Willingness to pay for "taste of Europe": geographical origin labeling controversy in China

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Abstract

Purpose – Continuing economic growth in emerging markets offers large market opportunities to producers and marketers worldwide; however, market failures due to asymmetric information are often seen when high-quality products enter these "new markets" where recognition rates among consumers are low. The use of "geographical origin" labels as quality signals to overcome asymmetric information problem plays an important role. The purpose of this paper is to compare consumers' perception and willingness to pay (WTP) for different levels of geographic origin labels to provide insights to the strategic use of origin labels in emerging markets. **Design/methodology/approach** – A consumer survey on geographic labeling for imported dairy products was carried out in Beijing, China in May 2015. Under the "products of European Union (EU)" range, the authors used "product of Ireland" as a case study for the country-specific origin label. Information on consumer demographic, dairy consumption, safety perceptions, knowledge on Ireland and Irish products, as well as WTP for different geographic labeling and product attributes were collected from 307 face-to-face interviews. WTP was elicited using double-bounded contingent valuation method, and estimated with maximum log-likelihood function.

Findings – The authors found that consumers are willing to pay premium prices for both of these geographical origin indicators, but the EU label had slightly higher WTP results. However, the controversial situation is that although the EU label has a better chance than the country-specific label in signaling premium quality to Chinese consumers, EU labeling at its best signals an average quality across the EU counties. For premium products with above average quality, using generic EU labeling has a potential drawback to the establishment of product differentiation.

Originality/value – This study is the first to evaluate Chinese consumers' WTP for EU generic origin label for dairy products in comparison to country-specific origin label. Findings of the study have immediate policy and marketing implications in emerging markets.

Keywords Marketing, Consumer research, Country-of-origin, Geographic indications,

Geographical origin label

Paper type Research paper

1. Introduction

In recent years, more attention has been placed to the use of geographical origin labels by regulators, marketers, and consumers for food products. This is largely due to increased incidences of food-related scares and the promotion of value-added and high-quality



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products via labels and certifications (Roth and Romeo, 1992; Lusk *et al.*, 2006; Menapace *et al.*, 2011; Lim *et al.*, 2013). The underlying economic motivation of product labeling is to facilitate the resolution of market failures associated with high-quality products under asymmetric information (Akerlof, 1970). As geography often correlates with a product's overall quality, especially for food products, consumers often perceive geographical origin labels as signals for quality and product safety.

Origin labels can be particularly important for producers and exporters to promote premium products in "new markets." As western countries remain mired in post-financial turmoil, the continuing economic growth in emerging markets, such as China, offers large market potential and important new market targets for western producers and marketers[1]. The problem is that many of the renowned high-quality products and brands from western countries are still "new" to consumers in the "new markets," resulting in potential market failures in claiming respective high price premiums. This problem becomes more significant when the quality of the product is not easily observable to consumers. Under such situation, using origin labels for market newcomers plays a tremendous role in overcoming the asymmetric information problem.

The practical challenge facing an individual company or a country is how to strategically use origin labels to reach the desired results. By geographic representations, there are three levels of geographical origin labels; regional level within a country (e.g. Bordeaux in France); country level (e.g. France); or broader regional level with collective counties (e.g. European Union (EU)/2]. Different origin labels have advantages and disadvantages under different situations. Using wine products as an example, wine labeled as Bordeaux gives an extra premium for its unique quality and higher recognition, but many other less recognized wines from France may be better off associating with "product of France" in the world market and may benefit from the established country-of-origin reputation. A basic behindthe-line understanding is that for products with regional average or below average quality, generic origin labeling seems to be a logical choice. However, for high-quality premium products, the proper use of origin labels is less straightforward, especially when the well-established products in the home country encounter a low consumer recognition rate in new markets (Menapace et al., 2011). There is often a tradeoff between long-term benefit and short-term return. That is, promoting a less recognized specific label may result in steady growth of consumer recognition and long-term payback, but it also means giving up some immediate benefits from associating the products with a more generic label, and vice versa (Crespi, 2003). Understanding consumers' perception and recognition of potential geographical origin labels at various levels in the target markets helps marketers better understand consumers' consumption choices among substitutes and thus improve the effectiveness of their marketing operations (Menapace et al., 2011).

In this paper, we investigated the controversial situation of origin labeling of premium products in emerging markets. Exporters from the EU system to China's markets were the best logical choice as the EU Commission has a long policy tradition to support "geographical origin" labels of member countries, and China, as a rapidly emerging world market and largest global economy, has a strategic importance to world exporters. Over the past 15 years, around €50 million was provided by the EU Commission annually in terms of co-financing of promotional programs, 10 percent of which was used for supporting "geographical origin" labels[3]. A further €111 million was allocated by the EU Commission for the 2016 promotion programs to facilitate a better competitive position for European producers in an increasingly competitive world markets by publicizing globally the standards and quality of what EU agriculture offers (European Commission, 2015a). One recent promotional program carried out by the EU Commission was the launch of a "Tastes of Europe" campaign in China in May 2015. The campaign's aim was to create awareness among Chinese consumers about the characteristics and benefits of EU food

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products as a guarantee of authenticity, quality, and safety, and ultimately to drive WTP for "taste consumer purchase of these products. Yet in order to gain broader consumer recognition, an "umbrella" message (i.e. "Taste of Europe"), was used to carry out a generic geographical origin message to reach consumers (European Commission, 2015b).

