

Universita' degli Studi di Napoli "Federico II"

Dottorato di Ricerca in Valorizzazione e Gestione delle  
Risorse Agro-Forestali XXIV Ciclo

---

Marketing the improvements in the supply chain for  
domestic agricultural produce: Legislation, Consumer  
Behavior, Estimation of market penetration potentiality

**Candidata: Dott.a Francesca Colantuoni**

**Relatore: Prof. Gianni Cicia**



## TABLE OF CONTENTS

INTRODUCTION.....	5
CHAPTER 1.....	6
1.1 Traceability: a tool for quality control and hygiene and a tool of differentiation and marketing.....	6
1.2 The issue of place of origin.....	9
1.2.1 The international rules on place of origin and disputes.....	12
1.2.2 The case of olive oil.....	16
1.2.3 Counterfeiting of the place of origin.....	18
1.3 The traceability and labeling the place of origin.....	20
1.4 Methods of assessing costs and benefits of traceability.....	24
CHAPTER 2.....	28
Nuove e vecchie sfide per le Politiche di Food Safety: un'applicazione della SWOT Analysis (New and Old Challenges for Food Safety policies: a SWOT Analysis application).....	28
2.1 Introduzione.....	28
2.2 Descrizione della metodologia.....	31
Figura 2.1. Domande chiave della SWOT analysis.....	32
2.3 Risultati e discussione.....	33
Figura 2.2. Analisi SWOT del Regolamento sulla food safety.....	33
2.4 Conclusioni.....	42
CHAPTER 3.....	43
Willingness to Pay for Traceable Meat Attributes: A Meta-analysis.....	43
3.1 Introduction.....	43
3.2 WTP estimations on traceable meat attributes.....	44
3.3 Testing the robustness of empirical findings on meat traceability: Meta-analysis.....	47
3.3.1 Sample selection process.....	48
3.3.2 Impact indicators for meat traceable attributes.....	49
3.3.3 Study factors.....	49
3.4 Analysis.....	51
3.4.1 Expectations.....	52
3.4.2 Results.....	53
3.5 Results interpretation.....	55
3.6 Concluding remarks.....	56
CHAPTER 4.....	57

---

Marketing the improvements in the supply chain for domestic agricultural produce: Estimation of market penetration potentiality .....	57
4.1 Introduction .....	57
4.1.1 The product.....	58
4.2 Experimental design .....	58
4.2. Survey design .....	61
4.3 Analysis .....	66
Behavioral model: Random parameter logit and repeated choices.....	66
4.3.1 Model estimation .....	68
4.4 Results interpretation.....	70
4.5 Concluding Remarks .....	71
CONCLUSION .....	72
REFERENCES .....	74
APPENDIX .....	80

---

## INTRODUCTION

Traceability in food chains is a food safety tool introduced institutionally in 2002 by the European Community policy, in order to restore consumer confidence in food and those who produce them, in the wake of food scandals that have occurred in recent decades (Rijswijk et al., 2008.) In fact, the tracking systems in Europe, existing since 1990, not only allow the increase of food safety and consumer trust, but also help enhance food products through the labeling of the experience and confidence attributes.

The requirements of this tool are such as to impose to any company operating in the agro-food system to be able at all times to trace and follow the path of the food produced and ingredients used from production to consumption. In other words, to reconstruct the history, identify the source and responsibilities of each actor involved in the process, with the aim of objectively enhancing safety in the market and to better manage emergencies resulting from sudden or unforeseen food-borne illness (de Stefano, 2007.) At the same time, the traceability of goods may be, for businesses, a tool to characterize and differentiate their products, clarifying nature, and the set of characteristics and origin, with the explicit assumption of responsibility linked to the quality of products sold.

This research proposes an analysis of the functions of traceability limited only to aspects concerning the origin of food products, after having briefly described brief its main features. A plethora of studies have shown that the perception of European consumers about the traceability and the benefits they expect from this system are very closely related to the place of origin of foodstuffs. The latter is, in fact, the first association that consumers make when they are asked to give their own definition of traceability (Giraud and Halawany, 2006.) Since consumers show interest in the geographical origin of the place of origin labeling (Bernues et al., 2003; Giraud and Halawany, 2006,) it can be argued that the more they care about these issues, the more the specific benefits of traceability must be derived from them, being elements that guide consumer choices (Rijswijk et al., 2008.)

## CHAPTER 1

### **1.1 Traceability: a tool for quality control and hygiene and a tool of differentiation and marketing**

The traceability, introduced in the General Food Law (Reg 178/2002,) Art.18, is considered an essential instrument of Community policy for food security. Often the terms of tracing and tracking are used interchangeably. In reality, they identify two mirror-side processes.

Traceability is the process that allows following the product from upstream to downstream in a way that, at every stage, appropriate traces (information) are released. Tracking is the reverse process, which should enable the reconstruction of information in order to identify, by contrast, the list of steps in the chain made by the product. This procedure is intended to facilitate the withdrawal of the product from the market, wherever there are unexpected risks to human health or the environment.

In the first case, the main task is to determine which agents and which information should leave a trace; in the second, it is mainly a matter of highlighting the technical procedure best suited to go back to these traces. The two processes are closely interlinked and based on a system that, in the absence of specific references about the direction of the analysis, hereafter will be called traceability.

The Regulation (EC) No 178/2002 of the European Parliament and Council, effective from January 1<sup>st</sup> 2005, article 2, defines traceability as the ability to trace and follow food, feed, livestock or substance intended or likely to become part of a food or feed, through all stages of production, processing and distribution.

The regulation also requires being able to track every raw material used in the production process and its supplier, similarly, it is required to specify all those to whom the final product has been supplied, and finally, to make public disclosure of the documentation (de Stefano, 2007.)

The person required to provide such information can choose among:

- Tracing paperwork: it is the organization consistent flow of information relating to the production process, through the use of paper documents. The technique is rather limited, which poses problems in the pace of updating and tracking information.
- IT Procedures that consists of the use of software specifically developed for the production process. These are certainly most appropriate to meet the needs of a modern company. They allow tracing the history of each unit of product.

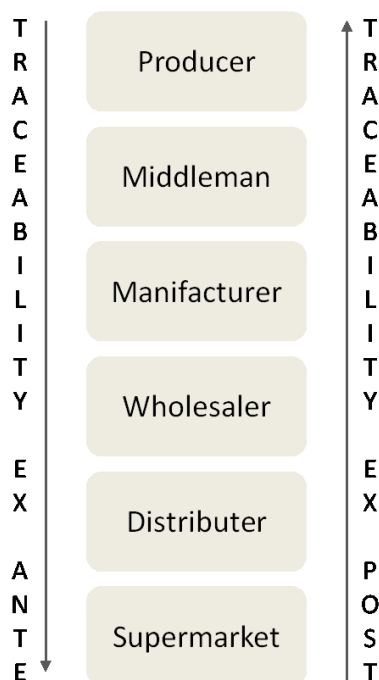
Information released is primarily aimed at consumers and, in general, compared with other forms of action, has a lower distortive impact on the market (Sodano, 2006.)

According to Hobbs (2004,) it is possible to identify two distinct models of traceability: *ex post* traceability systems and *ex ante* verification of the quality. An *ex post* traceability system is appropriate in case of food scandal in which there is the spread of a disease, or in case of contamination. It allows to "track back" the lot from which the product or the source of contamination and then locate the contaminated products that are supposed to reach the final market, enabling to isolate them from safe products. Theoretically, these safe products should not be involved in withdrawal from the market, reducing the cost of goods withdrawn and, hopefully, protecting the company's reputation.

In a system of quality assessment *ex ante*, however, there is the presence of a third party institution that monitors and verifies product quality or conformity of the manufacturers with the standards. A program *ex ante*, which the producers adhere voluntarily not only to obtain a premium price, but also because it allows to verify, during all stages of production, attributes such as hygiene of the processes, compliance with ethical standards and compliance with the

environmental parameters. Figure 1.1 illustrates schematically the two types of traceability.

**Figure 1.1**  
Flows of information in the traceability systems



Traceability, as mentioned above, may be mandatory or voluntary. The mandatory traceability is essentially a tool for food safety. In particular, it improves the flow of information and makes it available to all agents in the agro-food industry. Nevertheless, it must be coupled with at least one other tool, such as labeling.

The effectiveness of the traceability depends closely on the interaction between policies, businesses and consumers, and can be determined by

three factors. First, there must be an efficient system of monitoring of the entire distribution network, enabling to act quickly when in a state of risk. The existence of such a monitoring system and its efficiency are factors only partially attributable to the production system, but also depend on political choices and the ability of the public to implement the system. In particular, it emphasizes the difficulty of extending the monitoring operations, or the release

of the "traces," the most marginal stages of the supply chain, the latter is sufficiently long and involves a large number of actors/intermediaries. The second factor is the ability of the public to identify the responsibilities and choose the appropriate sanctions. In fact, when the political process of introducing legislation is perceived as derisory by the company, and the ability to pursue a liability is low, the traceability system has a high probability of failure. The third factor is the incentive generated by the tracking system for businesses to invest in quality control and avoid any risks. In this case, the main element to consider is the different level of risk that characterizes the production process and the seriousness of potential damage to the image for the company in case of food scandal.

Given that, it is important to emphasize the double aspect of traceability: while the public interventions are intended to ensure the hygiene and health processes, other private interventions are motivated by other incentives. In fact, the voluntary traceability chain is a marketing tool widely used by manufacturers and processors of food for the differentiation of their products. The adoption of procedures for tracking can be an opportunity for food producers to protect their product. This expectation is based on some potential benefits:

- A more complete traceability, can enhance the territorial identity of the product, where the historical, social and economic factors that have helped create this identity can play a key role of differentiation, given their non-reproducibility;
- Whenever there are any quality agricultural productions, it may be a signal to the market of "identification of specificity," especially if associated with other signs of identity and quality, as the designation of origin or the certification ISO 9000;
- It can lead eventually to a more efficient management of internal logistics of goods, inventory and quality control, to lower costs of production and distribution, whose importance grows with increasing size of companies (de Stefano, 2007.)

This policy has been followed especially by big brands of the food industry, and has proved its importance for obtaining a competitive advantage and for the recognition of a premium price (e.g. Granarolo with its "thread of high quality.") Traceability is, however, necessary to increase the level of information about certain attributes of quality of products, some of which may be only ethical attributes, so do not necessarily have to do with food security as such, but to be characteristics which modern society is willing to pay for: the presence or absence of GMOs, information on production techniques (organic, biodynamic, integrated pest management, etc.) the certainty of the places of origin, protection of animal welfare, hygiene of the working conditions, etc.. Then, of course, the need for traceability from a business



point of view rises together with the presence of trust attributes, or other attributes that are difficult or expensive to measure. Without the tool of traceability it would be no possible to establish any market for Fair Trade products, for non-engineered foods, or any other product that involves trust attributes (Golan et al., 2006.) In this regard it is important to note that labeling attributes associated with trust, must necessarily be coupled to a tracking system ex ante. In fact, traceability ex post, as will facilitate many operations in the event of negative episodes, does not reduce the information asymmetry on trust attributes (Hobbs, 2003.)

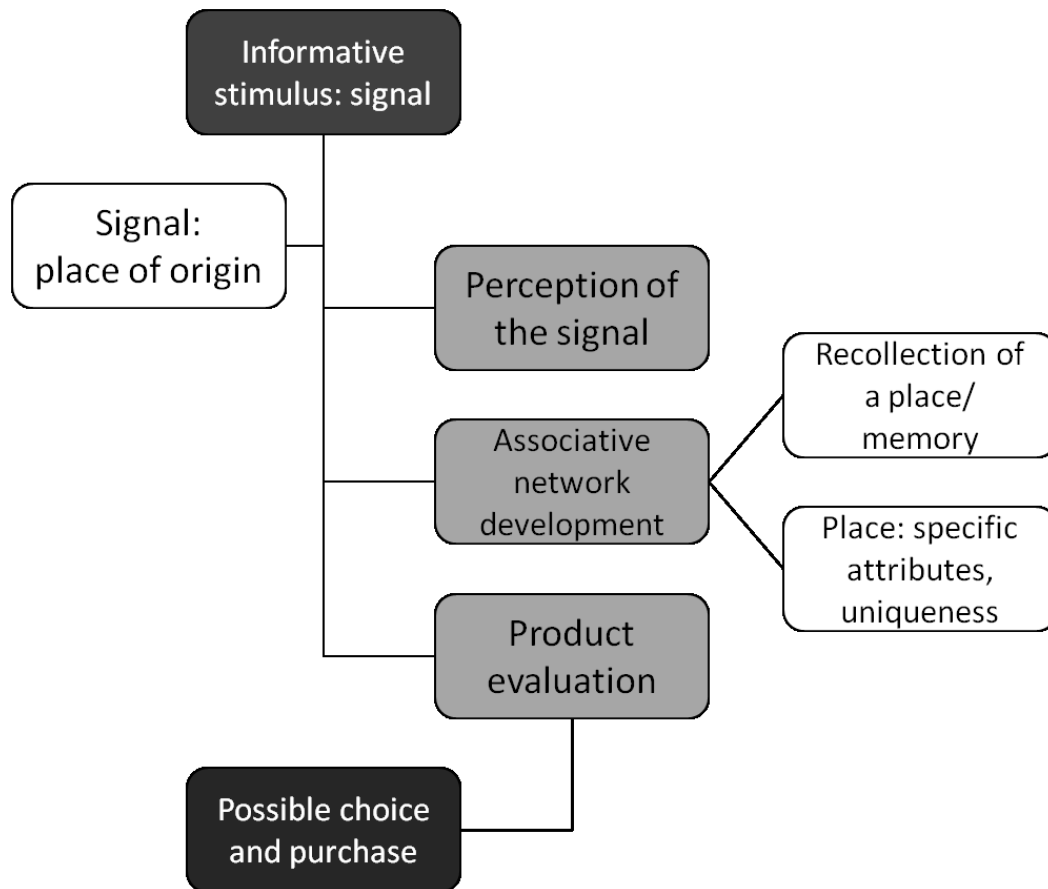
## **1.2 The issue of place of origin**

Among trust attributes, the one we want to focus here is the place of origin of food products and the problems associated with it.

First, it is important to note that efficient markets for credence goods or credence attributes require the presence of credible signals (Hobbs, 2003.) The "signals" (Shapiro, 1983; Stiglitz, 1989) are informative stimuli that allow consumers to judge the product before consumption (Steenkamp, 1990.) When a signal is received, the consumer association with the attribute we want to highlight is automatically invoked. During this phase of coding, consumers interpret and give meaning to the signals (Olson, 1972, 1978, Anderson and Bower, 1973; Schellink, 1983,) then develop a network of associations related to products, creating an opinion on the attribute, and consequently, the perception of product quality. The combination between the opinion on quality and the consumption desire is the basis for judgments and preferences (Sheth et al., 1991, Huffman and Houston, 1993.) In particular, marketing food products using the name of their region of origin (e.g. Prosciutto of Parma) is a strategy that relies on the evocative power of the signal-name (Aaker, 1991.) In fact, through the use of an indication of origin, it is possible to exploit consumers' associations with a geographical region and assign an image to the product (Kapferer, 1992.) The signal in the region of origin during the purchase decision process, leads to associations with the same region, which are used to evaluate the product (Fig. 1.2.)

**Figure 1.2**

Phases of the purchase decisional process



The practice of using the geographical name of origin of a product in order to identify the characteristics is very old. Yet in the fourth century a. C., in ancient Greece, wines of Corinth, almonds and honey of Naxos in Sicily were well known, as well as the cured ham from Gaul and oysters from Brindisi, in the Roman Empire, during the reign of Augustus. Such traditions have persisted in subsequent historical periods, until nowadays. Another example involves a commercial treaty dated 1712, where wines of Burgundy, the silk of Messina and leathers of Russian origin are mentioned (De Vlietan, 1989.) The importance of the use of the geographical name is explained by the fact that a product with a given origin has some attributes of originality and specificity that are the result of the influence of geographical and human factors. The influence of the natural environment and soil conditions for agricultural products provides special features, which are usually identifiable. The influence of the human factor is related to the choice of production methods and technology. Although for a long time to state the place of origin has been mostly informal convention, then, for commercial reasons of national and international level, this issue has been addressed institutionally. In 1951, some European countries (Austria, Belgium, Denmark, France, Italy, Switzerland, Norway, Sweden

and the Netherlands,) joined the "International Convention on the use of designations for cheeses with a view to putting into effect a system of cooperation designed to secure and ensure the correct reciprocal use of the indication on the origin of cheese (Bertozzi, 1995.) Subsequently, in order to provide consumers with reliable information on specific signs and characteristics of products, in 1992, the European Regulation (EEC) 2081/92<sup>1</sup> has launched a set of rules to promote and protect food products linked to specific places origin. This regulation establishes three levels of recognition: PDO, PGI and TSG.

Before the entry into force of European law, in Italy there was already a national certification system whose trademarks have been retained to distinguish the quality wines. The first organic law for the establishment of the names of Italian origin is represented by the promulgation of Presidential Decree 930 of 1963 with which the Italian state has sought to protect and regulate the production of quality wines from well defined geographical areas. It was so possible to establish categories of wines with simple denomination of origin "SDO," controlled designation of origin "CDO," and controlled and guaranteed designation of origin "CGDO." After nearly thirty years as the Presidential Decree 930/63 was in force, in order to give rise to quality productions, the new system of protected designations of origin for wines was introduced by the Law No. 02/10/1992 164. Law 164 does not alter the basic concept of protected designations of origin which confirms the definition understood as a "geographical name of a particularly suited wine-producing area is used to describe a quality and prestigious product" but introduces some new features such as new category, typical geographical indication "TGI" wines (ex SDO.)

The CDO indicates quality wines originating in limited areas mentioned by the name of the wine. The characteristics must comply with certain stringent requirements set by production rules. The CGDO indicates the particular value of some CDO wines. Among the requirements is the obligation to bottling in the production area and in less than 5 liters of capacity containers. The label TGI indicates quality table wines generally produced in large areas, they must comply with a generic specification.

The PDO (Protected Designation of Origin) designate a product originating in a region and a country whose quality and characteristics are essentially or solely due to the geographical environment (a term that includes both natural and human factors.) The entire production, processing and preparation of the product must have place in the designed area. The abbreviation PGI (Protected Geographical Indication) denotes a level of protection that gives

---

<sup>1</sup> Regulation (EEC) No 2081/92 of July 14, 1992 on the protection of geographical indications and designations of origin for agricultural products and foodstuffs, has been replaced by Regulation (EC) n.510/2006 of the Council of 20<sup>th</sup> March 2006.

more weight to the qualitative techniques of production with respect to territorial restrictions. It identifies a product originating in a region and a country whose quality, reputation and characteristics can be attributed to their geographical origin, and at least one stage of production, processing and preparation takes place in the designed area. The label TGS (Traditional Guaranteed Specialty) points out the characteristic of specificity of an agro-food product, intended as an element or set of elements that, because of their quality and tradition, make the product clearly distinguishable from other similar products. It refers, therefore, to products obtained using a traditional method of production typical of a particular geographical area, in order to protect specificity. Products which peculiar character is related to the geographical origin are excluded from this discipline; this aspect distinguishes the TGS from PDO and PGI. The indications of origin are collective trademarks: requested by a party, individual or collective, whose function is to report and ensure the nature, quality or origin of goods or services. They can be used by several manufacturers that adhere to certain quality standards and related controls established by a regulation. They also allow the diversification of agricultural production and protection of the names of the products from imitations and abuse (van der Lans et al., 2001.)

The products protected by this regulation are characterized, then, by a certificate of origin that represents a signal. In other words, when the consumer encounters a logo of origin, uses his opinions to infer some knowledge about the product. Van Ittersum et al. (2000) shows, through the results of a focus group that consumer reviews related to logos of origin may be represented by two main dimensions: a dimension of quality assurance and a dimension of economic support. The opinions related to the first dimension concerns the guarantee of "high quality" and "exclusivity" of the product. The second dimension is the perception of consumers from the economic point of view, namely the desire to support producers' incomes and improve employment in the territory of origin of the product (Van Ittersum et al., 2000.)

### **1.2.1 The international rules on place of origin and disputes**

Internationally, geographical indications (GIs) are acknowledged and protected as part of TRIPS Agreement, Art. 22-24 (1986-94, Uruguay Round.) By GIs it is meant the generic definition for products that in the European Union are within the scope of Regulation (EEC) 2081/92 described above. The general rule is that the EU member states must make available to interested parties the legal means to prevent the use, in the designation or presentation of a product, of geographical indications if this can mislead the consumer or provide a form of unfair competition. In contrast, for the majority of products that are not eligible for

acknowledgement under the EU Regulation 2081/92, is implicitly denied to report the area of origin, as was the case of olive oil. The same legislation, although on several occasions on this critical issue for the regulation of trade, has not introduced a uniform claim in regard to the origin of food products. This contradiction has, however, engendered a series of consequences in the legislation on the labeling of food products. It is sufficient here to recall, among the many Community provisions, the 2000 directive on labeling and advertising of foodstuffs, which replaced Directive n.79/112<sup>2</sup> and the other provisory ones, by rearranging and codifying the existing decisions. In this way, it has fully confirmed the formulas introduced by the 1978 directive, in particular, that "The labeling and methods used must not be likely to mislead the buyer, especially with regard to the characteristics of the food and in particular the nature, identity, quality, composition, quantity, durability, origin or provenance<sup>3</sup>, method of manufacture or production. "

The choice confirmed with the directive of 2000 is particularly significant, especially considering that during the years 1978 to 2000, many innovative regulations took place in matter of food products labeling, such as products for collectivities, the product name, the indication of the date deadline both for the fresh and preserved, the specification of stocks, indication nutritional value. In short, despite the frequency and significance of the changes legislation on the subject, and despite the repeated conflicts that arose between the Commission and the States concerning food labeling, regulation on origin labels have remained apparently unchanged for over two decades, without addressing and resolving in general terms the uncertainty of the used mechanisms (Albisinni, 2007.)

The continuing absence of a general European framework in terms of geographical origin food, excluding products with brand GI, in reality it is not random, but it is in line with the positions constantly expressed by the European Commission, regardless the change in the executives, to comply with the requirements of free market dictated in the WTO. In many European documents the logic of " objective, material quality " prevails, according which the quality of the food must be uniquely identified by a number of elements measurable and quantifiable through the chemical-physical characteristics; value and relevance to the evocative and intangible elements are, in fact, denied, and so also the geographic origin, often even considered as deceptive, that is, designed to induce consumers to consider as special products which were no different from the average.

Moreover, there are philosophical differences between the U.S. and the European Union on

---

<sup>2</sup> Directive No. 79/112/EEC of 18 December 1978 "on the alignment among the laws of the Member States concerning the presentation and advertising of foodstuffs for sale, to the ultimate consumer."

<sup>3</sup> The directive on labeling and advertising of foodstuffs No 79/112 of 1978 generically uses the words "origin or provenance," which meaning and terms that allow for their use are not specified in the law.

the type of registration and protection that should be made to the GIs, which created the age-old dispute that even today, despite the succession of regulations, does not seem to stop (Marette et al., 2008.) In fact, the EU has a very strict definition for the GIs, allowing control of the supply, but also to promote rural development and income support for farmers. The U.S. position is based on the fact that his trademark laws adequately protect GIs, so there is no need for special regulations. In fact, under the U.S. system, geographical indications have the same function as trademarks (property rights,) because, like these, they are a guarantee of quality and are designed to protect private interests. The disagreement on the European system of regulation of the GI conducted in 1999, the United States to move his protest against the WTO in the EEC Regulation 2081/92. The main reason for the dispute developed by the United States concerned the fact that this regulation (a) would discriminate against non-European GI and (b) did not provide sufficient protection to pre-existing U. S. trademarks, GIs of European competitors (Marette et al., 2008.) In March 2005, the WTO issued the report prepared by panels of experts appointed to resolve disputes, which regards the system of European GIs. The conclusions and recommendations of the panel have led the EU to revise the Regulation 2081/92 and to draw up the new EC Regulation 510/2006 (European Council, 1992, 2006b, World Trade Organization, 2005.) In particular, the new regulation provides that the EU recognizes and protect foreign GIs, and allows foreign producers to record directly GI products in Europe. These changes represent a step forward in terms of market integration, but will raise many questions about the impact on domestic markets. This also depends greatly on how the regulation will be implemented in Europe. You can, in fact, that the EU implements the rules and requirements so that it is still prevented foreign manufacturers to register with GI European (i.e. non-European products provide a CDO, PDO, PGI, etc.) Based on considerations related to control supply, to improve the quality and rural development, the EU could support a very restrictive and record a few foreign producers (Marette et al., 2008.)

