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CONSUMER PERCEPTION AND WILLINGNESS TO PAY FOR LOCAL FOOD

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Abstract

A growing number of empirical studies recently investigated consumers' valuation for local food products. However, different aspects related to the local food consumption still remain vague or unexplored. As such, the objective of the present research is to fulfill the existing literature using a mixed methodological approach for the investigation of consumers' preferences and Willingness to Pay (WTP) for local food products. First of all, local food is still a blurred concept and this factor might be source of individuals' misperception for the local origin meaning. Therefore, a qualitative research has been performed in order to investigate the meaning and the perception of the local food in the Italian food market. Results from this analysis have been used as inputs for the building of a non-hypothetical Real Choice Experiment (RCE) to estimate consumers' WTP for locally and organically produced apple sauce. The contribution of this study is three-fold: (1) consumers' valuation for the local origin is interpreted in terms of regional borders, over the organic food claim in case of an unusual food product in the area of interest, (2) the interaction between individuals' personality traits and consumers' preferences for local and organic foods is analyzed, (3) the role of Commitment Cost creation in consumers' choice making in case of uncertainty due to the use of a novel food product and of an unconventional food claim is investigated. Results suggest that consumers are willing to pay a higher price premium for organic over locally produced apple sauce, possibly because of the presence of a regulated certification. In accordance with Commitment Cost theory, the organic label might thus decrease consumers' uncertainty for the features of the product in question. Results also indicate that individuals' personality can be source of heterogeneity in consumers' preferences.

Executive summary

The increasing popularity of the so-called "local food movement" has led to a growing number of empirical studies focusing on the exploration of locally-based Alternative Agro-Food Networks (AAFNs) and especially on the analysis of consumers' preferences and WTP for locally grown or locally produced food products (Darby *et al.*, 2008; de Magistris & Gracia, 2008; Goodman, 2003; Hu, *et al.*, 2009; Raffaelli *et al.*, 2009; Seyfang, 2006; Zepeda & Li, 2006). However, different aspects related to the local food consumption still remain unexplored. As such, the objective of the research is to fill the gap in the existing literature investigating different issues related to the "local food movement", using a mixed methodological approach.

Although the increasing interest in local food consumption from governmental institutions and conventional food retail systems, both in the case of the Italian and international food systems, the definition of local food is not currently regulated. Indeed, in previous studies, several criteria have been used for the interpretation of local food products, ranging from food miles (Caputo *et al.* 2013; Caputo *et al.* 2013a; de-Magistris & Gracia, 2014) and political boundaries (regional or State borders) (Hu *et al.*, 2012; Scarpa, *et al.*, 2005), to food traditions (Akaichi *et al.*, 2012; Amilien *et al.*, 2007) and PGI-PDO definitions (Aprile *et al.* 2012, Giovannucci *et al.*, 2010).

Past studies showed that the abstract nature of the local food concept might be a source of consumers' misunderstanding for the local origin meaning (Lim & Hu, 2015; Bazzani & Canavari, 2013). For this reason, in the present study as first approach in the analysis of consumers' preference and WTP for local food products, a qualitative-explorative approach was used in order to investigate the meaning and the perception of local food in the Italian food market. In-depth interviews were performed, supported by a semi-structured interview schedule, which served as a non-binding guideline for the interviewer. A convenience, non-probabilistic sample of twenty-three individuals was selected. The selected sample was composed of six consumers, eight farmers and nine experts of the food market. It was established to interview different actors of the supply chain in order to have a broader interpretation of the issues related to the local food system. Results from this research indicate that the meaning of local must be explained more in terms of political boundaries and connection to a geographical area than in terms of food miles. Some authors (Aprile *et al.*,

2012; Giovannucci, *et al.*, 2010) suggest that the meaning of local in the Italian food system can be associated to the one of Geographical Indications (GIs). However, GIs specify the link between the product in question and the environmental peculiarities, food traditions of the geographic area of production, without considering the connection between the production and consumption areas. According to these findings, this particular aspect mainly differentiates the interpretation of "local" from the one of GIs. "Local" origin claim should, in fact, resemble the re-valuation of short-distance relationships and community food habits. On the other hand, results show that issues which are usually embraced by the organic production claim, such as production method and hygienic safety aspect have been commonly associated to the local food concept. The association between local and organic production is, indeed, a largely discussed topic in the literature. Several studies observed, in fact, that consumers tend to perceive local food products as having being cultivated using neither synthetic agrochemicals nor genetically modified organisms (GMO) (Campbell, *et al.* 2014; Zepeda & Deal, 2009; Zepeda, 2009). It is no surprise, therefore, that some consumers may be confused and perceive the “organic” and “local” concepts as partially overlapping. However, while local food is still a loosely defined concept, the organic food system is more developed and characterized by certified labeling programs. Precisely for the growing global standardization and industrialization of organic foods, several studies argued that organic agriculture has lost some luster as an alternative to conventional agriculture (Murdoch & Miele, 1999; Adams & Salois, 2010; Campbell *et al.*, 2014). This factor might have caused a shift in consumers' preferences from organic towards local food products and, accordingly, defining local food as the "new organic" (Adams & Salois, 2010; Adams & Adams, 2011; Campbell *et al.*, 2014). In light of this association, but at the same time divergence in the perception of local and organic production, recent studies investigating local food consumption, have mostly focused on preferences for local in comparison to organic foods, with results suggesting that consumers tend to value locally grown products more than organic food products (Aprile *et al.*, 2012; Campbell *et al.*, 2014, 2013; Costanigro *et al.*, 2014; de-Magistris & Gracia, 2014; Gracia *et al.*, 2014;Hu *et al.*, 2012; Meas *et al.*, 2014; Onozaka & Mcfadden, 2011). However, Scarpa *et al.* (2005), exploring Italian consumers' evaluation for regionally grown and organic food products, observed that respondents' preferences for local and organic claims varied depending on the product in question. Scarpa *et al.* (2005) argued that this heterogeneity in consumers' evaluations could be explained by the generation of a "home bias" effect, and therefore a preference for the local claim, when food products with a strong connection with the territory are considered. Results from the qualitative research also confirm that the product

in question might play an important role in the definition of what is local or not. National borders have been, in fact, associated to local origin, in case of food products which are not typically grown or produced in the area of interest. To the best of the knowledge of the author, past studies have focused on traditional or commonly consumed food products in the survey area (Aprile *et al.*, 2012; Costanigro *et al.*, 2012; de-Magistris & Gracia, 2014; James *et al.*, 2009; Moser & Raffaelli, 2012). Hence, it is not known yet how consumers value the local origin, especially in comparison to the organic certification, when the product in question is still novel in the geographic area of interest and should be less likely that a "home-bias" effect is generated.

Furthermore, past studies showed that heterogeneity in consumers' preferences for local foods might also be explained by factors related to consumers' profile, such as socio-demographic variables, attitudes and beliefs (Campbell *et al.*, 2014; Costanigro *et al.*, 2014; Gracia *et al.*, 2014). Furthermore, Grebitus *et al.* 2013 showed that individuals' personality traits play an important role in consumers' food choice making. Indeed, in psychology, personality has been identified as a relevant aspect in understanding individuals' choice behavior given that personality traits are stable features which can explain individuals' behavior in different contexts (Mischel, 2009; Grebitus *et al.*, 2013). However, to the knowledge of the author, no known study has explored the effect of personality traits on consumers' valuation for food claims, such as origin and method of production. In order to fill this void in the existing literature related to local food consumption, in this study a Real Choice Experiment (RCE) approach has been used to estimate consumers' WTP for locally produced organic apple sauce. Local has been interpreted as regional production, while national production, but outside regional boundaries is considered non-local. The apple sauce was chosen because it is still an unfamiliar food product to many consumers in the area of interest, since it has been just recently introduced in the Italian food market as a healthy snack product. Furthermore, consumers respondents' preferences and WTP were estimated, while assessing whether personality traits can be sources of heterogeneity in consumers' valuation. The RCE was performed on a sample of shoppers in a hypermarket, because issues related to the supply of local food at large retail chains and related to mainstream consumers' perception for local food have been largely discussed in the qualitative analysis. The field survey was carried out in a hypermarket located in Bologna (Emilia-Romagna region, Italy), where participants were randomly recruited at the entrance of the store. A 2-pack of apple sauce in 100g aluminum cups were used as the good in question. The apple sauce was described by three attributes: price, production method and origin. Four price levels were chosen (0,95€,

1,45€, 1,95€, 2,45€) for the 2-pack apple sauce (200g). The production method attribute was specified as either organic or non-organic. Lastly, as aforementioned, for the origin attribute, two levels were used: local (regionally produced) and non-local (produced in Italy, but outside the regional borders). The allocation of the attribute and attribute levels in 8 choice tasks was designed using a Bayesian sequential design (Scarpa *et al.*, 2007). Different models were specified for the estimation of the data. *Model 1,* the Multinomial Logit Model (MNL) model, was used as benchmark model. *Model 2,* the Random Parameter Logit (RPL) model allowed examining whether heterogeneity across consumers' preferences is an issue to take into account when assessing consumer preferences for organic and local attribute information displayed in apple sauce products. *Model 3* added to *Model 2* by incorporating personality traits as a possible source of additional heterogeneity. Personality traits have been elicited using the MIDI personality scale, based on the description of the so-called Big Five personality factors (OCEAN): Openness to experience, Consciousness, Extraversion, Agreeableness, Neuroticism. (Keyes, *et al.*, 2002; Lachman & Weaver, 1997; Weiss *et al.*, 2008). Finally, the estimates from *Model 3* have been used for the calculation of individuals' Marginal WTP for locally produced and organic apple sauces. Results suggest that consumers are willing to pay a price premium both for the local and organic attribute. However, estimates also indicate that consumers are willing to pay the highest price for the organic apple sauce. This is a finding that is relatively unusual in the literature and the most likely explanation to the inconsistency of these results with previous research might be that the use of an unfamiliar food product, instead of a well-known one, may induce a weaker connection with territory and local community components and therefore, a decrease of "home bias" generation. Moreover, results from *Model 3* show that personality traits explain consumers' preferences heterogeneity mainly in the case of the local origin claim. Open-minded and caring personalities were more willing to pay for locally produced apple sauce, in contrast to the worrying consumers. On the other hand, the effect of personality interaction with organic attribute was significant only in the case of extravert consumers who showed less inclination to choose the apple sauce when it was organic. It is possible to deduce that the effect of personality traits might be more significant in the case of an unconventional food claim, such as "local food". Indeed, the personality traits which were related to the inclination to experience new situations (openness to experience, extraversion, neuroticism) appear to be the most influential ones in relation to respondents' preferences for local and organic apple sauce.

On the other hand, consumers' characteristics might not be the only factors affecting individuals' valuations for food claims. Recent studies have highlighted that consumers' WTP

for a good can vary depending on the degree of uncertainty for the value of the good in question (Zhao & Kling, 2001, 2004). Local origin and organic production can be defined as credence attributes, which represent those features of the product which individuals cannot personally evaluate before or after the consumption, but their valuation relies on trust in the source of the claim. In the literature related to food consumption, credence attributes have been often associated with the generation of consumers' uncertainty in food choices (Grunert, 2005; Grunert *et al.*, 2001; Van Wezemael *et al.*, 2010; Vermeir & Verbeke, 2006). As such, the use of credence attributes and the use of an uncommon food product might be source of uncertainty in consumers' decision making. According to Zhao and Kling (2001, 2004), in real purchasing situations, when there is uncertainty regarding the quality features of a good, consumers have the possibility to delay the purchase until they obtain more knowledge about the quality of the product in question or they have the chance to return the product in case they do not feel comfortable with their purchase. Hence, in uncertainty conditions, choices are mostly made in a more dynamic context (Zhao and Kling 2001, 2004). In order to explain WTP formation in dynamic settings, Zhao and Kling (2001, 2004) developed the Commitment Cost (CC) Theory. Theoretically, the CCs represent the differing element between the measure of consumers' WTP and the neoclassical static compensating variation when individuals have uncertainty about the value of a good. According to Zhao & Kling (2004), CCs are decreasing and thus WTP increasing when (1) subjects are less uncertain about a good's value, when (2) they expect less information to be gathered about the good in the future, and when (3) they expect that reversing the transaction is easy. Despite the intuitive prediction of the CC theory, a few studies tested WTP formation in dynamic settings (Lusk, 2003). Precisely, no known study has explored this theory in the context of novel food products, in particular in relation to consumers' uncertainty for food products characteristics, such as credence attributes. Using the same aforementioned choice experiment design, four between-subject RCE treatments were implemented. These treatments differed in terms of possibility to gain information (present or future information) and in terms of degree of reversibility of the transaction. One sub-sample was the control group. In the second treatment, respondents received information on organic certification and "local food" movement in Italy. In the third treatment, participants had the chance to gather information after they concluded their grocery shopping. Finally, in the fourth treatment, respondents were allowed to return the product at the exit of the store. Data were estimated using a RPL model. RPL models estimates were used to calculate, for each group, consumers' marginal WTP for organic and locally produced apple sauce. The hypotheses about the CCs formation were,

then, tested using an one-tailed independent t-test between individuals' MWTP calculated in the control group and the other three treatments. Results show an increase in WTP when consumers were provided with information regarding the meaning of the products on interest. This confirms the CC theory prediction that making a choice in conditions of more uncertainty induces a CC formation and therefore a decrease in WTP for the good in question. However, this finding is consistent with the CC theory just in the case of the attribute related to the organic production. At first glance, the reader might deduce that the cause of these diverging results might be explained by the nature of the given information. However, neutral information in the case of both attributes were provided precisely in order to avoid any potential induced preference for one of the two attributes. On the other hand, the only important difference between the organic and local claim information is that the first one is a universally regulated certification, characterized by a specific label, while the Italian food system still lacks of a shared regulation of local food products and therefore of a label that identifies this kind of information. Hence, the awareness of a controlled certification system might significantly affect individuals' decision making and induce to a decrease of uncertainty for the quality of the food product in question. On the other hand, results from this study are not consistent with CC theory when potential future information can be gathered. However, these results may have been affected by the nature of the attributes that were used, since credence attributes are features which individuals can not personally evaluate before or after the consumption and, therefore, they represent themselves a source of uncertainty in individuals' choice making. We can suppose that the use of experience or search attributes which imply the possibility of acquiring a potential personal experience of the product in question, might have differently affected respondents' choice behavior. Finally, results strongly confirm CCs formation in case of change in the degree of transaction reversibility. Hence, it is possible to conclude that the option value related to the reversibility issue can be considered as a crucial aspect in the design of RCE, as elicitation method of consumers' preferences for food claims.

Overall, results from this study suggest that respondents were willing to pay a price premium for the local apple sauce. This result is of importance for marketing strategies since it indicates that the use of the "locally produced" food claim might be positively valued even in the case of novel food products. This is confirmed for the estimates of all the four treatments which were part of this study. However, these findings show that organic claim was more valued over the local origin claim. This outcome can be explained in two ways. First the use of an usual food product in the area of interest might induce a weaker connection

with territory and local community components and therefore an implicit decrease of interest for the origin attribute in comparison to other features of the product. Second, as it is suggested by application of the CC theory, the awareness of a controlled certification system might lead to a decrease of uncertainty for the quality of the product and therefore to an increase of WTP for the food product in question. This second explanation might be of relevant implication in the marketing of local food products, and it might be interpreted as an incentive to the introduction in the market of a universally regulated “local food” label. In fact, results from the explorative analysis indicated that the introduction of labels which determine the local origin of the products in mainstream food outlets may educate even the more "distracted" consumer to local food consumption. Local food labels should differ from food miles labels, since food miles are mainly associated to the environmental impacts due to food transportation. Local food labels, instead, should highlight the connection between a community and the territory and provide information not just regarding the environmental benefits related to local food consumption, but also regarding the support to the local economy, the safeguard of the territorial biodiversity and of food traditions.

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Claudia

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Introduction

As a response to market globalization and issues related to food safety, food security, and environmental safeguard, the demand for information concerning the origin and the methods of production of food products has been significantly increasing in the recent years (Adams & Salois, 2010; Aprile *et al.*, 2012; de-Magistris & Gracia, 2014; Klaus G. Grunert, Hieke, & Wills, 2014; Sirieix *et al.*, 2013). As a result, the food system of North American and European countries has been characterized by the emergence of a growing number of locally-based and alternative forms of food networks defined as "Alternative Agri-food Networks" (AAFNs). AAFNs can be interpreted as a “turn” from industrialized and standardized systems to the “domestic world" where quality is interpreted in terms of food localization, proximity relations, trust, tradition, re-evaluating the relation between consumer and territory (Goodman, 2004, Hinrichs, 2003).

The increasing popularity of the so-called "local food movement" can be observed by the formation of a growing number of Farmers Markets (FMs) and "Community Supported Agriculture" (CSAs), which represent the most popular forms of AAFNs. The number of US FMs and CSA more than doubled in the last decade (US. Department of Agriculture, 2014a; US. Department of Agriculture, 2014b) and the increase in the formation of AAFNs has been also observed in European countries, especially in the UK, Germany and France (Kneafsey *et al.*, 2013). In Italy, a mix of historical, political, institutional and cultural factors supported the resilience of traditional forms of retail, such as urban outlets for food products, according to regional specializations (Rocchi *et al.*, 2010). Indeed, a total of 1113 active FMs has been recorded by the National foundation “Campagna Amica”, which mainly enforces the development of FMs in Italy (Campagna Amica, 2014).

However, the increasing appeal for local food products is not anymore limited to alternative, niche forms of food networks. Indeed the growing popularity of the "local food movement" has captured, at the international level, the interest from many institutions and policy-making bodies, such as provincial, regional governments, and mainstream food retailers, which are increasingly promoting food claims indicating the local origin of food products. In the US, for example, labels which provide information regarding the "locally grown" or "Grown in the State" claim are becoming increasingly popular in the American food market (Darby *et al.*, 2008; Martinez et. al., 2010). On the other hand, "local food" labels are not yet present in the Italian food system, neither at the level of mainstream food networks, such as large retail chains, nor at the level of AAFNs. However, most of the Italian Regions have established local regulations or have agreed on and supported rules focused on the promotion of the commercialization and the purchase of regional products. For example, the Veneto region with the regional legislative decree L.R7 of the 25th of July, 2008 defines regional food products as local food (Region del Veneto, 2014), while the Abruzzo region with the regional Legislative decree of the 20th of October 2010, identifies local food products as seasonal, regional and eco-friendly grown food products. Furthermore, these two regions were the first ones to allow shops and restaurants to use the logo "Local" if at least 30% of the supplied food products were grown or produced in the region. This approach has also been followed by the Basilicata, Lazio, Calabria, Marche, Molise and Puglia regions (Coldiretti, 2014).

Although the increasing interest in local food consumption from governmental institutions, both in the case of the Italian and international food systems, the definition of what is local or not is not currently regulated. As such, "local food" is still a blurred concept and it is difficult to identify a shared definition (Adams & Salois, 2010; Bazzani & Canavari, 2013; Campbell *et al.*, 2013). In previous studies, several criteria have been used for the

interpretation of local food products, ranging from food miles (Caputo *et al.* 2013; Caputo *et al.* 2013a; de-Magistris & Gracia, 2014) and political boundaries (regional or State borders) (Hu *et al.*, 2012; Scarpa, *et al.*, 2005) to food traditions (Akaichi *et al.*, 2012; Amilien *et al.*, 2007). However, the recent study of Lim & Hu (2013) investigated consumers' valuations for local beef in USA and in Canada, proposing different interpretations of local origin, such as (1) "local", (2) "local" with the specification of different levels of food miles, (3) provincial borders and (4) National borders. Their results show that consumers were willing to pay a higher price for locally produced beef when the local origin was specified in terms of provincial borders and when the origin of production was within a range of 320 km. This suggests that the “local food” concept might still be misunderstood by consumers, therefore an exact, shared, and widely recognized definition results as determinant in the exploration of food consumers' perception for local origin claims. It is necessary to point out that origin claims such as PDO (Protected Designation or Origin) and PGI (Protected Geographical Indication) are common in the Italian food system and some authors associated the concept of local to this kind of labels (Aprile *et al.*, 2013). This is because the aim of PGI and PDO labels is to specify the link between the product in question and the environmental peculiarities, food traditions of the geographic area of production. However, PDO and PGI claims do not consider the connection between the production and consumption areas, which, instead, is the main aspect of the local food concept.

In addition, the need to call for a shared definition of local food can also be confirmed by the fact that the "local" concept is often associated with organic production, which is one of the other most popular alternative to conventional food. Actually, the organic agriculture label identifies food produced by using a specific approach to production, and a farming system that is aimed at the safeguard of natural resources and at the reduction of agricultural

inputs[1]. Its principles do not necessarily require that food is produced locally, the organic concept was initially strongly associated to experiences that, together with the balanced management of natural resources (soil, plants, animals, etc.) aimed at promoting a close, sometimes direct relationship between farmers and consumers. Therefore, the organic production was considered as strictly embedded in the local food system. In addition, several studies observed, in fact, that consumers tend to misperceive local food products as having being cultivated using neither synthetic agrochemicals nor genetically modified organisms (GMO) (Campbell, *et al.* 2014; Zepeda & Deal, 2009; Zepeda, 2009). It is no surprise, therefore, that some consumers may be confused and perceive the "organic" and "local" concepts as partially overlapping.

However, while local food is still a loosely defined concept, the organic food system is more developed and characterized by certified labeling programs. In light of the growing global standardization and industrialization of organic food, several studies have argued that organic agriculture has lost some luster as an alternative to conventional agriculture, and that this has caused a shift in consumers' preferences from organic toward local food products (Adams & Salois, 2010; Adams & Adams, 2011; Campbell *et al.*, 2014). Accordingly, local food has been defined as the "new organic" (Adams & Salois, 2010; Campbell *et al.*, 2014).

In light of this association, but at the same time divergence in the perception of local and organic production, in recent years, studies investigating local food consumption, have mostly focused on preferences for local in comparison to organic foods, with results suggesting that consumers tend to value locally grown products more than organic food products (Aprile *et al.*, 2012; Campbell *et al.*, 2014, 2013; Costanigro *et al.*, 2014; de-Magistris & Gracia, 2014; Gracia *et al.*, 2014;Hu *et al.*, 2012; Meas *et al.*, 2014; Onozaka &

[1]According to the definition agreed upon by the International Federation of Organic Movements (IFOAM) "Organic Agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic Agriculture combines tradition, innovation and science to benefit the shared environment and promotes fair relationships and a good quality of life for all involved."

Mcfadden, 2011). Consumers preferences for local food products have been confirmed when origin has been interpreted in terms of State and regional borders (Darby *et al.*, 2008; Hu *et al.*, 2012; James *et al.*, 2009), in terms of designation of origin and geographical indication labels (Aprile *et al.*, 2012) and in terms of food miles (Caputo *et al.*, 2013; Caputo *et al.* 2013; de-Magistris & Gracia, 2014). However, Scarpa *et al.* (2005), exploring Italian consumers' evaluation for regionally grown and organic food products, observed that respondents' preferences for local and organic claims varied by the product in question. The local origin was more valued than the organic production in the case of olive oil, while, in the case of oranges, the organic claim was preferred to the domestic production. Scarpa *et al.* (2005) argued that this heterogeneity in consumers' evaluations could be explained by the generation of a "home bias" effect, and therefore a preference for the local claim, when food products with a strong connection with the territory are considered. Hence, the choice of the product in question might play an important role in consumers' valuation for local and organic claims. Past studies have focused on traditional or commonly consumed food products in the survey area (Aprile *et al.*, 2012; Costanigro *et al.*, 2012; de-Magistris & Gracia, 2014; James *et al.*, 2009; Moser & Raffaelli, 2012). Hence, it is not known yet how consumers value the local origin, especially in comparison to the organic certification, when the product in question is still novel in the geographic area of interest and should be less likely that a "home-bias" effect is generated.

Furthermore, past studies showed that heterogeneity in consumers' preferences for local foods might also be explained by factors related to consumers' profile, such as socio-demographic variables, attitudes and beliefs (Campbell *et al.*, 2014; Costanigro *et al.*, 2014; Gracia *et al.*, 2014). Several studies explored the interaction of socio-demographic characteristics with consumers' choices for locally grown products, observing that age, gender and income affected individuals' WTP formation for this kind of attribute (Aertsens, *et*

al., 2009; Campbell *et al.*, 2014b; Carpio & Isengildina-massa, 2009; Loureiro & Hine, 2002; Zepeda & Li, 2009; Zepeda, 2009). In particular, local food shoppers have been mainly identified as young adult females, with high education and medium-high income level (Rocchi *et al.*, 2010; Zepeda & Li, 2006; Zepeda, 2009). While, regarding consumers' motivations for buying locally grown food products, the environmental awareness and the appeal for "genuine" products (which have also been identified as motivations for buying organic products) are generally followed by the willingness to support the local economy and to consume authentic, traditional foods (Costanigro *et al.*, 2014; Rocchi *et al*., 2010; Darby *et al.*, 2008; Thilmany, Bond, & Bond, 2008; Verbeke & Roosen, 2009; Zepeda & Li, 2006).

However, there might be other factors that could influence consumer preferences for local and organic foods. For instance, in psychology, personality traits have been identified as a relevant source of heterogeneity in individuals' attitudes and behavior (Borghans, *et al.*, 2008; Ferguson *et al.*, 2011). According to Hofstee (1994), the definition of personality refers to individual differences in characteristic patterns of thinking, feeling and behaving. Its relevance in understanding individuals' decision making is given by the fact that personality traits are "thought to capture how people actually think, feel, and act and not what people say they are thinking, feeling, and behaving" (Grebitus, *et al.*, 2013; pp. 12). Hence, personality traits have been often used in psychology to explain different aspects of individuals' behavior, such as health issues, lifestyles and economical decisions (Almlund, *et al.*,, 2011; Borghans *et al.*, 2008; Goodwin & Friedman, 2006). However, no known study has explored the role of personality traits on consumers' valuation for food claims, such as origin and method of production. For instance, an individual whose personality is characterized by traits such as willingness to be cooperative, helpful and caring might care more about issues such as the support to the local economy or environmental protection and therefore would value more a food product that is locally produced. On the other hand, a broadminded personality, open to

new experiences might be more willing to choose a food product characterized by a claim such as "locally grown", rather than a global standard label, like the organic certification. On the other hand, an individual that tends to be apprehensive and worrying might be more comfortable in buying food that has been produced according to certified labeling programs. The definition of personality traits might then play an important role in the consumer's valuation of a food claim, such as "local food", that still counts on trust relationships between consumers and the sources of information instead of certified labeling programs.

However, consumers' characteristics might not be the only factors affecting individuals' preferences for food claims. Indeed, local origin can be defined as a credence attribute. Credence attributes represent those features of the product that individuals cannot personally evaluate before or after the consumption, but their valuation relies on trust in the source of the claim. In the literature related to food consumption, credence attributes have been often associated with the generation of consumers' uncertainty in food choices (Grunert, 2005; Grunert *et al.*, 2001; Van Wezemael *et al.*, 2010; Vermeir & Verbeke, 2006).

Recent studies have highlighted that consumers' WTP for a good can vary depending on the degree of uncertainty for the value of the good in question (Zhao & Kling, 2001, 2004). Therefore, the consideration of the uncertainty issue might play an important role in the estimation of consumers' preferences for local food. Accordingly, Costanigro *et al.* (2014) observed that respondents' WTP for local apples increased when some kind of information regarding the local claim were provided.

According to Zhao and Kling (2001, 2004), in reality, when there is uncertainty regarding the quality features of a good, consumers have the possibility to delay the purchase until they obtain more knowledge about the quality of the product in question or they have the chance to return the product in case they do not feel satisfied with their purchase. Hence, in contrast with the assumption of the static neoclassical theory, in uncertainty conditions,

choices are mostly made in a more dynamic context (Zhao and Kling 2001, 2004). In order to explain WTP formation in dynamic settings, Zhao and Kling (2001, 2004) developed the Commitment Cost (CC) Theory. Theoretically, the CCs represent the differing element between the measure of consumers' WTP and the neoclassical static Hicksian compensating variation when individuals have uncertainty about the value of a good. Despite the intuitive prediction of the CC theory, a few studies tested WTP formation in dynamic settings (Lusk, 2003). Precisely, no known study has explored this theory in the context of food choices, in particular in relation to consumers' uncertainty for food products characteristics, such as credence attributes. CC formation might play an important role in the estimation of consumer's valuation for an unconventional, not regulated food claim such as local production. Indeed, testing CC theory in the estimation of consumers' preferences for local and organic food products, might indicate whether the presence of a globally regulated and recognized food label might be source of a decrease in consumers' uncertainty for products features, suggesting policy implications related to the potential regulation of a local food label (Grunert, 2005; Van Wezemael *et al.*, 2010).

Research objectives

The growing popularity of the "local food movement" has led to an increasing number of empirical studies focused on consumers' preferences and WTP for locally grown food products. Local food consumption, in fact, has been investigated in different countries and contexts. However, different aspects related to the local food system and to consumer perception for local origin still remain unexplored in the current literature. First of all, local food is a blurred concept, especially in Italy, where a shared, and widely recognized definition of the local food is still lacking, deriving a potential misperception of consumers for the local origin meaning (Bazzani & Canavari, 2013; Campbell *et al.*, 2013; K. H. Lim & Hu, 2015). Second, the study of Scarpa *et al.* (2005) highlighted that consumers' valuation for the local claim might vary according to the product in question and that in the case of food products with a strong connection with the territory, the generation of "home bias" might cause an implicit shift of individuals' preferences towards the local origin over other attributes such as the organic production. Past studies focused on traditional or commonly consumed food products in the survey area (Aprile *et al.*, 2012; Costanigro *et al.*, 2012; de-Magistris & Gracia, 2014; James *et al.*, 2009; Moser & Raffaelli, 2012). Hence, it is not known yet how consumers value the local origin when the product in question is unfamiliar in the geographic area of interest and therefore it should be less likely that a "home-bias" effect is generated. Moreover, several consumers' characteristics, such as socio-demographic or attitudinal factors, have been considered in the estimation of consumers' preferences for local food (Adams, D. & Adams, A., 2011; Carpio & Isengildina-massa, 2009; Costanigro *et al.*, 2014; Zepeda & Li, 2006). However, the recent study of Grebitus *et al.* (2013) showed that personality traits strongly affect consumers' food choice behavior. Indeed, in psychology, personality traits have been widely used to explain individuals' decision making, since they

represent stable features, which can influence individuals' behavior in different contexts (Mischel, 2009). Therefore, the effect of personality traits might be of importance in explaining consumers' heterogeneity in food choices, especially in the case of products characterized by an unfamiliar food claim such as the "local" production. Lastly, although credence attributes, such as origin of production, have been largely associated with the generation of consumers' uncertainty in food choices (Caswell & Mojduszka, 1996; Grunert, 2005; Van Wezemael *et al.*, 2010), no- known study analyzed how uncertainty conditions in decision making might affect consumers' choice behavior and WTP formation for local food products.

