be assigned to the asiago cheese treatment, the GI policy treatment, and the “style” language treatment. This respondent would only see asiago cheeses, and all cheese produced outside of Italy would be labeled as “asiago style.”

3.2 Descriptive statistics

Descriptive statistics of the main explanatory variables are contained in Table 1. The sociodemographic statistics are a reasonable approximation of the Canadian population. The youngest age category is somewhat underrepresented in our sample: in the census 19 percent of adults are between 18 and 29, while only 13 percent of the sample falls into that age group. Conversely, the sample has six percentage points more 30-39 year olds than the census. The shares of all other age categories are within three percentage points of the census. The median income in the census (\$70,336 in 2016) is within the median range in our sample (\$60,000 to \$80,000).

Individuals in our sample are, on average, not very familiar with GIs or CETA: the mean familiarity with CETA is 2.5 on a scale of 1-5, significantly less than the mean familiarity with NAFTA, which stands at 3.5 on the same scale. As expected, feta cheese is the most familiar of the three cheese types which we study, while gorgonzola is the least familiar. The differences in familiarity across the three cheeses are all statistically significant. Finally, the importance that respondents put on the food values is similar to prior studies; as in Lusk and Briggeman (2009), respondents place the most importance on food safety, taste, price, and nutrition.

4 Empirical model

We assume that the utility the i^{th} individual obtains from the j^{th} cheese is a function of (a) the price, (b) the type of cheese (asiago, feta, gorgonzola), (c) the place of production (EU, US, Canada, the province of the respondent), (d) the wording on the label (“style,” “type,” or “imitation”), and (e) the information a respondent received, such that:

$$\begin{aligned}
 U_{i,j} = & \beta_{PRI,i}Price_j + \beta_{ASI,i}Asiago_j + \beta_{FET,i}Feta_j + \beta_{GOR,i}Gorgonzola_j + \\
 & \beta_{PROV,i}Made\ in\ province_j + \beta_{CAN,i}Made\ in\ Canada_j + \beta_{EU,i}Made\ in\ EU_j + \\
 & \beta_{IM,i}Imit_j + \beta_{ST,i}Style_j + \beta_{TY,i}Type_j + \\
 & Info_i(\beta_{IM-I,i}Imit_j + \beta_{ST-I,i}Style_j + \beta_{TY-I,i}Type_j + \beta_{EU-I,i}Made\ in\ EU_j) + e_{i,j}.
 \end{aligned} \tag{1}$$

Note that all the variables in equation (1), other than price, are indicator variables. Note that *Info* is a dummy variable equal to one if the respondent received information about GIs. We model the affect of information, by interacting it with dummy variables for each of the language treatments and a dummy variable for cheese made in the EU.

We estimate preferences using both multinomial logit and mixed-logit models. The mixed-logit model assumes that preferences are heterogeneous, with coefficients drawn from random distributions. In the mixed-logit models, we draw all coefficients from a normal distribution save for the coefficient on price, which we assume to be negative and log-normally distributed in absolute value. We also tested sign restrictions on other coefficients. In particular, we hypothesize that the variables indicating that a product was labeled with “imitation,” “style,” or “type,” without any information, will have negative coefficients. We therefore estimate models that assume the absolute value of these coefficients ($\beta_{IM-N,i}$, $\beta_{ST-N,i}$, $\beta_{TY-N,i}$) are distributed according to either a log-normal distribution or a normal distribution truncated at zero. However, we find that the normal distribution returns a

better model fit than either of these two alternate specifications.

4.1 Willingness-to-pay

We calculate willingness-to-pay (WTP) using a simulation method proposed by Hensher and Greene (2003). To illustrate this method, consider WTP for cheese labeled as made in Canada. In a simple multinomial logit model we could calculate WTP by dividing the coefficient on made in Canada by the coefficient on price,

$$\text{WTP}(\text{made in Canada}) = \frac{\beta_{CAN}}{\beta_{PRI}}. \quad (2)$$

The standard error of WTP can be found using the delta method.

Estimating WTP is somewhat more complex with random parameters. We use the following algorithm to obtain a distribution of both the median and standard deviation of WTP:

1. Draw the means and standard deviations of all parameters from their sampling distribution.
2. Make 1,000 draws from the distributions based on the means and standard deviations drawn in the previous step.
3. For each of the thousand draws calculate WTP according to equation (2).
4. Calculate the median and standard deviation of 1,000 WTP estimates.
5. Repeat 1,000 times to obtain a sampling distribution for the median and standard deviation of the WTP distribution.

Hensher and Greene (2003) and Armstrong, Garrido, and de Dios Ortúzar (2001) point out that the mean WTP estimates can become skewed when dividing two random parameters,

particularly when price is drawn from the log-normal distribution. We therefore focus on the median of the distribution, as opposed to the mean.

5 Results

The results from our base model are presented in Table B2. The coefficients on the cheeses (asiago, feta, and gorgonzola) are all positive and significant, which is consistent with individuals generally purchasing cheese. We expected respondents to be most likely to purchase feta, the best-known cheese, and least likely to purchase gorgonzola, the least familiar cheese. However, the mean differences are not significant in either the multinomial logit nor in the mixed logit model.

As expected, consumers prefer cheese that is made either locally, or in Europe, relative to cheese produced in the United States. The difference between the mean values of the place of origin coefficients is statistically significant at the 1% percent level. This suggests that pre-CETA, when cheese only carried country of origin labels, the average Canadian preferred cheese produced in-province to cheese produced in the EU. This finding provides justification for the EU’s push to obtain GI recognition in CETA, as absent such labeling restrictions Canadians prefer domestic products. It is interesting, however, to note that the standard deviation of the coefficient on made in Europe is larger relative to the two other place of origin coefficients, which implies that there are particular consumers who highly value authentically sourced cheese.

The impact of stronger protections for GIs (that is requiring domestic producers to label their products with “style,” “type,” or “imitation”), depends on the terminology used on the label and the information given to consumers. When no information on GIs is given, consumers significantly discount cheese that is labeled as “imitation.” They apply a more modest discount to cheese labeled as “style,” while cheese labeled as “type” is not discounted at all.

This suggests Canadian cheese makers can mitigate the effect of GI recognition through product marketing. It also underscores the importance of latitude in trade agreements. For example, the EU could increase the strictness of GI protection by forcing more salient terms (such as “imitation”) to be used on packaging.

The provision of information on GIs to consumers has two effects on their preferences. First, it increases WTP for all cheeses, both those produced outside of the EU and those produced in the EU. It may be the case that the information provided in the survey has an “advertising” effect; respondents may value the fact that cheese has a special history tied to a particular region, even if it is not currently produced in that region. Second, information mediates the negative impact of the label “style.” In the information treatment, respondents do not discount food that is labeled as “style” or “type” (relative to EU cheeses). Conversely, the discount applied to cheese labeled as “imitation” remains the same even when information is provided.¹⁰ It appears that people simply do not want to buy food that is implied to be an imitation of something else.

5.1 Product and market characteristics

We have already seen that the effect of GIs is moderated by the terminology used to market cheese and the information given to consumers. In this section, we analyze whether other characteristics of the product or the market moderate the impact of GI recognition. To do so we add several interaction terms to the utility function in equation (1). These terms interact the place of origin (EU, Canada, and province) and the terminology (“style,” “type,” and “imitation”) with each other, the type of cheese, and the familiarity individuals have with GIs and CETA. We treat the coefficients on these interaction terms as fixed in the mixed-logit model.

¹⁰We measure the discount applied to cheese labeled as imitation by subtracting the coefficient on “Europe, with info,” to the coefficient on “Imitation, with info.”

The results of the model are presented in Table 3. The model includes the same random parameters that are displayed in Table B2, though for brevity the coefficients on the random parameters are only reported in Appendix C. Each cell of Table 3 contains the coefficient on the interaction between the variable in the columns and the variable in the rows. Throughout this subsection and the next, we focus on the joint significance of coefficients when grouped by place of origin, label, and information treatment.