On April 19<sup>th</sup> 2011, members of the Committee on Environment have voted draft legislation aimed to modernize, simplify and clarify EU legislation on food labeling. Members are now demanding to extend mandatory labeling of country of origin on all meat, milk and derivatives, and other foods made from a single ingredient. In addition, the Environment Committee approved an amendment to include also the country of origin labeling for meat, chicken and fish when used as ingredients. The food labels must include required information including the content of trans-fatty acids and the country of origin, according to the text approved. The parliamentary body has also amended the proposed legislation to ensure that labels are legible, clear and contain information useful to the consumer.

The draft legislation, approved on second reading by the Committee on Environment, Public Health and Food Safety, mandates information on labels affixed to food, such as, for example, name, ingredients list, the dates of consumption with terms like "best before," the specific conditions of use of the product, and establishes an obligation to provide nutrition information. Members also asked to indicate the date of first freeze for products based on a single ingredient, such as meat, poultry and frozen fish.

Ministers of the European Parliament ask that nutrition information on food, such as energy content, the amount of fat, saturated fat, carbohydrates, sugars, proteins and salts, are clearly indicated in the form of a table on the back of the packaging. This list should also include the artificial fat (which the Council would like to volunteer element,) which should be given per 100g or 100ml of content and also according to the percentage of the daily portion.

The label on the country of origin is already mandatory in the EU for certain products such as beef,<sup>4</sup> eggs,<sup>5</sup> fish,<sup>6</sup> honey,<sup>7</sup> olive oil,<sup>8</sup> vegetables and fresh fruit.<sup>9</sup> The Parliament has already requested and obtained from the Council that this obligation is also extended to pork, sheep, goat and chicken.

However, Members are now demanding to extend mandatory labeling of country of origin on all meat, milk and derivatives, and other foods made from a single ingredient. In addition, the Environment Committee approved an amendment to include also the country of origin labeling for meat, chicken and fish when used as ingredients.

The labels on the meat should indicate the country where the animal was born, raised and slaughtered. Members have also strengthened the existing rules to ensure clear information and avoid confusion among consumers. The Environment Committee approved a legislative report with 57 votes in favor, 4 against and one abstention to give the rapporteur Renate Sommer (EPP, DE) a strong mandate to negotiate with national governments an agreement in second reading before the plenary vote scheduled for July 2011. Once the legislation is adopted by Parliament and the Council, the food industry will have three years to adapt to new rules and two more years, so five in total, to meet the new requirements on nutrition information. Moreover, the Italian Parliament, with the Law 4/ 2011(Feb 3<sup>rd</sup> 2011,) on labeling and quality food, intended to ensure Italian consumers complete and correct information about the characteristics of processed, partially processed or unprocessed food products, by requiring indication on the label of the place of origin or provenance (Fig.1.3.) For processed food there are two types of information: - a statement about the place (country) where they underwent their last substantial transformation; - the place of cultivation and feedstock breeding used in preparing or produce the products. The novelty, compared to the past, is the extension of the obligation indication of origin virtually to all food products, e.g. pork and cured meats, rabbit meat, mutton and lamb, fruit

---

<sup>4</sup> Regulation (EC) 1760/2000

<sup>5</sup> Council Regulation 1028/2006 (19.6.2006, stamp on the shell)

<sup>6</sup> Regulation (EC) 104/2000 (17/12/1999)

<sup>7</sup> Council Directive 2001/110/EC (20/12/2001)

<sup>8</sup> Regulation(EC) 182/2009 (6/3/2009)

<sup>9</sup> Regulation (EC) 1580/2007 (12/21/2007)

and vegetables, processed tomato products other than sauce, cheese, cereal derivatives (bread, pasta,) long-life milk. Italy has therefore tightened, compared to other EU countries, the information procedures to consumers about the origin of products, in the name of transparency and quality, considering that this is a useful element to combat counterfeiting and agro-piracy and to enhance the made in Italy.

**Figure 1.2**

Country of origin Regulation in Europe and Italy

LEGISLATION THAT REQUIRES THE INDICATION OF COUNTRY OF ORIGIN OF FOOD		
Community Regulation	Additional National Regulation	Under Law 4/2011 (after adoption of decrees)
<ul style="list-style-type: none"> <li>• Fresh Fruit and Vegetables: Regulation (EC) 1580/2007 (21/12/2007)</li> <li>• Honey: Directive 2001/110/EC Council (20/12/2001)</li> <li>• Fish: Regulation (EC) 104/2000 (12/17/1999)</li> <li>• Eggs: Regulation 1028/2006 of (06/19/2006, stamping on the shell)</li> <li>• Beef: Regulation (EC) 1760/2000 of European Parliament</li> <li>• Olive Oil: Regulation (EC) 182/2009 (03/06/2009)</li> </ul>	<ul style="list-style-type: none"> <li>• Fresh milk (country of origin obligation): Law 204/2004 with the ministerial decrees implementation</li> <li>• Tomato sauce (obligation country of origin of the tomatoes used): Ministerial Decree Law 204/2004 implementation</li> <li>• Poultry meat (Country of origin obligation): Order of the Ministry of Health 2005 due to avian flu (EU infringement procedure)</li> </ul>	<ul style="list-style-type: none"> <li>• Other meats: pork, rabbit, goat etc.</li> <li>• UHT milk and all dairy products</li> <li>• Meats and sausages</li> <li>• Products processed from cereals - pasta, bread etc..</li> <li>• Products processed from fruit and vegetables: fruit juices, jams etc..</li> </ul>

**1.2.2 The case of olive oil**

As mentioned previously, the majority of products not eligible for recognition under the EU Regulation 2081/92, are implicitly denied the emphasis on the area of origin, as was the case until 2009 for the extra-virgin olive oil that did not have an GI label. Yet numerous studies show that the place of origin directs consumers' choices, so much so that many use false statements or omissions to give false impressions about the place of origin.

Cicia et al. (2006) estimated the impact on the welfare of the Italian consumer from an incomplete traceability system, that is, not intended to reveal the origin of the olives used for



the production of extra-virgin olive oil. The authors empirically estimated the welfare loss and distortion on the market shares generated by the absence of binding legislation requiring producers of extra-virgin to label in the country of origin of the raw material. Also, they show that the information on place of origin of the olives has a positive impact on willingness to pay, generating a premium price greater than the investment in the corporate brand per unit (Cicia et al., 2006.) The current legislation during the drafting of this work (EU Reg 1019/02,) did not entail, indeed, any obligation on the indication of the area of olive production, with the exception of oil PDO and PGI. Consequently, the indication on bottling in Italy, caused confusion among consumers, who tend, for the most part, to match the place of filling with the place of origin of the olives (Cicia et al., 2006.)

In order to avoid the presence of oil on the market with misleading labels on the real characteristics and origin of the product, the EU member states have voted (Feb. 4, 2009) in favor of a European Commission proposal to introduce mandatory labeling for the origin of virgin and extra virgin olive oil. As a result of traditional agricultural systems and local extraction and blending of such oils may be very different taste and quality according to their geographical origin. For this reason, and in line with the rules of the European rules on food traceability, the amendment to the Regulation 1019/02<sup>10</sup> was approved on olive oil (Regulation (EC) No 182/2009.) Therefore, the oils from one country will carry the name of the Member State or third country. The mixtures will carry the label "blend of Community olive oils," "blend of non-Community olive oils," "blend of Community and non-Community olive oils" or the equivalent information. The new rules apply from 1 July 2009.

Instead, with regard to national legislation, it has recently been examined the draft law on strengthening the competitiveness of the agro-food sector, formerly approved by the Council of Ministers 31 October 2008. In particular, the Article 7 of the law establishes the mandatory indication of origin in the food labels. To ensure a high level of protection for consumers, indeed, the legislation requires the indication of place of origin or provenance for all food products marketed in Italy, especially in those cases where failure to give this information might mislead the consumer about the source or provenance of the food. For unprocessed foods it requires to indicate the location of origin or to the country of origin and possibly the area of production of the product. For processed products the indication to the location where the last substantial transformation has taken place or place of origin or source of agricultural raw material mainly used in the production are required. The regulation requires, with the decrees of the Minister of Agriculture, Food and Forestry and the Minister of Economic

---

<sup>10</sup> Regulation (EC) No 182/2009 of the Commission of 6 March 2009 amending Regulation (EC) No 1019/2002 on marketing standards for olive oil

Development, and after having consulted the main trade associations, that the food products entailed to the indication will be established case by case. Through these decrees, moreover, determine the manner of indicating the place of origin or provenance of ingredients and feedstock used in the preparation or production of products ([http // mipaaf.org](http://mipaaf.org).)

### **1.2.3 Counterfeiting of the place of origin**

A phenomenon also very widespread at the expense of Italian products is counterfeiting of the place of origin, according to various forms and levels. The work of de Stefano and Del Giudice (2005) identified three main categories are counterfeit.

The first type of counterfeit may include without distinction products of any kind and origin, being represented in substance by fraud that take place in food handling and adulteration damaging food, through processing and sophistication of various intensities.

In the second type of infringement has been recently attributed the term "agro-piracy." This kind of imitation / fraud consists of marketing of a food product using the reputation and the popularity of a country or region, imitating names, trademarks, appearance or features. The latter, detrimental in regard of Italian products, is particularly common in some important foreign markets and is based on using images, colors, or names that recall Italy. This is known as "Italian sounding." The phenomenon must be linked to the fact that the Italian agro-food industry has a good reputation and can count on a strong preference in its favor from the existing demand locally. So it is sufficient that the goods are loosely considered the "Italian style" so to obtain a premium price, estimated by 30 - 70% (de Stefano Del Giudice, 2005.) In fact, it is now known that in the U.S. only 10% of food sold as "Italian" really comes from our country. While on one hand this makes visible the size of the implicit counterfeiting currently done at the expense of domestic products, on the other it generates optimism on the scale of the potential expansion of our exports of food products existing in that market. Since we already have, in fact, a large demand for " Italian style" food, it could be argued that it would be enough to replace even a fraction of the products of imitation with the authentic ones to achieve an immediate and significant expansion of our market export (and de Stefano Del Giudice, 2005.) Unfortunately, it was demonstrated through an analysis on the consumption of pasta in the United States (Cicia et al., 2008) that the structure of agro-piracy is very complex and can be summarized into three stages:

- Introduction of a traditional authentic Italian foreign markets;
- Imitation of the product, if successful, by foreign companies;

- Reformulation of the original product by the foreign companies according to consumption patterns and preferences of local consumers.

Therefore, marketing strategies focused on trying to prevent the erosion (or to regain) market shares of authentic products, such as geographical indications of origin (GIs,) are inappropriate for those products that are experiencing the third phase (Cicia et al., 2008.) Hence, the regulations which require information on labels of products have a chance of success only in the first and second phases.

The third type of counterfeiting is less discussed and is a recent phenomenon, but seems bound to quickly become an extremely serious problem, given its likely spread due to globalization of trade (de Stefano and Del Giudice, 2005.) It also covers the Italian fruit and vegetable sector and mainly its domestic market, which is by far the most important in terms of generating income and employment in agriculture, but obviously it has much less dynamic export markets (Tosi, 2005.) Many products from foreign countries, whose producers are not required to comply with European standards, are purchased by consumers in the Italy unaware that the goods actually possess quality attributes poorer than those of our productions. In practice, in the countries from which these goods are it is possible to produce at lower costs than in Italy and, consequently, to trade at lower prices, mostly because they adopt techniques of production and the hygienic, environmental and social standards that are often unacceptable for the European agro-food industry. If these countries were to adopt production techniques that guarantee the same quality standards in Europe, probably their goods would not be able to compete with our domestic ones. These countries, in other words, operate in conditions that, in regard to the European markets, might be defined a "hygienic, environmental and social dumping" (de Stefano and Del Giudice, 2005.) A further problem concerns cases in which the reputation of manufacturing facilities is exploited in order to disguise the raw material from abroad, as happened with the tomato paste from China and then canned in Italy, in the canning industry of the "Piana del Sele" area, or in the case of olives coming from Turkey and processed in Puglia.

Consequently these concerns, as well as adequate information systems on the characteristics of the products according to their origin, it would be necessary to potentiate those mechanisms able to discredit those products that do not have certain characteristics in the reality.

For example, traceability, coupled with the labeling on the place of origin, can be an important tool to establish the authenticity of the food and ensure that the statements made by manufacturers are accurate. The products for which specific statements are made may benefit

from traceability as a means of support, for example, if a premium on the indication related to geographic, disciplinary specific production and marketing of ethical characteristics, or features that consumers consider important (Gregory, 2000.) In fact, this tool can be used to trace the fraud involving false information on the label, both on the qualitative characteristics and the origin (Verbeke & Ward, 2006.) Consumers are showing a preference for products from their country or region of origin (Verlegh and Steenkamp, 1999, Van der Lans et al., 2001) may be particularly interested in tracking when it concerns the insurance on these attributes (Hobbs et al., 2005.)

### **1.3 The traceability and labeling the place of origin**

The country of origin labeling (COOL-Country of origin labeling) can be made only by means of traceability systems implemented in food chains. The ability to provide this information to consumers requires a basic level of traceability, and does not necessarily imply a complete traceability along the entire supply chain, from farm to consumer markets. The problems discussed in the literature that addresses this issue, relates to the value placed by consumers to the place of origin of products with respect to other attributes, which generates possible market failures related to the presence/absence on the label, and commercial implications.

In several countries, interest groups have lobbied for the introduction of the place of origin labeling on food products. This lobbying is based on the assumption that consumers reclaim this information, the reasons for believing so is that the problems aforementioned are true (Hobbs, 2003) or because, simply, consumers prefer the products of their country (home bias,) or for ethnocentric reasons. The latter reflects on the fact that consumers manifest the desire to support domestic agriculture and industry. It is also considered very important what chemical-bond territory brings about, as an indication of origin shall include evocative function that influences the purchase decision process.

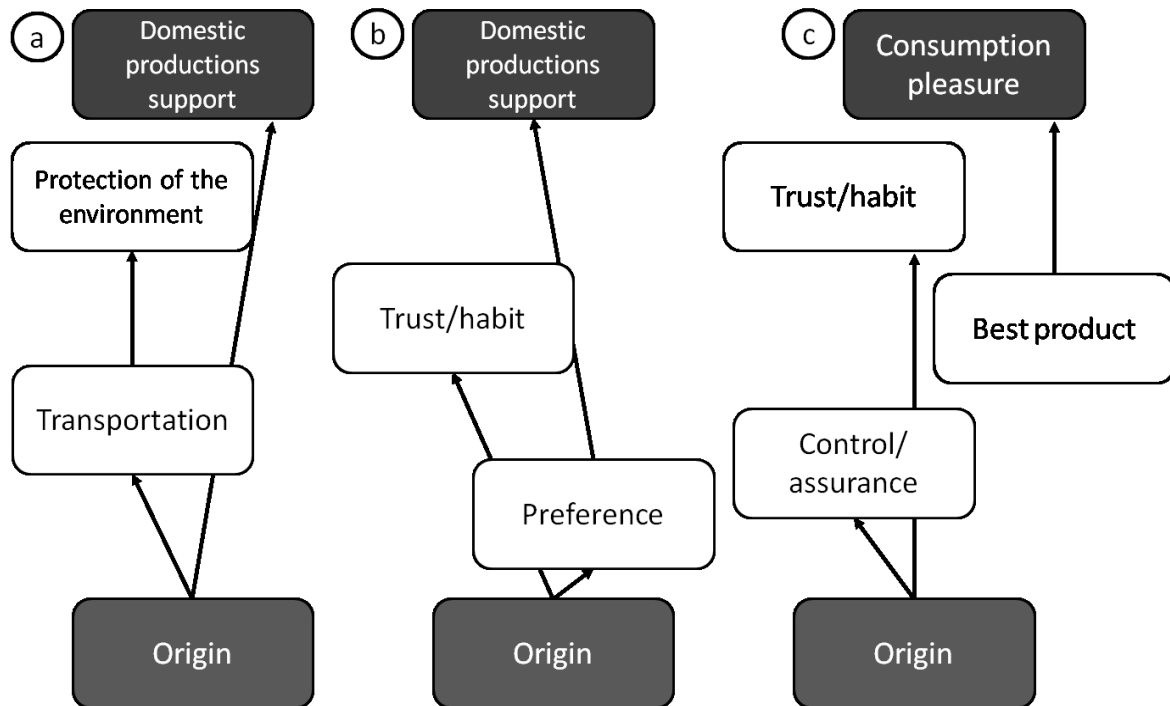
Research on consumer behavior has generally indicated a stated preference for the information on the country of origin, although the literature has not investigated the real conditions that must be met for a premium on domestic productions to be actually realized. The effect on the country of origin label (COOL) on consumer behavior has been widely studied (Peterson and Jolinbert, 1995; Verlegh and Steenkamp, 1999; Dinnie, 2004.) this effect is defined by the construct called **ethnocentrism** (Shimp and Sharma, 1987.) Consumer ethnocentrism normally motivates positively the decision to purchase domestic products (Verlegh and Steenkamp, 1999.) However, certain studies have demonstrates that the COOL

effect on the decision to purchase domestic products can be negative (Klein et al., 2006) or indifferent (Tootelian and Segale, 2004,) depending on the country and product. Focusing on the wine industry, for instance, research has consistently demonstrated the importance of origin in consumer wine choice. Keown and Casey (1995) found that the country of origin is the most important factor when consumers are selecting wine in Northern Ireland. Tzimitra-Kalogianni et.al. (1999) established that the appellation of origin is one of the most important wine attributes for Greek consumers, together with taste, clarity, aroma and label. Steiner (2002) discovered that grape varieties are highly important in the choice of Australian wines, the most classical recent wine producer, whereas regional origins are valued the most in the case of French wines. Skuras and Vakrou (2002) found that consumers are willing to pay twice the price for a bottle of table wine that guarantees the place of origin. However, Loureiro (2003) discovered that consumers willingness to pay for origin-labelled wine in Colorado is fairly low, concluding that wineries need a reputation for quality to garner a higher premium in differentiated markets.

Most of the studies on WTP, notwithstanding, has been carried out on beef, being the first product to be affected by a traceability system, as a consequence of the fact that many food outbreaks in recent decades have involved this sector. Both the study by Shupp and Gillespie (2001) and Louriero and Umberger (2002,) both conducted in the U.S., have shown that consumers have a preference for domestic products, in particular, they interpret the information on the country of origin, namely whether the meat comes from the USA, as a sign of quality. Although Hoffman (2000,) analyzing the preferences of Swedish consumers for country of origin labeling that identifies the meat produced in Sweden, found that consumers use this information both as a signal of quality and safety. This is justified by the specific characteristics of the meat produced in Sweden, including the emphasis on animal welfare, prohibition of the use of antibiotics and a unique program to control salmonella. On the contrary, Grunert (1997) had concluded that the information on the country of origin does not affect the perception of quality in France, Germany, Spain and the UK. In fact, the results of the latest study Rijswijk et al. (2008) which was carried out using the means-end chain to analyze the perception of consumers about the traceability in four European countries, shows that although French and German consumers are directed to an improved system for tracking the place for you to ensure of origin in Germany is mainly so support for domestic productions, as well as in France, but also, secondly, its ecological, that recognize and prefer local products to avoid long-distance transport (Figure 1.4.)

**Figure 1.3**

Hierarchical map for samples of German (a,) French (b) and Italian (c) consumers, related only to the recognition of the place of origin among the perceived functions of foods traceability



Source: own elaboration from Rijswijk et al., 2008

In this same study it was found that even in Italy consumers perceive traceability as a means to trace the place of origin, but the benefits accruing to cover the greatest pleasure that comes from the consumption of Italian products, as they consider best. Spanish consumers do not seem to assign much importance to the recognition of the place of origin of the functions of traceability, probably because Spain has a high degree of food self-sufficiency, low level of imports, so consumers may not be interested in this problem (Rijswijk et al., 2008.)

Two conditions are necessary for successful marketing based on place of origin (Kapferer, 1992; Van der Lans et al., 2001): First, a significant proportion of the target market should be aware of the region; second, consumers' regional associations should be favorable and relevant (Deklihi et al., 2011.) In accordance with this, Grunert (2005) found that origin has no effect on product quality evaluation when consumers lack knowledge about the region of origin. Importantly, Aaker (1991) and Van der Lans et al. (2001) note that promotion of regional products based on regional characteristics and product dimensions may work in foreign markets in the same way as the development of a new brand name.

Numerous studies have examined consumer preferences and willingness to pay to programs that are voluntary or mandatory labeling and traceability associated with attributes such as confidence in the country of origin of beef (Alfnes, 2004; Alfnes and Rickertsen, 2003, Dickinson and Bailey, 2002, 2005; Enneking, 2004; Hobbs, 2003, Loureiro and McCluskey, 2000, Loureiro and Umberger, 2003, 2005, 2007, Lusk et al., 2003, Roosen et al., 2003; Umberger et al., 2003; Verbeke and Ward, 2003.)

For example, Alfnes (2004) and Alfnes and Rickertsen (2003) have conducted experimental auctions to track the preferences of consumers for the Norwegian meat produced in different countries. On average, consumers surveyed in these studies preferred the Norwegian meat produced in their country, beef or Swedish, to those imported from elsewhere. Loureiro and Umberger (2003) conducted a survey among a sample of consumers in Colorado and concluded that on average they are willing to pay a large premium to buy U.S. beef certified origin. On the contrary, the search Verbeke and Ward (2003) conducted in Belgium showed that consumers surveyed expressed greater interest in the information on the label denoting the quality of meat and standards compliance, rather than to information relating to traceability and the place of origin. The reason for this contrasting result may depend on the methodology used, i.e. the ordered probit model, with which it is possible to make a ranking of attributes and then determine what is considered more important. This does not mean that consumers should not attribute importance to the traceability, especially if it allows you to check the quality of these statements on the label (Verbeke and Ward, 2003.)

The results of other studies cited are summarized in Table 3.1.

Therefore, many studies show the interest on the part of consumers to information on the country of origin, but there is much heterogeneity regarding the reasons why the knowledge of the origin is assigned a value: for ethical reasons or ethnocentric, or because consumers connect home to a perception of quality and safety. If many of these studies cover the meat, which, as noted above represent a very diverse and sometimes unique, but very little about the importance of origin for agricultural products as homogeneous as fruit and vegetables.

However the discussions and the results obtained in the research cited may be extended and analyzed in studies such as this, which relates to the traceability and labeling the place of origin of specific fruits and vegetables. In fact, it is very important to go back to why consumers might be willing to pay a premium for these products and that conditions must be fulfilled so that this premium is actually achieved (Loureiro and Umberger, 2007.)