There are a few key questions to ask under this situation. For policy makers, can generic origin messages carry sufficient value to promote member country products? For producers and marketers in member countries, what are the advantages and disadvantages to be associated with the European umbrella message relative to the use of country-specific labeling? Answers to the above questions will directly impact marketing strategies in the emerging markets. From a consumer survey carried out in May 2015 in China, we address these questions by studying Chinese consumers' response to and evaluation of origin labels as quality signals associated with EU and country-specific origins. From the "products of EU" category, we chose "product of Ireland" as a representative case study for the specific country-of-origin label (see the section below for further justification).

Some key contributions of this paper include the evaluation of consumer willingness to pay (WTP) for EU labeling, and the comparison of the origin labeling effect between generic regional labels and country-specific origin labels. We find the use of the EU label can be beneficial in terms of higher consumer WTP for products with lower recognition rates. However, due to asymmetric information, consumers will likely perceive products with EU labeling as products of average or below average quality within the EU. This implies that for products with above average quality within EU countries, using EU labeling rather than country-specific labeling has a potential drawback regarding the slower establishment of product differentiation and brand equity. Although, for practical reasons, the study focuses on one particular country and one particular product to compare the EU labeling and country-specific labeling, the findings hold a broader implication for many other countries, products, and marketers facing similar challenges in emerging markets.

The rest of this paper is organized as follows. In the next section, we provide detailed justification for the choice of product and market in this study. Then we briefly review the literature, followed by methods and data. Empirical results and conclusion remarks are presented in the last two sections.

2. Dairy economies and challenges in the EU and Ireland

The dairy sector is of great importance to the EU. It contributes approximately 15 percent of the agricultural output of the EU, and milk is produced in every single EU member state[4]. In the world dairy market, the EU is a leading exporter of many dairy products, most notably cheeses (European Commission, 2015c). Total EU28 milk production is estimated at around 159 million tons per year (Eurostat, 2013). As a result of increased production efficiency and world demand. EU dairy exports have increased by 45 percent in volume and 95 percent in value in the five years leading up to 2015, even with the milk quotas (European Commission, 2015d). With the end of the EU milk quota regime in April 2015, dairy industries in the EU are anticipating a drastic increase in milk production. On the other hand, the milk demand for EU countries and other developed countries is expected to be stable; thus, rapid expansion into emerging world markets holds the key to absorb the increased milk production and the sustainability of the dairy industry for many EU countries. In order to create new market opportunities, especially in the third-country context, the European Commission has made a total of €111 million available for promotion programs in 2016, which includes €30 million for dairy and pig meat promotion (European Commission, 2016).

Ireland, one of the top quality dairy producers and exporters in the EU, faces many challenges. Dairy production and exports have always been important for the Irish economy. The Irish dairy industry exports 85 percent of all its dairy production worldwide (IDIA, 2015).

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With the removal of the milk quota, the Irish dairy industry is expecting a 50 percent production increase within five years. Historically, the UK has been Ireland's largest export market for dairy products, but for a mature market like the UK, little can be expected in terms of market growth to absorb dramatic increases in Irish dairy products in the post-quota regime. Thus, exploration of the emerging international markets becomes even more crucial to the Irish dairy industry than the rest of the EU.

In 2015, China became the second most important dairy export market target for Ireland (Bord Bia, 2015). China emerged as a key opportunity for many global dairy exporters with strong growth in milk demand and limited increase in domestic production. From 2001 to 2013, China's imports of milk powder increased from 0.059 million tons to 0.86 million tons, with an annual growth rate of 25.1 percent. The stable milk (UHT milk) market also witnessed consistent growth in China, with current market capacity at €12.9 billion, with further projected increases to reach over €20.3 billion by 2020 (Euromonitor, 2015).

On the other hand, China's potential to expand its own milk production is limited considering the scarcity of land and water resources in China, as well as rising production costs due to environmental protection requirements, shortage of livestock feed supply, and the increasing labor costs (Bai and Li, 2015). Moreover, dairy-related food scares in recent years have had a significant negative impact on Chinese consumer confidence in domestic products (Qiao *et al.*, 2010). Such incidences have caused consumers to search for quality information in product selection, and have provided more opportunities for imported dairy products.

Establishing competitive brands to the Chinese market, however, is challenging for both the EU Commission and its individual member countries. First of all, China's domestic milk production still makes up the majority of the market share. Taking the UHT category as an example, two major domestic producers in China (Mengniu and Yili) control over 70 percent of the market share (Euromonitor, 2015). Second, competition for international players within the market is fierce, especially for new entrants competing with more "established" exporters such as New Zealand and Australia. Besides the advantage of higher consumer recognition from early entry, New Zealand and Australia also benefit greatly from a free trade agreement with the Chinese Government. In addition, with the substantial amount of new market entrants into China over the past years, this market has seen an increasing level of competition (Gira, 2013).

The task could be tougher for countries like Ireland who has a lower recognition rate in Chinese consumers' minds. The two largest milk producers in Ireland, Glanbia and Ornua (previously known as the "Irish Dairy Board"), only recently entered the premium UHT drinking milk category in China in November 2014 during an Irish trade mission to China led by Ireland's Minister for Agriculture, Food, and the Marine. Although Irish dairy products are generally regarded as premium products in established markets, milk from Ireland is considered a "newcomer" in the Chinese market. Establishing competitive product identity in China's market is an urgent yet challenging task. Consequently, the use of EU or Ireland geographical origin labeling has immediate marketing implications for the Irish dairy exporting industry.