Overall, the product and market characteristics explain little of the effect of place of origin, GI labels, or information. Not surprisingly, we find that consumers pre-existing familiarity with GIs was correlated with stronger preferences for place of origin labels. Suggesting that consumers who value place of origin are more likely to be informed about labels that speak to a product’s origin. We also find that familiarity with both GIs and CETA influence the effect of the information treatments. Recall that the information treatment generally increased consumers preference for cheese with all labels, whether it was EU cheese or non-EU cheese labelled as imitation, style, or type. No surprisingly, when consumers have more pre-existing information about GIs the effect of information is generally weaker (i.e., the interaction terms are generally negative, save for the interaction with “style”). Conversely, respondents who had greater pre-existing information about CETA actually increased their willingness-to-pay for cheese even more when they were given the information treatment (again, the interaction with the label “style” is the exception).

5.2 GIs and individual characteristics

We run two different models that analyze if individual characteristics moderate the effect of GIs. The first model contains sociodemographics including age, gender, education, and income, as well as a variable that captures how often an individual has traveled to Europe. These results are reported in Table 4.

We find that age and gender moderate consumer preferences for place of origin. Younger

people are more likely to prefer products that are made in the EU, while older respondents are more likely to prefer cheese that is made in Canada. Previous research on local food has also found that age had a positive effect on preferences for local food (Feldmann and Hamm, 2015; Stanton, Wiley, and Wirth, 2012). The finding that younger people are more likely to prefer EU cheese comports with past research showing that younger people are more interested in authenticity (Danshekhu, 2018), and more comfortable with foreign products and foods (FoodInsight, 2015). There is a similar preference difference in terms of gender; women are prefer locally produced food more than men, while men have stronger preferences for cheese made in the EU. However, these coefficients are not statistically significant.

The age and gender also have a moderating effect on the labeling variables. The interactions between age and the labeling variables are all negative and jointly significant at the ten percent level. This suggests that older consumers find inauthentic negative labels more off-putting. Intriguingly, women are more affected by inauthentic labels when they are not provided any information (these variables are jointly significant at the five percent level). This finding is consistent with past research that has found women to have a stronger preference for other food labels such as local (Feldmann and Hamm, 2015; Loureiro and Umberger, 2003), organic (Hughner et al., 2007), and GM free (Burton et al., 2001). Conversely, women are less affected by labels when they are provided with information, though these variables were not statistically significant.

The education and income of participants appear to be uncorrelated with WTP for place of origin and for different labels. None of the education and income interaction terms are individually or jointly significant. A similar lack of significance is present when we consider individuals who have visited Europe. The frequency of travel to the Europe is only important in determining WTP for cheese made in the EU.

In a separate model we interact place of origin and labeling variables with the importance that respondents place on certain food values. In the survey we asked respondents about

the full list of food values contained in Lusk and Briggeman (2009), though we replaced “tradition” with “authenticity.” However, we hypothesize that some of these values are orthogonal to preferences for place of origin and our labeling treatments (i.e., fairness, animal welfare, novelty, and convenience). Indeed, models without these food values are preferred by both the Akaike and Bayesian information criteria.

The results of the food values model are presented in Table 5. Food values play a large role in shaping consumer preferences for place of origin labels – all the food values are statistically significant. Not surprisingly, respondents who value price have a lower WTP for place of origin labels, conversely taste has a positive effect on preferences for cheese produced in the EU and to a lesser extent in Canada, suggesting that “foodies” value both authentic food and food produced locally. Those who value the environment are more likely to prefer locally sourced food, which is consistent with the narrative of local food having fewer “food miles” or a lower environmental impact (Brown, Dury, and Holdsworth, 2009; Stanton, Wiley, and Wirth, 2012). Finally, there is an interesting interplay between the “authenticity” and “origin” food values. Consumers who value authenticity are more likely to prefer EU cheese (the authenticity coefficients are jointly, though not individually significant”, while those who value origin are more likely to prefer locally produced cheese. Evidently, when respondents say they value origin, what they really mean is they prefer local food.

Food values have less statistical significance when explaining the effect of GI labelling. As we suspected, consumers who value the origin of the product are more affected by GI labels (though the interaction of origin and style is of the opposite sign). The three-way interactions between origin, GI labels, and information are jointly significant, though we did not have an *ex ante* hypothesis relating to these variables. The same is true of the three-way interaction between the environment value, information and GI labels.

6 Market implications

Ultimately, farmers, food marketers, and policymakers are concerned with the impact that stronger recognition of GIs will have on markets. We consider the impact of stronger GI recognitions in two different ways. First, we estimate how these policies will impact WTP. Second, we examine how these policies impact the market share of cheese produced in different countries under a variety of scenarios.

6.1 Willingness to pay

Table 6 reports the effect of product of origin and GI labeling on consumers' WTP for cheese based on the coefficients reported in Table B2. The implications are, of course, similar to Table B2. Given that the typical price for 100g of feta cheese in a Canadian grocery store is around \$4.00, the WTP for cheese with place of origin labels, and to avoid cheese with labels like "imitation" and "style," appears to be economically significant.

6.2 Market share

WTP estimates do not provide a complete picture of how domestic producers would be impacted by stronger protections for GIs. For example, certain labeling and information treatments raise WTP for both Canadian and European cheese. If market share was held constant, Canadian cheese makers would benefit as they could charge more for their cheese. However, if the WTP for European cheese increased more than Canadian cheese, then Canadian cheeses may lose market share. In this section, we simulate the market shares using a variety of assumptions of how cheese would be priced.

To understand how market shares might be affected by GI recognition, it is necessary to have some understanding of Canadian dairy policy. The Canadian dairy market is rationalized by a system of supply management, which gives producer groups the right to restrict

milk production and thereby achieve a higher price. Imports to Canada are constrained through tariff rate quotas (TRQs). Under these TRQs, a small percentage of dairy products are allowed into the country under nominal tariffs, while additional imports over the quota limit are charged prohibitively high tariff, in excess of 200 percent for most product lines (Schmitz, Furtan, and Baylis, 2002, Ch. 10). Under CETA, Canada agreed to import 18,500 tons of European cheeses annually by the sixth year of the deal. While this represents only about two percent of domestic cheese production, it is likely that imports of particular cheeses will be significantly greater in percentage terms. Over 75 percent of the Canadian cheese market is cheddar, cream cheese, and mozzarella (CanadaDairy, nd) – these undifferentiated cheeses are unlikely to see significant imports from the EU. Instead, the bulk of EU cheese imports will likely be in the form of higher value cheeses, such as asiago, feta, or gorgonzola.

We simulate the market share of feta cheese using estimates from our base model (contained in Table B2). Results for asiago and gorgonzola are much the same and are contained in Appendix C. We consider market share under three different scenarios. Across all scenarios we assume the price of Canadian feta cheese is fixed at \$4 per 100g. We do not expect the price to change with the quantity of feta. This is because cheese processing is a competitive industry in Canada and the price of raw milk is unlikely to be affected by changes in the consumption of feta cheese, which accounts for a small fraction of Canadian milk production.

Table C5 presents the predicted market shares. In the first scenario, we assume that EU cheese is priced at \$4 per 100g and there are no constraints on imports. In this scenario, Canadian cheese captures 43% of the market when there is no GI labeling. However, when the “imitation” label is used, the Canadian market share is cut to about one third of its previous level. Most of this market share moves to Greek cheese, though there is also an increase in the proportion of consumers who do not purchase any cheese. When the “type” label is used, the Canadian market share falls by three percentage points, and loss in market

share is further moderated when information is provided.

In the second scenario, the price of EU cheese is increased to \$5 per 100g. As one would expect this increases the market share of Canadian cheese, and the fraction of consumers who do not purchase the product (especially when Canadian cheese is labelled as “imitation”).

These two scenarios may be somewhat unrealistic, as TRQs limit the amount of cheese that is imported into Canada. Currently, about nine percent of Canadian consumption of feta is imported. Under CETA this will likely rise. Overall, European cheese imports into Canada are estimated to increase 237 percent under CETA (Dairy Farmers of Canada, 2017), however it is not clear how this increase will be allocated across cheese categories. In our third scenario we assume that imports of feta cheese will be capped at 20 percent of the potential market for cheese (in the base scenario only 85 percent of consumers actually purchase feta cheese, hence the actual market share of EU cheese is 23.5 percent, two and a half times the current level of imports.) We assume that the price of EU cheese is set to maximize revenue, while the price of Canadian cheese remains at \$4 per 100g.

