ISSN 1831-9424

European Commission

JRC TECHNICAL REPORT

CONSUMER UNDERSTANDING OF ORIGIN LABELLING ON FOOD PACKAGING AND ITS IMPACT ON CONSUMER PRODUCT EVALUATION AND CHOICES

A SYSTEMATIC LITERATURE REVIEW

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2022

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JRC126893

EUR 31208 EN

PDF ISBN 978-92-76-56613-7 ISSN 1831-9424 doi:10.2760/336778 KJ-NA-31-208-EN-N

Luxembourg: Publications Office of the European Union, 2022

How to cite this report: Thøgersen, J., & Nohlen, H.U. *Consumer understanding of origin labelling on food packaging and its impact on consumer product evaluation and choices: A systematic literature review,* Ciriolo, E.,ed., Publications Office of the European Union, Luxembourg, 2022, doi:10.2760/336778, JRC126893.

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Acknowledgements

This study was financed by the European Commission and was carried out by the author. The conclusions and recommendations presented in this report are the sole responsibility of the author and do not necessarily reflect the opinion of the European Commission or anticipate its future policies. I am grateful for constructive feedback and comments on an earlier version by Emanuele Ciriolo, at the European Commission's Joint Research Centre, Petroula Vantsiouri at DG SANTE, and dr. Anne O. Peschel at the MAPP Centre, Aarhus University, School of Business and Social Sciences, Department of Management.

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Abstract

The purpose of this project is to systematically review and synthesize empirical research regarding why consumers consider the origin of the food important, how and why it influences consumers' choices, or how and why consumers do or do not understand, interpret and trust information on the origin of food. The specific objectives were expressed in three research questions:

1. Does the origin of a food influence purchase decisions and consumption, and if so, how?
2. Why do consumers find it important to know the origin of the foods they purchase or consume?
3. How do consumers understand and interpret information on the origin of food?

1 Introduction

On 20th May 2020, the European Commission adopted its Farm to Fork (F2F) Strategy aiming at transitioning to a sustainable food system that is fair, healthy and environmentally friendly. Recognising the interrelations between health, ecosystems, supply chains, consumption patterns and planetary boundaries, the F2F Strategy aims at ensuring that citizens have access to sufficient, safe, nutritious, sustainable, and affordable food. The strategy sets out both regulatory and non-regulatory initiatives considering all parts and actors in the food system, from primary production to processing, retail, consumption and disposal or reuse of food. One focus lies on the creation of a favourable food environment that makes it easier to choose healthy and sustainable diets.

The F2F Strategy's objective on origin labelling is to allow consumers to better identify the origin of food and to facilitate informed and sustainable food choices by consumers. This is based on mounting research findings that, in addition to price, taste and convenience (Szejda, Urbanovich, & Wilks, 2020), consumers are increasingly affected by a range of considerations when making food-purchasing decisions, including the origin of the food, the length of the food supply chain, and its potential impact on the environment (Aboah & Lees, 2020; Maesano, Di Vita, Chinnici, Pappalardo, & D'amico, 2020). EU's origin labelling initiatives aim at providing the necessary information to identify local productions with regard to certain foods, on the basis of relevant, useful, accurate and legitimately expected information, while ensuring that consumers across the EU receive the same information on origin. Other important aims are to empower consumers to play an active role in the transition to sustainable food systems, to preserve the integrity of the single market and to establish a level playing field across the EU.

Extant research suggests that a large share of the population finds the origin of the food they buy and/or consume important (Aboah & Lees, 2020; Fraser & Balcombe, 2018; Maesano et al., 2020). However, it is less clear why consumers consider the origin of the food important and how and why it influences consumers' choices. It is also less clear how consumers understand, interpret and trust information on the origin of food and what influences the level of trust in and understanding of information on the origin of foods.

On this background, it is the purpose of this systematic literature review to assess consumers' understanding and use of origin labelling on food packages and its impact on their attitudes, perceptions, consumption and behaviour, with a particular focus on its influence on consumers' purchasing behaviour. To do this, relevant scientific publications are systematically reviewed and synthesised, primarily peer-reviewed academic publications, but also relevant reports from public and private institutions at EU and national level.

1.1 Current regulations regarding origin labelling

In accordance with Regulation (EU) No 1169/2011, the general rule is that the indication of the country of origin or place of provenance shall be mandatory where failure to indicate this might mislead the consumer as to the true country of origin or place of provenance of the food, in particular if the information accompanying the food or the label as a whole would otherwise imply that the food has a different country of origin or place of provenance (Article 26(2)(a)). In addition, the Regulation requires the origin labelling for fresh, chilled and frozen meat of swine, sheep, goats and poultry and establishes rules on the origin indication of the primary ingredient. Furthermore, at EU level mandatory origin provisions have been developed on the basis of vertical approaches for instance for honey, fruit and vegetables, fish, beef and beef products and olive oil. The Commission Regulation (EU) No 1337/2013 has been adopted setting out the modalities requiring (with some exceptions) the indication of the place of rearing and the place of slaughter for prepacked fresh, chilled and frozen meat of swine, sheep, goats and poultry. These rules became applicable as of 1 April 2015. In addition, there is a strong demand to extend this mandatory country of origin or place of provenance indication to other categories of food.[1] In the absence of EU rules, some Member States have enacted national legislation requiring mandatory origin labelling for specific categories of foods. Seven EU Member States[2] have adopted national mandatory labelling schemes for certain food products, under Regulation (EU) No 1169/2011.

[1] The following foods have been identified as those in which consumers have particular interest in knowing where they come from: milk and milk used as an ingredient, meat used as an ingredient, rabbit and game meat, rice, durum wheat used in pasta, potatoes and tomato used in certain tomato products.

[2] Seven Member States (France, Italy, Greece, Finland, Spain, Lithuania and Portugal) have notified national measures on the origin indication of milk and milk as an ingredient and two (France and Finland) on meat as an ingredient.

As regards origin labelling of the primary ingredient of a food, Article 26(3) of Regulation (EU) No 1169/2011 requires that where the origin of a food is given and is different from one of its primary ingredients, the origin of the primary ingredient shall be given or at least indicated as being different to the origin of the food. Commission Implementing Regulation (EU) 2018/775 clarifies how the information on the origin of the primary ingredient should be displayed on labels, if required according to Article 26(3) of Regulation (EU) No 1169/2011. These rules became applicable as of 1 April 2020. On 30 January 2020, the Commission adopted a NOTICE on the application of the provisions of Article 26(3) of Regulation (EU) No 1169/2011 with regard to the origin indication of the primary ingredient of a food. This Notice aims at assisting all players in the food chain as well as the competent national authorities to better understand and correctly apply the provisions of Regulation (EU) No 1169/2011 related to the origin indication of the primary ingredient.

1.2 Past research

A recent systematic network analysis found that the country of origin (COO) is one of the most researched determinants of consumer food product choices (only surpassed by price, food labelling, and brand), and COO research is increasing relative to other determinants (Hoffmann et al., 2020). Systematic reviews of the literature on the importance of the COO for consumer choices confirm the research interest in this factor.

Newman et al. (2014) systematically reviewed the COO food labelling literature from 1990 to 2010 and found that the most popular response variable in this research is willingness to pay (WTP). Content-wise, a key finding was that consumers in many contexts are willing to pay more for domestic than for imported food products. Also, studies using other response variables (e.g., preferences, attitudes, evaluations) report a similar domestic country bias (cf. Balabanis & Diamantopoulos, 2004). However, this COO preference is occasionally reversed in poorer, less economically developed countries with regard to imports from a more developed country. According to Newman et al. (2014), the key reasons for finding the COO important are ethnocentrism and using the COO as a cue to food safety and other desirable qualities. A smaller COO effect is typically found when COO labelling is used in conjunction with other food label information, perhaps because consumers partly use them as cues to the same qualities.

These findings were confirmed by a more recent systematic review of research on the quality cues consumers use when buying meat products (Aboah & Lees, 2020). Aboah and Lees (2020) conclude that the COO is the most important cue for quality, followed by food safety certification, price, production system (e.g., organic vs. conventional) and quality certification labels. They also confirmed that consumers usually prefer (meat) products that are locally produced within their home country. The exceptions, where consumers preferred imported products, were in all cases countries (such as China and Brazil) where local food safety standards were perceived to be inferior to those of exporting countries.

The referred key conclusions about consumer responses to COO labelling (COOL) were largely confirmed by another recent systematic literature review, in this case of research on the labelling of credence characteristics (Darby & Karni, 1973) for consumer WTP for fish products (Maesano et al., 2020). Again, this review finds that the COOL is the most important cue, surpassing, for example, organic, sustainability and animal welfare labelling, and that consumers are generally willing to pay a premium for domestic products.

A recent systematic review and meta-analysis of literature (until 2018) on consumer responses to information about the (subnational) place or region of origin (ROO) concluded that ROO information can be an effective differentiation tool for food products, but only if supported by geographical indication (GI) labels, such as Protected Designation of Origin (PDO) or Protected Geographical Indication (PGI) (Santeramo et al., 2020). It also found that the relative importance of ROO varies significantly between countries, products, and origins. The systematic meta-analysis by Leufkens (2018) also found evidence for a significant and positive marginal WTP for GI's, but only clear and positive in the case of the PGI, whereas the effect of a PDO label depends on the certified product. In general, this study revealed substantial heterogeneity in quality label effects and also indications of a publication bias. Contrary to Leufkens (2018), Deselnicu, Costanigro, Souza-Monteiro, and McFadden (2013) found that PDO labelling commands a higher premium than PGI, which they assumed is due to the more stringent quality standards of the former.

1.3 Objectives

As input for the F2F Strategy on origin labelling, which aims at empowering consumers to play an active role in the transition of food systems by providing the necessary information to identify local productions with regard to certain foods, on the basis of relevant, useful, accurate and legitimately expected information, it is the objective of this systematic literature review to answer the following three research questions (RQ):

RQ #1 – Does the origin of a food influence purchase decisions and consumption, and if so, how? What does extant research tell us about the extent to which the origin of a food, and attitudes toward the origin of a food influence consumers' purchase decisions and consumption? Which aspects influence whether decisions are informed by the origin of a food?

RQ #2 – Why do consumers find it important to know the origin of the foods they purchase or consume? What does extant research tell us about how important consumers find the origin of their food and what the reasons are why consumers find the origin of food important? Consumers may have different reasons, so attention is also paid to population differences including whether some subgroups of the population find the origin of their food more important than others, and why that might be the case?

RQ #3 – How do consumers understand and interpret information on the origin of food? What does extant research tell us about whether or not consumers interpret origin information correctly, and what common misperceptions are (if any)? What influences consumers' understanding and interpretation of information on the origin of food? Can we infer anything from extant research on how information on the origin of a food needs to be provided to be interpreted correctly (if that is not yet the case)? Is the level of trust in and understanding of information on the origin of foods influenced by the geographical level at which the information is provided ('EU' or 'non-EU'/national/regional/local)?

Extant research does not contain sufficient evidence to fully answer all of these questions. Hence, it is an important objective in its own right to identify knowledge or research gaps for all of these research questions.

1.4 Scope

The relevant literature is primarily peer-reviewed journal articles, but also includes other scientific publications, including working papers, books, policy or position papers, evaluation or technical reports, and others where the studies and their reporting are deemed of sufficient scholarly quality to be publishable in a peer-reviewed academic journal. Especially, other relevant publications might be relevant research documents or papers produced on all levels of government, academics, business and industry, which are not controlled by commercial publishers (grey literature). The literature review especially focuses on experimental, behavioural, field and survey studies, but also includes qualitative studies where relevant. Special attention is paid to studies on European countries and the transferability of findings from studies conducted outside of the EU to a European context is considered. Therefore, the literature review is limited to research carried out in EU and OECD countries. To ensure sufficient accessibility, quality and policy relevance, the review is limited to publications in English, published between 2010 and 2021. The literature search was carried out on June 8, 2021. A review of this literature pointed to previous scientific evidence worth mentioning, which has been included as background information. Additionally, grey literature was acquired through a call issued by DG SANTE to the DG SANTE Advisory Group on June 21, 2021. This literature was only included if it met the criteria set out above and reported primary empirical data on consumer understanding and behaviour.

2 Method

To answer the research questions, a systematic literature review is performed of empirical research articles on consumers' understanding and use of origin labelling, with a particular focus on its influence on consumers' purchasing decisions and behaviour. The review is limited to literature published in English between 2010 and 2021, reporting empirical research carried out in EU or OECD countries and with special attention to studies on European countries.

2.1 Overall search strategy

This systematic literature review is based on the PRISMA guidelines (Moher, Liberati, Tetzlaff, Altman, & PRISMA_Group, 2009; Siddaway, Wood, & Hedges, 2019). To secure a comprehensive coverage of qualified research, it is imperative to do the primary search in a database or databases that has/have proven suitable for systematic reviews of academic literature (Gusenbauer & Haddaway, 2020). Among researchers doing systematic literature reviews, the most popular curated databases of academic literature are Scopus and Web of Science. Singh, Singh, Karmakar, Leta, and Mayr (2021) recently published a comparative study of these two databases, reporting that 99.11% of the journals indexed in Web of Science are also indexed in Scopus, while only 34% of the journals indexed in Scopus are also indexed in Web of Science. Hence, Scopus has a substantially more comprehensive coverage of journals than Web of Science. The decision to index a journal or other publication in Scopus is made by a Content Selection and Advisory Board, which means that the necessary quality control of covered sources is maintained. For these reasons, it was decided to use Scopus as the primary scientific database for the literature search.

In order to secure an as comprehensive coverage of the targeted literature as possible, the Scopus search was supplemented by a search for further relevant articles in the reference lists of the articles emanating from the Scopus search and in the reference lists of identified, relevant review articles. Two additional procedures were employed to especially capture potentially relevant new and "grey" literature: a citation search in Google Scholar, screening publications from the last two years (i.e., dated 2019-2021) that cites relevant publications identified in the earlier steps, and an internal search by DG Sante for relevant reports commissioned by EU or member states that might not be captured by a search in Scopus or Google Scholar. Relevant articles, working papers and other "grey" literature identified by these additional searches are included when they fulfil the same screening criteria as used in the basic search. An overview of the literature search process is shown in Figure 1.

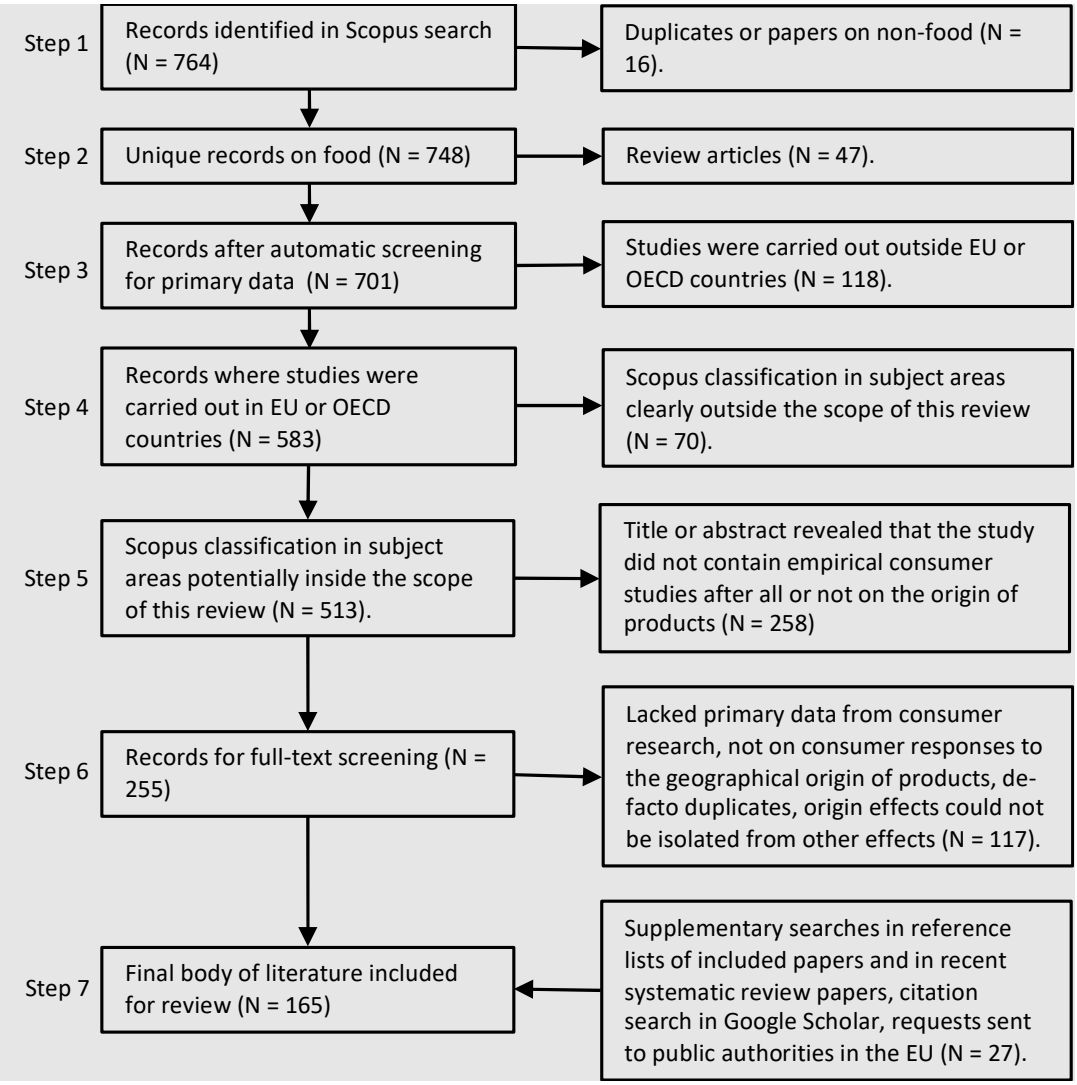
In addition, stakeholders were asked to provide grey literature through the SANTE Advisory group. We received 49 documents, some of which were duplicates, fell outside the date range or did not report primary data. A total of 17 articles were considered for the review. Non-English documents were also included. Since such evidence – articles, reports, etc. - was not published in peer-reviewed academic journals, they are presented separately in table 5 and not reported in Figure 1.

2.2 Primary search in Scopus

For the Scopus search, a Boolean search string was developed consisting of three substantive elements that all needed to appear in either title, abstract, or keywords, supplemented by a number of limitations to further specify the body of knowledge for review and reduce the number of irrelevant hits. The three substantive elements were: (1) product origin, (2) consumer, and (3) food. The limitations were: (4) only empirical consumer studies based on primary data, (5) year of publication, from 2010 to 2021, (6) research carried out in EU or OECD countries, (7) not (only) on alcoholic beverages (which is not considered food in this report), and (8) published in English.

We operationalized "product origin AND consumer AND food" by the search string: ("country of origin" OR "region of origin" OR "Protected Designation of Origin" OR "Protected Geographical Indication") AND (consum*) AND (food OR milk OR meat OR rice OR wheat OR potatoes OR tomatoes OR dairy OR honey OR fruit OR vegetables OR fish OR beef OR olive OR eggs). Already in the initial search, we added the limitations PUBYEAR > 2009 and language is English. The literature search was carried out on June 8, 2021. The Scopus search using this Boolean search sting and these limitations identified 764 publications.

Figure 1. PRISMA flow diagram of the literature search and screening procedure



The screening of titles and abstracts revealed three duplicates and 13 papers that were not on food products as defined in this project (but on alcoholic beverages), reducing the number of relevant publications to 748. Of these, Scopus identified 30 articles as review articles (i.e., not based on primary data) and 17 more were identified during the first manual screening of title and abstracts, further reducing the number to 701.

Next, Scopus identified 77 empirical papers where all studies were carried out in non-EU/non-OECD countries and 41 more were identified during the manual screening of title and abstracts. This reduced the number of articles to 583 where studies were carried out in EU or OECD countries.

Scopus classified these publications into 27 different subject areas, many of which were clearly outside the focus of this project, such as "Biochemistry, Genetics and Molecular Biology" or "Pharmacology, Toxicology and Pharmaceutics." When limiting the search to nine subject areas that the author assessed could potentially contain relevant research (Agricultural and Biological Sciences, Business, Management and Accounting, Social Sciences, Economics, Econometrics and Finance, Environmental Science, Psychology, Arts and Humanities, Decision Sciences, Multidisciplinary), 70 papers were screened away and the number of articles was reduced to 513.

Next, a more thorough screening of titles and abstracts led to the identification of 246 publications that did not contain empirical consumer studies after all and 12 that did not study the origin of products (but of people or other species), reducing the sample of articles for further scrutiny to 255.

The screening of the full texts of these 255 articles revealed that 109 of them were not within the scope of this review after all (i.e., they lacked primary data from consumer research or did not focus on consumer responses to the geographical origin of products), seven were de-facto duplicates, and one employed a research design that did not allow isolating origin effects from other effects, reducing the final sample of relevant papers from the Scopus search to 138.

2.3 Supplementary searches

As already mentioned, the Scopus search was supplemented by search in reference lists and citation searches. The supplementary searches were carried out between June 20-22, 2021. First, the reference lists of 12 relevant review papers identified through the Scopus search were screened (Aboah & Lees, 2020; Albuquerque et al., 2018; Braghieri, Girolami, Riviezzi, Piazzolla, & Napolitano, 2014; Deselnicu et al., 2013; Fraser & Balcombe, 2018; Hoffmann et al., 2020; Krystallis, Chrysochou, Perrea, & Tzagarakis, 2017; Leufkens, 2018; Maesano et al., 2020; Newman et al., 2014; Santeramo et al., 2020; Thøgersen, Pedersen, Paternoga, Schwendel, & Aschemann-Witzel, 2017). This led to the identification of nine additional papers that fulfil the search criteria, increasing the number of relevant articles for review to 147.

Next, the reference lists of these 147 articles were screened for additional papers fulfilling the search criteria. This led to the identification of 16 additional articles, increasing the number to 163.

Finally, especially in order to also capture relevant "grey" literature that is so recent that it is still not published by an academic journal or cited in any of the screened 12 review papers and 163 empirical papers, we searched for and screened papers citing any of these papers by means of Google Scholar. In practice, the operationalization of "recent" was that the paper was published or made available online after 2018. This led to the identification of two additional papers fulfilling the search criteria, increasing the final number of papers to be included in the literature review to 165.