3. Previous research on geographical origin labeling

Goods can be classified into three categories: search goods (e.g. a flower), experience goods (e.g. a bottle of wine), and credence good (e.g. vitamin supplement or organic food), based on information availability to consumers at the time of purchase (Nelson, 1970; Darby and Karni, 1973). An asymmetric information problem occurs more often for experience and credence goods when the quality of the goods is not easily observed (Loureiro and McCluskey, 2000). The label can be used as an instrument that reduces the asymmetric information problem between producers and consumers, as well as lowers the search costs for consumers, especially for experience and credence goods (Caswell and Padberg, 1992;

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Loureiro and McCluskey, 2000; Aprile et al., 2012). In addition, in recent years, more WTP for "taste attention has been placed toward the use of "geographical origin" labels by regulators and marketers for food product differentiation.

Different levels of geographical regions can be used as the base for "geographical origin" labels: geographical indications (GIs), country-of-origin labeling (COOL), and umbrella geographical origin. GIs typically denote a smaller geographical area of origin within a country where given quality, reputation, or other characteristic of the good is essentially attributable to its geographical origin (Menapace et al., 2011). The European GI system mainly includes "protected designation of origin" (PDOs), and "protected GI" (PGIs), and "traditional specialty guaranteed". COOL, sometimes referred to as "country brands," is seen as a quality signal that aggregates many intrinsic and extrinsic product attributes linked to the country-of-origin (e.g. Loureiro and Umberger, 2003). A group of countries can be promoted under the same "umbrella" geographical origin such as the "EU countries" to capture a notion of collective reputation beyond country borders (European Commission, 2015a).

Consumer preference of geographical origin labels, especially GIs and COOL, has been widely studied and evidence has suggested that GI can affect consumers' perceived product quality and therefore influence consumer preferences (Strutton and Pelton, 1993; Maheswaran, 1994; Haucap et al., 1997; Loureiro and McCluskey, 2000; Van der Lans et al., 2001; Loureiro and Umberger, 2007; Menapace et al., 2011; Aprile et al., 2012; Gao et al., 2014; Xie et al., 2016). For example, Loureiro and McCluskey (2000) used a hedonic approach to calculate consumers' WTP for fresh meat products that carry a PGI label. Their results showed that consumers are willing to pay a price premium only in the case where a PGI label is displayed on high-quality cuts of meat, stating that a PGI label is an effective quality signal when combined with other quality indicators such as a high price level. Aprile et al. (2012) assessed consumers' preferences and WTP for EU GI quality labels (PDO and PGI), the organic farming label, and other product quality cues. They found that consumers are willing to pay the highest premium price for a product with a PDO label, followed by organic farming label, and then a PGI label. Results from the study by Gao et al. (2014) on French consumer perceptions and preferences for fresh fruit from different countries showed that French consumer WTP for citrus fruit from different countries has a positive association with a country's development stages (e.g. developing vs developed). In addition, risk and quality perceptions have a significant impact on consumer WTP for fresh citrus fruit from different countries.

Under the third-country context, Menapace et al. (2011) investigated whether consumers of extra virgin olive oil recognize and value the informational content of a variety of GI labels with different levels of geographical differentiation in regards to PDOs and PGIs[5]. Using a CE approach, they estimated consumer preferences and demand for European GIs outside the EU (i.e. Canada). They found that Canadian consumers are willing to pay an additional premium for both types of GI-labeled olive oils. Strutton and Pelton (1993) compared consumer-perceived quality differences between two country-of-origin labels (the USA and Japan) in Southeast Asia and the influences to consumer choice. Based on their findings, they discussed the implications for the promotional and positioning strategies of American exporting firms. Using China as a research target market, some studies evaluated consumer preference for geographic origin labels (Wang and McCluskey, 2010; Xu and Zeng, 2014). Wang and McCluskey (2010) studied Chinese consumers' WTP for four wine products from different countries (China, the USA, France, and Australia) and found that consumers are willing to pay more for wines from France than for wines from the other three countries. Xu and Zeng (2014) analyzed Chinese consumers' WTP for domestically produced and imported red wines; they also found French wines are the most preferred compared to Chinese and US (California) wines. Zhuang et al. (2008) tested a model of the asymmetric effects of brand origin confusion on consumer preference and the purchase of local vs foreign brands in China to help explain the decreasing competitiveness of foreign brands in emerging markets.

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Using dairy products as their research interests, Bonnet and Simioni (2001) evaluated how consumers respond to the presence or absence of quality signals such as a PDO label. They estimated the distribution of WTP for labeled and branded Camembert cheese products using a mixed multinomial logit model and found that brand was valued by consumers more than the PDO label. Requillart (2007) provided a critical review of both theoretical and empirical models that have been developed in the literature to evaluate the various welfare impacts of GIs, with many examples in the dairy industry.

Our study used dairy as the research product to evaluate consumer preference for EU and Irish geographical origin labels in a third-country context (China). The collective reputation of the EU has been used as an umbrella message to promote member country products; however, to our knowledge no economic research has been done to evaluate consumer WTP for EU origin labels as a quality signal for food products. We further extend the literature by comparing the signaling effect on consumer preference between a broader geographic origin (EU) and one of its member nations' country-of-origin (Ireland). A controversial situation and its marketing implication are discussed in details. This study proposes a unique angle often overlooked by the existing large amount of GI research literature, and sheds insights onto understanding consumers in "new" emerging markets.