#### **1.4 Methods of assessing costs and benefits of traceability**

Much literature has addressed the issue of traceability by discussing whether it needs to be a responsibility for private enterprises or governmental authorities, and which one is preferable from a social point of view (Souza-Monteiro and McEvoy, 2008.) Golan et al. (2004) studied the implementation of traceability systems in the U.S. and concluded that it may be inefficient when imposed by governments. Fewer companies evaluate their costs and benefits over the management of supply, security, marketing attributes trust to determine the extent and level of detail for their efficient traceability systems. The net benefits to establishing and maintaining such systems are not necessarily positive for each attribute for each stage of the chain, or the highest levels of precision (Golan et al., 2004.) Hobbs (2004) shows that the issue, namely whether the tracking should be a private or public responsibility, depends on the extent of market failures. In other words, despite the clear traceability can lead to private benefits, such as the improvement of logistics and facilitation of supply, it can also lead to larger public benefits, since it can significantly reduce the frequency and/or severity in the development of scandals food (Meuwissen et al. 2003; Golan et al. 2004.) Souza-Monteiro and McEvoy (2008) have suggested that in situations where one could envisage a reduction in cost due to this occurrence for companies, providing traceability in a cooperative manner, they will carry out a voluntary agreement which always leads to an increased level of traceability. However, the actual number of companies that would join the voluntary agreement depends on the relative cost of providing traceability and the benefits resulting from a reduction in the cost of any food incident. They have also shown that voluntary agreements typically do not guarantee the full participation and therefore may not have complete success in reaching the socially optimal level of traceability due to significant phenomena of free-riding (Souza-Monteiro and McEvoy, 2008.) It is obvious that from the point of view of private investment in measures to ensure the traceability would be convenient only if its costs are lower than the revenues it can generate. But the costs and private benefits arising from the traceability can be different from those of society. This means that the private supply of traceability may be higher or lower than socially desirable, creating a socially inefficient situation (de Stefano, 2007.) This tool is useful for increasing food security and helps to improve the level of information about certain attributes of quality of goods, however, this is not to say that the establishment of a traceability system is necessarily a benefit for consumers (de Stefano, 2007.) According to Coppola (2000,) in fact, the acquisition of a real advantage compared to the previous situation with a lack of traceability, it should be carefully assessed on case by case basis. One of the main problems is, therefore, to analyze what are the costs of traceability and what



are the economic agents that support them. The identification and calculation of costs is necessary in order to test the effects of these policies on the efficiency of an economic system. There are many problems concerning the costs (Ragona and Mazzocchi, 2008.) There are explicit and direct costs, for businesses, driven by the compliance to the standards for a traceability programs. Additional costs are those that the consumer will incur for the implementation of a traceability system (higher price.) The research has also generally ignored the costs associated to the enforcement, monitoring and control to be implemented by the public and ultimately borne by taxpayers (Ragona and Mazzocchi, 2008.) In addition, we must consider that this information might be as well not enough to rebate the cost companies would bear in case of food scandal, which could simply nullify all the costs they have incurred for security policies. The studies concerning the costs are very small numbers compared to those for inherent benefits. In addition, there are statements that convey about estimating costs as it was a simple task (de Stefano, 2007.)

Among the studies that analyzed the cost of implementing the instruments of Food Safety, whose methods are also applicable for traceability, hereafter it is offered a selected review. Antle (1999) has developed a model that considers the change in production costs as a result of structural adjustment to a standard part of a production plant (direct compliance cost - or - accountancy direct method.) He considers a multi-technology product manufacturing are two distinct functions, one for the hypothetical product  $y$  and one for the hypothetical quality  $q$ , and determines the general shape of the cost function for production processes that provides for quality control. According to this model, there may be inputs that are part of the production process and are closely bound with the quality of the final product and inputs, although not to the joint production process, are used for quality control. So the total cost is the sum of variable costs, which cover both the inputs for the conventional production inputs needed to be some quality control, and not joint, plus you have fixed costs that are independent of both the product and the quality. A standard requires a specific level of quality without, however, specify that a company must employ technology to achieve it. In many cases a company will change its operational characteristics, his equipment, and invest in new equipment, changing the capital stock of the company. These conditions result in a change in the parameters of the cost function. The change in production costs caused by compliance with the standard is the difference of cost functions pre and post legislation. Therefore, to estimate the cost that such legislation brings about for the company, accurate estimates of cost functions before and after legislation has been implemented, and of the capital stock are needed (Antle, 1999.) Examples of application of this technique in the literature, even before

the formalization of Antle, are: Klein and Brester (1997,) who estimated a translog cost function to examine the impact of a USDA directive, aimed to regulate slaughter facilities of beef, on the cost of meat production; Boland et al. (2001) have carried out econometric estimates of the cost function generated from the implementation of HACCP in small meat processing plants; Ollinger et al. (2004) have estimated the fixed and variable costs for compliance to HACCP for meat and poultry, and Antle (2000) has estimated a cost function to evaluate the safety impact on the efficiency of the company, with an application for the effects of regulations on food safety variable costs for various types of meat, even taking into account different company sizes. The direct method of accountancy is simple and easy to interpret and this is the most used to quantify the cost of the food industry in assessing the impact of policies on food safety. It should be noted however that this method does not consider other categories of social costs (e.g., the welfare loss) (Ragona and Mazzocchi, 2008.)

Other methods reported in the literature to estimate the cost of food security policies, even those not strictly related to the traceability, concern the use of linear programming, including the study of Onal et al. (2000.) This method assesses the impact on costs and efficiency of the reduction of contamination by *Salmonella* spp. in the production of pork. The cost estimate can be made with microeconomic models (profit function) and study of the performance (stochastic frontier production) that include the public sector. These methods are also useful for evaluating the effects on the competitiveness between enterprises, as the instruments of food security can generate barriers to entry or change the balance of power between companies (Ragona and Mazzocchi, 2008.)

In contrast, studies that deal with the estimated benefits associated with an increased supply of food security, with particular reference to the traceability, are very numerous. The most common techniques fall into two general classes of methods (Sodano, 2006.) The first (market-based techniques) indirectly assess changes in social welfare, using data from related markets. One example concerns the estimation of the cost of the disease. This method called Cost of Illness (COI) provides a measure of distortions in the economy resulting from illness or premature death, through a quantification of the direct medical costs and indirect costs related to lost productivity or income. There are not examples of using this technique in the case of traceability, at least to our knowledge.

The second class of techniques consists of stated preference methods (contingent valuation, conjoint analysis, choice modeling) or revealed preference (hedonic pricing.) The latter method has been used by Loureiro and McCluskey (2000) to estimate the willingness to pay

(WTP) of consumers for food that bears the mark PGI "Galician Veal" in Spain. The results of this study indicate the presence of a premium for this brand when present on high-quality cuts of meat. Another study, also conducted in Spain using the hedonic pricing method to analyze the economic value of the attributes of veal that influence the purchasing decisions of consumers (Gracia and Perez, 2004.) Again it is shown that the appellation of origin of the meat is the most important characteristic in determining its price. Studies concerning the application of conjoint analysis are: Valeeva et al. (2005,) with which it is estimated that the value attributed to different characteristics of the chain of pasteurized milk; Darby et al. (2008,) analyze the value that consumers attach to local production and possible confusion with other factors like the freshness of food, the authors show that the willingness to pay for local production (Ohio) is independent of the values associated with other attributes. A study specifically related to traceability is Mennecke et al. (2006.) This study uses conjoint analysis to examine the utility on a set of characteristics of beef steak for a sample of U.S. consumers. The analysis reveals that, not surprisingly, the region of origin is by far the most important feature, followed by breed, traceability and the power supply. The ideal steak for the sample interviewed in this study is derived from a calf Angus, locally grown (Iowa,) fed with corn and green fodder, which is traceable from origin to consumer sales (Mennecke et al., 2006.) As regards the application of choice models in studies relating to traceability, we can mention Loureiro and Umberger (2004,) Loureiro and Umberger (2005,) Loureiro and Umberger (2007.) The search for Loureiro and Umberger (2007) has allowed us to estimate, through a choice experiment, the value attributed to different characteristics from U.S. consumers of beef, such as COOL, traceability systems, the USDA established standards on inspection hygiene and labeling of organoleptic characteristics. The innovation of this study concerns the use of an experimental design with a single choice set to elicit the willingness to pay for these various programs for tracing the location of origin and security.

Another class of techniques to estimate the benefits of food security policies are those that use experimental markets. This technique attempts to overcome the limits of the methods based on willingness to pay, i.e. the hypothetical scenario. In fact, with experimental auction markets are used with real money and real food. There are many ways to apply this technique, the most common is the "second auction in a sealed envelope to the price," where participants make a secret bid for the product, and the one who makes the highest bid has the chance to purchase the product at a price equal to the second highest bid. An example of application of this technique regards the work of Dickinson and Bailey (2002,) where experimental auctions were used to evaluate consumer preferences and the WTP of Utah traceability, insurance,

additional food safety, and particular attention to animal welfare (including the absence of use of growth hormones) in the case of beef and ham vaccine. It was found that consumers in this study were willing to pay a premium for traceability. However, that premium was higher in the presence of additional insurance on the security and the presence of other attributes. The results of Dickinson and Bailey are consistent with those of Hobbs (2003) from an experimental study on Canadian consumers. The latter, in fact, is the realization of a set of experiments auction markets in order to assess the WTP of Canadian consumers for traceability, security, insurance extra on animal welfare and information on small-scale production, in the case of beef and veal and ham. Traceability from the farm of origin, without additional quality assurances, he did find, on average, the lowest willingness to pay. Additional insurance, type of ex ante, safety or animal welfare have been assessed by most participants. While the highest bid, on average, has been declared for veal or ham from the set of feature tracking and insurance ex ante "quality" (Hobbs, 2003.) This is due to the fact that the tracking alone cannot reduce the information asymmetry, is therefore a necessary but not sufficient to control unobservable attributes such as animal welfare or the low environmental impact of production.

Estimates of the costs of and benefits are essential for assessing the cost-effectiveness in the case of implementing traceability programs, and have as their ultimate goal of predicting shifts in demand and supply, the effects on trade, the change of prices, the change in social welfare, through equilibrium models.

The partial equilibrium models are particularly relevant to the analysis of the effects on trade, while the general equilibrium models are needed to capture the interactions between the various sectors of the economy. The latter considers the effects of both factors on the market of final products on the market and allows the analysis of different types of impact on the various economic agents.

## CHAPTER 2

### **Nuove e vecchie sfide per le Politiche di Food Safety: un'applicazione della SWOT Analysis (New and Old Challenges for Food Safety policies: a SWOT Analysis application)**

#### **2.1 Introduzione**

I problemi legati all'igiene, alla sicurezza e alla qualità degli alimenti sono molteplici, e vengono ancor più amplificati se si considera il contesto di globalità dei mercati. Garantire la completa

sicurezza alimentare è un'impresa ardua e complessa che presuppone penetranti sistemi di controllo lungo tutta la filiera, i quali sono articolati in varie fasi e possono riguardare materie prime importate da diversi paesi. Rispetto a questa tematica, emerge l'importanza dell'intervento del legislatore comunitario e quella degli accordi internazionali nei settori produttivi strettamente legati all'alimentazione. In ambito WTO hanno assunto grande importanza gli Accordi SPS (Sanitary and Phytosanitary measures) e TBT (Technical Barriers Trade,) del 1995, che hanno affrontato il problema delle barriere agli scambi di natura non tariffaria (misure sanitarie, barriere tecniche.) Sulla base di questi due accordi, ciascun paese ha il diritto di adottare misure restrittive agli scambi per garantire la protezione della salute delle persone, il benessere degli animali e la tutela dell'ambiente, ma tali misure devono essere applicate in modo non discriminatorio nei confronti delle importazioni tra i diversi paesi, a meno che ciò non sia giustificato dall'esistenza di un rischio scientificamente dimostrabile (SPS Agreement, Articolo 2.2,) e che non sia utilizzato per proteggere i mercati domestici (SPS Agreement, Articolo 2.3.) A questo fine, nell'applicazione delle misure sanitarie e fitosanitarie, i Paesi si sono impegnati a riconoscere le norme, le direttive e le raccomandazioni fissate da:

Codex Alimentarius che, su iniziativa della FAO e dell'OMS, analizza la legislazione alimentare ed elabora standard alimentari comuni per proteggere la salute dei consumatori;

Ufficio internazionale delle epizoozie che definisce le norme sanitarie per il commercio internazionale degli animali e dei prodotti derivati e le misure per il controllo delle malattie animali;

Convenzione internazionale per la protezione delle piante che ha lo scopo di prevenire l'introduzione e la diffusione di malattie che possono derivare da piante o da prodotti vegetali. L'impegno dell'Unione Europea nell'ambito della sicurezza alimentare, iniziato negli anni '60, si manifesta con interventi diversi in "funzione della natura e delle priorità del problema". Dopo gli interventi sulla PAC, quelli di emergenza per le crisi alimentari, quelli di riforma delle normative sull'igiene delle produzioni alimentari e quelli per la tutela dei marchi, si è cercato di dare coerenza e sistematicità ad un settore, che a causa di direttive orizzontali e verticali, di prodotto e di produzioni, creava disorientamento tra gli stessi produttori. Il dibattito pubblico avviato dal Libro Verde sui principi generali della sicurezza alimentare è sfociato, nel 2000, nella pubblicazione del Libro Bianco che segna un'importante tappa nell'adozione di una nuova legislazione in campo alimentare. Esso si basa sul principio che la politica della sicurezza alimentare deve prendere in considerazione l'intera filiera, tanto che la Commissione, nella sua stesura, ha delineato più di 80 azioni necessarie ad integrare ed ammodernare l'attuale normativa,

per renderla più coerente, comprensibile e flessibile, per farla rispettare meglio e per garantire una maggiore trasparenza. In tale documento sono elencati tre punti:

Il principio del mutuo riconoscimento;

1. Il trasferimento agli organi comunitari dell'autorità legislativa in tema di politica alimentare;
2. La promozione di azioni private tese alla certificazione della qualità.

Attualmente, l'integrazione dei mercati può considerarsi conclusa, e ciò ha permesso di redigere una legislazione europea in tema di sicurezza alimentare: la General Food Law, contenuta nel Regolamento CE 178/2002. Tale Regolamento è completato da una serie di normative parallele che specificano i diversi strumenti di food safety messi in atto, tra i quali: Direttiva 2000/13/CE, Direttiva 2001/101/CE e Direttiva 2003/89/CE (etichettatura); Regolamento (CE) N. 510/2006, Regolamento (CE) N. 1898/2006, Regolamento (CE) N. 628/2008 (protezione delle indicazioni geografiche e delle denominazioni d'origine); Regolamento (CE) N. 509/2006 e Regolamento (CE) N. 1216/2007 (specialità tradizionali garantite); Regolamento (CE) N. 852/2004, Regolamento (CE) N. 853/2004 e Direttiva 2004/41/CE (igiene degli alimenti); ecc.

Successivamente, all'interno del testo si farà riferimento al Regolamento europeo intendendo, per semplicità, l'intero impianto comunitario in materia di *food safety*.

L'ambiente sociale che circonda il Regolamento sulla sicurezza alimentare nei paesi industrializzati è costantemente in uno stato di flusso. La domanda di cibo più sicuro e salutare cresce laddove migliora il benessere dei consumatori, aumentano le prospettive di vita, e migliora anche la comprensione dei legami tra la dieta e la salute. D'altra parte, vi sono preoccupazioni sul carico imposto sul sistema agroalimentare che è percepito come troppo oneroso. La soluzione di questa contraddizione riporta l'attenzione all'"efficienza" del Regolamento europeo, intendendo che esso debba essere tale da permettere il raggiungimento del desiderato livello di food safety, al minimo costo (Henson, 1997.) Come risultato vi è un crescente interesse non solo sulla natura del Regolamento in sé, ma anche verso i processi di *enforcement* dello stesso e, di conseguenza, verso l'influenza sulla produzione e decisioni di adeguamento delle imprese operanti nel sistema agroalimentare.

La comprensione dei processi con cui le attività produttive e commerciali si allineano con i requisiti legali è un aspetto essenziale, anche se frequentemente ignorato, del regolamento europeo sulla sicurezza alimentare. Inoltre, l'attuale crisi economica e finanziaria sta determinando una sorta di *trade-off* tra necessità di risparmio e sicurezza per la propria salute.

Pertanto, ci si può chiedere se le politiche di *food safety*, nel garantire la sicurezza dei consumatori, siano anche idonee ad assicurare prezzi sostenibili per questi ultimi e per le imprese. Un altro interrogativo riguarda i punti deboli della legislazione europea. Vale a dire, è possibile individuare le fragilità degli strumenti e proporre soluzioni per migliorarne l'efficienza? Quali, invece, i punti di forza che permettono di migliorare la competitività delle imprese agroalimentari europee?

Considerando che l'efficacia degli strumenti di *food safety* dipende dall'interazione con l'ambiente esterno, ossia il sistema economico, il commercio internazionale, il progresso tecnico, i consumatori, le aziende, quali sono le minacce attuali con cui la legislazione europea si deve confrontare? Quali invece gli incentivi e le opportunità?

Di seguito si propone una descrizione della metodologia utilizzata per rispondere agli interrogativi posti, ossia la *SWOT analysis*; il terzo e quarto paragrafo saranno dedicati, rispettivamente, ai risultati ottenuti ed alle riflessioni conclusive.

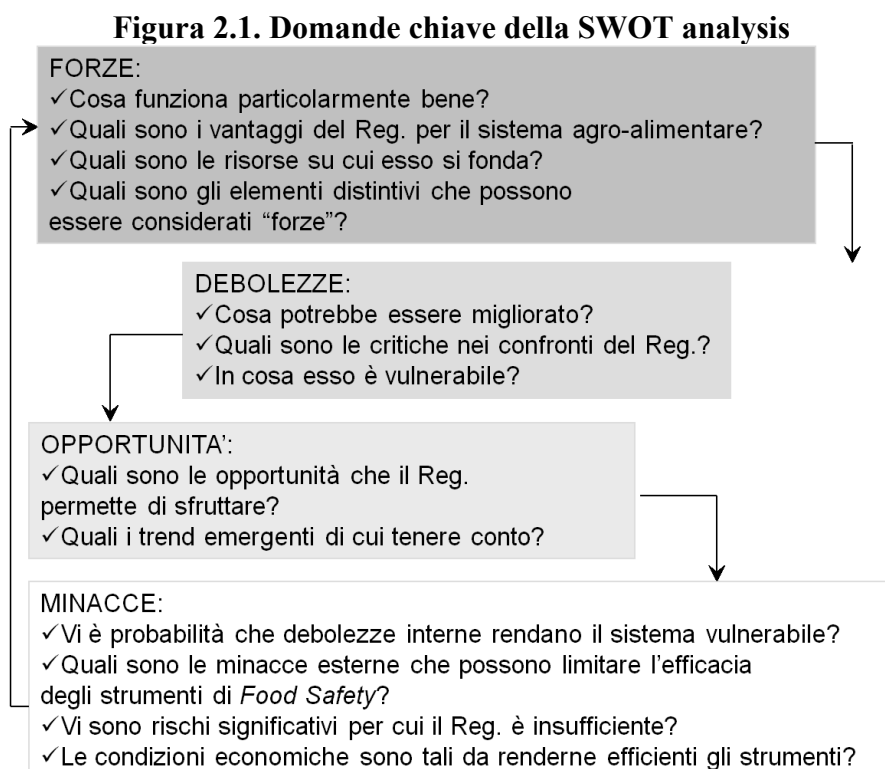
## **2.2 Descrizione della metodologia**

La *SWOT (Strengths, Weaknesses, Opportunities, Threats)* ha origine dalle ricerche svolte presso la *Harvard Business School*, dal 1960 in poi, in particolare con i lavori di Andrews (1971, 1980) e Porter (1980, 1985.) L'obiettivo di questa tecnica è quello di analizzare l'impatto dei maggiori fattori interni ed esterni che definiscono il posizionamento competitivo di un'impresa o *business unit* all'interno del proprio mercato, per elaborare una strategia competitiva (Hill e Westbrook, 1997.) Gli elementi che vengono considerati sono i fattori interni e quelli esterni. Il contesto interno è caratterizzato da forze e debolezze (Panagiotou, 2003.) Le forze sono le risorse, le competenze o i fattori produttivi che consentono all'impresa di realizzare le strategie che supportano la *mission*; le debolezze sono quegli elementi che interferiscono con la realizzazione della strategia (mancanza di risorse, competenze o fattori produttivi.) Il contesto esterno, invece, comprende minacce ed opportunità (Panagiotou, 2003.) Le minacce sono fenomeni, tendenze o leggi che possono influenzare in maniera negativa le possibilità dell'impresa di ottenere risultati positivi; al contrario, le opportunità sono gli stessi fattori esterni che però possono creare condizioni favorevoli per l'impresa.

Il sistema agroalimentare, come gli altri sistemi economici, non è un ambiente isolato ma piuttosto coesiste, compete e coopera in un ambiente multi-dimensionale e caratterizzato da ambiguità e complessità. Comprendere questo ambiente è fondamentale per formulare strategie, prendere decisioni e pianificare. Per la sua immediatezza interpretativa e l'accuratezza dei risultati cui conduce, l'analisi strategica del Regolamento europeo sulla *food safety* è stata

condotta attraverso lo schema operativo della SWOT. Un esempio di applicazione di questa tecnica per la valutazione delle politiche è dato dal lavoro di Vairo *et al.* (2006,) che consiste in un'analisi condotta attraverso le interviste ad un panel di esperti coinvolti in un workshop, allo scopo di esaminare l'impatto delle politiche agricole attuali sull'agricoltura biologica. La FAO si è avvalsa di questo strumento per la stesura di linee guida sul ruolo delle agenzie governative responsabili del sistema della sicurezza alimentare e qualità (FAO, 2006; FAO, 2007.) Un altro esempio di analisi delle politiche di *food safety* attraverso la SWOT analysis è dato dal contributo di Samira *et al.* (2010,) i quali valutano il funzionamento del sistema di HACCP di recente introduzione in Madagascar. Altre applicazioni un po' differenti da quelle per cui è tradizionalmente utilizzata la SWOT, vale a dire per le aziende, i settori commerciali ed i piani di marketing, riguardano le analisi delle filiere, come in Gabelli (2007.) In quest'ultimo studio la SWOT è stata realizzata per diverse filiere regionali del settore biologico, attraverso incontri ed interviste con esperti. Nella presente ricerca, la procedura standard per l'applicazione di questa tecnica è stata modificata. Infatti, l'analisi e la valutazione delle politiche di *food safety* è stata condotta seguendo esclusivamente lo schema della SWOT, al fine di sintetizzare in modo analitico e critico la vasta letteratura sul tema. Pertanto, le informazioni utilizzate derivano sia dalla letteratura scientifica nazionale ed internazionale, ossia dalle considerazioni e dalle analisi empiriche svolte da altri Autori, sia da riflessioni proprie.

Si riporta di seguito lo schema seguito per la realizzazione dell'analisi (Fig. 2.1.)



*Elaborazione propria*



### 2.3 Risultati e discussione

Le risposte agli interrogativi posti hanno consentito di evidenziare quali sono i punti di forza e di debolezza insiti nel Regolamento sulla *food safety* e nella sua interazione con il settore agroalimentare europeo, con le caratteristiche delle imprese e della società, nonché con il commercio internazionale. Tali risultati sono stati ottenuti considerando le numerose questioni di tipo economico che s'interfacciano con la legislazione, in particolare quelle riguardanti le relazioni tra l'operatore pubblico ed il mercato. Attraverso l'analisi dell'ambiente esterno sono state individuate minacce ed opportunità, le quali sono esposte di seguito e discusse in un'ottica propositiva. I risultati ottenuti sono schematizzati nella Figura 2.2.

**Figura 2.2. Analisi SWOT del Regolamento sulla food safety**



*Elaborazione propria*

#### *Punti di forza*

Indiscutibilmente, il primo punto di forza del regolamento europeo corrisponde anche con il suo obiettivo, vale a dire l'innalzamento degli standard di sicurezza degli alimenti. Infatti, gli interventi di *food safety* mirano, per loro stessa natura, a minimizzare i rischi per la salute,

derivanti dall'assunzione di sostanze nocive insieme con gli alimenti ed a massimizzare le componenti "qualitative" in senso lato. La Legislazione ha anche lo scopo di ridurre gli effetti dell'asimmetria informativa sui mercati dei beni alimentari, poichè a questa causa di fallimento del mercato sono associate gravi perdite di benessere sociale. Come evidenziato da Akerlof (1970,) l'esistenza di asimmetria informativa può comportare sul mercato effetti tipo lo scambio di beni qualità inferiore (selezione avversa,) ma anche costi aggiuntivi da parte del consumatore e del produttore (aumento dei costi di transazione.) Gli strumenti d'intervento sia obbligatori che volontari, come le norme sull'etichettatura, le certificazioni e la tracciabilità sono indispensabili per aumentare il livello d'informazione circa determinati attributi qualitativi dei prodotti, di cui alcuni possono essere esclusivamente attributi etici, quindi non avere necessariamente a che fare con la sicurezza alimentare in quanto tale, ma essere caratteristiche per cui la società moderna è disposta a pagare: presenza/assenza di OGM, informazioni sulle tecniche di produzione (biologico, biodinamico, lotta integrata, ecc.,) la certezza dei luoghi d'origine, la tutela del benessere degli animali, l'idoneità delle condizioni di lavoro, ecc. Senza questi strumenti non sarebbe possibile istituire alcun mercato per i prodotti del commercio equo e solidale, per gli alimenti non-ingegnerizzati, o per qualsiasi altro prodotto che coinvolga gli attributi fiducia (Golan *et al.*, 2004.)