3 Data – description of the reviewed literature

The yearly number of identified publications on consumer responses to origin information on food products fluctuated over the analysis period with a minimum of 9 (in 2011, 2015 and 2019) and a maximum of 20 (in 2016), with no clear trend. This research is published in a wide range of journals, 75 different journals in total of which 50 only published one article on consumer responses to origin information between 2010 and 2021. The most popular outlets for this research are *British Food Journal* (16 articles), *Food Quality and Preference* (14 articles) and *Agribusiness* (12 articles). *Meat Science* and *Sustainability* each published seven articles, *Appetite* six, and *Food Policy* five.

The reviewed papers include empirical studies from 18 of the 27 EU Member States (MS) and from three of the four non-MS that are part of the EU's single market.[3] In addition, there are studies from eight other high-income countries that are members of OECD (UK, USA, Canada, Australia, New Zealand, Japan, Korea, Chile) and from five middle-income countries (Turkey, China, Thailand, Russia, Tunisia). The most researched EU countries are Italy (33 studies), Germany (27), Spain (23), and France (12). Outside the EU, the most researched countries are USA (26), UK (11), and Japan (8).

A large majority of the reviewed papers report studies of consumer responses to country-of-origin information (COO: 123 studies). Responses to information about the local, subnational place or region of origin (ROO) without origin-based quality indicators is studied in 24 papers, and responses to the two most popular types of EU origin-based quality accreditations, Protected Designation of Origin (PDO) and Protected Geographical Indication (PGI), are studied in 30 and 20 papers, respectively.

The papers report studies of consumer responses to origin information on a wide range of different food products, in total 61 different products or product categories. The largest number of studies focus on meat products (beef: 23 studies, pork: 16, chicken: 11, lamb: 8, others: 9), followed by fruit and vegetables (apples: 9, tomatoes: 7, others: 15) and dairy (cheese: 9, milk: 9, ice cream: 3, yogurt: 3, others: 3). Different seafood and aquaculture products are studied in 19 papers and vegetable oils in 15 (of which 14 focus specifically on olive oil). There are also several studies focusing on honey (6), rice (5), and pasta (3). Sixteen other products (spices, organic food, plant-based mince, etc.) were treated in one or two papers each.

A large majority of the reviewed papers are based on Lancaster's (1966) economic theory, proposing that the consumer's utility of a product can be decomposed into separate utilities for its characteristics or attributes (like the healthiness, taste and price of a food product), and random utility theory (McFadden, 1974) assuming that rational consumers choose the option that yields the highest utility. Most of these papers use some kind of conjoint analysis (90 studies) to estimate the impact of (a limited number of) product characteristics or attributes on consumer preferences for or choices between alternative product variants, primarily in the form of discrete choice experiments (64), sometimes supplemented by between-subjects experiments (6). In 16 studies, the primary method was between-subjects experiments. Non-experimental surveys are also common (47), sometimes supplemented by tasting tests (6). Only one of the reviewed papers only reported qualitative studies, but a number of papers mention qualitative pre-studies.

The primary focus of conjoint analysis is to disentangle the impact of certain product characteristics, such as origin information, on consumer choices, which makes them particularly relevant for RQ #1. Since studies based on conjoint analysis are so dominating in the reviewed literature, the literature's input to answering RQ #1 will be extracted first, followed by RQ #2 and finally RQ #3.

The received grey literature was published between 2010 and 2021. We found no relevant publications in some years (in 2011, 2012, 2016, 2017, 2018) and up to a maximum of 4 publications in 2014. One publication did not indicate the publication year (cf. Table 5). The literature covered all EU27 countries except Cyprus, Malta, and Luxembourg, and included the UK. Studies covered consumer responses to COO as well ROO. Food products addressed were food in general, dairy products, fish and aquaculture products, meat and meat products, and milk and milk products. The studies reported survey responses (14 reports), focus groups (3 reports), observations (2 reports), in-store interviews (2 reports), Point-of-Sale questions (1 report), online experiments (1 report) and mystery shopping (1 report). As can be seen, survey responses constitute the largest source of data in the received grey literature.

[3] The EU and associated countries not being researched in the period covered by this review are Austria, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Latvia, Luxembourg, Malta and Iceland.

4 Results

4.1 Whether and how the origin of a food influences purchase decisions and consumption

As already mentioned, most studies informing the question of whether and how the origin of a food influences purchase decisions and consumption use conjoint analysis to estimate the impact of (a limited number of) product characteristics or attributes on consumer preference rating of alternative product variants (traditional conjoint analysis) or on their (repeated) choices between two or more alternative product variants (discrete choice experiments). All reviewed papers using one of these methods report a significant effect of origin information on product preferences and choices and a preference for domestic and even local, although of different magnitude. Most studies using different methods to assess the importance of the origin of foods to consumers reach similar conclusions as the conjoint analysis studies, but some of these other studies estimate the importance of origin information to be smaller. Although there are exceptions, a majority of the reviewed papers focuses exclusively on either the country of origin (COO) or the (subnational) place or region of origin (ROO). Therefore, studies of the impacts of these two types of origin information are reviewed separately in the following. Papers focusing on both COO and ROO are allocated to the category where they are judged to contribute the most.

4.1.1 The impact of country of origin on food choices

Of the 90 reviewed articles reporting traditional or choice-based conjoint analyses, 71 studied consumer responses to food product profiles that varied with regard to COO and other attributes. In 11 of these studies, the focus was more on the ROO than on the COO and therefore they are discussed in Section 4.1.2, together with other studies of the impact of ROO on consumer choices. The 60 conjoint analysis papers that solely or primarily focus on COO impacts are listed in Table 1. Irrespective, **all of the papers using conjoint analysis to study the impact of the COO on food choices report that the COO has a significant impact on consumer responses**. Also, all studies in EU or OECD countries that include a domestic origin find that consumers prefer domestic to imported, irrespective of the product, the included foreign options, or where the study was carried out (e.g., Banovic, Reinders, Claret, Guerrero, & Krystallis, 2019; Dudinskaya et al., 2021; Ortega, Wang, & Olynk Widmar, 2015; Peschel, Grebitus, Colson, & Hu, 2016; Schnettler et al., 2017). The least preferred origin is typically the least developed (Aizaki & Sato, 2020; Berry, Mukherjee, Burton, & Howlett, 2015; Claret et al., 2012; Thøgersen et al., 2019; Wang, Zhang, Ortega, & Olynk Widmar, 2013; Xie, Kim, & House, 2013; Zander, Risius, Feucht, Janssen, & Hamm, 2018), least familiar (Font i Furnols et al., 2011; Realini et al., 2013) or most distant country (Balcombe, Fraser, Williams, & McSorley, 2017; Lim, Hu, Maynard, & Goddard, 2014; Schnettler et al., 2014). Exceptions to the preference for domestic origin are only found in developing countries with regard to import from a more developed country (e.g., Cui, Fitzgerald, & Donovan, 2014; Thøgersen et al., 2019).

In studies based on conjoint analysis, only few alternative origins are included, often just domestic versus imported (e.g., Bernabéu, Rabadán, El Orche, & Díaz, 2018; Papanagiotou, Tzimitra-Kalogianni, & Melfou, 2013; Pileliene & Liesionis, 2014). Both the number of levels and the chosen levels (or exemplars) of a categorical attribute (e.g., the specific, included origins) influence the calculated importance of the attribute. For example, using a different method, Gao, Wong, House, and Spreen (2014) found that whether French consumers care about the COO of citrus fruits depends on the countries in the comparison. When domestic citrus fruit was compared with fruit from China, about 50% of participants stated that they cared about the COO, but when alternative foreign origins were compared, substantially fewer cared. On this background, it is remarkable that most conjoint analysis studies that vary the COO, irrespective of which foreign origins are included, report the COO to be more important to consumers than all other included attributes (e.g., Cicia, Cembalo, del Giudice, & Scarpa, 2011; Grunert, Sonntag, Glanz-Chanos, & Forum, 2018; Hersleth, Næs, Rødbotten, Lind, & Monteleone, 2012; Holdershaw, Gendall, & Case, 2013).

Exceptions to the dominating importance of the COO primarily (but not only) occur when consumers are asked to make trade-offs between COO and desired intrinsic qualities. For example, in a three-country study of consumer preferences for canned, peeled tomatoes, Frez-Muñoz, Steenbekkers, and Fogliano (2016) found that the colour of the tomatoes (an intrinsic attribute) was more important than the COO in all three countries. The COO was second in importance for Italian consumers and much less important for Dutch and Chilean consumers. Similarly, studies of German consumers choosing tomatoes (Jiménez-Guerrero, Gázquez-Abad, Mondéjar-Jiménez, & Cordente-Rodríguez, 2010) and German tourists in

Spain choosing cucumbers (Jiménez-Guerrero, Gázquez-Abad, Huertas-García, & Mondéjar-Jiménez, 2012) found that freshness was more important than the COO (which was more important than production method and price). Also, Papanagiotou et al. (2013) found that the COO was less important than the marbling, colour and price for Greek consumers' quality assessment of and intention to buy pork chops. Mørkbak, Christensen, and Gyrd-Hansen (2010) and Apostolidis and McLeay (2016) found that the COO was less important than the fat content for, respectively, Danish and UK consumers' choice of minced meat. Van Loo, Grebitus, and Roosen (2019) found that guaranteed hormone free was more important than the COO for US consumers' choice of cheese. And studies of French (Nguyen, Haider, Solgaard, Ravn-Jonsen, & Roth, 2015), Hawaiian (Davidson, Pan, Hu, & Poerwanto, 2012) and Australian (Mueller Loose, Peschel, & Grebitus, 2013) consumers' choice of seafood found that the COO was less important than the seafood species, respectively whether it is wild caught vs. farmed and how it was processed (fresh or frozen), or the oyster preparation format and price.

As regards extrinsic qualities, studies have found that consumers attribute less importance to COO than to quality assurance labelling for meat products, for example, for UK consumers choice of chicken (Doherty & Campbell, 2014), and for Chilean consumers' choice of beef (Villalobos, Padilla, Ponce, & Rojas, 2010). Mixed results were obtained by Balcombe, Bradley, and Fraser (2021), who found that COO was less important than quality labels for UK consumers' choices of chicken breast and pork loin joint, but more important than all other included attributes for beef sirloin steak and corn on the cob.

Also, Zanoli et al. (2013) found that the production method (organic vs. conventional) was more important than the COO for Italian consumers' choice of beef. Cavallo and Piqueras-Fiszman (2017), found that the colour of the bottle was more important for Italian and Dutch consumers' assessment of the healthiness of olive oil than the COO, which was more important than pungent indications, cold processing and production method. Balcombe, Bradley, Fraser, and Hussein (2016) found that UK consumers valued COO information for a wide range of meat products, but it was less important than other food attributes for some products, such as bacon, pizza and ready meals. Colantuoni et al. (2016) found that the price was more important that the COO for German (but not for Italian) consumers' choice of potatoes.

Only two studies investigated the development of the importance of the COO over time. In 2020, Meixner and Katt (2020) replicated a study by Lim et al. (2014) on US consumers' choice of beef and found a substantially lower importance of the COO in 2020 than in 2014, having become less important than food safety assurance and price. Also, studies reported by Pileliene and Liesionis (2014) indicate a decreasing importance of the COO for Lithuanian consumer's choice of milk over time, from being the most important of six attributes in 2009 to being less important than the price and production method (organic vs. conventional) in 2014.

Most studies using a different method to estimate the relative consumer importance of COO (listed in Table 3 and Table 4) reach similar conclusions as the conjoint analyses. For example, studies using best-worst scaling, where participants had to repeatedly pick the attribute they considered most important and the attribute they considered the least important when buying the product, from choice sets with a small number of attributes, found that the COO was the most important of included attributes for Italian consumers' choice of milk and for Japanese consumers' choice of vegetable juice, respectively (Aizaki & Sato, 2020; Paparella, Stanco, & Lerro, 2020). Also, studies using experimental auctions confirmed the existence of a strong preference for domestic origin in Japanese and Korean consumers' choice of rice and pork (Lee, Han, Nayga Jr, & Yoon, 2014; Peterson, Bernard, Fox, & Peterson, 2013) and in US consumers' choice of honey (Wu, Fooks, Messer, & Delaney, 2015). Using different types of experiments, the preference for domestic was further confirmed for consumers in USA with regard to beef steaks (Berry et al., 2015; Dentoni, Tonsor, Calantone, & Peterson, 2014; Klain, Lusk, Tonsor, & Schroeder, 2014), pork chops (Klain et al., 2014) and chicken (Berry et al., 2015), for consumers in Spain with regard to olive oil (Blazquez-Resino, Gutierrez-Broncano, Jimenez-Estevez, & Perez-Jimenez, 2021) and for consumers in France with regard to pasta (Bernard, Collange, Ingarao, & Zarrouk-Karoui, 2020).

A few studies used blind-tasting of samples of a processed food product, followed by revealing the product's COO. Studies with Korean consumers found that revealing the origin of the basic ingredient led to a significant increase in the purchase intent for domestic wheat bread (Kim et al., 2017) and rice (Jang, Lim, & Kim, 2012) and a significant drop in the purchase intent for Japanese rice. A study using the same method, revealing the origin after tasting, found the same domestic country effect for Slovenian consumers with regard to chicken meat (Strašek, 2010).

Using direct ranking of attributes in an online survey, Guziy, Šedík, and Horská (2017) found that consumers in Slovakia perceive the COO as most important among included attributes when buying honey, Wang et al. (2013) found that US consumers perceive COO labelling as second in importance when buying seafood, after

safety labelling, and Vecchio and Annunziata (2011) found that Italian consumers perceive COO (domestic origin) as second in importance when buying food, after hygienic standards. Using contingent valuation, i.e., asking participants directly about their willingness to pay to obtain the product, van Houcke, Altintzoglou, Linssen, and Luten (2018) found that Dutch consumers were willing to pay 12% more for domestic than for imported oysters.

Using an exploratory survey approach, Ariyawardana, Ganegodage, and Mortlock (2017) found that COO preferences had a significant influence on Australian consumers' willingness to pay a premium for domestically produced vegetables. Also, a focus group study with Australian consumers found that country of origin was the most important extrinsic cue to the majority of participants when purchasing seafood (Lawley, Birch, & Hamblin, 2012). Pedersen et al. (2018) intercepted German organic consumers while shopping, in two different supermarket chains in three different cities. Responding to an open question, 78% said that the COO mattered to their product choices, and 8% that it mattered sometimes. Practically everyone indicated spontaneously that they prefer domestic (and about 75% particularly local products).

However, a number of studies using other methods than conjoint analysis found considerably lower effects on consumer preferences and choices of the COO. Using best-worst scaling, Dekhili, Sirieix, and Cohen (2011) found that the COO was only the fourth or fifth most important attribute (out of 13) for French and Tunisian consumers' choice of olive oil, the most important attribute by far being the taste of the oil (i.e., an intrinsic quality). Also, responding to direct importance questions in a survey, consumers in Germany (Klöckner, Langen, & Hartmann, 2013), France (Gao et al., 2014), Greece (Likoudis, Sdrali, Costarelli, & Apostolopoulos, 2016), Belgium (de Graaf et al., 2016), the Netherlands (van Houcke et al., 2018), Slovenia (Kos Skubic, Erjavec, & Klopčič, 2019) and Russia (Guziy et al., 2017) expressed that the COO was less important than many other (especially intrinsic) attributes for their choices of a range of food products (pepper, citrus fruits, milk, honey, oysters, food products in general).

Most of the mentioned survey-based studies created an artificial focus on the COO, either by asking questions focusing on this factor or by including the COO among few factors that are varied in a conjoint analysis. A few studies using methods that do not specifically focus attention to the COO suggest that this artificial focus might have inflated the COO effect in some studies. A few studies intercepted consumers at the check-out counter and asked open questions about the reasons why they had chosen some food product(s) in their shopping basket. Among the participants in these studies, only 9.3% of German consumers (Profeta, Balling, & Roosen, 2012), 5.6% of UK consumers (Kemp, Insch, Holdsworth, & Knight, 2010) and 3.5% of New Zealand consumers (Insch & Jackson, 2014) mentioned the COO as a reason for choosing the product. Responding to a follow-up question, only 22.5% of German consumer and 19.1% of UK consumers, but 54.9% of New Zealand consumers were able to correctly state the origin of a food item they had just chosen in the supermarket, and 22%, 17% and 62% then indicated that this knowledge had influenced their purchase decision. Two other studies used a slightly different method, which actually directs attention to the COO, namely asking consumers intercepted while shopping or at the check-out counter whether the origin of a product in their shopping cart influenced their choice of product. Using this method, Grebitus, Menapace, and Bruhn (2011) found that 28% of intercepted German shoppers said they had used the origin as a criterion for choosing a pork meat product in their shopping cart. Of German shoppers intercepted in the study by Pedersen et al. (2018), 76% claimed that the COO mattered to their choice of organic products in their shopping cart and another 8% that it mattered sometimes. Still, only 37% claimed they always pay attention to the COO when shopping organic food. Related, Wang et al. (2013) found that among surveyed consumers in USA who claimed that the COO was important to them when buying seafood, only about half of them actually checked the COO labelling when shopping seafood.

Using a different approach, Szakaly, Soos, Szabo, and Szent (2016) found that the capability of consumers in Hungary to recall country of origin and quality labels was limited, with the best known label being "Hungarian Product," which was remembered unaided by 30.5%, but recognized by nearly 90% when shown. Nearly a third of participants were ready to pay premium for products bearing this label.

Only seven studies measured the impact of COO on consumer food choice without including domestic origin as one of the alternatives, and five of them still found a significant COO effect. The exceptions were studies of German consumers' WTP for pepper (Klöckner et al., 2013) and their quality perception of and intention to buy chocolate made from Ecuadorian cocoa (Otter, Prechtel, & Theuvsen, 2018), neither of which appeared to be influenced by the COO. However, Dumitrescu, Nganje, and Shultz (2013) found that the COO was more important than the price and the type of wheat for Greek and Romanian consumers' choice of pasta, Italian origin being preferred to US. Menapace, Colson, Grebitus, and Facendola (2011) found that the COO was more important than other included attributes for Canadian consumers' choice of olive oil, Italian origin being

preferred to Greek and Spanish. Further, Kitagawa, Kashiwagi, and Isoda (2020) found that the importance of the COO for Japanese consumers' choice of olive oil was second only to the taste, Italian origin again being preferred, in this case to Spanish and Tunisian origin. Cicia, Cembalo, and Del Giudice (2012) found that the importance of the COO for German consumers' choice of imported peaches was second only to the production method (organic vs. conventional), with Italian origin again being preferred overall, in this case to Spanish, French and Turkish origin. Finally, using a between-subjects design, Bonaiuto et al. (2021) found that not only consumers in Italy, but also consumers in other European countries, USA and China, as well as non-Italian expats in China valued pasta and olive oil (products strongly associated with Italy) more when they were labelled "Made in Italy." In the USA and China, just having an Italian sounding name increased the consumer value of these products.

A few studies investigated how it influences the effect of COO labelling if other extrinsic qualities are labelled as well, such as organic (Onozaka & Mcfadden, 2011; Xie, Gao, Swisher, & Zhao, 2016), carbon footprint (Onozaka & Mcfadden, 2011), environmentally friendly (Uchida, Onozaka, Morita, & Managi, 2014), quality assurance labels (Doherty & Campbell, 2014) or a premium brand name (Bernard et al., 2020). These studies generally report that the COO is less important when other credence characteristics are labelled as well, suggesting that consumers make partly overlapping inferences from the different labels.

Multi-country studies often find substantial differences in the importance of COO for consumer choices of the same product in different countries (e.g., Aoki, Akai, & Ujiie, 2017; Thøgersen et al., 2019). Among European countries, studies suggest that origin information is particularly important for consumers in Italy (Colantuoni et al., 2016; Frez-Muñoz et al., 2016) and of particularly low importance for consumers in the UK (Banovic et al., 2019; Dudinskaya et al., 2021).

Some studies include demographic or attitudinal variables to capture some of the heterogeneity in the relative importance for consumers of various product attributes, including COO and COO labelling (e.g., Dekhili et al., 2011; Papanagiotou et al., 2013). As regards demographic variables, the most consistent findings across studies are a significant, positive impact on preference for domestic origin of female gender (Aizaki & Sato, 2020; Ariyawardana et al., 2017; Bernabéu, Díaz, & Olmeda, 2010; Dekhili et al., 2011; Font i Furnols et al., 2011; Lesáková, 2016; Lim et al., 2014; Realini et al., 2013; Schnettler et al., 2017) and age (Aizaki & Sato, 2020; Colantuoni et al., 2016; Dekhili et al., 2011; Font i Furnols et al., 2011; Hill, Nelson, Woods, Weese, & Whitis, 2013; Kimura et al., 2011; Lesáková, 2016; Lim et al., 2014; Onozaka & Mcfadden, 2011; Pouta, Heikkilä, Forsman-Hugg, Isoniemi, & Mäkelä, 2010; Schnettler et al., 2017). Income and education did not appear to make any systematic difference for the impact of origin information on consumer choice (Ariyawardana et al., 2017; Colantuoni et al., 2016; Hill et al., 2013; Kimura et al., 2011). Consistent with this, research has found that among US consumers choosing sugar or seafood the preference for origin labelling increases with female gender and age (Lewis & Grebitus, 2016; Wang et al., 2013). However, the most effective way to demonstrate heterogeneity in consumer responses to product attributes (which is substantial) is by means of cluster analysis (Claret et al., 2012; Font i Furnols et al., 2011; Hill et al., 2013; Kimura et al., 2011; Papanagiotou et al., 2013; Pileliene & Liesionis, 2014; Realini et al., 2013; Schnettler et al., 2017; Schnettler et al., 2014) or latent class analysis (Apostolidis & McLeay, 2016; Banovic et al., 2019; Cicia et al., 2012; Cosmina, Gallenti, Marangon, & Troiano, 2016; Grunert et al., 2018; Mueller Loose et al., 2013; Nguyen et al., 2015; Peschel et al., 2016; Pouta et al., 2010; Risius, Hamm, & Janssen, 2019; Sonoda, Oishi, Chomei, & Hirooka, 2018). Studies using these methods add the important caveat to the findings summarized above that there are (often substantial) segments of consumers in all countries for whom the COO is relatively unimportant. However, a downside to these methods is that the identified consumer segments are idiosyncratic to the specific study, which makes it difficult to extract any general patterns, except for the existence of a substantial heterogeneity among consumers.