4. Methodology

The theoretical framework for consumer studies in general can be traced back to Lancaster (1966, 1971) where consumer utility can be explained by the employment of a bundle of product attributes. When facing two alternatives products, consumers will select the product that gives them the maximized utility. In our study, geographical origin indicator is part of the credence quality attribute. For marketers exploring new international marketplaces, real purchasing data for the products of interest are often unavailable or non-existent. Under such case, the stated preference method can be used to elicit consumer preference to understand how consumers would respond to alternative products and marketing approaches[6]. Contingent valuation (CV) is a popular stated preference method that is widely used for both market and non-market goods (Hanemann, 1984; Hu et al., 2011). Under the CV framework, researchers may ask consumers to directly state the prices they are willing to pay for a product or service (open-ended questions), or to answer "yes" or "no" to one or a few given prices (close-ended questions) to elicit consumer WTP (Kealy and Turner, 1993; Loomis, 1990). The open-ended CV approach is easier to implement but sometimes results in zero bid problems given the difficulty for consumers to name their own prices. On the other hand, a standard close-ended CV approach may suffer from limited information on WTP (Alvarez-Farizo, 1999; Bateman et al., 1995; Muller and Ruffieux, 2011; Shi et al., 2014). In this paper, we use a double-bounded CV method proposed by Hanemann et al. (1991) which allows more information to be collected than a typical standard close-ended CV approach, thus increasing the reliability of the WTP estimation. The details of the double-bounded CV approach are explained below.

A survey participant is asked two questions in relation to his valuation of the product, if the individual answers "yes" to the first question, he is then asked whether he is willing to pay a higher amount. If he answers "no" to the first question, then a lower amount is offered in the second bid. For example, in the China dairy study, the survey participant is asked: If a regular bottle of fresh milk product (250 ml) sells for RMB4.5 yuan (about 0.63 euro), would you be willing to pay 5.5 yuan for a bottle of milk labeled as "product of EU"? If the individual answers "yes," a follow-up question is asked (e.g. would you be willing to pay 1.5 yuan in addition for the bottle of milk labeled as "product of EU"?). If the individual answers "no" to the first question, the follow-up question will have a lower value (e.g. would you be willing to pay 5 yuan for a bottle of milk labeled as

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"product of EU"?). The second question is endogenous in the sense that the amount asked WTP for "taste depends on the answer obtained for the first question (which is exogenous)[7]. To reduce of Europe" the starting value bias that may be introduced by a given price of the regular fluid milk, we included three base prices for the regular fluid milk, RMB2.5, RMB3.5, and RMB4.5 (Herriges and Shogren, 1996).

As shown by Lopez-Feldman (2012), consumer WTP can be expressed as a linear combination of explanatory variables (consumer characteristics, product attributes, etc.), where β is a vector of parameters and u_i are unknown errors for individual:

$$WTP_i(x_i, u_i) = x'_i \beta + u_i$$
, where $u_i \sim N(0, \sigma^2)$, and $i = 1, ..., N$ (1)

Assuming that an individual is asked if he is willing to pay the amount of t^1 in the first round (call it the first bid), and the amount of t^2 in the second round (call it the second bid). Let Y_i^1 and Y_i^2 denote the dichotomous variables that record the responses to the first and second questions about consumer valuation. The probability that an individual answers "yes" to the first question and "no" to the second questions can be expressed as $Pr(Y_i^1 = 1, Y_i^2 = 0 | x_i)$, where x_i is a vector of explanatory variables. It is expected that the individual will answer "yes" if his WTP is greater than the bid amount, and will answer "no" if his WTP is less than the bid amount. The probabilities of the possible cases in the double-bounded scenarios are as follows.

Scenario 1 - ves to bid 1, no to bid 2:

$$\Pr\left(Y_{i}^{1}=1, Y_{i}^{2}=0|x_{i}\right) = \Pr\left(t^{1} \leqslant WTP < t^{2}\right)$$
$$= \Pr\left(t^{1} \leqslant x_{i}'\beta + u_{i} < t^{2}\right)$$
$$= \Pr\left(\frac{t^{1}-x_{i}'\beta}{\sigma} \leqslant \frac{u_{i}}{\sigma} < \frac{t^{2}-x_{i}'\beta}{\sigma}\right)$$
$$\Pr\left(Y_{i}^{1}=1, Y_{i}^{2}=0|x_{i}\right) = \Phi\left(\frac{t^{2}-x_{i}'\beta}{\sigma}\right) - \Phi\left(\frac{t^{1}-x_{i}'\beta}{\sigma}\right)$$
(2)

where Φ is the cumulative distribution function for a normal function[8].

Scenario 2 - ves to bid 1, ves to bid 2:

$$\Pr\left(Y_i^1 = 1, Y_i^2 = 1 | x_i\right) = \Pr\left(t^1 < WTP, t^2 \leq WTP\right)$$
$$= \Pr\left(t^1 < x_i'\beta + u_i, t^2 \leq x_i'\beta + u_i\right)$$

Using Bayes rule, which says that $Pr(A, B) = Pr(A|B) \times Pr(B)$, we have:

$$\Pr(Y_i^1 = 1, Y_i^2 = 1 | x_i) = \Pr(t^1 < x_i'\beta + u_i | t^2 \le x_i'\beta + u_i) \times \Pr(t^2 \le x_i'\beta + u_i)$$

Given that if the individual said yes to the first bid, he will be offered a higher big, thus $t^1 < t^2$, which implies $\Pr(t^1 < x'_i\beta + u_i | t^2 \le x'_i\beta + u_i) = 1$, thus:

$$\Pr\left(Y_i^1 = 1, Y_i^2 = 1 | x_i\right) = \Pr\left(t^2 \leqslant x_i'\beta + u_i\right)$$

$$\Pr\left(Y_{i}^{1}=1, Y_{i}^{2}=1|x_{i}\right) = 1 - \Phi\left(\frac{t^{2} - x_{i}^{\prime}\beta}{\sigma}\right)$$
(3)