In the third scenario, when there is no GI labelling Canadian cheese captures 57% of the potential market. The share of Greek cheese is fixed at 20% and the revenue maximizing price of Greek cheese is \$5.25. When the imitation label is used, significantly fewer consumers purchase Canadian and American cheese. The revenue maximizing price of Greek cheese is predicted to be \$11.02. Evidently, this result should be treated with some skepticism as it requires an out of sample prediction – in our experiment the maximum cheese price was \$6. Nonetheless, it does demonstrate that, under certain labelling treatments, GIs transfer significant rents to foreign producers. In contrast, when the type label is used the market share of Canadian cheese is virtually the same as when there are no GI protections. Although the revenue maximizing price of Greek cheese is somewhat higher – \$5.84. Finally, when the type label is used and information is provided to respondents, both domestic and foreign producers are expected to receive an increase in welfare. Canadian cheese gains an extra

5% of the potential market, and the revenue maximizing price of Greek cheese increases to \$6.20.

7 Conclusions and Policy Implications

In this article we examine the impact that stronger protections for foreign geographic indications have on consumer preferences and domestic producers. In particular, we analyze the labeling policies mandated under the recent trade agreement between Canada and the EU. This agreement on GIs represents a middle-ground between the strict GI protections advocated by the EU, and the lax policies that are favored by other developed countries, such as Canada and the United States. We believe that a similar compromise over the protection of GIs might arise in future trade agreements, such as TTIP.

We find that consumer preferences can be significantly affected when domestic producers are forced to label their cheese with certain modifiers. However, this effect is moderated, and indeed completely eliminated, depending on the terminology used, and the information provided to consumers. In fact, we find that when GI protections are accompanied by information and trade restrictions (such as those included in CETA), both domestic and foreign producers can gain from GI protections. This result arises because information about GIs increase consumers willingness-to-pay for all cheese, not just those produced in the catchment area of the GI.

We have left aside a number of important questions. We make no effort to calculate welfare measures. In this setting, welfare calculations are fraught with philosophical complications. For example, labeling Canadian cheese as “imitation” reduces the utility consumers receive from that cheese. Under a traditional conception of welfare, this would reduce the consumer surplus from purchasing Canadian cheese. However, advocates for protection of GIs might counter that this is not actually a reduction in welfare, as consumers were previ-

ously being misled about the origin of the product.

We also do not analyze the effect of even stricter GI protections, which would prevent terms like asiago, feta, or gorgonzola from being used at all. Under such a policy Canadian cheese manufacturers would have to label their cheese using some name other than “feta.”

Finally, we have not modelled the grandfathering in of existing cheese producers. Under CETA, existing Canadian cheese producers can continue to market their cheese without using any modifiers. Our assumption is that in the long-run there will be turnover in the food processing industry, eliminating the products that were grandfathered in. However, in the short- to medium-term the grandfathering provision in CETA may benefit existing Canadian cheese producers, providing them with additional market power. We also suspect the grandfathering of existing producers will amplify consumer confusion, as some Canadian cheeses will be labeled with modifiers, while others will not.

Overall, our results suggest that the details are very important when setting GI policies. We find that protection of GI cheese generates significant gains in for European producers, either through increased market shares, or higher prices. However, we also find that domestic cheese producers can partially neutralize the effects of GI protection through judicious selection of which modifying terms to use on their labels. For policymakers who wish to preserve domestic industries while recognizing foreign GIs, it is therefore important to leave domestic firms with as much latitude as possible to decide how best to market their products. Conversely, countries that want to protect their GIs should try to foreclose these avenues for product marketing.

Recognition of GIs is typically seen as a zero-sum game, with gains to foreign producers coming at the expense of domestic producers. However, we show that increasing consumer awareness of GIs through marketing and information campaigns can have positive impacts on both foreign and domestic producers when imports are constrained. We view this as an exciting avenue for future research.

References

- Addor, F., and A. Grazioli. 2002. “Geographical Indications beyond wines and spirits: A roadmap for a better protection for Geographical Indications in the WTO/TRIPS Agreement.” *The Journal of World Intellectual Property* 5:865–97.
- Alfnes, F., and K. Richertsen. 2003. “European consumers’ willingness to pay for U.S. beef in experimental auction markets.” *American Journal of Agricultural Economics* 85:396–405.
- Aprile, M.C., V. Caputo, and R. Nayga. 2012. “Consumers’ valuation of food quality labels: the case of the European geographic indication and organic farming labels.” *International Journal of Consumer Studies* 36:158–65.
- Armstrong, P., R. Garrido, and J. de Dios Ortúzar. 2001. “Confidence intervals to bound the value of time.” *Transportation Research Part E: Logistics and Transportation Review* 37:143–61.
- Babcock, B. 2015. “Common Names or Protected Property? A US Perspective on Strengthening GI Protection.” Presented at the EAAE Seminar *Intellectual Property Rights for Geographical Indications: What is at Stake in the TTIP?* April 14 -15, 2015, Parma Italy.
- Baldwin, R., A. Gonzalez, S. Jackson, K. Murphy, R. Sally, and H.V. Singh. 2015. “The Case for Trade and Competitiveness.” Global agenda councils on competitiveness and trade and fdi, World Economic Forum.
- Balogh, P., D. Bekesi, M. Gorton, J. Popp, and P. Lengyel. 2016. “Consumer willingness to pay for traditional food products.” *Food Policy* 61:176–84.
- Batte, M., N. Hooker, T. Haab, and J. Beaverson. 2007. “Putting their money where their mouths are: Consumer willingness to pay for multi-ingredient, processed organic food products.” *Food Policy* 32:145–59.
- Behsudi, A. 2015. “U.S. to Europe: Don’t move my cheese.” <https://www.politico.com/story/2015/07/us-to-europe-dont-move-my-cheese-120387>, *Politico*.
- Brown, E., S. Dury, and M. Holdsworth. 2009. “Motivations of consumers that use local, organic fruit and vegetable box schemes in Central England and Southern France.” *Appetite* 53:183–8.
- Burton, M., D. Rigby, T. Young, and S. James. 2001. “Consumer attitudes to genetically modified organisms in food in the UK.” *European Review of Agricultural Economics* 28:479–98.
- CanadaDairy. nd. “Canada Dairy Information Centre.” <http://www.dairyinfo.gc.ca/>, Government of Canada.

- CETA. 2017. “CETA Chapter by Chapter.” <http://ec.europa.eu/trade/policy/in-focus/ceta/ceta-chapter-by-chapter/>, Canadian-European Union Comprehensive Economic Trade Agreement.
- Dairy Farmers of Canada. 2017. “Putting Canadian Dairy First.” Available at: https://www.dairyfarmers.ca/content/download/2102/30431/version/2/file/DFC-CETA-Handout_EN_2-1.pdf, accessed July 25, 2018.
- Danshekhu, S. 2018. “How millennials’ taste for ‘authenticity’ is disrupting powerful food brands.” *Financial Times*. Available at: <https://www.ft.com/content/09271178-6f29-11e8-92d3-6c13e5c92914>, accessed June 19, 2018.
- Deconinck, K., and J. Swinnen. 2014. “The political economy of geographical indications.” Mimeo.
- Engelhardt, T. 2015. “Geographical indications under recent EU trade agreements.” *IIC-International Review of Intellectual Property and Competition Law* 46:781–818.
- Feldmann, C., and U. Hamm. 2015. “Consumers’ perceptions and preferences for local food: A review.” *Food Quality and Preference* 40:152–64.
- FoodInsight. 2015. “Meet the Millennials: Insights from the 2015 Food and Health Survey.” <https://www.foodinsight.org/2015-food-health-survey-millennial-research>, International Food Information Council Foundation.
- Goldberg, S.D. 2001. “Who Will Raise the White Flag—The Battle between the United States and the European Union over the Protection of Geographical Indications.” *University of Pennsylvania Journal of International Economic Law* 22:107–51.
- Gracia, A., T. de Magistris, and R. Nayga. 2012. “Importance of social influence in consumers’ willingness to pay for local food: Are there gender differences?” *Agribusiness* 28:361–71.
- Hensher, D.A., and W.H. Greene. 2003. “The mixed logit model: The state of practice.” *Transportation* 30:133–76.
- Hughner, R.S., P. McDonagh, A. Prothero, C.J. Shultz, and J. Stanton. 2007. “Who are organic food consumers? A compilation and review of why people purchase organic food.” *Journal of Consumer Behaviour* 6:94–110.
- Jeffries, S. 2015. “What is TTIP and why should we be angry about it?”, pp. . *The Guardian*.
- Johnson, R. 2017. “Geographical Indications (GIs) in U.S. Food and Agricultural Trade.” Congressional Research Service Report No. R44556, Congressional Research Service.
- Josling, T. 2006. “The war on terroir: Geographical indications as a transatlantic trade conflict.” *Journal of Agricultural Economics* 57:337–63.