4.1.2 Grey Literature: The impact of country of origin on food choices

The majority of the reviewed grey literature is based on survey studies, and mostly focuses on the importance that consumers attach to receiving origin information. The reported studies converge (11 of 17 studies) on the suggestion that consumers report to find it important to know the origin of their food products – especially when asked about the importance of origin information directly (Bureau Européen des Unions de Consommateurs (BEUC), 2013; Carlsson, Johansson, Lagerkvist, Sundström, & Wilhelmsson, 2014; Davies & MacPherson, 2010; infas, 2019; Food Chain Evaluation Consortium (FCEC), 2014; Forsa, 2020a; Forsa, 2020b; Hermanowski et al., 2014; Origo Group, 2021; Taloustutkimus Oy, 2019; Zühlsdorf, & Spiller, 2014). Some differences in the importance of origin information can also be found in the grey literature, these differences are observed across countries, food products, and research methods. For instance, most French and Polish consumers reported to use it to assess food safety and quality, and Austrians to assess quality and

environmental impact. Only a minority (1-3%) of consumers in BEUC's study (2013) said they wish to support the local economy/farming. Consumers indicated that origin information should (at least) be at the country level for it to be considered meaningful information. In a study by FCEC (2014), consumers from several countries indicated that origin of food is the 4th most important aspect (out of 10) influencing purchase decisions. The main reasons reported by respondents are higher trust in own country or local products and food quality reassurance. In this study, origin labelling is considered important by the majority of respondents for all of the tested products. Out of the 11 food groups tested, origin information was considered most important for pre-packed fresh cut salads, break, fruit juices, and frozen vegetables. Looking at meat products, on study found that COO was the 3rd most cited first choice indication when it comes to purchases, and 82% of consumers indicated to prefer meat from their own country (Agra Ceas Consulting SA/ IHS Markit, Areté Srl, 2020). Similarly, a report published in 2021 by the Swedish Livsmedelverket showed that 80% of the respondents in their study find it (very) important for restaurants to indicate the COO of the meat they serve. Women and respondents who eat meat less often tended to find it more important than men and more frequent meat-eaters. Main reported reasons for COO importance were assessment of safety and the environmental and climate impact of the meat. One study conducted in Sweden also looked at the importance of origin information for fish and aquaculture products (Johansson & Skog, 2015). 73% of respondents in this study indicated to prefer to eat fish and aquaculture products of Swedish origin, however, about 1/3 of respondents were unaware of the origin of the fish and aquaculture products they consume. Similarly, another study on fish and aquaculture products (BDI, 2021) indicated that the majority (74%) of their respondents say that they look at origin quite regularly when buying fish, yet their experimental data showed that individuals often overlook this information. Other studies report lower interest of consumers in origin information. For example, confirming the relevance of taking into account whether respondents were prompted about origin information, Davies and MacPherson (2010) reported that 11% of UK respondents spontaneously stated to look for COO labels when purchasing food for the first time, and this percentage increased to 52% when respondents were prompted. This finding suggests that the way in which respondents are asked about the relevance of origin labelling is thus relevant for participants responses. Of the 52% of respondents who looked for COO labels, 34% reported to do this to buy British/support British farmers, 17% (so half of 34%) aiming to decrease food miles of their purchases. However, price and use-by/best-before information was considered more important than COO. Authenticity, safety, animal welfare, and food miles were reasons reported for using origin information on food products.

4.1.3 The impact of region of origin on food choices

Most conjoint analysis-based studies of the impact of the (subnational) place or region of origin (ROO) on consumer food choices (listed in Table 2) include the local area or home region of the respondent as an option (with or without PDO or PGI labelling), which is assessed relative to either (other) domestic or to both domestic and foreign origins. Studies that include both domestic and local in addition to foreign origin generally find a positive consumer value of local on top of domestic (e.g., Meyerding, Trajer, & Lehberger, 2019; Resano, Sanjuán, & Albisu, 2012; Sanjuán-López & Resano-Ezcaray, 2020; Spognardi, Vistocco, Cappelli, & Papetti, 2021; Winterstein & Habisch, 2021). For example, Hasanzade, Osburg, and Toporowski (2018) found that regional/local was preferred to domestic and the difference between the two amounted to about a third of the total origin effect on German consumers' milk choices. Hempel and Hamm (2016) found a similar effect size for local relative to domestic origin for German consumers' choice of steaks (but smaller effects for three other products, which we will return to in the next paragraph). Even bigger effects of local/regional compared to domestic were found by Kallas and Gil (2012), on consumer choices of rabbit meat in Catalonia, Spain: about 75% of the total origin effect, and by Onozaka and Mcfadden (2011), on US consumers' choices of tomatoes and apples: about half of the total origin effect.

Others found a much smaller, but still significant added value of a local origin (e.g., Bernabéu et al., 2010; Denver & Jensen, 2014; Hu, Batte, Woods, & Ernst, 2012; Mauracher, Tempesta, & Vecchiato, 2013). For example, Hempel and Hamm (2016) found that the difference between local and domestic origin on German consumers' choice of butter and flour was about 15% of the total origin effect and a slightly lower effect (around 10%) for apples (and, as mentioned above, substantially higher (around 33%) for steaks). Practically the same effect size of local relative to domestic origin was found by Denver and Jensen (2014) for Danish consumers' choices of apples, by Bernabéu et al. (2010) for Madrid consumers' choice of PDO certified Manchego cheese, and by Mauracher et al. (2013) for consumer choices of Mediterranean sea bass in the Veneto region in Italy. Among the conjoint-analysis studies covered by this review, only Apostolidis and McLeay (2016) found no added effect of local relative to domestic, on British consumers' choice of minced meat. In addition, a study using a different method – direct importance questions in a survey – found that the

place of origin was less important than the country of origin, in this case for Greek consumers' food buying decisions (Likoudis et al., 2016), suggesting no added value of local relative to domestic.

Still, with these two exceptions, studies including both local and domestic origins of food products generally find a preference for the local. On this background, it is unsurprising that a preference for local origin is also found by studies that do not include both domestic and foreign origins (Davidson et al., 2012; Fonner & Sylvia, 2015; Groot & Albisu, 2020; Pérez Y Pérez, Gracia, & Barreiro-Hurlé, 2020; Schnettler, Sepúlveda, Bravo, Grunert, & Hueche, 2018). For example, Davidson et al. (2012) found that the ROO (local) was more important than other included attributes for Hawaiian consumers' preference for Moi and also important for their preference for Tilapia, but less than whether it is wild caught vs. farmed and how it is processed (fresh or frozen). Similarly, Mugera, Burton, and Downsborough (2017) found that local origin was more important than other included attributes for consumers' choice of chicken breast in Perth, Australia. For these consumers' choice of fruit yogurt, local origin was also important, but less so than the producer and the quality of the fruit. A caveat is that Garavaglia and Mariani (2017) found that local origin of dry-cured ham was valued more in some than in other Italian regions (i.e., more in Parma than in Monza).

Based on these studies, it should be expected that when adding ROO information to information about domestic origin, without specifying the region or locality, or specifying one that does not match participants' area of residence, the effect on consumer choices is smaller. This was confirmed by some studies (Bernabéu et al., 2018; Carzedda et al., 2021; Grebitus, Peschel, & Hughner, 2018; Kos Skubic et al., 2019), but not by others. For example, Van Loo et al. (2019) found that the effect of adding a ROO label on US consumers' choice of cheddar cheese was about half the size of the effect of adding a COO label. Also, studies on Italian consumers' choice of beef (Scozzafava, Casini, & Contini, 2014) and olive oil (Bimbo, Roselli, Carlucci, & de Gennaro, 2020) found that the difference in estimated consumer utility or WTP between domestic with PGI (which is not just origin information, but also a quality label) and domestic without was nearly twice as big as between domestic and foreign (EU) origin. Similarly, a study in Zaragoza, Spain, found that adding PDO certification doubled the consumer value of local peaches (from Calandra) (Groot & Albisu, 2020) whereas other studies in different regions in Spain found a positive, but considerably smaller marginal effect on consumer choices of adding PDO certification (for dry-cured ham) (Mesías, Gaspar, Escribano, & Pulido, 2010; Resano et al., 2012; Sahelices, Mesías, Escribano, Gaspar, & Elghannam, 2017).

Kos Skubic, Erjavec, and Klopčič (2018) also found a substantial effect on Slovenian consumers' choice of cheese, ham and honey of adding a PDO or PGI label to COO information, having both domestic and EU quality labels in their design. However, since domestic/EU PDO and PGI labels can in practice only appear on domestic products/products of EU origin, the effects of COO information and origin quality labels cannot be separated in this study.

In August 2017, 1407 products were registered with EU quality certification, primarily as PGI (721) or PDO (626), whereas the number of Traditional Specialty Guaranteed (TSG) was marginal (60) (Albuquerque et al., 2018). Most of these registered products were in southern Europe, with Italy, Spain, Portugal and Greece together having 53% of the registered products. If France is counted in, the southern European share was more than 70%, whereas the numbers are marginal in Eastern and Northern Europe. Since 2006, the number of especially PGIs has increased in other parts of Europe relative to the south, but still designation of origin certification and labelling remains "a quality differentiation strategy predominantly for the southern European agricultural and food industry" (Krystallis et al., 2017, p. 230). Reflecting this, most studies on consumer perception on and responses to these labels were carried out in southern Europe.

Some studies found that PDO certification (of dry-cured ham and olive oil) is valued equally much by consumers in different Italian regions (Garavaglia & Mariani, 2017; Panzone, Di Vita, Borla, & D'Amico, 2016), whereas others found systematic differences. For example, Garavaglia and Marcoz (2014) found that the PDO certification of Fontina cheese was about 50% more important to consumers in the region where the cheese is produced than to consumers in another region of Italy, where the cheese is very popular. In line with this, Bonaiuto et al. (2021) found a substantially bigger value of adding PDO to "Made in Italy" on pasta and olive oil for consumers in Italy than in the rest of Europe. A partly conflicting result was reported by Marcoz, Melewar, and Dennis (2016), who found that the consumer value of PDO certification on Fontina cheese, relative to its origin, increased with the consumer's geographical distance to the region of production. A caveat is that Aprile, Caputo, and Nayga Jr (2012) found that consumers in Milan, Italy, valued PDO labelled olive oil more than three times as much as PGI labelled and also more than organic and extra virgin.

A few studies investigated the value of certified (i.e., PDO or PGI) or uncertified origin information to consumers, without specifying the origin of the product. For example, Erraach, Sayadi, Gómez, and Parra-López (2014) found that to consumers from Andalusia, Spain, the difference in utility between PDO certified

and uncertified origin information on olive oil was twice as big as the difference between the latter and no origin information. Similarly, studies find that PGI labelling is valued by Italian consumers when choosing clementines (Di Vita, Vecchio, et al., 2021) or olive oil (Di Vita, Zanchini, et al., 2021), but that it is less important than production method and price. Vecchio and Annunziata (2011) found that PDO/PGI certification (without reference to the consumer's local area) of food products was much less important to Italian consumers than the COO.

Studies investigating the impact of PDO or PGI labelling or a specific ROO on consumer responses in *other* regions or countries find different effect sizes. Menapace et al. (2011) found that a PDO/PGI label had a strong additional effect on Canadian consumers' choice of Italian olive oil, about half the size of the COO effect (Italian vs. Greek and Spanish). However, Cicia et al. (2012; 2011) found a much smaller, but still significant effect on German consumers' choice of imported peaches and no effect on their choice of cherry tomatoes of adding a PDO/PGI label to the COO.

Like research on COO effects, research on the effects of ROO information or PDO/PGI labelling using different methods in general reaches similar conclusions as research using conjoint analysis. For example, using experimental auction, Wu et al. (2015) found that for US consumers' choice of honey the added value of local origin relative to domestic was about the same size as the added value of domestic to imported. Using a between-subjects lab experiment and a student sample in northern Italy, Luceri, Latusi, and Zerbini (2016) found a positive effect of ROO information on consumers' intention to buy, in this case, PDO-labelled apples and PGI-labelled bresaola. Using contingent valuation, Arfini and Mancini (2015) found that students in Parma were willing to pay 15% more for PDO labelling of Parma dry-cured ham and Berg and Preston (2017) found that consumers in Otago, New Zealand, were willing to pay about 10% more for local than for domestic fruits and vegetables. Using best-worst scaling, Dekhili et al. (2011) found a difference between countries in the importance of the ROO for consumers' choice of olive oil, the ROO being more important than the COO in Tunisia, but not in France. Also, Beiermann, Jones Ritten, Thunström, and Ehmke (2017) found that a large majority of participating US consumers valued origin information when choosing honey where the options were locally produced or of unknown origin.

Evidence questioning how important local origin is to consumer includes a survey in Belgium by de Graaf et al. (2016) using direct importance questions, where participants expressed that local was less important than many other (especially intrinsic) attributes for their choice of milk (but more important than the COO).

Testing Italian consumers' knowledge of PDO or PGI foods, perceived as a prerequisite of choosing it in the supermarket, Vecchio and Annunziata (2011) found that 29% were unable to recall any PDO or PGI food and over 37% of participants gave the wrong answer when asked to name some. They also found that the choice of PGI-labelled Mortadella Bologna and PDO-labelled Asiago cheese in a choice test was positively related to knowledge of and trust in the EU PDO logo.

Some studies included demographic or attitudinal variables to capture some of the heterogeneity in consumer responses to ROO information and PDO/PGI labelling (e.g., Fonner & Sylvia, 2015; Mugera et al., 2017; Resano et al., 2012; Sanjuán-López & Resano-Ezcaray, 2020; Winterstein & Habisch, 2021). It is less clear than with regard to the COO what characterizes those with high versus low preferences for local and/or PDO/PGI certification, but like with domestic COO there is some evidence that the preference for local ROO and/or PDO/PGI tends to increase with age (Berg & Preston, 2017; Di Vita, Vecchio, et al., 2021; Groot & Albisu, 2020) and female gender (Bernabéu et al., 2010; Di Vita, Vecchio, et al., 2021; Erraach et al., 2014). An exception is Di Vita, Pippinato, et al. (2021), who found a negative effect of female gender on the preference for PDO labelled honey among northern Italian consumers. A few studies also found that the preference for local and/or PDO/PGI labelled food increases with income (Berg & Preston, 2017; Erraach et al., 2014; Groot & Albisu, 2020), but tend to be lower among the more highly educated (Berg & Preston, 2017; Di Vita, Vecchio, et al., 2021).

Also in this stream of research, some used cluster analysis (Di Vita, Vecchio, et al., 2021; Di Vita, Zanchini, et al., 2021; Erraach et al., 2014; Marcoz et al., 2016; Mesías et al., 2010; Schnettler et al., 2018) or latent class analysis (Meyerding et al., 2019; Peschel, Grebitus, Alemu, & Hughner, 2019) to detect consumer heterogeneity in responses. Also here, a substantial heterogeneity in the relative importance for consumers of origin information is reported, revealing the presence of (often substantial) segments of consumers in all countries for whom the origin of the product is relatively unimportant.

1.1.1.1 Grey Literature: The impact of region of origin on food choices

Of the 17 reviewed studies published as grey literature, six studies reported consumer preferences regarding region of origin information (Aide à la Décision Economique, 2019; infas, 2019; Forsa, 2020a, 2020b; Galatoulas, N.A.; Hermanowski et al., 2014). All used surveys, interviews, or observation to collect their data. Four of these studies were conducted in Germany (infas, 2019; Forsa, 2020a, 2020b; Hermanowski et al., 2014). Most of these studies report a preference of consumers for regional products. For example, Hermanowski et al. (2014) found that roughly 75% of their German interview respondents indicated to always prefer regional products over others (categories "fully agree" and "agree" combined). 70.4% of respondents indicated they were willing to pay more for regional products. The majority of respondents indicated shorter transports (95.3%) and supporting the local economy (89.8%) as reasons for preferring local products. Roughly 62% of respondents associated local products with environmental friendliness and with superior freshness. Similarly, in a study by infas (2019), 86% of respondents found regionality of food products a (very) important criteria when buying a product. Another recent study conducted in Germany (Forsa, 2020a; see also Forsa2020b for similar results), reported that 92% of respondents find it very/quite important that food products are regional. 85% of these respondents believe that buying regional products contributes to climate protection. 40% indicate that they find it quite/very difficult to identify regional food products. 96% of respondents indicated that they find regional products/supporting regional producers an important reason for buying organic food products. A similar preference for local products was also expressed in a study conducted in France (ADE, 2019).

4.1.4 Wrap up, the impact of origin information on consumer decisions

In sum, **information about both country of origin and region of origin is generally found to have a substantial influence on consumers' (hypothetical) food choices.** Furthermore, consumers generally prefer domestic food products to imported, products from the local area or region to other domestic, and PDO or PGI certified to uncertified origin. Still, the importance of origin information and the preference for local or domestic vary between countries and regions. Especially, a lower preference for domestic is generally found in developing countries. With regard to European countries, the reviewed research suggests that the preference for local origin is stronger in the south than in the rest of Europe and that this preference is boosted if the local produce is PDO or PGI certified (which is most common in southern Europe, cf. Albuquerque et al., 2018). The origin effect also appears to differ between products, but without a clear pattern as to which products or types of products benefit more or less from origin information. However, there is some indication that the origin becomes less important when trade-offs have to be made with important intrinsic product attributes, such as freshness, colour (of tomatoes), or marbling (of a steak). Also, the effect of origin labelling is generally lower in the presence of other quality cues on the product, such as organic, eco-, or quality assurance labels.

Choice-based and other types of conjoint analyses are clearly very popular in origin research, and therefore it is important to understand and acknowledge their limitations, including that the choice situation is hypothetical and more simplified and focused than in a real shopping situation, which creates a risk of inflated responses to origin information. Especially, studies using open questioning at the check-out counter or questions about the importance of a long list of product attributes suggest such a bias. That said, it should also be noted that research shows that responses in discrete choice experiments are less influenced by social desirability bias (Auger & Devinney, 2007) and by response styles from scale usage (Grunert, Loose, Zhou, & Tinggaard, 2015) than measures of consumer preferences based on response scales. Also, the fact that most research using different methods to study consumer choices reach similar conclusions as research based on conjoint analysis strengthens the face validity of the results, as does research showing that "utilities" or preference estimates from discrete choice experiments are often good predictors of actual purchase behaviour (Grunert et al., 2009; Mueller, Osidacz, Francis, & Lockshin, 2010).

4.2 Why consumers find it important to know the origin of the foods they purchase or consume

Research specifically investigating *why* consumers find it important to know the origin of the foods they buy or consume mostly uses either explorative surveys or qualitative interviews, asking direct questions about these issues, using an open response format or response scales. Also, some of the studies using a type of conjoint analysis or experiments, reviewed in Section 4.1, included survey questions that are used as potential moderators when calculating the effects of varied attributes on consumer preferences or choices and can thereby inform about why specific product characteristics are important to the consumer. The key question

that this section attempts to answer is what research tells us about why consumers find the origin of food important. Attention is also paid to possible population differences, including differences between countries.

4.2.1 Why is information about the country of origin of food products important to consumers?

That consumer ethnocentrism (Shimp & Sharma, 1987) is an important source of the very common domestic country bias (Balabanis & Diamantopoulos, 2004) is well documented in prior research (Schnettler, Sánchez, Orellana, & Sepúlveda, 2013; Zeugner-Roth, Žabkar, & Diamantopoulos, 2015). Also, several conjoint analysis studies reviewed in section 4.1.1 report that the preference for domestic and the liability of foreignness increase with consumer ethnocentrism (Bernard et al., 2020; Blazquez-Resino et al., 2021; Cui et al., 2014; Klain et al., 2014; Lesáková, 2016; Schnettler et al., 2017; Thøgersen et al., 2019; Van Loo et al., 2019). A study using a different method (an online survey) also confirmed that consumer ethnocentrism is positively related to attitudes towards origin labelling, in this case focusing on sugar products in the USA (Lewis & Grebitus, 2016). Consumer ethnocentrism refers to the ethnocentric belief held by consumers in a country, the in-group, that it is not appropriate, and possibly even immoral, to buy products from other countries, the out-group (Shimp & Sharma, 1987). Hence, the reported findings regarding the impact of consumer ethnocentrism suggest that many consumers believe it to be a patriotic duty to support domestic production and that this is one of the reasons why it is important to them to know the origin of products they buy. This inference is further supported by experimental research in the USA by Klain et al. (2014), finding a positive relationship between consumer ethnocentrism and the consumer value of origin information.

That perceived moral duty is one of the reasons why origin information is important to consumers was further supported by Mäkiniemi, Pirttilä-Backman, and Pieri (2011), using a word association task with the stimulus word "ethical/morally right food" and "unethical/morally wrong food," presented to samples of young consumers (university students) in Finland, Denmark and Italy. Based on content analysis, participants' associations were classified into fourteen categories, one of which captured local/global. It appeared that participants generally believed that ethical foods are produced close to home: home grown, local or domestic, whereas unethical food was associated with global mass production and multinational corporations based abroad. However, local and domestic versus foreign were mentioned much more frequently by participants from Finland than from the other two countries, suggesting that the strength of consumer ethnocentrism varies between countries.

Related, but different, Bernard et al. (2020) found a significant, positive impact of national identity on how important domestic origin is for consumers, suggesting that some consumers value domestic products as a means to build their personal identity.

Another, well-documented reason why consumers want origin information is the perception that products from different origins differ in desired qualities and therefore the origin can be used as a reliable cue to product quality (Verlegh & Steenkamp, 1999). For example, in a series of experiments, Gineikiene, Schlegelmilch, and Ruzeviciute (2016) found that consumers in different countries (but mostly Lithuania) perceived domestic food products (tomatoes, apples, yoghurt and bread) as healthier than foreign and that they prefer domestic products partly because they perceive them as healthier. Similarly, a study of French consumers' perception of the safety and quality of fresh fruit from different countries found that domestic fruits were regarded as the safest and best quality, followed by fruits from neighbouring Spain, then the US, Israel, Brazil, Turkey, and last China (Gao et al., 2014). Gao et al. (2014) also found that whether or not participants cared about the origin of citrus fruit depended on the perceived risk or safety as well as the perceived quality of products from different origins.

A bit broader, but consistent with this, Vanhonacker, Tuyttens, and Verbeke (2016) found that Belgian consumers answering an online survey considered nearly all aspects of domestic chicken production and broiler meat superior to chicken produced in Brazil. Also, Ariyawardana et al. (2017) found that Australian consumers perceived domestic vegetables producers more trustworthy than foreign producers, which significantly increased their willingness to pay a premium price for domestically produced vegetables. Similarly, based on focus groups with Australian consumers, Lawley et al. (2012) found that the reasons why the COO was the most important extrinsic cue for the majority of participants when purchasing seafood was that they used it as a proxy or surrogate measure for freshness, superior quality and safety. Imported seafood was perceived to be cheaper but riskier in terms of possible contamination and hygiene, and less fresh.