Scenario 3 – no to bid 1, yes to bid 2:

$$\Pr\left(Y_i^1 = 0, Y_i^2 = 1 | x_i\right) = \Pr\left(t^2 \leqslant WTP < t^1\right)$$
$$= \Pr\left(t^2 \leqslant x_i'\beta + u_i < t^1\right)$$
$$= \Pr\left(\frac{t^2 - x_i'\beta}{\sigma} \leqslant \frac{u_i}{\sigma} < \frac{t^1 - x_i'\beta}{\sigma}\right)$$

 $\Pr\left(Y_i^1 = 0, Y_i^2 = 1 | x_i\right) = \Phi\left(\frac{t^1 - x_i'\beta}{\sigma}\right) - \Phi\left(\frac{t^2 - x_i'\beta}{\sigma}\right)$ Scenario 4 – no to bid 1, no to bid 2:

$$\Pr\left(Y_{i}^{1} = 0, Y_{i}^{2} = 0|x_{i}\right) = \Pr\left(WTP < t^{1}, WTP < t^{2}\right)$$
$$= \Pr\left(x_{i}'\beta + u_{i} < t^{1}, x_{i}'\beta + u_{i} < t^{2}\right)$$
$$\Pr\left(Y_{i}^{1} = 0, Y_{i}^{2} = 0|x_{i}\right) = \Phi\left(\frac{t^{2} - x_{i}'\beta}{\sigma}\right)$$

To estimate the WTP under the double-bounded preference, we can apply a log-likelihood function to directly obtain the maximum likelihood estimates for β and σ , which can be called $\hat{\beta}$ and $\hat{\sigma}$:

$$L(\theta) = \sum_{i=1}^{N} \left\{ \begin{array}{l} d_i^{sn} \ln\left[\Phi\left(\frac{t^2 - x_i^{\prime}\beta}{\sigma}\right) - \Phi\left(\frac{t^1 - x_i^{\prime}\beta}{\sigma}\right)\right] + d_i^{ss} \ln\left[1 - \Phi\left(\frac{t^2 - x_i^{\prime}\beta}{\sigma}\right)\right] \\ + d_i^{ns} \ln\left[\Phi\left(\frac{t^1 - x_i^{\prime}\beta}{\sigma}\right) - \Phi\left(\frac{t^2 - x_i^{\prime}\beta}{\sigma}\right)\right] + d_i^{nn} \ln\left[\Phi\left(\frac{t^2 - x_i^{\prime}\beta}{\sigma}\right)\right] \end{array} \right\}$$
(6)

The variables $d_i^{sn}, d_i^{ss}, d_i^{ns}$, and d_i^{nn} are the indicator variables that take the value of 1 or 0 depending on the relevant scenario for each individual (i.e. each individual will contribute to the logarithm of the likelihood function in one of the four parts). Once we have $\hat{\beta}$ and $\hat{\sigma}$, given $WTP_i(x_i, u_i) = x_i'\beta + u_i$ in Equation (1), we can estimate WTP by the following equation:

$$E(WTP|\tilde{x},\beta) = \tilde{x}^{'\beta} \tag{7}$$

(4)

(5)

 \tilde{x} is a vector with the values of interest for the explanatory variables. In general, such values of interests can be the average value of the group, or the value for certain groups (e.g. current consumer who buys imported milk). The statistical software package we used for the model estimation is Stata13 (StataCorp, 2013).

5. Data analysis and results

5.1 Survey and consumer demographics

A consumer survey consisting of 307 observations was conducted through face-to-face interviews in three districts (Xicheng, Haidian, and Changping) within the great metropolitan areas in Beijing, China, in May 2015. The survey team contained three subgroups who interviewed every second shopper encountered at the exit beside the check-out counters at Carrefour (a French multinational retailer), Wumart (a local top retailer in Beijing and adjacent areas, not Walmart), and Beijing Hualian Group (a national premium retail chain) over three-day time period. Table I shows some of the main statistical

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Variables	%	WTP for "taste
Female	59.3	of Europe
Age < = 25 26-34 35-44 45-64 > 64	18.9 35.5 19.2 18.2 8.1	1905
Income < 7,000 7,001-10,000 10,001-16,000 16,001-25,000 > 25,001	27.4 27.0 24.1 13.4 8.1	
<i>Education</i> Junior high of less High school or vocational school College degree Post Grad Degree (MS or Doctoral)	13.3 37.4 33.0 16.0	
Abroad experience (self or family members) Yes No	53.75 46.25	
Consumed before Yes No	62.21 37.79	
Online channel Yes No Note: $n = 307$	19.37 80.63	Table I. Statistical summaries of the sample

summaries of the sample, including demographic and behavior indicators (overseas experience, imported dairy consumption experience).

About 59 percent of the shoppers interviewed are female, which is consistent with the fact that females shop more frequently than males (Brennan, 2013). Approximately 60 percent of the people interviewed have college or postgraduate degrees, reflecting the higher level of education in Beijing, the capital city of China. In the survey sample, about 54 percent of the people have direct or indirect traveling abroad experience ("have you or your close family members traveled abroad before?"), and 62 percent of the people have consumed imported dairy products in the past five years. For those who had consumed imported dairy products before, about 20 percent (19.37 percent) use online channels to purchase their milk product.