A questo punto, è importante sottolineare il duplice aspetto del Regolamento: se da un lato gli interventi pubblici hanno il fine di garantire l'igiene e la sanità dei processi, dall'altro gli interventi di tipo privato sono animati anche da altri incentivi. Infatti, questi ultimi sono strumenti di marketing utilizzati dalle aziende produttrici e trasformatrici di beni alimentari al fine di adottare una strategia di differenziazione dei propri prodotti ed ottenere un premio di prezzo. In particolare, le imprese che rispondono più velocemente nei confronti dell'introduzione delle normative, possono conquistare un vantaggio competitivo, ossia il cosiddetto "vantaggio della prima mossa" (Porter e van der Linde, 1995.) Ovviamente, la risposta del mercato evolve continuamente, fino ad un livello più maturo, dove il processo competitivo è tale che tutte le imprese si adattano al Regolamento, ed esso non è più una fonte di vantaggio competitivo. Esiste però un tipo di strategia di differenziazione più duratura, ossia basata sull'identità territoriale del prodotto, dove i fattori storici, sociali ed economici che hanno contribuito a creare questa identità possono avere un ruolo essenziale di differenziazione, data la loro non riproducibilità (de Stefano, 2007.)

Inoltre, l'adozione degli strumenti promossi dal Regolamento europeo, come ad esempio la tracciabilità, può condurre, ad una più efficiente gestione della logistica interna delle merci, del magazzino e dei controlli di qualità, fino ad una riduzione dei costi di produzione e distribuzione,

la cui rilevanza accresce con l'aumentare delle dimensioni delle imprese (de Stefano, 2007.) A tal proposito, si sottolinea la possibilità di un cambiamento della strategia organizzativa delle imprese al fine di ridurre i costi di transazione. Infatti, rapporti occasionali lungo la filiera generano un alto grado d'informazione ma anche alti costi di monitoraggio dei dettaglianti e dei trasformatori, tali relazioni hanno il fine di identificare e monitorare i fornitori più appropriati, onde prevenire potenziali problemi (Hobbs, 1996.) Per minimizzare questi costi di transazione, alcune imprese stabiliscono accordi di *partnership* più stretti con i loro fornitori, i quali facilitano il trasferimento d'informazioni lungo la filiera, rendendo più semplice, ad esempio, per le imprese a valle conformarsi con i requisiti del Regolamento sulla *food safety*. Inoltre, questa strategia organizzativa riduce l'asimmetria informativa lungo la filiera, permettendo ai dettaglianti di offrire garanzie di qualità ai loro clienti. Tale strategia crea il potenziale per l'ottenimento di una rendita addizionale dal mercato al consumo se questa filiera strettamente coordinata fosse in grado di offrire maggiore sicurezza e garanzie più credibili ai consumatori rispetto ai loro *competitors* (Loader e Hobbs, 1999.)

La risposta strategica delle imprese rispetto alle relazioni di filiera saranno, comunque, influenzate dal grado di fiducia intrinseca in questi rapporti. La fiducia svolge, infatti, un ruolo chiave sull'entità dei costi di transazione che si generano dalle diverse relazioni commerciali (Williamson, 1996.) Con una completa fiducia non vi è opportunismo, e senza opportunismo, l'impatto del Regolamento sulle relazioni tra le imprese sarebbe minimizzato, ma anche il bisogno di accrescere il monitoraggio sulle imprese a valle scomparirebbe.

### *Punti di debolezza*

Una delle funzioni del Regolamento è quella di escludere dal mercato alcuni alimenti che non possiedono le caratteristiche definite per legge. Infatti, è possibile che i consumatori non conoscano alcuni rischi per la salute o che li sottovalutino, per cui il mercato da solo non riesce ad escludere quei prodotti qualitativamente inferiori. In questo caso lo strumento utilizzato è dato dagli Standard Minimi di Qualità. Una riduzione della varietà disponibile è, però, l'altra faccia della medaglia dell'innalzamento degli standard di sicurezza. Ovviamente, l'esclusione dal mercato di alcuni beni, comporta anche l'esclusione di alcuni consumatori e di alcuni produttori, con conseguenze dal punto di vista economico e sociale assai dibattute in letteratura. Ad esempio, Bockstael (1984) dimostra analiticamente come per i beni la cui qualità sia perfettamente nota al consumatore prima dell'acquisto, la fissazione di uno standard minimo comporti una perdita netta di benessere per la collettività. Sugli effetti della fissazione di

standard minimi in condizioni di informazione imperfetta è focalizzato il lavoro di Leland (1979,) il quale osserva che da un lato la domanda può rispondere positivamente a variazioni aumentative della qualità, dall'altro, una maggiore qualità media offerta, connessa alla fissazione dello standard, si accompagna necessariamente a prezzi più alti. Di fatto, più prevale la seconda condizione maggiore sarà l'effetto di esclusione dal mercato di alcuni consumatori, a causa della riduzione della varietà prodotta ed a causa dell'incremento dei prezzi (dovuto all'incremento dei costi) (Coppola, 2000.)

Per quanto concerne il problema informativo del consumatore, se è vero da una parte che il Regolamento riduce l'asimmetria informativa tra produttore e consumatore, d'altra parte può creare una sovrapposizione d'informazioni o un eccesso informativo. Ciò avviene quando, in aggiunta alle informazioni da riportare in etichetta per legge, le imprese abbinano una propria certificazione e riportano i propri standard qualitativi. In questi casi, ai consumatori potrebbe risultare difficile decifrare la massa di dichiarazioni sulla qualità/sicurezza del prodotto. Difatti, un'etichetta è tanto efficace quanto chiaro è il suo messaggio. Laddove il consumatore non recepisce tale messaggio allora i suoi costi informativi aumenteranno, non decresceranno (Loader e Hobbs, 1999.)

Nella valutazione non vanno, infine, trascurati, gli aspetti relativi alla struttura del mercato: uno standard qualitativo, ad esempio, può rappresentare una barriera all'entrata e dunque ridurre il livello di concorrenzialità sul mercato. Il contrario, invece, accade se lo standard non è troppo elevato rispetto al livello minimo che si determinerebbe in un mercato non regolato, e le imprese avessero la possibilità di adeguarsi strutturalmente. Infatti, con queste condizioni, l'adozione dello standard, riducendo le differenze strutturali tra le imprese, può innescare processi di competizione di prezzo ed annullare le distorsioni derivanti da una struttura oligopolistica della produzione. Ciò fa sì che i consumatori possano acquistare prodotti di qualità a prezzi più bassi (Coppola, 2000.)

In merito al problema della struttura del mercato ed esercizio del potere di mercato, la letteratura sull'economia industriale focalizza la sua attenzione sugli effetti derivanti delle strategie di differenziazione (Beath and Katsoulacos, 1991,) tra cui vi è lo strumento della certificazione. Le norme di certificazione dei prodotti agroalimentari, che nascono essenzialmente come strumenti per la tutela del consumatore, possono assumere anche una funzione di valorizzazione e distinzione del prodotto. Inoltre, lo strumento della certificazione può agire sia in modo offensivo che difensivo. Nel primo caso, per esempio, può rappresentare un meccanismo per aumentare la quota di mercato attraverso l'offerta di una qualità più elevata, e nel secondo caso,

invece, può essere utilizzato per difendere la propria quota di mercato attuale dall'erosione (quindi come barriera all'entrata) (Henson e Caswell, 1999.) In entrambi i casi gli incentivi privati ad istituire programmi di certificazione sono sufficienti perchè lo strumento venga attuato, ma con un effetto ambiguo sul benessere sociale netto. Uno degli effetti più rilevanti della certificazione quando ha la funzione di valorizzazione del prodotto, è quello di modificare le caratteristiche della domanda, rendendola più rigida (Coppola, 2000.) Dal punto di vista sociale si ha, dunque, un trasferimento del benessere dal consumatore al produttore e, man mano che si ha un allontanamento da una situazione di concorrenza perfetta, si realizza una perdita netta sociale. Quindi, se da un lato le norme per la certificazione hanno effetti positivi per il consumatore grazie all'aumento del grado di informazione ed alla riduzione del rischio di danni alla salute, è anche vero che esse comportano una modificazione della struttura di mercato verso forme meno concorrenziali.

Punto cruciale dell'efficacia del Regolamento sulla *food safety* riguarda la capacità dell'operatore pubblico di identificare le responsabilità e scegliere le sanzioni adeguate, laddove le normative vengano eluse. Quest'ultimo può rappresentare un problema serio in quanto, quando il processo politico di introduzione normativa è percepito come inadeguato dalla società, e la capacità di perseguire una responsabilità è bassa, il sistema ha un'alta probabilità di fallire. Ciò può accadere perché, *in primis*, dato che i costi di adeguamento sono elevati, c'è incentivo a deviare, e possono determinarsi comportamenti opportunistici e di *free riding* (McEvoy e Souza-Monteiro, 2008,) conseguentemente, in assenza di un sistema sanzionatorio concreto ed effettivo, i segnali di qualità e sicurezza non sono ritenuti credibili. Un altro fattore riguarda l'incentivo generato dal sistema regolamentario per le imprese al fine di investire in sistemi di controllo della qualità e prevenire ogni rischio. In questo caso, gli elementi principali da tenere in considerazione sono il diverso livello di rischio che caratterizza i processi produttivi e la portata del potenziale danno all'immagine per l'impresa in caso di un danno alimentare. Le imprese sono incentivate ad investire in sicurezza se sono chiamate a compensare i soggetti eventualmente danneggiati dai propri prodotti. Pertanto, quanto più severa ed efficace sarà la legislazione in tema di responsabilità legale (*tort liability*,) minore sarà il rischio alimentare per la società. Sebbene lo strumento del *tort liability* potrebbe assicurare un adeguato livello di sicurezza, in pratica la sua efficacia è limitata dall'eccessiva asimmetria di potere economico e contrattuale delle parti in causa, vale a dire, il singolo individuo danneggiato e l'impresa (Sodano, 2006.)

Un ulteriore punto di debolezza riguarda l'incapacità degli strumenti di prevenire il verificarsi di shock sui mercati agroalimentari. Infatti, bisogna considerare che molto spesso basta un'informazione allarmistica per vanificare i costi sopportati per politiche di sicurezza sostenute dalle imprese del comparto agroalimentare coinvolto in uno scandalo alimentare. Questo accade quotidianamente nonostante l'istituzione del Rapid Alert System for Food and Feed (RASFF,) il quale ha come obiettivo l'individuazione dei rischi alimentari fin dai primi stadi della produzione e la loro eliminazione prima che il prodotto venga immesso sul mercato (Reg. CE n. 178/2002, art. 50,51 e 52.)

Infine, è da sottolineare anche l'impatto del Regolamento sul commercio internazionale, in quanto è stato tacciato di frequente, soprattutto in sede negoziale WTO, di essere fonte di barriere non tariffarie agli scambi (si veda Wilson *et al.*, 2008, per il dibattito sugli OGM.) Tuttavia, a livello aggregato è difficile sottolineare il vero impatto di un prodotto con particolari caratteristiche o quello di una specifica regolamentazione. Ciò richiede un'analisi più dettagliata della regolamentazione sulla *food safety* a livello di prodotto (Hooker, 1999.)

### *Minacce*

La necessità di risparmio, che si sta avendo negli ultimi tempi, fa ipotizzare che vi sarà un ampliamento della porzione della popolazione disposta a rinunciare all'acquisto di prodotti alimentari dotati di determinati segnali di sicurezza, i quali hanno normalmente un costo più elevato rispetto ai prodotti anonimi. Ciò è dimostrato dal fatto che, sebbene complessivamente le quantità acquistate siano stagnanti, si sono verificate variazioni nella composizione della spesa, attraverso la sostituzione con prodotti meno costosi, ad esempio, vengono acquistati più pollo e meno bistecche (Ismea e Ac Nielsen, 2008.) Le vendite sono in netto calo nei negozi al dettaglio specializzati, mentre sono stabili negli ipermercati (Ismea e Ac Nielsen, 2008.) Al contempo crescono gli *hard discount*, i mercati rionali e soprattutto gli acquisti diretti dai produttori. La crisi economica sta, quindi, provocando una polarizzazione nei consumi alimentari; se da un lato si assiste ad un consolidamento della domanda di prodotti caratterizzati da alta qualità e sicurezza, tradizionalmente acquistati da fasce di cittadini a più alto reddito, dall'altro cresce il numero di coloro i quali sono costretti a ricercare prodotti a più basso prezzo e di dubbia qualità. Una tendenza che rischia di vanificare gli sforzi effettuati in politiche per la sicurezza.

E' plausibile che vi sarà una futura intensificazione della competizione tra le industrie agroalimentari come risultato dell'allargamento ad est dell'Unione Europea. Data la particolare significatività della produzione agricola nei paesi dell'est Europa, ci si può aspettare che la

manifattura di prodotti alimentari per il consumo di massa ed a basso grado di trasformazione, nella produzione dei quali questi paesi hanno un vantaggio competitivo, possa essere trasferita all'est nel medio periodo. A tal proposito, si rende necessaria l'estensione delle norme di *food safety* a questi paesi, la cui implementazione richiederà competenze specifiche e tempi tecnici di recepimento.

La deregolamentazione dei mercati fortemente voluta dal WTO, esercita da sempre una forte pressione sull'UE. Nel tentativo di oltrepassare gli effetti considerati distorsivi della legislazione sulla *food safety*, l'UE, insieme con gli altri governi, ha adottato alcuni dettami, tra cui il principio del mutuo riconoscimento, secondo il quale i prodotti provenienti dall'estero devono essere ritenuti equivalenti a quelli domestici e commercializzati in modo non discriminatorio. La minaccia che può essere avvertita in questo contesto, riguarda la possibilità che vengano introdotte nuove regole internazionali sull'allineamento degli standard, i quali ovviamente diventerebbero meno restrittivi di quelli attuali europei, e che ciò vanifichi tutti gli sforzi e i costi sostenuti per un elevato grado di sicurezza, che non sarebbe più concorrenziale.

Un'ulteriore minaccia da sempre incombente in particolare sul settore agricolo riguarda il comportamento dei settori "a monte". E' chiaro che l'esistenza di un regolamento che impone agli imprenditori agricoli, in prima istanza, l'adeguamento a determinati requisiti, e che quindi li obbliga a fare uso di specifici input, ad esempio prodotti fitosanitari registrati per determinate certificazioni, li espone maggiormente all'egemonia delle industrie produttrici di tali input.

Vi sono poi alcune circostanze, che interagiscono tra loro, in cui si verifica il cosiddetto rischio di *non-compliance*, ossia quando (Loader e Hobbs, 1999): 1) il grado di concentrazione di un comparto agroalimentare è elevato; 2) esistenza di asimmetria informativa; 3) scarsa efficacia delle procedure di *enforcement*. Infatti, nei mercati dominati da una sola azienda, non c'è una pressione competitiva tale da spingere tale azienda all'adozione di strumenti volontari di *food safety* (assumendo la presenza di costi d'ingresso per potenziali *competitors*.) Questa situazione può essere poi peggiorata dalla presenza di asimmetria informativa che rende difficile per il consumatore, ma anche per l'ispettore, monitorare l'adeguamento con la regolamentazione. La portata con la quale l'asimmetria informativa impedisce l'efficacia della legislazione sulla *food safety* dipende dalla forza con cui le leggi vengono fatte rispettare (Loader e Hobbs, 1999.)

### *Opportunità*

Nonostante il fatto che la società stia fronteggiando negli ultimi tempi un periodo di crisi molto

preoccupante, è pur vero che, in Europa, si è ormai da tempo affermato il modello di consumo di sazietà che caratterizza la società moderna. Tale modello si basa sul fenomeno del completo soddisfacimento del fabbisogno calorico medio e della stabilizzazione della spesa alimentare sul consumo totale, per cui i consumi si sono evoluti verso prodotti di “qualità” e sempre più diversificati. Se gli strumenti di *food safety* rappresentano prima di tutto una garanzia di sicurezza verso il consumatore, è anche vero che l’adozione di tali procedure è percepita dai produttori del comparto agroalimentare come un’opportunità di consolidare la propria presenza sul mercato, ovvero, di tutela del proprio prodotto. Tale aspettativa si fonda sul beneficio potenziale di poter evidenziare le produzioni agricole di qualità o comunque con qualche peculiarità, attraverso i segnali di “identificazione di specificità”, quali la tracciabilità, i marchi d’origine o le certificazioni ISO 9000.

L’allargamento dell’Unione Europea a 27, elencato tra le potenziali minacce per la Legislazione, può inoltre causare un aumento della competitività per le imprese agro-alimentari per quanto concerne i prodotti agricoli di largo consumo. Allo stesso tempo, però, un mercato europeo allargato con circa 500 milioni di consumatori e ulteriori opportunità di commercializzazione, dovrebbe offrire un significativo potenziale per lo sviluppo dei punti di forza (Fisher e Shonberg, 2007.)

Per quanto concerne le opportunità date dal Regolamento nel commercio internazionale, si può considerare la possibilità di contrastare fenomeni negativi soprattutto per i prodotti italiani, come la contraffazione, nelle sue varie forme e livelli (de Stefano e Del Giudice, 2005.) Oltre alle ben note frodi alimentari, che si esplicano in manipolazioni e adulterazioni, vi è un tipo di contraffazione che si realizza nei mercati esteri, a cui è stato di recente attribuito il termine di “agropirateria”. In realtà, è ormai noto che negli USA solo il 10% dei prodotti alimentari venduti come “italiani” provengono realmente dal nostro paese. Se da un lato ciò rende visibile la dimensione dell’implicita contraffazione effettuata attualmente ai danni dei prodotti nazionali, dall’altro genera ottimismo sull’ampiezza del potenziale di espansione delle nostre esportazioni agroalimentari esistente su quel mercato. Essendo già presente, infatti, una estesa domanda per produzioni “di tipo italiano” si potrebbe ipotizzare che sia sufficiente sostituire anche solo una parte dei prodotti di imitazione con quelli autentici, provenienti dall’Italia, per conseguire una immediata e sensibile espansione del nostro mercato di esportazione (de Stefano e Del Giudice, 2005.) Di conseguenza, andrebbero potenziati dei meccanismi di assicurazione sulla reale origine che andassero a screditare quei prodotti che ne sono privi. Ad esempio la tracciabilità, accoppiata con l’etichettatura sul luogo d’origine, può costituire un importante strumento per stabilire



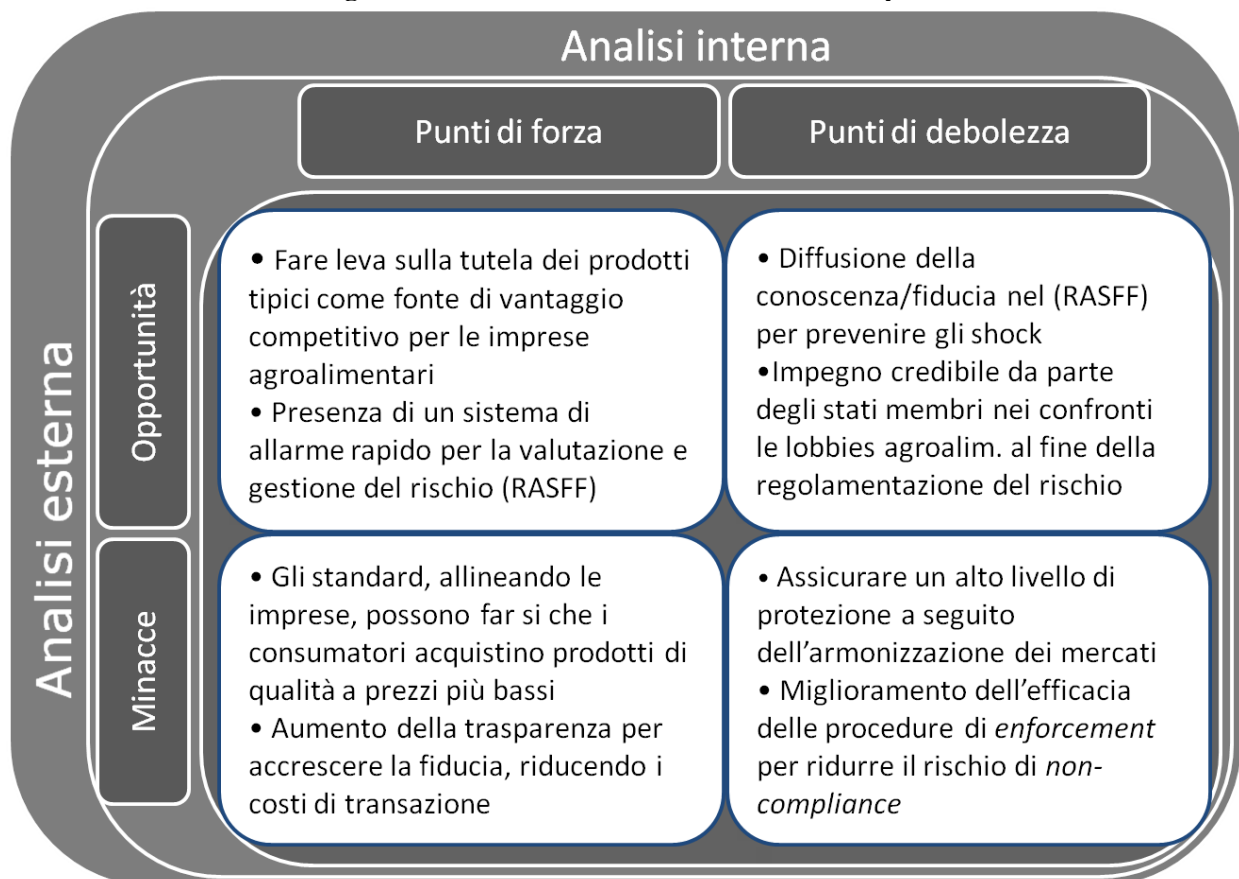
l'autenticità degli alimenti e controllare che le dichiarazioni effettuate dai produttori siano reali.

### Matrice SWOT di confronto

La matrice di confronto permette di sintetizzare i risultati dell'analisi, nonché evidenziare le strategie applicabili in maniera puntuale.

Le strategie "Forze-Opportunità" mirano a sfruttare le opportunità esogene che riguardano i punti di forza del sistema. Le strategie "Debolezze-Opportunità" sono intese tali da permettere il superamento dei punti di debolezza sfruttando le opportunità. Le strategie "Forze-Minacce" individuano i modi in cui avvalersi dei punti di forza al fine di attenuare o eliminare le minacce esogene. Le strategie "Debolezze-Minacce", infine, rappresentano piani di difesa per evitare che le minacce esterne acuiscano i punti di debolezza.

Figura 2.3. Matrice di confronto SWOT Analysis



Elaborazione propria

Per quanto concerne le strategie "F-O", una delle strategie da perseguire, alla luce della discussione sui punti di forza, è la difesa della tipicità dei prodotti, che rappresenta una fonte di vantaggio competitivo non riproducibile e perciò duratura per le imprese agroalimentari europee. Inoltre, al fine di assicurare in modo efficiente la minimizzazione del *food-borne risk*, si sottolinea validità della presenza di un sistema di allarme rapido per la valutazione e gestione del

rischio (RASFF.) D'altra parte, come strategia "D-O", onde prevenire il verificarsi di shock sui mercati agroalimentari, con conseguente danno all'immagine di alcuni settori e gravi perdite economiche, è necessaria la diffusione della conoscenza e l'aumento del grado di fiducia da parte dei consumatori, nel suddetto sistema. In aggiunta, a causa della presenza di gruppi d'interesse nel settore agroalimentare, che può ostacolare l'applicazione delle norme dell'EFSA (Krapohl, 2004,) la strategia auspicabile è la dimostrazione di un impegno credibile da parte degli Stati Membri verso un'appropriata regolamentazione del rischio (Krapohl, 2004.) Tale impegno credibile si può realizzare, ad esempio, attraverso la delega della materia ad un agente istituzionalmente indipendente dagli interessi dello Stato Membro (Krapohl, 2004.)