Also, in the USA, in a study using a within-subjects design, Berry et al. (2015) found that consumers gave domestic meat products (beef, pork, chicken, turkey, and lamb) a higher safety evaluation than meat products from other countries (Canada, Mexico, Brazil, New Zealand, Nicaragua, Russia, India, Thailand, and China). The perceived safety of meat from Canada and New Zealand was also relatively high, whereas meats from the other included countries were perceived to be less safe. Consistent with these results, Tedford et al. (2014) found that US consumers rated Canadian quality graded beef as "good" to "excellent" for both quality and safety attributes and that US consumers did not differentiate between US and Canadian beef within comparable quality grading. In two between-subjects experiments, Berry et al. (2015) further found that US consumers (a) believe that domestic meat products are safer, tastier and fresher than imports from Mexico and (b) that these beliefs partly mediate the impact of the COO on buying intentions. In addition, Lewis and Grebitus (2016) found that concern about food safety contributed to explaining a positive attitude towards origin labelling of sugar among US consumers.

A partial exception to the research finding a consistent domestic country bias, Dentoni et al. (2014) found that US consumers randomly assigned to evaluate a beef steak labelled “Made in Australia” perceived the steak as safer and healthier than consumers assigned to evaluate one without origin information (presumably assumed to be domestic). However, the latter group had a more favourable assessment of the steak’s flavour.

Regarding other quality dimensions than health and safety, two exploratory survey studies in Italy found that consumers associate higher functional and aesthetic quality to products labelled “Made in” the home country and that willingness to pay a premium for domestic food products is partly attributed to this higher perceived quality, in addition to a basic preference for domestic (i.e., consumer ethnocentrism) (Cappelli, D'Ascenzo, Arezzo, Ruggieri, & Gorelova, 2020; Cappelli et al., 2017). In addition, Chousou, Tsakiridou, and Mattas (2018), using direct questions in a survey, found that country and region of origin were among the most important cues consumers in Thessaloniki, Greece, used to assess the authenticity of olive oil.

A couple of studies found that the importance of the COO and in particular the value of domestic origin increases with the consumer’s environmental concern (Kimura et al., 2011; Thøgersen et al., 2019). Other studies confirm that consumers infer environmental friendliness from origin information. For example, in a qualitative study using in-store interviews and focus groups, Pedersen et al. (2018) found that the main reason why the origin of food products was important to German consumers, and why they preferred domestic and local products and geographically close CsOO for imports, was short haulage distance. Also, Wang et al. (2013) found that US consumers’ stated importance of COO when buying fish and shellfish products increased with the personal importance of a number of environmentally relevant attributes, such as sustainability, naturalness, organic, packaging, and quality certification labels. Related to this, Alphonce, Temu, and Almli (2015) found that Norwegian consumers’ origin preferences with regard to dried tropical fruits depended primarily on attitudes towards fair trade.

In terms of differences between consumers, Chousou et al. (2018) found that the importance of country and region of origin as cues to authenticity among consumers in Thessaloniki, Greece, increased with age and income and was higher among married people than among singles.

4.2.2 Grey Literature: Why is information about the country of origin of food products important to consumers?

All reasons for importance of origin information reported in the grey literature are based on self-report, some of which are acquired in focus group discussions in which respondents may be influenced by reasons other participants are giving. Recurring reasons reported are assumed product quality (BEUC, 2013; Davies & MacPherson, 2010; FCEC, 2014; Johansson & Skog, 2015), the environmental impact including food miles (BEUC, 2013; Davies & MacPherson, 2010; Origo Group, 2021), food safety (BEUC, 2013; Davies & MacPherson, 2010; Origo Group, 2021), freshness of products (Davies & MacPherson, 2010; Johansson & Skog, 2015), higher trust (ADE, 2019; FCEC, 2014), animal welfare (Davies & MacPherson, 2010), product authenticity (Davies & MacPherson, 2010), as well as the support of the industry/farming in one’s own country (Davies & MacPherson, 2010). COO is often seen as a proxy for other credence attributes, such as safety, quality, and the production method (Agra Ceas Consulting SA/ IHS Markit, Areté Srl, 2020; BDI, 2021).

4.2.3 Why is information about the region of origin of food products important to consumers?

The reviewed research suggests that consumers infer many of the same qualities from ROO information on food products as they do from COO information, and that these inferences are the main reason why information about the narrower, local or regional origin of food products is important to consumers.

For example, similar to the findings regarding consumer ethnocentrism reviewed above, Waehning and Filieri (2021) found a positive impact of a measure of "regional ethnocentrism" on German consumers' preferences for regional products and Lorenz, Hartmann, and Simons (2015) found that German consumers' attitudes towards pork from their region depends on their identification with the region and perceived authenticity of pork from the region. Other evidence regarding the importance of "local patriotism" is provided by studies finding that the importance Spanish consumers give to a (local) GI label when buying cherries and loquats (Adrián, Laura, Margarita, & Rodolfo, 2021) or lamb meat (Rabadán, Zamora, Díaz, & Bernabéu, 2021) increased with the importance they attached to the place of origin of the product. Rabadán et al. (2021) found that this relationship is stronger for more ethnocentric consumers. Similarly, Likoudis et al. (2016) found that Greek consumers' intentions to buy PDO/PGI-labelled food products increased with the importance they attached to the place of origin of the products, after controlling for a number of other significant predictors (knowledge of and trust in the labels and believing that PDO/PGI-labelled food products have superior quality).

Regarding the more specific inferences consumers make from "local," Merle, Herault-Fournier, and Werle (2016) found that French consumers perceived cheese and apples presented as local (as opposed to national or from another region) as healthier, tastier, and more respectful of the environment, and also of the work of farmers. Similarly, over 3/4 of the participants in Bryła's (2015, 2017) representative survey of Polish consumers thought that local (regional) food products are of higher quality than ordinary food and are more trustworthy and authentic (i.e., genuine, ancient, traditional). In another survey of Polish consumers, Bryła (2019) found that the preference for local (regional) food products was positively correlated with perceiving these products as superior in a range of different respects (e.g., quality, taste, healthiness, appearance, environmental friendliness). Indirect evidence suggesting the same inferences is provided by Wu et al. (2015) and Beiermann et al. (2017), finding that when US consumers are given information about potential health risks of imported honey, they value locally produced honey more.

The inferences consumers in Italy make from PDO and PGI labelling were investigated in an exploratory study by Spognardi et al. (2021), asking consumers to describe the "PDO" term with three adjectives. The four most frequently mentioned adjectives were safe (33.4%), better quality (16.0%), certified (15.1%), and local (10.8%). That safety and quality inferences are common and important among Italian consumers was confirmed by Di Vita, Cavallo, et al. (2021), who found that the more important the healthiness, taste and colour of olive oil is to Sicilian consumers, the higher is their WTP for a Sicilian PGI olive oil, and by Di Vita, Pippinato, et al. (2021), who found that the more important environmental sustainability is for consumers in northern Italy, the more they prefer PDO-labelled honey.

Also, Portuguese consumers in general agreed with a range of positive statements about PDO-labelled beef (more genuine, promotes higher development of region of origin, safer, more tender, more juicy, of higher quality, etc.) (Fontes, Banović, Cardoso Lemos, & Barreira, 2012). And Likoudis et al. (2016) found that Greek consumers' intentions to buy PDO/PGI-labelled food products depend on favourable beliefs about these products in terms of quality, safety, affordability, healthiness and taste, among other things (label knowledge and trust, perceived importance of product origin and environmental self-identity). Also, Sepúlveda, Maza, and Mantecón (2010) found that Spanish consumers' purchase of PGI-labelled lamb meat increased with believing that labelled products are safer and healthier and with considering the production region to be a quality cue. Kos Skubic et al. (2019) also found that, among the about a third of their sample of Slovakian consumers that were aware of PDO-labelled food products, buying PDO-labelled products primarily depended on believing that these products are of higher quality and taste. In this case, interest in local products also played a role, but relatively small.

4.2.3.1 Grey Literature: Why is information about the region of origin of food products important to consumers?

Only three grey literature report presented findings on reasons consumers mentioned for the importance of origin information. Respondents in Hermanowski and colleagues' study (2014) mentioned shorter transports (95.3%) and supporting the local economy (89.8%) as reasons for preferring local products. Roughly 62% of respondents associated local products with environmental friendliness and with superior freshness. Similarly,

respondents in Forsa's study (2020a) believe that buying regional products contributes to climate protection. Somewhat differently, 96% of respondents in Infas' study (2019) indicated that they find regional products and supporting regional producers an important reason for buying organic food products.

4.2.4 Wrap up: Why consumers find it important to know the origin of foods

Research investigating why consumers find it important to know the origin of food products they buy unanimously **point at feelings of patriotic duty or ethnocentrism as well as a widespread use of origin information as a cue to desired credence or experience qualities** (cf. also Aboah & Lees, 2020; Maesano et al., 2020; Newman et al., 2014). According to the reviewed research, most consumers in all studied countries believe that **domestic food products are safer, healthier, fresher, tastier, more environmentally friendly**, etc. than imported. Consumers also distinguish between foreign origins in these respects, generally believing that food products from countries that are more like their home country are better and more trustworthy than products from more distant, unfamiliar, or less developed countries. Most consumers also appear to infer that food products from their local area or region are better than products from other areas, in much the same way as domestic products are perceived as better than imported. These perceptions seem to be boosted by PGI or PDO labelling of local food, especially among consumers in the south of Europe (cf. also Krystallis et al., 2017).

4.3 How consumers understand and interpret information on the origin of food

This section mostly draws on the already reviewed literature, especially on literature reviewed in Section 4.2, but from a slightly different angle. From the review in Section 4.2, it appeared that consumers use origin information as a heuristic cue to a long range of desirable product qualities. Especially, consumers generally perceive domestic and local products to be superior on practically all aspects that they cannot easily check before the purchase (cf. Maesano et al., 2020), often referred to as experience and credence attributes (Darby & Karni, 1973; Nelson, 1970). Consumers also make inferences about experience and credence qualities when choosing between products from different foreign COO as, for example, demonstrated by research on the impact of an exporting country's image on consumers' evaluation of an imported food product (Thøgersen, Aschemann-Witzel, & Pedersen, 2021; Thøgersen & Pedersen, 2021).

In this section, we review the available evidence on the correctness of consumers' understanding and the inferences they make from origin information. Hence, the focus is on consumer knowledge of the origin of food products and of origin labelling, common misinterpretations and misperceptions of origin information, and ethnocentric and other biases influencing consumer responses to origin information. In addition, evidence is reviewed on factors that seem to influence consumers' understanding and interpretation of information on the origin of food. We also looked for, but did not find research on how information on the origin of a food needs to be provided to be interpreted correctly. Another important issue is trust in the labelling and factors that seem to influence the level of trust in information on the origin of foods.

4.3.1 Wrong inferences and biases

Consumers do not always make correct inferences based on origin information. For example, extant research has identified a common "domestic country bias" (Balabanis & Diamantopoulos, 2004) in consumer perceptions and evaluations. The strongest evidence of a domestic country bias, and a similar ethnocentrism with regard to local origin (Waehning & Filieri, 2021), comes from studies showing that consumers' evaluation of a domestic relative to an imported product change when they are informed about the COO of the products, compared to their previous evaluation based on blind-tasting. These studies report that the relative evaluation of domestic products becomes more favourable, not only with regard to extrinsic attributes, but also with regard to intrinsic attributes, such as quality and taste (e.g., Strašek, 2010). Ethnocentric biases also make consumers generally trust domestic and local producers more, which is another reason why the origin of products is important to them (e.g., Fontes et al., 2012).

Ethnocentric biases are the most common, but not the only source of erroneous consumer inferences from origin information. For example, Shi, Visschers, Bumann, and Siegrist (2018) found that consumers generally know that the climate impact of food products depends on the transport distance and transport mode (e.g., ship vs. flight), but when estimating the climate impact of specific products they rely heavily on the distance to the COO, rather than on how they are transported, which in practice is much more important for many imported food products. This misperception also favours domestic and local producers and products.

In addition, many consumers do not understand, or tend to misunderstand origin labelling. For example, Tonsor, Schroeder, and Lusk (2013) found that, although US consumers generally prefer meat products carrying origin information to unlabelled alternatives, they are largely unaware of origin labelling laws and rules. Among other things, this was revealed in US consumers valuing meat products labelled "Product of North America" approximately the same as "Product of United States," apparently failing to understand that the former includes Canada and Mexico. Similarly, only about one third of participants in a study in New Zealand correctly understood the difference between the "Made in" and "Product of" labels (Insch & Jackson, 2014).

Producers sometimes, knowingly or unknowingly, take advantage of consumers' misunderstandings. For example, the purpose of foreign branding, using brand names such as *Häagen-Dasz* (ice cream) and *Milford* (tea), is to create associations to a different country than the actual COO (which are USA and Germany in these two cases). This branding technique has shown to often have a positive impact on the brand's performance (Aichner, Forza, & Trentin, 2017). For example, interviewing German consumers at the supermarket check-out after having bought one of the two mentioned products, Aichner et al. (2017) found that more than 90% indeed thought the COO of the product was different from what it actually was and when they were told the correct COO they were disappointed, which was reflected in their average WTB and WTP decreasing significantly.

4.3.2 Knowledge deficits

Several studies investigated consumer knowledge of the origin of food products they had just bought or often buy, and some studies investigated consumer knowledge and recognition of various origin labels, including EU's quality labels (especially PDO and PGI). Most of these studies report low origin and label knowledge among consumers.

For example, when Bimbo et al. (2020) asked Italian consumers at the supermarket check-out whether the olive oil they had just bought was "100% Italian," "a blend of European olive oils" or "a blend of non-European olive oils," about one third of the sample was unable to answer (without checking the label on the product) or gave the wrong answer. Given the importance of olive oil in the Italian diet and the high volume of domestic production this seems like a high number.

Other studies intercepting consumers at the check-out counter found that only 23% of German consumers (Profeta et al., 2012) and 19% of UK consumers (Kemp et al., 2010) were able to correctly tell the origin of a food item they had in their shopping cart. Another study intercepting German consumers while shopping found that only 25% knew the origin of an organic product they had in their shopping cart, although an additional 12% was able to guess it (Pedersen et al., 2018).

Interestingly, studies in New Zealand where consumers were also intercepted at the check-out counter found a higher COO knowledge: 55% of participants in one study (Insch & Jackson, 2014) and 50% in another (Holdershaw & Konopka, 2018) were able to tell the correct COO of fresh food products they had just bought. According to the latter study, the extent of knowledge varied by food category and even more for specific food items within categories.

Several studies also found that consumers lack knowledge of origin and quality labels. The most comprehensive evidence on this in terms of geographical and time coverage comes from a re-analysis of data from four Eurobarometer surveys that were conducted in 2012, 2013, 2015 and 2017 across all EU member states (Goudis & Skuras, 2021). Participants were shown pictures of origin and sustainability logos that are common on food products in the EU, including the EU logo for PDOs and asked: "Which of the logos on this screen are you aware of?" On average, over the four surveys and all member states, only 16% said they knew the EU PDO logo (aided recall), with no clear trend over time. The countries where a significantly higher share than average said they recognized the PDO logo were primarily in the south of Europe (e.g., France, Greece, Italy, Portugal) and the countries where a significantly lower share than average recognized the logo were primarily in the north (e.g., Denmark, Sweden, UK, Netherlands).

In order to obtain a more valid measure of logo knowledge, Vecchio and Annunziata (2011) used a different method, asking Italian consumers to rate four different logos, including the EU PDO logo and an invented, non-existing logo, in terms of familiarity. It may be debatable whether the finding that 37% of the participants claimed to know the PDO logo well or very well is a high or low number. However, when 34% of the participant also claimed they knew the non-existing logo well or very well, it appears that participants tended to heavily exaggerate their label knowledge, suggesting that the actual label knowledge was lower than indicated by these numbers.

In Portugal, 44% of consumers participating in the study by Fontes et al. (2012) said they recognized the PDO label on beef, which might again be considered a rather low number when considering that Portugal at the time of study had the highest number of beef products with EU PGI and PDO designations among EU member states.

Among regular consumers of horchata (tigernut milk) in Valencia, Spain, interviewed right after participating in a taste test of this product, 61% knew the local *Horchata de Valencia* (Clemente-Villalba et al., 2021). Most of them (58%) knew that *Horchata de Valencia* is a PDO, but only 20% knew what the term PDO meant.

A number of studies in eastern European countries also found a low knowledge of origin labels. In Slovakia, 65% of the participants in a study knew no food products with a PDO label (Kos Skubic et al., 2019). In Poland, Bryła (2015, 2017) also found that the awareness of origin quality labels was low among consumers, especially the EU PGI, TSG and PDO labels, which only 12 to 16% claimed to know well. Also in Hungary, surveyed consumers had difficulties recalling origin and quality labels on the market, a study finding that the best known label, "Hungarian Product," recognized by nearly 90% when shown, was recalled unaided by only 30.5% of the participants (Szakaly et al., 2016).

4.3.3 Trust in labels

As all the origin-related perceptions and evaluations discussed earlier, measures of the level of trust in food from different origins and trust in different origin labels are also influenced by ethnocentric biases. Notably, studies find that consumers generally trust domestic and local producers and products more (Ariyawardana et al., 2017; Bryła, 2015, 2017; Fontes et al., 2012; Szakaly et al., 2016), something which boosts their preference for domestic and local products (e.g., Insch & Jackson, 2014; Pedersen et al., 2018; Thøgersen et al., 2019). Consumers also generally trust food producers and products from countries that are similar to their home country more than producers and products from more distant, unfamiliar, or less developed countries (e.g., Pedersen et al., 2018; Wang et al., 2013).

For example, Likoudis et al. (2016) found that most Greek consumers trust domestic products (78%), traditional products (70%), and PDO/PGI-labelled products (53%). This is considerably more than the percentage of Greek consumers who trust, for example, organic products (trusted by 49%) or products labelled "light" or with special health claims (trusted by 10 – 12%).

Vecchio and Annunziata (2011) used the same method to measure logo trust among Italian consumers as they used to measure logo knowledge, as discussed above. When rating four different logos, including the EU PDO logo and an invented, non-existing logo, in terms of their level of confidence in the logo, 42% of the participants expressed high or very high confidence in the EU PDO logo. However, the finding that 38% expressed high or very high confidence in the non-existing logo suggests a substantial acquiescence bias also in the trust responses.

4.3.4 Differences between consumers

A number of studies attempted to profile consumers with different levels of knowledge of the origin of food products and of various origin labels or logos. Not surprisingly, the level of knowledge is higher among consumers that buy origin products more often (e.g., Bryła, 2015, 2017) and among consumers that are more interested in labelling information and in the product's origin (e.g., Bimbo et al., 2020). Based on Eurobarometer survey data from 2013, Goudis and Skuras (2021) also found a higher knowledge of PDO logos among respondents that buy locally produced and seasonal food as an action against climate change. In addition, studies found that consumers that focus more on the price of products are more ignorant of origin labels (Bimbo et al., 2020; Goudis & Skuras, 2021)

In terms of demographics, it seems that especially age, education and perhaps income are related to origin label knowledge. For example, based on four Eurobarometer surveys, Goudis and Skuras (2021) found that knowledge of EU's PDO label increases with education and is higher among middled aged, middle income and middle class consumers than among other age and income groups and classes. Also, using a different method, Bimbo et al. (2020) found that Italian consumers' knowledge of the origin of olive oil they had just bought differed by gender, education and income; females and consumers with higher education and income being more likely to correctly identify the product's country of origin than males and consumers with a lower level of education and income.

4.3.5 Grey Literature: Consumer understanding and interpretation on the origin of Food

The studies reported in the grey literature confirm that consumers experience it as difficult to interpret origin information. Davies and MacPherson (2010) reported that only 12% of their respondents accurately understood COO labelling. Similar misunderstandings were also reported in their focus groups and observational data. An even lower percentage was reported in a study looking specifically at meat products (Agra Ceas Consulting SA/ IHS Markit, Areté Srl, 2020), here only 5% of respondents correctly understand the three origin terms "reared", "slaughtered", "origin". With regard to fish and aquaculture products (FAP), findings of one study suggest that respondents understand mandatory origin claims on FAPs ~70% of the time. Only a minority of respondents in this study was aware that a vessel's flag determines fish origin (except when caught in territorial waters) (BDI, 2021). With regard to identifying regional products, Forsa (2020a) noted that 40% of their respondents indicated they find it difficult to identify regional products.

4.3.6 Wrap-up: How consumers understand and interpret information on the origin of food

In sum, **research indicates that consumers can easily misinterpret and are often not aware of the rules and regulations behind official origin or quality labels**. Many studies also find a low knowledge and awareness of origin-based quality labels, such as EU's PDO and PGI labels. In addition, the reviewed research documents that **consumer inferences from origin information are strongly influenced by ethnocentrism. Consumers primarily use origin information to identify domestic and local produce**, to which they generally attribute superiority on both, extrinsic and intrinsic attributes. Consumers also tend to rely on the distance to the COO to estimate the climate impact of specific products, and they tend to trust local producers and products more. However, **when consumers are incepted in the store or at the check-out counter and asked about the origin of products in the shopping cart, usually most of them are not able to tell**, which suggests that in practice they pay less attention to the origin of food products than they say when asked in a survey. Still, knowledge of labels is related to interest in origin information and the origin of food products, which are driven by the consumer's beliefs and inferences about what differentiates products from different origins. Hence, consumers are more likely to acquire knowledge about product origin and origin labelling if they believe this is useful for obtaining their goals. But this belief is apparently only strongly held by a relatively small minority of consumers. Origin and origin labelling knowledge appears to increase with education and also with age, income and social status to a certain level. Some research suggests that women in general know more than men about these topics, perhaps because they still do most of the food shopping.

5 Discussion

This report is based on a systematic review of published research on how and why information about the origin of food products influences consumers and especially their decisions about buying and consuming the product. The scope of the study was limited to research carried out in EU or OECD countries and published in English between 2010 and 2021. A review of this literature pointed to previous scientific evidence worth mentioning, which has been included as background information. The basic search was carried out in the most comprehensive curated database of research publications available, Scopus. This search was supplemented by backward and forward citation searches, stakeholders in EU member states in order to identify relevant "grey" literature.

5.1 Summary of key findings

It was the objective of this systematic literature review to answer three research questions:

1. Does the origin of a food influence purchase decisions and consumption, and if so, how?
2. Why do consumers find it important to know the origin of the foods they purchase or consume?
3. How do consumers understand and interpret information on the origin of food?