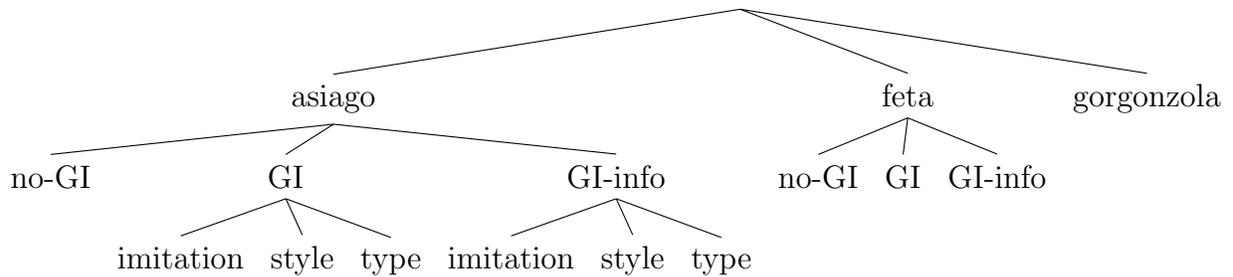
- Lim, K., W. Hu, L. Maynard, and E. Goddard. 2013. "U.S. consumers' preferences and willingness to pay for country-of-origin-labeled beef steak and food safety enhancements." *Canadian Journal of Agricultural Economics* 61:93–118.
- Loureiro, M., and S. Hine. 2002. "Discovering niche markets: A comparison of consumer willingness to pay for local, organic, and GMO-free products." *Journal of Agricultural and Applied Economics* 34:477–87.
- Loureiro, M.L., and W.J. Umberger. 2003. "Estimating consumer willingness to pay for country-of-origin labeling." *Journal of Agricultural and Resource Economics*, pp. 287–301.
- Lusk, J.L., and B.C. Briggeman. 2009. "Food values." *American Journal of Agricultural Economics* 91:184–96.
- Menapace, L., G. Colson, C. Grebitus, and M. Facendola. 2011. "Consumers' preferences for geographical origin labels: Evidence from the Canadian olive oil market." *European Review of Agricultural Economics* 38:193–212.
- Mérel, P., and R. Sexton. 2011. "Will geographical indications supply excessive quality?" *European Review of Agricultural Economics* 39:567–87.
- Moschini, G., L. Menapace, and D. Pick. 2008. "Geographical indications and the competitive provision of quality in agricultural markets." *American Journal of Agricultural Economics* 90:794–812.
- New, W. 2015. "Stakeholders Give Opposing Views On GIs In EU-US Trade Agreement." <https://www.politico.com/story/2015/07/us-to-europe-dont-move-my-cheese-120387>, *Politico*.
- Schmitz, A., H. Furtan, and K. Baylis. 2002. *Agricultural Policy, Agribusiness, and Rent-Seeking Behaviour*. Toronto, ON: University of Toronto Press.
- Serra, R. 2015. "The Protection of Geographical Indications in TTIP: A Mission Possible!" Presented at the EAAE Seminar *Intellectual Property Rights for Geographical Indications: What is at Stake in the TTIP?* April 14 -15, 2015, Parma Italy.
- Stanton, J.L., J.B. Wiley, and F.F. Wirth. 2012. "Who are the locavores?" *Journal of Consumer Marketing* 29:248–61.
- Syrengeles, K., K. de Jong, G. Grebitus, and R. Nayga. 2017. "Is the natural label misleading? Examining consumer preferences for natural beef." *Applied Economic Perspectives and Policy* 40:445–60.
- Urena, F., R. Bernebeu, and M. Olmeda. 2008. "Women, men and organic food: Differences in their attitudes and willingness to pay: A Spanish case study." *International Journal of Consumer Behavior* 32:18–26.
- Watson, K. 2016. "Reign of *Terroir*." Policy Analysis No. 787, Cato Institute.

Figure 1: Sample Choice Tasks

(a) Feta cheese treatment			(b) Asiago cheese treatment		
Product	Cost	Choice	Product	Cost	Choice
Feta cheese made in Canada 	\$4.00	<input type="radio"/>	Asiago style cheese made in Ontario 	\$3.35	<input type="radio"/>
Feta cheese made in Greece 	\$5.30	<input type="radio"/>	Asiago cheese made in Italy 	\$4.70	<input type="radio"/>
Neither	--	<input type="radio"/>	Neither	--	<input type="radio"/>

Note: Panel (a) presents an indicative example from the “no-GI” policy treatment where feta cheese produced outside of Greece requires no language modifiers, though Greek cheese still bears the PGI symbol. Panel (b) presents an indicative example from both the “GI” and “GI-info” policy treatments where asiago cheese produced outside Italy requires a language modifier.

Figure 2: Assignment to Treatments



Note: The game tree provides a suggestive, though incomplete, description of assignment to treatment. “No-GI,” “GI,” and “GI-info” treatments exist for all three cheese types. Similarly, the three language treatments exist for each cheese type. However, language treatments exist only for the “GI” and “GI-info” policy treatments, since no language modifiers are required under the “no-GI” treatment.

Table 1: Descriptive statistics

Variable	Mean (St Dev)
Sociodemographics	
Age ^a	3.42 (1.59)
Female	0.531
Education ^b	5.20 (1.33)
Income ^c	4.43 (1.93)
Children in the household	0.400 (0.780)
Frequency of	
Cheese consumption ^d	2.21 (0.995)
Travel to EU ^e	2.64 (1.68)
Familiarity with^f	
NAFTA	3.54 (1.04)
CETA	2.50 (1.13)
Asiago	3.33 (1.23)
Feta	4.08 (0.996)
Gorgonzola	2.89 (1.26)
Geographic indications	3.07 (1.24)
Food values^f	
Price	4.20 (0.881)
Taste	4.49 (0.891)
Nutrition	4.09 (0.929)
Environment	3.56 (0.979)
Authenticity	3.44 (1.02)
Origin	3.70 (0.967)
Appearance	4.03 (0.941)
Fairness	3.59 (0.950)
Naturalness	3.56 (1.05)
Safety	4.60 (0.895)
Animal welfare	3.66 (1.06)
Novelty	2.94 (0.870)
Convenience	3.47 (0.992)
Number of respondents	833

Note: ^a1=18-29 years; 2=30-39; 3=40-49; 4=50-59; 5=60-69; 6=70 or older.

^b1=No high school; 2=Some high school; 3=High school; 4=Some post-secondary; 5=College degree; 6=Bachelors; 7=Masters; 8=PhD.

^c1=Less than 25; 2=25-40; 3=40-60; 4=60-80; 5=80-100; 6=100-125; 7=More than 125 (in 000s).

^d7 point scale: 1=Less than once a year; 7=Daily or more.

27

^e1=Never; 2=Once; 3=2-3 times; 4=4-5 times; 5=5-10 times; 6=More than 10 times.

^f5-point scale.