Prima di passare alla descrizione delle strategie "F-M", ricordiamo che una delle minacce esogene al buon funzionamento del Regolamento è la recente crisi economica, che ha generato una maggiore esigenza di risparmio, spostando la domanda verso alimenti più economici (Ismea e Ac Nielsen, 2008,) e pertanto, potenzialmente, meno sicuri. Di conseguenza, una strategia di contrasto a questo fenomeno, facendo leva sui punti di forza, è l'allineamento delle imprese agroalimentari sul fronte degli standard di qualità, affinché si generi una generale offerta di cibi più sicuri, che abbiano prezzi più bassi grazie al meccanismo della concorrenza. Inoltre, attraverso l'aumento della trasparenza garantito dal Regolamento, è possibile un miglioramento della strategia organizzativa delle imprese, che renda possibile una riduzione dei costi di monitoraggio e, più in generale, dei costi di transazione, che abbia, infine, come risvolto, la riduzione dei prezzi al dettaglio.

Relativamente alle strategie "D-M", si sottolinea la necessità di assicurare un alto livello di protezione a seguito dell'armonizzazione dei mercati (Szajkowska, 2009,) nonché il miglioramento dell'efficacia delle procedure di *enforcement* per ridurre il rischio di *non-compliance* (Berends e Carreno, 2005.)

## 2.4 Conclusioni

Data la complessità dell'ambiente in cui opera la Legislazione europea in materia di sicurezza alimentare ed il bisogno di soddisfare numerosi "fattori chiave" di successo, l'applicazione dello schema della SWOT analysis ha permesso di raggiungere il più avanzato livello di analisi possibile. La metodologia dell'analisi SWOT, nell'analisi delle politiche e degli strumenti legislativi, può costituire, in generale, un utile strumento a sostegno delle attività decisionali e operative dei soggetti pubblici e privati coinvolti.

I risultati, infatti, hanno consentito di valutare l'effettiva efficacia degli strumenti attuati, nonché l'individuazione di strategie opportune per affrontare nuove e vecchie sfide con cui il settore agroalimentare si confronta. Tali risultati possono essere utilizzati dai politici e *decision makers*

---

per correggere o migliorare gli strumenti di *food safety*, alla luce della più recente evoluzione del sistema economico e della società. Alcuni dei risultati potranno essere a vantaggio delle aziende agroalimentari che hanno l'esigenza di comprendere meglio le dinamiche dell'ambiente legislativo, economico e sociale, per migliorare le proprie strategie produttive e commerciali.

## CHAPTER 3

### Willingness to Pay for Traceable Meat Attributes: A Meta-analysis

#### 3.1 Introduction

Economic literature is rich with contributions that evaluate, through different methodologies, benefits linked to food safety policies and other quality attributes, especially for specific food products. In particular, a plethora of studies have examined consumers' preferences and Willingness To Pay (WTP) for mandatory and voluntary labeling programs associated with credence attributes related to preferences for traceability assurances. In fact, different levels of traceability are implemented to guarantee credence attributes, which have captured the public attention in the last decades. Modern societies care about food safety, which has to be viewed from the peremptory perspective, and many other attributes, such as animal welfare, respect for the environment, labor conditions, production technologies (GMO presence/absence,  $\gamma$ -rays irradiation, organic production, etc.) and country of origin. Several researches evaluated consumers' WTP for each attribute mentioned above, generating a great deal of information on this issue. Notwithstanding, this information is specific to the conditions of each study. WTP estimates for traceability characteristics largely differ across the literature, leading sometimes to contrasting interpretations.

A meta-analysis has been conducted in this study with the objective of seeking a full, meaningful statistical description of the findings presented in a collection of studies. The meta-analysis on the body of literature on consumer's behavior with respect to meat traceability allows us to analyze consistency across studies and control for factors thought to drive variations in WTP estimates. The goal is to generate a set of findings about consumer WTP that are not conditional on the particulars of a single study, and to provide researchers and policy makers with a concise summary of the extant work. The next section reviews some of studies on traceability benefits estimates, classified on the basis of the method adopted.

This is important for highlighting the differences in results due to study conditions. Afterwards we discuss the method of selecting papers and describe the data from these specific studies. To the comprehension of traceability effects, a series of several methodological and conceptual factors are considered for inclusion in the proposed models. A description of the models is then presented. We conclude with remarks on obtained results.

### **3.2 WTP estimations on traceable meat attributes**

Consumer attitudes towards traceability along the production chain of the meat sector have been discussed extensively, starting in the 1990s. The most common benefits estimation techniques used are the stated preferences methods (contingent evaluation, conjoint analysis, choice modeling) and revealed preferences methods (hedonic pricing.) Regarding the use of the latter method, a notable example is given by Ward et al. (2008.) This study on unobservable characteristics of ground beef and steak, conducted in US, reveals that quality grade signals do not significantly influence ground beef prices. But steak shows significant price premiums for quality signals when compared to products with no quality grade designation. Consumers would expect to pay more for higher quality grade steaks and less for lower graded products (Ward et al., 2008.) But steaks labeled as "no hormones added" were priced lower than steaks with no special labels. This result contradicts with the estimates attained by Lusk et al. (2003) through a choice model. They find that consumers in France, Germany, UK and USA are willing to pay significant premiums for steaks produced without growth hormones. According to the authors, this may be caused by the fact that the model already controls for other attributes, like brand name, and thus "no hormones added" has secondary importance.

Mennecke et al. (2007) apply a conjoint analysis to estimate relative utilities associated with beef steak characteristics. The analysis reveals that the most important characteristic for U.S. consumers is the region of origin, followed by the breed, on-farm traceability and type of feeding. The ideal steak for the national sample comes from a locally produced choice Angus, fed with a mixture of grain and grass that is traceable to the farm of origin (Mennecke et al., 2006.)

Concerning the use of choice models in studies about traceability of poultry and beef, we can refer to Loureiro and Umberger (2004; 2005; 2007.) In the last two studies, the country of origin label seems to be the most important attribute of meat, while in the 2004 study, where a comparison with additional safety cues are considered, safety elicits the highest premium. Angulo and Gil (2007) offer an example about the use and findings attained for this topic

through the contingent evaluation. Results show that safety perception is one of the most important determinants of Spanish consumers' WTP for beef certifications.

Another class of techniques aimed at estimating food safety policies benefits are the ones based on experimental markets. These try to overtake the limits of methods based on willingness to pay, which is the use of a hypothetical scenario. Indeed, in experimental auction markets, interviewees deal with actual money and actual foodstuffs. This difference might lead to significant divergences with regards to benefits estimates. An example of the use of this class of technique is given by Dickinson and Bailey (2002,) who conducted experimental auctions to assess US consumers' preferences and WTP for traceability, additional assurances for food safety and animal welfare (including non use of growth hormones) for beef and pork products. This study reveals that consumers are willing to pay a premium for on-farm traceability and that such a premium is higher for a multi-attribute traceability. Dickinson and Bailey's results are consistent with Hobbs' findings (2003) from an experimental study with a Canadian sample. Although in this study on-farm traceability elicited the lowest willingness to pay, the highest bid was for beef or pork products characterized by on-farm traceability plus ex-ante assurances on "quality" (animal welfare and food safety.) This result is due to the fact that traceability alone does not reduce information asymmetry about credence attributes. Hence it becomes a necessary but not a sufficient condition for the control of unobservable attributes such as animal welfare or environmental friendly productions (Hobbs, 2003.)

In general, what can be observed from literature on meat traceability is that same attributes are differently ranked across studies and sometimes even contrast each other. This may depend on how WTP estimates are elicited, the country where the analysis is conducted, the set of attributes considered and their relative importance, etc. Thus, all information we have now regarding meat traceable attributes represent only a partial picture.

A more complete review of studies on meat traceability is available in the table 3.1.

**Table 3.1**  
**Summary of studies on meat traceability**

Study	Location of study	Sample size	Nature of valuation method <sup>1</sup>	Product	Meat traceable attribute	Base_price (\$/lb) <sup>2</sup>
Alfnes (2004)	Norway	106	hypothetical	Beef	Food_safety, Country_of_origin	5.00
Alfnes and Rickertsen, (2003)	Norway	106	non-hypothetical	Beef	Food_safety, Country_of_origin	5.00

Study	Location of study	Sample size	Nature of valuation method <sup>1</sup>	Product	Meat traceable attribute	Base_price (\$/lb) <sup>2</sup>
Angulo and Gil (2007)	Spain	650	hypothetical	Beef	Food_safety	9.12
Baley et al. (2005)	US	104	hypothetical	Beef	Food_safety	13.47
Bolliger and Révion (2008)	Switzerland	450	hypothetical	Poultry	Country_of_origin	7.50
Checketts (2006)	US	264	hypothetical	Beef	Food_safety, on-farm traceability	6.66
Dickinson and Bailey (2002)	US	112	non-hypothetical	Beef	Food_safety, Country_of_origin, on-farm traceability, animal welfare	<sup>3</sup> 3.00
Dickinson and Bailey (2002)	US	112	non-hypothetical	Pork	Food_safety, Country_of_origin, on-farm traceability, animal welfare	<sup>3</sup> 3.00
Dickinson and Bailey (2003)	US, Canada, UK	14	non-hypothetical	Beef	Animal welfare	3.02
				Pork	Animal welfare	2.65
Dickinson et al. (2003)	US, Canada	56	non-hypothetical	Beef	Food_safety, on-farm traceability, animal welfare	3.00
				Pork	Food_safety, on-farm traceability, animal welfare	4.00
Enneking (2004)	Germany	321	hypothetical	Pork	Food_safety	1.50
Hobbs (2003)	Canada	204	non-hypothetical	Beef	Food_safety, on-farm traceability, animal welfare	2.62
Hobbs (2003)	Canada	204	non-hypothetical	Pork	Food_safety, on-farm traceability, animal welfare	2.64
Loureiro and Umberger (2003)	US	243	hypothetical	Beef	Country_of_origin	4.00
Loureiro and Umberger (2004)	US	632	hypothetical	Beef	Food_safety, Country_of_origin, on-farm traceability	8.00
Loureiro and Umberger (2005)	US	632	hypothetical	Beef	Country_of_origin	6.90
Loureiro and Umberger (2005)	US	632	hypothetical	Pork	Country_of_origin	3.60
Loureiro and	US	632	hypothetical	Poultry	Country_of_origin	2.00

Study	Location of study	Sample size	Nature of valuation method <sup>1</sup>	Product	Meat traceable attribute	Base_price (\$/lb) <sup>2</sup>
Umberger (2005)						
Loureiro and Umberger (2007)	US	632	hypothetical	Beef	Country_of_origin, on-farm traceability	4.85
Lusk et al. (2003)	France, Germany, UK, US	360, 210, <sup>4</sup> 450, 725	hypothetical	Beef	Food_safety	6.88
Meuwissen et al. (2007)	The Netherlands	1199	hypothetical	Pork	Food_safety, Country_of_origin, on-farm traceability, animal welfare	5.53
Menozzi et al. (2009)	Italy	160	hypothetical	Poultry	Country_of_origin	1.90
Sanchez et al. (2001)	Spain	<sup>5</sup> 247, 235	hypothetical	Lamb	Country_of_origin	7.58
Sanchez et al. (2001)	Spain	<sup>5</sup> 247, 235	hypothetical	Beef	Country_of_origin	6.00
Stainer and Yang (2007)	US, Canada	214	hypothetical	Beef	Food_safety	3.54
Ubilava and Foster (2009)	Republic of Georgia	159	hypothetical	Pork	On-farm traceability	5.33
Umberger et al. (2003)	US	273	non-hypothetical	Beef	Country_of_origin	4.00
Umberger et al. (2009)	US	866	hypothetical	Beef	Country_of_origin	7.89

<sup>1</sup> By hypothetical nature of valuation method is meant all the benefits estimation techniques based on the stated preferences (contingent evaluation, conjoint analysis, choice modeling) and revealed preferences (Hedonic pricing,) while by non-hypothetical is meant experimental auctions.

<sup>2</sup> The base price is the market baseline price of the product to the *status quo*.

<sup>3</sup> The value of the sandwich in both beef and ham auction is roughly the same (Dickinson, Baley, 2002.)

<sup>4</sup> Sample size with respect to each country, respectively.

<sup>5</sup> Sample size with respect to the type of meat.

### 3.3 Testing the robustness of empirical findings on meat traceability: Meta-analysis

A meta-analysis of meat traceability research helps answer the following research questions:

- *Is there empirical evidence that WTP for meat traceability is positive and increases when specific attributes are considered (Country of origin, food safety, type of meat, etc.)?*
- *What is the attribute certified by traceability that systematically elicits the highest WTP?*

- *What are the studies' characteristics that influence WTP estimates?*

In fact, the meta-analysis allows us to examine the extent of traceability effects despite different study conditions, like different research designs, country of study, etc. Although the meta-analysis technique is common to many fields of Science and Economics, to the best of our knowledge, this is the first meta-analysis concerning the consumer behavior in regard to meat. Another meta-analysis concerning food attributes is contained in Lusk et al. (2005.) This study, though, is centered on genetically modified food and considers many types of food, including meat, vegetables, fish and other food products like cornflakes, cookies, vegetable oil, etc.

Our analysis consists of three consecutive steps, following the procedure already tested by Farley and Lehmann (1994) and Varlegh and Steenkamp (1999):

1. A prior collection of empirical studies concerning WTP estimations with respect to meat traceable attributes
2. The identification of study factors thought to drive variations in WTP estimates
3. Model setting by using dummy variables to codify those factors

### **3.3.1 Sample selection process**

Our sample is given by findings from empirical studies about meat traceable attributes for the period 2000-2008. Those studies have been collected and selected through research databases, such as:

AgEcon Search (agriculture economics and applied economics)

Blackwell Journals (interdisciplinary)

EconLit (paper from economics journals)

Emerald Insight (interdisciplinary)

Google Scholar (interdisciplinary)

ScienceDirect (technical, medical scientific literature, but also on business and economics.)

These databases offer numerous papers and government reports on applied economics, consumer's behavior, chain management, marketing and business.

From the six databases twenty-three separate studies have been selected on the basis of their specific connection to the topic. Studies in which consumers' WTP, for meat characterized by certain traceability systems, has been estimated (Table 3.1) were selected. The 23 studies collectively provide 88 estimates of consumers' values for meat traceable attributes, giving a reasonably large sample for the analysis. Most of them are already published papers; a few are working papers. We do not have reasons to doubt the trustworthiness of the latter ones.



However we conducted statistics on the estimates we gathered and found that the sample is indeed consistent (Table 2.)

### **3.3.2 Impact indicators for meat traceable attributes**

Aimed at enabling a comparison among meat traceable attributes impact, the indicator adopted is the associated premium, or WTP, as it results from collected studies. Each WTP estimate has been converted in percentage of the product's base price, so that problems like different currencies and different ways to express price premium (i.e. with respect to the weight unit, product unit) are overcome.

In some studies, we have several WTP estimates, depending on the specific meat traceable attribute and meat product considered in the study (e.g. beef, pork.) Consequently, the number of WTP estimates is greater than the number of collected studies. Each observation in our meta-analysis includes, as the dependent variable, the estimate of the mean willingness to pay (MWTP) as percentage of the base price.

### **3.3.3 Study factors**

Factors that are hypothesized to have a systematic impact on WTP estimates have been identified in selected studies. Because they are likely to moderate the impact, those factors are considered moderator variables (Varlegh, Steenkamp, 1999,) and tested in the proposed model. A discussion on factors is reported below:

*Country.* The country where the single study was conducted is considered a factor that may affect consumer willingness to pay. In fact, due to cultural differences and other macroeconomics variables (e.g. GDP, inflation, per-capita income, unemployment rate) the WTP for food safety and other traceable attributes may differ. Also, we need to consider that consumers' sensitivity to some food attributes is somehow related to the emphasis given by governments, vis-à-vis advertising campaigns and regulatory restrictions.

*Research design.* Because individuals tend to overstate the amount they are willing to pay in hypothetical valuation tasks as compared to when real money is on the line (Lusk et al., 2005,) we included whether the valuation task was hypothetical or non-hypothetical.

*Sampling nature.* Whether the sample was comprised of students or randomly recruited subjects may embody a crucial aspect. Use of student subjects in experimental markets is more convenient and less costly than standard subject pools, and according to some authors, there is ample evidence that students perform equally as well as professionals in economic experiments (Smith et al., 1988.) Notwithstanding, those type of sample might not be representative of the general population either in terms of demographics or purchasing habits

(Nalley et al., 2006.) Hence, the debate concerning students being actual consumers and their decisions being representative of market decisions is still open.

*Sample size.* Sample size can be an important factor affecting the reliability of single study's findings.

*Base price.* This factor is thought to influence the premium price, in the sense that the additional amount of money that consumers may be willing to pay for credence attributes depends on the original price of the meat. In fact, firstly, higher prices are quality cues *per se*; secondly, the percentage of WTP tends to decrease with higher prices, as consequence of a greater incidence on the total expenditure.

*Type of meat.* Different types of meat, meaning the animal species like pork, beef, poultry, etc., might affect consumer WTP due to different degrees of trust about rearing systems and control along the production chain (use of hormones, disease incidence potentiality.) Type of meat may also be important because several scandals have involved those meat sectors, seriously affected quantity and price as well as leading consumers to search for product guarantees.

*Type of cut.* As underlined in several studies, the type of cut of meat (steak, ground meat, ham, etc.) can make a difference in the WTP estimates.

*Food safety.* This category includes WTP for additional assurances on Food safety, such as USDA inspection label, BSE-free label, hormone-free label, GMO-free label.

*Country of origin.* It considers WTP for a label declaring the country or the region where meat has been produced.

*On-farm traceability.* WTP for a label stating that meat is traceable to the farm of origin.

*Animal welfare.* It considers WTP for a label that declares respect for animal welfare.

*Multi-attribute traceability.* This includes WTP for a level of traceability implementation able to assure several meat attributes concurrently.

The way in which moderator variables were defined into the model is shown in Table 3.2.

**Table 3.2. Summary statistics and definitions of variables**

Variable	Definition	Mean
Dependent variable		
MWTP%	Marginal Willingness To Pay percentage per each meat traceable attribute	22.702 (3.221)
Independent variables		
Food_safety	1 if the related WTP was estimated; 0 otherwise	0.505 (0.052)
Country_of_origin	1 if the related WTP was estimated; 0 otherwise	0.258 (0.046)

Variable	Definition	Mean
Animal welfare	1 if the related WTP was estimated; 0 otherwise	0.355 (0.050)
Multi_attribute_trac	1 if the related WTP was estimated; 0 otherwise	0.258 (0.046)
On_farm_trac	1 if the related WTP was estimated; 0 otherwise	0.258 (0.045)
Non_hyp_scen	1 if valuation involved actual scenario; 0 otherwise	0.591 (0.051)
Beef	1 if the type of meat was beef; 0 otherwise	0.581 (0.051)
Poultry	1 if the type of meat was poultry; 0 otherwise	0.064 (0.026)
Lamb	1 if the type of meat was lamb; 0 otherwise	0.011 (0.011)
Pork	1 if the type of meat was pork; 0 otherwise	0.344 (0.050)
Ham	1 if product valued was ham; 0 otherwise	0.123 (0.048)
Roast_beef	1 if product valued was roast beef; 0 otherwise	0.215 (0.044)
Ground_meat	1 if product valued was ground meat; 0 otherwise	0.032 (0.018)
Steak	1 if product valued was steak; 0 otherwise	0.344 (0.049)
Sausage	1 if product valued was sausage; 0 otherwise	0.011 (0.011)
Europeans	1 if data from Europe; 0 otherwise	0.269 (0.046)
US_Americans	1 if data from United States; 0 otherwise	0.452 (0.052)
Canadians	1 if data from Canada; 0 otherwise	0.236 (0.044)
Sampling_nature	1 if sample comprised of students only; 0 otherwise	0.000
Sample	Number of observations in each subsample (study)	218.463 (28.226)
Base_price	Baseline price per each study and each meat product	4.026 (0.401)

### 3.4 Analysis

Multiple linear regression modeling is used the most in meta-analysis studies when considering WTP estimates as dependent variable (Loomis, White, 1996; Lusk et al., 2005; Jacobsen, Hanley, 2009; Richardson, Loomis, 2008.)

Our initial model is:

$$MWTP_i = \alpha_0 + \alpha_1 * Food\_safety_i + \alpha_2 * Multi\_attribute\_trac_i + \alpha_3 * Country\_of\_origin_i + \alpha_4 * Non\_hyp\_scen_i + \alpha_5 * On\_farm\_trac_i + \alpha_6 * Animal\_welfare_i + \alpha_7 * Base\_price_i + \alpha_8 * Sample_i + \alpha_9 * Poultry_i + \alpha_{10} * Lamb_i + \alpha_{11} * Pork_i + \alpha_{12} * Ham_i + \alpha_{13} * Roast\_beef_i + \alpha_{14} * Ground\_meat_i + \alpha_{15} * Sausage_i + \alpha_{16} * Europeans_i + \alpha_{17} * Canadians_i + u_i$$

We originally hypothesized our model as described above and included all the variables we considered important in explaining the variation in consumers' WTP. Our model considers the

problem of traceability as well as the variables typically included in meta-analysis such as “Sample” and “Non\_hypothetical\_scenario.” As such, we are confident that our model is well-specified.

Regressors in our model can be grouped as “type of meat” (beef, poultry, lamb and pork,) “type of cut” (steak, ground meat, roast beef, ham and sausage,) “nationality of interviewees” (European, US, and Canadian) and the rest as “traceable meat attribute.” The criterion with which variables defined in the Table 2 enter the model is aimed at avoiding the “dummy variable trap.” That is why, for example, for variables like “nationality of interviewees,” since the most numerous were the US Americans (45.2%), we did not include this variable in the model and considered it a benchmark. We included the others to compare with the reference variable. Similarly, we used beef as a reference variable for “type of meat” and steak as benchmark for “type of cut.” The variable “Sampling\_nature” could not be tested because there were no observations in our sample with studies whose sample was comprised of only students.

### **3.4.1 Expectations**

We expect the coefficient of the variable “Food\_safety” to have a positive sign because the WTP should increase with food safety cues. For the variable “Multi\_attribute\_traceability,” we expect a negative sign since there can be a decreasing marginal utility with respect to the amount of information provided as well confusion resulting from too much information. We anticipate a positive sign for “Country\_of\_origin,” given the evidence in literature about consumers’ concern on the country where meat originates. People may be willing to pay more for meat produced in their country in order to either support the domestic industry and/or reduce the pollution due to the transportation on long distance, etc. The coefficient of the variable “Non\_hypothetical\_scenario” is supposed to be negative because it should reflect the idea that people might overstate their bids when hypothetic money is involved. The coefficients of “On\_farm\_traceability” and “Animal\_welfare” are both expected to show a positive sign since they can be desirable attributes for meat.

“Base\_price” is thought to influence the WTP in a negative manner. Additional amount of money that consumers may be willing to pay for credence attributes depends on the original price of the meat. In fact, higher prices are already quality signals and the percentage of WTP tends to decrease with higher prices as consequence of a greater incidence on the total expenditure. Although we do not have an expectation for the sign of “Sample\_size,” we believe that it is important for the reliability of the estimates. We also do not have any expectations for the set of variables “type of meat,” but we are interested in determining if

they are statistically significant. We do have expectations for the cuts of meat; specifically we expect that consumers are willing to pay more for the more processed meats. This reflects not only the fact that there is added value but also that consumers may look for further assurances about the quality itself, the absence of preservatives, additives, etc. For “nationality of interviewees” we hypothesize that Europeans are willing to pay more for meat traceable attributes than North Americans. This is evident in the recent European trend of banning products that contain growth-hormones and genetically modified organisms.

### 3.4.2 Results

Our original model exhibits signs of multicollinearity as seen in the high variance inflation for the variables “Base\_price,” “Pork,” “Ham,” “Roast-beef” and “Canadians.” Moreover, the classic signs indicating multicollinearity are also present. We observe a high  $R^2$  (for cross-sectional data) and an F-calc value that is significant at the 1% level or better, suggesting that our regressors explain a statistically significant portion of the variation in our dependent variable, WTP. These two results contradict our low t-calc values, which suggest that only a few of our parameters are statistically significant. To address this issue we calculated the pair wise correlation matrix and determined which of the variables were offensive. We considered pair-wise correlation and found high degree of correlation between the following pairs: “Beef” and “Ham,” “Pork” and “Ham,” “Canadians” and “Base\_price,” and “Beef” and “Pork.” We also considered the issue of heteroskedasticity since the data come from different papers and consequently we should expect them to exhibit different variances. White’s test-result,  $\chi^2$ -value, make us fail to reject the null -the absence of heteroscedasticity- at the 5% significance level. Tests for model misspecification, at the 5% significance level, support the idea that our model is correctly specified in regard to the choice of the variables.