Research on why consumers find it important to know the origin of the foods they purchase or consume suggests that this information primarily serves two purposes that are more or less important to different consumers (cf. also Newman et al., 2014). First, **many consumers believe that origin information is useful for identifying good quality, safe, environmentally friendly and in other ways better food products**. This is based on the belief that food products from some origins are of better quality, safer, more environmentally friendly and in other important ways superior to food products from other origins (Aboah & Lees, 2020). Second, **many consumers feel that it is their duty to support their local or domestic farmers and food industry** and they need information about the origin of food products to be able to fulfil this obligation. Businesses and politicians in a number of countries actively support such sentiments, most obviously through "Buy Domestic" campaigns (Saffu et al., 2010; Verlegh, 2007).

The reviewed research also reveals that these two purposes of attending to origin information converge in the minds of most consumers. A strong "domestic country bias," and ethnocentrism with regard to the person's local area, clearly emerge from the literature review, not only with regard to the products consumers buy, but even more with regard to their beliefs about products from different origins. Especially, consumers tend to believe that domestic and local food products are superior to products from other places in terms of extrinsic and even intrinsic qualities. Hence, the patriotic duty to buy domestic and local is bolstered by believing that domestic and local products are also better in terms of most important qualities.

Research finds that consumers also use foreign origins as cues to food product quality, based on the image of the country in general and/or the image of food products from the country. Preferences for specific foreign origins are also influenced by the foreign country's familiarity as well as its similarity with and distance from the home country. Especially, it appears that people to some extent make ethnocentric inferences from foreign origins' similarity with the home country (cf. Watson & Wright, 2000).

In addition to the mentioned ethnocentric biases, it appears from the reviewed research that **consumers' understanding and interpretation of information on the origin of food are impeded by a knowledge deficit**. Studies find that most consumers do not know the rules and regulation behind origin labels and therefore often misinterpret them. Relatedly, research found low consumer awareness and knowledge of EU's PDO and PGI labels all over Europe. Even more, when consumers are intercepted while shopping or at the supermarket check-out counter, most of them appear to be unaware or uncertain about the origin of products in their shopping cart. This not only suggests a knowledge deficit, but also that these consumers did not pay much attention to origin information while they were shopping.

A majority of the reviewed publications on the impact of origin information on consumer purchase decisions used choice experiments or other types of conjoint analysis. Irrespective of the country or product of study, this research unanimously finds a strong impact of the country of origin on consumers' choices and that domestic origin is preferred to foreign, among which more developed countries are preferred to less developed countries. Similar findings were reported by a systematic review of the literature covering the two decades before this one (Newman et al., 2014). However, some research based on other methods than conjoint analysis finds the origin to be less important for consumer food choices. This is, for example, the case for studies asking participants to rate the importance of a longer list of intrinsic and extrinsic product

attributes, including place or country of origin. A possible reason for the different findings of the two types of studies with regard to the importance of origin information is that the importance rating studies explicitly list many search and credence attributes that consumers appear to infer from the origin information when participating in choice experiments. This might also be part of the reason why studies investigating the joint effect of origin and other types of labelling often find a negative interaction between domestic origin and labelling indicating other desired qualities, meaning that the impact of origin information is smaller when there is also, for example, an organic label (e.g., Thøgersen et al., 2019).

An even bigger discrepancy with regard to how important origin information is to consumers appears when comparing the results of conjoint analysis studies and studies intercepting consumers while shopping. The results of the latter suggest that origin information is considerably less important to consumers than is usually inferred from conjoint analyses. On this background, it seems that conjoint analyses tend to overestimate the impact of origin information on consumer choices. A likely reason is that conjoint analysis studies direct consumers' attention towards origin information whereas this information tends to "drown" in the overwhelming amount of information and distractors in a real shopping environment. If this is the reason, the in-store interception studies may actually underestimate how important origin information is to consumers. That is, **in the hassle, time pressure, and information overload of everyday shopping, consumers may attend less to origin information than they would like to**.

5.2 Limitations and research gaps

This literature review was limited to origin research in the most economically developed countries published during the last 11 years in English. Hence, it gives a status on the results of this research in developed countries in the last decade or so, but is (practically) mute about possible differences between developed and developing countries and possible longer-term developments with regard to the importance for or impacts on consumers of origin information. However, the fact that many of the main findings are consistent with what was reported in a systematic literature review with a similar focus covering the two decades before this one (Newman et al., 2014) gives confidence in the temporal stability of these findings.

The language constraint means that there could be relevant studies in non-English speaking countries published strictly with a domestic audience in mind, which are not captured by this study. However, given the large number of reviewed studies it seems unlikely that the inclusion of such studies would have changed the main conclusions.

In terms of research gaps, we note in particular a **lack of studies digging deeper into consumers' (lack of) knowledge and understanding of origin information and, in particular, into the causes and possible solutions of this lack of knowledge and understanding**. It is important to know whether the lack of knowledge and understanding is due to a lack of interest in origin information on food products on the side of consumers or is rather due to the way this information is designed and/or presented, which may be confusing or in other ways inaccessible to consumers. Especially for processed food products, it is often difficult to identify the origin, which may differ for different ingredients and processes. It would also be relevant to obtain a more precise **estimation of the consumer value of origin information rinsed for undocumented quality inferences versus certified quality information**, disentangling the effect of origin information in itself from the quality inferences that consumers draw on the basis of origin information. There also appears to be a need for more systematic research on the differences in effects of official origin labels adhering to legal regulation, such as mandatory origin provision, PDO/PGI, etc., and unofficial origin information.

The **research on the level of trust in and understanding of information on the origin of foods is also sparse** and, for example, the influence on trust of the geographical level at which the information is provided ('EU' or 'non-EU'/national/regional/local) still remains to be systematically investigated.

There is also a need for **research that disentangles the role of consumer ethnocentrism from other reasons why consumers are interested in origin information**. It appears from the reviewed literature that consumer ethnocentrism is a major reason, but that there are also other reasons that can be independent of ethnocentrism. For example, several reviewed studies suggested that **beliefs about a product's environmental impact are inferred from origin information, which is not necessarily the outcome of consumer ethnocentrism** (i.e., local products are *objectively* produced closer by and thus have a shorter transportation distance to the consumer). However, there is a lack of research on the extent to which interest in the origin of food products is based on environmental concern. One reviewed study suggests this to be the case in Germany (Pedersen et al., 2018). However, other studies suggest that environmental impacts

are considerably less important to consumers than the origin (especially studies including organic vs. conventional alternatives or carbon labelling). It also appears from many reviewed studies that beliefs about products' environmental attributes, like other desirable qualities, are strongly influenced by ethnocentric biases. Hence, based on current research it is not possible to disentangle the role of environmental concern from ethnocentrism as reasons why consumers are interested in origin information.

The conflicting conclusions on the consumer importance of origin information from studies using different methods show a need for more mixed methods studies. Quite many of the reviewed papers report that, for example, a pilot study to uncover which attributes and attribute levels were important for consumers' choices of a specific product, often using focus groups or interviews, preceded the main study of consumer choices. However, there is a need for research that targets the inconsistency of conclusions from studies using choice experiments and studies intercepting and interviewing consumers while shopping or right after. By combining both of these methods in the same study, it might be possible to get a clearer impression of the reasons for this inconsistency, and of contingencies influencing the situational importance of origin information to consumers.

5.3 Implications

The findings regarding common consumer misunderstanding, misinterpretation and lack of knowledge of origin information, including EU's origin-based quality certifications, suggest a **need for more and better information about and consumer education on these matters**. In addition, it seems worthwhile to investigate ways of **making this information more accessible to the average consumer**. Accessibility should be considered both in term of how easy it is to obtain the relevant information when one needs it and how easy this information is to comprehend versus to misunderstand. Information and education campaigns assume that consumers are sufficiently interested in the information to acquire it, which is questioned by some of the reviewed research. This suggests that, in addition to informing and educating consumers about the existence of the various origin labels, it is necessary to teach them why and in which ways this information is relevant to them, that is, what are the personal and societal benefits that the labelling helps the consumer obtain. It is outside the scope of this report to speculate on the specific content and design of such information and education interventions.

Note also that the EU court[1] and others deemed campaigns promoting domestic and local products "solely by reason of their national origin" and not based on their particular properties (Hojnik, 2011, p. 271) not compliant with article 34 of the Treaty on the Functioning of the European Union (Hojnik, 2011; Stere & Trajani, 2015). These campaigns partly play into consumer ethnocentrism (e.g, Saffu et al., 2010), which is pervasive across studied countries according to this review, and significantly contributes to preferences for domestic/local food products. Hence, in order to attenuate the effect of ethnocentrism on consumer choices, it may be advisable for EU and member states to **communicate more actively that food safety standards are harmonized and that food safety and product quality have to live up to the same, high standards all over the EU.**

[1] E.g., the EU Court's 1982 ruling against Ireland's "Buy Irish" campaign, Case 249/81 – Commission v Ireland, [1982] ECR I-4005.

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Tables

Table 1. Empirical studies of the impact of the COO on consumer choices using conjoint analysis

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Product
1	Aoki, K., Akai, K., & Ujiie, K.	2017	A choice experiment to compare preferences for rice in Thailand and Japan: The impact of origin, sustainability, and taste	COO has the strongest effect in both countries, but considerably stronger in Japan than in Thailand (where the price is relatively more important). Attributes: COO, fair trade label, cultivation method, taste ranking, price.	DCE	1073 Thai, 1259 Japan	Japan, Thailand	Domestic, USA	Rice
2	Balcombe, K., Bradley, D., & Fraser, I.	2021	Do Consumers Really Care? An Economic Analysis of Consumer Attitudes Towards Food Produced Using Prohibited Production Methods	COO very important for all products and more important than all other attributes for two (beef and corn). For the other two, quality labels were more important. Domestic preferred.	DCE	1600	UK	Domestic, EU, Non-EU	chicken breast, beef sirloin steak, pork loin joint, corn on the cob
3	Balcombe, K., Bradley, D., Fraser, I., & Hussein, M.	2016	Consumer preferences regarding country of origin for multiple meat products	COO information is positively valued for all products, but is less important than other attributes for a large number of products.	DCE	2951	UK	Four levels: Domestic; a specific EUcountry (differing b product); a generic EU option; and a specific non-EU country	4 fresh meat products, 4 processed and 4 that contain meat as an ingredient.
4	Balcombe, K., Fraser, I., Williams, L., & McSorley, E.	2017	Examining the relationship between visual attention and stated preferences: A discrete choice experiment using eye-tracking	COO is most important among the included attributes, domestic preferred.	DCE	100	UK	Domestic, USA, Italy and EU	pepperoni pizza
5	Banovic, M., Reinders, M. J., Claret, A., Guerrero, L., & Krystallis, A.	2019	A cross-cultural perspective on impact of health and nutrition claims, country-of-origin and eco-label on consumer choice of new aquaculture products	COO label more important than ASC eco-label and health and nutrition claims, domestic preferred. Different segments.	DCE	1598	France, Germany, Italy, Spain, and UK	None, produced in the EU, domestic (FR, DE, IT, ESP and UK	Seafood
6	Bienenfeld, J. M., Botkins, E. R., Roe, B. E., & Batte, M. T.	2016	Country of origin labeling for complex supply chains: The case for labeling the location of different supply chain links	Domestic preferred. consumer WTP for products with single-country and multicountry supply chains are statistically different. For	DCE	2382	USA	Domestic, UK, China	Cereal products

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Product
				countries with a poor quality reputation, consumers respond more negatively when that country has the "last touch".					
7	Cavallo, C., & Piqueras-Fiszman, B.	2017	Visual elements of packaging shaping healthiness evaluations of consumers: The case of olive oil	Organic production and COO enhanced healthiness perception. Varied: color of the bottle, sensory quality claims, organic production logos, COO, and cold processing. Most of the elements were perceived similarly by the Dutch and Italian consumers.	CA	214	Netherlands, Italy	Italy, EU	Olive oil
8	Cicia, G., Cembalo, L., & Del Giudice, T.	2012	Country-of-origin effects on German peaches consumers	COO is most important among the included attributes, Italy preferred. Differs between consumer segments.	DCE	300	Germany	Italy, Spain, Turkey and France	peaches
9	Cicia, G., Cembalo, L., del Giudice, T., & Scarpa, R.	2011	The Impact of Country-of-Origin Information on Consumer Perception of Environment-Friendly Characteristics	COO most important. Domestic and imported from Italy are preferred.	DCE	360	Germany	Domestic, Italy, Turkey, Spain, France and Holland	cherry tomatoes
10	Claret, A., Guerrero, L., Aguirre, E., Rincón, L., Hernández, M. D., Martínez, I., . . . Rodríguez-Rodríguez, C.	2012	Consumer preferences for sea fish using conjoint analysis: Exploratory study of the importance of country of origin, obtaining method, storage conditions and purchasing price	COO most important, more than the obtaining method (wild-farmed sea fish), the storage conditions (chilled-frozen) and the price	CA	914	Spain	Domestic, Morocco, Norway	Seafood
11	Colantuoni, F., Cicia, G., Del Giudice, T., Lass, D., Caracciolo, F., & Lombardi, P.	2016	Heterogeneous Preferences for Domestic Fresh Produce: Evidence from German and Italian Early Potato Markets	COO most important in Italy, second most in Germany (after the price), more important in Italy than in Germany, domestic preferred. (COO, carbon footprint, production method, ethical certification, packaging).	DCE	1,004 in Italy, 1,009 in Germany	Italy and Germany	Domestic, foreign COO, unknown	Potatoes
12	Cosmina, M., Gallenti, G., Marangon, F., &	2016	Attitudes towards honey among Italian consumers: A choice experiment approach	COO most important, domestic preferred, followed by organic.	DCE	427	Italy	Local region, domestic, foreign	honey

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Product
	Troiano, S.								
13	Doherty, E., & Campbell, D.	2014	Demand for safety and regional certification of food: Results from Great Britain and the Republic of Ireland	COO most important in Ireland, second to safety standards in GB - domestic preferred, different consumer segments. Varied: food testing standards, traceability standards, health and welfare standards, origin and price.	DCE	400 in Ireland, 1,173 in UK	UK, Ireland	UK, Ireland, other	chicken breast
14	Dumitrescu, C., Nganje, W., & Shultz, C. J.	2013	Perceived value of pasta in Greece and Romania	COO more important than price and type of wheat. Italian origin preferred to US.	DCE	1800 in Romania, 640 Greece	Romania, Greece	USA, Italy	Pasta
15	Eldesouky, A., Mesias, F. J., & Escribano, M.	2020	Consumer assessment of sustainability traits in meat production. A choice experiment study in Spain	COO most important, domestic preferred, compared to three eco-labels and price. Consumer segments.	DCE	285	Spain (Extremadura)	Domestic, foreign	pre-packaged sliced beef (500-g tray)
16	Fernández-Polanco, J., Loose, S. M., & Luna, L.	2013	Are retailers' preferences for seafood attributes predictive for consumer wants? Results from a choice experiment for seabream (sparus aurata)	COO more important than price, sustainability label, farm vs wild, health and safety labels, domestic preferred	DCE	169	Spain (Santander)	Domestic, foreign	Fish
17	Fitzsimmons, J., & Cicia, G.	2018	Different tubers for different consumers: Heterogeneity in human values and willingness to pay for social outcomes of potato credence attributes	COO most important, domestic preferred, more in Italy than in Germany, a small but significant effect of value priorities. Varied: price, COO, carbon footprint certification, ethical certification, method of production)	DCE	1,004 in Italy, 1,009 in Germany	Italy and Germany	Domestic, foreign COO, unknown	Potatoes
18	Font i Furnols, M., Realini, C., Montossi, F., Sañudo, C., Campo, M. M., Oliver, M. A., . . . Guerrero, L.	2011	Consumer's purchasing intention for lamb meat affected by country of origin, feeding system and meat price: A conjoint study in Spain, France and United Kingdom	Origin of the meat the most important factor, domestic being most preferred, Uruguayan least preferred.	CA	100 in Spain, 99 in France, 92 in UK	Spain, France and UK	Domestic, Argentina, Switzerland and Uruguay	lamb
19	Forbes-Brown, S., Micheels, E. T., &	2016	Consumer Willingness to Pay for Dairy Products With the 100%	COO most important among the included attributes, domestic preferred.	DCE	455 for milk and 453 for ice	Canada	Domestic, unknown	Milk, ice cream

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Product
	Hobbs, J. E.		Canadian Milk Label: A Discrete Choice Experiment			cream			
20	Frez-Muñoz, L., Steenbekkers, B. L. P. A., & Fogliano, V.	2016	The Choice of Canned Whole Peeled Tomatoes is Driven by Different Key Quality Attributes Perceived by Consumers Having Different Familiarity with the Product	COO most important extrinsic attribute for Italians, packaging material for Chileans and Dutch. The color of tomatoes was the most important attribute for all groups.	CA	80 from each country	Chile, Netherlands, Italy	Netherlands Italy Spain Mediterranean Non Mediterranean Any country PDO	peeled tomatoes
21	Gao, Z., Schroeder, T. C., & Yu, X.	2010	Consumer willingness to pay for cue attribute: The value beyond its own	COO is most important among the included attributes, domestic preferred.	DCE	154	USA	Domestic vs unknown	beef strip loin steak
22	Grunert, K. G., Sonntag, W. I., Glanz-Chanos, V., & Forum, S.	2018	Consumer interest in environmental impact, safety, health and animal welfare aspects of modern pig production: Results of a cross-national choice experiment	COO is most important among the included attributes, domestic preferred. Differ between consumer segments.	DCE	1007 in Germany, 988 in Poland	Germany and Poland	Domestic, imported from Poland/Germany, EU	Pork
23	Hersleth, M., Næs, T., Rødbotten, M., Lind, V., & Monteleone, E.	2012	Lamb meat - Importance of origin and grazing system for italian and norwegian consumers	COO important for consumers' buying, domestic preferred. More than pasture (lowland and mountain)	CA	189 in Norway, 193 in Italy	Norway, Italy	Norway, Italy and New Zealand	lamb
24	Hill, J. I., Nelson, R. G., Woods, K. L., Weese, J. O., & Whitis, G. N.	2013	Consumer preferences for attributes of catfish nuggets: price, breading color, cooking method, and country of origin	COO most important. Cluster analysis suggested three consumer segments: a price-sensitive, a domestic-origin, and a dark-breading segment.	CA	614	USA	Domestic, China	the belly flap of the catfish
25	Hinkes, C., & Schulze-Ehlers, B.	2018	Consumer attitudes and preferences towards pangasius and tilapia: The role of sustainability certification and the country of origin	COO is most important among the included attributes, domestic preferred.	DCE	325	Germany	Domestic, Bangladesh Vietnam	pangasius and tilapia
26	Holdershaw, J., Gendall, P., & Case, P.	2013	Country of origin labelling of fresh produce: consumer preferences and policy implications	COO is most important among the included attributes, domestic preferred to both unlabelled and overseas-labelled produce.	CA	100	New Zealand (Palmerston North)	Domestic, foreign	tomatoes, apples and pork
27	Jiménez-Guerrero,	2012	Estimating consumer	Freshness most important for	CA	378	Germany (German	Domestic, Spain,	Cucumbers

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Product
	J. F., Gázquez-Abad, J. C., Huertas-García, R., & Mondéjar-Jiménez, J. A.		preferences for extrinsic and intrinsic attributes of vegetables. a study of German consumers	consumers, considering four attributes: price, COO, production method, and freshness.			tourists visiting Almería, Spain)	Netherlands	
28	Jiménez-Guerrero, J. F., Gázquez-Abad, J. C., Mondéjar-Jiménez, J. A., & Cordente-Rodríguez, M.	2010	Comparing alternative methods for conjoint analysis: A case of tomatoes in the German market	Freshness most important, considering: Level of freshness, COO, price, and production method.	CA	1404	Germany	Domestic, Spain, Netherlands	Tomatoes
29	Kimura, A., Kuwazawa, S., Wada, Y., Kyutoku, Y., Okamoto, M., Yamaguchi, Y., . . . Dan, I.	2011	Conjoint analysis on the purchase intent for traditional fermented soy product (Natto) among japanese housewives	Purchase intention affected by COO, seasonings, and price, considering: price, COO of the soybeans, stickiness, smell, seasonings, environmental friendliness of the packaging.	CA	479	Japan	Domestic, foreign	fermented soybean product natto
30	Kitagawa, T., Kashiwagi, K., & Isoda, H.	2020	Effect of religious and cultural information of olive oil on consumer behavior: Evidence from Japan	COO less important than taste, but more than other extrinsic quality cues and price. Italy preferred, followed by Spain.	DCE	2478	Japan	Spain, Italy, Tunesia	Olive oil
31	Lagerkvist, C. J., Berthelsen, T., Sundström, K., & Johansson, H.	2014	Country of origin or EU/non-EU labelling of beef? Comparing structural reliability and validity of discrete choice experiments for measurement of consumer preferences for origin and extrinsic quality cues	Information about the COO most valued. Info about the specific COO preferred to info about EU/non-EU origin.	DCE	506 without and 278 with a price vector	Sweden	-	Beef
32	Lewis, K. E., Grebitus, C., Colson, G., & Hu, W.	2017	German and British Consumer Willingness to Pay for Beef Labeled with Food Safety Attributes	COO most important, domestic preferred, and more by those who considered food safety information. Varied: COO, quality assurance seals, hormone-free beef production and a gourmet label.	DCE	402 in UK, 503 in Germany	Germany, UK	USA, Canada, Argentina, France, Germany and UK	Beef