The aim of this research is precisely to fill the gap in the existing literature regarding local food consumption, focusing on the exploration of the aforementioned issues.

In order to achieve this objective, a mixed approach have been used. First, an analysis of the literature regarding the emergence of AAFNs and "local food movement" has been performed, in order to investigate the social, cultural and economical factors which led to the growing popularity of local food in the National and International food systems. According to the main issues drawn from the literature review, an explorative analysis based on the use of semi-structured in-depth interviews has been developed to explore the meaning and the perception of local food in the Italian food market. Findings from this qualitative analysis have been then used as inputs for the building of a Real Choice Experiment (RCE) to estimate consumers' WTP for local food.

This study is structured in five main chapters, dedicated to the investigation of the aforementioned issues:

1. Chapter 1, "An exploration of the "local food movement": in this section an overview of the cultural-social factors that affected the emergence of the "local food movement" is given.
2. Chapter 2, "An exploration of local food concept in the Italian food market": this section is focused on the investigation of the local food meaning in the Italian food market, using a qualitative approach.
3. Chapter 3, "A questionnaire-based survey on a novel product with local origin" in this chapter descriptive information regarding socio-demographic characteristics, food behavior and food attitudes of respondents will be given.
4. Chapter 4, "Local vs. Organic: Does consumer personality matter?": in this section results from a RCE will be provided, where consumers' WTP for an usual food product (apple sauce) was estimated, while assessing whether personality traits affected respondents' choices.
5. Chapter 5, "A test of the Commitment Cost theory using a Real Choice Experiment Approach": this part of the research is aimed at testing for the first time in the literature the CC theory on consumers' food choices.

Every chapter includes an introduction to the problem under investigation, the description of the adopted methodological approach, the explanation of results and finally a discussion of the main finding and some concluding remarks.

Finally, the study concludes with a general discussion of the results obtained.

1. An exploration of the "Local Food movement"[2]

1.1 Introduction

The drawbacks of industrialization and globalization in the food system have been widely discussed in the recent literature (Raffaelli, *et al.,* 2009; Seyfang, 2006; Sonnino & Marsden, 2006a). The increasing detachment between the places of production and consumption related to globalization led to an estrangement between consumers and the territory both on a social and geographical point of view (Cicatiello & Franco, 2008). Critics affirm that the "relations between producers and consumers become distant and anonymous" (Hinrichs, 2000: 296), due to a progressive loss of decision power and difficulties of farmers in entering conventional market channels (Mastronardi & De Gregorio, 2012). Furthermore, the mainstream modern farming and food distribution system that some authors define as "industrial agriculture" and is mainly based on Long Food Supply Chains (LFSCs) are widely associated to environmental problems such as excessive land-use, pollution of soils and water, and CO_2 emissions (Raffaelli *et al.*, 2009). Finally, the lack of traceability along these long and stretched supply chains, the occurrence of numerous food safety scandals and the increase of health related diseases represented a further motivation of a decreasing trust of consumers in the global food networks (Verbeke & Roosen, 2009).

As opposed to the limitations of the LFSCs, a range of models for agricultural and food products networks that are based on different paradigms are emerging as possible

[2] This chapter largely draws from Bazzani, C. & Canavari, M. (2013). Alternative Agri-food Networks and Short Food Supply Chains: a review of the literature. *Economia Agro-Alimentare, 15(2),* 11-34. doi: 10.3280/ECAG2013-002002. I thank the publisher Franco Angeli for the opportunity they offered to me to publish this part of my research.

alternatives (Allen *et al.*, 2003). Grey (2000) suggests the definition of two diverging "food streams": the industrialized and global food stream and the "alternative" one, that "emphasizes local production and consumption" (Grey, 2000:144).

1.2 Materials and methods

The applied method relies upon the analysis and summarization of secondary data, which were collected through sources represented by institutional and private bodies such as Coldiretti, Enea, USDA, Slow Food and through scientific journals. The relevant articles were searched in the Scopus® and Google Scholar® literature databases, using the following keywords: "Alternative Food Networks", "Short Food Supply Chain", "Local Food", "re-localization", "social" and "environmental embeddedness". The content of the abstracts have been analyzed to decide whether the full text of the paper should have been considered. Finally, the findings and opinions of the selected research papers have been compared, describing the accordant and discordant points of view.

1.3 Results

1.3.1 The emergence of the "Local Food Movement" as a response to conventional food streams

Alternative Agri-Food Networks (AAFNs) can be defined as a term to "cover new emerging networks of producers, consumers, and other actors that embody alternatives to the more standardized industrial mode of food supply" (Renting *et al.*, 2003). They can be of different forms: from direct selling, to organic or social farming, to urban gardening.

Some authors propose a strong dichotomy between mainstream food networks and AAFNs. Grey (2000) affirms that two diverging tendencies characterize the food system: the conventional, industrialized food stream and the alternative food stream. The first one is distinguished by the presence of few multinational, vertically integrated companies, which hold the market share on a global basis and are part of a global system that is regulated by the trade agreements between Nations associated to the World Trade Organization (WTO). As example of an industrialized and vertically integrated food system, Grey mentions one of the largest food producers in the USA, the "ConAgra Foods", an American packaged foods company that tends to acquire brand names, instead of using their own labels and on the control of large shares of primary production and logistics. On the opposite, alternative food networks represent a "scattered assortment of much smaller efforts" (Grey, 2000:144), as farmers' markets or community supported agriculture programs (CSA), which are focused in the encouragement of local production and consumption, in the establishment of direct relations between farmers and consumers and in the responsibility for the quality and natural aspect of the food.

Analyzing the food system localization in Iowa, Hinrichs (2003) defines further aspects related to the distinction between "local" and "global" (Table 1); the term "local" is considered as synonymous of proximity relations, local economy support, social embeddedness and biodiversity differentiation, in opposition to "global", related to the industrialized and market economy.

Table 1: Attributes associated with "Global" and "Local" food concepts

Global	Local
Market economy	Moral economy
An economics of price	An economic sociology of quality
Intensification	Extensification
Large-scale production	Small-scale production
Industrial models	Natural models
Monoculture	Biodiversity
Relations across distance	Relations of proximity
Homogenization of food	Regional palates

Sources: Hinriches, 2003

Indeed, Goodman (1994) accuses conventional food streams to overcome biological and physiological properties of food, replacing "natural" production processes by industrial activities (*approprianism*) and natural products by standard and industrialized commodities (*substitutionism*). AAFNs represent, then, the quality "turn" from standardized and industrialized systems to the "domestic world, where quality conventions embedded in face to face interactions, trust, tradition and place support more differentiated, localized and ecological products and forms of economic organization" (Goodman, 2004:4.). According to Marsden et al (2000), AAFNs count on "new relationships of association and institutionalization", aiming at the association of natural, quality, regional and value constructions with food production and supply. On the other hand, Murdoch & Miele (1999) affirm that there is not such a clear dichotomy between conventional and alternative food systems, between standardization and specialization; they compare the case of Ovopel, the largest Italian egg-producer company, that overtime tended to specialize in different niche products imbued with "natural" and "animal-friendly" qualities, to the case of "Naturasì" that was born as a group of organic producers who, then, developed in a commercial structure, partially standardizing the organic produce. Similarly, Lockie (2008) argues about the

transformation, in U.S.A., of organic products as embedded to an “alternative” food system, to their commercialization, in large part, by large retail chains. Indeed, Higgins *et al* (2008:17) state the necessity of certifications in the cases where “AAFNs are attempting to extend beyond face-to face relationships with consumers”, in order to inform about the quality and the environmental aspects. Furthermore, quality attributes and values can vary in different countries: in Southern Europe countries, for example, AAFNs count on regional quality production and direct-selling long tradition, while in UK, the Netherlands and Germany they are based on “modern and more commercial quality definitions” (Parrott *et al*, 2002, p. 256) (Parrott, Wilson, & Murdoch, 2002), in relation with environmental sustainability, animal welfare and matters of public health and hygiene.

Further aspect that has been widely discussed in previous studies is the description of AAFNs as a new form of rural development. Marsden *et al* (2000) define the AAFNs as a form of "re-socialization" or "re-spatialization" of food, by re-building a connection between consumers and “place”, "enhancing an image of the farm and/or region as a source of quality foods" (p. 425). Hence, the valorization of local resources becomes an instrument to revitalize rural areas (Cassani (2012), Brunori and Rossi (2007) (Brunori & Rossi, 2007; argue that tourism activities have been crucial in the reassessment of the territory in Tuscany, while Roest and Menghi (2000) show that the production system associated with Parmigiano Reggiano cheese contributed to employment of artisanal and environmentally benign production techniques. Finally, according to Knickel & Renting (2000), the promotion of the new product line of local organic dairies in the Rhoen area in Germany conceived not only to create alternative markets for local farmers, but it also achieved economic benefits for the whole region. However, the identification of AAFNs as a new form of rural development has been questioned by recent researches: Goodman (2004) hesitates to affirm that alternative food strategies can truly support long-lasting rural problems as poverty, inequality and social

exclusion and Sonnino & Marsden (2006) assert the difficulty of these new forms of food chains to contextualize at institutional and political level.

With the analysis of the literature review regarding AAFNs, it emerged that two factors mostly influence the characterization of the alternative food streams: **embeddedness** and **food localization**.

1.3.2 Social and Environmental Embeddedness

By an anthropological point of view, embeddedness represents the social component of economic action, or rather, the influence of social influences on economic behavior and activities (Sonnino, 2007). In the case of the food sector, the concept of embeddedness has been mainly used when defining the "social" character of the AAFNs (Sonnino & Marsden, 2006a). The term embeddednes is used to embody AAFNs as opposed to globalization forces, emphasizing the development of niche food products and the closer relations between producers and consumers (Parrott *et al.*, 2002). Goodman (2004) and Kirwan (2006) point out the concepts of trust, regard and transparency in association with social embeddedness.

In several studies regarding food networks, embeddedness has not been considered just in a social dimension, but it was also defined in a wider ecological and cultural context. Indeed, the concept of embeddednes is connected to place and origin, and food products are valued "in the natural processes and social context of the territory" (Barham, 2003:130). Sage (2003), reporting the development of AAFNs in South West Ireland, states that the notion of "good food" is considered related not just to the sensory attributes of the products, but also to environmental features as well as origin or methods of production.

Kirwan (2004) concludes that, in the context of the food system, embeddedness can be defined in three different ways: first, to create an alternative food system, at the level of production and distribution that integrates social, environmental and health issues; second to value-enhance rural areas; third to operate at the global level by accessing niche markets. This third aspect has moved critics from several authors: Goodman (2004) affirms that the relational connections between “local sites of production and distant spaces of consumption” can draw to “processes of abstraction” (Goodman, 2004:12), to an "associative economy in interpersonal ties of reciprocity and trust" (Goodman, 2003:5) (Goodman, 2003) or to a disembedding "competitive territory", caused by a "proliferation of competing quality schemes, labels and logos" (Goodman, 2004:10); Goodman (2004) shows the case of the Parmesan cheese cluster that according to his analysis operates a sort of “semi-oligopoly”, where producers have to face a prize-squeeze and reduce continuously costs in order to avoid a too high price differential between Parmigiano-Reggiano and its close industrial substitutes.

As a response to Goodman’s critics, Sonnino (2007), reports the case of saffron production and marketing in Tuscany, where she demonstrates that the concept of embeddedness in AAFNs can be interpreted both at a “horizontal level", including the activities of farmers "within a re-created social context informed by the value of cooperation", and at a "vertical level", that links actors from a local context to the "larger society, economy and polity" (Sonnino, 2007:70). Sonnino & Marsden (2006b) conclude that, with the growing popularity of alternative food streams, it is necessary to establish, by the political point of view, precautions to create more reliable markets for local producers, to "vertically re-embed the emerging networks and to protect the local at the national and global levels" (Sonnino & Marsden, 2006b:317).

1.3.3 What does local mean?

According to the United States Department of Agriculture (USDA), local food can be defined as "food produced, processed and distributed within a geographical boundary that consumers associate with their own community" (Martinez *et al.*, 2010:3). The present definition embraces different interpretations; indeed, local food system can be related to geographic distances in terms of "*Food Miles*", to political boundaries (Hand & Martinez, 2010), to a traditional method of production, and finally to social embeddedness, embodied as social connections, mutual exchange and trust (Sage, 2003).

According to Hand & Martinez (2010), the re-valuation of local food has its origin in the "Slow Food" movement, whose philosophy counts on the consumption of food that must concern the attributes of "Good", "Clean" and "Fair", which concern the use of sustainable production methods, the preservation of culinary traditions of the local communities and the protection of the biodiversity of the territory (Slow Food, 2014). "Slow Food" defines "local" ("*chilometro zero*", in Italian) the products which are consumed in a range of 100 Km from the production place (Slow Food, 2014), while in the U.S.A. a radius of 100 miles (about 160 Km) is more common (Martinez *et al*., 2010). It is necessary to point out that "Slow Food" itself does not strictly respect this distance constraint: at the Earth Market (the Farmers' Market organized by Slow Food) of Bologna, fishery produce comes from the coastal area of the Emilia-Romagna region, which is about 150 Km far away from the city of Bologna (Pirazzoli, 2012). Indeed, several scholars used wider scopes to define local: Scarpa *et al* (2005) associated to "local" a regional meaning in the case of Mediterranean countries, while Hu *et al* (2012) showed that, in Ohio, consumers aimed to purchase products originating from the State, especially the ones characterized by the "Ohio Proud" logo. Lombardi *et al.* (2013), instead, provide evidence that consumers in Campania, Italy, were more willing to pay for Italian early potatoes in comparison to potatoes characterized by attributes as eco-friendly,

organic, fair trade, etc. Akaichi *et al* (2012) combine the term of "typicality" to "local food", on the basis of place of origin and traditional production and processing techniques, omitting the concept of *Food Miles*. Amilien *et al* (2007) associate to "local food" the well-known French term "*terroir*" that identifies a complex concept embracing temporal, spatial and human dimensions. They suggest that "the territorial reputation of a product is more often derived from a mixture of messages rather than the actual geography or culture" (Amilien *et al.*, 2007:55); therefore, "*terroir"* assumes both a natural and a social meaning, based on social and cultural factors which influence food traditions. The different meanings that are attributed to "local food" are summarized in Table 2.

Table 2: Different "Local Food" meanings

Meaning	***Terms of definition***
Functional	Health
	Taste
Ecological	Food miles
	Biodiversity and landscape
Aesthetic	Diversity v/s standardization
	Distinction
Ethical	Authenticity
	Identity and Solidarity
Political	To change the balance of power in the food chain
	To orient the balance of production and consumption patterns

Sources: Brunori, 2007

Several authors mention the contribution of AAFNs to food "**re-localization**" (Brunori, 2007; Goodman, 2004; Sonnino & Marsden, 2006a). Re-localization can be defined as the strategies focused building production-consumption networks based on the local production of food, energy and goods, and the local development of currency, governance and culture.

Brunori (2007) distinguishes three forms of localization: the *symbolic re-localization* relies on the awareness of consumers of the origin of the product or its main ingredients, it bases on the concept of food traceability and on the exchanging information between

producers and consumers, to create a link between origin and safety in the mind of consumers; *physical re-localization* "implies a reconfiguring of sourcing patterns and the localization of processing plants" (Brunori, 2007:200), it counts on the valorization of the place of origin of food products (like in Geographical Indications, such as the "Protected Definition of Origin" and "Protected Geographical Indication" certifications as regulated by the EU); finally, *relational re-localization* represents the marketing forms of "local food" supply such as direct farmers' markets, box schemes and Community Supported Agriculture. Brunori (2007) concludes that, on the basis of the three forms of localization, it is possible to make a further distinction between "local food", "locality food" and "localist food": "local food" is an expression of local community, that implies short-distance relationships and traditional community food habits, on the other hand, in the case of "locality food", consumption may be removed from production, consumers are focused on the origin of a product from a particular place, not carrying about the "community factor", finally "localist food" represents the need of "reconstructing local identities" (Brunori, 2007:12): in this case, food products are considered local not on the basis of traditional food habits, but consumers, living in the same place, chose deliberately among a set of products, which are generally produced in the area.

Hinrichs (2003), as well, analyzing the local food movements in Iowa, defines two forms of localization: the "defensive localization", which imposes rigid spatial boundaries and defines itself in patriotic opposition to outside forces, becoming "elitist and reactionary" (Hinrichs, 2003:37) and the "diversity-receptive localization", which "embeds the local into a larger national or world community and recognizes that the contents of local are "relational and open to change" (Hinrichs, 2003:44).

Finally, Dupuis and Goodman (2005) suggest that, with the increasing politicization and market-orientation of local food systems, the re-localization movement would lose its

meaning of "resistance against a global capitalist logic" (Dupuis & Goodman, 2005:360), but it would tend to constitute an "imperfect, political process in which the local and the global make each other on a everyday basis" (Dupuis & Goodman, 2005:369). In conclusion, they affirm that alternative food systems have, today, the challenge of maintaining "localism an open, process-based vision, rather than a fixed set of standards" (Dupuis & Goodman, 2005:369).

1.4 Discussion and conclusion

Alternative food networks (AAFNs) are increasingly gaining popularity as an alternative to globalized and industrialized food streams (Grey, 2000). AAFNs have been represented as a "turn" from industrialized and standardized systems to the "domestic" world, where quality is interpreted in terms of food localization, proximity relations, trust, tradition and place support, re-valuating the relation between consumer and territory (Goodman, 2004, Hinrichs, 2003). On the other hand, the present study shows that the distinction between conventional and alternative food stream may be not so clear: for instance, organic products tend to be produced with the use of standard production techniques, in order to be marketed at global level, while large food companies tend to promote niche food lines, addressed to a specific kind of consumer (Lockie, 2008, Murdoch and Miele, 1999). Hence, there is still a need to improve the definition of AAFNs and to identify (if any) special features which are intimately related to food products that are marketed through alternative networks. According to Higgins *et al.* (2008), a solution to this problem may be the adoption of certifications as means of quality assurance and vehicles of trust between consumers and producers. However, Goodman (2004) states that, on some extent, the use of labels and logos may drive to a sort of standardization of alternative food streams and, therefore, to a loss of contextualization.

One of the factors that mostly characterize AAFNs is the concept of re-localization that has been defined as the re-building of production/consumption networks based on the local production of food. On the other hand, in this review of previous literature, it was not possible to provide a shared definition of "local food": the concept of "local food" is described in terms of *Food Miles* (Slow Food, 2013), but sometimes also in terms of regional and political boundaries (Scarpa, 2010; Hu 2012) or in terms of natural and social meaning, based on social and cultural factors which influence food traditions (Amilien, 2007). According to Hand and Martinez (2010), the definition of local food has its origin in the "Slow Food" movement, which identifies "local" ("*chilometro zero*", in Italian) the products which are consumed in a range of 100 Km from the production place (Slow Food, 2014). However, "Slow Food" itself does not strictly respect this distance constraint: at the Earth Market (the Farmers' Market organized by Slow Food) of Bologna, fishery produce comes from the coastal area of the Emilia-Romagna region, which is about 150 Km far away from the city of Bologna (Pirazzoli, 2012). On the other hand, regarding the definition of political bounderies, there is still confusion whether considering provincial, regional or national borders. Hence, the more than centenary concept of "*terroir*" put forward by Amilien (2007) might be the one that mostly gets close to the concept of "local", but it is necessary to point out that this definition of local food overlaps and is not easily distinguishable from the general understanding of GI certifications and it could generate confusion at the market level. Furthermore, considering a food product as local on the basis of social and cultural factors may cause disagreements in the definition of what is related to food traditions. For example, in 1972, in Berlin, the Turkish restaurateur Kadir Nurman, in order to attract more customers, had the intuition to wrap the Kebab meat (a typical Middle Eastern meal) in a kind of bread that German people could better enjoy; he invented the famous "Döner kebab". From 1972, the Döner Kebab became one of the most popular street food meals in Berlin. The question is:

can (or should) Berliners consider the Döner Kebab as a local food? This is just a funny example of how much in a context of growing globalization and cultural mixing, interactions and contaminations, new food traditions are emerging and it may become harder and harder to define what is local and what is not. For all these reasons, the need of an exact, shared, and widely recognized definition of "local food" is called, aiming at the development of those "local food labels". The use of this kind of labels may promote the supply of locally grown food products in more conventional kind of outlet, such as large retail chains. Referring to previous studies, it was not possible to determine the opinion of both consumers and farmers regarding the marketing of local food products in conventional stores. In future research, it would be interesting to analyze whether consumers are willing to purchase locally grown products, even at the outlet where the direct communication with producers is not possible and, especially, if small-scale farmers consider that selling their products through intermediaries such as large retailers may achieve the same advantages, which are generally attributed to the direct marketing at FMs.

2. An exploration of "local food" concept in the Italian Food Market

Evidence from the review of the literature (Chapter 1) showed that the main question related to the local food system is the necessity of a shared and widely recognized definition of "local food" in order to understand whether the local origin can be interpreted in terms of food miles, political boundaries or food traditions. This represents a crucial issue of this study aimed at the analysis of consumers' perception and WTP for local food products. In addition, a clear definition of "local food" is a basic requirement in the establishment of recognized labels claiming the local origin of a food product. Authors' points of view regarding the emergence of local food labels were diverging, considering on the one hand the adoption of certifications as means of trust between consumers and producers, on the other as means of standardization and therefore loss of contextualization of the local food as alternative to conventional food streams. However, the potential emergence of local food labels has been scarcely discussed in the current literature both at the level of AAFNs and at the level of more conventional food networks. This part of the research is, therefore, focused on the exploration of the meaning of "local food" and the potential emergence of local food labels in the Italian food market.

2.1 Introduction

In the Italian market, local food is defined as "Chilometro Zero" (Kilometre zero), since the first form of direct marketing was represented by the points of sales organized by producers within their farm, where the supply of food products to consumers occurred in the same location of the production (Bugni 2010). The popularity of local food products in Italy has been considerably growing: 1113 Farmers' Markets (FMs) organized by "Campagna Amica" (the most popular format of FMs in Italy) were recorded in 2014 (Campagna Amica 2014), in Giuca (2012) estimated that more than one thousand of Community Supported Agriculture (CSA) organizations were operating and the number of direct marketing outlets as

open markets, small shops and farm-shops showed a 18% growth just in the year 2013 (Aldinucci 2014). With the Decree "De Castro"[3], currently in force from the 1st of January 2008, guidelines have been set for the realization of the markets exclusively dedicated to the direct retailing of farmers. Large retail chains started, as well, to highlight the origin of the products that have been locally produced. The Veneto Region, first in Italy, regulated the regional law number 7 on the 25th of July 2008 in order to promote the consumption of regional products in public food services in order to support the local economy, and other Italian regions, Abruzzo, Basilicata, Lazio, Calabria, Marche, Molise and Puglia are tending to follow the same approach (Coldiretti 2014).

On the other hand, in the Italian market, labels which certify the local origin of the products are not present and the definition of what is local or not is not currently regulated.

Admittedly, according to Italian and international literature review, it is difficult to draw "a shared definition of "local food"" (Bazzani, C. & Canavari M., 2013:30). Brunori (2007) suggested the distinction between "local food", "locality food" and "localist food". The term "local food" implies the instauration within a community of short-distance relationships, based on food habits and food traditions. On the other hand, the definition of "locality food" is mainly focused on the origin of a product from a particular place, giving less importance to the "community factor". Finally, Brunori (2007) explains the concept of "localist food": consumers tend to reconstruct local identities by the regular consumption of food products, although they do not belong to the rural traditions of the local area. Hand and Martinez (2010) stated that the re-valuation of local food has been firstly supported by the Slow Food movement that defines whether a product is local or not on the basis of a range of 100 Km (approximately 60 miles) within the consumption and production locations (Slow Food 2013). It is necessary to point out that "Slow Food" itself does not strictly respect this distance

[3] DECRETO 20 Novembre 2007, MINISTERO DELLE POLITICHE AGRICOLE ALIMENTARI E FORESTALI, Attuazione dell'articolo 1, comma 1065, della legge 27 dicembre 2006, n. 296, sui mercati riservati all'esercizio della vendita diretta da parte degli imprenditori agricoli. Gazzetta Ufficiale N. 301 del 29 Dicembre 2007.

constraint (Pirazzoli, 2012). Furthermore, in the literature, the concept of "local" has been associated with regional, national boundaries (Feagan, 2007; Hu *et al.*, 2012; Lombardi *et al.,* 2013) or in terms of "typical" food from a certain area (Akaichi *et al*., 2012). Authors (Amilien *et al.*,2007; Barham, 2003) associate to "local food" the well-known French term "*terroir*", highlighting the influence of social and cultural factors in determining consumers' food habits: "the territorial reputation of a product is more often derived from a mixture of messages rather than the actual geography" (Amilien *et al.*, 2007:55).

Given this variety of interpretations of the meaning of “local”, the aim of the present study is to determine a definition of "local food" that can be shared in Italy, where the variety of resources in different territories and an ancient culinary art tradition lead to a high diversification in food consumption. Particularly, the main goal of the research is to establish whether “local” can be better interpreted in terms of food miles, political bounderies or in terms of belonging to a community and food traditions.

An explorative qualitative research, based on the use of semi-structured interviews was performed. To the best of the knowledge of the author, past studies related to the determination of local food meaning was mostly based on an anthropological analysis of geographical and cultural conditions which lead to the instauration of local food networks (Brunori 2007; Sonnino & Marsden 2006; Dupuis & Goodman 2005; Hinrichs 2003) or they were mainly focused on the description of consumers' perceptions towards local food (Aprile *et al*. 2012; Darby *et al*. 2008; Zepeda & Deal, 2009). Therefore, this study represents one of the few attempts, the first one in Italy, to explore the meaning of local food using a qualitative approach. In the survey, consumers, farmers and experts of the food system (in total a number of twenty-three participants) were interviewed regarding their opinions on local food consumption.

Through the exploration of concepts as food values, quality perception, attitudes towards origin certifications, the main issues related to the definition of "local food" was drawn and we attempted to describe a possible scenario of the development of "local food" labels in the Italian market.

The following sections we will include the description of the used methodology, an explanation of the results which were obtained and finally a concluding discussion will be provided.

2.2 Materials and Methods

In order to describe the complexity and diversity of meanings embodied in the concept of "local food" an explorative qualitative analysis was developed. This approach was chosen because it is more suitable to achieve a level of depth understanding that is usually not possible to obtain with a statistical survey method (Molteni & Troilo 2012). Interviews were chosen as the most appropriate tool to analyze the social, cultural contexts through which informants can build cultural meanings (Denzin, 2001; Moisander *et al.*, 2009). In-depth interviews were performed, supported by a semi-structured interview schedule, which served as a non-binding guideline for the interviewer[4].

A convenience, non-probabilistic sample of twenty-three individuals was selected. Three interviews were conducted by phone, the remaining in person. The face-to-face interviews were performed in the cities of Bologna and Genoa. The selected sample was composed of six consumers, eight farmers and nine experts of the food market. It was established to interview different actors of the supply chain in order to have a broader interpretation of the issues related to the local food system. The consumers were recruited on

[4] The semi-structured questionnaire is reported in appendix A

the basis of their interest in the local food networks, indeed, four of them were regular Farmers' Markets shoppers and two of them were members of a CSA initiative. All the interviewed farmers regularly participated in Farmers' Markets and the selected experts were mainly involved in direct marketing activities or certification bodies (Table 3).

Table 3: Description of Survey Participants

No.	*Consumer/Farmer/Expert*	*Activity*
1	Consumer	Regular Farmers' Markets shopper
2	Farmer	Farmer participating in direct marketing activities
3	Farmer	Farmer participating in direct marketing activities
4	Farmer	Farmer participating in direct marketing activities
5	Expert	Brand manager involved in the direct marketing of a wine company
6	Consumer	Regular Farmers' Markets shopper
7	Farmer	Farmer participating in direct marketing activities
8	Farmer	Farmer participating in direct marketing activities
9	Expert	Member of Coldiretti Association
10	Expert	Small Retailer of local food products
11	Farmer	Farmer participating in direct marketing activities
12	Farmer	Farmer participating in direct marketing activities
13	Consumer	Regular Farmers' Markets shopper
14	Consumer	Regular Farmers' Markets shopper
15	Expert	Researcher at the University of Bologna
16	Expert	Farm Assurance Technical Coordinator of a certification body
17	Consumer	Regular CSA shopper
18	Expert	Member of Slow Food association, Bologna
19	Expert	Brand manager involved in the direct marketing of organic fresh fruit and vegetable company
20	Expert	General manager of Italian vegetable seed company
21	Expert	General manager of a retail company
22	Consumer	Regular CSA shopper
23	Farmer	Farmer participating to direct marketing activities

Source: Data from the Survey

The recruitment of consumers was the most demanding between the three categories of respondents since most of the contacted consumers affirmed to have an insufficient knowledge of the topic and they did not accept to participate in the survey. On the other hand, most of the contacted farmers and experts agreed to take part in the research (Table 4).

Table 4: Contacted and selected participants

	Contacted	Selected	Percentage of participation (%)
Consumers	17	6	34%
Farmers	11	8	73%
Experts	12	9	75%
Total	40	23	58%

Source: Data from the Survey

The interviews were administered during summer 2013. Once the respondents had been contacted, they were asked to take part in a research regarding the local food system. They were informed about the duration of the interview (30-45 minutes) and they were assured that their participation would be anonymous. Finally, the interviews were scheduled according to respondents' availability.

As previously mentioned, the interviews were structured according to a semi-structure interview schedule that was not strictly followed in order to minimize researchers' influence and other sources of bias (Alvesson 2003). Therefore, general questions (open-ended questions) were posed to introduce the argument and, along the discussion, informants tended to be induced to raise issues that were considered important and relevant to the subject of interest (Myers, 2009). All the interviews were recorded and transcribed verbatim. The transcribed interviews were analyzed using firstly an open coding approach to examine the discrete parts. Then, axial coding was applied for the re-assembly of the data in categories and subcategories, which were finally, brought together using a selective coding (Strauss & Corbin 1998).

2.3 Results

2.3.1 Food values

Respondents suggested different interpretations of the concept of food values: they referred to features as organoleptic characteristics and nutritional value as well as to the environmental and ethical aspects related to the production and the supply of food products.