To address multicollinearity, though, we re-specified the model by re-aggregating some of the variables. As such we did not lose any of the information; we merely reorganized how we considered the data. We reclassified the type of cut by degree of processing -we defined ground-meat and sausage as one variable (GS) and roast-beef and ham as another (HRB.) We also reclassified nationality as Europeans and North Americans, by adding the two variables “US-Americans” and “Canadians.” We then used this modified database for our analysis. We changed our benchmarks for the two variable groups referred above. We compared “Steak” and “GS” to the most processed meat “HRB,” which we utilized as the reference variable. Similarly, the benchmark for the group “Nationality of interviewees” is now “North-Americans.” Our model now is:

$$MWTP\%_i = \alpha_0 + \alpha_1 * Food\_safety_i + \alpha_2 * Multi\_attribute\_trac_i + \alpha_3 * Country\_of\_origin_i + \alpha_4 * Non\_hyp\_scen_i + \alpha_5 * On\_farm\_trac_i + \alpha_6 * Animal\_welfare_i + \alpha_7 * Base\_price_i + \alpha_8 * Sample_i + \alpha_9 * Poultry_i + \alpha_{10} * Lamb_i + \alpha_{11} * Pork_i + \alpha_{12} * GS_i + \alpha_{13} * Steak_i + \alpha_{14} * Europeans_i + u_i$$

We again conducted White's test for the presence of heteroskedasticity (SPEC test) and we found that our results do not indicate heteroskedasticity at the 5% significance level. Again, tests for model misspecification at the 10%, as well as the 5%, significance level, state that our model is correctly specified. We present the results in table 3.3.

**Table 3.3. Results from model 2**

	Parameter estimate	Standard error	t-value	VIF
Constant	-7.02972	11.393	-0.62	0
Food_safety	22.09159	5.10538	4.33***	3.08527
Multi_cues_trac	-21.92097	7.87242	-2.78***	4.54039
Country_of_origin	3.01212	5.01484	0.6	2.43638
Non_hyp_scen	5.85944	8.50597	0.69	7.16897
On_farm_trac	16.71379	4.17481	4***	2.32533
Animal welfare	14.0649	5.44877	2.58***	7.13103
Base_price	-0.42237	0.21098	-2.0**	6.02813
Sample size	0.01169	0.01131	1.03	2.23173
Poultry	13.95939	10.92267	1.28	3.09827
Lamb	-2.80164	5.95347	-0.47	1.13291
Pork	-5.94306	2.65098	-2.24**	1.4448
Steak	14.62895	7.99507	1.83**	9.1619
GS	29.89204	11.76735	2.54***	2.56644
Europeans	15.50501	5.93293	2.61***	1.75317
Adj R <sup>2</sup>	0.2899			
F	3.54***			
Spec test	65.53 ( $\chi^2$ -stat)*			

<sup>1</sup>\* =10% significance; \*\*=5% significance; \*\*\*=1% significance or better.

### 3.5 Results interpretation

Our model explains 28.99% of the variation in our dependent variable, MWTP%, consumers' willingness to pay, this percentage is indeed consistent with the cross-sectional nature of the database. The regression model also explains a statistically significant portion of the variation in our dependent variable. The F-calc value is 3.54, which is significant at the 1% level or better. Signs of the estimated coefficients for each regressor match well with our expectations, especially for variables like "Food\_safety," "Multi\_attribute\_traceability,"

"On\_farm\_traceability," "Animal\_welfare," "Base\_price," "GS" and "Europeans."

Consumers are willing to pay 22.09% above the base price for the attribute "Food\_safety," holding all other variables constant. This result confirms to our expectations and shows that "Food\_safety" is statistically significant.

"Multi\_attribute\_traceability" is statistically significant, and when present the marginal WTP decreases by 21.92% as the number of attributes increases, holding all variables constant. This matches our expectations as well.

The estimate for "Country\_of\_origin" is not statistically significant, *ceteris paribus*. This may be due to the fact that "On-farm traceability" and "Animal welfare" may offset the importance of meat's country of origin to some extent.

"Non-hypothetical scenario" does not appear to have a significant influence on the WTP.

The other attribute that is statistically significant and appears to be very important for consumers is the "On-farm traceability." When this attribute is available, consumers are willing to pay a premium of 16.71% over the base price, holding all other variables constant.

This result confirms to our expectations and implies that consumers are willing to pay more in order to be fully informed about the "meat's production path" from the farm to the table.

Another attribute which embodies particular importance to consumers, *ceteris paribus*, is a further assurance on "Animal welfare." This attribute is statistically significant and, when present, elicits a premium of 14.06% over the base price, showing consumers' interest about the life quality of domestic animals.

In keeping with our expectations, the variable "Base\_price" is statistically significant and the sign is negative, holding all other variables constant. A 1% increase in the base price yields a 0.42% decrease in WTP. The variable "Sample size" is not statistically significant. The variables "Poultry" and "Lamb" are also not statistically significant probably because our database includes only a few observations for these "types of meat."

The variable "pork," however, is statistically significant and its estimate has a negative sign. This suggests that consumers purchasing pork are willing to pay 5.94% less for traceable attributes of the pork meat when compared to their willingness to pay for beef, holding all

other variables constant. This may mean that they value beef more than pork and/or they are more concerned with the safety of beef. In fact, our database includes samples from a period of time in which consumers were aware of multiple “mad cow disease” outbreaks. So, it is probable that newer studies would find more concerns about pork meat because of the recent “swine flu” outbreak, which the media has covered extensively.

“Steak” and “GS” are both statistically significant and they reflect the grade of processing. The signs of their coefficients suggest that consumers are in fact willing to pay less and less as the degree of processing decreases, *ceteris paribus*. Specifically, they are willing to pay a premium of 14.63% for steak and 29.89% for “GS” when compared to “HRB,” which is our benchmark.

The coefficient for the variable “Europeans” both confirms to our expectations and is statistically significant, showing that European consumers are, on average, willing to pay more for meat traceable attributes than North American consumers, *ceteris paribus*.

### **3.6 Concluding remarks**

The meta-analysis on the body of literature on consumer behavior with respect to meat traceability allowed us to analyze consistency across studies and control for factors thought to drive variations in WTP estimates. Results from this study help summarize effectively the extant literature on consumers’ WTP for meat traceability and permit us to make inferences that are not conditional on the results of one particular study. For instance, our study clearly shows that consumers from different countries are placing an increasing importance on traceable meat attributes. In particular, “Food\_safety,” “Multi\_attribute\_traceability,” “On\_farm\_traceability” and “Animal\_welfare” appear to be the most requested attributes. As suggested by Caracciolo et al. (2010) in a recent contribution on pork meat attributes requested by European consumers, those credence attributes could be linked as direct and indirect indicators to food safety. While the food industry sector is increasing the amount of information on products sold, consumers look for easily understandable cues that allow them to buy meat with high levels of safety.

Finally, at least part of information released by this study is meant to be a useful tool for Industry, because results correspond to realistic premiums for each meat traceable attribute. This can be very useful to achieve an efficient voluntary traceability program. Also this information is reliable to policy makers, during cost-benefit evaluations, for the implementation of mandatory meat traceability programs.



## CHAPTER 4

### **Marketing the improvements in the supply chain for domestic agricultural produce: Estimation of market penetration potentiality**

#### **4.1 Introduction**

In this study, we aim at estimating the benefits of a traceability program for a specific agro-industrial product, such as the early potato, with particular characteristics rising both from the production method and from the distribution chain. The research focuses on the analysis of consumer's behavior toward specific attributes of this product.

In particular, concerning the traceability program, the following research questions are of primary interest for this project:

- How much Italian consumers value the origin of a food product such as the potato?
- What are the benefits of traceability for producers?

With this research a specific discrete-choice experiment has been designed, in order to estimate the economic benefits associated with a voluntary traceability to certify the origin of the early potato.

The early potato is typically cultivated in Southern Italy, and suffers a strong competition with the supply of potatoes from other Mediterranean countries and Israel.

We used a random parameter logit model to exploit the panel structure of data set we obtained, in order to estimate the willingness to pay of each individual in the sample. In fact, the willingness to pay estimates are normally expressed as measures of central tendency of a prior distribution, as mean or median of the estimated values, while the random parameters logit allows for the identification of the determinants of the estimated individual-specific willingness to pay. In comparison with standard methods used to incorporate the variables in the analysis of individual specific discrete-choice experiment, this approach is able to add analytical power to explain the estimates of wealth.

In standard discrete-choice experiment, while the attributes of the property subject to assessment generally vary depending on the alternatives, the individual characteristics remain the same and cannot enter directly into the model. This means that the effects on the characteristics of individuals on the conditional probability of choosing specific alternatives are not identifiable, with the result that the parameters of the model (and thus the indirect utility functions) are the same for each individual interviewed. In order to overcome such approximation, this research proposes an alternative method to identify some of the estimates of WTP obtained from discrete-choice experiment. The distribution of willingness to pay will

then be obtained through the part-worth analysis.

An essential aspect of the project is data collection. Data have been obtained through a questionnaire administered to a representative sample of Italian consumers. The alternatives of choice within each choice set will have been attained via experimental design.

#### **4.1.1 The product**

The early potato cultivation is concentrated mainly in southern regions where locates more than 95% of the national area planted. According to ISTAT data, in 2009, such area accounted for more than 20000 hectares, approximately 30% of the total areas used for the production of early and common potato. For the southern regions with the highest suitability for the early crop, the interested area is by far higher than the national average (for Sicily 82% and 71% for Puglia,) while for the regions of Central-North this impact is essentially irrelevant. The data on the structure of the segment of early potato show the strong concentration of cultivation in restricted areas of the South (60% of production affects total of 12 provinces of Campania, Sicily and Puglia) so to become almost territorial districts that bind their agricultural economy to this crop. The climatic conditions of these areas, characterized by mild winters and rainfall, are the favorable basis to the diffusion of non-seasonal cultivation of the potato, which peculiarity is to be harvested much earlier than the common potato (sown between December and January and harvested from March to June.)

#### **4.2 Experimental design**

Stated Choice studies typically rely on the use of an underlying experimental design to construct the hypothetical choice situations shown to respondents. These designs are constructed by the analyst, with several different ways of constructing them having been proposed in the past. Unlike data collected from most of other surveys, stated choice experiments require the design of the data in advance by assigning levels to the attributes that defines each of the alternatives which respondents are asked to consider. Rather than randomly changing attribute levels, researchers generate experimental designs which determine which attribute levels to show in each choice situation. Research has shown that how the attribute levels of a design are distributed over the course of the experiment, via the underlying experimental design, will impact to a greater or lesser extent upon whether or not an independent assessment of each attributes contribution to the choices observed to have been made by sampled respondents can be determined (Vermeulen et al. 2010.) The research efforts have concentrated on the concept of improving the statistical efficiency in terms of increased precision of the parameter estimates for a fixed sample size. In taking such a

definition, statistical efficiency within this literature has therefore been linked to the standard errors likely to be obtained from the experiment, with designs that can be expected to i) yield lower standard errors for a given sample size, or ii) the same standard errors given a smaller sample size, being deemed more statistically efficient.

Different types of designs can be generated, depending on the preferred statistical properties, the information available, and the preferred size of the design:

- Full factorial designs. Full factorial designs are designs in which all possible combinations of levels and attributes are enumerated. The advantages of this type of design are that the design is always orthogonal; the design is always balanced and the design allows estimation of all main effects and all interaction effects. The main disadvantage is that the design may contain too many choice situations (grows exponentially with the design dimensions,) that's why it is applicable only with a small number of attributes and levels, to avoid having the respondent answer a very large number of choice situations.
- Fractional factorial designs. There are many types of Fractional factorial designs, generated in order to reduce the choice situations. These designs only use a subset of choice situations from the full factorial design according to some criteria. Because only a fraction of the choice situations is used, not all effects can be measured, e.g., only main effects and a few interactions effects. In fact, as general rule concerning the number of choice situations that should be used, there is a lower bound, that is, the number of choice situations should at least be equal or greater than the number of parameters (excl. constants) plus 1. Types of fractional factorial designs are:
  - Orthogonal designs: The property consists in the independence of the attribute levels;
  - Optimal orthogonal designs: They optimize for the trade-offs in each choice situation;
  - (Bayesian) efficient designs [assumes prior parameter info]: Get maximum information from each choice situation by minimizing asymptotic standard errors;
  - Optimal choice probability designs [assumes prior parameter info]: Get maximum information from each choice situation using optimal choice probability values.

Hereafter, we will discuss in better detail the characteristics of the orthogonal design and the efficient design, being the two considered, respectively, the optimal and the best choice for the design.

By definition, orthogonality is a mathematical constraint requiring that all factors be statistically independent of one another, in other words, there must be zero correlations between attributes. Orthogonality requires at least equal distances between attribute levels. A necessary, but not sufficient, condition for orthogonality is that the sum of the products

---

between any two design columns equal zero (using orthogonal codes only.) A necessary and sufficient condition for orthogonality is that the correlations between each two attributes are zero (no matter the coding used.)

Orthogonality is a preferred condition when constructing designs for estimating linear models. Discrete choice models are nonlinear; hence orthogonality may not transfer into the data. This raises the question if orthogonality is such an important characteristic for stated choice experiments. Also, orthogonal designs do not take dominance into account. In fact, in order to assess dominance, utilities need to be computed for each alternative; this is only possible if one has (prior) knowledge about the parameter values. Having information on parameter priors (obtained for example from pilot studies, literature, etc.) can make the design more efficient by aiming to rule out dominant alternatives and maximize the information obtained from each choice situation. Current research focuses on these so-called efficient designs (which do not need to be orthogonal.) The efficiency of the design is implied by the small standard error of the parameters, which makes the estimates more reliable. Obviously, to assess the efficiency, in this case, we should conduct the survey first. Thus, the method to determine the efficiency of a design without conducting the survey is based on the assumption of a prior knowledge of the parameters values. Secondly, we need to approximate the variance-covariance matrix for the parameters estimates. Such approximation is made by using the asymptotic variance-covariance (AVC) matrix. There are two ways to derive the AVC matrix, one is by simulation and the other is analytical. The simulation is conducted throughout a pilot study, simulating a large sample, using any design. In this case it is possible to attain prior parameter estimation, yielding the AVC matrix. The other method is analytical and utilizes formulas to compute the AVC matrix directly, in particular, via the Fisher information matrix; in this case we need to make a “best guess” on the value of the parameters. Once having had the two pieces of information (i.e. AVC matrix and value of the parameters,) it is possible to generate an efficient experimental design. There are many types of efficient design (Random Design, D-efficient design, A-efficient design, etc.); the common practice is to generate different designs and then compare on the base of some efficiency indicators. Thus, for creating efficient design, we assume some known fixed prior parameters values. Whether the assumption on the true parameter values is actually false, the design is no longer efficient. Because, clearly, prior parameters are only known by approximation, we can indeed assume that the prior parameter values are only approximately known, using a prior parameter random distribution, instead. In this case, we think of Bayesian efficient designs.

## 4.2. Survey design

This research is based on the data collected through a questionnaire, conducted during the summer 2011, that is, right after the commercial season for the early potato was over.

The questionnaire is divided into four sections. The first section is introduction-aimed and targeted to the appraisal of the purchasing behaviors of consumers towards fruit and vegetables. This section asked explorative questions concerning the perception of quality of foods by consumers and their level of knowledge of attributes such as the certifications, as well as the importance they give to them.

The second section focuses exclusively on the early potato. Interviewed were briefly illustrated the characteristics of the product. Questions concern the frequency of consumption, the origin of potatoes purchased, the importance attached to certain attributes that define the quality. In this section, the respondents were asked to examine hypothetical early potato labels, all different in the level of attributes that are listed, and to choose the preferred option. These labels are the result of an experimental design, orthogonal with main effects. The choice sets generation method is “Complete Enumeration.” There are 2 versions of the questionnaire; because the design produced 10 total choice sets (5 per version.)

Each choice task includes 4 labels plus the no-choice option, and 6 attributes. The design utilized guarantees the following characteristics:

**Minimal Overlap:** Each attribute level is shown as few times possible in a single task. If an attribute’s number of levels is equal to the number of product concepts in a task, each level is shown exactly once.

**Level Balance:** Each level of an attribute is shown approximately an equal number of times.

**Orthogonality:** Attribute levels are chosen independently of other attribute levels, so that each attribute.

The technique used is that of the choice model, which will enable us to estimate the willingness to pay for each attribute. The emphasis is directed to the place of origin and sustainability.

The attributes and their levels are listed in the following table 4.1:

**Table 4.1**  
**The attributes and their levels**

Attributes	Levels
Price (€/kg)	a) 0,60 b) 1,00 c) 1,40
Country of Origin	a) Italian product;

Attributes	Levels
	<ul style="list-style-type: none"> <li>b) Product is not Italian, but with origin specified on the label;</li> <li>c) No information on the country of origin</li> </ul>
Production Technique	<ul style="list-style-type: none"> <li>a) Organic product;</li> <li>b) Product from eco-friendly agriculture (but not organic);</li> <li>c) Conventional Product</li> </ul>
Carbon Footprint (reduction in the emission of carbon dioxide)	<ul style="list-style-type: none"> <li>a) Product with the emission of carbon dioxide known</li> <li>b) Product with the emission of carbon dioxide unknown</li> </ul>
Ethical Certification	<ul style="list-style-type: none"> <li>a) Fair-Trade product</li> <li>b) No Fair-Trade Certification</li> </ul>
Packaging	<ul style="list-style-type: none"> <li>a) Packed in plastic;</li> <li>b) Biodegradable Packaging;</li> <li>c) Bulk</li> </ul>

The third part is tailored to detect the psychological characteristics of consumers interviewed, through the “Portrait Value Swarzy” questions. These questions help to classify respondents by "type,” and as a consequence, to obtain a more precise framework of consumers’ preferences according to their social and behavioral characteristics.

The fourth part concerns questions about the sustainability, as viewed in its threefold sense: environmental, economic and social. These questions are intended to assess the sensitiveness given to these aspects by consumers.

The questionnaire has been administered by GFK Eurisko to a representative and stratified sample of Italian consumers. The sample size is 1004 interviewees.

Descriptive statistics of the sample demographics are reported in the following tables:

	Obs	Mean	Std. Dev.	Min	Max
gender	1,004	1.86753	0.33917	1	2
age	1,004	52.54482	14.37467	19	86
children<=10	1,004	1.816733	0.387078	1	2

	Freq.	Percent	Cum.
North West	301	29.98	29.98
North East	199	19.82	49.8
Center	188	18.73	68.53

Table 4.3. Geographical Region

	Freq.	Percent	Cum.
South and Islands	316	31.47	100
Total	1,004	100	

Table 4.4. Education

	Freq.	Percent	Cum.
Graduated from University	151	15.04	15.04
Attended University	71	7.07	22.11
High school diploma	406	40.44	62.55
Attended High school	43	4.28	66.83
Middle school	225	22.41	89.24
Attended Middle school	11	1.1	90.34
Primary school	89	8.86	99.2
Attended Primary school	8	0.8	100
Total	1,004	100	

Table 4.5. Profession spouse / partner / partners

	Freq.	Percent	Cum.
Student	3	0.3	0.3
Housewife	226	22.51	22.81
Retired	105	10.46	33.27
Unemployed	21	2.09	35.36
Director / officer / board	15	1.49	36.85
Teacher / military	179	17.83	54.68
Worker / clerk / apprentice	62	6.18	60.86
Entrepreneur / freelancer	56	5.58	66.43
Tradesman / craftsman / farmer	26	2.59	69.02
Adjuvant / independent contractor	38	3.78	72.81
No spouse / does not say	273	27.19	100
Total	1,004	100	

Table 4.6. Occupation head of household

	Freq.	Percent	Cum.
Student	3	0.3	0.3
Housewife	32	3.19	3.49
Retired	354	35.26	38.75
Unemployed	22	2.19	40.94
Director / officer / board	56	5.58	46.51
Teacher / military	208	20.72	67.23
Worker / clerk / apprentice	146	14.54	81.77
Entrepreneur / freelancer	84	8.37	90.14
Tradesman / craftsman / farmer	59	5.88	96.02

	Freq.	Percent	Cum.
Adjuvant / independent contractor	27	2.69	98.71
Does not say	13	1.29	100
Total	1,004	100	

	Freq.	Percent	Cum.
Low	253	25.2	25.2
Medium	371	36.95	62.15
High	368	36.65	98.8
Does not say	12	1.2	100
Total	1,004	100	

Interwiees have been asked about their purchase habits. Specifically, we asked about the frequency with which they buy certain types of products and where. The frequency is measure on a 1-6 scale, where:

1= few times per week; 2= once a week; 3= few times a month; 4= once a month; 5= Less often than once a month; 6= never.

Variable	Obs	Mean	Std. Dev.	Min	Max
Grocery store	1,004	2.85	1.59	1	6
Fruit&Veg local shop	1,004	3.66	1.87	1	6
Discount store	1,004	4.71	1.64	1	6
Local market	1,004	4.28	1.80	1	6
Direct purchase from producers	1,004	4.69	1.68	1	6

Variable	Obs	Mean	Std. Dev.	Min	Max
Organic produce	1,004	4.56	1.55	1	6
Low environmental impact produce	1,004	4.42	1.65	1	6



Variable	Obs	Mean	Std. Dev.	Min	Max
Fair trade produce	1,004	4.89	1.45	1	6
Certified POD/TGI produce	1,004	4.24	1.64	1	6

Interviewees have been asked about their perception of quality for food products. Their assessment is measured on a 1-7 Lickert scale, where 1 means “absolutely not important” and 7 means “extremely important”.

Variable	Obs	Mean	Std. Dev.	Min	Max
<b>Taste</b>	1004	<b>6.57</b>	0.78	1	7
Apparence	1004	5.77	1.29	1	7
Packaging	1004	4.55	1.71	1	7
<b>No chemicals</b>	1004	<b>6.21</b>	1.17	1	7
<b>Italian Origin</b>	1004	<b>6.38</b>	1.09	1	7
Origin certification	1004	5.49	1.40	1	7
Price	1004	6.01	1.16	1	7
Bio Packaging	1004	5.56	1.49	1	7
Low Env Impact prod.	1004	5.61	1.40	1	7
Traceability	1004	5.75	1.38	1	7
Fair Trade	1004	5.32	1.54	1	7
Carbon footprint	1004	5.47	1.52	1	7
Local origin	1004	6.15	1.17	1	7

From this table we can observe that the most important aspect to determine quality for the consumers in the sample, on average, is the taste, the second is the domestic origin of the product, the third is the absence of chemical substances.

The following table shows consumers assessment of the several possible ways to acquire information **before** purchase, again in a Lickert scale:

Variable	Obs	Mean	Std. Dev.	Min	Max
EU Certification (POD, TGI)	1004	5.61	1.35	1	7
Organic Certification	1004	5.39	1.49	1	7
<b>Labeling</b>	1004	<b>6.04</b>	1.14	1	7
<b>Direct knowledge of the producer</b>	1004	<b>5.67</b>	1.45	1	7
Seller’s suggestion	1004	5.11	1.43	1	7

Variable	Obs	Mean	Std. Dev.	Min	Max
Private labels	1004	5.38	1.42	1	7

We can observe that the most import way to get informed about a product is, on average for our consumers, by reading the labels.

The following table shows the descriptive statistics for consumers' assessment of their consumption habits for fruit and vegetable, in Lickert scale:

Variable	Obs	Mean	Std. Dev.	Min	Max
The cheapest	1004	4.10	1.68	1	7
Convenience products, even if more expensive	1004	3.42	1.90	1	7
<b>An Italian Product</b>	1004	<b>6.11</b>	1.16	1	7
Local produce, price doesn't matter	1004	5.49	1.40	1	7
Private Labels	1004	4.19	1.73	1	7

From the table above we notice that, consistently, consumers in our sample declare that, on average, they tend to buy Italian products the most.