Table 2: Results of the Base Model

	Multinomial logit	Mixed logit	
		Mean	Standard dev
Price	-0.609 (0.031)***	-1.23 (0.075)***	0.819 (0.100)
Type of cheese			
Asiago	2.55 (0.228)***	7.79 (1.64)***	4.33 (1.34)**
Feta	2.53 (0.225)***	8.12 (0.785)***	4.15 (0.814)*
Gorgonzola	2.27 (0.242)***	7.42 (0.810)***	4.86 (0.502)*
Place of origin			
Canada	1.33 (0.077)***	1.93 (0.118)***	0.033 (0.193)
Province	1.60 (0.081)***	2.37 (0.134)***	0.868 (0.200)
Europe	1.22 (0.123)***	1.59 (0.189)***	1.77 (0.202)*
Labels			
Imitation	-1.71 (0.230)***	-5.02 (0.585)***	3.96 (0.419)*
Style	-0.420 (0.217)*	-1.00 (0.406)**	1.01 (0.291)*
Type	-0.068 (0.207)	-0.336 (0.364)	1.26 (0.536)*
Information treatment (interaction terms)			
Imitation	0.873 (0.308)***	3.60 (1.18)***	0.210 (1.27)
Style	1.12 (0.295)***	3.34 (1.02)***	0.195 (0.559)
Type	0.731 (0.283)***	2.45 (1.13)**	0.764 (0.611)
Europe	0.692 (0.198)***	2.46 (1.03)**	0.890 (0.968)
Model information			
Observations	12495	12495	–
Log-likelihood	-3420.15	-2700.273	–

Standard errors are in parentheses. *, **, *** represent significance at the 10%, 5% and 1% levels.

Table 3: Product and Market Covariates

	Asiago	Feta	Canada	Province	Fam. GI	Fam. CETA
Place of origin						
Canada	-0.059 (0.262)	0.038 (0.280)	–	–	0.274 (0.086)***	0.182 (0.103)*
Province	0.091 (0.290)	-0.309 (0.289)	–	–	0.308 (0.098)***	0.106 (0.112)
Europe	0.348 (0.486)	-0.662 (0.450)	–	–	0.426 (0.169)**	-0.005 (0.166)
Joint significance	0.760	0.158	–	–	0.005***	0.289
Labels						
Imitation	1.99 (1.11)*	-1.76 (0.935)*	-0.165 (0.414)	-0.173 (0.472)	-0.099 (0.271)	-0.023 (0.309)
Style	0.660 (0.946)	-0.225 (0.744)	0.157 (0.401)	-0.156 (0.429)	-0.013 (0.328)	0.140 (0.386)
Type	-0.606 (0.994)	-0.743 (0.877)	-0.319 (0.354)	-0.283 (0.360)	0.330 (0.279)	-0.052 (0.333)
Joint significance	0.230	0.300	0.731	0.880	0.620	0.979
Information treatment (interaction terms)						
Imitation	-3.43 (1.42)**	0.443 (1.55)	0.607 (0.599)	0.551 (0.621)	-1.69 (0.616)***	0.819 (0.596)
Style	-1.17 (1.58)	-0.230 (1.20)	-0.006 (0.440)	0.317 (0.499)	0.269 (0.479)	-0.167 (0.898)
Type	0.562 (1.46)	0.066 (1.48)	0.518 (0.404)	0.593 (0.446)	-0.383 (0.391)	1.11 (0.511)**
Europe	0.154 (1.22)	0.525 (1.13)	–	–	-0.177 (0.352)	0.708 (0.570)
Joint significance	0.137	0.941	0.449	0.404	0.045**	0.038**

Standard errors are in parentheses. *, **, *** denote significance at the 10%, 5% and 1% levels.

Number of observations=4,165. Log-likelihood=-2,664.

^aP-value from a test of the joint significance of the interactions between the covariate in the column header and the covariates within the particular subtable (place of origin, labels, or information treatment).

Table 4: Sociodemographic Covariates

	Age	Female	Education	Income	Travel to EU
Place of origin					
Canada	0.161 (0.078)**	0.337 (0.359)	0.029 (0.129)	0.094 (0.076)	0.119 (0.113)
Province	0.335 (0.085)***	0.472 (0.448)	0.003 (0.135)	0.092 (0.081)	0.027 (0.095)
Europe	-0.094 (0.257)	-0.269 (1.10)	0.087 (0.440)	0.007 (0.225)	0.403 (0.205)**
<i>F</i> -test ^a	0.000***	0.204	0.986	0.514	0.165
Labels					
Imitation	-1.01 (0.378)***	-1.94 (0.991)**	-0.081 (0.491)	0.417 (0.334)	-0.038 (0.765)
Style	-0.221 (0.285)	0.367 (1.72)	0.245 (0.397)	-0.129 (0.307)	0.028 (0.214)
Type	-0.370 (1.63)	-1.27 (1.91)	-0.078 (0.698)	0.255 (0.807)	0.030 (1.05)
<i>F</i> -test ^a	0.052*	0.047**	0.840	0.558	0.999
Information treatment (interaction terms)					
Imitation	-0.101 (0.636)	3.62 (1.75)**	0.575 (1.17)	0.160 (0.499)	-1.32 (1.01)
Style	-0.212 (0.518)	0.478 (2.81)	-0.361 (0.678)	0.443 (0.402)	-0.161 (0.504)
Type	-0.010 (1.15)	1.77 (2.47)	0.193 (1.23)	0.253 (0.946)	-0.639 (0.480)
Europe	-0.705 (0.531)	1.47 (1.83)	0.079 (0.645)	0.506 (0.317)	-0.639 (0.525)
<i>F</i> -test ^a	0.364	0.140	0.690	0.339	0.153

Standard errors are in parentheses. *, **, *** denote significance at the 10%, 5% and 1% levels.

Number of observations=3,365. Log-likelihood=-2,105.

^aP-value from a test of the joint significance of the interactions between the covariate in the column header and the covariates within the particular subtable (place of origin, labels, or information treatment).

Table 5: Food Values Covariates

	Price	Taste	Environment	Authenticity	Origin
Place of origin					
Canada	-0.646 (0.148)***	0.243 (0.133)*	0.403 (0.122)***	-0.092 (0.124)	0.487 (0.139)***
Province	-0.635 (0.178)***	0.332 (0.163)**	0.443 (0.149)***	0.069 (0.129)	0.464 (0.159)***
Europe	-0.474 (0.345)	0.907 (0.336)***	-0.216 (0.326)	0.400 (0.271)	0.118 (0.286)
<i>F</i> -test	0.000***	0.019**	0.002***	0.099*	0.004***
Labels					
Imitation	1.06 (0.731)	-1.56 (0.756)**	0.916 (0.699)	0.075 (0.785)	-2.35 (0.971)**
Style	0.374 (0.460)	-0.170 (0.533)	-0.641 (0.526)	0.284 (0.437)	0.629 (0.648)
Type	-0.326 (0.495)	0.693 (1.05)	-0.207 (0.438)	0.379 (0.516)	-0.398 (0.624)
<i>F</i> -test	0.386	0.115	0.336	0.847	0.098*
Information treatment (interaction terms)					
Imitation	1.92 (1.23)	-0.486 (0.724)	-1.58 (1.19)	-1.65 (1.36)	1.85 (0.871)**
Style	0.138 (1.02)	0.382 (0.613)	1.24 (0.574)**	-0.874 (0.621)	-1.60 (1.03)
Type	2.01 (1.20)*	-0.425 (1.14)	0.222 (0.816)	-0.923 (0.658)	-0.661 (0.957)
Europe	0.966 (1.25)	0.187 (0.642)	0.762 (0.761)	-0.659 (0.417)	-1.35 (0.728)*
<i>F</i> -test	0.114	0.848	0.026**	0.146	0.054*

Standard errors are in parentheses. We report the p -values on the F -tests. *, **, *** denote significance at the 10%, 5% and 1% levels. Number of observations=4,165. Log-likelihood=-2,595.

^aP-value from a test of the joint significance of the interactions between the covariate in the column header and the covariates within the particular subtable (place of origin, labels, or information treatment).