Taste was defined as the feature that mainly explained the value of a product. It is necessary to point out that, in the case of fresh food products, taste was mostly mentioned in combination with **freshness** and **correct grade of ripeness**; interviewees indicated "good products" as the ones that were harvested and sold within a day's time. **Seasonality**, as well, was mentioned as an important value in the food system, since the consumption of seasonal products implies both a better organoleptic quality and the respect of natural cycles. Furthermore, common opinion was that the conventional agricultural techniques, the early harvest and the post-harvest treatments represented, generally, the main cause of quality loss, not just by the organoleptic, but also by the nutritional point of view. In fact, **safety** has been pointed out as one of the primary factors in food consumption: a good food product is the one that a "*mom can give to his child without worrying if it is healthy or not*" (Interviewed farmer) and the one that "*does not contain poisons*" (Interviewed farmer). Accordingly, several respondents stated that an important value was whether the product had been **organically** produced. One expert argued that the industrialized food system lead to the research of agricultural techniques aimed at the production of "attractive" foods in large scale and he highlighted the necessity to turn to the use of techniques that were focused on the protection of soil fertility and the "respect of nature". Indeed, the **safeguarding of biodiversity** became a crucial aspect in the definition of the food values, in order to preserve the variety of the products which are typical of the different Italian regions. Particularly, **protecting the**

territory was defined as a very important aspect, both by the environmental point of view and by the social-cultural point of view: "*the respect of the natural conditions of the territory must be considered as an investment in improving the lifestyles, the economy of local farmers and the re-vitalization of rural areas*" (Interviewed expert). Indeed, the re-valorisation of the role of farmers and of the **rural culture** has been defined as the crucial point in the Italian food system, where the dominance of the large retail chains tends more and more to a large scale production and does not focus on the peculiar characteristics (**typicalness**) of the regional productions, which represent the strength of the products "made in Italy". Therefore, several interviewees argued that the **communication** between farmers and consumers or the information given by labels and certifications are essential in a context where consumers are increasingly less aware and less interested in food traditions. Finally, **price** was mentioned as a value that had a relative importance, but did not outweigh the items previously mentioned. Only one consumer suggested price as one of the main attributes in purchasing food. In most of the cases, interviewees agreed on the fact that price had to be in compliance with the organoleptic characteristics of the product and the quality of used production techniques. Therefore, an expert mentioned the slogan of Slow Food: "Buono, Pulito e Giusto" (Good, Clean and Fair) in order to summarize the values which should be related to food consumption: food products must have a good taste, they must be produced in respect of food safety regulations and environmental safeguard and they must be purchased at a price that is fair to consumers and profitable for farmers.

2.3.2 The definition of quality

Most of the interviewees mentioned the word “quality”, when they were asked to explain the values related to the food products. The concept of quality has been mainly

interpreted in two different ways: some interviewees tended to be more focused on the definition of intrinsic characteristics as taste, freshness, seasonality, while others referred mainly to cultural, geographical, environmental factors related to food consumption.

Some experts argued that quality is a subjective concept, it can be interpreted as the "*satisfaction of the needs of who receives the product*" (Interviewed expert): consumers, for example, tend to look for a product with a good taste, flavour, their idea of food quality diverges from the requests of large retail chains, which are more interested to characteristics as colour, shape standardization and long shelf life. In this respect, quality is therefore interpreted as excellence or differentiation according to consumer preferences, but it can also be interpreted as standardization and compliance with customer's contractual requirements. Indeed, quality has also been defined as the respect of the standards, laws and regulations which control the food system, thus introducing a concept of compliance with minimal requirements.

The food safety aspect was mentioned as a basic feature or even a prerequisite that food products must achieve in every stage of the food supply chain, therefore it should not bring to any differentiation among food products available on the market. In some cases, however, the safety aspect has been associated to organic production that, on the other hand, has been identified as a factor strictly related to the concept of quality. First of all, it implies the absence of pesticides which allegedly alter the taste, the flavour and the healthiness of the products. Secondly, but not less important, the continued use of artificial fertilizers (as it is linked to conventional agriculture) drives to soil exploitation and to the damage of food products nutritional value. Soil protection and use of sustainable agricultural techniques have been mentioned as crucial aspects in giving a definition of quality in the food system, but in this case interviewees, especially farmers and experts, highlighted the importance of the suitability of the territory: "*the territory must do what it can do*" (interviewed expert). Fruits

and vegetables should be grown in the most favourable soil and climate conditions, animals should be kept living in their natural habitat, respecting their welfare, and the transformation of the food products (cheese and wine for example) should be applied where the environmental conditions caused a food product to be part of the community traditions. On the basis of these issues, quality can be interpreted as the respect of natural cycles and the safeguard of the typicalness of food products.

Regarding the organoleptic characteristics, interviewees stated that taste was the main attribute in defining the quality of a food product: "*it does not matter if a product looks perfect, the important part is that it tastes good!*" (Interviewed consumer). It is necessary to point out that respondents argued that a product is good and healthy when it is fresh, since the avoidance of preservatives, and in the specific case of fresh fruits and vegetables, the seasonality and the correct harvest time, allow the achievement of the authentic aromas and flavours of a product.

2.3.3 The importance of the origin of food products

First of all, it is necessary to reaffirm the importance of suitability and potentiality of territory: soil and environmental conditions of a certain area are crucial in the development of particular kinds of food products. Respondents suggested the examples of the Pachino cherry tomatoes and of the Parma ham. An interviewed farmer argued that the Pachino cherry tomatoes are typical from an area of Sicily where soils are characterized by a high salinity and the climate is very dry, and it would be difficult to obtain the typical sweet flavour in different environmental conditions. One expert stated that the Parma ham would not achieve its peculiarities if the raw material was not being kept exposed to the right grade of humidity that is prevailing in the Parma area. Generally, interviewees pointed out the variety of climate

conditions in Italy, which determined the presence of different food traditions and their historic value in the different regions. Some experts stated that the population of a certain area selected, generation by generation, the best food products that they could obtain and they learned, over the years, how to grow them and transform them. The development and the introduction of new varieties may cause confusion in local farmers and, therefore result in lower quality products. For all these reasons, several informants agreed on the fact that, in a "*world of growing indifference towards food traditions*" (Interviewed expert), there is the necessity to educate consumers in "*respecting what the territory can give*" (Interviewed expert) and re-valorising the role of agriculture in the Italian economy. Accordingly, when interviewees were asked about their opinion on GI certifications, some of them affirmed that this kind of certification may be a starting point to re-build a connection between consumers and territory and to the revaluation of rural areas, but they highlighted the necessity to give more information about their function and meaning. Indeed, interviewed consumers affirmed that they could not give their opinion about GI certifications, since their knowledge about these certifications was not sufficient. On the other hand, several interviewees were skeptic regarding this kind of certification for different reasons: (1) they affirmed that it is not difficult to counterfeit the origin of food products, especially in the case of those ones which are unpackaged, (2) the specification of the origin of a product does not give crucial information as to agricultural techniques and treatments which have been used. One farmer suggested that a collective self-certification within a community of farmers would be the appropriate tool to overcome these inconveniences.

It is necessary to point out that in several cases, when interviewees were asked about their opinion regarding the importance of the origin of the food products, they referred to the proximity. The argument concerning the advantages of shortening the distance between the

site where the food is produced and the site where the food is consumed will be the subject of the next section.

2.3.4 Local food and its role in the Italian food market

In Italy, "local food" is widely identified with those products defined with the acronym "Chilometro Zero" or "Km0" (kilometre zero). General opinion was that this acronym may be misleading, since it is barely possible to purchase food products which were produced in a range lower than one kilometre (around half mile). Interviewees stated that term "Km0" may have developed especially for marketing reasons in order to encourage consumers to buy these kinds of products. Indeed, the interviewed consumers appreciated this acronym, they affirmed that it explained clearly the origin of the product from a close area.

Most respondents suggested that the determination of a food product as local was strictly related to the distance of the place of purchase from the area where it was produced and that it should be defined in terms of miles; some of them suggested 30 miles as a reasonable threshold. On the other hand, it is necessary to point out that, once that interviewees had analyzed the issue more deeply, they considered that the restriction of food miles depended on the kind of product. Several of them suggested the example of oranges, which are mostly cultivated in the South of Italy (in particular in Sicily and Calabria), but they are typically consumed in the whole country, thus implying hundreds of miles transportation. Interviewees agreed on the fact that in this case Italian oranges could be defined as a local product, whereas non-local products are the ones coming from other countries as Spain or Morocco. The same can be argued for olive oil: the interviewed farmers in Bologna were aware of the fact that very few olive orchards were present in the range of 30 miles, since the city is situated at the northern limit of the natural distribution area of the olive

tree. However, acknowledging that extra-virgin olive oil is a crucial ingredient in the culinary tradition of the area, they affirmed that, in this case, the original olive oil from Emilia Romagna, or from neighbour regions, could be defined local. Indeed, the term "local" has been frequently combined with food traditions and territory suitability: the Parmigiano-Reggiano (Parmesan) cheese, for example, is produced in an area that includes four different provinces of the region Emilia-Romagna, where similar environmental conditions and land configuration induced the development of the same culinary traditions. Hence, local food has been valued as a factor joining farmers of a certain area and, especially, bringing the farmers closer to the consumers. Local food supply is generally enclosed to forms of short food supply chain as farmers' markets, Community Supported Agriculture (CSA) or direct marketing, where the consumers come in direct contact with producers. This aspect has been considered crucial in educating consumers to build a connection with their traditions and rural areas. Thanks to the direct communication with farmers, consumers can obtain information about when and how to consume what they buy and especially about the agricultural techniques that have been used. They become an active participant of the local agriculture and aware of increasing the local economy. Indeed the interviewed farmers stated that these forms of short supply chains are the only ways for small farmers to maintain their business in a food system that is dominated by large retail chains. Local consumption has also been associated with environmental safeguard, because of the decrease of transportation, consequently of gas emissions along the supply chain, and the favouring of a lower use of packaging. Further common opinion was that local products were fresher in comparison to the non-local ones and that the face-to-face relationship between farmers and consumers was an encouragement for producers to sell higher quality products.

On the other hand interviewees agreed on the fact that these forms of short food supply chains have some limitations: first of all food products supplied directly from farmers

may be subject to less stringent food safety controls in comparison to conventional food streams. In fact, several small producers who take part in farmers' markets cannot be provided with certifications, since the procedure to obtain these implies a cost that farmers cannot afford. Moreover Farmers' Markets and services organized by CSA may sometimes take place in periods and locations which are not convenient to consumers. Another inconvenience may be given by the difficulty in providing the consumers with all the kind of foods that a family may need. For these reasons, interviewees were asked about their opinion regarding the possibility, in large retail chains, that some food products are being labelled as "locally produced". In most of the cases, interviewees said they would appreciate this initiative, since it may represent a way to also teach the more distracted consumers how to value-enhance the local, seasonal food products and to establish a connection with their food traditions. They suggested that the "local food label" should be mainly focused on the identification of the farmers who produced the product and it should tell its "story": the location and the features of the farm where it has been produced, the agricultural techniques they used, how to consume it, etc.; one expert suggested that the use of QR-codes may be appropriate to give this kind of information. On the other hand, the opinion of some interviewees was that the information given in this way to consumers may not replace the information given directly by farmers. Most of them were skeptical about the integrity of food certifications, especially where the labels would define the origin of a product. Furthermore, interviewed farmers commented that large retail chains usually request an amount of products that small farmers are often not able to supply and that the reward that large retailers offer is not worth the higher cost of production. Finally, one expert argued that large retail chains would be interested in promoting the consumption of local food products only if these products were characterized by large retail chains own local brand, as a market strategy, to compete against foreign products.

2.4 Discussion and Conclusions

The adoption of an explorative approach, based on the use of in-depth interviews, turned out to be appropriate for the aim of the research. A high variety of information was collected that allowed to highlight the different aspects of the proposed topic. The semi-structured interview guideline was also effective in helping the interviewee to initially facing the problem by a broad point of view, and by turning the discussion into more specific issues related to the local food system. The definition of food values and respondents' perception of quality was essential in introducing the concept of origin, since nearly the totality of the interviewees marked the important issues as environmental and biodiversity safeguard, suitability of the territory and local traditions.

Furthermore, the variety of issues mentioned in the survey was also due to the choice of interviewing different actors of the food supply chain. Indeed, results showed that generally consumers were more focused on aspects as the organoleptic features of the products and the local economy support, farmers on the environmental safeguard and, finally experts highlighted the hygienic-sanitary aspect and the cultural factors related to food consumption.

Results show that the meaning of local must be explained more in terms of political boundaries and connection to a geographical area than in terms of food miles. Authors (Amilien *et al.*, 2007; Barham, 2003; Giovannucci, *et al.*, 2010) suggest that the meaning of local can be associated to the one of Geographical Indication. However, general opinion of the interviewees is that the interpretation of "local" must be more related to the belonging to a community of a certain area, where a culinary tradition has been preserved generation by generation. According to Brunori's classification regarding the local food system (Brunori 2007), the definition of "locality food" would be rather associated to the concept of Geographical Indication, that is focused on the origin of a product from a particular place,

while interpretation of local food that can be drawn from the finding of this study resembles the one of "local food", based on re-valuation of short-distance relationships and community food habits. Furthermore, according to the results, distance restrictions in defining local strictly depend on the kind of product: the concept of local goes further than the one of food miles, in the case that a food product is an expression of the identity of a region or of a country. Indeed, in several cases, respondents associated the re-valorisation of Italian food products and the support of the national economy to the consumption of local food. Accordingly, "local food" labels would differ from "Food Miles" labels, since “Food Miles” are mainly (perhaps naively (Cholette, 2011)) associated to the environmental impacts due to food transportation. "Local food" labels, instead, should highlight the connection between a community and the territory and provide information not just regarding the environmental benefits related to local food consumption, but also regarding the support to the local economy, the safeguard of the territorial biodiversity, of food traditions and, especially, regarding the characteristics and activities of the farm where foods have been produced.

The supply of local food products is mainly associated to forms of alternative food networks (Kirwan, 2004; La Trobe, 2001; Martinez *et. al*., 2010) and respondents agreed on the fact that the introduction of labels which determine the local origin of the products in mainstream food outlets may educate even the more "distracted" consumer to local consumption. Nevertheless, results showed that different limitations would affect the supply of locally grown products at large retail chains’ outlets. In the first place, general opinion was that consumers do not usually have a good knowledge of the meaning of certifications and the addition of a label might mostly generate confusion between consumers. In the second place, small farmers, who are generally the main actors in the supply of local food (Goodman, 2004; Renting *et al.*, 2003) may not be able to satisfy the volumes requirements of large retail chains and they may not have the economic advantages that they usually obtain through alternative

food networks. Finally, but not less important, the quality and the quantity of the information given by a label could not replace the information given by the producers, and the lack of direct communication between farmers and consumers would imply the loss of the connection between urban and rural traditions that represents the main issue of the local food networks.

3 A questionnaire-based survey on a novel product with local origin

The qualitative-explorative analysis has been performed aiming at the identification of aspects related to the local food concept in the Italian food system. Outcomes from this qualitative analysis have been then used as inputs for the building of the methodological approach to estimate consumers' WTP for local food. Hence, a consumer survey has been designed in order to obtain a quantitative description of the issue at hand. This survey also contains the data collection instruments that will provide the data for the analyses discussed in chapters 4 and 5. In this chapter The survey objectives, method and structure and I report descriptive statistics about the data collected are illustrated.

3.1 Introduction

The qualitative analysis played an essential role in the definition of the aspects related to local food consumption. However, the main objective of the present study is to estimate consumers' preferences and WTP for local food products. As such, the information collected in the explorative phase were used for the building of a quantitative questionnaire-based survey aimed at the investigation of consumers' perception for local food products. First , from the qualitative analysis it emerged that local is mainly interpreted in terms of cultural-geographical borders instead of food miles. However, the distances defining what is local strictly depend on the product in question. For instance, national borders can be interpreted as "local origin" in case of food products which are not typically grown or produced in the area of interest. Second, issues which are usually embraced by the organic production certification, such as production method and hygienic safety aspect, have been commonly associated to the local origin claim. The implementation of a non-hypothetical Real Choice Experiment (RCE) allowed the consideration of these aspects in the estimation of consumers' preferences and WTP for local food. In order to explore consumer's valuation for the local food claim in case of an unusual food product, apple sauce has, been implemented as the product in question, since it has been recently introduced in the Italian food market as healthy snack product and it

is still unfamiliar to many consumers. In addition, origin of the product and method of production have been considered as the attributes identifying the different kinds of the apple sauce, in order to assess what kind of food claim is more valued by consumers. The production method attribute was, then, specified as either organic or non-organic. Lastly, for the origin attribute, two levels were used: local (regionally produced) and non-local (produced in Italy, but outside the regional borders). The tradeoff between regional and national borders information allowed to test whether consumers value more the local over the National production claim when the product in question is not commonly consumed in the area of interest and this aspect was considered. Finally, the survey was performed in a hypermarket, since issues related to the supply of local food at large retail chains and related to mainstream consumers' perception for local food have been largely discussed in the qualitative analysis. The implementation of the RCE will be matter of hand and described in detail in chapters four and five. However, the RCE was part of a quantitative survey investigating issues related to respondents' perception for the good in question regarding participants' food habits and attitudes (mainly towards local and organic food claims) and finally regarding the description of the sample characteristics, such as personality traits and socio.-demographic information.

The aim of the present section of the research is precisely to provide a description of the sample, capturing information ranging from issues related to respondents' familiarity with the product in question (apple sauce), food values perception and local and organic food consumption to the description of respondents' personality and socio-demographic characteristics.

3.2 Methods and data

A number equal to 248 participants was randomly recruited at the entrance of a hypermarket located in Bologna, Italy. A specific hypermarket located in the city of Bologna has been selected for several reasons. First, this kind of outlet offers a high variety of food products, calling several consumers with different profiles. Second, the selected hypermarket differentiates from the typical target for this retail format since it is close to the city center and it provides a variety of specialty, traditional, niche products which are usually characterized by higher prices. Third, the retail chain cooperative allowed the use of only one outlet for the survey and, for the aforementioned reasons, this hypermarket was selected as the one with the most possible diversity in visitors' characteristics. Food shoppers were randomly intercepted and recruited at the entrance of the retail store. They were informed about the opportunity to participate in a survey on consumers' valuations for apple sauce. Interviewers approached the randomly selected participants and asked them a set of screening questions, verifying whether they were the main household food shopper, that each participant was at least 18 years old, and whether they were available to taste different types of apple sauce (for instance, excluding consumers who disliked or were allergic to apples). If the responses to all of these questions were affirmative, the interviewer started the survey. In the case of negative responses, the interviewer randomly selected another customer and asked the screening question until finding a participant who would be eligible to participate in the survey. Each participant was incentivized with a 5€ check-coupon. It is necessary to anticipate that the sample has been divided in four treatments for the testing of the different hypothesis concerning CCs formation. However, in this chapter a description of the total sample is provided.

A closed questionnaire format has been used and it was validated after the performance of a pre-test on 30 subjects (students and administrative staff of the Department of Agricultural Economics, University of Bologna).

The questionnaire[5] was structured in 8 main sections, investigating the different issues:

1. Respondents' familiarity with the product in question

   Since apple sauce is an usual food product in the area of interest, it was expected that many consumers were unfamiliar with this product. Therefore, different questions were proposed to elicit respondents' degree of familiarity with the apple sauce. First, respondents were asked to evaluate, from 1 (not at all) to 7 (extremely) how they were familiar with the product in question. The second question was aimed at identifying the purchase frequency of apple sauce. Then, the knowledge of the brands producing apple sauce was investigated, asking participants whether they could indicate any known apple sauce producer. In case respondents were not able to answer, the interviewer suggested some examples. Finally, the last question was focused on the exploration of respondents' reference price in Euros (€) for two cups of apple sauce, 100g each. This question was of relevant importance in the pre-test phase to determine the four levels of the price attribute.

2. Sensory evaluation of the different kinds of apple sauce

   Since respondents' unfamiliarity with apple sauce was expected, each participant was asked to taste all the four apple sauce products (local/organic, local/conventional, non-local/organic, non-local/conventional), in order to approximately equalize the level of experience with the product in question across the respondents. Consumers' degree of liking/disliking of the apple

[5] The full questionnaire is available in Appendix B

sauce was assessed using the LAM scale (Schutz & Cardello, 2001). The LAM scale is a 11-point scale that has its end points in the expressions "greatest imaginable like" (100) to "greatest imaginable dislike" (0)[6].

3. Definition of the importance of the different food values

   In the qualitative phase of the research, it emerged that food values play an important role in individuals' food choices. As such, part of the questionnaire-based survey was focused on capturing the importance of different food values in respondents' food habits. Food values were interpreted using the 11 items identified by Lusk & Briggeman (2009): Environmental impact, Appearance, Fairness, Origin, Tradition, Nutritional value, Convenience, Safety, Price, Taste and Naturalness. Respondents were asked to value the importance of each food value using a 7 point scale (1= not at all important, 7=extremely important).

4. Real Choice Experiment

   This section of the survey was aimed at estimating respondents' valuation for local and organic apple sauce. Respondents faced eight different choice tasks, each of them describing three choice options: two different apple sauce products and a “no purchase" option. The detailed description of the RCE mechanism will be given in the next chapter

5. Consumers' attitudes towards local and organic food products

   This part of the survey was aimed at exploring consumers' knowledge of organic and local production and respondents' organic and local foods purchasing habits. Degree of knowledge of local and organic production was measured using a 5 point scale, where 1 indicated the option "not

[6] LAM scale is illustrated in Appendix B

knowledgeable at all" and 5 the option "Very knowledgeable". Finally participants were asked to indicate among different options, where and when they mostly purchased local and organic food products.

6. Consumers' perception of the meaning of local food

   In order to capture a definition of local food, respondents were asked to suggest how they defined a food product as "local" both in terms of Km and in terms of political boundaries. Respondents had to tick a bar representing a range from 0 to 250 km in order to indicate which was the maximum distance of production to define a food product from local origin. Regarding the definition of local food in terms of regional borders, respondents were asked to make a choice between the option "from the province (Bologna), from the region (Emilia-Romagna), from the country (Italy).

7. Personality traits:

   In order to measure the personality traits, the Midlife Development Inventory (MIDI) scale was used, where the different personality traits with defined with a list of 25 items[7] (Keyes, *et al.*, 2002; Lachman & Weaver, 1997; Weiss *et al.*, 2008) (Table 9) . Each item was elicited by subjects, using a scale from 1 (not at all) to 4 (a lot) to indicate the degree to which each adjective on the scale describes them. The use of the personality traits was used in order to estimate whether individual's personality traits influenced their valuation for local and organic apple sauce. As in the case of the RCE a detailed description of the methodological approach and of the results will be given in the next chapter.

[7] The MIDI scale by Lachman & Weaver (1997) is composed of 30 items and 6 dimensions, but the literature usually focuses only on the Big Five (OCEAN) model, leaving the sixth factor (Agency) out.

8. Socio-demographic information:

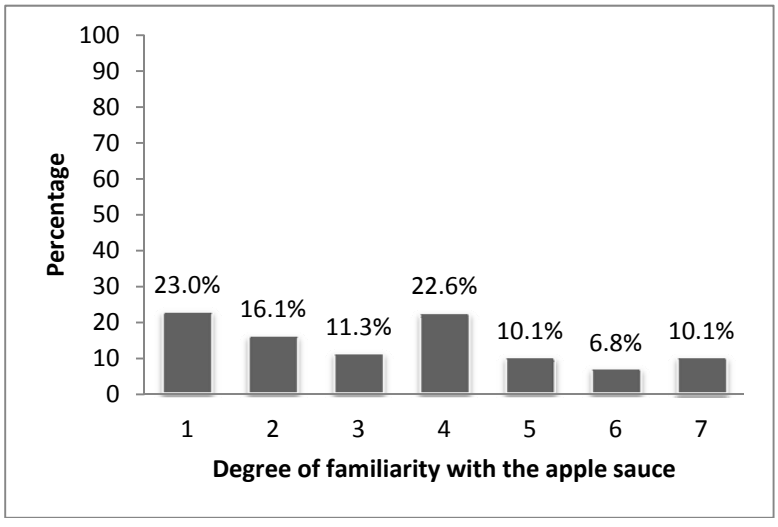
   Questions related to the socio-demographic characteristics of the sample explored information regarding the gender, age, education, household components and average annual income of respondents.

Finally, the data collected from the questionnaire were analyzed using univariate statistics.

3.3 Results

The first questions of the questionnaire were aimed at capturing respondents' degree of familiarity with the product in question, the apple sauce. First, respondents were asked to evaluate from 1 (not at all) to 7 (extremely) how they were familiar with the apple sauce. Figure 1 reports respondents' degree of familiarity with the apple sauce.

Figure 1: Respondents' degree of familiarity with apple sauce (%)

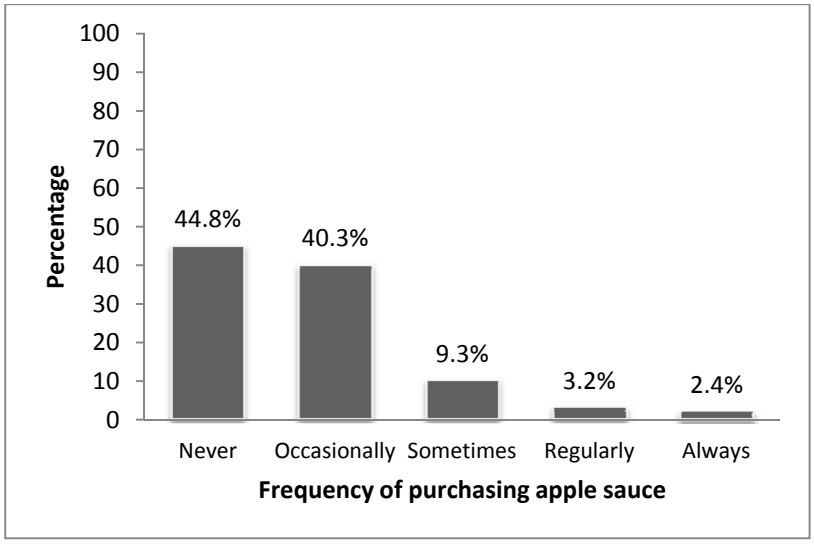


Source: Data from the survey

Figure 1 indicates that the majority of respondents affirmed to be not familiar (50.4%) with the apple sauce. Only the 27% of the sample declared to have familiarity with the

product in question. As excepted, this confirms that apple sauce is not a well known product in the survey area. The low popularity of apple sauce is confirmed by Figure 2, where the frequency of purchasing apple sauce is reported. Indeed, the largest part of the sample (85.1%) affirmed that never or occasionally buys apple sauce.

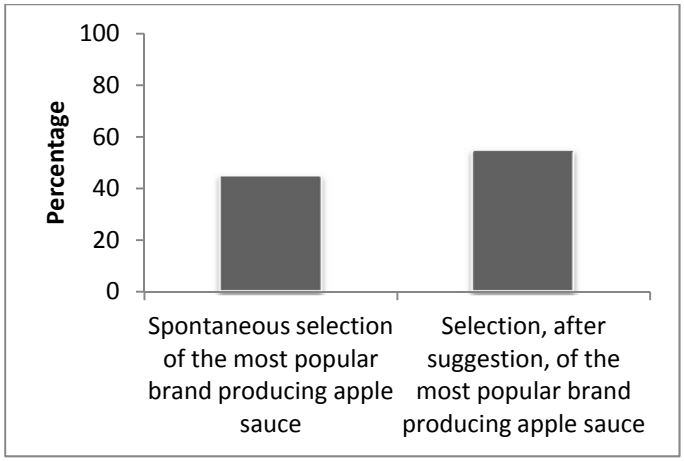
Figure 2: Frequency of purchasing apple sauce (%)



Source: Data from the survey

Respondents were then asked whether they could indicate the most popular brand producing apple sauce (Figure 3). More than the half of the sample was not able to spontaneously suggest a brand producing apple sauce (Figure 3). In this case an information sheet was provided to the respondents, indicating different brand logos, producing apple sauce.

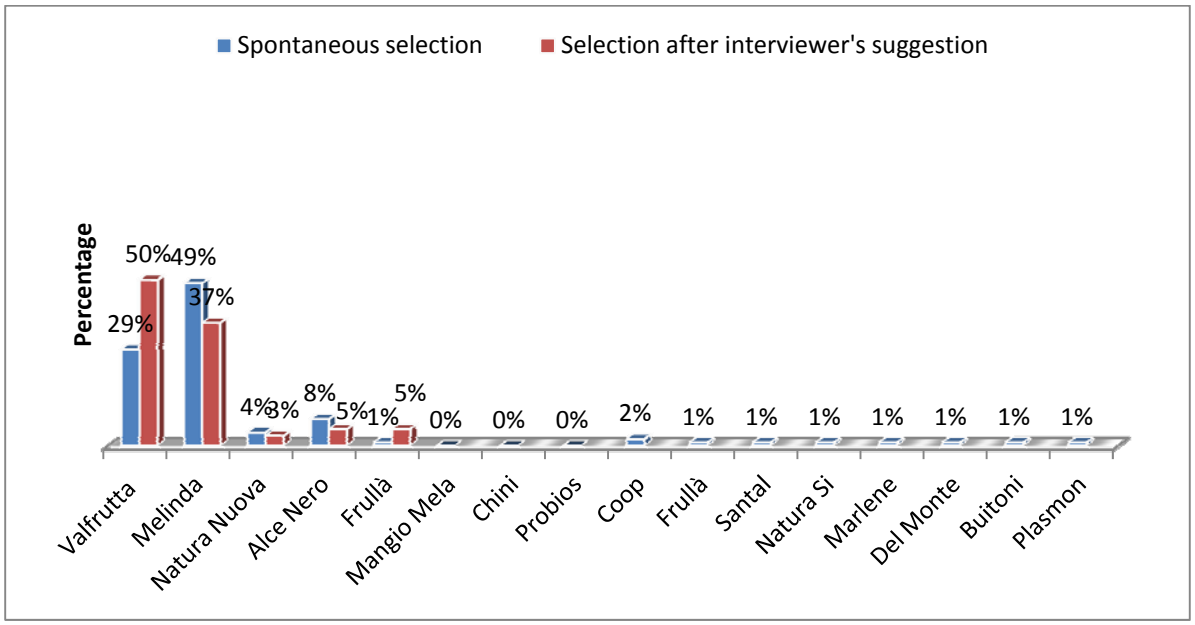
Figure 3: Respondents' selection of the most popular brand producing apple sauce (%)



Source: Data from the survey

Seven brands were individuated by the researcher as the main producers of apple sauce. These brands are: Melinda, Valfrutta, Natura Nuova, Alce Nero, Frullà, Probios, Chini. Figure 4 show the brands which were considered as the most popular in the apple sauce production. The participants who spontaneously indicated the name of a brand, most commonly mentioned Melinda (49%), followed by Valfrutta (29%) and Alce Nero (8%), while the respondents who requested a suggestion, indicated the brand Valfrutta (50%) as the one that they mostly knew, followed by Melinda and Frullà. The fake brand "Mangio Mela", used by the researcher as a control, was never selected. However, some consumers spontaneously suggested names of brands which do not supply apple sauce (Santal, Marlene, Del Monte, Plasmon).