### 4.3 Analysis

#### Behavioral model: Random parameter logit and repeated choices

In discrete choice models, the decision maker is assumed to choose among  $J$  alternatives the one that provides the greatest utility. Models that can be obtained from this assumption are called random utility models (RUMs) and are derived as follows. When a decision maker, labeled  $n$ , faces a choice, each alternative yields the decision maker a certain level of utility. The utility that  $n$  obtains from alternative  $j$  is  $U_{nj}$ , with  $j=1, \dots, J$ . This utility is known to the decision maker but not by the researcher. The behavioral model is therefore assumed to be consistent with the choice of alternative  $i$ , if and only if  $U_{ni} > U_{nj} \forall j \neq i$ . Also, the researcher observes some attributes of the alternatives as faced by the decision maker, named  $x_{nj} \forall j$ , and some attributes of the decision maker,  $s_n$ , thus can specify a function that relates these observed factors to the decision maker's utility. This function is  $V_{nj} = V(x_{nj}, s_n) \forall j$ . Because of the aspects that the researcher does not observe, then  $V_{nj} \neq U_{nj}$ . Utility can be rewritten as  $U_{nj} = V_{nj} + \varepsilon_{nj}$ , where  $\varepsilon_{nj}$  captures the factors that affect utility but are not included in  $V_{nj}$ . The characteristics of  $\varepsilon_{nj}$ , such as its distribution, depend on the research specification of  $V_{nj}$ .

Our model is a stated choice model in which the decision maker faces repeated choices among a number of choice sets. The utility function is specified as  $U_{njt} = \beta'_n x_{njt} + \varepsilon_{njt}$ , with  $n: 1 \dots N$  that varies over respondents,  $j: 1 \dots J$  varies over the alternatives and  $t: 1 \dots T$  varies over the choice sets. The vector  $x_{njt}$  contains all the observed variables given by the attributes of the alternatives as faced by the decision maker. The vector  $\beta_n$  is a vector of unobserved coefficients; they are constant for each choice situation but, by varying over decision makers, represent each person's taste. They are random parameters and follow the population distribution  $f(\beta|\theta)$ , where  $\theta$  are the parameters of the distribution. Moreover,  $\varepsilon_{njt}$  is the random term, which is iid extreme value over people, alternative and choice situation. Let's now consider a single series of alternatives, one per choice situation,  $\mathbf{i} = i_1, \dots, i_T$ . The probability that each individual picks this sequence of choices depends on  $\beta$  and it is given by the product of standard logit formulas:

$$L_{ni}(\beta_n) = \prod_{t=1}^T \left[ \frac{e^{\beta'_n x_{ni_t t}}}{\sum_j e^{\beta'_n x_{nj_t t}}} \right] \quad (1)$$

The unconditional probability that person  $n$  chooses sequence  $\mathbf{i}$  is the integral of the conditional probability (1) over all possible values of  $\beta_n$ :

$$P_{ni}(\theta) = \int L_{ni}(\beta_n) f(\beta_n|\theta) d\beta_n \quad (2)$$

The ultimate goal is to estimate  $\theta$ , the population parameters, that is, the mean and covariance of  $\beta_n$ . In fact, in this model, tastes vary over people, and by knowing the population parameters, it will be possible to know the distribution of the individual parameters.

The probability estimation cannot be carried out via exact maximum likelihood, because integral (2) does not exist in closed form and cannot be calculated analytically. It needs to be approximated through simulation. The researcher specifies the functional form for the mixing distribution  $f(\beta_n|\theta)$ , and for any given value of  $\theta$ , a value of  $\beta_n$  is drawn from its distribution.  $L_{ni}(\beta_n)$  is calculated using every draw, thus the process is iterated for a number of draws and the average of all the  $L_{ni}(\beta_n)$  so obtained gives the approximate choice probability:

$$AP_{ni}(\theta) = 1/S \sum_{s=1}^S L_{ni}(\beta_n^{s|\theta})$$

Where  $S$  is the number of draws of  $\beta_n$ ,  $\beta_n^{s|\theta}$  is the  $s$ -th draw from  $f(\beta_n|\theta)$ , and  $AP_{ni}(\theta)$  is the simulated probability of individual  $n$ 's sequence of choices. The characteristics of  $AP_{ni}(\theta)$  concern: its unbiasedness by construction, in other words, it is an unbiased estimator for  $P_{ni}(\theta)$ ;

its variance is inversely related to  $S$ ; it is twice differentiable, which allows the maximization of the simulated log-likelihood function; it is strictly positive for any finite number of  $S$ , such that it is always defined. The idea is that the coefficient vector is given by  $\beta_n = b + \eta_n$ , where  $b$  is the population mean, and  $\eta_n$  is the stochastic deviation representing individual's tastes relative to the average taste in the population.

Discrete choice models are derived under the assumption of utility-maximizing behavior by the decision maker. However, it is worthwhile to point out that models derived from utility maximization can also be used to represent decision making that does not require utility maximization. Although the derivation assures that the model is consistent with utility maximization, it does not prevent the model from being consistent with other forms of behavior (Train, 2009.) In fact, one of the advantages of using a random parameter logit is that, by specifying the explanatory variables and density appropriately, not only the researcher can represent any utility-maximizing behavior, but also many forms of *non-utility maximizing* behavior.

Other advantages of using the random coefficients approach, as opposed to fixed parameters as in the standard logit, is that the restrictive property of “independence from irrelevant alternatives” is not displayed, and it allows for very general substitution patterns over alternatives and time, captured by the correlation matrix.

#### 4.3.1 Model estimation

This model has been used for several applications, ranging from transportation to recreation, since the seminal paper from Revelt and Train (1998.) Examples of the use of this model for the demand estimation of food related products are: Rigby and Burton (2003,) Cicia et al. (2002,) Alfnes (2004,) Scarpa and Del Giudice (2004,) Hu et al. (2005) and Mørkbak et al. (2011.)

The variables that enter the model are:

1. *Price of early potato*, as reported in table 4.1.

All the following variables have been codified as a dummy variable. Specifically, we have 3 or 2 dummies per level, as they appear in each label of the design.

2. *Country of origin*: 3 dummies, one per level;
3. *Production technique*: 3 dummies, one per level;
4. *Carbon footprint*: 2 dummies, one per level;
5. *Ethical Certification*: 2 dummies, one per level;

6. *Packaging*: 3 dummies, one per level;

We specified the price coefficient to be fixed while allowing the other coefficients to be random. The willingness to pay for each attribute follows therefore the same distribution as the coefficient of the attribute. We assigned to all non-price coefficients an independent normal distribution.

Table 4.8 provides the estimation results (main effects) for this model.

**Table 4.13. Mixed Logit with normally distributed random coefficients and price as fixed coefficient and Willingness To Pay (WTP) for each attribute**

Attribute	Mean	Std. Dev.	WTP(€/kg) Mean, s.d.
Price	-0.719	0.058	-
Not Italian- origin known	0.591 (0.066)	0.631 (0.094)	0.822, 0.877
Italian origin	2.236 (0.073)	1.45 (0.072)	3.11, 2.01
Eco-friendly	0.162 (0.055)	0.067 (0.163)	0.225, 0.093
Organic	0.285 (0.052)	0.053 (0.154)	0.396, 0.073
CO <sub>2</sub> emission known	0.409 (0.040)	0.321 (0.091)	0.568, 0.446
Fair Trade	0.390 (0.044)	0.552 (0.077)	0.542, 0.767
Plastic pack	0.404 (0.055)	0.521 (0.020)	0.564, 0.724
Bio pack	0.411 (0.053)	0.224 (0.188)	0.572, 0.311
Value of the Log-Likelihood at convergence			-6078.80
Standard errors in parentheses			

The willingness to pay is computed as the negative of the ratio between the attribute coefficient and the price coefficient. All the coefficients are significant at the 1% or better. The estimated standard deviations for most of the coefficients are highly significant, which implies that parameters do vary in the sample population. The estimated standard errors for the parameters Eco-Friendly and Organic labels are not significant, meaning that the taste for these attributes tend not to vary in our sample. The sizes of the estimated standard deviations are all reasonable

relative to the estimated means. For example, the distribution of the Italian origin coefficient has an estimated mean of 2.24 and an estimated standard deviation of 1.45. On the base of the estimated price coefficient, the model indicates that the willingness to pay for the presence of the indication of Italian origin on the label, holding all the other variables constant) is normally distributed in the population, with mean of €3.11 and standard deviation of €2.01. The Italian origin of the product yields the highest WTP. The WTP for the information on about an origin different from the Italian one is €0.82, compared to no information on the origin. The attribute “organic” is worth to the consumers €0.28, while “eco-friendly” only about €0.16, as opposed to a conventional product without any labeling on the production technique. Knowing the emission of CO<sub>2</sub> is valued €0.41, and the label “Fair-trade” is valued €0.39. Consumers are willing to pay €0.40 for a plastic packaging, while they would pay €0.41 for a biodegradable packaging, but they would prefer a packaging over the bulk product.

#### **4.4 Results interpretation**

From the results of the main effect model we can infer that Italian consumers assign great importance to the country of origin. As other study demonstrated, for Italians consumers the domestic origin of a food product is also the warranty for other characteristics, such as quality and safety. These embedding attributes create a sort of “home bias” in the estimate, because suddenly, for the consumers, all that matters is the Italian origin. With this belief, they are actually paying not only for the information on the origin itself, but also for other valuable characteristics. For this reason, the values of WTP for the Italian origin in stated preferences studies tend to be high. In general, Italian consumers want to be informed on the origin of their food, as we can see from the WTP they assign to “origin known”.

Another aspect that only lately has become of a concern is the emission of CO<sub>2</sub> along the distribution chain. The certification related to it is known as “carbon footprint”. This is closely related to both the country of origin and the method of production, and we would aspect that people that assign a positive WTP to the Italian origin and to the organic product, would also do for the information on the CO<sub>2</sub> emission. By introducing this attribute we also wanted to test consumers’ reaction about this aspect, which has been less discussed than the others.

Nonetheless, we got a positive WTP also for this attribute, fact that makes us conclude for a positive attitude towards the introduction of distribution chain that would impact less on the environment.

Furthermore, consumers prefer a packed product to a bulk product, being willing to pay a premium for it. As a consequence, it should be commercialized in a biodegradable package, given that it is the type of packaging worth more than the others.

Summarizing, the improvements that should be introduced in the early potato supply chain concern, in a first place, a traceability system able to certify the origin of the product. Indeed, Italian producers would benefit by adopting this system, given that consumers are willing to pay significantly more for the Italian product. The type of production method seems to be relatively less important than the other attributes. Finding new distribution ways, less impacting on the environment, might be worthwhile, although an estimate of the costs associated to that would be needed. Consumers also assign a significant premium to the ethics of production, meaning the safety of the workplace and the fair reward of labor.

#### **4.5 Concluding Remarks**

This analysis has allowed the estimation of the willingness to pay for specific characteristics of an Italian agro-industrial product. The product is the early potato, which is typically produced in Southern Italy, and many ways to improve its production and supply management have been considered for the assessment of a potential premium consumers would attribute to it. The willingness to pay estimates are normally expressed as measures of central tendency of a prior distribution, as the mean or median of the estimated values, while this model of panel data will be used to identify the determinants of individual-specific estimates of willingness to pay. In comparison with standard methods used to incorporate the individual specific variables in the analysis of discrete-choice experiment, this approach is able to add analytical power to explain the estimates of wealth.

The results obtained allow us to conclude that there is a positive attitude of consumers toward a traceability program that would certify attributes developing along the distribution chain for the early potato. In particular, there is a positive willingness to pay to the information concerning the place of origin. Italian consumers are willing to pay more for information on the origin of products, and significantly more for an Italian product. Other characteristics of the production and distribution that generated a positive willingness to pay are the organic method of production and certification of carbon footprint. The approach used was to assess the economic viability of this program. This can be considered very useful in obtaining an efficient program of voluntary traceability.

This research has allowed:

- Providing a better understanding of the value system of traceability for consumers;
- Estimating the willingness' to pay for several attributes of the product, that can be considered improvements in the supply chain;
- Identifying the most desirable level of information (traceability of operational detail) for a specific product;

- Understanding the characteristics of consumers and how the market is interfaced with the producers, to develop more effective marketing strategies.

Politicians and industry may be interested to information released by this study to improve their strategies and create synergies to increase efficiency in the food system. Although traceability is a key component of any self-respecting food chain where food security and other attributes of confidence, it is expensive to implement (USAIP (2004,) Sparks (2002,) and Buhr (2002).)

Therefore, measuring the attitudes of consumers about the traceability can determine the political support for these systems and the costs to implement them can be shared between the public and private sectors.

## CONCLUSION

The traceability system in the agro-food supply chain, as well as the other food safety tools, can be viewed as performing a double task. On one hand, government interventions are intended to ensure the hygiene and healthiness of processes; on the other hand, the voluntary traceability can be used as marketing tool by manufacturers and processors for the differentiation of its products. Traceability is, indeed, essential to increase the level of information about certain quality attributes of products, of which some might only be ethical attributes, so do not necessarily have to do with food security as such, but be characteristics for which modern society is willing to pay: for example, the safety of the workplace or the protection of animal welfare. In fact, the need for traceability, from the commercial point of view, stands together with the presence of confidence attributes, i.e. those attributes that cannot be verified even after consumption. Among confidence attributes, the one we especially focused on here is the place of origin of food products. The literature on place of origin typically explores the question of how the image of the product's region of origin is used by the consumer as a quality cue. What are the components of this image? How is the origin perceived? The literature cited in the first part of this study suggests that this image is multidimensional (Dekhili et al., 2009.) In order to guarantee the origin of products there is need for a system of traceability implemented in the supply chain, coupled with the labeling, so that the source information can be transmitted to the consumer. The problems discussed in the literature that addresses this issue, deal with the value attributed by the consumer's place of origin of products compared to other attributes, any market failures related to the presence / absence on the label (i.e., moral hazard,) and the commercial implications (given that, however, adhering to this system has its costs, for example, structural adjustments for the company.)



Given the complexity of the environment in which the European legislation on food safety operates and the need to satisfy a number of "key drivers" of success, we have applied the SWOT analysis scheme to achieve the most advanced level of analysis possible. Such analysis has allowed highlighting strengths and weaknesses, opportunity and threats for the European food system. The SWOT analysis methodology, analysis of policies and legislation, may, in general, be a useful tool to support decision-making and operational activities of public and private stakeholders.

The results, in fact, help assess the actual effectiveness of tools in place, and the identification of appropriate strategies to deal with old and new challenges that the agro-food sector is facing. The signals that traceability, coupled with labeling, releases to consumers, are differently perceived. As a consequence, depending on the meaning assigned to information, consumers' willingness to pay varies. That is one of the reasons why in the literature there is no consensus on how much each attribute is worth to consumers. In order to shed some light on the motivations that lead to different estimates, we conducted a meta-analysis on the body of literature on consumer behavior with respect to meat traceability. This study allowed us to analyze consistency across studies and control for factors thought to drive variations in WTP estimates. Results from this study help summarize effectively the extant literature on consumers' WTP for traceability and permit us to make inferences that are not conditional on the results of one particular study.

Subsequently, we conducted our marketing analysis on a specific product. We aimed at evaluating the worthiness of some improvements that could take place in the supply chain. Such improvements consist of, specifically, the method of production (i.e., organic,) the distribution typology (i.e., carbon footprint,) the respect of certain ethics (i.e., fair trade,) the type of packaging, and the information concerning the origin. The product is the early potato, which cultivation is concentrated mainly in southern regions of Italy, and especially in restricted areas of the South, such to become almost territorial districts that bind their agricultural economy to this crop. This study permitted us to obtain estimates of the premium consumers would assign to the aforementioned attributes, and to assess the preference of groups of consumers sorted by some demographic variables. The results can be used to enhance the market penetration of this product and inform on which possible advantages these improvements in the organization of the supply chain could bring about for producers.

## REFERENCES

- Aaker D.A., 1991. *Managing brand equity: Capitalizing on the value of a brand name*. New York: Free Press.
- Alfnes F., 2004. "Stated Preferences for imported and hormone-treated beef: Application of a mixed logit model," *European Review of Agricultural Economics*, Vol. 31 (1) pp. 19-37.
- Alfnes F., Rickertsen K., 2003. "European Consumers' Willingness to Pay for U.S. Beef in Experimental Auction Markets," *American Journal of Agricultural Economics*, Vol. 85 (2) pp. 396-405.
- Anderson J.R., Bower G.H., 1973. "A propositional theory of recognition memory," *Memory & Cognition*, Volume 2, Number 3, pp. 406-412.
- Angulo A.M., Gil J.M., 2007. "Risk perception and consumer willingness to pay for certified beef in Spain," *Food Quality and Preference*, Vol. 18 pp. 1106–1117.
- Bailey D., Robb J., Checketts L., 2005. "Perspectives on Traceability and BSE Testing in the U.S. Beef Industry," *CHOICES- The magazine of food, farm, and resource issues*, publication of the American Agricultural Economics Association, Vol. 20 (4) pp. 293-297.
- Beath J., Katsoulacos Y. (1991) "The Economic Theory of Product Differentiation" Cambridge University Press, New York.
- Berends G., Carreño I., 2005. "Safeguards in food law – ensuring food scares are scarce" *European Law Review* Vol. 30, pp. 386–405.
- Bernués A., Olaizola A., Corcoran K., 2003. "Labelling information demanded by European consumers and relationships with purchasing motives, quality and safety of meat," *Meat Science*, Vol. 65, Issue 3, pp. 1095-1106.
- Bolliger C., Réviron S., 2008. "Consumer Willingness to Pay for Swiss Chicken Meat: An In-store Survey to Link Stated and Revealed Buying Behaviour," 12th Congress of the European Association of Agricultural Economists – EAAE 2008.
- Buzby J.C., 2001. "Effects of food safety perceptions on food demands and global trade," in *Changing structure of global food consumption and trade*, Report ERS/USDA (pp. 55–66.) Washington, DC: USDA
- Caracciolo F., Cembalo L., Cicia G., and Del Giudice T., 2010. "European preferences for pork product and process attributes: a generalized random utility model for ranked outcome" paper presented at 4<sup>th</sup> International European Forum on "System Dynamics and Innovation in Food Networks," February 08 – 12, 2010, Innsbruck-Igls, Austria.
- Checketts L.T., 2006. *Two-Step Tracking, Traceability, Or BSE Testing: Which Do United States Beef Consumers Prefer?* Master of Business Administration in International Food and Agribusiness, Royal Agricultural College in Cooperation with Utah State University. [gradworks.umi.com](http://gradworks.umi.com)
- Cicia G., Del Giudice T., Scarpa R., 2002. "Consumers' perception of quality in organic food: A random utility model under preference heterogeneity and choice correlation from rank-orderings," *British Food Journal*, Vol. 104. No. 3/4/5, pp: 200-213.

- Cicia G., Del Giudice T., Scarpa R., 2006. "Una stima dell'impatto sul benessere del consumatore italiano derivante da un'imperfetta tracciabilità dell'olio extra-vergine di oliva," *Rivista di Economia Agraria* No.4, pp. 593-610.
- Coppola A., 2000. "Il problema della valutazione economica dell'intervento pubblico per la qualità," in *Qualità e valorizzazione nel mercato dei prodotti agroalimentari tipici*, pp. 61-79, Collana "Manlio Rossi-Doria," Napoli: Edizioni Scientifiche Italiane.
- de Stefano F., 2007. "Problematiche economico-sociali dei pesi avanzati: intervento pubblico sulla sicurezza alimentare" XLIV Convegno Sidea Taormina, 8 - 10 novembre 2007.
- de Stefano F., Del Giudice T., 2005. "La frutticoltura italiana e nuove strategie competitive," collana *working paper* n. 3/2005, Centro per la Formazione in Economia e Politica dello Sviluppo Rurale.
- De Vlietan A., 1989. *Appellation d'Origine*, Masson, Paris.
- Dekhili S., d'Hauteville F., 2009. "Effect of the region of origin on the perceived quality of olive oil: An experimental approach using a control group," *Food Quality and Preference*, Vol. 20, pp. 525–532.
- Dekhili S., Sirieix L., Cohen E., 2011. "How consumers choose olive oil: The importance of origin cues," *Food Quality and Preference* Vol. 22, pp. 757–762.
- Dickinson D.L, Hobbs J.E., Bailey D., 2003. "A Comparison of US and Canadian Consumers' Willingness To Pay for Red-Meat Traceability" , Paper presented at the American Agricultural Economics Association Annual Meetings, Montreal, Canada, July 27-30, 2003.
- Dickinson D.L. and Bailey D., 2005. "Experimental evidence on Willingness to Pay for red meat traceability in the United States, Canada, The United Kingdom, and Japon," *Journal of Agriculture and Applied Economics*, Vol. 37 (3) pp. 537-548.
- Dickinson D.L., Bailey D., 2002. "Meat Traceability: Are U.S. Consumers Willing to Pay for It?," *Journal of Agricultural and Resource Economics*, Vol. 27(2) pp. 348-364
- Dickinson, D. L. and D. Bailey, 2003. "Willingness-to-pay for information: Experimental evidence on product traceability from the U.S.A., Canada, the UK and Japan," *Economic Research Study Paper ERI 2003–12*, Utah State University, Logan, UT.
- Enneking U., 2004. "Willingness to pay for safety improvements in the German meat sector: the case of the Q&S label," *European Review of Agricultural Economics*, Vol. 31 (2) pp. 205-223.
- FAO, 2006. *Strengthening national food control systems. Guidelines to assess capacity building needs*, Roma, Italia. (<ftp://ftp.fao.org/docrep/fao/009/a0601e/a0601e00.pdf>)
- FAO, 2007. *Strengthening national food control systems. A quick guide to assess capacity building needs*, Roma, Italia (<ftp://ftp.fao.org/docrep/fao/010/a1142e/a1142e00.pdf>)
- Farley J.U., Lehmann D.R., 1994. "Cross-National 'Laws' and Differences in market Response," *Management Science*, Vol. 40 pp. 111-22.
- Fisher C., Shonberg S., 2007. "Assessing the Competitiveness Situation of EU Food and Drink Manufacturing Industries: An Index-Based Approach," *Agribusiness*, Vol. 23, No. 4, pp. 473–495.

Gambelli D., 2007. “Nota metodologica: l’uso dei dati qualitative nelle analisi socio-economiche territoriali,” in *Le politiche per l’agricoltura biologica in Italia –casi studio nazionali e regionali –* a cura di R. Zanoli, Franco Angeli Editore, Milano.

Giraud G., Halawany R., 2006. “Consumers’ Perception of Food Traceability in Europe,” Paper prepared for presentation at the 98 th EAAE Seminar *Marketing Dynamics within the Global Trading System: New Perspectives*, Chania, Crete, Greece as in: 29 June – 2 July, 2006.

Golan E., Krissoff B., Kuchler F., Kalvin K., Price G., 2004. “Traceability in the US Food Supply: Economic Theory and Industry Studies,” Washington, D.C.: U.S. Department of Agriculture- Economic Research Service.

Grunert K.G., 2005. “Food quality and safety: Consumer perception and demand,” *European Review of Agricultural Economics*, Vol. 32 (2) pp. 369-391.

Grunert K.G., 2005. “Food quality and safety: Consumer perception and demand,” *European Review of Agricultural Economics*, Vol. 32, pp. 369–391.

Henson S., Caswell J., 1999. “Food safety regulation: an overview of contemporary issues,” *Food Policy*, Vol. 24, pp. 589–603.

Henson, S. J., 1997. “Costs and Benefits of Food Safety Regulations,” OECD, Paris.

Hill T., Westbrook R., 1997. “SWOT Analysis: It’s Time for a Product Recall” *Long Range Planning*, Vol. 30, No. 1, pp. 46-52.

Hobbs J.E., 2003. “Traceability and country of origin labelling,” Presented at the Policy Dispute Information Consortium 9th Agricultural and Food Policy Information Workshop, Montreal, April 25 2003.

Hobbs J.E., Bailey D., Dickinson D.L., Haghiri M., 2005.”Traceability in the Canadian Red Meat Sector: Do Consumers Care?,” *Canadian Journal of Agricultural Economics*, Vol. 53 pp. 47–65.