5.2 Consumer perception for dairy product safety and geographical origin labeling

When asked about the reasons to consume imported milk products, safety appears at the top of the list. Table II shows Chinese consumers' safety perception toward domestic dairy products. About one-fifth (20.85 percent) of the people surveyed are concerned about the domestic dairy product being somewhat or very unsafe. For a subgroup of people who consumed imported milk in the past five years (n = 191), this number is slightly higher (22.52 percent).

BFJ	Consumers' perception for GI labeling showed evidence that GI as a quality signal may help
119,8	ease consumers' safety concerns. As shown in Figure 1, most consumers perceive GI label as an
,	indicator for better safety (63 percent). Other than that, consumers also perceive GI-labeled
	products to be more trustable (53 percent), or with better product quality (46 percent)[9]. These
	findings are consistent with another recent study done in China on dairy consumer
	consumption habit, which found that over 60 percent survey participants ranked being safer as
1906	the top reason for them to choose international brand milks (Bai and Li, 2015).

5.3 Chinese consumers' knowledge and perceptions about Ireland

Europe has a long-standing reputation in China as being the origin of many premium products. However, Ireland, being a small country within Europe, is somewhat less familiar to many Chinese consumers. In order to evaluate Chinese consumers' knowledge and perceptions about Ireland, we listed a few statements in the consumer survey about Ireland and the Irish agriculture, and asked respondents to identify the truthfulness of those statements. Table III shows the distribution of consumers' response, with the right answers highlighted in italic print. About 57 percent of consumers surveyed did not know Ireland is an independent country, nor did 59 percent know that Ireland is advanced in sustainable agricultural production. Almost half of the consumers surveyed did not know that the majority of Ireland's dairy is based on grass-fed production. One thing worth noting is that the consumers surveyed were mainly residents in Beijing, the capital city and the country's most important economic and cultural center. These consumers were interviewed in large shopping centers in a well-developed city area. We are conscious that this small sample does

	Safety perception	Full sample $(n = 307)$ (%)	Subsample ($n = 191$) (user of imported dairy) (%)
Table II.	Very safe	01.30	01.05
Safety perception	Somewhat safe	23.78	17.28
toward Chinese	Neither safe or unsafe	54.07	59.16
domestic dairy	Somewhat unsafe	18.57	19.90
product	Very unsafe	02.28	02.62



Figure 1. Consumer perception for GI label not represent the total population of Chinese consumers, and is likely to have higher WTP for "taste education, higher income, and better worldly knowledge than the average population in of Europe" China. However, this upward bias further reinforces the lack of visibility of Ireland and its dairy industry to Chinese consumers.

5.4 Double-bounded CV results and WTP estimation

The regression results from the double-bounded CV method are presented in Table IV[10]. Older age groups are less likely to pay a higher premium for geographical origin labeling (significantly negative at the 5 percent significance level for both the EU and Irish labels). Income has a significant positive effect (at the 1 percent significance level for EU, and 0.1 percent significance level for Ireland), indicating that financial ability is still an important factor when it comes to paying a higher price for imported milk products. However, no significant differences were found between female and male shoppers regarding their likelihood to pay a premium for geographical origin labels. People who had consumed imported dairy products before are more likely to pay more for imported milk products with geographical origin labels. But interestingly, people with overseas experience may be less likely to pay a premium for milk products from the EU. A possible explanation is that although Europe has a general reputation for good product quality, people with experience are more likely to associate Europe with fashion or luxury brands, not necessarily with premium milk products[11].

Statements about Ireland	True	False	Do not know	
1. Ireland is an independent country	42.4	26.4	31.3	
2. Ireland is part of Unite Kingdom	38.8	31.9	29.3	
3. With limited land, Ireland relies heavily on agriculture imports	18.2	<i>33.9</i>	47.9	
4. Ireland exports more than 80% of its agricultural products	38.8	9.5	51.8	Table III.
5. The majority of Ireland's dairy are based on grass-fed production	54.1	2.0	44.0	Consumer knowledge
6. Some well-known world brands of IMF use milk sourced from Ireland	35.2	9.5	55.4	and perceptions about
7. Ireland is advanced in sustainable agricultural production	40.7	4.9	54.4	Ireland

Parameter	(1) Product of EU estimate	<i>t</i> -test	(2) Product of Ireland estimate	<i>t</i> -test	
Age	-0.133*	(-2.29)	-0.144*	(-2.56)	
Female	0.138	(0.79)	0.199	(1.19)	
Income	0.227**	(2.96)	0.256***	(3.44)	
Abroad experience	-0.450*	(-2.37)	-0.182	(-1.03)	
Consumed before	2.376**	(2.67)	3.085***	(3.59)	
Safety perception	0.280*	(2.32)	0.040	(0.36)	
Base price 3.5	1.222***	(5.67)	1.219***	(5.91)	
Base price 4.5	2.041***	(10.19)	2.020***	(10.50)	
GI_service	-0.703	(-1.93)	-0.747*	(-2.13)	
GI_not sure	-1.020*	(-2.54)	-0.575	(-1.54)	
Online channel	-0.554*	(-2.04)	-0.839**	(-3.20)	Table IV
Constant	0.813	(0.86)	0.431	(0.47)	Decreasion result
Log likelihood	-361.30		-373.14		from double bounde
Wald $\chi^2(11)$	150.29		153.18		CV metho
Notes: n = 307. *,**,**	*Significant at 5, 1, and (0.1 percent levels,	respectively		(full sample

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Regarding consumers' perception of geographical origin labeling, the variable ("GL_not sure") is significant (negative at the 5 percent significance level for the EU label), indicating that not knowing what geographical origin stands for in terms of quality signaling leads to a negative effect to the possibility of paying a higher price for products with the EU label, which is logically expected. For those who relate geographical origin labeling to service, they are less likely to pay a higher premium for products of Ireland given the concern about lack of aftersales support. In regard to channel choice, those who use domestic online channels to order milk products are less likely to pay a higher price premium for both the EU and Irish labels. Consumers who shop online often tend to be more price sensitive, especially given that online shopping provides easy access to comparing prices across different suppliers (Broekhuizen and Huizingh, 2009).