Figure 4: Respondents' selection of the most popular apple sauce brand (%)



Source: Data from the survey

The last question concerning the degree of familiarity with the product in question was focused on the exploration of respondents' reference price in Euros (€) for two cups of apple sauce, 100g each. This question was of relevant importance in the pre-test phase to determine the four levels of the price attribute. Table 5 shows that the minimum value that was given to the two cups of apple sauce is 0.7€, while the maximum value is 10€. On average, respondents suggested that the two cups of apple sauce had a price equal to 1.99 €.

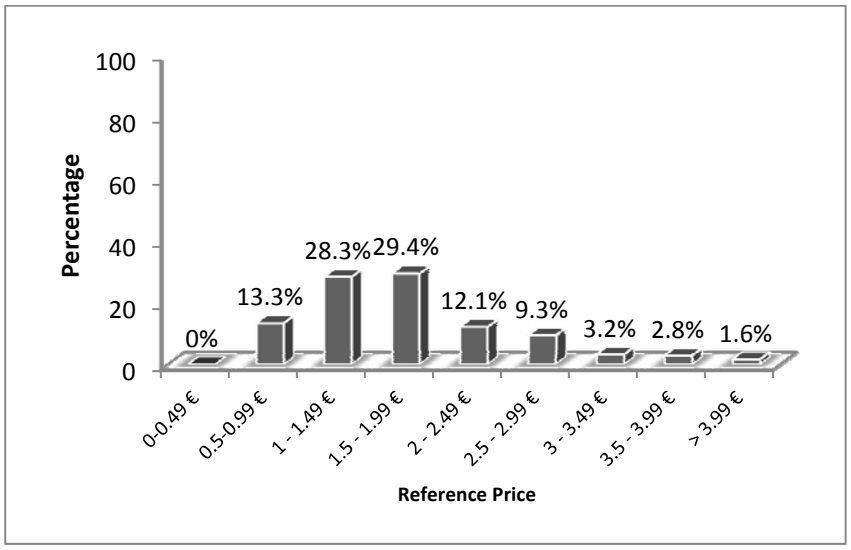
Table 5: Descriptive statistics of Reference Price variable

N° of observation	*Mean*	*Standard deviation*	*Min. value*	*Max value*
248	1.99 €	1.01€	0.7 €	10 €

Source: Data from the survey

Figure 5 reports that most of the respondents (29.4%) estimated that two cups of apple sauce had a price ranged between 1.5€ and 2€, followed by the category 1-1.49 €.

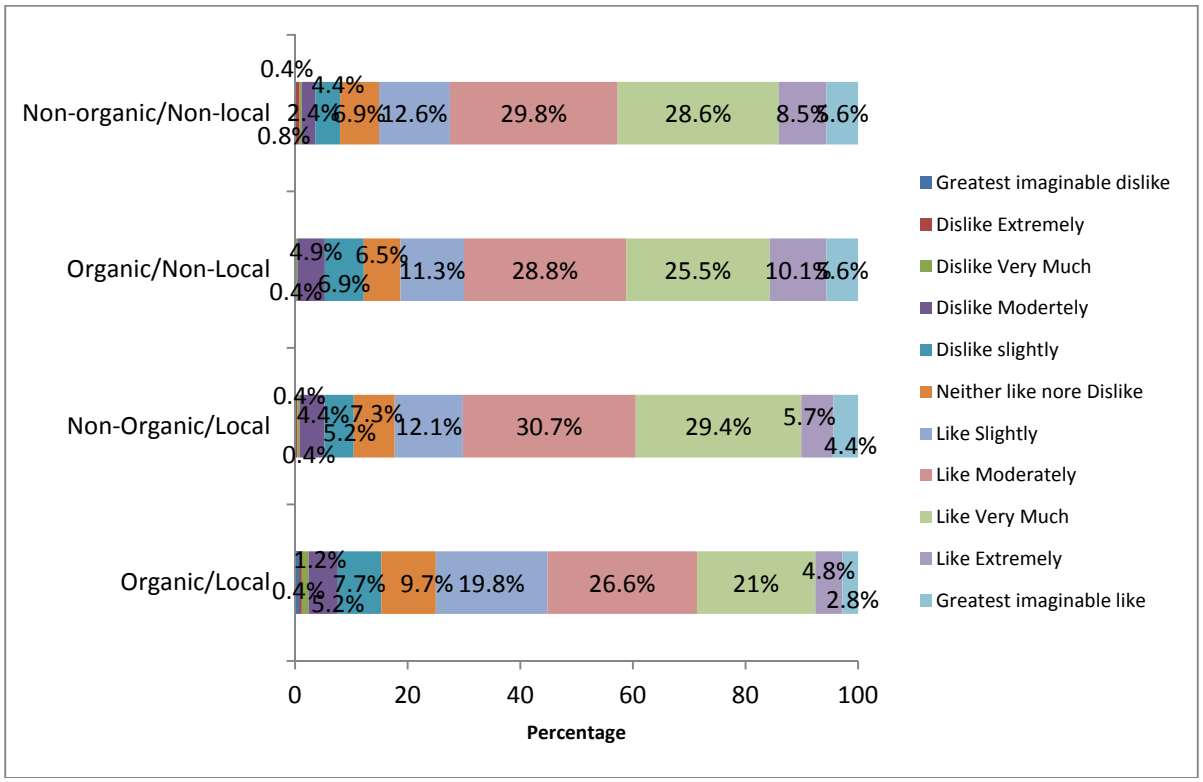
Figure 5: Respondents' reference price for two cups of apple sauce (€/100g)



Source: Data from the survey

In addition, precisely because of the expected respondents' unfamiliarity with the product in question, each participant was asked to taste all the four apple sauce products (local/organic, local/conventional, non-local/organic, non-local/conventional), in order to approximately equalize the level of experience with the product in question across the respondents. Consumers' degree of liking/disliking of the apple sauce was assessed using the LAM scale (Schutz & Cardello, 2001). LAM scale is a 11-point scale that has its end points in the expressions "greatest imaginable like" (100) to "greatest imaginable dislike" (0). Respondents' perception of all the four kinds of apple sauce was measured (Figure 6).

Figure 6:Liking/disliking of the different kinds of apple sauce (%)



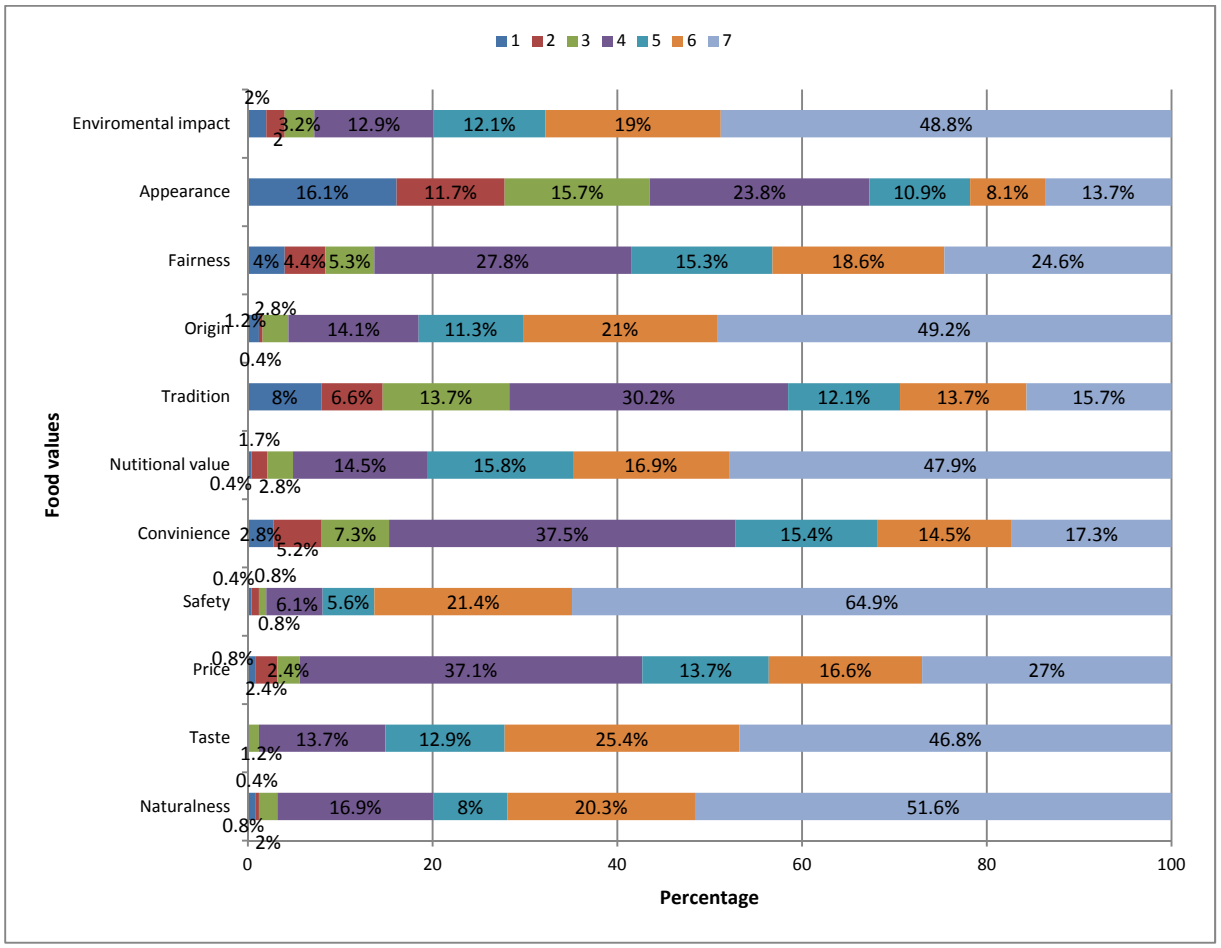
Source: Data from the survey

Figure 6 indicates that most of the respondents liked moderately all the four products . However, the organic/local apple sauce was the least preferred, with the highest percentage, (15,3%) of dislikes.

After the investigation of respondents' familiarity with the product in question, part of the questionnaire-based survey was focused on the investigation of the importance of different food values in respondents' food habits. Food values were interpreted using the 11 items identified by Lusk & Briggeman (2009) (Figure 7). Respondents were asked to value the importance of each food value in their food choices using a 7 point scale (1= not at all important, 7=extremely important). Figure 7 shows that safety and naturalness were considered the food values with the highest degree of importance. Precisely, the safety issue was considered extremely important by 64.9% of the sample, while the naturalness by 51.6% of the respondents. Origin and environmental impact have been indicated as the following

most important values in food consumption. On the other hand, appearance and tradition have been considered as the least important food values. Indeed, 43.5% of respondents valued appearance as a non important factor in their food habits. Tradition was as well identified as not important by 28.3% of the sample.

Figure 7: Importance of Food Values in respondents' food habits (%)



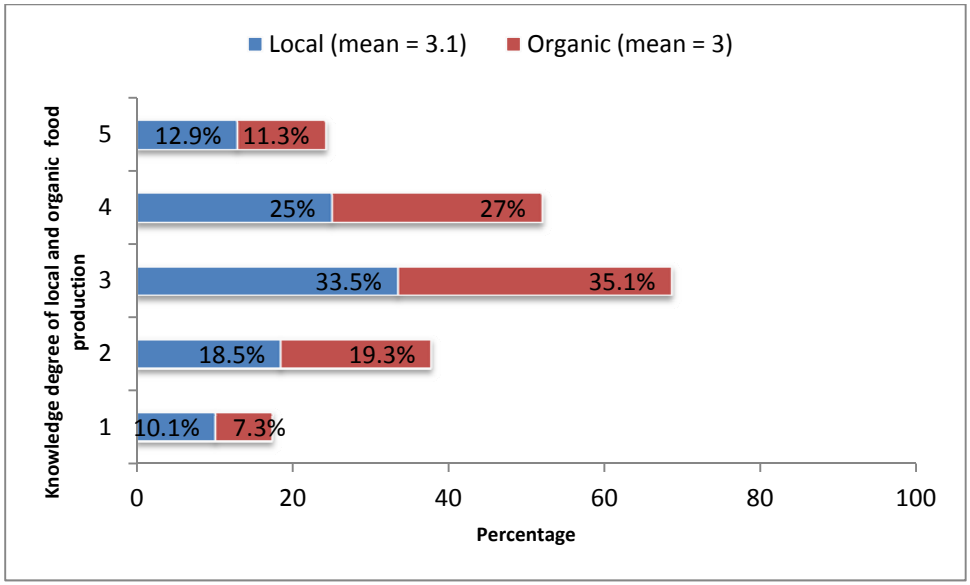
Source: Data from the survey

Afterwards, the RCE experiment was performed. As aforementioned, this relevant part of the survey will be described in detail in the following chapters (Chapter four and Chapter five).

The part of the questionnaire following the RCE was aimed at exploring consumers' knowledge of organic and local production and respondents' organic and local foods purchasing habits.

First, respondents were asked to evaluate their knowledge of organic and local food production, using a scale from 1 (not knowledgeable at all) to 5 (Very knowledgeable). Figure 8 shows that most of the respondents affirmed to have a moderately good knowledge both of the organic (35.1%) and of local (33.5%) production food claims. In addition, figure 8 indicates that the degree of knowledge of the two food attributes is almost equivalent.

Figure 8:Knowledge degree of local and organic production (%)



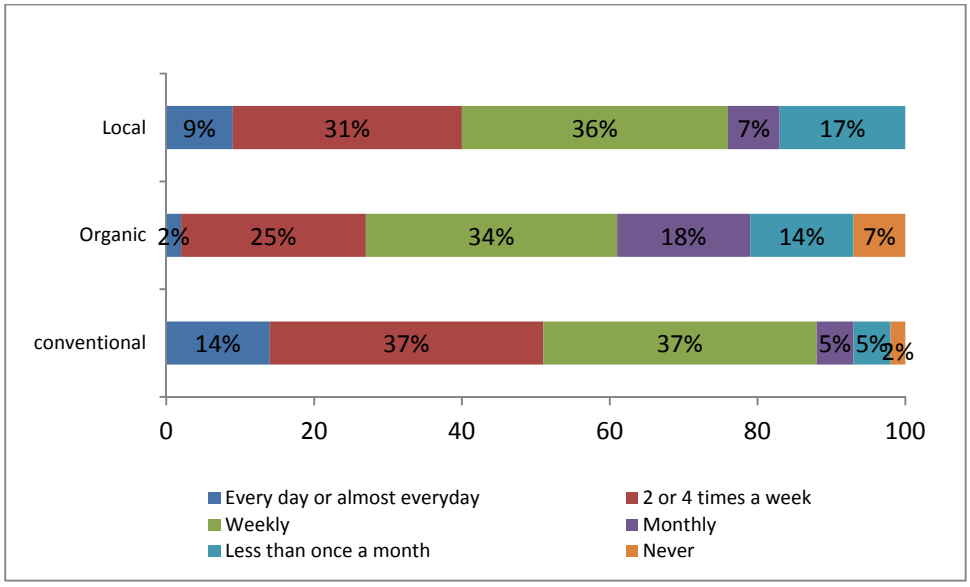
Source: Data from the survey

The following questions were focused on the investigation of the frequency and the location of purchasing conventional, organic and local food products (Figure 9 and Figure 10).

Figure 9 shows that conventional food products are more often purchased than the products characterized by the organic and local origin claims. Indeed 77.4% of respondents affirmed that they buy conventional food products more the once a week. On the other hand,

organic foods have been indicated as the kind of products which are generally purchased the least. Altogether, 39.8% of the participants affirmed that they buy organic food products just monthly or even more rarely. Finally, it is necessary to point out that only in the case of local food products no participant indicated the "never purchase" option.

Figure 9: Purchase frequency of conventional, organic and local foods (%)

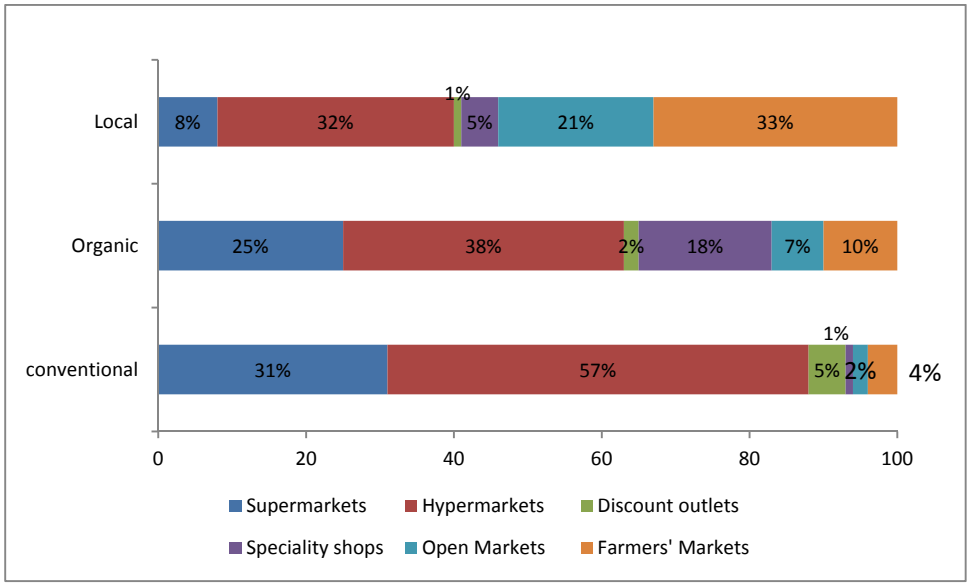


Source: Data from the survey

Figure 10 reports where respondents mainly purchase food products. The majority of the participants (57.3%) who buy conventional foods affirmed that they buy this kind of food products at hypermarkets, followed by supermarkets (30.5%) and discount outlets (5.3%). Even organic food shoppers buy mostly organic foods at hypermarkets (37.9%), followed by supermarkets (25%) and speciality stores (17.8%). Organic foods are the kind of products which are purchased more often at speciality stores in comparison to conventional and local food products. On the other hand, local food products are mostly purchased at open markets (20.9%) and Farmers' Markets (32.8%). This suggests that the supply of local foods is still linked to alternative forms of food networks. Finally, hypermarkets have been selected as the kind of outlet where respondents mostly purchase food products. However this outcome

might have been affected by the fact that the experiment has been performed in a hypermarket, increasing the probability to select hypermarket visitors.

Figure 10: Purchase location of conventional, organic and local food products (%)

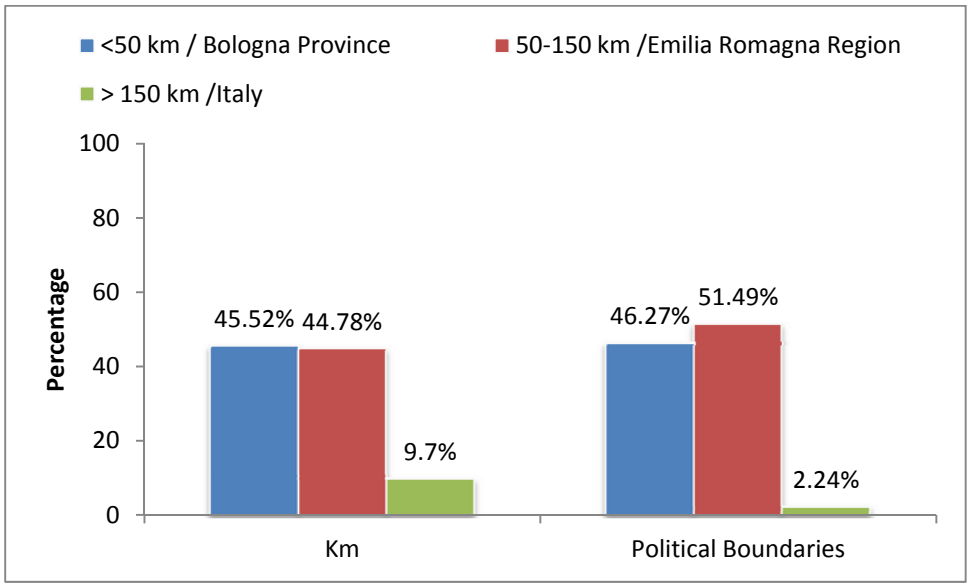


Source: Data from the survey

Finally, questions related to the exploration of consumers' perception for the definition local origin were provided. Respondents were asked to indicate how they defined a food product as "local" both in terms of Km and in terms of political boundaries (Figure 11). Figure 11 shows that in terms of kilometric distance, 45.5% of respondents perceive food products as local when the distance between the area of production and the area of consumption is less than 50 km. However, this percentage is slightly different from the category defining local food as produced in a range between the 50 and 150 km from the consumption area. Indeed, 44.8% of participants defined food products as local when grown or produced in a range between the 50 and 150 km. Accordingly, in terms of political boundaries, the regional products have been mostly perceived as "local". Only a modest part

of the sample defined as local food, products which have been produced over a distance of 150 km from the survey area of production (9.7%) or in Italy (2.2%).

Figure 11: Respondents' definition of local origin in terms of Km and political boundaries (%)



Source: Data from the survey

In order to explain the relationship between km distance and political borders variables, a bi-variate analysis approach, using cross tabulations has been implemented (Table 6). Table 6 shows that the hypothesis of independence across the table variables can be rejected at the 0.001 value of significance. This means that distance in km and political borders are highly associated in the definition of local food.

Table 6: Cross-tabs across distance in km and Political borders variables

	Political borders			
	Provincial borders	***Regional borders***	***National borders***	***TOT***
Distance in km				
<50 km	68.70%	31.30%	0.00%	100.00%
50-150 km	31.53%	65.77%	2.70%	100.00%
> 150 km	18.18%	72.73%	9.09%	100.00%
Tot	46.27%	51.49%	2.24%	100.00%
Pearson's Chi^2 (4) = 44.5160, p-value = 0.000				

Source: Data from the survey

The survey concluded with questions describing respondents' personality and socio-demographic characteristics.

Respondents' personality traits were elicited in order to investigate the effect of individuals' personality on consumers' preference for local and organic food claims. As aforementioned, this issue will be discussed in the next chapter, where both information about descriptive statistics of respondents' personality and about the interaction effect of personality traits with participants' valuation for locally produced and organic apple sauce will be given.

In table 7, the socio-demographic characteristics of the sample and of the last census of the population of Bologna (Istat, 2011) are reported.

Table 7: Socio-demographic characteristics of the sample (%)

Variable	*Sample*	*Census data*
Gender		
Female	60%	52%
Male	40%	48%
Age		
18-39	22%	31%
40-64	52%	42%
Older than 65	26%	27%
Household size		
1	14%	N/A
2	38%	N/A
3	23%	N/A
4	21%	N/A
> 5	4%	N/A
Education		
Primary School	23%	N/A
Secondary School	38%	15%
College degree	31%	31.2%
College degree + Professional Degree (Masters, PhD)	8%	N/A
Average household income		
< 15.000€	18%	N/A
15.000€ - 29.999	37%	N/A
30.000-44.999€	30%	N/A
45.000-59.999€	9%	N/A
60.000 €	6%	N/A

Source: Data from the survey

Table 7 shows that the majority of respondents are female (60%), consistently with the data of the latest Italian census. Regarding the age information, data of the survey are as well consistent with the census data, indicating that the largest part of the respondents (52%) is included in the category 40-64 years of age. The household size for the largest part of the sample (38%) is composed of two people. Most of the respondents hold a secondary school degree (38%), followed by the university degree (31%) category and this outcome differentiates from the census data, which show that the a larger part of the population of Bologna holds a university degree. With respect to the income level, the majority (55%) of the respondents has an annual income lower than 30.000 €.

3.4 Conclusion

Evidence from the questionnaire-based survey confirms the hypothesis that the apple sauce is still an unfamiliar product to many consumers. Indeed, just 27% of the respondents affirmed to have some kind of familiarity with the apple sauce and especially 85% of the sample never or just occasionally purchased cups of apple sauce. This aspect confirms the suitability of apple sauce as the product in question for the investigation of consumers' valuation for local food claim in case of a novel food product. In addition, respondents' uncertainty about the value of the product in question is also confirmed by the analysis of the reference price variable. The actual market price for two cups of apple sauce generally varies in a range between 1€ and 2€, depending on the brand, the method of production (organic or conventional) and the type of store. However, a relevant part of the sample suggested prices which were lower (13.3%) or higher (29%) than that actual market prices.

On the other hand, respondents affirmed to have on average a good knowledge both of the organic and local production. Local food products are, however, more often purchased than organic foods, although the purchase of locally grown food products is still linked to the call to alternative forms of food retailing, such as Open Markets or Farmers' Markets.

Respondents' interest in organic and local production might be explained by the fact that participants considered extremely important food values such as naturalness, safety and origin which are generally strictly linked to organic and local food concepts. In the qualitative-explorative phase food tradition was also suggested as one of the main aspects in the food system. On the other hand, in this quantitative analysis, food tradition has been indicated as one of the least important values in respondents' food consumption.

Finally, results from this questionnaire-based survey show that regional production (that is, goods produces within the boundaries of the same Italian region, in this case Emilia-

Romagna) mainly embraces the definition of "local". This finding suggests that the use of labels indicating the regional origin of food products might indeed be the most appropriate claim of local origin information.

4. Local vs. Organic: Does consumer personality matter?[8]

This phase of the research is focused on the investigation of consumers' preferences and WTPs for a locally produced food produced, using a Real Choice Experiment approach. In the explorative analysis of the local food meaning (Chapter 2), it emerged that local is mainly interpreted in terms of cultural-geographical borders instead of food miles. For this reason, regional borders (produced in /outside Emilia Romagna) have been used for the determination of local origin attribute. Moreover, an important finding from the explorative phase is that the definition of what is local strictly depends on the product in question, defining national borders as local in case of food products which are not typically grown or produced in the area of interest. These results have been crucial in the intuition of the empirical originality in investigating consumers' valuation for the local claim, when the product in question is unusual in the survey area. Therefore, they have been used as basic elements for the design of the RCE. As attribute levels of production origin "produced in Emilia Romagna" and "Produced in Italy, but outside Emilia-Romagna" have been implemented. While, as product in question, the apple sauce has been used, since it is not traditionally consumed in Emilia-Romagna and it has been recently introduced in the Italian market as a healthy snack product. The described design of the RCE allowed to test whether consumers value more the local over the National production claim when the product in question is not commonly consumed in the survey area. In addition, organic production has been used as other attribute in the RCE. Moreover it is necessary to point out that, although GI labels (such as PDO and PGI products) have been frequently associated to the local food concept in the literature, they have not been considered in the present survey for three reasons: (1) in the explorative analysis (chapter two) local has been mainly interpreted in terms of proximity between the production and consumption area and this aspect does not embrace the definition of GI labels; (2) the information related to GI labels is strictly linked to the food traditions of a specific geographic area and the quality of the product is supposed to be peculiar (and possibly superior) because of the characteristics of the area of production, and this aspect is in contrast with the research question of this study and would represent a confounding element; (3) The market does not offer GI-labeled apple sauces and the use of this kind of claim in the RCE design would have led to the generation of deception towards respondents. On the other hand, the organic production was implemented as second attribute of the apple sauce because, in the explorative phase, issues which are usually embraced by the organic production certification, such as production method and hygienic safety aspect, have been commonly associated to the local origin claim. In addition, differently from local food, organic food is characterized by certified labeling programs. In the literature related to AAFNs, the standardization and globalization of organic production

[8] Contents from this chapter will be presented at the 143th EAAE seminar: Consumer Behavior in a Changing World: Food, Culture and Society; March 25-27, Naples, Italy

method had been severely discussed, arguing that organic agriculture has lost some luster as an alternative to conventional agriculture. However, the adoption of globally regulated and recognized food labels might be source of a decrease in consumers' uncertainty for products features and this aspect might suggest policy implications related to the potential regulation of a local food label. Finally, the survey was performed in a hypermarket, since in the explorative research the supply of local food at the level of large retail chains has been widely questioned. Therefore, it was decided to interview mainstream consumers in order to assess whether local food claims might be a value-added attribute of food products even in the case of more conventional food networks. It is necessary to point out that only data from the control treatment have been used to determine the effect of the interaction of personality traits on respondents' valuation for locally produced and organic apple sauce. This is due to the fact that the different information given before the choice experiment could influence, as expected, consumers' WTP estimation.

4.1 Introduction

Due to market globalization and issues related to food safety, food security, and environmental safeguard, there has been increasing demand for attribute information concerning the origin and the methods of production of food products in recent years (Adams & Salois, 2010; Aprile *et al.* 2012; de-Magistris & Gracia, 2014; Grunert, *et al.*, 2014; Sirieix *et al.*, 2013). As a result, the food system of Northern American and European countries has been characterized by the emergence of a growing number of locally-based and alternative forms of food networks such as Farmers' Markets and Community Supported Agriculture (CSA). The popularity of the so-called "local food movement" is evidenced by the increasing promotion from provincial, regional governments, and mainstream food retailers of claims indicating the local origin of food products (Adams & Salois, 2010; Bazzani & Canavari, 2013; Campbell *et al*., 2013). This growing appeal for "local foods" has led to an increasing number of empirical studies focused on the exploration of Alternative Agro-Food Networks (AAFNs) and on the analysis of consumers' preferences and WTP for locally grown food products (Darby *et al.*, 2008; de Magistris & Gracia, 2008; Goodman, 2003; Hu, *et al.*, 2009; Raffaelli *et al.*, 2009; Seyfang, 2006; Zepeda & Li, 2006)..

As discussed in depth in the previous chapters, the food system is still lacking of a universal shared definition of "Local Food" (Adams & Salois, 2010; Bazzani & Canavari, 2013; Campbell *et al.*, 2013; Gracia, 2013). Indeed, in previous studies, different criteria have been used for the interpretation of local food products, ranging from food miles (Caputo *et al.* 2013; Caputo *et al.* 2013a; de-Magistris & Gracia, 2014) and political boundaries (regional or State borders) (Hu *et al.*, 2012; Scarpa, *et al.*, 2005) to food traditions (Akaichi *et al.*, 2012; Amilien *et al.*, 2007). Furthermore, the concept of local food has been often associated with organic production (Campbell *et al.*, 2014; Zepeda & Deal, 2009). However, while local food is still an abstract concept, the organic food system is more developed and characterized by certified labeling programs. Organic products are identified by the use of sustainable methods of production aimed at safeguarding the natural resources and reducing pollution caused by chemical fertilizers. In the last two decades, the conversions of farms to organic agricultural production methods and the sales of organic products have exponentially increased both in Europe and in North America (Adams & Salois, 2010; Campbell *et al.*, 2014; Rossi, 2013; Zepeda & Deal, 2009). However, in light of the growing global standardization and industrialization of organic food, several authors have argued that organic agriculture has lost some luster as an alternative to conventional agriculture, and that this has caused a shift in consumers' preferences from organic toward local food products (Adams & Salois, 2010; Adams, D. & Adams, A., 2011; Campbell *et al.*, 2014). Accordingly, local food has been defined as the "new organic" (Adams & Salois, 2010; Campbell *et al.*, 2014).