Table 6: Willingness-To-Pay for Cheese Labels

	No information		Information	
	Mean	St dev	Mean	St dev
No additional label				
Made in Canada	1.88 (0.134)***	1.53 (0.258)***	–	–
Made in Province	2.20 (0.165)***	2.24 (0.345)***	–	–
Made in EU	1.31 (0.203)***	6.96 (1.02)***	–	–
Made in USA	Base case		–	–
Imitation label				
Made in Canada	-2.60 (0.506)***	6.12 (0.948)***	0.457 (1.02)	5.86 (0.791)***
Made in Province	-2.22 (0.489)***	6.12 (0.926)***	0.823 (1.06)	6.01 (0.769)***
Made in EU	1.31 (0.203)***	6.96 (1.02)***	4.11 (1.02)***	8.08 (1.07)***
Made in USA	-4.39 (0.548)***	6.86 (1.09)***	-1.20 (1.02)	5.95 (0.852)***
Style label				
Made in Canada	0.812 (0.374)**	1.66 (0.490)***	4.02 (1.03)***	3.74 (0.861)***
Made in Province	1.19 (0.381)***	2.22 (0.461)***	4.40 (1.04)***	4.23 (0.884)***
Made in EU	1.31 (0.203)***	6.96 (1.02)***	4.11 (1.02)***	8.08 (1.07)***
Made in USA	-0.878 (0.378)**	1.69 (0.413)***	2.16 (0.964)**	2.52 (0.711)***
Type label				
Made in Canada	1.40 (0.355)***	2.21 (0.672)***	3.71 (1.20)***	3.94 (0.942)***
Made in Province	1.78 (0.363)***	2.74 (0.593)***	4.10 (1.21)***	4.40 (0.945)***
Made in EU	1.31 (0.203)***	6.96 (1.02)***	4.11 (1.02)***	8.08 (1.07)***
Made in USA	-0.285 (0.319)	1.81 (0.688)***	1.91 (1.10)*	2.93 (0.790)***

Willingness-to-pay measures are relative to cheese that is made in the USA without any additional labels.

Table 7: Predicted Market Share of Feta Cheese

	Greece	Canada	USA	No purchase
Greek feta at \$4				
No GI protection	0.37	0.43	0.06	0.14
Imitation label	0.68	0.12	0.02	0.18
Type label	0.41	0.39	0.06	0.14
Type label with information	0.45	0.42	0.06	0.07
Greek feta at \$5				
No GI protection	0.23	0.54	0.08	0.15
Imitation label	0.58	0.16	0.02	0.23
Type label	0.28	0.49	0.07	0.16
Type label with information	0.31	0.53	0.08	0.09
Greek feta at 20% share of potential market				
No GI protection	0.20	0.56	0.08	0.16
Imitation label	0.20	0.34	0.05	0.40
Type label	0.20	0.55	0.08	0.17
Type label with information	0.20	0.62	0.09	0.09

Online-Only Appendix to “Foreign Geographical Indications, Consumer Preferences, and the Domestic Market for Cheese”

A Survey

Below is an off-line text version of the HTML survey that was delivered by *Asking Canadians*.

Screening questions

S1. Do you wish to proceed in English or in French?

English

French

S2. Are you responsible for grocery shopping in your household?

Yes, I am the sole grocery shopper in my household

Yes, I share grocery shopping responsibilities in my household

No, I never or rarely buy groceries for my household

S3. When was the last time you ate any type of cheese?

Within the past week

Within the past month

Within the past two months

More than two months ago

S4. Please select the province in which you reside

Alberta

British Columbia

Manitoba

New Brunswick

Newfoundland and Labrador

Nova Scotia

Ontario

Prince Edward Island

Quebec

Saskatchewan

Information Script

Markets no-GI and GI

The first five questions of this survey will ask you to imagine that you are shopping for [CHEESE] cheese. You will be given the option of purchasing one of two different products, each product is 100g. You will also have the option of purchase neither product.

During this task, please imagine that you are making real purchases with real money. Please keep in mind a reasonable price that you would consider paying for [CHEESE].

Market GI-info (two screens)

In 2017 Canada and the European Union signed a trade and economic cooperation agreement. As part of this agreement certain types of cheese, such as [CHEESE], are protected by *geographical indication*. This means that new Canadian-made cheeses can no longer simply be called “[CHEESE],” but must instead be referred to using expressions such as “kind,” “type,” “style,” or “imitation.” For example, new Canadian-made cheese could be called [CHEESE] style, [CHEESE] type, or imitation [CHEESE].

I have read and understand this information

The first five questions of this survey will ask you to imagine that you are shopping for [CHEESE] cheese. You will be given the option of purchasing one of two different products, each product is 100g. You will also have the option of purchase neither product.

During this task, please imagine that you are making real purchases with real money. Please keep in mind what you typically pay for [CHEESE] cheese.

I have read and understand the instructions

Sample Choice Problem

Imagine that you are in the grocery store and you wish to purchase 100g of asiago cheese. Which of the following products presented below, at their given price, do you prefer? Please keep in mind a reasonable price that you would consider paying for asiago.

Product	Cost	Choice
<p data-bbox="394 464 797 491">Asiago style cheese made in Ontario</p> 	<p data-bbox="951 737 1016 764">\$3.35</p>	<input data-bbox="1187 743 1203 764" type="radio"/>
<p data-bbox="440 1043 751 1071">Asiago cheese made in Italy</p> 	<p data-bbox="951 1316 1016 1344">\$4.70</p>	<input data-bbox="1187 1323 1203 1344" type="radio"/>
<p data-bbox="557 1623 638 1650">Neither</p>	<p data-bbox="976 1623 992 1650">--</p>	<input data-bbox="1187 1623 1203 1644" type="radio"/>

Preference Questions

B1. How often do you typically eat cheese products of any kind?

- At least once a day
- More than twice a week but less than everyday
- Once or twice a week
- At least once a month, but less than once a week
- Less than once a month

B2. How often do you typically eat [CHEESE]?

- At least once a day
- More than twice a week but less than everyday
- Once or twice a week
- At least once a month, but less than once a week
- Less than once a month, but more than once every three months
- Less than once every three months, but more than once a year
- Less than once a year

B3. On a scale of 1-5 from very unfamiliar to very familiar, how familiar are you with:

- a) The North American Free Trade Agreement (NAFTA)
- b) The Canada-European Union Free Trade Agreement, also called the Comprehensive Economic Trade Agreement (CETA)
- c) Feta cheese
- d) Asiago cheese
- e) Gorgonzola cheese
- f) Geographical indication

B4. Please rank the following cheeses from your most preferred to your least preferred:

- a) Cheddar
- b) Feta
- c) Asiago
- d) Gorgonzola
- e) Brie
- f) Edam
- g) Monterrey Jack

B5. How many times have you travelled to Europe?

- Never
- Once
- 2–3 times
- 4–5 times
- 5–10 times
- More than 10 times

B6. How many times have you travelled outside Canada and the United States?

- Never
- Once
- 2–3 times
- 4–5 times
- 5–10 times
- More than 10 times

B7. How often do you shop at your local farmers market?

- Once a week or more
- At least once a month, but less than once a week
- Less than once a month, but more than once every three months
- Less than once every three months, but more than once a year
- Less than once a year

B8. How often do you shop at each of these types of stores?

	Once a week or more	More than once a month but less than once a week	Less than once a month or never
Large chain grocery store			
Discount grocery store			
Independent grocery store			
Department store (e.g. Walmart)			
Specialty food store			
Ethnic grocery store			
Wholesale club store (e.g. Costco)			
Other (please specify):			

B9. Please rank how important each of the following attributes are in your food purchase decisions. (*Check one per row*)

	Very unimportant	Unimportant	Neither Important nor Unimportant	Important	Very Important
Price (price you pay)					
Taste (the flavour of the food)					
Nutrition (amount and type of fat, vitamins, etc.)					
Environmental impact (effects of production on environment)					
Authenticity (whether food is produced according to traditional methods)					
Origin (whether the food is grown locally or overseas)					
Appearance (whether the food looks appealing)					
Fairness (farmers, processors, retailers and consumers equally benefit)					
Naturalness (made without modern food technologies)					
Safety (eating the food will not make you sick)					
Animal welfare (well-being of farm animals used in production)					
Novelty (the food is something you haven't tried)					
Convenience (how easy and fast the food is to cook)					

Control Questions

C1. Select your age category? (*Please select one only*)

- 18–29 years
- 30–39 years
- 40–49 years
- 50–59 years
- 60–69 years
- 70 years or older
- Prefer not to say

C2. Which gender do you prefer to identify with? (*Please select one only*)

- Male
- Female
- Other
- Prefer not to say

C3. How many adults live in your household (including yourself)?