Consumer perception about Ireland may impact their likelihood to pay a premium for "product of Ireland." As Ireland is a country within the EU, we also reported the regression results for "product of EU" while including consumer perception for Ireland variables in the model. In the survey, we asked seven questions to evaluate consumer knowledge and perception about Ireland and Irish agriculture (Table III). We included only three perception variables in the model[12]. The three variables included Ireland_GF ("The majority of Ireland's dairy are based on grass-fed production"; about 54 percent of the people surveyed got this right), Ireland_source ("Some well-known world brands of infant milk formula use milk sourced from Ireland"; only 35 percent of the people surveyed got this right), and Ireland_sustain ("Ireland is advanced in sustainable agricultural production"; about 41 percent of the people surveyed got this right). Table V shows the regression results with these three perception variables added. All the parameter estimations for these Ireland perception variables are positive for both "product of Ireland" and "product of EU" labels, but none was statistically significant, indicating no strong link between consumers' right perception regarding

Parameter	(1) Product of EU Estimate	<i>t</i> -test	(2) Product of Ireland Estimate	<i>t</i> -test
Age	-0.128*	(-2.18)	-0.132*	(-2.37)
Female	0.172	(0.97)	0.254	(1.53)
Income	0.219**	(2.85)	0.237**	(3.25)
Abroad experience	-0.433*	(-2.28)	-0.130	(-0.75)
Consumed before	2.291*	(2.57)	2.895***	(3.43)
Safety	0.269*	(2.24)	0.019	(0.17)
Base price 3.5	1.222***	(5.66)	1.226***	(6.05)
Base price 4.5	2.057***	(10.26)	2.051***	(10.84)
Ireland_GF	0.064	(0.32)	0.159	(0.85)
Ireland_source	0.101	(0.49)	0.270	(1.40)
Ireland_sustain	0.167	(0.84)	0.312	(1.68)
GI_service	-0.720*	(-1.97)	-0.778*	(-2.25)
GI_not sure	-0.938*	(-2.32)	-0.383	(-1.04)
Online channel	-0.532	(-1.96)	-0.794**	(-3.08)
Constant	0.748	(0.78)	0.283	(0.31)
Log likelihood	-360.15		-366.89	
Wald $\chi^2(14)$	151.65		164.48	

Table V. Regression results

Ireland

with perception about

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Notes: n = 370. To detect potential collinearity problem, we applied variance inflation factor (VIF) analysis to the right-hand-side variables. The average VIF score is reported to be 1.26, with the maximum VIF score at 1.57, which indicated that collinearity is not a concern for the model. *, **, ***Significant at 5, 1, and 0.1 percent levels, respectively

Ireland and their likelihood to pay higher premium for milk with "product of EU" or WTP for "taste "product of Ireland" labels.

Tables VI and VII show the main results from the WTP estimation. For a bottle of 250 ml fresh fluid milk, on average, the consumers surveyed are willing to pay RMB4.76 (64 cents) for the milk with "product of EU" label, and RMB4.63 (62 cents) for the milk with the "product of Ireland" label. The magnitude of the number can be arbitrary, but the revealing finding is that compared to the "base product" (a bottle of 250 ml fresh fluid milk with an average price of milk being RMB2.5, RMB3.5, and RMB4.5, respectively), most consumers are willing to pay a premium for the above-mentioned labels of credential attributes. The weighted average indicated that overall respondents were willing to pay 37 percent more for "product of EU" milk and 32 percent more for "product of Ireland" compared to milk without such GI indicators.

Compared to Irish milk products, Chinese consumers are willing to pay slightly more for EU milk products (about 5 percent higher). There are two possible interpretations to this result: either Chinese consumers perceive Irish milk product quality to be lower than the EU average, or there is uncertainty involved so consumers are not willing to pay as much for Irish milk products. The first interpretation is about quality, while the second interpretation is about information. To Irish consumers or the Irish dairy industry, milk quality in Ireland is among the top in the EU member countries. Very likely, the lower WTP by Chinese consumers reflects their lack of confidence for Irish milk products due to unfamiliarity and lack of information, rather than an informed valuation of product quality.

5.5 Discussion on EU label vs Ireland COOL

The above findings have a few important implications for dairy marketers and exporters. For the case study per se, the immediate question is: should we attach a "product of EU" label or "product of Ireland" label to Irish milk products sold in China? According to the WTP analysis, immediate gain can be realized from using the EU label due to higher visibility of EU compared to the Irish label and the established positive quality perception in Chinese consumers' minds for EU products. In addition, using the EU label enables Irish dairy exporters to take advantage of the continuous promotional campaigns funded by the EU Commission. But we also need to recognize the fact that the premium gained from using the EU label is limited (5 percent), and using the EU label might be a risky choice if it

	Mean	SD	Lower 95% CL for mean	Upper 95% CL for mean	
All samples	4.76	0.08	4.59	4.92	
Base price RMB2.5 RMB3.5 RMB4.5	3.63 4.93 5.66	0.14 0.18 0.14	3.36 4.58 5.39	3.90 5.28 5.93	Table VI.WTP of respondentsfor "product of EU" in the surveys

	Mean	SD	Lower 95% CL for mean	Upper 95% CL for mean	
All sample	4.63	0.08	4.48	4.79	
Base price RMB2 5	3.48	0.15	319	378	Table VII. WTP of respondents
RMB3.5	4.76	0.15	4.47	5.04 5.74	Ireland" in the

of Europe"

undermines the establishment of a unique and strong brand identity for Irish dairy products, thus resulting in a loss to long-run profits.