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Product
33	Lim, K. H., Hu, W., Maynard, L. J., & Goddard, E.	2014	A Taste for Safer Beef? How Much Does Consumers' Perceived Risk Influence Willingness to Pay for Country-of-Origin Labeled Beef	COO and price most important, domestic preferred, moderated by risk perceptions. Suggests that the preference for domestic can be partly explained by consumers' risk handling behavior.	DCE	1079	USA	Domestic, Canada, Australia	Beef
34	Meixner, O., & Katt, F.	2020	Assessing the impact of covid-19 on consumer food safety perceptions—a choice-based willingness to pay study	Compared to Lim et al (2014), COO less important and food safety assurrance more important. Price also more important than COO. Domestic preferred.	DCE	999	USA	Domestic, Canada, Australia	Beef
35	Menapace, L., Colson, G., Grebitus, C., & Facendola, M.	2011	Consumers' preferences for geographical origin labels: Evidence from the Canadian olive oil market	COO/origin information most important, Italy preferred. ROO information also valued when COO is known.	DCE	207	Canada (Toronto)	Greece, Italy, Spain	Olive oil
36	Mørkbak, M. R., Christensen, T., & Gyrd-Hansen, D.	2010	Consumer preferences for safety characteristics in pork	Domestic produce is valued as the second most important attribute after low fat, and followed by reduced Salmonella risks, reduced use of antimicrobial agents, and increased animal welfare.	DCE	1,322	Denmark	Domestic, foreign	minced pork
37	Mueller Loose, S., Peschel, A., & Grebitus, C.	2013	Quantifying effects of convenience and product packaging on consumer preferences and market share of seafood products: The case of oysters.	Price, preparation format and species the most important choice drivers, followed by ROO and accompaniments, while packaging format and claims only had a minor influence. Consumers differ in price sensitivity and preferences for species and different oyster accompaniments.	DCE	1718	Australia	Australia New Zealand New South Wales (Aus) Corrie Island (NSW)	Oysters
38	Nguyen, T. T., Haider, W., Solgaard, H. S., Ravn-Jonsen, L., & Roth, E.	2015	Consumer willingness to pay for quality attributes of fresh seafood: A labeled latent class model	COO second in importance after seafood species, domestic preferred. Varied: COO, species, form, production method, price. Different consumer segments.	DCE	960	France	Domestic, foreign	Seafood
39	Norris, A., &	201	Consumer preferences for	COO most important, domestic preferred.	DCE	1,6	Canada	Domestic, USA, UK,	Gouda and cheddar

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Product
	Cranfield, J.	9	country-of-origin labeling in protected markets: Evidence from the canadian dairy market	Varied: price, COO, production method, brand, traceability			(Ontario)	Italy, Australia, New Zealand	cheese, ice cream, and yogurt
40	Ortega, D. L., Wang, H. H., & Olynk Widmar, N. J.	2015	Effects of media headlines on consumer preferences for food safety, quality and environmental attributes	COO appears most important, but only reported as interactions with various food-safety cues. Domestic preferred, influenced by negative headlines about the safety of imports from Asia.	DCE	670	USA	Domestic, China, Thailand	Shrimp
41	Papanagiotou, P., Tzimitra-Kalogianni, I., & Melfou, K.	2013	Consumers' expected quality and intention to purchase high quality pork meat	COO and marbling appear to be more important for purchase decisions than for quality evaluations, while the opposite appears to be true for price.	CA	626	Greece (Thessaloniki)	Domestic, imported	pork loin chops
42	Peschel, A. O., Grebitus, C., Colson, G., & Hu, W.	2016	Explaining the use of attribute cut-off values in decision making by means of involvement.	The COO is more important than the price and more the more involved the consumer is in the purchase.	DCE	453	Germany	Domestic; Argentina; France; Canada; U.S.; Great Britain	Beef
43	Pileliene, L., & Liesionis, V.	2014	Influence of product attributes on milk consumer's choice in Lithuania	In 2009, the COO was the most important of six attributes, but in 2014, the price and production method were more important than the COO. Varied: COO, Naturalness, Package size, Package type, Richness, Price.	CA	26 in 2009, 27 in 2014	Lithuania	Domestic, foreign	Milk
44	Pouta, E., Heikkilä, J., Forsman-Hugg, S., Isoniemi, M., & Mäkelä, J.	2010	Consumer choice of broiler meat: The effects of country of origin and production methods	COO strongest, domestically produced preferred. The effect of production method was minor. Different consumer segments.	DCE	1312	Finland	Domestic, Thailand, Brazil	chicken
45	Realini, C. E., Font i Furnols, M., Sañudo, C., Montossi, F., Oliver, M. A., & Guerrero, L.	2013	Spanish, French and British consumers' acceptability of Uruguayan beef, and consumers' beef choice associated with country of origin, finishing diet and meat price	Origin most important, preference for domestic. Varied: COO, finishing diet, price.	CA	100 in Spain, 99 in France, 93 in UK	Spain, France and UK	Domestic, Switzerland Argentina, Uruguay	Beef
46	Risius, A., Hamm, U., &	2019	Target groups for fish from aquaculture:	COO most important, domestic preferred. Differs between	DCE	447	Germany (Hamburg,	Domestic, Denmark, Poland,	smoked trout filets

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Product
	Janssen, M.		Consumer segmentation based on sustainability attributes and country of origin	consumer segments.			Stuttgart, and Leipzig)	Turkey	
47	Schjøll, A.	2017	Country-of-origin preferences for organic food	COO most important, domestic preferred. Ranking of product attributes found COO less important than intrinsic attributes and price. Differs between consumer segments.	DCE	953	Norway	Domestic, Denmark, Poland	minced veal meat
48	Schnettler, B., Sánchez, M., Miranda, H., Orellana, L., Sepúlveda, J., Mora, M., . . . Hueche, C.	2017	"Country of origin" effect and ethnocentrism in food purchase in Southern Chile	COO most important. Differs between three consumer segments. Domestic preferred, lower preference for food from countries that were farther away and more culturally different from Chile. Being ethnocentric in food consumption increased if woman, of older age, belong to the medium or high socioeconomic level, and having a conservative lifestyle.	CA	800	Chile (Temuco and Los Angeles)	Domestic, foreign	rice, sugar, chicken meat and oil
49	Schnettler, B., Sepúlveda, N., Sepúlveda, J., Orellana, L., Miranda, H., Lobos, G., & Mora, M.	2014	Consumer preferences towards beef cattle in Chile: Importance of country of origin, cut, packaging, brand and price	Origin more important (44.5%) than price (20.8%), form of presentation (12.2%), cut (12.0%) and brand (10.5%), with preference for domestic.	CA	800	Chile (Concepción (Bio Bío) and in Temuco (La Araucanía))	Domestic, Argentina, Australia, Paraguay	Beef
50	Son, E., & Lim, S. S.	2021	Consumer acceptance of gene-edited versus genetically modified foods in Korea	COO most important, domestic preferred.	DCE	200	Korea	Domestic, US, and China	Soybean oil
51	Sonoda, Y., Oishi, K., Chomei, Y., & Hirooka, H.	2018	How do human values influence the beef preferences of consumer segments regarding animal welfare and environmentally friendly production?	COO most important, prefererence for domestic. Varied: animal welfare and environmentally friendly labels, COO, price. Differ between consumer segments	DCE	846	Japan	Domestic, USA, Australia	Beef
52	Stefani, G., Scarpa, R., & Cavicchi, A.	2012	Exploring consumer's preferences for farmed sea bream	COO most important (domestic preferred) followed by organic certification and fish farming in marine cages. Varied: price, COO, type and place	DCE	251	Italy	Domestic, foreign	farmed sea bream

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Product
				of fish farming, type of feed.					
53	Thøgersen, J., Pedersen, S., & Ascheman n-Witzel, J.	2019	The impact of organic certification and country of origin on consumer food choice in developed and emerging economies	COO most important, preference for domestic, exept for China. Varied: COO, production method, price. Differ between consumer segments	DCE	about 1,000 per country	Denmark, Germany, France, China, Thailand	Denmark, Germany, France, Netherlands, Austria, Europe, Thailand, China	Milk, pork chops
54	Uchida, H., Onozaka, Y., Morita, T., & Managi, S.	2014	Demand for ecolabeled seafood in the Japanese market: A conjoint analysis of the impact of information and interaction with other labels	COO most important, followed by eco-label, domestic preferred. Negative interaction between preferred origins and eco-label.	DCE	3370	Japan	Hokkaido in Japan, Alaska in the US, Norway, an Chile	Salmon
55	Van Loo, E. J., Grebitus, C., & Roosen, J.	2019	Explaining attention and choice for origin labeled cheese by means of consumer ethnocentrism	Hormone free more important than COO, ROO has a small effect, biodegradable packaging, and price. Domestic not necessarily preferred.	DCE	103	USA	Domestic, Ireland, England	cheddar cheese
56	Villalobos, P., Padilla, C., Ponce, C., & Rojas, Á.	2010	Beef consumer preferences in Chile: Importance of quality attribute differentiators on the purchase decision	Varied: price, origin, production method, and quality assurance. Price is least important and quality assurance most important.	CA	521	Chile (Talca, Rancagua, and Santiago)	Domestic, Argentina, Brazil	Beef
57	Xie, J., Gao, Z., Swisher, M., & Zhao, X.	2016	Consumers' preferences for fresh broccolis: Interactive effects between country of origin and organic labels	COO is most important among the included attributes, domestic preferred.	DCE	508	USA (the eastern half)	Domestic, Canada, Mexico, China	broccoli
58	Xie, J., Kim, H., & House, L.	2013	Valuing Information on GM Foods in the presence of Country-of-Origin Labels	COO most important, domestic preferred, China least.	DCE	738 from Europe, 331 from Japan, and 377 from the United States	USA, Japan, Belgium, France, Germany, and Spain	Domestic, China, New Zealand	Apples
59	Zander, K., Risius, A., Feucht, Y., Janssen, M., & Hamm, U.	2018	Sustainable Aquaculture Products: Implications of Consumer Awareness and of Consumer Preferences for Promising Market Communication in Germany	COO and sustainability of minor relevance to the vast majority. Freshness, taste, and price frequently ranked higher. In the choice experiment, COO most important, domestic preferred, followed by Denmark, Poland, Turkey.	DCE	459	Germany (Hamburg, Leipzig, and Stuttgart)	Domestic, Denmark, Poland, Turkey	Seafood

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Product
60	Zanoli, R., Scarpa, R., Napolitano, F., Piasentier, E., Naspetti, S., & Bruschi, V.	2013	Organic label as an identifier of environmentally related quality: A consumer choice experiment on beef in Italy	COO second in importance after production method (organic), domestic preferred.	DCE	145	Italy (Udine, Potenza, Ancona)	Domestic, foreign	beef steaks

Note: DCE = Discrete Choice Experiment, CA = classical Conjoint Analysis.

Table 2. Empirical studies of the impact of the ROO on consumer choices using conjoint analysis

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Product
1	Apostolidis, C., & McLeay, F.	2016	Should we stop meating like this? Reducing meat consumption through substitution	The type of mince, fat content, COO and price influence choice. Carbon footprint, method of production and brand play a secondary role.	DCE	247	UK	Local, Domestic, Imported (EU country), Imported (non EU country)	Minced meat, plant-based mince
2	Aprile, M. C., Caputo, V., & Nayga Jr, R. M.	2012	Consumers' valuation of food quality labels: The case of the European geographic indication and organic farming labels	WTP the highest premium price for a product with a PDO label, followed by organic label, describing the product as extra-virgin and then a PGI label.	DCE	200	Italy (Naples)	PDO and PGI	Olive oil
3	Bernabéu, R., Díaz, M., & Olmeda, M.	2010	Origin vs organic in Manchego cheese: which is more important?	COO/ROO most important, PDO (regional) followed by domestic preferred.	CA	420	Spain (Madrid)	Castilla-La Mancha, domestic, foreign	Cheese
4	Bernabéu, R., Rabadán, A., El Orche, N. E., & Díaz, M.	2018	Influence of quality labels on the formation of preferences of lamb meat consumers. A Spanish case study	COO most important, domestic preferred. PGI adds value as well, but small.	CA	400	Spain (Madrid)	Domestic, imported	Lamb
5	Carzedda, M., Gallenti, G., Troiano, S., Cosmina, M., Marangon, F., de Luca, P., . . . Nassivera, F.	2021	Consumer preferences for origin and organic attributes of extra virgin olive oil: A choice experiment in the italian market	COO most important, domestic preferred, followed by EU origin. PGI to a lesser extent, prefer a leading brand. PDO certification decreased the utility.	DCE	1024	Italy (northern part)	Italy, EU, Non-EU	Olive oil
6	Davidson, K., Pan, M., Hu, W., & Poerwanto, D.	2012	Consumers' willingness to pay for aquaculture fish products vs. wild-caught seafood—A case study in Hawaii	COO is important for Salmon, but less than production method and processing. ROO (local) most important for Moi, but less important than production method and processing for Tilapia.	CA	566	USA (Hawaii)	Local, domestic, foreign	Seafood
7	Denver, S., & Jensen, J. D.	2014	Consumer preferences for organically and	COO/ROO most important, local followed by	DCE	637	Denmark	Local, domestic, other EU	Apples

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Product
			locally produced apples	domestic preferred.				country, outside EU	
8	Di Vita, G., Vecchio, R., Borrello, M., Zanchini, R., Maesano, G., Gulisano, G., . . . D'Amico, M.	2021	Oh my darling clementine: Heterogeneous preferences for sustainable citrus fruits	PGI adds value, but price and production method are more important to consumers.	CA	345	Italy		Clementines (citrus fruit)
9	Di Vita, G., Zanchini, R., Falcone, G., D'Amico, M., Brun, F., & Gulisano, G.	2021	Local, organic or protected? Detecting the role of different quality signals among Italian olive oil consumers through a hierarchical cluster analysis	Buying fromn local producer, and PGI label are important to consumers, but less than production method.	CA	709	Italy (Turin, Milan, the five provincial capitals of the Calabria region)	-	Olive oil
10	Dudinskaya, E. C., Naspetti, S., Arsenos, G., Caramelle-Holtz, E., Latvala, T., Martin-Collado, D., . . . Zanoli, R.	2021	European consumers' willingness to pay for red meat labelling attributes	COO most important, except for Turkey (halal more important) and UK ((not) halal and organic more important), domestic preferred. Domestic origin more important in Turkey and less important in the UK than in other countries. PGI/PDO important (but less) in Mediterranian countries.	DCE	2900	Finland, France, Greece, Italy, Spain, Turkey, UK	Domestic, EU, New Zeeland	Red meat (beef, lamb and goat)
11	Erraach, Y., Sayadi, S., Gómez, A. C., & Parra-López, C.	2014	Consumer-stated preferences towards Protected Designation of Origin (PDO) labels in a traditional olive-oil-producing country: The case of Spain	Price and PDO label affect consumers' preferences most. Differ between consumer segments.	CA	439	Spain (Andalusia)		Olive oil
12	Fonner, R., & Sylvia, G.	2015	Willingness to pay for multiple seafood labels in a niche market	Local and ecolabels yielding the largest WTP. Preferences for local are not affected by additional labels on the product.	DCE	378	USA (Portland, Oregon)	Local vs non-local	Seafood
13	Garavaglia, C., & Marcoz, E. M.	2014	Willingness to pay for P.D.O. certification: an empirical investigation	PDO certification most important, but about 50% more important in the region where the cheese is produced than in	CA	200	Italy (Aosta Valley, Milan)	-	Fontina cheese

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Product
				another region, where the cheese is very popular.					
14	Garavaglia, C., & Mariani, P.	2017	How Much Do Consumers Value Protected Designation of Origin Certifications? Estimates of willingness to Pay for PDO Dry-Cured Ham in Italy	Consumers who live in the area where certified ham is produced are WTP a lower premium than consumers living farther away. The closer they live to the area of production, the less they refer to certification.	CA	189	Italy (Monza, Parma)	Domestic vs local	dry-cured ham
15	Grebitus, C., Peschel, A. O., & Hughner, R. S.	2018	Voluntary food labeling: The additive effect of "free from" labels and region of origin	Preference for dates grown in Arizona over dates not labeled for ROO. Also, pesticide-free and GMO-free dates are preferred, with pesticide-free having a larger impact on choices.	DCE	1400	USA	California, Arizona, unknown	dates
16	Groot, E., & Albisu, L. M.	2020	The best late season peaches profile	Local origin most important and adding PDO certification doubled the consumer value.	DCE	316	Spain (Zaragoza)	Calanda, Spain	peaches
17	Hasanzade, V., Osburg, V. S., & Toporowski, W.	2018	Selecting decision-relevant ethical product attributes for grocery shopping	Origin more important than price and environmentally-friendly production method, less important than animal and worker welfare. Local preferred, followed by domestic. Differs between consumer segments.	DCE	249	Germany	Local, domestic, EU, unknown	Milk
18	Hempel, C., & Hamm, U.	2016	Local and/or organic: a study on consumer preferences for organic food and food from different origins	COO/ROO most important, local followed by domestic preferred. Differ between consumer segments	DCE	641	Germany (8 regions)	Local, domestic, neighboring country (Austria, Italy, Denmark, France), non-EU (Argentina, Kazakstan, New Zealand, Australia)	flour, apples, butter and steak (beef)
19	Hu, W., Batte, M. T., Woods,	2012	Consumer preferences for	WTP higher for locally produced,	CA	1884	USA (Kentucky,	Local vs neighboring	blackberry

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Product
	T., & Ernst, S.		local production and other value-added label claims for a processed food product	produced in their state or in a well-identified multi-state region.			Ohio)	state	jam
20	Kallas, Z., & Gil, J. M.	2012	Combining contingent valuation with the analytical hierarchy process to decompose the value of rabbit meat	COO/ROO more important than brand, less than purchasing format, local followed by domestic preferred.	DCE	112	Spain (Barcelona)	Local region, domestic, foreign	Rabbit
21	Kos Skubic, M., Erjavec, K., & Klopčič, M.	2018	Consumer preferences regarding national and EU quality labels for cheese, ham and honey: The case of Slovenia	COO most important for ham, price for cheese and honey, PDO and PGI labels least. the national PDO and PGI labels more desired than EU PDO and PGI labels.	DCE	650	Slovenia	Domestic, EU	cheese, ham and honey
22	Marcoz, E. M., Melewar, T. C., & Dennis, C.	2016	The Value of Region of Origin, Producer and Protected Designation of Origin Label for Visitors and Locals: The Case of Fontina Cheese in Italy	The origin of the product is more valued than PDO certification. The importance of PDO certification increases with the distance from the ROO. PDO is valued more by tourists than by locals.	CA	220	Italy (tourists an residents in Aosta, Milar and in Lugano, Switzerland	Aosta Valley, in the northern part of Italy	Fontina cheese
23	Mauracher, C., Tempesta, T., & Vecchiato, D.	2013	Consumer preferences regarding the introduction of new organic products. The case of the Mediterranean sea bass (Dicentrarchus labrax) in Italy	COO most important, domestic and especially local preferred. Varied: COO, size, production method, price. Different consumer segments.	DCE	366	Italy (Padua, Venice, Vicenza)	Local, domestic, EU	Mediterran ean sea bass
24	Mesías, F. J., Gaspar, P., Escribano, M., & Pulido, F.	2010	The role of protected designation of origin in consumer preference for iberian dry-cured ham in Spain	Price and type of ham most important, PDO of some value. 3 clusters: pro-PDO, average, and price-sensitive consumers.	CA	417	Spain (Extrem-adura)	Iberian, Serrano	Dry cured ham
25	Meyerding, S. G. H., Trajer, N., & Lehberger, M.	2019	What is local food? The case of consumer preferences for local food labeling of tomatoes in Germany	COO/ROO second most important, after price, local followed by domestic preferred. Differ between consumer	DCE	617	Germany	Local, domestic, Netherlands , Spain, Morocco	Tomatoes, ketchup

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Product
				segments					
26	Mugera, A., Burton, M., & Downsborough, E.	2017	Consumer Preference and Willingness to Pay for a Local Label Attribute in Western Australian Fresh and Processed Food Products	High awareness and preference for local foods, because the local attributes are associated with high-quality products.	DCE	333	Australia (Western)	Region, outside region	skinless chicken breast and fruit yogurt
27	Onozaka, Y., & McFadden, D. T.	2011	Does Local Labeling Complement or Compete with Other Sustainable Labels? A Conjoint Analysis of Direct and Joint Values for Fresh Produce Claim	COO/ROO most important, local followed by domestic preferred. Differ between consumer segments	DCE	1,052	USA	Local vs US state (Washington, California, Florida) vs other country (Chile, Canada, Mexico)	Gala apples and red round tomatoes
28	Panzone, L., Di Vita, G., Borla, S., & D'Amico, M.	2016	When Consumers and Products Come From the Same Place: Preferences and WTP for Geographical Indication Differ Across Regional Identity Groups	Locals are WTP more for goods originating from the region they identify with compared with a region associated with non-locals.	CA	1000	Italy (Sicily, Rome, Milan)	Local vs non-local	Olive oil
29	Pérez Y Pérez, L., Gracia, A., & Barreiro-Hurlé, J.	2020	Not seeing the forest for the trees: The impact of multiple labelling on consumer choices for olive oil	The valuation for PDO is almost double that of the valuation of the organic label. Negative interaction between the two labels.	DCE	540	Spain (Aragon)	Bajo Aragon	Olive oil
30	Peschel, A. O., Grebitus, C., Alemu, M. H., & Hughner, R. S.	2019	Personality traits and preferences for production method labeling – A latent class approach	Consumer preferences differ across segments, with personality traits.	DCE	1411	USA	California, Arizona, unknown	Dates
31	Resano, H., Sanjuán, A. I., & Albisu, L. M.	2012	Consumers' response to the EU Quality policy allowing for heterogeneous preferences	PDO attracts a segment of consumers, but the origin by itself is a more powerful signal of quality, and especially the ROO	CA	202	Spain (Zaragoza)	Spain, Teruel, Bayonne	Dry cured ham
32	Sahelices, A., Mesías, F. J., Escribano, M., Gaspar, P., & Elghannam, A.	2017	Are quality regulations displacing PDOs? A choice experiment study on Iberian meat products in Spain	PDOs are better known than the Quality Standards, but consumers are WTP only a small premium for Iberian products with a PDO.	DCE	250	Spain (Extremadura)	Domestic	dry-cured ham

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Product
33	Sanjuán-López, A. I., & Resano-Ezcaray, H.	2020	Labels for a Local Food Speciality Product: The Case of Saffron	A small marginal effect on consumer choices of adding PDO certification.	DCE	208	Spain (Zaragoza)	Local, domestic, Iran	Saffron
34	Schnettler, B., Sepúlveda, N., Bravo, S., Grunert, K. G., & Hueche, C.	2018	Consumer acceptance of a functional processed meat product made with different meat sources	The meat source more important than packaging, ROO, price and the functional ingredient claim. Two main segments.	CA	411	Chile (Southern)	Three different regions of Chile	three different meats (pork, turkey and lamb)
35	Scozzafava, G., Casini, L., & Contini, C.	2014	Analysis of Italian consumer preferences for beef	COO is most important, domestic preferred, especially when PGI certified or branded.	DCE	1500	Italy	Domestic, Tuscany, EU, Italy PGI, Mugello CAF	Beef
36	Winterstein, J., & Habisch, A.	2021	Organic and local food consumption: a matter of age? Empirical evidence from the German market	COO/ROO most important, local followed by domestic preferred. Differ between consumer segments	DCE	325	Germany	Home region, domestic, foreign	Apples, carrots

Note: DCE = Discrete Choice Experiment, CA = classical Conjoint Analysis.