C4. How many children live in your household?

C5. What is the highest level of education that you have completed? (*Please select one only*)

- Elementary or junior high school
- Some high school
- Completed high school
- Some post-secondary (i.e. college or University)
- Completed college or technical institute
- Completed Bachelors degree
- Completed Masters degree
- Completed PhD degree
- Prefer not to say

C6. What was your total annual household income in 2017 before tax? (*Please select one only*)

- Under \$25,000
- \$25,000–\$39,999
- \$40,000–\$59,999
- \$60,000–\$79,999
- \$80,000–\$99,999
- \$100,000–\$125,000
- More than \$125,000
- Prefer not to say

C7. Please enter the first three digits of your postal code:

End of Survey Message

You have now completed the questionnaire!

We sincerely thank you and appreciate your time, dedication, and participation in our online survey. Your responses will be used to understand the impact of trade agreements on food purchases. If you would like to request a copy of a summary of research results or if you have any questions, you can email the researcher below:

B French results

Traits of French-speaking survey respondents are statistically different from results for English-speaking survey respondents. Considering personal traits, French-speakers tend to be older and more are women, at statistically significant different levels. Additionally, many significant discrepancies exist with respect to familiarity and food values. French speaking respondents are statistically less likely to be familiar with NAFTA, feta, and with geographic indications, though they are statistically more likely to be familiar with CETA, asiago, and gorgonzola. Considering food values, French speaking respondents place statistically significantly less value on price, taste, nutrition, environment, appearance, fairness, naturalness, safety, and animal welfare. Due to these differences, we do not pool our analysis for French and English speakers. We present the results of the base model here.

Table B1: Descriptive statistics for English and French

Variable	English	French
Sociodemographics		
Age ^a	3.42 (1.59)	3.70 (1.56)**
Female	0.531 (0.499)	0.416 (0.494)***
Education ^b	5.20 (1.33)	5.15 (1.35)
Income ^c	4.43 (1.93)	4.20 (1.87)
Children in the household	0.400 (0.780)	0.429 (0.833)
Frequency of		
Cheese consumption ^d	2.21 (0.995)	2.20 (1.16)
Travel to EU ^e	2.64 (1.68)	2.73 (1.89)
Familiarity with^f		
NAFTA	3.54 (1.04)	2.75 (1.04)***
CETA	2.50 (1.13)	3.41 (1.06)***
Asiago	3.33 (1.23)	3.53 (1.26)**
Feta	4.08 (0.996)	1.98 (0.951)***
Gorgonzola	2.89 (1.26)	3.08 (1.30)*
Geographic indications	3.07 (1.24)	2.36 (1.19)***
Food values^f		
Price	4.20 (0.881)	3.96 (1.00)***
Taste	4.49 (0.891)	4.32 (1.07)**
Nutrition	4.09 (0.929)	3.85 (0.995)***
Environment	3.56 (0.979)	3.42 (1.04)*
Authenticity	3.44 (1.02)	3.45 (0.973)
Origin	3.70 (0.967)	3.72 (0.950)
Appearance	4.03 (0.941)	3.76 (0.956)***
Fairness	3.59 (0.950)	3.37 (1.01)***
Naturalness	3.56 (1.05)	3.33 (1.04)***
Safety	4.60 (0.895)	4.42 (1.01)**
Animal welfare	3.66 (1.06)	3.39 (1.14)***
Novelty	2.94 (0.870)	2.96 (0.939)
Convenience	3.47 (0.992)	3.36 (1.01)
Number of respondents	833	233

Note: Standard deviations are in parentheses. *, **, *** represent significance of *t*-test for differences in mean across the two languages at the 10%, 5% and 1% levels.

^a1=18-29 years; 2=30-39; 3=40-49; 4=50-59; 5=60-69; 6=70 or older.

^b1=No high school; 2=Some high school; 3=High school; 4=Some post-secondary; 5=College degree; 6=Bachelors; 7=Masters; 8=PhD.

^c1=Less than 25; 2=25-40; 3=40-60; 4=60-80; 5=80-100; 6=100-125; 7=More than 125 (in 000s).

^d7 point scale: 1=Less than once a year; 7=Daily or more.

^e1=Never; 2=Once; 3=2-3 times; 4=4-5 times; 5=5-10 times; 6=More than 10 times.

^f5-point scale.

Table B2: Results of the Base Model (French Data)

	Multinomial logit	Mixed logit	
		Mean	Standard deviation
Price	-0.582 (0.057)***	-1.30 (0.171)***	1.17 (0.263)***
Type of cheese			
Asiago	2.11 (0.433)***	6.98 (1.28)***	3.07 (0.634)***
Feta	1.88 (0.406)***	7.58 (2.54)***	5.00 (1.49)***
Gorgonzola	1.82 (0.416)***	8.53 (1.61)***	8.16 (1.43)***
Place of origin			
Canada	1.64 (0.154)***	2.37 (0.249)***	0.581 (0.511)
Province	2.02 (0.164)***	3.10 (0.314)***	0.726 (0.571)
Europe	1.21 (0.220)***	1.70 (0.321)***	1.37 (0.308)***
Labels			
Style	-0.296 (0.285)	-0.564 (0.395)	0.029 (0.277)
Information treatment (interaction terms)			
Style	0.217 (0.364)	0.738 (0.941)	0.955 (0.586)
Europe	-0.100 (0.367)	-0.183 (0.992)	1.74 (0.480)***
Model information			
Observations	3495	1165	–
Log-likelihood	-990.759	-739.1562	–

Standard errors are in parentheses. *, **, *** represent significance at the 10%, 5% and 1% levels.

C Additional results

Full results for tables 3-5 are presented in the following tables.

Table C1: Product and Market Covariates (complete results)

	Mean	St dev	Asiago	Feta	Canada	Province	Fam. GI	Fam. CETA
Place of origin								
Canada	0.658 (0.370)*	0.245 (0.146)*	-0.059 (0.262)	0.038 (0.280)	–	–	0.274 (0.086)***	0.182 (0.103)*
Province	1.29 (0.388)***	0.839 (0.167)***	0.091 (0.290)	-0.309 (0.289)	–	–	0.308 (0.098)***	0.106 (0.112)
Europe	0.436 (0.558)	1.82 (0.237)***	0.348 (0.486)	-0.662 (0.450)	–	–	0.426 (0.169)**	-0.005 (0.166)
Labels								
Imitation	-5.32 (1.36)***	5.61 (0.709)***	1.99 (1.11)*	-1.76 (0.935)*	-0.165 (0.414)	-0.173 (0.472)	-0.099 (0.271)	-0.023 (0.309)
Style	-0.772 (1.08)	1.16 (0.431)***	0.660 (0.946)	-0.225 (0.744)	0.157 (0.401)	-0.156 (0.429)	-0.013 (0.328)	0.140 (0.386)
Type	-1.31 (1.06)	0.899 (0.480)*	-0.606 (0.994)	-0.743 (0.877)	-0.319 (0.354)	-0.283 (0.360)	0.330 (0.279)	-0.052 (0.333)
Information treatment (interaction terms)								
Imitation	7.82 (2.00)***	2.30 (0.555)***	-3.43 (1.42)**	0.443 (1.55)	0.607 (0.599)	0.551 (0.621)	-1.69 (0.616)***	0.819 (0.596)
Style	2.10 (2.24)	0.076 (0.313)	-1.17 (1.58)	-0.230 (1.20)	-0.006 (0.440)	0.317 (0.499)	0.269 (0.479)	-0.167 (0.898)
Type	0.409 (1.67)	0.375 (0.469)	0.562 (1.46)	0.066 (1.48)	0.518 (0.404)	0.593 (0.446)	-0.383 (0.391)	1.11 (0.511)**
Europe	0.365 (1.57)	1.14 (0.386)***	0.154 (1.22)	0.525 (1.13)	–	–	-0.177 (0.352)	0.708 (0.570)

Standard errors are in parentheses. *, **, *** denote significance at the 10%, 5% and 1% levels.