In light of this association, in recent years a growing number of studies have investigated consumers' preferences for local and organic foods, with results suggesting that consumers tend to value locally grown products more than organic food products (Aprile *et al.*, 2012; Campbell *et al.*, 2014, 2013; Costanigro *et al.*, 2014; de-Magistris & Gracia, 2014; Gracia *et al.*, 2014;Hu *et al.*, 2012; Meas *et al.*, 2014; Onozaka & Mcfadden, 2011;).

However, Scarpa *et al.* (2005), exploring Italian consumers' evaluation for regionally grown and organic food products, observed that respondents' preferences for local and organic claims varied by the product in question. The local origin was more valued than the organic production in the case of olive oil, while, in the case of oranges, the organic claim was preferred to the domestic production. Scarpa *et al.* (2005) argued that this heterogeneity in consumers' evaluations can be explained by the generation of "home bias", and therefore a preference for the local claim, when food products with a strong connection with the territory are considered. Hence, the choice of the product in question might play an important role in consumers' valuation for local and organic claims. Past studies have focused on traditional or commonly consumed food products in the survey area (Aprile *et al.*, 2012; Costanigro *et al.*, 2012; de-Magistris & Gracia, 2014; James *et al.*, 2009; Moser & Raffaelli, 2012). To the best of knowledge of the author, no-known study has explored consumers' preferences for organic and local claims using an unfamiliar product to the subjects in question. Hence, it is not known yet how consumers value the local origin, especially in comparison to the organic certification, when the product in question is still novel in the geographic area of interest and should be less likely that a "home-bias" effect is generated.

In addition, several studies reported that consumers' profile is a relevant aspect in the determination of consumers' evaluation for local and organic foods (Campbell *et al.*, 2014; Costanigro *et al.*, 2014; Gracia *et al.*, 2014). Evidence from the literature shows that factors such as individuals' socio-demographic characteristics, attitudes, and beliefs can be sources of heterogeneity in preferences for locally grown and organic food products. However, there might be other factors that could influence consumer preferences for local foods and organic foods. For instance, in psychology, personality traits have been identified as a relevant source of heterogeneity in individuals' attitudes and behavior (Borghans, *et al.*, 2008; Ferguson *et al.*, 2011). According to Hofstee (1994), the definition of personality refers to individual

differences in characteristic patterns of thinking, feeling and behaving. Its relevance in understanding individuals' decision making is given by the fact that personality traits are "thought to capture how people actually think, feel, and act and not what people say they are thinking, feeling, and behaving" (Grebitus, *et al.*, 2013; pp. 12). Hence, personality traits have been significantly used in psychology to explain different aspects of individuals' behavior, such as health issues, lifestyles and economical decisions (Almlund, *et al.*, 2011; Borghans *et al.*, 2008; Goodwin & Friedman, 2006).

To the knowledge of the author, only the study by Grebitus *et al.* (2013) investigated the effect of personality on consumers food choices, using credence attributes as varying features of the product. Their study focused on the use of personality traits to explain differences in respondents' behavior in Experimental Auctions (EAs) and Choice Experiments (CEs) but they did not consider the interaction between respondents' personality and the product features (e.g., different levels of food miles). Hence, no known study has explored the role of personality traits on consumers' valuation for food claims, such as origin and method of production. For instance, an individual whose personality is characterized by traits such as willingness to be cooperative, helpful and caring might care more about issues such as the support to the local economy or environmental protection and therefore would value more a food product that is locally and organically produced. On the other hand, a broadminded personality, open to new experiences might be more willing to choose a food product characterized by a claim such as "locally grown", rather than a global standard label, like the organic certification. On the other hand, an individual that tends to be apprehensive and worrying might be more comfortable in buying food that has been produced according to certified labeling programs, as in the case of organic certification.

In previous studies, personal aspects such as altruism/egoism and emotions have been investigated in relation to consumers food choice behavior (Aertsens *et al.*, 2009; van Doorn

& Verhoef, 2011, Dean *et al.*, 2008). However, these aspects might be influenced by external factors, such as social desirability or quality of available information (Richards, *et al.*, 2011; Teyssier *et al.*, 2014; Dean *et al.*, 2008). On the other hand, according to Mischel (2009), personality traits are stable features which can influence individuals' behavior in different contexts. Therefore, the effect of personality traits might be of importance in explaining consumers' heterogeneity in food choices.

In this study, results from the implementation of a Real (non-hypothetical) Choice Experiment (RCE) are presented. The RCE was performed in the city of Bologna, Italy.

The aim of the study is to estimate consumers' valuation for organic and locally produced apple sauce, while assessing whether personality traits can be sources of heterogeneity in consumers' valuation. The present study advances the literature in this area in two important ways. First a food product (apple sauce) that is still considered unusual in the area of interest, i.e. Italy is used. While apple sauce is largely consumed in North America and Northern European countries, it is a product that is not part of Italian food traditions and it has only been recently introduced in the Italian market as a healthy snack product. The choice of this product was also motivated by the fact that, even though the processed apple sauce is not a common product in the survey area, the Emilia-Romagna region is the third largest producer of apples in Italy and it is the Italian region with the largest organic fresh fruit production. Second, the role of personality in consumers' preferences for local and organic claims was explored.

This part of the research is structured as follows: first a background on the investigation of consumers' preferences for organic and local food products is provided. Then, the description of personality traits measurement and of the methodological approach used to estimate respondents' WTP for locally produced and organic apple sauce will be

given. Finally, on the basis of these results, conclusions and suggestions for future studies will be suggested.

4.1.1 Background on consumers' WTP for local and organic food

As aforementioned, a growing number of studies explored consumers' demand for locally grown and organic food products (Aprile *et al.*, 2012; Campbell *et al.*, 2014, 2013; Costanigro *et al.*, 2014; de-Magistris & Gracia, 2014; Gracia *et al.*, 2014; Hu *et al.*, 2012; Lim & Hu, 2015; Meas *et al.*, 2014; Onozaka & Mcfadden, 2011; Scarpa *et al.*, 2005).

Finding from these studies show that consumers are willing to pay a premium both for organic and locally grown products, but the local origin attribute has been identified in most of the cases as the more valued attribute (Aprile *et al.*, 2012; Costanigro *et al.*, 2012; de-Magistris & Gracia, 2014; W. Hu *et al.*, 2012; Hu *et al.*, 2009; James *et al.*, 2009). Consumers' preferences for local food products have been confirmed when origin has been interpreted in terms of State and regional borders (Darby *et al.*, 2008; Hu *et al.*, 2012; James *et al.*, 2009), in terms of designation of origin and geographical indication labels (Aprile *et al.*, 2012), and in terms of "Food Miles" (Caputo *et al.*, 2013; Caputo *et al.* 2013; de-Magistris & Gracia, 2014).

An increasing number of papers have also focused on consumers' valuation for the combination of both local origin and organic attributes (Connolly & Klaiber, 2014; Gracia *et al.*, 2014; Meas *et al.*, 2014; Onozaka & Mcfadden, 2011; Yue *et al.*, 2009). Findings from choice experiments performed by Gracia *et al.* (2014) in Spain and by Onozaka & McFadden (2011) in USA showed that consumers generally prefer local over the organic food products, but their WTP for locally grown products increases with the combination of the organic label. On the other hand, Meas *et al.* (2014), Yue *et al.* (2009) and Connolly & Klaiber (2014),

reported a negative interaction effect between State, regional claims, and the organic certification, although these two types of labels were positively valued when not combined. Even in the case of these three studies, higher WTPs were estimated for local than for the organic products, suggesting that local food producers and marketers should emphasize that their products are “local” in their marketing campaigns. However, results from the studies of Lim & Hu (2015) and Scarpa *et al.* (2005) did not confirm a general consumers' preference for locally grown products over organic products. Specifically, Lim & Hu (2015) investigated consumers' valuations for local beef in USA and in Canada, proposing different interpretations of local origin, such as (1) "local", (2) "local" with the specification of different levels of food miles, (3) provincial borders and (4) National borders. Their results suggest that consumers were willing to pay a higher price for local in comparison to organic beef, only when the local origin was specified in terms of provincial borders and when the origin of production was within a range of 320 km. On the other hand, Scarpa *et al.*, (2005) observed that consumers' valuations for local and organic claims varied by product. Using a discrete choice framework, they investigated Italian consumers' preferences for organic and regionally grown labels on olive oil, table grapes and oranges. They found that consumers' likelihood to purchase the olive oil was higher when it was regionally produced, and that organic production was the more valued claim in the case of oranges.

In addition, in order to determine the factors which can effect heterogeneity in consumers' preferences, several studies explored the interaction between socio-demographic characteristics and consumers’ choices for locally grown and organic food products. Age, gender, education and income have been identified as the socio-demographic features which mostly affected individuals’ WTP for both attributes (Aertsens *et al.*, 2009; Bazzani, Asioli, Gozzoli, & Canavari, 2013; Campbell *et al.*, 2014; Carpio & Isengildina-massa, 2009; Ltheeiro & Hine, 2002; Scarpa *et al.*, 2005; Zepeda & Li, 2006; Zepeda, 2009).

Further, the literature related to organic and local food consumption particularly investigated the effect of individuals' attitudes and beliefs on consumers' preferences showing that consumers who are more concerned about hedonic factors, such as health, freshness, taste, food safety and about issues related to environmental safeguard are willing to pay a price premium for organically produced food products (Aertsens *et al.*, 2009; Storstad & Bjørkhaug, 2002; Zanoli & Naspetti, 2002). On the other hand, consumers' motivations for buying locally grown food products have been found to include the environmental awareness and the appeal for "genuine" products, willingness to support the local economy, and to consume authentic, traditional foods (Costanigro *et al.*, 2012; Thilmany, *et al.*, 2008; Verbeke & Roosen, 2009; Zepeda & L., 2009).

4.2 Material and Methods

4.2.1 Real choice Experiment

Choice experiments (CE) are one of the most popular stated preference methods used in food marketing to elicit individuals WTPs for a certain good or service. Their popularity is due to its ability to estimate simultaneously the evaluation of different attributes and attribute levels. CEs are consistent with Lancaster's theory of consumer behaviour (Lancaster, 1966) and with the random utility theory (McFadden, 1974) , which assume that (1) individuals make choices to maximize their utility under budget constraint, (2) the total utility of a good can be segregated in partial utilities given by the different attributes of the good, and that individuals make choices based on these attributes, (3) choices can be modeled comparing a random component in the utility function and analyzing the probability of choice between the alternatives. In addition, the choice task in the CEs is very similar to real purchasing

situations, where consumers are subject to make trade-offs between products, characterized by different attributes (Lusk & Schroeder, 2004). CEs are based on the provision of several hypothetical purchasing scenarios, where individuals are asked to make repeated choices between alternatives representing the products with different attributes and attributes' levels and a no-buy option The familiarity with the decision mechanism of CEs is the main advantage of this approach. However, the limit that has been observed in hypothetical CEs is the formation of hypothetical bias (Murphy *et al.*, 2005). The absence of an economic commitment in hypothetical methods can be a source of inconsistency (generally over-estimation) in individuals' WTP estimation in comparison to non-hypothetical approaches, such as Experimental Auctions (EAs) (Lusk & Shogren, 2007). Hypothetical bias have been defined as the difference between individuals' WTP in hypothetical and non-hypothetical evaluation methods (Carlsson & Martinsson, 2001; Carpenter & Harrison, 2004; Murphy *et al.*, 2005). Therefore, to mitigate hypothetical bias formation in CEs, several studies turned to the implementation of the so-called Real (non-hypothetical) Choice Experiments (RCEs) (Alfnes *et al.*, 2006; Chang, *et al.*, 2009; de-Magistris & Gracia, 2014; Gracia, 2013; Lusk & Schroeder, 2004; Yue *et al.*, 2009). In RCEs, economic incentives are given by paying respondents with a participation fee and by randomly choosing one of the choice tasks as binding. In addition, real products are used and participants have to buy for real the product that they chose in the randomly selected purchasing scenario. Different studies have proved that results from hypothetical CEs are different from the ones obtained using a RCE approach estimation (Chang *et al.*, 2009; Grebitus *et al.*, 2013; Johansson-stenman & Sveds, 2008; Loomis *et al.*, 2009; Lusk & Schroeder, 2004; Volinskiy, *et al.*,, 2009; Yue *et al.*, 2009). According to these findings, the incentive compatibility of RCEs allows the mitigation of hypothetical bias formation and therefore a better approximation of actual consumer's WTP. RCEs also more closely represent individuals' choice making behavior in comparison to EAs

because of the higher similarity to real purchasing processes (e.g. type of choice decisions making at the supermarkets) and the absence of peer pressure that can characterize EA mechanisms (Akaichi *et al.* 2013; Gracia *et al.*, 2011; Grebitus *et al.*, 2013).

Based on the aforementioned advantages of RCE, in the present research it was decided to use this methodological approach to investigate respondents preferences for locally produced and organic apple sauce.

4.2.2 Experimental design

As a first step in the design of the RCE, a specific product to be analyzed was selected. Apple sauce was chosen as the product of interest. This is due to a number of reasons. First, it would be considered a novel product in the Italian market. This aspect might, then, limit the generation of "home bias" issues discussed by Scarpa *et al.*, (2005). Second, it is a non-perishable product. As such, the effect of changes in its attributes from the organoleptic characteristics are isolated (Gracia, *et al.* 2011). Lastly, evidence from the literature shows that freshness of food products is often associated with the organic and locally grown claims. Hence, the use of a fresh food product might, implicitly induce a preference for product profiles characterized by the presence of organic and/or locally produced attributes.

As second step in the design of the RCE, the attributes and attribute levels were chosen. As the objective of this study is to analyze consumers' preferences for locally produced and organic novel food products, origin and method of production were selected as the features characterizing the different apple sauce products. For the origin of production, two levels were used: produced in Emilia-Romagna (the Italian region where the city of Bologna is located) and produced in Italy, but outside Emilia-Romagna. The regional borders were defined as boundary between local and non-local because both results from the

qualitative research and from the pretest suggested that regional borders are the closest interpretation of local food in the Italian market. Regarding the method of production, two levels were used: organic and conventional (Hu *et al.*, 2009). Finally, the price levels were (0.95€, 1.45€, 1.95€, 2.45€), partly reflecting the market prices for two cups (100g each) of apple sauce were used for the price attribute. The actual market price for two cups of apple sauce generally varies in a range between 1€ and 2€, depending on the brand, the method of production (organic or conventional) and the type of store. However, in the pre-test phase, respondents were asked to indicate their reference price for two cups of apple sauce (100g each). The range of the suggested prices was much wider than the actual market prices. Therefore, in this experiment, it was decided to use a slightly larger price range than the one defined by the market. It is also important to provide a wide range in order to avoid that respondents may consider the differences in price irrelevant. Table 8 reports the attribute and attributes levels used in this study.

Table 8: Attributes and Attribute Levels

Attributes	***Attribute Level***
Price	- 2.45 €
	- 1.95 €
	- 1.45 €
	- 0.95 €
Origin	- Local (produced in Emilia-Romagna)
	- Non-local (produced in Italy, but outside Emilia-Romagna)
Method of production	- Organic
	- Conventional

Following Scarpa *et al.* (2007), the allocation of attribute and attribute levels to product alternatives was designed using a sequential Bayesian design to minimize the D-error (Choice Metrics, Ngene v1.0.1, 2011). It was performed in three different phases. In the first phase, the choice set design follows Street and Burgess (2005). Accordingly, the selected attributes

and their levels were first used to come up with an orthogonal factorial design for the first alternative of the CE design, reducing the original 16 ($4x2^2$) combinations to 8. Then, the generators described by Street & Burgess (2007) were used to obtain a practical set of 8 pairs, with a D-efficiency of 96.6%. This design was used for the pilot survey (second phase). In the last phase, the data from the pilot survey were used to estimate a MNL model whose coefficient estimates were then used as Bayesian priors.

4.2.3 Personality traits measurement

Individuals' personality can be interpreted as a dynamic and organized set of characteristics which differentiate individuals in patterns of thinking, feeling and behaving (Hofstee, 1994). In the definition of the different personality traits, the literature is divided into two main currents: the "lumbers" who believe that individuals' personality is characterized by a few broad traits and the "splitters" who, instead, believe that personality is characterized by more narrowly specified traits (Bouchard & Loehlin, 2001). However, an increasing consensus among personality theorists is that personality is structured as a set of global traits, which, in turn, are composed by more narrower traits (Gill & Hodgkinson, 2007, Eysenck ,1991; Bouchard & Loehlin, 2001). Indeed, the most popular structure in defining personality traits is the so-called "Big Five Model" (Bouchard & Loehlin, 2001; Goodwin & Friedman, 2006; Weiss, et al, 2008). The Big Five model, abbreviated as OCEAN, consists of five broadely defined dimensions (factors): openness to experiences (O), conscientiousness (C), extraversion (E), agreeableness (A), and neuroticism (N). Each of these dimension is defined by more specified personality traits.

- The "**Openness to experience**" (*Open*) factor describes personality traits related to: intellectual creativity, openness or skepticism to novelty, inclination to be practical or imaginative, flexibility in emotions and ideas.

- The dimension "**Conscientiousness**" (*Consc*) refers to traits such as aptitude for being organized, active and hardworking.
- The factor "**Extraversion**" (*Extra*) describes the inclination to be sociable, lively, extroverts.
- "**Agreeableness**" (*Agr*) is the sum of those traits which define whether an individual is cooperative, helpful, sympathetic, caring and trustworthy.
- Finally, the factor "**Neuroticism**" (*Neu*) implies all those traits related to emotional instability such as anxiety, inability in reacting to stressful situations, self-consciousness.

In order to measure the personality traits, the Midlife Development Inventory (MIDI) scale was used, where the five OCEAN traits are associated to a list of 25 items[9] (Keyes, *et al.*, 2002; Lachman & Weaver, 1997; Weiss *et al.*, 2008) (Table 9) . Each item is elicited by subjects, using a semantic scale from 1 (not at all) to 4 (a lot) to indicate the degree to which each adjective on the scale describes them. The MIDI scale was constructed based on the MIDUS survey, where a broad number of personality items were tested. Items with the highest correlations and factor loadings were selected for its construction. The main advantages of the MIDI scale are its simplicity and conciseness, which suited with the necessity to interview the participants in a limited time-frame.

[9] The MIDI scale by Lachman & Weaver (1997) is composed of 30 items and 6 dimensions, but the literature usually focuses only on the Big Five (OCEAN) model, leaving the sixth factor (Agency) out.

Table 9: Structure of the OCEAN model

OCEAN global factors	Specified traits
Openness to experience (O)	- Creative
	- Imaginative
	- Intelligent
	- Curious
	- Broadminded
	- Sophisticated
	- Adventurous
Conscientiousness (C)	- Organized
	- Responsible
	- Hardworking
	- (non) Careless*
Extraversion (E)	- Outgoing
	- Friendly
	- Lively
	- Active
	- Talkative
Agreeableness (A)	- Helpful
	- Warm
	- Caring
	- Softhearted
	- Sympathetic
Neuroticism (N)	- Moody
	- Worrying
	- Nervous
	- (non) Calm*

Source: Weiss, 2008. Note *: the scores for these items are reversed.

For the analysis of the data, the mean value of the adjectives for each trait was calculated: first, we summed up the different adjectives to the traits they were part of and then the sums of each trait obtained were divided for the number of the respective adjectives. Finally, following Grebitus *et al.*, (2013), before including the personality information in the econometric model, each trait was normalized to have a mean of zero so that the constant terms in the regressions could be interpreted as the mean WTP (or utility) for the mean personality trait.

4.2.4 Data and Empirical Model

Data

A field RCE involving 80 subjects during fall 2014 in a hypermarket located in Bologna, a city in the Emilia Romagna region (Italy) was conducted. Food shoppers were randomly intercepted and recruited at the entrance of the retail store. They were informed about the opportunity to participate in a survey on consumers' valuations for apple sauce. Interviewers approached the randomly selected participants and asked them a set of screening questions, verifying whether they were the main household food shopper, that each participant was at least 18 years old, and whether they were available to taste different types of apple sauce (for instance, excluding consumers who disliked or were allergic or apples). If the responses to all of these questions were affirmative, the interviewer started the RCE. In the case of negative responses, the interviewer randomly selected another customer and asked the screening question until finding a participant who would be eligible to participate in the survey. Each participant was incentivized with a 5€ check-coupon.

Before answering the RCE questions, the participants were asked to taste all the four apple sauce products (local/organic, local/conventional, non-local/organic, non-local/conventional). After completing the blind test, participants had also the possibility to visually examine the apple sauce products (two cups of 100g of apple sauce each). Information regarding the RCE mechanism was also provided in detail to all participants. Specifically, they were first informed that they would face eight different choice tasks, each of them describing three choice options: two different apple sauce products and a "no purchase" option. Next, they were informed that after completing the CE questions, one of the choice tasks would be randomly selected as the binding choice task. That is, the participant will have to purchase the product they chose in the binding choice task if they picked one of

the two product alternatives. If they chose the "no purchase" option, then they would not purchase any product and would not pay anything. Finally, the participants were clearly told that an actual payment would have to occur if they chose one of the two product options in the binding choice task and that every choice task would have the same probability to be picked as the binding choice task. After completing this informative phase, the RCE was proposed.

Once participants completed the RCE, they were asked to fill out the rest of the questionnaire. Respondents were informed that the questions concerned a description of their personality and an explanation of the personality scale was provided. Participants were not supervised in responding to the personality questions in order to avoid any social desirability or social pressure. The questionnaire concluded with questions related to socio-demographic information.

Empirical Models

Respondents' preferences and WTPs were analyzed using a discrete choice framework. Discrete choice models are based on the Lancaster's theory of consumer utility (Lancaster, 1966) and the random utility theory (McFadden, 1974) and, therefore they are analysed using Random Utility Models.

The basic assumption of the Random Utility Model (RUM) is that consumers make decisions according to the maximization of the utility they can derive from a good or a service (Marschak, 1960). Hence, given a set of alternatives *j* the individual *n* will choose the alternative *j* that will provide the highest utility:

$$U_{nj} > U_{nk} \; \forall \; \mathrm{k} \neq \mathrm{j} \quad (1)$$

The choice of the consumer might depend on factors which can be observed by the researcher, such as the selected choice alternative or the attributes of the product, and on

factors which are not directly observable (e.g. consumer emotional state). Hence, given a set C_n of choice alternatives j, the individual utility U_{njt} can be decomposed at follows:

$$U_{njt} = V_{njt} + \varepsilon_{njt} \qquad (2)$$

where n is the index of the respondents, j is the index of the different choice alternatives and t is the index of the choice situation. V_{njt} is the representative component of total utility, that is the utility that the consumer n derived by the attributes and the equivalent values for alternative j in choice set t, while ε_{njt} is the stochastic component that resumes all those factors that cannot be observed or are not considered by the researcher and, therefore, is the cause of disturbance in the estimation of individuals' preferences.

Discrete choice models are based on the assumption that individuals make choices with a margin of uncertainty, assigning a level of probability to each alternative to be chosen instead of indicating which alternative is chosen by the individual.

It follows that, when an individual n faces a choice set C_n, the probability that he/she chooses an alternative j is equal to the probability that the utility of alternative j , U_{nj}, is greater than the utilities given by the choice of the other alternatives in the choice set, as it it explained in equations (3) and (4):

$$Prob_n\{j\ chosen\} = Pr\,(U_{nj} \geq U_{nk}, \text{ for all } j,k \in C_n \text{ with } k \neq j) \qquad (3)$$

$$Prob_n\{j\ chosen\} = Pr\,(V_{njt} + \varepsilon_{njt} \geq V_{nkt} + \varepsilon_{nkt}, \text{ for all } j,k \in C_n \text{ with } k \neq j) \qquad (4)$$

Different choice models can be derived depending on assumptions regarding the distribution of the unobserved error term and the functional form of the utility. In this study, two discrete choice models were used for the estimation of the data: the Multinomial Logit Model (MNL) and the Random Parameter Logit (RPL) model.

Multinomial Logit Model (MNL)

The MNL is built on the assumption that the error terms are independently and identically distributed (IID) with a Gumbel distribution that is represented in the following equation:

$$P(\varepsilon_j \leq \varepsilon) = exp(-exp(-\varepsilon)) \qquad (6)$$

Assuming the Gumbel distribution of the random error, the probability that an individual n chooses alternative j across the choice set C_n can be represented by the following equation:

$$Prob_n\{j\ chosen\} = \frac{e^{V_{nj}}}{\sum_{k=1}^{j} e^{V_{nk}}}, \text{ for all } j,k \in C_n \text{ with } k \neq j \qquad (7)$$

Equation (7) indicates that the probability of the individual n of choosing the alternative j from the choice-set C_n is equal to the ratio between the exponential of the observed component given by the choice of the j alternative and the sum of the exponentials of all the alternatives including the j alternative. The properties of the MNL model can be outlined as follows (Train 2003):

- $Prob_n\{j\ chosen\}$ has a value ranging between 0 and 1
- The sum of the different probabilities is equal to 1
- The model allows an easy interpretation of the relationship between the representative utility and the choice probability

However, although this model is traditionally used in the analysis of discrete choice experiment data for its convenience, the MNL has important limitations:

1. The assumption of IID errors induces the condition of IIA (Independence of Irrelevant Alternatives). According to the IIA condition, the ratio between the probability to choose the alternative *j* and the probability to choose alternative *k* does not depend on the presence/absence of other alternatives from C_n. Hence, IIA property implies the proportional substitution across alternatives, that means that every improvement/worsening of the probability of an alternative to be chosen causes a decrease/increase in the probability ratio of all the other alternatives proportionally.
2. MNL assumes homogeneity across individuals' preferences and, accordingly, it assumes that coefficients of the parameters have a fixed value across the individuals of the population
3. The error terms are assumed to be independent over the different choice occasions, therefore the index *t* is not relevant and is dropped.

Random Parameter Logit Model (RPL)

The RPL model can be considered as an extension of the MNL model and it overcomes the limitations of the MNL model in two important ways: (1) assuming heterogeneity in consumers' preferences and (2) accounting for repeated observations from each respondent.

Heterogeneity in preferences within the population is usually expected. Contrary to the MNL model, the RPL model assumes taste heterogeneity across consumers preferences, relaxing the assumption of the IID distribution of the errors and the IIA condition.

The utility of a *n* individual derived by the choice of a *j* alternative at the t^{th} choice can be represented as follows:

$$U_{njt} = V_{njt} + \varepsilon_{njt} \qquad (8)$$

The observed component of the utility function can be explained in terms of observed attributes and the associated parameters, as it is represented in the following equation:

$$V_{njt} = \beta'_n x_{njt} + \varepsilon_{njt} \qquad (9)$$

where x_{njt} is a vector of observed variables relating to alternative j and individual n; β_n is a vector of structural taste parameters which characterizes the different choices; ε_{njt} is the unobserved error term, which is assumed to be independent of the vectors β and x. This specification is the same as for the MNL model, but in the case of the RPL model, the coefficients β_n vary randomly across individuals rather than being fixed. (Train, 1998). Taste variation component can be included in equation (9), as follows:

$$U_{njt} = \beta'_n x_{njt} + \varepsilon_{njt} = b'_n x_{njt} + \eta'_n x_{njt} + \varepsilon_{njt} \qquad (10)$$

where β_n can be expressed as the sum of the population mean, b'_n, and the individual deviation, η'_n . Individual deviation η'_n is the component representing the heterogeneity across individuals' preferences and it binds additively to the unobserved ε_{njt}. As such, $\eta'_n x_{njt}$ and ε_{njt} are uncorrelated and they represent the utility component that cannot be observed by the researcher. The RPL model overcomes the independence from irrelevant alternatives property of MNL model precisely because of the presence of the $\eta'_n x_{njt}$ component that introduces a correlation term across the t choice situations. Accordingly, β_n explains individual n preferences variation for each alternative j, considering taste variation of the same individual constant over the t choice occasions.

According to Train (1998), the probability that an individual n chooses the alternative j, depending on β_n, is specified as follows:

$$L_{njt}(\beta_n) = \frac{e^{\beta' x_{njt}}}{\sum_{j=1\to k} e^{\beta' x_{nkt}}} \qquad (11)$$

However, differently from the MNL model, in the case of the RPL model, tastes might vary in the population following a density function denoted as $f(\beta/\vartheta^*)$, where ϑ^* represents the parameters of this distribution, such as mean and variance. As such, the probability that individual n chooses alternative j is equal to the integral of equation (11) over the values of β weighted by the density of β, as it is represented in equation (12):

$$P_{njt}(\vartheta^*) = \int \frac{e^{\beta' x_{njt}}}{\sum_{j=1\to k} e^{\beta' x_{njt}}} f(\beta/\vartheta^*)\, d\beta \qquad (12)$$

For the maximum likelihood estimation the sequence of the probability derived by the choices of each individual must be obtained, according to the following equation:

$$S_n(\beta) = \prod_t L_{nj(n,t)t}\, \beta \qquad (13)$$

where $nj(n,t)$ is the alternative chosen by the n individual in the choice situation t. For this sequence, the conditional probability to be chosen by the individual n is equal to:

$$P_n(\vartheta) = \int S_n(\beta\ )\, f(\beta/\vartheta) d\beta \qquad (14)$$

Since the integral in equation (14) does not have a closed form solution, the probabilities of choice must be simulated by a R repeated number of draws, derived by the density function of probability $f(\beta_n/\vartheta)$. The logit formula (12) is calculated for each random draw and the simulated probability (SP_n) is the average of these calculations.

The simulated log-likelihood function is represented by the following equation:

$$SLL(\theta) = \Sigma_n ln(SP_n(\theta)) \qquad (15)$$

it is obtained from the different simulated probabilities and the estimated parameters are those which maximize *SLL*.

Model specification

In this study, different models were specified. *Model 1* is a MNL model and it was used as benchmark model. *Model 2* is a RPL model and it allows examining whether heterogeneity across consumers' preferences is an issue to take into account when assessing consumer preferences for organic and local attribute information displayed in apple sauce products. Model 3 adds to Model2 by incorporating personality traits as a possible source of additional heterogeneity. Data were estimated using Nlogit 5.0:Econometric software, Inc., New York, USA.