Table 3. Empirical studies of consumer responses to and understanding of product origin information using experimental designs

#	Author(s)	Year	Title	Origin results	Method	Sampl	Coverag	Origin	Product
1	Lee, J. Y., Han, D. B., Nayga Jr, R. M., & Yoon, J. M.	2014	Assessing Korean consumers' valuation for domestic, Chinese, and US rice: Importance of country of origin and food miles information	Preference for domestic rice when COO information is provided.	AE	75	Korea (Seoul, Gyeonggi	domestic, China, USA	Rice
2	Peterson, H. H., Bernard, J. C., Fox, J. A., & Peterson, J. M.	2013	Japanese consumers' valuation of rice and pork from domestic, U.S., and other origins	In a first round based only on taste, U.S., Japanese, and third country products were valued similarly. In a second round with information only on product origin, bids for domestic products increased while bids for U.S. and other foreign products declined.	AE	244	Japan (Tokyo, Kyoto, Shizuoka)	Domestic, USA, Australia, Denmark	Rice, pork
3	Wu, S., Fooks, J. R., Messer, K. D., & Delaney, D.	2015	Consumer demand for local honey	Consumers' demand for honey varies significantly based on the geographic location of the honey's production. Greater demand for locally produced honey, especially when provided negative information about internationally produced honey.	AE	115	USA	Local, domestic, foreign	honey
4	Beiermann, J., Jones Ritten, C., Thunström, L., & Ehmke, M.	2017	Measuring the value of information – revealed preferences for country of origin information	80 percent positively value free origin information. The value of learning the origin increases as food safety benefits of local products are communicated.	BSE	448	USA (Laramie and Torrington Wyoming	Domestic v unknown	honey
5	Bernard, Y., Collange, V., Ingarao, A., & Zarrouk-Karoui, S.	2020	Products labeled as "made in domestic country": the brand matters	Intention to buy the product increases with the MIDC label, but not WTP. The effect on buying intention is stronger when the brand equity is low, consumer ethnocentrism is high, and/or national identity is strong.	BSE	293	France	Domestic, unknown	Pasta
6	Berry, C., Mukherjee, A., Burton, S., & Howlett, E.	2015	A COOL Effect: The Direct and Indirect Impact of Country-of-Origin Disclosures on Purchase Intentions for Retail Food Products	Consumers are more likely to purchase meat when it is identified as domestic. Mediating effects of perceived food safety, taste, and freshness. Effects of COO disclosure are attenuated by the	BSE	S. 1: 123, S. 2: 183	USA	Domestic, Mexico, unknown	beef/ chicken

#	Author(s)	Year	Title	Origin results	Method	Sampl	Coverag	Origin	Product
				presentation of objective information about the meat processing systems of competing countries.					
7	Blazquez-Resino, J. J., Gutierrez-Broncano, S., Jimenez-Estevez, P., & Perez-Jimenez, I. R.	2021	The effect of ethnocentrism on product evaluation and purchase intention: The case of extra virgin olive oil (EVOO)	COO labeling had a significant impact on quality assessment and buying intention, domestic being evaluated more favorably. Etnocentrism had a positive impact on the evaluation of domestic and negative on imported.	BSE	146	Spain	Domestic, Italy	Olive oil
8	Bonaiuto, F., De Dominicis, S., Ganucci Cancellieri, U., Crano, W. D., Ma, J., & Bonaiuto, M.	2021	Italian Food? Sounds Good! Made in Italy and Italian Sounding Effects on Food Products' Assessment by Consumers	Consumers hold more favorable perceptions to products generally associated with Italy when they signal Italian origin, primarily PDO Made in Italy and Made in Italy. Chinese and Americans also preferred products with Italian sounding names over generic foreign.	BSE	In Italy, 148 Italians and 56 non-Italians In China 100 Chinese and 91 non-Italian expats, in USA, 237	Italy, China, USA	Protected Designation of Origi Made i Italy, Mad in Italy Italian Sounding, and Generi Foreign	olive oil and pasta
9	Cui, A. P., Fitzgerald, M. P., & Donovan, K. R.	2014	Extended self: Implications for country-of-origin	COO effects increased with felt animosity toward the foreign country and ethnocentrism and decreased with acculturation. American consumers living abroad were more heavily influenced by COO effects.	BSE	140 Chinese in Chin 96 Chinese in USA, 153 America ns in USA, 114 America ns in China	USA, China (Beijing, Shanghai, Guangzho	USA, China	Milk
10	Dentoni, D., Tonsor, G. T., Calantone, R., & Peterson, H. C.	2014	Disentangling direct and indirect effects of credence labels	The negative effect on consumer attitudes of the Australian label is 86% direct vs 14% indirect, which means that US consumers do not make strong inferences to form their attitudes toward buying Australian beef.	BSE	460	USA	Australia	Beef
11	Gineikiene, J., Schlegelmilch, B. B., & Ruzeviciute, R.	2016	Our apples are healthier than your apples: Deciphering the healthiness bias for domestic and foreign products	Consumers choose domestic products because they perceive them as healthier and more natural. The effect holds across different samples and product categories	BSE	Pilot s: 94 Lithuan ans; S. 130 wh lived in 22 countri	Switzerla Germany, Lithuania, Italy, Liechtens n, N Zealand, Russia	Domestic v Spain, domestic vs Germany, domestic vs France	apples, tomatoes, bread, and yogurt

#	Author(s)	Year	Title	Origin results	Method	Sampl	Coverag	Origin	Product
				(apples, tomatoes, bread, and yogurt, but vanishes when products are presented as posing health risks or introduced with a dual identity (i.e., both foreign and domestic).		; S. 2: 201 Lithuan ans; S. 209 Lithuan ans; S. 127 Lithuan ans			
12	Klain, T. J., Lusk, J. L., Tonsor, G. T., & Schroeder, T. C.	2014	An experimental approach to valuing information	The value-of-origin information contained in U.S. federally mandated country of origin labels for beef and pork is 36% lower using the new direct elicitation compared to the conventional approach. The VOI is substantively influenced by ethnocentrism and meat consumption frequency.	BSE	526	USA (Da and S Antonio, Texas)	Domestic	beef and pork
13	Luceri, B., Latusi, S., & Zerbini, C.	2016	Product versus region of origin: which wins in consumer persuasion?	A significant main effect of the region of origin presentation on brand attitude and purchase intention. Communicating the region of origin through pictorial cues leads to more favourable responses. Pictorial-textual cues leads to more positive responses than communication based just on pictorial cues.	BSE	600	Italy (north)	Trentino an Valtellina, Italy	apples and bresaola
14	Merle, A., Herault-Fournier, C., & Werle, C. O. C.	2016	The effects of indication of local geographical origin on food perceptions	Cheese (Study 1) and apples (Study 2) are perceived as healthier, better tasting, and more respectful of the environment and the work of farmers when they are presented as local foods (as opposed to national or from another "region"). Purchase intention is also higher.	BSE	S. 1: 501, S. 2: 131	France (Cotentin, Haute-Lo Loire)	Domestic, local	Cheese, apples
15	Shi, J., Visschers, V. H. M., Bumann, N., & Siegrist, M.	2018	Consumers' climate-impact estimations of different food products	Participants were able to correctly order foods' climate impact based on the type of food, its country of origin, its transportation mode and its season, whereas they were less knowledgeable of the extent to which the food products differed in their climate impact.	BSE	226	Switzerla (German-speaking)	Domestic, Great Britain, Brazil, Per Netherland or Morocco.	chicken, pork, beef, meat, cheese, lentils, asparag us, bell peppers

#	Author(s)	Year	Title	Origin results	Method	Sampl	Coverag	Origin	Product
				People tended to underestimate the climate impact of organic and national produced meat products and of vegetarian protein-rich products.					
16	Tonsor, G. T., Schroeder, T. C., & Lusk, J. L.	2013	Consumer valuation of alternative meat origin labels	Consumers prefer meat products carrying origin information to unlabelled alternatives. Consumers are largely unaware of origin labelling laws and are indifferent to an important aspect of the implementation of current mandatory country of origin information rules in the US. In particular, consumers value meat products labelled 'Product of North America' approximately the same as 'Product of United States'.	BSE	2001	USA	Domestic, North America, USA Canad or Mexico	beef steak, pork chop and chicken breast meat
17	Arfini, F., & Mancini, M. C.	2015	The effect of information and co-branding strategies on consumers willingness to pay (WTP) for Protected Designation of Origin (PDO) products: The case of pre-sliced Parma Ham	The process of value adding and WTP is positively influenced by brands guaranteeing the link with the territory through European quality schemes or association or producer brands rather than through private labels.	CV	185	Parma, It	Parma, Italy	Ham

Note: AE = Auction Experiment, BSE = Between Subjects Experiment, CV = Contingent Valuation.

Table 4. Empirical studies of consumer responses to and understanding of product origin information using surveys or interviews

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Label	Product
1	Bryła, P.	2017	The perception of EU quality signs for origin and organic food products among Polish consumers	The frequency of origin and organic food purchase increases with the perceived importance of quality signs. A strong correlation between the perception of European quality signs and the attitude toward origin and organic food. The perception of European quality signs is positively related to the WTP for origin and organic food.	OS	1000	Poland	-	PDO, PGI, TSG	Food
2	Bryła, P.	2015	The role of appeals to tradition in origin food marketing. A survey among Polish consumers	The perceived authenticity of origin products depends mostly on natural taste, product quality, sale in the region of origin and labelling. The most important determinants of origin food selection include: traditional recipe, taste, and product uniqueness.	OS	1000	Poland	-	PGI	Food
3	Lewis, K. E., & Grebitus, C.	2016	Why U.S. Consumers Support Country of Origin Labeling: Examining the Impact of Ethnocentrism and Food Safety	Consumers' support for COOL for sugar and for sugar in soft drinks increases with ethnocentrism and pessimism about food safety.	OS	566	USA	-	COO	Sugar
4	Spognardi, S., Vistocco, D., Cappelli, L., & Papetti, P.	2021	Impact of organic and "protected designation of origin" labels in the perception of olive oil sensory quality	People prefer local olive oils and are positively influenced by PDO/organic certification, while price is not a decisive factor.	OS	160	Italy (central-southern)	Domestic	PDO	Olive oil
5	Wang, H. H., Zhang, X., Ortega, D. L., & Olynk Widmar, N. J.	2013	Information on food safety, consumer preference and behavior: The case of seafood in the US	Women, older people and the less educated care more about COO labels than others. Consumers with higher consumption care more about food safety labels. They trust Canada much more than Indonesia, Ecuador, Thailand, China and Viet Nam. Quality certification labels improve the trust on Indonesia and Ecuador but not much on the other countries.	OS	1004	USA	Canada, Indonesia Ecuador, Thailand, China, VietNam	COO	Seafood
6	Adrián, R., Laura, M.	2021	Perceptions of geographical	The preference for GI fruit is related to the	POS	582	Spain (Alicante,	Alicante, Callosa d'	PGI	Fruits. Cherries.

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Label	Product
	C., Margarita, B., & Rodolfo, B.		indication labels as quality indicators inside and outside the labels' area of influence: The case of spring fruits	importance attributed to the origin. The association of different attributes with the GI fruit label is product dependent. The closer the consumer is to the GI area of influence, the more attributes they associate with these labels.			Murcia, Valencia)	Sarriá (Spain)		Loquats
7	Aichner, T., Forza, C., & Trentin, A.	2017	The country-of-origin lie: impact of foreign branding on customers' willingness to buy and willingness to pay when the product's actual origin is disclosed	Foreign branding has a positive impact on the brand's performance. However, when customers find out that they were misled with regard to the origin of the product, their WTB and their WTP decrease.	POS	200	Germany (Berlin)	USA, domestic	COO	ice crean tea
8	Bimbo, F., Roselli, L., Carlucci, D., & de Gennaro, B. C.	2020	Consumer misuse of country-of-origin label: Insights from the Italian extra-virgin olive oil market	Compared to a product labeled as blend of European EVOOs, domestic origin can command a premium of +35%, while a a non-European origin a discount of −10.8%. 20% is unable to correctly identify the origin of the EVOO purchased, mostly consumers who report that they had purchased Italian EVOO, while they had actually purchased a blend of European EVOOs. Female and more highly educated consumers are more likely to correctly identify the origin.	POS	982	Italy	Domestic EU, Non-EU	COO	Olive oil
9	Di Vita, G., Cavallo, C., Del Giudice, T., Pergamo, R., Cicia, G., & D'Amico, M.	2021	Expanding the PGI certification scheme as a marketing tool in the olive oil industry: a perspective on consumer behavior	Consumers would accept a new, regional PGI for EVOO product, expecting attributes such as: green color, not filtered, not with a sweet taste and with a known brand.	POS	251	Italy (Sicily)	Own region	PGI	Olive oil
10	Grebitus, C., Menapace, L., & Bruhn, M.	2011	Consumers' use of seals of approval and origin information: evidence from the German pork market	Consumers' use of seals of approval and origin information varies with the shopper's usage goals, time pressure, level of involvement, perceived risk and quality consciousness, prior knowledge, sociodemographic characteristics, and with the shopping	POS	752	Germany (Northern)	-	COO, R	Pork

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Label	Product
				environment.						
11	Likoudis, Z., Sdrali, D., Costarelli, V., & Apostolopoulos, C.	2016	Consumers' intention to buy protected designation of origin and protected geographical indication foodstuffs: The case of Greece	50% were willing to buy PDO/PGI products, which is related to: origin, health claims and label of a product, as well as sustainable consumer behaviour.	POS	615	Greece (Attica)	-	PDO, P(	Food
12	Kemp, K., Insch, A., Holdsworth, D. K., & Knight, J. G.	2010	Food miles: Do UK consumers actually care?	Intercept surveys in four supermarkets found only 5.6% mentioned country-of-origin as one of the reasons for choosing a fresh food item they had just purchased. Only 3.6% had consciously chosen domestic products because such produce was "less harmful for the environment". In surveys in the street, 21.5% indicated that "food miles" or "the long distance it travels" would stop them buying New Zealand products.	POS	501	UK	-	Food m	Food
13	Alphonce, R., Temu, A., & Almli, V. L.	2015	European consumer preference for African dried fruits	Consumer preferences for a dried fruit are affected by its typical aroma intensity and consumers are WTP a premium for organic and fair-trade products. Two consumer segments expressing distinct COO preferences for tropical dried fruits and a third group with no country preferences are revealed.	STT	96	Norway	Tanzania	COO	Dried fru
14	Ariyawardana, A., Ganegodage, K., & Mortlock, M. Y.	2017	Consumers' trust in vegetable supply chain members and their behavioural responses: A study based in Queensland, Australia	Domestic producers are more trustworthy than foreign in terms of producing safer vegetables. Gender, household size, years of stay in Australia, trust perceptions, and country of origin concerns had a significant influence on the respondents' intentions to pay a premium price for domestically produced vegetables.	S	854	Australia (south-west Brisbane)	Domestic imported	COO	Vegetabl
15	Berg, N., & Preston, K. L.	2017	Willingness to pay for local food?: Consumer preferences and shopping behavior at	Some consumers are unwilling to purchase non-local food at any price. Others are willing to substitute non-local for local food when	POS	114	New Zealand	Local, domestic, USA, China	COO, R(	Food

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Label	Product
			Otago Farmers Market	priced appropriately. The mean consumer's WTP premium for "local" ranges from 2.1 to 8.0% and is positively associated with age and income.						
16	Bryła, P.	2019	Regional ethnocentrism on the food market as a pattern of sustainable consumption	Eight significant predictors of regional ethnocentrism w.r.t. food were identified: brand and retailer trust; the importance of quality signs in regional food purchases; opinion that insufficient marketing constitutes an important barrier to the development of the regional food market; buying in shops owned by producers, rather than in big stores; frequency of purchasing regional products as a tourist; and national ethnocentrism on the regional food market.	OS	1000	Poland	Own region	ROO, Lo	Food
17	Cappelli, L., D'Ascenzo, F., Arezzo, M. F., Ruggieri, R., & Gorelova, I.	2020	The willingness to pay in the food sector. Testing the hypothesis of consumer preferences for some made in Italy products	Finds a WTP for "Made in Italy" products, correlated with the level of education.	S	410	Italy (Rome)	Italy	COO	Food
18	Cappelli, L., D'Ascenzo, F., Natale, L., Rossetti, F., Ruggieri, R., & Vistocco, D.	2017	Are consumers willing to pay more for a "made in" product? An empirical investigation on "made in Italy"	"Made in Italy" is a well established conceptual category in the minds of consumers; and there is a WTP a significant premium price for "Made in Italy" in the three sectors analyzed (food, fashion and furnishings), most commonly at the order of 10-30%.	POS	660	Italy (Rome & Cassino)	Italy	COO	Food
19	Chousou, C., Tsakiridou, E., & Mattas, K.	2018	Valuing Consumer Perceptions of Olive Oil Authenticity	Consumers attached great importance to taste, acidity, country and region of origin, olive variety, color, organic production, and regional certification in the evaluation of olive oil authenticity	S	603	Greece (Thessaloniki)	-	COO	Food
20	Clemente-Villalba, J., Cano-Lamadrid, M., Issa-Issa, H., Hurtado,	2021	Comparison on sensory profile, volatile composition and consumer's acceptance for PDO or non-PDO	There was not a clear difference among protected and non-protected tigernut milks respect to volatile compounds but there were differences in the	S	200	Spain	Valencia, Spain	PDO	Tigernut milk

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Label	Product
	P., Hernández, F., Carbonell-Barrachina, Á. A., & López-Lluch, D.		tigernut (Cyperus esculentus L.) milk	degree of consumer preference. Penalty analysis found that 80% of non-PDO samples needed improvements, compared to 40% for PDO samples. A lot of participants drink horchata, less people know the PDO Chufa de Valencia and even less people consume the protected product consciously.						
21	de Graaf, S., Van Loo, E. J., Bijttebier, J., Vanhonacker, F., Lauwers, L., Tuyttens, F. A. M., & Verbeke, W.	2016	Determinants of consumer intention to purchase animal-friendly milk	Local origin was more important than the COO, but less important than all included intrinsic and most ethical attributes.	OS	787	Belgium (Flanders)	-	COO, lo	Milk
22	Di Vita, G., Pippinato, L., Blanc, S., Zanchini, R., Mosso, A., & Brun, F.	2021	Understanding the Role of Purchasing Predictors in the Consumer's Preferences for PDO Labelled Honey	Consumers who prefer PDO honey also associate this label with environmental sustainability and organic production. Among the socio-demographic characteristics, only gender had a significant effect on consumer attitudes toward the PDO label.	S	652	Italy (Northern)	-	PDO	honey
23	Fontes, M. A., Banović, M., Cardoso Lemos, J. P., & Barreira, M. M.	2012	PDO Beef Recognition: How Can We Improve It?	Low level of PDO label recognition	S	780	Portugal	-	PDO	Beef
24	Goudis, A., & Skuras, D.	2021	Consumers' awareness of the EU's protected designations of origin logo	The "logo aware" consumer is a small minority and distinctively different from the average European consumer.	OS	≈4*27000	EU	-	PDO, P(	-
25	Guziy, S., Šedík, P., & Horská, E.	2017	Comparative study of honey consumption in Slovakia and Russia	The most important factors for Slovak consumers was the country of origin (2.59) followed by taste (3.51), type (3.97) and price (4.18). For Russian consumers the most important factors	OS	Slovakia: 316, Russia: 309	Slovakia, Russia	-	COO	honey

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Label	Product
				werethe type (2.97), design of packaging (3.13), price (3.28) and taste (3.61) while the least important factor was the country of origin (6.50).						
26	Holdershaw, J., & Konopka, R.	2018	Consumer Knowledge of Country of Origin of Fresh Food at Point of Purchase	Shoppers were certain of COO for 38% of purchases and of price for 53% of purchases. Overall, knowledge of COO for fresh foods was greater than previously reported for durables and processed foods. However, extent of knowledge varied by food category, and more noticeably for food items within categories.	S	100	New Zealand	-	COO	fresh me fruits an vegetabl
27	Insch, A., & Jackson, E.	2014	Consumer understanding and use of country-of-origin in food choice	Only 3.5% mentioned CoO as one of the factors influencing their food buying decision. When prompted, 61% said they knew the CoO of the selected food product. 90% of them were correct. 62% stated that they look at CoO labels when making food purchase decisions. Only one third correctly understood the difference between the "Made in" and "Product of" labels.	POS	402	New Zealand	-	COO, "M in New Zealand and "Pr of New Zealand labels	-
28	Jang, E. H., Lim, S. T., & Kim, S. S.	2012	Comparison of physicochemical characteristics and consumer perception of rice samples with different countries of origin and prices	In an informed test, PI was affected by price and CO, while WTP was affected mostly by price. The PI decreased with the price provided while the WTP increased. In a blind test, consumers evaluated PI and WTP according to sensory liking. The PI was higher in the informed test than in the blind test for all domestic product samples.	STT	158	Korea	Domestic Japan, US	COO	Rice
29	Kim, M. J., Kwak, H. S., Jung, H. Y., Lee, M. J., Kim, O. W., Kim, H., & Kim, S. S.	2017	Consumer perception of bread depending on wheat origin in relation to physicochemical characteristics of wheat flour	Consumers' WTP for breads prepared with domestic wheat flour increased significantly when informed about the origins.	STT	108	Korea	Domestic USA, Australia, Canada	COO	Bread
30	Kos Skubic, M.,	2019	Consumer awareness of	The presence of a PDO label on a food package	S	333	Slovenia	Regions	PDO	