The model also includes covariates capturing the effect of the type of cheese and the price. These means of these coefficients are: Asiago 9.14 (1.02)***, Feta 8.37 (0.993)***, Gorgonzola 7.76 (0.829)***, Price -1.31 (0.10); and the standard deviations are: Asiago 5.02 (0.608)***, Feta 4.19 (1.22)***, Gorgonzola 4.83 (0.446)***, Price 0.85 (0.12).

Number of observations=3,365. Log-likelihood=-2,105.

Table C2: Sociodemographic Covariates (complete results)

	Mean	St dev	Age	Female	Education	Income	Travel to EU
Place of origin							
Canada	0.340 (0.810)	0.285 (0.829)	0.161 (0.078)**	0.337 (0.359)	0.029 (0.129)	0.094 (0.076)	0.119 (0.113)
Province	0.546 (0.918)	0.862 (0.258)***	0.335 (0.085)***	0.472 (0.448)	0.003 (0.135)	0.092 (0.081)	0.027 (0.095)
Europe	0.740 (3.29)	1.79 (0.441)***	-0.094 (0.257)	-0.269 (1.10)	0.087 (0.440)	0.007 (0.225)	0.403 (0.205)**
Labels							
Imitation	-1.82 (5.62)	4.36 (0.755)***	-1.01 (0.378)***	-1.94 (0.991)**	-0.081 (0.491)	0.417 (0.334)	-0.038 (0.765)
Style	-0.737 (2.74)	0.773 (0.362)**	-0.221 (0.285)	0.367 (1.72)	0.245 (0.397)	-0.129 (0.307)	0.028 (0.214)
Type	0.563 (8.10)	0.363 (2.68)	-0.370 (1.63)	-1.27 (1.91)	-0.078 (0.698)	0.255 (0.807)	0.030 (1.05)
Information treatment (interaction terms)							
Imitation	1.49 (8.29)	1.55 (1.66)	-0.101 (0.636)	3.62 (1.75)**	0.575 (1.17)	0.160 (0.499)	-1.32 (1.01)
Style	3.35 (4.86)	1.24 (0.534)**	-0.212 (0.518)	0.478 (2.81)	-0.361 (0.678)	0.443 (0.402)	-0.161 (0.504)
Type	1.08 (10.4)	1.42 (0.553)**	-0.010 (1.15)	1.77 (2.47)	0.193 (1.23)	0.253 (0.946)	-0.639 (0.480)
Europe	2.46 (4.97)	0.847 (0.442)*	-0.705 (0.531)	1.47 (1.83)	0.079 (0.645)	0.506 (0.317)	-0.639 (0.525)

Standard errors are in parentheses. *, **, *** denote significance at the 10%, 5% and 1% levels.

The model also includes covariates capturing the effect of the type of cheese and the price. These means of these coefficients are: Asiago 7.25 (0.716)***, Feta 8.37 (6.31), Gorgonzola 7.18 (1.15)***, Price -1.12 (0.10); and the standard deviations are: St devs: Asiago 3.67 (0.754)***, Feta 4.86 (3.87), Gorgonzola 5.23 (1.05)***, Price 0.45 (0.15).

Number of observations=3,365. Log-likelihood=-2,105.

Table C3: Food Values Covariates (complete results)

	Mean	St dev	Price	Taste	Environment	Authenticity	Origin
Place of origin							
Canada	0.822 (0.629)	0.045 (0.193)	-0.646 (0.148)***	0.243 (0.133)*	0.403 (0.122)***	-0.092 (0.124)	0.487 (0.139)***
Province	0.174 (0.719)	0.811 (0.165)***	-0.635 (0.178)***	0.332 (0.163)**	0.443 (0.149)***	0.069 (0.129)	0.464 (0.159)***
Europe	-1.39 (1.57)	2.00 (0.257)***	-0.474 (0.345)	0.907 (0.336)***	-0.216 (0.326)	0.400 (0.271)	0.118 (0.286)
Labels							
Imitation	2.26 (3.95)	4.45 (0.878)***	1.06 (0.731)	-1.56 (0.756)**	0.916 (0.699)	0.075 (0.785)	-2.35 (0.971)**
Style	-2.86 (2.50)	0.712 (0.383)*	0.374 (0.460)	-0.170 (0.533)	-0.641 (0.526)	0.284 (0.437)	0.629 (0.648)
Type	-1.23 (2.21)	0.310 (0.893)	-0.326 (0.495)	0.693 (1.05)	-0.207 (0.438)	0.379 (0.516)	-0.398 (0.624)
Information treatment (interaction terms)							
Imitation	2.53 (3.49)	1.04 (0.960)	1.92 (1.23)	-0.486 (0.724)	-1.58 (1.19)	-1.65 (1.36)	1.85 (0.871)**
Style	5.19 (4.28)	1.10 (0.466)**	0.138 (1.02)	0.382 (0.613)	1.24 (0.574)**	-0.874 (0.621)	-1.60 (1.03)
Type	0.161 (5.74)	1.25 (0.968)	2.01 (1.20)*	-0.425 (1.14)	0.222 (0.816)	-0.923 (0.658)	-0.661 (0.957)
Europe	1.82 (4.40)	0.000 (0.523)	0.966 (1.25)	0.187 (0.642)	0.762 (0.761)	-0.659 (0.417)	-1.35 (0.728)*

Standard errors are in parentheses. *, **, *** denote significance at the 10%, 5% and 1% levels.

The model also includes covariates capturing the effect of the type of cheese and the price. These means of these coefficients are: Asiago 0.108 (0.070), Feta 0.045 (0.193), Gorgonzola 0.811 (0.165)***, Price -1.34 (0.10); and the standard deviations are: St devs: Asiago 5.41 (1.04)***, Feta 4.89 (2.60)*, Gorgonzola 4.77 (0.482)***, Price 0.88 (0.20).

Number of observations=4,165. Log-likelihood=-2,595.

Table C4: Predicted Market Share of Asiago Cheese

	Italy	Canada	USA	No purchase
Italian asiago at \$4				
No GI protection	0.37	0.43	0.06	0.14
Imitation label	0.68	0.13	0.02	0.18
Type label	0.42	0.39	0.06	0.14
Type label with information	0.40	0.46	0.07	0.07
Italian asiago at \$5				
No GI protection	0.24	0.54	0.08	0.15
Imitation label	0.58	0.16	0.02	0.23
Type label	0.28	0.49	0.07	0.16
Type label with information	0.26	0.57	0.08	0.08
Italian asiago at 20% share of potential market				
No GI protection	0.20	0.56	0.08	0.16
Imitation label	0.29	0.30	0.04	0.37
Type label	0.20	0.55	0.08	0.17
Type label with information	0.20	0.62	0.09	0.08

Table C5: Predicted Market Share of Gorgonzola Cheese

	Italy	Canada	USA	No purchase
Italian gorgonzola at \$4				
No GI protection	0.35	0.41	0.06	0.18
Imitation label	0.64	0.12	0.02	0.22
Type label	0.40	0.37	0.05	0.18
Type label with information	0.39	0.45	0.06	0.10
Italian gorgonzola at \$5				
No GI protection	0.23	0.51	0.07	0.19
Imitation label	0.55	0.15	0.02	0.27
Type label	0.27	0.46	0.07	0.20
Type label with information	0.26	0.55	0.08	0.11
Italian gorgonzola at 20% share of potential market				
No GI protection	0.15	0.57	0.08	0.20
Imitation label	0.15	0.35	0.05	0.45
Type label	0.15	0.55	0.08	0.22
Type label with information	0.15	0.64	0.10	0.11