As aforementioned, discrete choice models are consistent with the neoclassical Lancaster theory (Lancaster, 1966), based on the assumption that the total utility of a good can be segregated in partial utilities given by the different attributes of the product in question. Consumers will then choose the product that maximizes their utility derived by these product attributes under a budget constraint (Lancaster, 1966). Hence, the utility function of Models 2 and 3 can be specified by the attributes considered in the experimental design, such as price, origin, and method of production and by an alternative-specific constant (β_0) representing the opt-out (no buy) choice option, as compared to the two options related to the purchase of apple sauce.

The utility function for Model 1 is specified as follows:

$$U_{njt} = \beta_0 + \beta_1 Price_{jt} + \beta_2 Local_{jt} + \beta_3 Organic_{jt} + \varepsilon_{njt} \quad (16)$$

where n is the number of respondents, j pertains to three options available in the choice set (A, B and C, representing the no-buy option) and t is the number of choice situations. The alternative-specific constant (β_0), coded as a dummy variable, takes the value 1 for the no-buy option and 0 otherwise. The alternative-specific constant is expected to be negative and

significant, in case consumers would obtain a lower utility from the no-buy option than from the other two alternatives, thus indicating that on some extent they appreciate the product. *Price* is a continuous variable represented by the the experimentally designed price levels. It is modeled as a continuous variable linearly related to consumer's utility, expected to have a negative impact and therefore a negative sign of the coefficient. Finally, the non-price attributes such as *Local* (*Loc*) and *Organic* (*Org*) are dummy variables taking the value 1 if the product carries the corresponding labels, and 0 otherwise.

Model 3 is specified as follows:

$$U_{njt} = \beta_0 + \beta_1 Price_{jt} + \beta_2 Local_{jt} + \beta_3 Organic_{jt} + \beta_4 Local_{jt} * Openness_n + \beta_5 Local_{jt} * Consciousness_n + \beta_6 Local_{jt} * Extraversion_n + \beta_7 Local_{jt} * Agreeableness_n + \beta_8 Local_{jt} * Neuroticism_n + \beta_9 Organic_{jt} * Openness_n + \beta_{10} Organic_{jt} * Consciousness_n + \beta_{11} Organic_{jt} * Extraversion_n + \beta_{12} Organic_{jt} * Agreeableness_n + \beta_{13} Organic_{jt} * Neuroticism_n + \varepsilon_{njt} \quad (17)$$

where $\beta_4, \beta_5, \beta_6, \beta_7, and\ \beta_8,$ are the coefficients of the interaction terms between the attribute *Local* and the personality traits, while $\beta_9, \beta_{10}, \beta_{11}, \beta_{11}$ and β_{13} are the coefficients of the interaction terms between the attribute *Organic* and the personality traits. As previously mentioned, in the model the standardized scores of each personality trait were included. The rest of the other variables are specified as in Models 1 and 2. Table 10 summarizes the abbreviations that will be used to indicate the parameters representing the interactions between the personality traits and the local and organic attributes. This may facilitate the explanation and the understanding of the results.

Table 10: Parameters describing the interaction effect between personality traits and local and organic attributes

Parameter	Abbreviation
Loc*Openness	LOCO
Loc*Consciousness	LOCC
Loc*Extraversion	LOCE
Loc*Agreeableness	LOCA
Loc*Neuroticism	LOCN
Org*Openness	ORGO
Org*Consciousness	ORGC
Org*Extraversion	ORGE
Org*Agreeableness	ORGA
Org*Neuroticism	ORGN

As a last step, using the estimated coefficients from the RPL, the marginal WTPs (MWTP) were calculated as follows (Morrison *et al.*, 2002):

$$MWTP_{Attribute} = \frac{\frac{\delta U_{njt}}{\delta Attribute}}{\frac{\delta U_{njt}}{\delta Price}} \qquad (18)$$

The MWTP for one attribute is equal to the price change associated with a increase unit of the attribute in question. MWTP can be estimated by calculation of the ratio of the partial derivative of the utility function with respect to the attributes of interest, divided by the derivative of the utility function with respect to the price variable.

The estimations of the above models were carried out in Nlogit 5.0:Econometric software, Inc., New York, USA

4. 3 Results

4.3.1 Descriptive statistics

As aforementioned, 80 food shoppers participated in the RCE. Summary statistics of the demographic characteristics of the sample are reported in Table 11. Consistent with the

data of the latest Italian census (Istat, 2011), a slight majority of respondents were female (55%). The sample was mainly composed of individuals older than 65 years of age (40%). This proportion does not mirror the data relevant to the population of the Bologna community, which is characterized by a higher presence of mature adults (42%). The household size for nearly half of the sample (47.5%) was composed of two people. In accordance with the census data, the largest part of the sample held a college degree. With respect to the income level, the majority (65%) of the respondents had an annual income lower than 30.000 €.

Table 11: Socio-demographic characteristics of the sample (%)

Gender	***Sample***	***Census data***
Female	55%	52%
Male	45%	48%
Age		
18-39	27%	31%
40-64	33%	42%
Older than 65	40%	27%
Household size		
1	12%	N/A
2	47.5%	N/A
3	22.5%	N/A
4	14%	N/A
> 5	4%	N/A
Education		
Primary School	29%	N/A
Secondary School	31%	15%
College degree	32.5%	31.2%
College degree + Professional Degree (Masters, PhD)	7.5%	N/A
Average household income		
< 15.000€	23%	N/A
15.000€ - 29.999	42%	N/A
30.000-44.999€	23%	N/A
45.000-59.999€	5%	N/A
60.000 €	7%	N/A

Source: Data from the Survey

Table 12 shows the descriptive statistics of the personality traits. The various measures of the five personality traits were based on a MIDI 4-point scale (4 was the highest score and 1 the lowest). The majority of the means of the personality traits (except neuroticism) has a

value around three, indicating that respondents identified themselves "some" with most of the traits. Neuroticism has clearly the lowest figures, suggesting that participants, on average, did not define themselves as very worrying, anxious people.

Table 12: Descriptive statistics of personality traits

Trait	*Mean*	*Variable*	*Mean*	*SD*
Openness	2.98	Creative	2.8	0.81
		Imaginative	3	0.68
		Intelligent	3.22	0.63
		Curious	3.46	0.72
		Broadminded	3.3	0.67
		Sophisticated	2.48	0.80
		Adventurous	2.61	0.90
Conscientiousness	3.12	Organized	3.16	0.76
		Responsible	3.45	0.67
		Hardworking	3.33	0.68
		Careless*	2.53	0.92
Extraversion	3.08	Outgoing	2.85	0.90
		Friendly	3.45	0.58
		Lively	3.15	0.76
		Active	3.35	0.67
		Talkative	2.96	0.82
Agreeableness	3.18	Helpful	3.51	0.61
		Warm	3.12	0.73
		Caring	3.26	0.67
		Softhearted	2.53	1.03
		Sympathetic	3.47	0.61
Neuroticism	2.35	Moody	2.05	0.87
		Worrying	2.7	1
		Nervous	2.42	0.94
		Calm*	2.23	0.84

Source: Data from the Survey. Note *: scores are reversed before calculating the means of the dimension.

4.3.2 Estimates from Empirical Models

As mentioned earlier, the RPL model (Model 2) was estimated because heterogeneity in preferences across consumers' choice were expected. The RPL was also estimated including personality traits as covariates (Model 3) to examine one of the potential sources of heterogeneity.

The last three columns of table 13 report the estimates of Model1 (MNL), Model2 (RPL), and Model3 (RPL + interaction).

Table 13: Estimates from the MNL, RPL and RPL+PT models

		Model 1 MNL	*Model 2 RPL*	*Model 3 RPL+PT*
Local	***Mean***	0.81***	0.96***	1.11***
		(6.25)[1]	(4.5)	(4.91)
	St. Dev.		1.47 ***	1.27***
			(6.83)	(6.35)
Organic	***Mean***	1.08 ***	1.33 ***	1.39***
		(9.02)	(5.98)	(6.12)
	St. Dev.		1.45 ***	1.38***
			(6.32)	(5.66)
Price		-1.29***	-1.75***	-1.75***
		(-9.46)	(-10.06)	(-10.07)
No_buy		-1.05 ***	-1.43***	-1.43***
		(-5.04)	(-5.84)	(-5.84)
Interaction terms with Personality traits				
LOCO[2]				0.4**
				(2.03)
LOCC				0.25
				(1.18)
LOCE				-0.33
				(-1.59)
LOCA				0.58**
				(2.43)
LOCN				-0.38*
				(-1.69)
ORGO				-0.07
				(-0.36)
ORGC				0.01
				(0.06)
ORGE				-.41*
				(-1.93)
ORGA				0.08
				(0.33)
ORGN				0.06
				(0.24)
N observations		640	640	640
Log likelihood		-632.08157	-582. 59845	-571.15881

***, **, * indicate significance at 1%, 5%, 10% level, respectively; Note [1]: Numbers in parentheses are |t-stats|
Source: Data from the Survey; 2 = Scores of the interaction terms are standardized and therefore continuous typically ranging from -3 to +3.

Each model contains 640 observations, based on the responses of 80 individuals performing 8 choices each, for a total of 1,920 alternatives considered. A comparison across the models suggests that Model 3 is a better fitting model due to the increase in log-likelihood (LL). Hence, when assessing consumer preferences for local and organic foods, model

performance can be further improved when accounting for heterogeneity in consumer preferences and heterogeneity around the mean of some random parameters due to personality traits. However, since the values of the LL functions from Model 2 and from Model 3 are slightly different, a Likelihood test has been performed in order to test whether the difference between the two models is significant. Although the LL estimation is improved in Model 3, the likelihood ratio test between Model 2 and Model 3 (p-value = 0.33) indicates that the null hypothesis that the two models equally perform can not be rejected. In Model 3, the constant β_0 and the price coefficients are, as expected, negative and statistically significant at the 0.01 level; hence the utility that consumers derive from choosing none of the proposed alternative products (alternative C) is lower than the utility from buying one of them (alternative A or B). Also, increasing increments on the price variable decrease the associated utility level provided by the choice. On the other hand, for both local and organic attributes, the coefficients are positive and statistically different from zero at the 0.01 level. This indicates that the probability for consumers of choosing to buy the product increases when the apple sauce is locally produced or organic. In particular, respondents' utility increases when choosing the organic apple sauce, followed by apple sauce produced in Emilia-Romagna.

Moreover, looking at the interaction terms, 3 out of the 5 interaction terms are statistically significant, specifically when the local production claim is interacted with the "Openness to experience" trait (LOCO), "Agreeableness" (LOCA) and "Neuroticism" (LOCN). The positive value of LOCO coefficient indicates that the probability that an individual chooses the locally produced apple sauce is higher when his/her personality is characterized by the aptitude to experience new situations. Locally produced apple sauce might be perceived as a "new experience" for two reasons. First, the local production is still considered an unconventional claim in the food system (Adams & Salois, 2010; Bazzani & Canavari, 2013) and therefore still new for industrialized products. Second, apple sauce is

uncommon in the area of interest; hence the local production might represent an extra source of curiosity for a novelty-seeker consumer. The "Agreeableness" trait has, as well, a statistically significant effect on respondents' valuation for the local attribute, indicating that caring, helpful individuals tend to prefer locally produced apple sauce more than the non-local counterpart. This might reflect the association of local food with the support to the local economy. The utility of a helpful individual might, then, increase when his/her purchase can be of benefit for the geographical area he/she belongs to. On the other hand, the interaction between the local claim and the "Neuroticism" trait has a negative effect, suggesting that the utility of a worrying, anxious individual decreases when the apple sauce is locally produced. The novelty of the locally produced apple sauce might be a source of uncertainty for these type of consumers. This aspect might generate some source of inconvenience to an individual who is inclined to feel easily under stress, leading to a decrease of his/her utility in choosing a novel product.

Regarding the organic attribute, the interaction with the "Extraversion" (ORGE) trait is negative and statistically significant (at the 0.1 level of significance), suggesting that the organic product had less probability to be chosen when the subject in question was characterized by extravert personality. Extravert personality might be more inclined to try new aspects related to food products or be less worried about the consequences of her decisions, looking less for safety, compared to an introvert person. Organic products are (at least partly) focused on food safety because of the lower risk of chemicals residues, therefore could be less appealing for an extrovert person. Hence, he/she might, then, gain less utility in choosing the already popular and common organic label.

The hypothesis of preference heterogeneity for both organic and local cannot be rejected due to the fact that the derived standard deviation parameters for both claims are statistically different from zero. Hence, consistent with previous studies, heterogeneity in

consumer preferences is an issue that needs to be considered when assessing consumer preferences for both organic and local attribute information.

Table 14 displays the Marginal WTPs for organic and local produced apple sauce, accounting for both main and interaction effects from the Model 3 estimation. Estimates from Model 3 were used since it offers a better fit for the data.

Table 14: Marginal WTP estimates (€/two cups of apple sauce) by accounting for main and interaction effects from the Model 3 estimation.

	Marginal WTPs from Model 3	
	Mean	Standard error
Local	0.63***	0.12
Local + LOCO	1.22***	0.28
Local + LOCC	-	-
Local + LOCE	-	-
Local + LOCA	1.03***	0.23
Local + LOCN	0.25	0.23
Organic	0.80***	0.13
Organic + ORGO	-	-
Organic + ORGC	-	-
Organic + ORGE	0.39*	0.23
Organic + ORGA	-	-
Organic + ORGN	-	-

***, **, * indicate significance at 1%, 5%, 10% level
Source: Data from the Survey

Results indicate that all the WTP estimates for both organic and local claims are statistically different from zero at the 0.01 level, suggesting that respondents are willing to pay a premium for the both food claims. This outcome is consistent with previous research, which found that consumers are generally willing to pay a price premium for food products, when these are locally grown or organic (Aprile *et al.*, 2012; Campbell *et al.*, 2014, 2013; Costanigro *et al.*, 2014; de-Magistris & Gracia, 2014; Gracia *et al.*, 2014; Hu *et al.*, 2012; Lim & Hu, 2015; Meas *et al.*, 2014; Onozaka & Mcfadden, 2011; Scarpa *et al.*, 2005).

Estimates also indicate that consumers are willing to pay the highest price for the organic apple sauce. This is not consistent with most of the literature investigating consumers' evaluation for local and organic food, where consumers were found to prefer locally grown products over organic food products (Aprile *et al.*, 2012; Costanigro *et al.*, 2012; de-Magistris & Gracia, 2014; W. Hu *et al.*, 2012; Wuyang Hu *et al.*, 2009; James *et al.*, 2009). On the other hand, the results are consistent with the studies of Lim and Hu (2015) and Scarpa *et al.*, (2005). Indeed, findings from the study of Lim and Hu (2015) show that consumers were willing to pay a higher premium for local beef in comparison to the organic one only when local origin was specified in provincial borders and when the origin of production was within a range of 320 km. In addition, Scarpa *et al.* 2005 observed that consumers' preferences for local and organic claims varied depending on the product under consideration. Results from their study showed that in the case of olive oil, consumers were willing to pay a higher premium for the bottle labeled as locally produced than for the one labeled as organic. The preference for the origin of production was not confirmed when using a different type of product such as oranges.

Turning to the interaction effects, it can be noted that in the case of the local attributes, open to experience (LOCO + *Local*) and caring-helpful (LOCA + *Local*) personalities are willing to pay a higher price for the locally produced apple sauce (product from Emilia-Romagna). The interaction effects also suggest that neuroticism and extraversion traits can decrease WTP for locally produced (LOCN + *Local*) and organic (ORGE + *Organic*) apple sauces, respectively.

4.4 Discussion and conclusion

In accordance with the growing popularity and interest for locally grown and organic food products, a significant number of studies investigated consumers' valuation for local and organic food claims. Findings from the majority of these studies show that consumers tend to value more the local origin of the product than the organic production (Aprile *et al.*, 2012; Campbell *et al.*, 2014b, 2013; Costanigro *et al.*, 2014; de-Magistris & Gracia, 2014; Gracia *et al.*, 2013). Although the preference for local over organic food has been observed on different kinds of consumers and in several countries, in all these research, the products under study are traditional or largely consumed food products. This might be considered as an important issue since the association of the food product to aspects such as consumers' identity, sense of belonging and evocation to the geographic area of production might be source of "home bias" and therefore could induce an implicitly higher evaluation for the local product (Scarpa *et al.*, 2005). To the best of the knowledge of the author, in the present study, for the first time, consumers' preferences and WTPs for local and organic claims were assessed using a novel food product in the area of interest. A non-hypothetical (RCE) approach was used to elicit consumers' preferences and WTPs for locally (in the Emilia-Romagna Region) produced organic apple sauce.

The results suggest that consumers are willing to pay a price premium both for the local and organic attribute. However, estimates also indicate that consumers are willing to pay the highest price for the organic apple sauce. To the knowledge of the author, this is a finding that is relatively unusual in the literature (only the studies of Scarpa *et al.* (2005) and Lim & Hu (2015) are partially consistent with the results). Different possible reasons for this outcome might then be considered. One reason might be explained by the selection of the origin levels: Emilia-Romagna as local and the rest of Italy as non-local. Italy is a country with a very strong food tradition and National origin can still be perceived as kind of local

(Bazzani & Canavari, 2013; Lombardi *et al.*, 2013). However, the studies of Moser & Raffaelli (2012) and Scarpa *et al.* (2005), who also used regional and national borders to investigate Italian consumers' valuations for origin and organic claims, showed that respondents were more willing to buy apples (Moser & Raffaelli, 2012) and oil (Scarpa *et al.*, 2005) when these products were characterized by the regional origin. This suggests that the choice of the origin attribute levels might not be the determinant factor in explaining the peculiarity of the findings. In addition, since "local" is often perceived as an element of freshness and vice versa (Darby *et al.*, 2008; Lim & Hu, 2015), the use of a processed food product might have induced a decrease in consumers' interest for the local attribute in comparison to the organic one. However, this suggestion is not consistent with findings from other studies, which verified that consumers valued the local attribute more than the organic claim even in the case of processed products such as blackberry jam and pastries (Hu *et al.*, 2012; Hu *et al.*, 2009). Therefore, the most likely explanation to the inconsistency of the results with previous researches might be that the use of a unusual food product, instead of a well-known one, may induce a weaker connection with territory and local community components and therefore, a decrease of "home bias". Therefore, the suggestion is that the consideration of "home bias" might be of relevant importance in assessing consumers' preferences for origin of production claims. However, this aspect has been scarcely investigated in the literature related to WTP for local food, which then makes it a good area for future research (Scarpa *et al.*, 2005).

In contrast to past studies, the interaction effect between personality traits and consumers' valuations for local and organic apple sauce was also considered. In the literature concerning consumers' preference for sustainable food labels, different factors such as socio-demographic characteristics and food values have been analyzed to explain heterogeneity in consumers food choices. However, in psychology, personality has been identified as a

relevant aspect in understanding individuals' choice behavior given that personality traits are stable features which can explain individuals' behavior in different contexts (Mischel, 2009). Personality traits have been generally described using the so-called "big five" (OCEAN) model that considers the following factors: Openness to experience, Consciousness, Extraversion, Agreeableness, Neuroticism. In the experiment, respondents' personality traits using the MIDI personality scale were elicited (Keyes, *et al.*, 2002; Lachman & Weaver, 1997; Weiss *et al.*, 2008). The results suggest that open-minded and caring personalities are more willing to pay for apple sauce when it is locally produced, in contrast to the worrying consumers. On the other hand, the effect of personality interaction with organic attribute was significant only in the case of extraverted consumers who showed less inclination to choosing the apple sauce when it was organic.

On the basis of these results, it is possible to conclude that the effect of the personality traits was more significant in the case of the locally produced attribute in comparison to the organic one. It is possible to deduce that the effect of personality traits might be more significant in the case of an unconventional food claim, such as "local food". Indeed, the personality traits, which were related to the inclination to experience new situations (openness to experience, extraversion, neuroticism) appear to be the most influential ones in relation to respondents' preferences for local and organic apple sauce. However, what we cannot decipher is whether the originality of the locally produced apple sauce is given by the unconventionality of the local claim or by the peculiarity of the production in Emilia-Romagna of the novel food product. In order to answer this question, future research might investigate consumers' preferences for local labels using food products which are largely consumed in the area of interest. Furthermore, in this study, organic and "locally produced" information which are both credence attributes were used. To the best of the knowledge, no known study has explored individuals' personality effects on consumers valuation for search

or experience attributes and this might be of relevant interest for future researches. For instance, a caring or a worrying personality might give more importance to attributes related to health issues, while an organized, meticulous person might consider more valuable other factors, such as the visual aspects of a product (e.g., packaging). Finally, personality traits may also play an important role in the determination of consumers' attitudes and motivations in buying food products. A person characterized by a caring personality might pay more attention to issues related to the support of local economy or to environmental factors, while a worrying personality might value food safety aspects more than other personality types. Hence, the association between personality traits and food values could be an interesting area for future research.

In conclusion, we can affirm that respondents in the study were willing to pay a price premium for both the local and organic apple sauce. This result is of importance for marketing strategies since it suggests that the use of locally produced and especially organic food claims might be positively valued even in the case of novel food products. However, consumers' preferences for local and organic food can be heterogeneous and personality traits appear to partially explain this heterogeneity.

5. A test of the Commitment Cost Theory using a Real Choice Experiment Approach

Local origin and organic attributes can be defined as credence attributes, since these are features of the product which individuals cannot personally evaluate before or after the consumption. In the literature related to food consumption, credence attributes have been often associated with the generation of consumers' uncertainty in food choices (Grunert, 2005; Grunert et al., 2001; Van Wezemael et al., 2010; Vermeir & Verbeke, 2006). In addition, in the present study apple sauce has been used as product in question. As aforementioned, apple sauce is not a commonly consumed food product in the area of interest and it has been recently introduced in the Italian market as healthy food product. The unfamiliarity with the product in question might be an extra source of uncertainty generation in respondents' choices. Recent studies have highlighted that consumers' WTP for a good can vary depending on the degree of uncertainty for the value of the good in question (Zhao & Kling, 2001, 2004). In particular, according to Zhao and Kling (2001, 2004), in reality, when there is uncertainty regarding the features of a good, consumers have the possibility to delay the purchase until they obtain more knowledge about the quality of the product in question or they have the chance to return the product in case they do not feel satisfied with their purchase. Hence, in contrast with the assumption of the static neoclassical theory, in uncertainty conditions, choices are mostly made in a more dynamic context (Zhao and Kling 2001, 2004). In order to explain WTP formation in dynamic settings, Zhao and Kling (2001, 2004) developed the Commitment Cost (CC) Theory. Theoretically, the CCs represent the differing element between the measure of consumers' WTP and the neoclassical static Hicksian compensating variation when individuals have uncertainty about the value of a good. The aim of this part of the research is to test CC formation for the first time in the literature in the context of food choices, in particular in relation to consumers' uncertainty for food products characteristics, such as credence attributes. Results from this experiment might suggest both empirical implications, such as the potential regulation of a local food label as mean of decrease in consumers' uncertainty for the features of a food product, and methodological implications, testing whether the reproduction of dynamic settings in RCEs design can be considered as a significant issue in the validation of this approach for individuals' WTPs estimation

5.1 Introduction

Consumer willingness-to-pay (WTP) for both private and public goods is an important indicator of consumer response to different choice contexts. On the basis of the Hicksian welfare theory, the WTP can be interpreted as the compensating (or equivalent) variation

(CV/EV), assuming that individuals' choice decisions regarding the value of a good are made in certainty and static conditions (Mitchell & Carson, 1989; Smith, 2000; Zhao & Kling, 2004). However, in real purchasing situations, individuals might be uncertain about the utility they can derive from a good or a service.

Uncertainty in decision making is a crucial aspect in different economic settings such as financial investment and environmental policy, where agents generally make choice decisions without knowing their effects on future rewards (Arrow & Fisher, 1974; Avinash Dixit & Pindyck, 1994; Dixit, 1992; Fisher, 2000; Narain & Fisher, 2004). Also in food choice settings where consumers often deal with making decisions under uncertainty, this is an important issue. For example, individuals' uncertainty can be a key factor to be considered when developing new product development (NPD) strategies (Castaño *et al.*, 2008; Hoeffler, 2003). Hoeffler (2003) stated that consumers' revealed preferences for a NPD can be unstable because of: (i) consumers' uncertainty related to the expected utility of the product (performance uncertainty), (ii) the symbolic value that its adoption can confer (symbolic uncertainty), and (iii) the cost of switching to the new product from the usual one (switching-cost uncertainty).

The novelty of a product is not the only feature that can produce uncertainty in consumer decision making. For instance, consumers' uncertainty about quality features of food products has been mostly associated with the issue of credence attributes, such as safety, origin, and sustainability (Aprile *et al.*, 2012; Costa-Font, Gil, & Traill, 2008; K. G. Grunert, 2005; Grunert et al., 2001; Van Wezemael, *et al.* 2010; Vermeir & Verbeke, 2006). This is because credence attributes represent those features of the product that individuals cannot personally evaluate before or after consumption, but their valuation relies on trust in the source of the claim.

In addition, consumers' uncertainty about the value of the good has been often associated with the degree of availability of information. In this regard, several studies have documented that individuals' WTP for a good or a service increases when information is provided, especially in cases when individuals are not familiar with the good in question (Bower *et al.*, 2003; Hoehn & Randall, 2002; Lusk et al., 2004; Meenakshi et al., 2012; Protiere *et al.*, 2004; Tkac, 1998). The type of information (e.g. positive, negative, or/and positive and negative) also plays an important role on consumers' valuation for a good (Bower et al., 2003; Corrigan *et al.*, 2009; Depositario *et al.*, 2009; Marette *et al.*, 2008; Nayga *et al.*, 2005; Protiere *et al.*, 2004).

However, in real purchase or choice situations, consumers may not be able to acquire information during purchase. As such, when there is uncertainty regarding the quality features of a good, then consumers could delay the purchase until they obtain more knowledge about the quality of the product in question. Furthermore, individuals might have the opportunity to reconsider their purchase and return the product and this is usually appreciated by the persons who want to buy a good when they are uncertain whether its use can be beneficial or not. Hence, in contrast with the assumption of the neoclassical theory, in reality, choices are mostly made in a more dynamic context, where individuals have the possibility to delay the transaction until when more information is gathered or to return the product in case they do not feel satisfied with their purchase (Corrigan *et al.*, 2007; Corrigan, 2005; Kling et al., 2003; Lusk, 2003; Zhao & Kling, 2004).

Individuals' choice behavior has been particularly investigated in environmental economics and finance fields. Under the assumption of risk neutrality, the financial benefit in postponing an irreversible and uncertain investment is defined as Quasi-Option Value (QOV) (Dixit & Pindyck, 1994; Dixit, 1992). Zhao & Kling (2001, 2004) re-examined the QOV concept to explain consumer choice behavior. Their assumption is that, in real choice

situations, consumers' WTP does not depend exclusively on the intrinsic value of the good (CV), but also on a variety of factors such as the level of uncertainty about a good, the timing of the decision making, and the grade of reversibility of a transaction (Zhao & Kling, 2001, 2004). Hence, committing to a decision at the moment of the transaction could have a cost for an individual. This cost has been defined by Zhao & Kling (2001, 2004) as "Commitment Cost" (CC), which can be interpreted as the cost of forgoing the opportunity to learn more about the value of a good if a purchase is made today (Lusk & Shogren, 2007; Lusk, 2003; Zhao & Kling, 2004). Theoretically, the CCs represent the differing element between the measure of consumers' WTP and the static Hicksian compensating variation when (1) individuals have uncertainty about the value of a good, when (2) there is the possibility to delay a purchase and gather future information, and (3) when the degree of irreversibility of decision can vary (Lusk, 2003; Zhao & Kling, 2004). Zhao and Kling (2004) stated that if individuals' uncertainty about the value of a good decreases, the CC related to the choice of making the purchase *today* will decrease, therefore individuals' WTP will increase. On the other hand, in cases when consumers need to consider the possibility of gathering more information in the future, their CCs increase and WTP *today* will decrease. Finally, in cases when the reversibility of the purchase is easier, the CC for buying today will decrease and individuals' WTPs will increase.

The introduction of a practical example might help to explain the three basic assumptions of CC theory. Assume an individual wants to buy a novel product, but she is uncertain about its quality since she did not have experience of it before. Would her WTPs be higher if extra information about the quality features of this novel product is provided at the point of purchase? If extra information is provided, for example through promotion activities, the individual might gain more knowledge about the product in question and thus evaluate it differently. Under less uncertain conditions, the CCs might decrease while the individual's

WTP might increase, as suggested by the CC theory. As a further example, suppose that extra information about this novel product is not provided at the point of purchase. Thus, the consumer might consider the option to gather future information once out of the store, by reading reviews about the product's quality features. Therefore, her WTP formation at the moment of the purchase (today) does not only depend on the expected value of the product but also on the potential of receiving more information about the quality features of the product in the future. The opportunity to wait for a potential future information can be interpreted as CCs which, in this dynamic context, represent the difference between the expected value of the good and the WTP for the product at the moment of the purchase (today) (Lusk, 2003). Turning to the third aspect of the CC cost theory, let's now assume that at the moment of the purchase the individual knows about the possibility to return the novel product after purchasing it. As such, she faces the transaction with less uncertainty, since she knows that if she is not comfortable with her purchase, she has the change to reverse the tarnsaction. Thus, her WTP for the novel product at the moment of purchase (today) might be higher in comparison to a shopping situation in which no return policy is available. Hence, a change in the degree of reversibility of the transaction implies the formation of a CC.

As mentioned by Lusk (2003), despite the intuitive appeal of the commitment cost theory only a few studies have tested the CC theory and its effects on WTP measures. For example, Lusk (2003) tested the CC theory by performing a second price auction approach. Using a lottery ticket and a mug auction, he performed three treatments differing depending on (i) the degree of uncertainty regarding the value of the lottery, (ii) the degree of potential future learning, and (iii) the degree of reversibility of the transaction. Evidence from this study only partially confirms the CC theory. Specifically, no significant difference in terms of WTP was found by the author in case of lower or higher degree of uncertainty and reversibility. However, in the case of the coffee mug auction, participants were willing to pay

significantly less in a second round auction, when they were proposed to gather more information. Corrigan (2005), performing a n^{th} price experimental auction, verified that participants' WTP for a coffee mug was higher for subjects who perceived that reversing the transaction (selling the good outside of the experiment) was more difficult than delaying the transaction (buying the good outside of the experiment). Corrigan et al. (2008) performed a hypothetical referendum format CV survey in Iowa to estimate residents' valuation for improved water quality of Clear Lake. Their results show that respondents were less inclined to vote yes and therefore to pay a price premium for the actualization of the referendum, in case they were offered the possibility to delay the vote and acquire new information by studying the lake. The authors concluded that when the knowledge of the good under consideration is low, making a forced decision leads to the formation of a CC. Finally, Kling, *et al.* (2013) tested the disparity between individuals' WTP and WTA when the transaction could be delayed or reversed. Results from a field experiment (a n^{th} price auction of sportscards) confirm a disparity between WTP/WTA in dynamic purchasing conditions. Their findings also show that WTP increases when there is difficulty in delaying and decreases in case of reversing the transaction (difficulty in delaying or reversing the transaction was self-reported in a confidential survey).