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Label	Product
	Erjavec, K., & Klopčič, M.		PDO-labelled food in Slovenia	is not too important for consumers, who tend to pay greater attention to the taste, healthiness, and ingredients. There is low awareness of PDO-labelled products. Interests and quality perceptions played a significant role in shaping consumers' use of the PDO label.						
31	Lesáková, D.	2016	Ethnocentric behaviour in the Slovak population: Do Slovaks purchase Slovak dairy products?	Consumer ethnocentricity is a significant factor that should be taken into account in creating promotional campaigns for dairy products.	S	265	Slovakia	Domestic foreign	COO	Dairy
32	Lorenz, B. A., Hartmann, M., & Simons, J.	2015	Impacts from region-of-origin labeling on consumer product perception and purchasing intention - Causal relationships in a TPB based model	Identification with and authenticity of a region both have a significant influence on the personal norms/affective attitudes and on cognitive attitudes that consumers hold towards regional pork.	S	483	Germany (North-Rhine Westphalia)	North-Rhi Westphal	ROO	Pork
33	Mäkiniemi, J. P., Pirttilä-Backman, A. M., & Pieri, M.	2011	Ethical and unethical food. Social representations among Finnish, Danish and Italian students	Fourteen categories reflect the content and nature of ethical thinking with respect to food, including local/global. The most prevalent differences between the countries concerned the role of health, country of origin and the descriptions.	S	Finland: 162, Denmark: 111, Italy: 130	Finland, Denmark and Italy	Domestic foreign	COO	Food
34	Otter, V., Prechtel, B., & Theuvsen, L.	2018	Country of Origin Effect for Food Products from Developing and Transition Countries: A PLS Analysis of German Consumers' Perception	PLS estimations show a strong COO effect in German consumers' quality perception of chocolate and identify characteristics of the target consumer group. Protecting geographical indications may offer a potential for products from developing and transition countries to differentiate in the German market.	OS	205	Germany	Ecuador	COO	Chocolat
35	Strašek, R.	2010	Empirical testing of correlations between the effects of country-of-origin and consumer	COO affected the brand perception and evaluation of other properties of chicken meat. A positive assessment of Slovenian chicken meat and the impact of chicken meat	STT	500	Slovenia	Domestic Germany, Italy	COO	Chicken

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Label	Product
			perceptions	origin in the process of its evaluation were evident.						
36	Rabadán, A., Zamora, A., Díaz, M., & Bernabéu, R.	2021	Consumer preferences associated with the protected geographical indication label in the marketing of lamb meat	Significant association in consumers' minds between the origin of lamb meat and the protected geographical indication (PGI). the less ethnocentric consumers, who have a higher income and higher level of education, show a greater preference for the breed of lamb, while the more ethnocentric consumers present a greater preference for brand name.	POS	400	Spain (Madrid)	-	PGI	lamb
37	Sepúlveda , W. S., Maza, M. T., & Mantecón, A. R.	2010	Factors associated with the purchase of designation of origin lamb meat	Buyers who are less loyal to the label pay less attention to the origin of the meat when forming quality expectations at the time of purchas. The buyers that are very loyal to the quality label associate this label with a product that offers greater guarantees and is healthier.	S	371	Spain (Zaragoza)	-	PGI	lamb
38	Szakaly, Z. Soos, M. Szabo, S. Szent, V.	2016	Role of labels referring to quality and country of origin in food consumers' decisions	Information about quality (rating its importance at 4.04), but also information about origin (3.94) and production (3.89) was important. Recall of COO and quality labels limited: 35.5% could not name any such labels. The best known label was "Hungarian Product" (30.5%), recognized by up to 90%. Many were ready to pay premium for this label (31.7%).	S	1000	Hungary	-	COO	-
39	Tedford, J. L., Rodas-González, A., Garmyn, A. J., Brooks, J. C., Johnson, B. J., Starkey, J. D., . . . Miller, M. F.	2014	U. S. consumer perceptions of U. S. and Canadian beef quality grades	Consumers' opinions did not differ when comparing equivalent grades, but they rated Choice and Canadian AAA more palatable than Select and Canadian AA for all sensory attributes ($P < 0.05$). For Canadian beef, quality and safety were rated as "good" to "excellent". COO labeling was a minimal factor influencing beef steak purchasing decisions.	STT	642	USA (Baltimore, MD; Phoeni AZ; and Lubbock, TX	Domestic Canada	COO	beef strip loin stea
40	Thøgersen , J.,	2021	Country image and consumer	The attitude towards buying an imported food	OS	≈ 1000/c	Germany, France,	Denmark	COO	Milk, porl

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Label	Product
	Ascheman n-Witzel, J., & Pedersen, S.		evaluation of imported products: test of a hierarchical model in four countries	product is strongly influenced by the exporting country's image, both in general and the image of food production in the country. If the country is close by and familiar, all image effects are mediated through the image of the country's food production.		ountry	China, Thailand			chops
41	van Houcke, J., Altintzoglo u, T., Linssen, J., & Luten, J.	2018	Quality perception, purchase intention, and the impact of information on the evaluation of refined Pacific cupped oysters (Crassostrea gigas) by Dutch consumers	Taste, texture, and odor are the most important oyster quality characteristics. The willingness to buy and pay is influenced by COO, cultivation area, and flavor profile.	STT	S. 1: 85, S. 2: 56, S. 3: 72	Netherlands	Domestic Ireland	COO	Oyster
42	Vanhonac ker, F., Tuyttens, F. A. M., & Verbeke, W.	2016	Belgian citizens' and broiler producers' perceptions of broiler chicken welfare in Belgium versus Brazil	COO had a strong influence on the perception of both broiler production and broiler meat. Belgian citizens considered nearly all aspects related to broiler production and broiler meat to be superior for chicken produced in Belgium compared to Brazil.	OS	541	Belgium (Flanders)	Domestic Brazil	COO	Chicken
43	Vecchio, R., & Annunziat a, A.	2011	The role of PDO/PGI labelling in Italian consumers' food choices	Cluster analysis showed that the PDO and PGI logos are commonly the main purchasing motivation for shoppers with an excellent knowledge of the EU certification labels, while consumers with no knowledge of the labels tend to base their decision to buy on lower price, better appearance and Italian origin.	S	400	Italy (Bologna, Rome, Naples)	-	PDO, P(	Asiago cheese a Mortadel Bologna cured me (pork)
44	Gao, Z., Wong, S. S., House, L. A., & Spreen, T. H.	2014	French consumer perception, preference of, and willingness to pay for fresh fruit based on country of origin	Fruit from China was perceived as the lowest quality, the least safe, and the cheapest among the fruit from various countries. Highest stated WTP for domestic fresh fruit, followed by fruit from Spain. WTP for COO varies by type of fruit.	S	539	France	Domestic Spain, the US, Israel Brazil, Turkey, ar China	COO	fresh citı fruit (mandari oranges, and grapefru
45	Waehning, N., & Filieri, R.	2021	Consumer motives for buying regional	The newly built Regional Scale (REGIOSCALE) has a more substantial	OS	519	Germany	Local regi	ROO	Food products

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Label	Product
	(). . : 10.1007/s11002-021-09572-w.		products: the REGIOSCALE	explanatory power of consumer decision to buy regional products than the CETSCALE.						
46	Aizaki, H., & Sato, K.	2020	Consumer preferences for three dimensions of country of origin of a processed food product	Domestic preferred, followed by developed country, China last. The average utility of the country of growing is the highest among those of the three COO-related attributes.	OS, BWS	416	Japan	Domestic Australia, Thailand and China	COO, country growing country process country the compar	vegetabl fruit juic
47	Paparella, A., Stanco, M., & Lerro, M.	2020	Do product attributes affect consumers' preferences? An explorative analysis in the Italian dairy sector	COO is most important among the included attributes.	OS, BWS	202	Italy	-	COO	Milk
48	Dekhili, S., Sirieix, L., & Cohen, E.	2011	How consumers choose olive oil: The importance of origin cues	COO more important than ROO in France and the reverse in Tunesia. Several attributes more important. Taste most important.	BWS	Tunisia: 122, France: 123	Tunisia, France	-	COO, ROO	Olive oil
49	Klöckner, H., Langen, N., & Hartmann, M.	2013	COO labeling as a tool for pepper differentiation in Germany: Insights into the taste perception of organic food shoppers	Consumers are able to experience taste differences due to COO though only a minority expects those taste differences. As a result consumers are not WTP a significant higher price for COO labeled pepper.	POS; TT	100	Germany (Bonn)	-	COO	Black pepper
50	Pedersen, S., Ascheman n-Witzel, J., & Thøgersen , J.	2018	Consumers' evaluation of imported organic food products: The role of geographical distance	Preference for domestic and for geographically close countries as origin for imported organic products. The main reason is the perceived negative environmental impact of transportation, followed by trust in the country and general country image.	POS; FGs	255; 6 FGs	Germany (Hamburg, Münster, and Munich)	-	COO	Organic food
51	Profeta, A., Balling, R., & Roosen, J.	2012	The relevance of origin information at the point of sale	Origin play a role in the choice for approximately one-fifth of the participants. Participants are WTP an additional € 2.00-€ 2.60 per crate of beer if such crates are labelled with the GI Bavarian beer designation.	POS	514	Germany (Berlin, Braunschwe g, Hannover Osnabrück)	Bavarian, Hessen	ROO	packaged meat, da products and beer
52	Lawley, M., Birch, D., & Hamblin,	2012	An exploratory study into the role and interplay of	Consumers used extrinsic cues, particularly COO, as surrogate indicators of quality.	FGs	26 in 4 FGs	Australia	Domestic foreign	COO	Barramu fish

#	Author(s)	Year	Title	Origin results	Method	Sample	Coverage	Origin	Label	Product
	D.		intrinsic and extrinsic cues in Australian consumers' evaluations of fish							

Note: S = Survey, OS = Online survey, TT = Taste test, POS = Point-of-sale survey or interviews, BWS = Best-worst scaling, FGs = Focus groups COO = Country of origin, ROO = Regions of origin, PDO = Protected Designation of Origin, PGI = Protected Geographical Indication, TSG = Traditional Specialty Guaranteed.

Table 5. Grey literature documenting studies of consumer responses to and understanding of product origin information using surveys, observations, focus groups or interviews

#	Author(s)	Contracting authority	Year	Title	Origin results	Method	Sample	Coverage	Product
1	Davies, P., & MacPherson, K.	Food Standards Agency	2010	Country of Origin Labelling: A Synthesis of Research	S: 11% of respondents spontaneously reported they look for COO labels when purchasing food for the first time; 52% when prompted in a separate question. Price and use-by/best-before information was considered more important than COO. Of the 52% of respondents who looked for COO labels, 34% reported to do this to buy British/support British farmers, 17% due to food miles. 12% of respondents accurately understood COO labelling. Similar misunderstandings were also reported in the FGs and OBS. FGs indicated that COOL is also considered to provide information on environmental issues (e.g. awareness of food miles) and freshness of products. COO labelling also influences authenticity and genuineness perceptions of food products (also OBS). Other information on labels (brand, sell/use-by dates, price etc) were considered more likely to influence purchasing. OBS suggested that origin may convey quality implications for consumers. Authenticity, safety, animal welfare, and food miles were reasons for using origin information on food products.	S; FG; OBS (incl. eye-tracking)	S: 1,601; FG: 6x10 ppn; OBS: 15+36 +15+2 0+6	UK	Food
2	BEUC	-	2013	Where does my food come from? BEUC consumer survey on origin labelling on food	The majority of consumers (~70%) report that they find origin information important when buying food. Indicated reasons for the considered importance differ between countries: e.g. the majority of French and Polish consumers use it to assess food safety and quality, Austrians to assess quality and environmental impact. Only a minority (1-3%) of consumers say they wish to support the local economy/farming. Consumers indicate that origin information should (at least) be at the country level for it to be considered meaningful information.	OS	4,168 (AT:1,037; FR: 1,045; P:1,057; SE: 1,029) (July 2012)	Austria, France, Poland, Sweden	Food

3	Food Chain Evaluation Consortium (FCEC); Civic Consulting, Agra CEAS Consulting, Van Dijk Management Consultants,Arcadia International	European Commission (DG Health and Consumers)	2013	Study on the application of rules on voluntary origin labelling of foods and on the mandatory indication of country of origin or place of provenance of meat used as an ingredient (Annex D)	FCEC consumer survey: For meat preparations, meat products, and multi-ingredient food with meat ingredients (MIFM), consumers find it necessary to receive origin information. In all three categories, highest necessity was given to the "country where meat was produced (uncooked meat: 54.2%, cooked meat: 46.8%, MIFM: 45.5%). Interest in origin information differed significantly by country. The majority of respondents wanted the highest possible level of detail on origin information. The WTP more than base price is limited.	OS (Feb 2013)	3,000 (200 ppn x 15 countries)	Germany, France, UK, Italy, Spain, Poland, Romania, Greece, Belgium, Czech Republic, Hungary, Sweden, Austria, Bulgaria, Lithuania	Meat products
4	Carlsson, C., Johansson, H., Lagerkvist, C. J., Sundström, K., & Wilhelmsson, F.	AgriFood Economics Centre, Standardisation Research Centre (Lund University)	2014	Origin labelling of food – costs and benefits of new EU legislation for Sweden	The ranking study showed that the origin of food is important consumers, but its importance varies across products. Consumers' wtp for origin information was relatively low (SEK 0.12-2.5) depending on product and type of origin.	FGs, OS, POS	FGs: 31; OS: 1,500 ; POS: 750	Sweden	Food
5	Hermanowski, R., Liebl, B., Wirz, A., Klingmann, P., Mäder, R., Busch, C., Gider, D., Hamm, U., Janssen, M., Kilian, D., & Korn, A.	Bundesministerium für Ernährung und Landwirtschaft. Research Institute of Organic Agriculture (FiBL)	2014	Regional window (Gemeinsamer Abschlussbericht zu Projekten des Regionalfensters)	Roughly 75% of respondents indicated to always prefer regional products over others (categories "fully agree" and "agree" combined). 70.4% of respondents indicated they were willing to pay more for regional products. The majority of respondents indicated shorter transports (95.3%) and supporting the local economy (89.8%) as reasons for preferring local products. Roughly 62% of respondents associated local products with environmental friendliness and with superior freshness.	II (2013)	2,019 interviews	Germany (5 different regions, 20 different supermarkets)	Food
6	Zühlsdorf, A., & Spiller, A.	Verbraucherzentrale Bundesverbandes e.V.	2014	Herkunftsangaben auf Lebensmittelverpackungen. Ergebnischarts zum 2. Zwischenbericht des Projekts	72.2% of respondents support the proposal for mandatory origin labelling. 75.3% state that origin should be stated on each product. Origin information is seen as especially relevant for meat (products), fresh fruit and vegetables, dairy, and eggs.	S	750	Germany	Food

				„Repräsentative Verbraucherbefragungen im Rahmen des Projektes ‚Lebensmittelklarheit 2.0' "					
7	Food Chain Evaluation Consortium (FCEC);Civic Consulting, Agra CEAS Consulting, Arcadia International, Van Dijk Management Consultants	European Commission (DG Health and Consumers)	2014	Study on the mandatory indication of country of origin or place of provenance of unprocessed foods, single ingredient products and ingredients that represent more than 50% of a food	Out of 10 aspects, consumers report that origin of food is the 4th most important aspect influencing purchase decisions. The main reasons reported are higher trust in own country/local products and food quality reassurance. 41.6% of respondents indicate that origin is "very" and 38.2% that it is "fairly important". Origin labelling is considered important by the majority of respondents for all products (63.7%-82.5%). Out of 11 food groups, origin information was considered most important for pre-packed fresh cut salads, bread, fruit juices, frozen vegetables. For 8/11 of the presented products, more than 25% of the respondents reported no interest in the products' origin. Substantial country differences are reported with highest interest in origin information by Italian and Austrian consumers. WTP for origin information varies by product and level of detail. WTP suggest that consumers derive most utility from origin information at country level.	OS	5,370 (350-390 respondents x 15 countries)	Germany, France, UK, Italy, Spain, Poland, Romania, Belgium, Greece, Czech Republic, Hungary, Sweden, Austria, Bulgaria, Lithuania	Food
8	Johannson, A., & Skog, M.	Jordbruksverket (Swedish board of Agriculture)	2015	ATTITYD UNDERSÖKNING. Svenskt vattenbruk och vattenbruksprodukter 2014	About 1/3 of respondents were unaware of the origin of the fish and aquaculture products they consume. Almost 20% indicated that the consumed products most often came from other countries, compared to 8% who said they most commonly consumed Swedish products. Whereas 73% of the respondents indicated to prefer to eat fish and aquaculture products of Swedish origin, only 31% reported to actually eat fish and aquaculture products from mostly Swedish origin. Quality was the most important consideration for purchase choices, followed	TS (Nov/Dec 2014)	1002 (94% answered consumption habit questions)	Sweden	Fish and Aquaculture products

					by freshness and price.				
9	infas	Bundesministerium für Ernährung und Landwirtschaft (BMEL)	2019	Ökobarometer 2019. Umfrage zum Konsum von Biolebensmitteln	86% of respondents find regionality of food products a (very) important criteria when buying a product. 96% of respondents indicated that they find regional products/supporting regional producers an important reason for buying organic food products.	TS	1,005	Germany	Food
10	Taloustutkimus Oy	Finnish Ministry of Agriculture and Forestry	2019	Report on the application of the decree of the Ministry of Agriculture and Forestry on indicating the country of Origin of certain Foods	Meat: 89% of the respondents indicated that they find origin information "very important" (67%) or "somewhat important" for meat products. The same percentage of respondents finds origin indicated as "EU country" insufficient origin information. Dairy products: 87% of the respondents indicated that they find origin information "very important" (62%) or "somewhat important" for dairy products. The same percentage of respondents finds "EU country" insufficient origin information.	OS (09/2018)	1,043	Finland	Meat and dairy products
11	Aide à la Décision Economique (ADE)	French Ministry of Agriculture and Food	2019	Evaluation de l'application du décret n°2016-1137 relatif à l'indication de l'origine du lait et du lait et des viandes utilisés en tant qu'ingrédients	The survey indicates that while most (65-85%, depending on the product) consumers claim they often read information on product packaging, only 22% noticed changes after the decree on origin information was implemented. French consumers indicate a clear preference (+20-44%) for products made locally, or in a specific French region, or in France. The less specific the geographical indication is (e.g., EU vs. France, or even EU vs. a specific EU Country) the less the consumer claims to be willing to buy a given product.	S + II/OBS	S: 1,510 II/OBS: 632	France	Milk, and milk and meat as ingredients

12	Forsa	Verbraucherzentrale Bundesverband	2020	Verbraucherhermeinungen zu Nachhaltigkeit in der Lebensmittelproduktion	92% of respondents find it very/quite important that food products are regional. 85% of respondents believe that buying regional products contributes to climate protection. 40% indicate that they find it quite/very difficult to identify regional food products.	TS	1,000	Germany	Food
13	Agra Ceas Consulting SA/ IHS Markit, Areté Srl	European Commission (DG AGRI)	2020	Evaluation support study on mandatory indication of country of origin labelling for certain meats	Meat (consumer survey): 5% of respondents correctly understand the three origin terms "reared", "slaughtered", "origin". 62% of respondents were "quite" or "very satisfied" with the provided origin information. Regarding purchases, COO was the 3rd most cited first choice indication. 82% of consumers indicated to prefer meat from their own country. COO is seen as a proxy for other credence attributes (e.g. safety, quality, production method)	OS (Nov +Dec/2019)	6,250 (250/country)	EU28 except for Cyprus, Malta, Luxemburg	Meat
14	Forsa	Bundesministeriums für Ernährung und Landwirtschaft	2020	Deutschland, wie es isst. Der BMEL-Ernährungsreport 2020	83% of respondents find it (very) important that a food product comes from their region. 85% find origin labelling (very) important.	TS 1 (Dec 2019, Jan 2020); TS 2 (April 2020)	TS 1: 1,000; TS 2: 1,000	Germany	Food
15	BDI Research, Open Evidence, LSE, DG MARE	European Commission (DG MARE)	2021	Behavioural study on origin claims on fishery and aquaculture products	Origin information of Fishery and Aquaculture products (FAPs) is mostly used to extract other attributes from it: e.g. quality, environmental, and economic impact. Even though the majority (74%) of respondents indicate they look at origin quite regularly when buying fish, the experimental study showed that individuals often overlook this information. The study suggests that respondents understand the mandatory origin claims on FAPs ~70% of the time. Only a minority of respondents was aware that a vessel's flag determines fish origin (except when caught in territorial waters). 73% of respondents indicated to trust origin information. Information on the "catch area" was considered trustworthy origin information for caught fish.	FG, MSH, 3 OEs	FG (conducted in 2019): 8 x 4 countries; OE 1: 6,400(800/country); OE 2: 720 (180/country); OE 3: 6,400(800/country)	FG: Spain, Romania, Finland, Germany; OE 1 & OE 3: Sweden, Denmark, Romania, Croatia, Germany, Czech Republic, Italy, Spain; OE 2: Spain, Hungary, Germany, Sweden	Fish and Aquaculture products

16	Origo Group	Livsmedelsverket (National Food Agency Sweden)	2021	Konsumenters intresse för information om ursprungsland för kött på restaurang 2021	80% of respondents find it (very) important for restaurants to indicate the COO of the meat they serve. Women and respondents who eat meat less often tend to find it more important than men and more frequent meat-eaters. Main reported reasons for COO importance are assessment of safety and the environmental and climate impact of the meat. Some differences in reasons (e.g. Prominence of avoiding meat for political or ethical reasons) are reported based on demographic differences. 3 out of 4 would find it (very) good if COO information on meat would be directly on the menu.	OS (Jan/Feb 2021)	1000	Sweden	Meat in restaurants
17	Galatoulas, G.S.P.	Greek Ministry of Agricultural Development and Food	N.A.	Effectiveness evaluation of the national measures of obligatory indication of milk in milk and dairy products.	Most consumers say they look at origin information for milk and dairy products (especially for fresh milk and cheese, less so for evaporated or highly pasteurized milk, deserts and cream). They report to want to access this information as it affects their purchase choices (with a majority preferring Greek origin, followed by a much smaller preference for local/regional origin). However, origin is reported as less important than other factors (e.g. expiration date, brand name, price etc.). At the same time, consumers accept Greek milk to be a bit a pricier (< 5 cents). Nevertheless, consumers have difficulty to correctly identify origin information since the authors say that they rely more on the production country or the brand name than the actual origin. Note however, that the above conclusion does not fully correspond to the related graphs included in the report, which for some products show milk origin to be consulted more to infer origin information than brand name. Consumers are split as to how satisfied they are with the currently available origin information. Overall, they would like origin labelling to be extended to products other than milk and dairy.	S/OS (the researcher completed a google form questionnaire based on respondents oral responses to the survey)	520	Greece	Milk and dairy products

Note: S = Survey, OS = Online survey, TS = Telephone survey, TT = Taste test, POS = Point-of-sale survey or interviews, BWS = Best-worst scaling, FGs = Focus groups, II = In-store interview, MSH = Mystery Shopping, OE = Online experiment, OBS = Observations (in home/store/retail lab), COO = Country of origin, ROO = Regions of

origin, PDO = Protected Designation of Origin, PGI = Protected Geographical Indication, TSG = Traditional Specialty Guaranteed

Annex 1 – Database of reviewed papers

In a separate Excel file.

Annex 2 – PDF's of reviewed papers

In a folder on Sharepoint.

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