For a geographical origin label to effectively signal a premium quality of a certain product, positive consumer perception must be achieved linking geographical region to its product quality. Among the EU countries, Ireland benefits from its natural advantage for dairy production, with a mild climate and enough rainfall that warrants its rich premium pastureland. Most of Ireland's dairy production is grass-fed with about 300 days of free-range grazing on pastureland. In addition, Ireland is among the world's leaders in terms of sustainable production. Had the Irish dairy industry established a unique product image, Chinese consumers very likely would have been willing to pay more for "product of Ireland" label than for the "product of EU" label on average. However, building a unique product image for Irish milk products requires far more than just increasing Chinese consumers' general knowledge about Ireland and Irish agriculture. The marketing effort should emphasize promoting the premium quality of Irish products and building strong positive brand perception among consumers[13]. More research on the deterministic factors of consumer WTP and the potential impact of consumer learning will be valuable to effective brand building.

6. Conclusions and implications

The value of geographical origin labels as a quality signal is an aggregation of many intrinsic and extrinsic product attributes linked to origin. There are high levels of variations in quality across countries due to differences in the natural environmental and climatic conditions, as well as differences in national quality standards, production, and processing technologies, i.e. quality audit systems, etc. In this study, we compared Chinese consumer WTP for the "product of EU" label and the "product of Ireland" label. We found that consumers are willing to pay premium prices for both of these geographical origin indicators, but the EU label had slightly higher WTP results.

However, the controversial situation is that although the EU label has a better chance than the Irish label in signaling premium quality to Chinese consumers at this stage, using EU labeling at its best signals an average quality across the EU counties. With premium dairy products at above the EU average quality, educating consumers about Ireland and its grass-fed and highly sustainable agricultural production will likely strengthen the quality signal that the Irish label carries. Whether to put more effort in promoting Irish dairy products using generic EU labeling or to differentiate Irish products away from a generic origin quality message has immediate policy and marketing implications and is well-worth further investigation. Such controversial situation is faced not only by Irish dairy industry and policy makers, but also by many premium product marketers entering the new emerging markets. This study is the first to evaluate Chinese consumers' WTP for EU generic origin label for dairy products in comparison to country-specific origin label. Future research aiming to reveal consumers' perception and preference for alternative product attributes, especially the underlining interpretations of different credential attributes that link to geographical origin labeling, is crucial.

Notes

- 1. China, India, and some African countries are among the targeted emerging markets with high GDP growth (see Knoema, 2015).
- 2. The first two types of origin labels, often identified as geographical indications (GIs) and countryof-origin, have received extensive attention in the economic and marketing literature (Loureiro and Umberger, 2003; Lusk *et al.*, 2006; Menapace *et al.*, 2011; Lim *et al.*, 2013), but the third type of origin label, which captures a notion of collective reputation beyond country borders, is much less explored (European Commission, 2015a).

- 3. European GI system includes "protected designation of origin," and "protected GI," and WTP for "taste "traditional specialty guaranteed."
- 4. Total output of the agricultural industry in the EU28 in 2014 was an estimated EUR418.5 billion at basic prices.
- Third-country context here refers to promoting in a country away from product origin country and country issued GI certificate.
- 6. In this case the products are only becoming available to the market, so no historical purchase data exist.
- 7. While allowing us to have more information (two answers for each individual regarding willingness to pay (WTP)), at the same time, increased complexity and induced endogeneity of the double-bounded method make the econometric estimation slightly more complicated. A probit model cannot be used directly in such case, but the maximum likelihood method can be used to obtain estimates of WTP (Lopez-Feldman, 2012).
- 8. The cumulative distribution function for a normal function with mean μ and variance σ^2 can be expressed as $\Phi(x|\mu,\sigma) = \frac{1}{\sigma\sqrt{2\pi}} \int_{-\infty}^{x} e^{\frac{-(x-\mu)^2}{2\sigma^2}} dx$, where $x_i \sim N(\mu,\sigma^2)$. For more information on the underlining statistics theory, please refer to a standard statistics textbook.
- 9. Respondents can have multiple choices in this case.
- 10. Model selection process was implemented using the final bid price as the dependent variable. Most of the variables included in the model (Table IV) result from the selection process, whereas the gender variable (female) was an exception. Although it would have been excluded using the model selection process, we chose to keep it in the model to verify that there is no gender effect in this particular study.
- 11. Although Ireland dairy is dominated by grass-fed production and dairy cows are often grazing on green pastures, they are not easily seen by tourists or travelers as they are grazing on farms behind high hedge walls.
- 12. The inclusion of the variables on consumer perception about Ireland was based on the stepwise model selection process (only Ireland_sustain met the selection criteria) and the relevance to Irish dairy products and production process (we included Ireland_source and Ireland_GF for this reason).
- 13. Irish Government has planned to position Ireland as a world leader in sustainable agri-food production, which has lent itself to become a core agri-food product image and branding strategy. Tourism is also recognized as a potential device to help promote Irish food products (DAFM, 2015).

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