While all past studies tested the CC theory in different contexts no other known study has explored this theory in the context of food choices. Especially, WTP formation in dynamic settings has not been investigated in the case of novel food products. This is an important issue since novel products generally embed a source of uncertainty, which can affect CC formation and thus WTPs. It is necessary to point out that Corrigan *et al.* (2009) have originally tested the CC theory, using a non-market good (environmental policy actualization). In comparison to the other studies, the use of a non-market good might have induced a higher degree of individuals' uncertainty for the good in question. Despite this

positive aspect, the study of Corrigan *et al.* (2009) can be questioned for two reasons: (1) it is limited to the investigation of individuals' choice making when future information can be gathered, omitting relevant aspects of the CC theory such as the effect of a change in the degree of individual's uncertainty and decision reversibility, (2) the presence of hypothetical bias, since in hypothetical stated preference methods such as the used CVM can be source of inaccuracy in individuals' WTPs estimation (Murphy *et al.*, 2005) and therefore in the relevance of CCs formation. In addition, no other known studies have explored the CC formation due to uncertainty regarding the nature of product characteristics. Finally, most of the studies testing the CC theory used an Experimental Auction (EA) approach. EAs are an increasingly popular valuation mechanism, but, recently, non-hypothetical Real Choice Experiments (RCEs) have been implemented to elicit individuals' preferences. Hence, a growing number of studies used RCEs vis-a-vis EAs, showing differences in valuation estimates obtained from the two mechanisms (Akaichi *et al.*2013; Gracia *et al.*2011; Grebitus *et al.*2013; Lusk & Schroeder, 2006). RCEs might more closely represent individuals' choice making behavior in comparison to EAs because of the higher similarity to real purchasing processes (e.g. type of choice decisions making at the supermarkets) and the absence of peer pressure that can characterize EA mechanisms (Akaichi *et al.* 2013; Gracia *et al.*, 2011; Grebitus *et al.*, 2013). At the best of the knowledge of the author, no other known study has tested the CC theory using a RCE approach. To fill this void, a number of hypotheses regarding the CC formation using a RCE was tested. The aim is to advance the literature on this area in three ways. First, this is the first study using a novel food product to test CC formation. Apple sauce as the product in question was implemented, since, while it is largely consumed in North American and North European countries, the apple sauce is a food product that does not belong to Italian food traditions and it has been recently introduced in the Italian market as a healthy snack product. Second, for the first time, the CCs formation was tested

considering product characteristics such as the production method and the local origin of the product. Credence attributes were used, since in the literature related to food choices, individuals' uncertainty has been mostly associated with this kind of features. Third, a field experiment was designed using a RCE approach where different treatments were implemented to test the effect of information, delayed information, and reversibility on CC formation. The implementation of a RCE to estimate individuals' WTPs in dynamic settings can be a contribution not only to the CC theory, but also to the design of RCEs. The consideration of the option values related to potential future information and to transaction reversibility in choice making might result, indeed, as relevant aspects in individuals' WTPs formation.

5.2 Materials and Methods

5.2.1 Experimental design procedures

The data used in this article are drawn from responses to a field RCE carried out during fall 2014 in a hypermarket located in Bologna, the main city in the Emilia-Romagna region (Italy). Food shoppers were randomly intercepted and recruited at the entrance of the retail store. They were informed about the opportunity to participate in a survey on consumers' valuations for apple sauce, a food product that is novel in Italy. Interviewers approached the randomly selected participants and asked them a set of screening questions related to whether they were the main household food shoppers, verifying that each participant was at least 18 years old, and whether they were available to taste different types of apple sauce. If the responses to all of these questions were affirmative, the interviewer started the RCE. In the case of negative responses, the interviewer randomly selected another

customer and asked the screening question until finding a participant who would be eligible to participate in the survey. Each participant was incentivized with a 5€ check-coupon.

Apple sauce was used as empirical application in this study because of a number of reasons. Firstly, it is considered as a novel product in the Italian market. Hence, this product can provide a level of uncertainty for consumers in this study. Second, it is a non-perishable product. As such, the effect of changes in its attributes from the organoleptic characteristics are isolated (Gracia *et al.,* 2011). Lastly, since it is a processed product, it was easier to manage the packaging differences across the different types of experimentally designed apple sauce products. In order to avoid participants' deception about the features of the products, four types of apple sauces were used. Three attributes such as price, production method, and area of production were used. The price levels were specified to reflect the actual market price for apple sauce products (0.95€, 1.45€, 1.95€, 2.45€). The method of production was specified as a 2-level attribute, either organic or conventional. Lastly, two levels were used for the attribute area of production: locally produced and non-locally produced. All the types of apple sauces were produced in Italy, but the ones produced outside the regional borders were defined as non-locally produced, while the ones from Emilia-Romagna were considered as locally produced. Table 15 summarizes the attribute and attributes levels used in this study.

Table 15: Attributes and Attribute Levels

Attributes	***Attribute Level***
Price	- 2.45 €
	- 1.95 €
	- 1.45 €
	- 0.95 €
Origin	- Local (produced in Emilia-Romagna)
	- Non-local (produced in Italy, but outside Emilia-Romagna)
Method of production	- Organic
	- Conventional

Following Scarpa, Campbell and Hutchinson (2007), the allocation of attribute and attribute levels to product alternatives was designed using a sequential Bayesian design to

minimize the D-error. Three different phases were performed. In the first phase, the choice set design follows Street and Burgess (2005). Accordingly, the selected attributes and their levels were first used to come up with an orthogonal factorial design for the first alternative of this CE design, reducing the original 16 ($4x2^2$) combinations to just 8. Then, the generators described by Street and Burgess (2007) were used to obtain a practical set of 8 pairs, with a D-efficiency of 96.6%. This design was used for the pilot survey (second phase). In the last phase, the data from the pilot survey were used to estimate a MNL model whose coefficient estimates were then used as Bayesian priors.

Before answering the RCE questions, the participants were asked to taste all the four apple sauce products (local/organic, local/conventional, non-local/organic, non-local/conventional). After completing the blind test, participants had also the possibility to visually examine the apple sauce products (two cups of 100g of apple sauce).Information regarding the RCE mechanism was also provided in detail to all participants[10]. Specifically, they were first informed that they would facing eight different choice tasks, each of them describing three choice options: two different apple sauce products and a “no purchase" option. Next, they were informed that after completing the CE questions, one of the choice tasks would be randomly selected as the binding choice task. That is, the participant will have to purchase the product they chose in the binding choice task if they picked one of the two product alternatives. If they chose the “no purchase” option, then they will not purchase any product and will not pay anything. Finally, the participants were clearly told that an actual payment would have to occur if they chose one of the two product options in the binding choice task and that every choice task will have the same probability to be picked as the binding choice task.

[10] Full instructions are available in the Appendix C

After completing this informative phase, the questionnaire described in chapter 3 was proposed, including the performance of the RCE.

5.2.2 Experimental Treatments and research hypotheses

Four group treatments were used. Following Lusk & Schroeder (2004), a between-subjects approach was adopted. Hence, each participant was randomly assigned to only one of the RCE treatments. The four group treatments differed in terms of possibility to gain information (present or future information) and in terms of degree of reversibility of the transaction. In the first treatment, named "control group treatment" (CT), respondents were introduced to the RCE without receiving any information about the possibility to gain information about the product or to return it. In the second treatment, named "*treatment with information*" (INT), a brief explanation of organic certification and of "local food" movement in Italy was provided. In order to avoid giving information that could negatively or positively influence respondents' perceptions towards the mentioned issues, is was decided to furnish neutral information[11] (Aprile *et al.*, 2012; Lusk *et al.*, 2004). The third treatment, named *"Delayed information treatment" (DINT)*, was focused to allow us to assess consumers' willingness to wait for future information. Hence, right before approaching the RCE, respondents were informed that there is a possibility to be provided with information about organic and local food production (the same information that were given in the INT) after they concluded their grocery shopping, at the exit of the store. They were informed that an interviewer would be available right beyond the cash registers to give them this information, if they were interested. They were provided with an ID number in order to be recognized by

[11] Regarding the organic production, the definition of the organic certification was introduced according to the Council Regulation (EC) No. 834/2007 of 28 June 2007, while, since in Italy a universal definition of local is not existing yet, we described the present regional legislative decrees and proposed regulations related to the "local food" issue.

the collaborator. Finally, the last treatment, called the *"reversibility treatment" (RT)* was designed to determine the effect on respondents' WTP of the possibility that the participants could reverse the transaction; i.e., they can return the product if they purchased one. As such, before the RCE, participants were informed that in case they chose a product in the binding choice task, they had the possibility to return the product at the exit of the store after they concluded their grocery shopping. They were told that they could return the product to a collaborator who would reimburse them the amount of money they paid if they decide to return the product. Respondents were given an ID number that they had to show to the collaborator[12]. Table 16 shows a layout of the procedures followed in the RCE treatments.

Table 16: Layout of the RCE

	CT	INT	DINT	RT
Blind test	√	√	√	√
Visual examination	√	√	√	√
Information RCE mechanism	√	√	√	√
Neutral information		√		
Information given about organic and local production after the grocery shopping			√	
Possibility to return the product				√
RCE questions	√	√	√	√

With these RCE treatments, a set of hypotheses was then tested, with the aim to verify whether the CC theory holds in a choice context involving a novel food product and a set of credence attributes. In order to determine the effect of information on individuals' WTP, the estimates from the second and first treatment were compared. In regards to the first issue of the CC theory, the following null and alternative hypotheses were tested:

$$H_{01} : (WTP^{INT} - WTP^{CT}) = 0$$
$$H_{11} : (WTP^{INT} - WTP^{CT}) > 0$$

[12] The duration of individuals' grocery shopping was calculated in order to determine whether this factor could influence respondents' willingness to return the product. However, only one participant returned the apple sauce and this was 25 minutes after he completed the questionnaire.

If H_{01} is rejected, it can be confirmed that giving information reduces consumers' uncertainty regarding the value of the product. This would validate the assumption that when subjects are less uncertain about the value of a good, CCs decrease and WTP increases, as predicted by Zhao & Kling (2004).

Next, in order to answer the research question related to the effect of willingness to wait for future information, the following hypotheses were tested:

$$H_{02} : (WTP^{DINT} - WTP^{CT}) = 0$$

$$H_{12} : (WTP^{DINT} - WTP^{CT}) < 0$$

The rejection of H_{02} would confirm that when subjects expect to gather more information regarding the good, the CC increases and therefore WTP decreases. The rejection of H_{02} would confirm Zhao & Kling's (2004) CCs theory, which assumes that individuals' WTP *today* decreases when there is the possibility of getting future information.

Finally, the third hypothesis is related to individuals' WTP formation in case of a change in the degree of reversibility of the purchase. According to CC theory, individuals' WTP for a good should be higher when there is a possibility that one could reverse or return a purchase, because of a reduction of the CC associated to uncertainty. Accordingly, the following hypotheses were tested:

$$H_{03} : (WTP^{RT} - WTP^{CT}) = 0$$

$$H_{13} : (WTP^{RT} - WTP^{CT}) > 0$$

If H_{03} is rejected, we could confirm that when subjects expect that reversing the transaction is easier, then CCs decrease and WTP increases validating the assumption of Zhao & Kling (2004) CC theory.

5.2.3 Econometric Analysis

Two empirical models were specified in order to estimate the parameters and to calculate the WTP for the alternatives proposed in the RCE. *Model 1* is a MNL model and it was used as benchmark model. *Model 2* is a RPL model and it allows accommodating heterogeneity across consumers' preferences when assessing consumer preferences for organic and local attribute information displayed in apple sauce products. Both MNL and RPL models were explained in detail in the previous chapter. The utility function is specified as follows:

$$U_{njt} = \beta_0 + \beta_1 Price_{jt} + \beta_2 Local_{jt} + \beta_3 Organic_{jt} + \varepsilon_{njt} \quad (20)$$

where n is the index of respondents, j pertains to three options available in the choice task (A, B and C) and t is the index of choice situations. The alternative-specific constant (β_0), coded as a dummy variable, takes the value 1 for the no-buy option and 0 otherwise. The alternative-specific constant is expected to be negative and significant, indicating that consumers obtain lower utility from the no-buy option than from the other two alternatives. The *Price* is a continuous variable represented by the experimentally designed price levels. It is expected to have a negative impact on consumer utility and therefore a negative value. Finally, the non-price attributes such as *Local* (*Loc*) and *Organic* (*Org*) are dummy variables taking the value 1 if the product carries the corresponding labels, and 0 otherwise.

As a last step, using the estimated coefficients from the RPL, the marginal WTPs were calculated as the ratio of the values of the coefficients of the organic and local production attributes, divided by the coefficient of the price variable.

5.3 Results

Table 17 reports summary statistics of socio-demographic information across the RCE treatments (gender, age, education, income). A chi-square test was used in order to test whether these control and treatment groups differ in terms of gender, age, education and income. Results show that the hypothesis of independence between socio-demographic characteristics across the treatments cannot be rejected at the 5% significance level. According to table 15 participants were equally distributed across the treatments in terms of socio-demographic characteristics.

Table 17: Socio-demographic characteristics of the sample

	CT	INT	INDT	RT	TOT
Gender					
Female	55%	64%	64%	59%	40%
Male	45%	36%	36%	41%	60%
Pearson's Chi-square (3) =1.7177 *p-value = 0.633*					
Age					
18-39	27%	14%	18%	25%	22%
40-64	44%	59%	53%	55%	52%
Older than 64 years	29%	27%	29%	20%	26%
Pearson's Chi-square (6) = 6.2651 *p-value = 0.394*					
Education					
< Highschool	29%	16%	17%	23%	23%
Highschool	31%	50%	43%	34%	38%
Laurea Degree	32.5%	23%	31%	37.5%	31%
> Laurea degree	7.5%	11%	9%	5%	8%
Pearson's Chi-square (9) = 9.0546 *p-value = 0.432*					
Income					
< 15.000€	23%	22%	11%	14%	18%
15.000€ - 29.999	42%	38%	41%	22%	37%
30.000-44.999€	23%	24%	27%	47%	30%
45.000-59.999€	5%	12%	14%	8%	9%
> 60.000 €	7%	2%	7%	8%	6%
Pearson's Chi-square (12)= 17.4182 *p-value = 0.135*					

Source: Data from the Survey

Regarding consumers' preferences, Table 18 reports the estimates obtained from the MNL and RPL models across the different treatments.

Table 18: Estimates from the MNL and RPL models for each treatment

	Estimates from MNL and RPL models			
	Estimates from MNL model			
Variables	CT	INT	INDT	RT
Price	-1.29***(μ)	-1.4***(μ)	-1.64***(μ)	-1.10***(μ)
	(-9.46)[1]	(-8.13)	(-9.32)	(-6.70)
No-buy	-1.05 ***(μ)	-.82***(μ)	-1.15***(μ)	-0.69***(μ)
	(-5.04)	(-3.09)	(-4.45)	(-2.65)
Local	0.81 ***(μ)	1.07***(μ)	0.82***(μ)	1.07***
	(6.25)	(6.52)	(5.03)	(6.79)
Organic	1.08 ***	1.63***	1.59***	1.30***
	(9.02)	(6.52)	(9.68)	(9.02)
	Estimates from RPL model			
Variables	CT	INT	INDT	RT
Price	-1.75***(μ)	-1.92***(μ)	-2.08***(μ)	-1.43 *** (μ)
	(-10.06)	(-8.60)	(-9.48)	(-7.24)
Variables	CT	INT	INDT	RT
No-buy	-1.43***(μ)	-1.25 ***(μ)	-1.52 ***(μ)	-1.02***(μ)
	(-5.84)	(-3.98)	(-5.11)	(-3.45)
Local	0.96 ***(μ)	1.29 ***(μ)	0.86 ***(μ)	1.29 ***(μ)
	(4.5)	(4.90)	(3.46)	(5.33)
	1.47 ***(σ)	1.21***(σ)	1.17 ***(σ)	1.10 *** (σ)
	(6.83)	(5.25)	(4.97)	(5.29)
Organic	1.33 *** (μ)	2.06 ***(μ)	1.91 *** (μ)	1.59 ***
	(5.98)	(6.85)	(6.99)	(6.71)
	1.45 *** (σ)	1.57 ***(σ)	1.33 *** (σ)	1.16 ***(σ)
	(6.32)	(6.24)	(5.31)	(5.52)
Observations	640	448	448	448
LL from MNL model	-632.081	-412,079	-409,744	-428, 806
LL from RPL model	-582. 598	-374. 557	-386.178	-401.492

***, **, * indicate significance at 1%, 5%, 10% level; 1= Number in parenthesis are |t-stats|
Source: Data from the Survey

The constant β_0 and the price coefficients are, as expected, negative and statistically significant at the 0.01 level; hence the utility that consumers derive from choosing none of the proposed alternative products (alternative C) is lower than the utility from buying one of them (alternative A or B). Also, increasing increments on the price variable decrease the associated utility level provided by the choice. On the other hand, for both local and organic attributes, the coefficients are positive and statistically different from zero at the 0.01 level, in all four consumer groups. This indicates that the probability for consumers of choosing to buy the product increases when the apple sauce is locally produced or organic. In particular, respondents' utility increases when choosing the organic apple sauce, followed by apple sauce produced in Emilia-Romagna.

Table 18 shows a comparison across the models that suggests that RPL is a better fitting model due to the increase in log-likelihood function (LL). Hence, the RPL was the model used to estimate the parameters of all groups.

The coefficients estimates from the RPL models were then used to calculate the marginal WTPs (MWTP) across treatments. The hypotheses about the CCs formation were tested using a one-tailed independent t-test across individuals' MWTP calculated in the different treatments (Table 19)

Table 19: Marginal WTP (€/two cups 100g each of apple sauce) across Treatments and Hypothesis one-tailed independent t-test.

Hypothesis one-tailed independent t-test	*Local*	*Organic*
H_{01} : (WTP^{INT} - WTP^{CT}) = 0		
WTP^{INT}	0.67***	1.07 ***
WTP^{CT}	0.54***	0.76 ***
p-value	**0.11**	**0.013**
H_{02} : (WTP^{CT} - WTP^{DINT}) = 0		
WTP^{CT}	0.54***	0.76***
WTP^{DINT}	0.41***	0.92***
p-value	**0.374**	**0.139**
H_{03} : (WTP^{RT} - WTP^{CT}) = 0		
WTP^{RT}	1.26***	1.56***
WTP^{CT}	0.54***	0.76***
p-value	**0.005**	**0.011**

***, **, * indicate significance at 1%, 5%, 10% level.
Source: Data from the Survey

As can be seen from table 17, the first hypothesis (H_{01}: (WTP^{INT} - WTP^{CT}) = 0; HP_{11} = (WTP^{INT} - WTP^{CT}) > 0), is rejected in the case of organic label, indicating that respondents WTPs increase when information about the meaning of the attributes is provided to them. In contrast to Lusk's (2003) finding that increasing the certainty about the value of a lottery ticket did not significantly increase the bids for a lottery as predicted by the CC theory, this result is consistent with the assumption of CC theory, albeit only in the case of the organic production attribute.

Looking at the results of the second hypothesis, we can state that the hypothesis of equality between the WTP estimates of DINT and CT (H_{02} : (WTP^{DINT} - WTP^{CT}) = 0; H_{12} : (WTP^{DINT} - WTP^{CT}) > 0) cannot be rejected. This suggests that the potential future

information did not significantly affect respondents' WTP formation and there is no clear evidence of changes in commitment costs. This result is in contrast with Corrigan *et al.* (2008), who documented that respondents were less willing to pay for an environmental policy when there is the possibility to acquire delayed information. On the other hand, this finding is partially consistent with the results of Lusk (2003) who found out that when participants expected less information to be gathered in the future, then their bids did not vary significantly in the case the coffee mug. Finally, in the case of the third hypothesis (H_{03} : $(WTP^{RT} - WTP^{CT}) = 0$; H_{13} : $(WTP^{RT} - WTP^{CT}) > 0$), the null hypothesis of equality between the WTPs from the CT and the RT is rejected for both labels (local and organic), indicating that the WTPs for both organic and local labels are higher when the purchase transaction was reversible. Consistent with Kling *et al.* (2013), this result confirms the CC theory.

5.4 Discussion and conclusion

The neo-classical welfare theory is founded on the assumption that individuals make choices in certainty and static conditions. However, in real purchasing situations, uncertainty and the potential for delaying or reversing a transaction are factors that can effect choice decisions. Hence, the measurement of WTP in uncertainty conditions differs from Hicksian compensating variation because of the formation of the so-called "Commitment Costs" (Zhao and Kling,2001, 2004). According to the CC theory (Zhao & Kling 2001, 2004) CCs decrease and WTP increases when individuals are less uncertain about the value of a good and when reversing a transaction is easier, while WTP "today" decreases and CCs increase when potential future information can be gathered. Despite the intuitive prediction of the CC theory, a few studies tested WTP formation in dynamic settings using experimental approaches such as referendum-format CV and EAs. Results from these studies confirm a variation in

individuals' WTP estimations when subjects have the possibility to reverse or to delay a transaction (Corrigan *et al.*, 2008; Corrigan, 2005; Kling *et al.*, 2013; Lusk, 2003).

This study tests CC theory and its implications on WTP estimates for a novel product (apple sauce) using RCEs. To the best of the knowledge of the author, this is the first study testing CCs theory by using a novel product and employing a RCE as methodological approach to elicit WTPs.

These results show an increase in WTP when consumers were provided with information regarding the meaning of the products on interest. This confirms the CC theory prediction that making a choice in conditions of more uncertainty induces a CC formation and therefore a decrease in WTP for the good in question. However, these findings are consistent with the CC theory just in the case of the attribute related to the organic production. At first glance, the reader might deduce that the cause of these diverging results might be explained by the nature of the given information. However, neutral information in the case of both attributes were provided, giving a simple description of the regulations concerning the organic certification and the local food production in Emilia-Romagna. Neutral information were given precisely in order to avoid any potential induced preference for one of the two attributes. However, the important difference between the organic and local claim information is that the first one is a universally regulated certification, characterized by a specific label, while the Italian food system still lacks of a shared regulation of local food products and therefore of a label that identifies this kind of information. Hence, the awareness of a controlled certification system might significantly affect individuals' decision making and induce to a decrease of uncertainty for the quality of the food product in question. This finding might be of relevant implication in the marketing of local food products. Indeed, the supply of local food is often associated to short food supply chains, where consumers have the possibility to seek for information directly from farmers. The introduction of a "Local Food"

label might be of relevant importance in providing information and encouraging the commercialization of local food products even at the level of conventional forms of outlet, such as large retail chain.

The second prediction of the CC theory assumes that individuals' WTPs "today" decrease and CCs increase when potential future information can be gathered. To date, there has been little agreement on this aspect of CC theory. For instance, while Corrigan *et al.* (2008), Corrigan (2005) and Kling *et al.* (2013) found out that CCs increase when potential future information can be gathered, Lusk (2003) did not find any effect on WTPs. Consistently with Lusk (2003), with no significant decrease in the estimation of respondents' WTPs was observed when the possibility to gain delayed information was offered to respondents, neither in the case of the organic certification nor in the case of local production. While the failure of the hypothesis of a decrease in individuals' WTP in case of potential future information cannot be imputable at the methodological approach used to elicit consumer WTPs - Lusk (2003) obtained a similar outcome using an EA approach - a possible explanation can be related to the nature of the attributes used to describe our products.

In particular, two credence attributes were used to design the present RCE. This is because since credence attributes are features which individuals can not personally evaluate before or after the consumption, they represent themselves a source of uncertainty in individuals' choice making. As such, if different features had been used such as experience or search attributes, would have the respondents given a different value to the option of delaying the purchase decision? Would have respondents been more willing to wait for testing whether they liked the product in question or not? What we can suppose is that the possibility of acquiring a potential personal experience of the product in question might have differently affected respondents' choice behavior and, therefore, CC formation. Hence, testing WTP

formation in dynamic settings using search or experience attributes could be an interesting area for future research.

On the other hand, these results strongly confirm that individuals WTP decrease and CCs increase in case of irreversibility in the transaction. Respondents' WTPs were significantly higher when they had the chance to reverse the transaction although if in most of the cases they decided to keep the purchased product (just one subject returned the apple sauce). This might suggest that the option value related to the reversibility issue can be considered as a crucial aspect in the design of RCEs. In the real market, retailers generally dispose of policies, which concern the reversibility of costumers' purchases. Indeed, in real purchasing situations, consumers are usually aware of the possibility to return the product in case they are not satisfied with their purchase decisions. This suggests that the irreversibility conditions which generally characterize RCEs might be source of bias in individuals' WTP estimation.

Overall, results from this study partially support the CC theory predictions. However, we can state that the reproduction of dynamic settings in RCEs design can be considered as a significant issue in the validation of this approach for individuals' WTPs estimation, since two of the three main CC theory predictions were confirmed. In particular, results strongly confirm that a change in the degree of transaction reversibility significantly affect consumers WTP formation, suggesting that this issue might play an important role in the definition of RCEs design.

General discussion and conclusions

The increasing popularity of the so-called "local food movement" has led to a growing number of empirical studies focused on the exploration of locally-based Alternative Agro-Food Networks (AAFNs) and especially on the analysis of consumers' preferences and WTP for locally grown or locally produced food products (Darby *et al.*, 2008; de Magistris & Gracia, 2008; Goodman, 2003; Hu, *et al.*, 2009; Raffaelli *et al.*, 2009; Seyfang, 2006; Zepeda & Li, 2006). However, different aspects related to the local food consumption still remain unexplored in the current literature. As such, the objective of the research has been the investigation, using a mixed methodological approach, of different issues related to the "local food movement" in order to fulfill the existing literature regarding this area of interest.

First, what emerges from the literature is that, although provincial, regional governments, and mainstream food retailers are increasingly promoting claims indicating the local origin of food products, "local food" is still a blurred concept and it is difficult to identify a shared definition, especially in the Italian food market. Past studies showed that the abstract nature of the "local" definition might induce a misunderstanding by consumers of what defines a food product as local or not (Lim & Hu, 2015, Bazzani & Canavari, 2013). For this reason, in the present study, a qualitative analysis based on the use of semi-structured in-depth interviews has been developed to explore the meaning and the perception of local food in the Italian food market. Results from this research indicate that the meaning of local must be explained more in terms of political boundaries and connection to a geographical area than in terms of food miles. Some authors (Aprile *et al*., 2012; Giovannucci, *et al.*, 2010) suggest that the meaning of local in the Italian food system can be associated to the one of

Geographical Indication. However, general opinion of the interviewees was that the interpretation of "local" must be more related to the belonging to a community of a certain area, where a culinary tradition has been preserved generation by generation. The concept of Geographical Indication is mainly focused on the origin of a product from a particular place, while the interpretation of "local" must resemble the re-valuation of short-distance relationships and community food habits. However, further important finding from the qualitative-explorative analysis is that the definition of what is local strictly depends on the product in question. This result is consistent with the study of Scarpa *et al.* (2005), who observed that consumers' preferences for local food products varied depending on the product under investigation.

Moreover, what also emerged from the results of this analysis is that issues which are usually embraced by the organic production claim, such as production method and hygienic safety aspect have been commonly associated to the local food concept.

These results from the explorative phase of the study have been a crucial aspect in the settlement of the methodological approach aimed at the investigation of the core issue of the study, the estimation of consumers' preferences and WTPs for local food products.

As such, a Real Choice Experiment approach has been performed in order to estimate consumers' WTP for locally produced (interpreting the production within regional borders as local, while national production, but outside regional boundaries as non-local) and organic apple sauce, which is an uncommon food product in the area of interest and it has been just recently introduced in the Italian food market.

The association between local and organic production is a largely discussed topic in the literature, both because consumers can perceive “organic” and “local” concepts as partially overlapping and because organic production is one of the other most popular alternative to conventional food, but its increasing standardization caused a shift in

consumers' preferences from the globally regulated organic toward the still unconventional local food products (Adams & Salois, 2010; Adams & Adams, 2011; Campbell *et al.*, 2014). Indeed, results from past studies investigating local food consumption, suggest that consumers tend to value locally grown products more than organic food products (Aprile *et al.*, 2012; Campbell *et al.*, 2014, 2013; Costanigro *et al.*, 2014; de-Magistris & Gracia, 2014; Gracia *et al.*, 2014;Hu *et al.*, 2012; Meas *et al.*, 2014; Onozaka & Mcfadden, 2011).

Results from this study suggest that consumers are willing to pay a price premium both for the local and organic attribute. However, estimates also indicate that consumers are willing to pay the highest price for the organic apple sauce. To the knowledge of the author, this is a finding that is relatively unusual in the literature (only the studies of Scarpa *et al.* (2005) and Lim & Hu (2015) are partially consistent with the results). Different possible reasons for this outcome might then be considered. One reason might be explained by the selection of the origin levels: Emilia Romagna as local and the rest of Italy as non-local. As it emerged from the qualitative analysis, Italy is a country with a very strong food tradition and National origin can still be perceived as kind of local. However, the studies of Moser & Raffaelli (2012) and Scarpa *et al.* (2005), who also used regional and national borders to investigate Italian consumers' valuations for origin and organic claims, showed that respondents were more willing to buy apples (Moser & Raffaelli, 2012) and oil (Scarpa *et al.*, 2005) when these products were characterized by the regional origin. Moreover, only 2% of the sample defined food products, produced in Italy as local. This suggests that the choice of the origin attribute levels might not be the determinant factor in explaining the peculiarity of the finding. In addition, since "local" is often perceived as an element of freshness and vice versa (Darby *et al.*, 2008; Lim & Hu, 2015), the use of a processed food product might have induced a decrease in consumers' interest for the local attribute in comparison to the organic one. However, this suggestion is not consistent with finding from different research which

verified that consumers valued the local attribute more than the organic claim even in the case of processed products such as blackberry jam and pastries (Hu *et al.*, 2012; Hu *et al.*, 2009). Therefore, as suggested by Scarpa et al. (2005), the most likely explanation to the inconsistency of these results with previous research might be that the use of an uncommon food product, instead of a well-known one as it was performed in past studies, may induce a weaker connection with territory and local community components and therefore, a decrease of "home bias".

In addition, past studies showed that an explanation of heterogeneity in consumers' preferences for local and organic food products might be given by the by factors related to consumers' profile, such as socio-demographic variables, attitudes and beliefs (Aertsens, *et al.*, 2009; Campbell *et al.*, 2014b; Carpio & Isengildina-massa, 2009; Loureiro & Hine, 2002; Zepeda & Li, 2009; Zepeda, 2009). However, differently from these studies, in the present research the interaction effect between personality traits and consumers' valuations for local and organic food product was also considered. In psychology, personality has been identified as a relevant aspect in understanding individuals' choice behavior given that personality traits are stable features which can explain individuals' behavior in different contexts (Mischel, 2009, Grebitus *et al.*, 2013). Personality traits have been generally described using the five big (OCEAN) factors: Openness to experience, Consciousness, Extraversion, Agreeableness, Neuroticism. In this experiment, respondents' personality traits were elicited using the MIDI personality scale (Keyes, *et al.*, 2002; Lachman & Weaver, 1997; Weiss *et al.*, 2008). The results suggest that open-minded and caring personalities are more willing to pay for apple sauce when it is locally produced, in contrast to the worrying consumers. On the other hand, the effect of personality interaction with organic attribute was significant only in the case of extravert consumers who showed less inclination to choosing the apple sauce when it was organic. On the basis of these results, it is possible to conclude that the effect of the

personality traits was more significant in the case of the locally produced attribute in comparison to the organic one. It is possible to deduce that the effect of personality traits might be more significant in the case of an unconventional food claim, such as "local food". Indeed, the personality traits which were related to the inclination to experience new situations (openness to experience, extraversion, neuroticism) appear to be the most influential ones in relation to respondents' preferences for local and organic apple sauce. However, what we cannot decipher is whether the originality of the locally produced apple sauce is given by the unconventionality of the local claim or by the peculiarity of the production in Emilia Romagna of the novel food product.

Moreover, the present study advanced the existing literature related to the investigation of consumers' choice behavior for local and organic foods, considering that individuals' characteristics might not be the only factors affecting individuals' preferences for food claims. Indeed, local origin and organic production can be defined as credence attributes, which represent those features of the product which individuals cannot personally evaluate before or after the consumption, but their valuation relies on trust in the source of the claim. In the literature related to food consumption, credence attributes have been often associated with the generation of consumers' uncertainty in food choices (Grunert, 2005; Grunert *et al.*, 2001; Van Wezemael *et al.*, 2010; Vermeir & Verbeke, 2006). Moreover, the unconventionality of the local food claim and the unfamiliarity with the apple sauce might have represented extra sources of uncertainty generation in respondents' choices. Recent studies have highlighted that consumers' WTP for a good can vary depending on the degree of uncertainty for the value of the good in question (Zhao & Kling, 2001, 2004). However, no-know study analyzed how uncertainty conditions in decision making might affect consumers' choice behavior and WTP formation for local food products. According to Zhao and Kling (2001, 2004), in real purchasing situations, when there is uncertainty regarding the quality

features of a good, consumers have the possibility to delay the purchase until they obtain more knowledge about the quality of the product in question or they have the chance to return the product in case they do not feel sutisfied with their purchase. Hence, in contrast with the assumption of the static neoclassical theory, in uncertainty conditions, choices are mostly made in a more dynamic context (Zhao and Kling 2001, 2004). In order to explain WTP formation in dynamic settings, Zhao and Kling (2001, 2004) developed the Commitment Cost (CC) Theory. Theoretically, the CCs represent the differing element between the measure of consumers' WTP and the neoclassical static Hicksian compensating variation when individuals have uncertainty about the value of a good. According to the CC theory (Zhao & Kling 2001, 2004), CCs decrease and WTP increases when individuals are less uncertain about the value of a good and when reversing a transaction is easier, while WTP "today" decreases and CCs increase when potential future information can be gathered.

Results from this study show an increase in WTP when consumers were provided with information regarding the meaning of the products on interest. This confirms the CC theory prediction that making a choice in conditions of more uncertainty induces a CC formation and therefore a decrease in WTP for the good in question. However, this finding is consistent with the CC theory just in the case of the attribute related to the organic production. At first glance, the reader might deduce that the cause of these diverging results might be explained by the nature of the given information. However, neutral information in the case of both attributes were provided, giving a simple description of the regulations concerning the organic certification and the local food production in Emilia Romagna. Neutral information were given precisely in order to avoid any potential induced preference for one of the two attributes. In addition, according to the results of the descriptive statistics (Chapter 3), respondents' degree of knowledge for organic and local production was almost equal. However the important difference between the organic and local claim is that the first one is

an universally regulated certification, characterized by a specific label, while the Italian food system still lacks of a shared regulation of local food products and therefore of a label that identifies this kind of information. Hence, the awareness of a controlled certification system might significantly affect individuals' decision making and induce to a decrease of uncertainty for the quality of the food product in question. This finding might be of relevant implication in the marketing of local food products, suggesting that the introduction of a universally regulated "local food" label might encourage the commercialization of local food products even at the level of conventional forms of outlet, such as large retail chain.

The second prediction of the CC theory assumes that individuals' WTPs "today" decrease and CCs increase when potential future information can be gathered. Any significant decrease in the estimation of respondents' WTPs was observed when the possibility to gain delayed information was offered to respondents, neither in the case of the organic certification nor in the case of local production. While the failure of our hypothesis on this aspect of the CC theory cannot be imputable at the methodological approach used to elicit consumer WTPs - Lusk (2003) obtained a similar outcome using an EA approach - a possible explanation can be related to the nature of the attributes used to describe our products. Since credence attributes are features which individuals can not personally evaluate before or after the consumption, they represent themselves a source of uncertainty in individuals' choice making. As such, if different features had been used such as experience or search attributes, would have the respondents given a different value to the option of delaying the purchase decision? Would have respondents been more willing to wait for testing whether they liked the product in question or not? What we can suppose is that the possibility of acquiring a potential personal experience of the product in question might have differently affected respondents' choice behavior and, therefore, CC formation. Hence, testing WTP formation in

dynamic settings using search or experience attributes could be an interesting area for future research.

On the other hand, results from this study strongly confirm that individuals' WTP decrease and CCs increase in case of irreversibility in the transaction. Respondents' WTPs were significantly higher when they had the chance to reverse the transaction although if in most of the cases they decided to keep the purchased product (just one subject returned the apple sauce). This might suggest that the option value related to the reversibility issue can be considered as a crucial aspect in the design of RCEs. In the real market, retailers generally dispose of policies which concern the reversibility of costumers' purchases. Indeed, in real purchasing situations, consumers are usually aware of the possibility to return the product in case they are not sutisfied with their purchase decisions. This suggests that the irreversibility conditions which generally characterize RCEs might be source of bias in individuals' WTP estimation.

Overall, results from this study suggest that respondents were willing to pay a price premium for the local apple sauce. This result is of importance for marketing strategies since it indicates that the use of "locally produced" food claims might be positively valued even in the case of novel food products. This is confirmed for the estimates of all the four treatments which were part of this study. However, these findings show that organic claim was more valued over the local origin claim. This outcome can be explained in two ways. First the use of an usual food product in the area of interest might induce a weaker connection with territory and local community components and therefore an implicit decrease of interest for the origin attribute in comparison to other features of the product. Second, as it is suggested by application of the CC theory, the awareness of a controlled certification system might lead to a decrease of uncertainty for the quality of the product and therefore to an increase of WTP for the food product in question. This second explanation might be of relevant implication in

the marketing of local food products, and it might be interpreted as an incentive to the introduction in the market of a universally regulated “local food” label. In fact, results from the explorative analysis indicated that the introduction of labels which determine the local origin of the products in mainstream food outlets may educate even the more "distracted" consumer to local consumption. Local food labels should differ from food miles labels, since food miles are mainly associated to the environmental impacts due to food transportation. Local labels, instead, should highlight the connection between a community and the territory and provide information not just regarding the environmental benefits related to local food consumption, but also regarding the support to the local economy, the safeguard of the territorial biodiversity and of food traditions. However, results from the qualitative analysis show that the introduction of a local food label in more conventional food systems might have different limitations. In the first place, the addition of a new label might be source of confusion among consumers, since they might not be sufficiently informed about the regulations concerning the different certifications (for instance, the interviewed consumers in the qualitative study affirmed to have a scarce knowledge about PDO and PGI certifications) and they might miss-perceive the meaning of the different labels (Campbell *et al.* 2014). Precisely for this reason, an important outcome of the study is that the quantity and quality of information given by a label could hardly replace the information given directly by the producers, as it usually occurs in the context of alternative forms of food networks. In the second place, small farmers, who are generally the main actors in the supply of local food (Goodman, 2004; Renting *et al.*, 2003) may not be able to satisfy the volumes requirements of large retail chains and they may not have the economic advantages that they usually obtain through alternative food networks. As such, future studies related to the local food movement might investigate marketing strategies for the improvement in communication to consumers regarding food claims, such as origin of production, at the level of mainstream food networks,

where the direct interaction between consumers and producers is missing. The present research considered the effect of the potential introduction of a local food label on consumers' purchase behavior, suggesting an encouragement in the development of this kind of food labels even at the level of mainstream food networks. However, in order to decide whether the implementation, management and control of new local food labels may represent an advantage for both consumers and producers it would be necessary to make an estimation of the additional costs attached to the introduction of this food label.

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Appendix A: Semi-structured questionnaire used in the explorative analysis of the local food concept in the Italian Food Market

Obiettivi	Input
Introduzione e concetto di cibo	- Breve informazioni personali (es. ruolo nell'industria agroalimentare, tipo di attività nel caso di stakeholders, tipo di azienda nel caso di produttori) - Quanto definirebbe importante il ruolo del cibo nelle sue abitudini? - Quali valori/elementi considera determinanti quando si parla di cibo (nomi, aggettivi, esempi)? Ex.: • Gusto/sapore • Prezzo • Sicurezza • Elementi nutritivi • Tradizione • Origine • Impatto ambientale • Modo di preparazione • Apparenza
Concetto di qualità	- Cosa significa per lei qualità? - Quali sono per lei gli elementi che definiscono un cibo di qualità? (nomi, aggettivi, immagini) - Considera il fattore origine come determinante nel definire un prodotto di qualità? (Nel caso in cui non sia già stato nominato)
Concetto di identificazione geografica	- Si identifica nel concetto di indicazione geografica? - Quale è la sua opinione sulle certificazioni di indicazione geografica?
Concetto "prodotto di origine locale"	- Come descriverebbe un prodotto di origine locale? (aggettivi, esempi, immagini) Ex.: • Food miles • Tradizione culinaria • Appartenenza a territorio • Appartenenza a comunità • Confini regionali - Quale è la sua opinione sul consumo di prodotti di origine locale? - In Italia, per definire un prodotto alimentare di origine locale viene usato l'appellativo "Km 0", reputa che sia corretto?
Marketing prodotti di produzione locale	- Quali sono, per lei, i vantaggi nel consumo di prodotti di origine locale? - E gli svantaggi? - Il commercio di prodotti alimentari di produzione locale è spesso limitato a forme di filiera corta, secondo lei, la loro offerta dovrebbe essere

	promossa anche in supermercati, etc? - Quale è la sua opinione sulla creazione di un marchio (es. Indicazione geografica) che contraddistingua i prodotti di origine locale? - In conclusione, secondo Lei, origine locale è sinonimo di qualità?

Appendix B: Questionnaire used in the quantitative analysis focused on consumer perception and WTP for local food

A. Che grado di conoscenza/familiarità ha con la purea di mela?

Per niente familiare						**Estremamente Familiare**
O	O	O	O	O	O	O

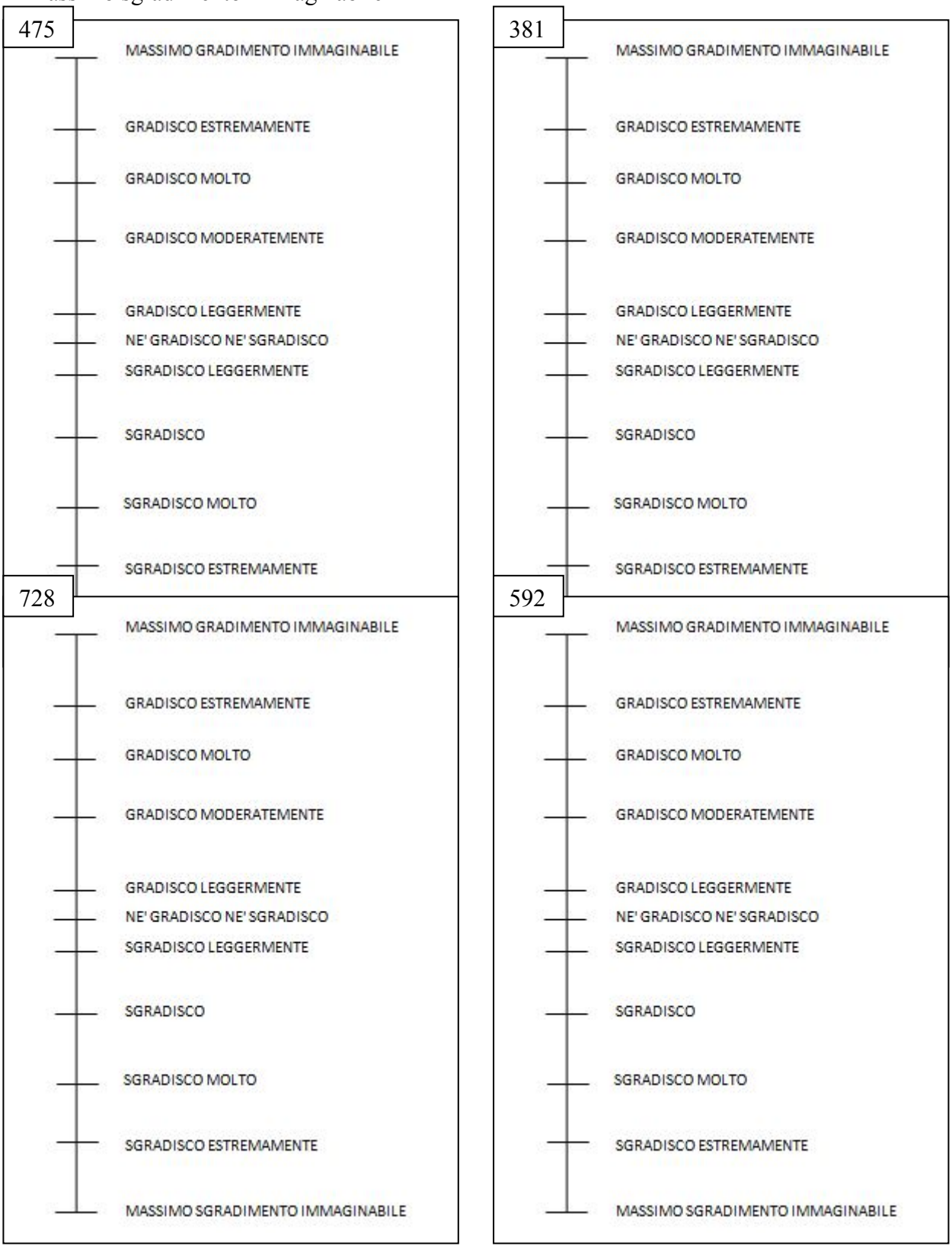
B. Quanto spesso compra la purea di mela?

Mai	Occasionalmente	Frequentemente	Spesso	Sempre

C. Quanto sono importanti per lei i seguenti valori quando si parla di cibo?

	Per niente importante			**Mediamente importante**			**Estremamente importante**
C1 Naturalezza	O	O	O	O	O	O	O
C2 Gusto	O	O	O	O	O	O	O
C3 Prezzo	O	O	O	O	O	O	O
C4 Sicurezza	O	O	O	O	O	O	O
C5 Praticità	O	O	O	O	O	O	O
C6 Valore Nutritivo	O	O	O	O	O	O	O
C7 Tradizione	O	O	O	O	O	O	O
C8 Origine	O	O	O	O	O	O	O
C9 Equità	O	O	O	O	O	O	O
C10 Apparenza	O	O	O	O	O	O	O
C11 Impatto ambientale	O	O	O	O	O	O	O

D. Quanto le è piaciuto questo prodotto? Segni, per piacere, il punto sulla linea che maggiormente si avvicina alla Sua opinione da "Massimo Gradimento Immaginabile" a "Massimo sgradimento Immaginabile"



E1. Quale pensa sia la marca più diffusa/popolare nella produzione di purea di mela? _____

E2. Se non le viene in mente nessun nome, scelga tra le seguenti opzioni quella che secondo il Suo parere è la marca più diffusa/popolare nella produzione di purea di mela

Valfrutta COOPERATIVE AGRICOLE	alce nero®
Frulla	Melinda® D.O.P. MELA VAL DI NON
	NATURA NUOVA® UN MONDO PIÙ BUONO
CHI NI	PROBIOS

E3. Quale pensa sia il prezzo per due vaschette di purea di mela da 100g della marca più popolare nella produzione di polpa di mela?

F. Come pensava che fosse il Suo livello di conoscenza prima del presente sondaggio riguardo ai seguenti temi? La preghiamo di notare che 1 significa "Per niente a conoscenza" e 5 "Ho una conoscenza molto buona"

	Per niente a conoscenza				**Ho una conoscenza molto buona**
F1. Produzione biologica	1	2	3	4	5
F2. Produzione di origine locale	1	2	3	4	5

G. Quanto spesso compra i seguenti alimenti?

	Tutti i giorni o circa tutti i giorni	2 o 4 volte alla settimana	Settimanalmente	Mensilmente	Meno di una volta al mese	Mai
G1 Prodotti convenzionali						
G2 Prodotti Biologici						
G3 Prodotti di origine locale						

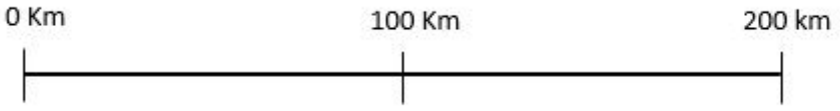
H. Dove compra prevalentemente i seguenti alimenti?

	Supermercati	Ipermercati	Discount	Negozi specializzati	Mercati	Mercati Contadini
H1 Prodotti convenzionali						
H2 Prodotti Biologici						
H3 Prodotti di origine locale						

I .Le chiediamo di indicare quanto Lei si identifica con i seguenti aggettivi. Noti che 1 significa che Lei si identifica "Molto", mentre 4 "Per niente"

	Molto	Abbastanza	Poco	Per niente
I1.1 Estroverso	1	2	3	4
I1.2 Disponibile	1	2	3	4
I1.3 Lunatico	1	2	3	4
I1.4 Organizzato	1	2	3	4
I2.1 Amichevole	1	2	3	4
I2.2 Caloroso	1	2	3	4
I2.3 Apprensivo	1	2	3	4
I2.4Responsabile	1	2	3	4
I3.1 Vivace	1	2	3	4
I3.2 Premuroso	1	2	3	4
I3.3 Nervoso	1	2	3	4
I3.4 Creativo	1	2	3	4
I4.1 Gran lavoratore	1	2	3	4
I4.2 Ingegnoso	1	2	3	4
I4.3 Di cuore debole	1	2	3	4
I4.4Calmo	1	2	3	4
I5.1 Sveglio	1	2	3	4
I5.2 Curioso	1	2	3	4
I5.3 Attivo	1	2	3	4
I5.4 Distratto	1	2	3	4
I5.5 Di larghe vedute	1	2	3	4
I6.1Comprensivo	1	2	3	4
I6.2 Loquace	1	2	3	4
I6.3 Raffinato	1	2	3	4
I6.4Avventuroso	1	2	3	4

L1. Indichi quale opzione corrisponde alla Sua opinione il cibo di origine locale



L2. Un alimento è di origine locale quando è prodotto in:

Provincia di Bologna	Emilia Romagna	Italia

Sesso	F □	M □

N. Componenti della famiglia	□ 1	□ 2	□ 3	□ 4	□ 5	□ 6	□ >6

Anno di nascita	---

Livello di istruzione	□ < diploma scuola superiore	□ Diploma scuola superiore	□ Laurea o altro titolo universitario	□ Titolo post-laurea

Reddito annuale medio lordo del nucleo familiare	□ Meno di 15.000 €	□ 15.000-29.999 €	□ 30.000-44.999€	□ 45.000-59.999€
	□ più di 60.000 €			

Appendix C: RCE instructions

" In questa parte del questionario, Le verranno proposte 8 domande, le quali rappresentano 8 opzioni di scelta. Ad ogni opzione di scelta, le verrà chiesto di scegliere una tra le due varianti di purea di mela proposte. Avrà anche la possibilità di non scegliere nessuna delle due per ognuna delle opzioni di scelta. Le sarà data l'opportunità di comprare realmente il tipo di polpa di mela al prezzo che viene determinato dalla seguente procedura di scelta.
Una volta che avrà terminato di rispondere alle 8 opzioni di scelta, Le verrà chiesto di scegliere una carta da un mazzo di 8 carte disposte a random. Ogni carta rappresenta un'opzione di scelta. Una volta che ha selezionato una carta, l'opzione di scelta rappresentata da tale carta, diventerà vincolante. Ciò significa che Lei comprerà il tipo di purea di mela al prezzo indicato nell'opzione di scelta selezionata. Nel caso in cui Lei abbia scelto l'opzione di non-acquisto, non riceverà alcun tipo di polpa di mela.
Ha domande prima di iniziare? E' molto importante che Lei abbia ben chiara la procedura che Le ho appena spiegato."

"Le verranno proposte diverse situazioni di acquisto in cui Le saranno proposte due diverse tipologie di purea di mele. Le puree di mela variano a seconda del prezzo, se sono state prodotte in Emilia Romagna o meno e se sono biologiche o meno. Le chiedo di indicarmi quale delle due varianti sceglie per ogni situazione d'acquisto. Le ricordo che ha anche la possibilità di non scegliere nessuna delle due opzioni. Ciò che e' importante e' che lei indichi solo una delle tre opzioni suggerite. Le ricordo inoltre che l'oggetto in considerazione sono due vaschette di polpa di mela da 100 g ciascuna".

Opzione di scelta n° 1
Nel caso in cui una confezione due vaschette di polpa di mele da 100 g costa 1,45€, non e' biologica, ed e' stata prodotta in Italia, ma fuori dall' Emilia Romagna, mentre l'altra confezione costa 2,45, e' biologica, ed e' stata prodotta in Emilia Romagna, quale sceglie? Le ricordo che può anche decidere di non comprare nessuna delle due.

Non-Bio	Bio	
Prodotto fuori dall' Emilia Romagna	Prodotto in Emilia Romagna	**Non compro nessuno dei due**
1,45 €	2,45 €	

Opzione di scelta n° 2
Nel caso in cui una confezione due vaschette di polpa di mele da 100 g costa 0,95€, non e' biologica, ed e' stata prodotta in Emilia Romagna, mentre l'altra confezione costa 1,95 €, e' biologica, ed e' stata prodotta in Italia, ma fuori dall' Emilia Romagna, quale sceglie? Le ricordo che può anche decidere di non comprare nessuna delle due.

Non-Bio	Bio	
Prodotto in Emilia Romagna	Prodotto fuori dall'Emilia Romagna	**Non compro nessuno dei due**
0,95 €	1,95 €	

Opzione di scelta n°3
Nel caso in cui una confezione due vaschette di polpa di mele da 100 g costa 1,45€, non e' biologica, ed e' stata prodotta in Italia, ma fuori dall' Emilia Romagna, mentre l'altra confezione costa 0,95 €, e' biologica, ed e' stata prodotta in Emilia Romagna, quale sceglie? Le ricordo che può anche decidere di non comprare nessuna delle due.

Non-Bio	Bio	
Prodotto fuori dall' Emilia Romagna	Prodotto in Emilia Romagna	**Non compro nessuno dei due**
1,45 €	0,95 €	

Opzione di scelta n°4

Nel caso in cui una confezione due vaschette di polpa di mele da 100 g costa 1,95€, e' biologica, ed e' stata prodotta in Italia, ma fuori dall' Emilia Romagna, mentre l'altra confezione costa 1,45 €, non e' biologica, ed e' stata prodotta in Emilia Romagna, quale sceglie? Le ricordo che può anche decidere di non comprare nessuna delle due.

Bio	Non-Bio	
Prodotto fuori dall' Emilia Romagna	Prodotto in Emilia Romagna	**Non compro nessuno dei due**
1,95 €	1,45 €	

Opzione di scelta n°5

Nel caso in cui una confezione due vaschette di polpa di mele da 100 g costa 1,95€, e' biologica, ed e' stata prodotta in Emilia Romagna, mentre l'altra confezione costa 0,95 €, non e' biologica, ed e' stata prodotta in Italia, ma fuori dall' Emilia Romagna, quale sceglie? Le ricordo che puo' anche decidere di non comprare nessuna delle due.

Bio	Non-Bio	
Prodotto in Emilia Romagna	Prodotto fuori dall' Emilia Romagna	**Non compro nessuno dei due**
1,95 €	0,95 €	

Opzione di scelta n°6

Nel caso in cui una confezione due vaschette di polpa di mele da 100 g costa 2,45€, non e' biologica, ed e' stata prodotta in Emilia Romagna, mentre l'altra confezione costa 2,45 €, non e' biologica, ed e' stata prodotta in Italia, ma fuori dall' Emilia Romagna, quale sceglie? Le ricordo che può anche decidere di non comprare nessuna delle due.

Non-Bio	Bio	
Prodotto in Emilia Romagna	Prodotto fuori dall' Emilia Romagna	**Non compro nessuno dei due**
2,45 €	2,45 €	

Opzione di scelta n° 7

Nel caso in cui una confezione due vaschette di polpa di mele da 100 g costa 0,95€, e' biologica, ed e' stata prodotta in Italia, ma fuori dall' Emilia Romagna, mentre l'altra confezione costa 1,95 €, non e' biologica, ed e' stata prodotta in Emilia Romagna, quale sceglie? Le ricordo che può anche decidere di non comprare nessuna delle due.

Bio	Non-Bio	
Prodotto fuori dall' Emilia Romagna	Prodotto in Emilia Romagna	**Non compro nessuno dei due**
0,95 €	1,95 €	

Opzione di scelta n°8

Nel caso in cui una confezione due vaschette di polpa di mele da 100 g costa 2,45€, e' biologica, ed e' stata prodotta in Emilia Romagna, mentre l'altra confezione costa 1,45 €, e' biologica, ed e' stata prodotta in Italia, ma fuori dall' Emilia Romagna, quale sceglie? Le ricordo che può anche decidere di non comprare nessuna delle due.

Bio	Non-Bio	
Prodotto in Emilia Romagna	Prodotto fuori dall' Emilia Romagna	**Non compro nessuno dei due**
2,45 €	1,45 €	

Trattamento INT

Istruzioni:
"*Ora Le vorremo dare alcune informazioni riguardo alle caratteristiche generali della polpa di mele e riguardo ad alimenti di origine locale e biologici. Le chiediamo di leggere questa brochure. Le sarà necessario circa un minuto. Una volta che avrà finito di consultare il volantino, andremo avanti con il questionario.*

Trattamento INDT

Istruzioni:
" Prima di andare avanti con il questionario, La vorremmo preavvertire che, in seguito, potrebbero esserLe fornite informazioni/aggiornamenti rispetto al prodotto da Lei scelto. Le chiediamo, quindi, di tenere in considerazione, nello scegliere le varie opzioni, che avrà presto la possibilità di acquisire maggior conoscenza riguardo al metodo di produzione biologica a riguardo al concetto di produzione di origine locale. Infatti, all'uscita del supermercato incontrerà, con buona probabilità, un/a mio/a collega che Le darà un opuscolo

con alcune informazioni. Il/la mio/mia collega è facilmente riconoscibile dato che ha una cartellina indicante il logo dell'università di Bologna e veste una maglietta di colore rosso. Se vuole, glielo/a posso indicare. La prego di prendere questa targhetta con un numero di identificazione e di portarla al/alla mio/a collega all'uscita dalle casse.

Trattamento RT

Istruzioni:
"Prima di andare avanti con il sondaggio, La vorremo informare sul fatto che avrà la possibilità di restituire il prodotto e di avere indietro la somma di denaro che Lei ha speso per compare il prodotto. Un/a mio/a collega La aspetterà all'uscita del supermercato. Le chiederà se vuole restituire il prodotto. Nel caso in cui lo voglia restituire, il/la collega lo ritirerà e Le ridarà i soldi che ha speso. Il/la mio/mia collega è facilmente riconoscibile dato che ha una cartellina indicante il logo dell'università di Bologna e veste una maglietta di colore rosso. Se vuole, glielo/a posso indicare. La prego di prendere questa targhetta con un numero di identificazione e di portarla al/alla mio/a collega all'uscita dalle casse. La prego di prendere questa targhetta con un numero di identificazione e di portarla al/alla mio/a collega."

Informazioni ai partecipanti:

Informazioni sul metodo di produzione biologica:

In accordo con il regolamento della Comunità Europea del 28 Giugno 2007, il logo di Agricoltura Biologica identifica i prodotti che sono stati ottenuti grazie a misure di gestione aziendale che mirano all'utilizzo di tecniche agricole conformi al rispetto dei sistemi e cicli naturali, al mantenimento della biodiversità, alla preservazione delle risorse naturali, all'applicazione di standard per il benessere degli animali, all'uso di sostanze naturali e al non utilizzo di sostanze chimiche di sintesi e di organismi geneticamente modificati.

Informazioni sulla produzione di origine locale:

Riguardo, invece, il concetto di cibo di origine locale (o a km0), nel mercato italiano non è ancora esistente una legislazione vera e propria. D'altro canto, la maggior parte delle regioni italiane hanno stabilito decreti legislativi o hanno approvato proposte di legge al fine di promuovere il commercio e il consumo di prodotti regionali. La regione Veneto, per esempio, con un decreto del 2008 definisce i prodotti della regione come "locali", mentre la regione Abruzzo con il decreto legislativo LR n.42 del 20 ottobre 2010 riconosce come prodotti "locali" quelli provenienti dai confini della regione, di stagione e di comprovata sostenibilità ambientale. Inoltre queste due regioni sono state le prime ad assegnare il logo "Km0" agli esercizi commerciali che si approvvigionano per almeno il 30% ,in valore, di prodotti agricoli ed agroalimentari regionali. Tale provvedimento è stato seguito dalle regioni Basilicata, Lazio, Calabria, Marche, Molise e Puglia.
La regione Emilia Romagna sostiene proposte di legge, non ancora in vigore, al fine di promuovere il commercio di generi alimentari prodotti regionalmente con lo scopo di ridurre le emissioni di Co_2 causate dai mezzi di trasporto.