Hobbs, J.E., 2006. “Liability and Traceability in Agri-Food Supply Chains.” In Ondersteijn, CJM, Wijnand, JHM, Huirne, RBM and van Kooten, O, editors. *Quantifying the Agri-Food Supply Chain*. Netherlands: Springer, (2006):85-100.

Hooker H., 1999. “Food safety regulation and trade in food products,” *Food Policy*, Vol. 24 , pp. 653–668

<http://it.nielsen.com/reports/index.shtml>

<http://www.ismea.it>

Hu W., Veeman M.M, Adamowicz W.L., 2005. “Labelling Genetically Modified Food: Heterogeneous Consumer Preferences and the Value of Information,” *Canadian Journal of Agricultural Economics/Revue canadienne d'agroeconomie*, Vol. 53, Issue 1, pp. 83–102.

Huffman C., Houston M.J., 1993. “Goal-oriented experiences and the development of knowledge,” *Journal of Consumer Research*, Vol. 20, No. 2, pp. 190-207.

Jacobsen J.B., Hanley N., 2009. “Are there income effects on global willingness to pay for biodiversity conservation?,” *Environmental and Resource Economics* (In press.)

- Kapferer, J.N., 1992. *Strategic brand management, new approaches to creating and evaluating brand equity*. London: Les Editions d'Organisation.
- Krapohl S., 2004. "Credible commitment in non-independent regulatory agencies: a comparative analysis of the European agencies for pharmaceuticals and foodstuffs" *European Law Journal* Vol.10, N.5, pp. 518–538.
- Leland H.E., 1979. "Quacks, Lemons, and Licensing: A Theory of Minimum Quality Standards," *Journal of Political Economy*, Vol. 87, pp. 1328-1346.
- Lewis J., Linzer D., 2005. "Estimating Regression Models in which the Dependent Variable Is
- Loader R., Hobbs J.E., 1999. "Strategic responses to food safety legislation," *Food Policy*, Vol. 24, pp. 685–706.
- Loomis, J.B., White, D.S., 1996. "Economic benefits of rare and endangered species: summary and meta-analysis," *Ecological Economics*, Vol. 18 (3) pp.197–206.
- Loureiro L.M., Umberger W.J., 2003."Consumer Response to the Country-of-Origin Labeling Program in the Context of Heterogeneous preferences," Paper prepared for presentation at the American Agricultural Economics Association Annual Meeting, Montreal, Canada, July 27-30, 2003.
- Loureiro L.M., Umberger W.J., 2003."Estimating Consumer Willingness to Pay for Country-of-Origin Labeling," *Journal of Agricultural and Resource Economics* Vol. 28 (2) pp. 287-301.
- Loureiro L.M., Umberger W.J., 2004. "A Choice Experiment Model For Beef Attributes: What Consumer Preferences Tell Us," Selected Paper Presented at the American Agricultural Economics Association Annual Meetings, Denver, Colorado, August 1-4, 2004.
- Loureiro L.M., Umberger W.J., 2005." Assessing Consumer Preferences for Country-of-Origin Labeling," *Journal of Agriculture and Applied Economics*, Vol.37 (1) pp. 49-63.
- Loureiro L.M., Umberger W.J., 2007."A choice experiment model for beef: What US consumer responses tell us about relative preferences for food safety, country-of-origin labeling and traceability," *Food Policy* Vol.32 pp. 496–514.
- Lusk J.L., Jamal M., Kurlander L., Roucan M., Taulman L., 2005. "A Meta Analysis of Genetically Modified Food Valuation Studies," *Journal of Agricultural and Resource Economics*, Vol. 30 (1) pp. 28-44.
- Lusk J.L., Roosen J., Fox J.A., 2003. "Demand for Beef from Cattle Administered Growth Hormones or Fed Genetically Modified Corn: A Comparison of Consumers in France, Germany, the United Kingdom, and the United States," *American Journal of Agricultural Economics*, Vol. 85 (1) pp. 16-29.
- Maddala, G. S. 2001. *Introduction to Econometrics*, 3rd ed. West Sussex: John Wiley and Sons.
- McEvoy D.M., Souza-Monteiro D.M., 2008. "Can an Industry Voluntary Agreement on Food Traceability Minimize the Cost of Food Safety Incidents?," [ageconsearch.umn.edu](http://ageconsearch.umn.edu) .
- Mennecke B.E., Townsend A.M., Hayes D.J., Lonergan S.M., 2007. "A study of the factor that influence consumer attitudes toward beef products using the conjoint market analysis tool," *Journal of Animal Science*, Vol. 85 pp. 2639-2659.

- Menozzi D., Mora C., Faioli G., Chrysochoidis G., Kehagia O., 2009. "Rintracciabilità, qualità e sicurezza alimentare nella percezione dei consumatori," XVII Convegno Annuale S.I.E.A. Firenze, 25-27 giugno 2009.
- Meuwissen M.P.M., Van Der Lans I.A., Huirne R.B.M., 2007. "Consumer preferences for pork supply chain attributes," *NJAS Wageningen Journal of Life Sciences*, Vol. 54 (3) pp.293-312.
- Mørkbak M.R., Christensen T., Gyrd-Hansen D., Olsen S.B., 2011. "Is embedding entailed in consumer valuation of food safety characteristics?," *European Review of Agricultural Economics*, Vol. 38, Issue 4, pp. 587-607.
- Nalley L.L., Hudson D., Parkhurst G., 2006. "Consistency of consumer valuation under different information sets: An experimental auction with sweet potatoes" *Journal of Food Distribution Research* 37 (3,) 56-67.
- Panagiotou G., 2003. "Bringing SWOT into focus" *Business Strategy Review*, Vol. 14, No. 2, pp. 8-10.
- Porter M.E., 1980. "Competitive Strategy: Techniques for Analysing industry and Competitors," The Free Press, New York.
- Porter M.E., 1985. "Competitive Advantage: Creating and Sustaining Superior Performance," The Free Press, New York.
- Porter M.E., van der Linde C., 1995. "Toward a New Conception of the Environment-Competitiveness Relationship," *The Journal of Economic Perspectives*, Vol. 9, No. 4, pp. 97-118.
- Ragona M., Mazzocchi M., 2008. "Food safety regulation, economic impact assessment and quantitative methods." *Innovation: The European Journal of Social Science Research*. Vol. 21, No. 2, pp. 145-158.
- Revelt D., Train K., 1998. "Mixed Logit with Repeated Choices: Households' Choices of Appliance Efficiency Level," *Review of Economics and Statistics*, Vol. 80, No. 4, Pages 647-657.
- Richardson L., Loomis J., 2008. "The Total Economic Value of Threatened, Endangered and Rare Species: An Updated Meta-Analysis," *Ecological Economics*, Vol. 68 (5) pp. 1535
- Rigby D., Burton M., 2003. "Capturing Preference Heterogeneity in Stated Choice Models: A Random Parameter Logit Model of the Demand for GM Food," The University of Manchester, School of Economic Studies, Discussion Paper Series.
- Roosen J, Lusk J.L., Fox J.A., 2001. "Consumer demand for and attitudes toward alternative beef labeling strategies in France, Germany, and the UK," *American Agricultural Economics Association Annual Meeting*, Chicago, IL, August 5- August 8, 2001.
- Sánchez M., Sanjuán A.I., Akl G., 2001. "The influence of personal attitudes and experience in consumption on the preferences for lamb and veal," *Presentado en el 71th European A. of Agricultural Economics Seminar*, Zaragoza (España,) 19-20 Abril, 2001.
- Sarter S., Sarter G., Gilabert P., 2010. "A Swot analysis of HACCP implementation in Madagascar" *Food Control* Vol.21, pp. 253-259.
- Scarpa R., Del Giudice T., 2004. "Market Segmentation via Mixed Logit: Extra-Virgin Olive Oil in Urban Italy," *Journal of Agricultural & Food Industrial Organization*, Vol. 2, Issue 1.

Schellink D.A., 1983. "Cue Choice As a Function of Time Pressure and Perceived Risk," *Advances in Consumer Research*, Vol. 10 (eds.) Provo, Utah: Association for Consumer Research, pp. 470-475.

Sheth J.N., Newman B.I., Gross B.L., 1991. "Why we buy what we buy: A theory of consumption values," *Journal of Business Research*, Vol. 22, Issue 2, pp. 159-170.

Smith, V., G. Suchanek, and A. Williams. 1988. "Bubbles, Crashes, and Endogenous Expectations in Experimental Spot Asset Markets." *Econometrica* 32:122–136.

Sodano V., 2006. "Elementi di politica della sicurezza alimentare" ciclostilato. Portici (NA.)  
<http://wpage.unina.it/vsodano/food%20safety.pdf>

Steiner B., Yang J., 2007. "A comparative analysis of US and Canadian consumers' perceptions towards BSE testing and the use of GM organisms in beef production: Evidence from a choice experiment," Selected Paper prepared for presentation at the American Agricultural Economics Association Annual Meeting, Portland, OR, July 29-August 1, 2007.

Szajkowska A., 2009. "From mutual recognition to mutual scientific opinion? Constitutional framework for risk analysis in EU food safety law" *Food Policy*, Vol.34, pp. 529-538.

Train K., 2007. "Discrete choice methods with simulation," Cambridge University Press.

Ubilava D., Foster K., 2009. "Quality certification vs. product traceability: Consumer preferences for informational attributes of pork in Georgia," *Food Policy*, Vol. 34 pp. 305–310.

Umberger W.J., D.D.T. McFadden, Smith A.R., 2009. "Does Altruism Play a Role in Determining U.S. Consumer Preferences and Willingness to Pay for Natural and Regionally Produced Beef?," *Agribusiness*, Vol. 25 (2) pp.268–285.

Umberger W.J., Feuz D.M., Calkins C.R., Sitz B.M., 2003. "Country-of-Origin Labeling of Beef Products: U.S. Consumers' Perceptions," Paper Presented at the 2003 FAMPS Conference: "Emerging Roles for Food Labels: Inform, Protect, Persuade" Washington D.C. March 20-21, 2003.

Vairo D., Zanolli R., Häring A.M., Dabbert S., 2005. "Assessment of policies and development of policy recommendations for organic farming: a cross-country synthesis of national policy workshops in 11 European countries," Report EU-CEEOPF.

Van der Lans I.A., Van Ittersum K., De Cicco A., 2001. "The role of the region of origin and EU certificates of origin in consumer evaluation of food products," *European Review of Agricultural Economics*, Vol. 28, No.4, pp. 451–477.

Van Rijswijk W., Frewer L. J., 2008. "Consumer perceptions of food quality and safety and their relation to traceability," *British Food Journal*, Vol. 110, Issue 10.

Varlegh P.W.J., Steenkamp J.E.M., 1999. "A review and meta-analysis of country of origin research," *Journal of Economic Psychology*, Vol. 20 pp. 521-546

Vermeulen B., Goos P., Vandebroek M., 2010. "Obtaining more information from conjoint experiments by best–worst choices," *Computational Statistics & Data Analysis*, Vol. 54, Issue 6, pp. 1426-1433.

Williamson O., 1996 , *The Mechanisms of Governance*, NY, Oxford U. Press.

Wilson W.W., Xavier H., Bruce L.D., 2008. "Costs and Risks of Conforming to EU Traceability Requirements: The Case of Hard Red Spring Wheat," *Agribusiness*, Vol. 24, No. 1, pp. 85–101.

---

## **APPENDIX**

MINISTERO DELLE POLITICHE AGRICOLE ALIMENTARI E FORESTALI  
DIREZIONE GENERALE DEI SERVIZI AMMINISTRATIVI  
GESTIONE EX CENTRO PER LA FORMAZIONE IN ECONOMIA E POLITICA DELLO SVILUPPO RURALE DI  
PORTICI

QUESTIONARIO PATATA PRECOCE

**PROGETTO TIPIPAPA**

LUGLIO 2011



\*\*\*\*\*  
\*\*\*\*\*

*Gentile Signora* le stiamo conducendo un sondaggio relativo ai prodotti agroalimentari di qualità e le saremmo molto grati se accettasse di rispondere ad alcune domande su questo argomento.

\*\*\*\*\*  
\*\*\*\*\*

**Parliamo di prodotti ortofrutticoli freschi**

**A1.** Indichi, per favore, con che frequenza effettua i suoi acquisti di frutta e verdura presso i seguenti luoghi di vendita:

	Più volte a settimana	1 volta a settimana	2-3 volte al mese	1 volta al mese	Meno spesso	Mai
Supermercato	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Negozio specializzato (frutta&verdura)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Discount	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mercato rionale	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Acquisto diretto dai produttori	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Da gruppi di acquisto	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**A2.** Indichi, per favore, con che frequenza fa acquisti di frutta e verdura provenienti

	Più volte a settimana	1 volta a settimana	2-3 volte al mese	1 volta al mese	Meno spesso	Mai
Da produzioni biologiche ( <u>sostituisce</u> le sostanze chimiche con sostanze naturali permesse dall'Unione Europea)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Da produzioni a basso impatto ambientale, ma non biologiche ( <u>riduce</u> le sostanze chimiche impiegate, per esempio produzioni integrate)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Da produzioni equo-solidali (rispettose dei diritti dei lavoratori, e capaci di remunerare correttamente il lavoro)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Da produzioni DOP e IGP (prodotti tipici il cui legame con uno specifico territorio è certificato dall'Unione Europea)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

**A2.a** (Se ha risposto “mai” ad almeno ad almeno un punto della domanda A2) Per quale motivo non acquista mai frutta e verdura provenienti da...(far apparire a video i prodotti con frequenza “mai”) \_\_\_\_\_

**A3.** Di seguito sono elencate alcune caratteristiche che definiscono la qualità di un prodotto ortofrutticolo. La prego di indicare quanto ognuna di esse è importante **per Lei** per definire un prodotto ortofrutticolo di qualità, utilizzando un punteggio da 1 a 7, in cui “1” significa che per Lei è “del tutto privo di importanza”, mentre “7” significa che per Lei è “estremamente importante”.

	Del tutto <u>privo di importanza</u>	Estremamente <u>importante</u>
a/ Sapore, gusto .....	1 .....2 .....3 .....4 .....5 .....6 .....7	
b/ Odore .....	1 .....2 .....3 .....4 .....5 .....6 .....7	
c/ Aspetto, colore del prodotto.....	1 .....2 .....3 .....4 .....5 .....6 .....7	
d/ Aspetto confezione.....	1 .....2 .....3 .....4 .....5 .....6 .....7	
e/ Assenza di sostanze chimiche di sintesi .....	1 .....2 .....3 .....4 .....5 .....6 .....7	
f/ Origine italiana/tedesca del prodotto.....	1 .....2 .....3 .....4 .....5 .....6 .....7	
g/ Certificazioni di origine (DOP, IGP) .....	1 .....2 .....3 .....4 .....5 .....6 .....7	
h/ Il prezzo .....	1 .....2 .....3 .....4 .....5 .....6 .....7	
i/ Confezione biodegradabile/riciclabile.....	1 .....2 .....3 .....4 .....5 .....6 .....7	
l/ Utilizzo di tecniche di produzione a basso impatto ambientale .....	1 .....2 .....3 .....4 .....5 .....6 .....7	
m/ Tracciabilità (conoscenza) delle diverse fasi della produzione .....	1 .....2 .....3 .....4 .....5 .....6 .....7	
n/ Utilizzo di manodopera equamente remunerata (equo-solidali).....	1 .....2 .....3 .....4 .....5 .....6 .....7	
o/ Modalità di trasporto che minimizzano le emissioni di anidride carbonica (CO2)	1 .....2 .....3 .....4 .....5 .....6 .....7	
p/ Origine locale del prodotto.....	1 .....2 .....3 .....4 .....5 .....6 .....7	

**A4.** Di seguito sono elencati alcuni aspetti che possono risultare utili al fine di aumentare il suo livello di informazione e di fiducia rispetto ad un prodotto ortofrutticolo **prima** dell’acquisto. Per favore indichi quanto ognuna di esse è importante **per Lei** utilizzando un punteggio da 1 a 7 in cui “1” significa che per Lei è “del tutto privo di importanza”, mentre “7” significa che per Lei è “estremamente importante”.

	Del tutto <u>privo di importanza</u>	Estremamente <u>importante</u>
a/ Certificazione di origine rilasciata dall’Unione Europea (DOP e IGP) .....	1 .....2 .....3 .....4 .....5 .....6 .....7	
b/ Certificazione biologica .....	1 .....2 .....3 .....4 .....5 .....6 .....7	
c/ Informazioni in etichetta .....	1 .....2 .....3 .....4 .....5 .....6 .....7	
d/ Conoscenza diretta del produttore.....	1 .....2 .....3 .....4 .....5 .....6 .....7	
e/ Consiglio del venditore .....	1 .....2 .....3 .....4 .....5 .....6 .....7	
f/ Marchio e certificazioni operate dal distributore		

(prodotti con amore coop, filiera controllata conad ecc.) .....1 .....2 .....3 .....4 .....5  
 .....6 .....7

**A5.** Pensando **esclusivamente** all'acquisto di prodotti **ortofrutticoli freschi** la prego di indicare in quale misura Lei è d'accordo o in disaccordo con ciascuna delle seguenti frasi utilizzando un punteggio da 1 a 7 in cui 1 significa che "Lei non è per niente d'accordo" e 7 significa che "Lei è pienamente in accordo."

<i>Quando scelgo un prodotto di frutta o verdura fresca</i>	<b>Per niente d'accordo</b>							<b>Pienamente d'accordo</b>
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	
<b>.1. compro generalmente il più economico</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>.2. compro generalmente un prodotto già lavato, tagliato e pronto all'uso, anche se costa di più</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>.3. compro generalmente un prodotto italiano/tedesco</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>.4. nel caso siano presenti, leggo attentamente le etichette e mi faccio guidare dalle informazioni</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>.5. prediligo generalmente prodotti locali, indipendentemente dal prezzo</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>.6. prediligo generalmente prodotti a marchio del distributore (Coop, Lidl, Carrefour.....)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Se penso ai prodotti ortofrutticoli  
credo che:

- |   |                          |                          |                          |                          |                          |                          |                          |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| .7. i prodotti italiani/tedeschi siano più sicuri di quelli importati   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| .8. Consumare ortaggi prodotti nella propria nazione permette di supportare l'agricoltura nazionale                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| .9. Il luogo d'origine dei prodotti agricoli influisce sul loro sapore, odore ed altre caratteristiche organolettiche | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| .10. Acquistare prodotti agricoli nazionali riduce l'inquinamento dovuto al trasporto su lunga distanza               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| .11. La legislazione italiani/tedeschi in materia di sicurezza alimentare dà più garanzie di quella di altri paesi    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

---

**B1.** Parliamo ora in particolare della patata precoce, detta anche patata primaticcia o novella.

#### DEFINIZIONE PATATA PRECOCE E FOTO

Per **patata novella** o **primaticcia**, si intende una patata ottenuta dalla coltivazione di varietà precoci e precocissime, non giunte a maturazione completa, non necessariamente di piccole dimensioni. La buccia della patata novella è sottilissima e può essere asportata per sfregamento



---

La patata novella viene ottenuta con un ciclo di semina e raccolta molto breve. Raccolta entro giugno, prima del completo indurimento della buccia, viene immediatamente destinata al mercato per essere consumata.

La patata novella presente sui mercati italiani\tedeschi proviene dal Sud Italia (principalmente in Sicilia, Puglia e Campania), da Israele, Egitto, Spagna, Francia e Cipro.

---

**B2.** Innanzitutto, con che frequenza ha acquistato i seguenti tipi di patate nell'ultimo anno?

	Più volte a settimana	1 volta a settimana	2-3 volte al mese	1 volta al mese	Meno spesso	Mai
Patata generica	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patata al selenio (selenella)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patata fresca novella, primaticcia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patate surgelate tagliate da forno	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patate surgelate tagliate per frittura	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**B4.** E' in grado di riconoscere la provenienza delle patate che compra?

	mai	raramente	qualche volta	spesso	sempre
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**B4.a.** (Solo se a B4 non risponde "mai"), come la riconosce? \_\_\_\_\_

**B3.** Se dovesse acquistare patate novelle, quale tra le seguenti confezioni preferirebbe?

- (a) Sacchetto di carta/materiale biodegradabile;
- (b) rete plastificata;
- (c) vaschetta di plastica trasparente;
- (d) patate sfuse da imbustare e pesare.

**B5.** Di seguito sono elencate alcune caratteristiche che definiscono la qualità della patata novella. La prego di indicare quanto ognuna di esse è importante **per Lei** per definire una patata di qualità, utilizzando un punteggio da 1 a 7, in cui "1" significa che per Lei è "del tutto privo di importanza", mentre "7" significa che per Lei è "estremamente importante".

	<b>Del tutto privo d'importanza</b>						<b>Estremamente importante</b>
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
<b>.1. la regolarità della superficie (assenza di fossi)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>.2. l'assenza di sostanze</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**conservanti sulla buccia**

<b>.3. lo spessore della buccia</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>.4. il prezzo</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>.5. il tipo di confezione (plastica, prodotto sfuso...)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>.6. il rispetto delle condizioni di lavoro</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>.7. il basso impatto ambientale della produzione</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>.8. la nazione di provenienza</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>.9. le certificazioni in etichetta (bio, equosolidale, origine geografica)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>.10. la vicinanza al luogo di produzione</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

---

**E1.** Immagini adesso di trovarsi in un luogo di vendita di patate novelle con diverse etichette. Immagini, dunque, di voler acquistare le patate novelle e di effettuare un confronto fra le diverse etichette esposte.

Le mostreremo ora 5 immagini. In ciascuna sono descritte le etichette di 4 tipi di patata novella.

Per ogni immagine dovrà indicare quale prodotto sceglierebbe.

*Per ogni set di scelta*

Tra i quattro prodotti appena descritti ne sceglierebbe uno, quale?

**DISEGNO STATISTICO**

C. 1 Utilizzando un punteggio da 1 a 7, in cui “1” significa “non mi somiglia per nulla“, mentre “7” significa “molto simile a me”, indichi quanto si identifica con le persone descritte di seguito.

	Non mi somiglia per nulla						Molto simile a me
.1. Essere ricco è importante per lui. Gli piace avere molti soldi e molti beni di lusso	1	2	3	4	5	6	7
.2. Crede che bisognerebbe comportarsi sempre secondo le regole ed obbedire ad esse anche quando sarebbe possibile eluderle.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.3. Ascoltare opinioni diverse dalle sue è molto importante per lui. Cerca di comprendere le ragioni degli altri anche se non le condivide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.4. La modestia è per lui un valore. Detesta essere al centro dell'attenzione	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.5. Vivere in un ambiente sicuro è per lui una priorità. Non fa alcuna scelta che possa mettere a rischio la sicurezza personale sua e della famiglia.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.6. Ama prendere decisioni in assoluta autonomia. Egli desidera essere libero ed indipendente.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.7. E' una persona innovativa e ricca di nuove idee.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.8. Gli piace sorprendere chi gli è intorno <del>ed</del> gli piace fare cose sempre nuove.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.9. Gli piace stare al centro dell'attenzione. Ama sentirsi ammirato.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.10. Essere felici è una priorità. Gli piace coccolarsi.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.11. Crede in un mondo equo dove tutte le persone abbiano le stesse opportunità nella vita.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.12. Desidera uno Stato forte che difenda i cittadini e li faccia vivere in un ambiente sicuro.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.13. E' importante per lui avere cura della gente che lo circonda. Desidera che tutti abbiano un livello di benessere equo.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.14. Cerca sempre attività avventurose che possano rendere la sua vita eccitante.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

.15. Ama essere autorevole. Gli piacerebbe che gli altri si comportassero come lui suggerisce di fare.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.16. Lealtà verso gli amici e la famiglia è molto importante per lui. Ama dedicarsi alle persone che vivono intorno a lui.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.17. Ama avere successo nella vita. Gli piace essere ammirato da chi lo circonda.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.18. Detesta fare cose giudicate sbagliate dalla società. Ama essere considerato una persona per bene.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.19. Crede che tutti dovrebbero avere una maggiore cura per l'ambiente. La difesa dell'ambiente è per lui un valore molto importante	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.20. Ama le tradizioni. Desidera continuare le tradizioni che gli sono state trasmesse dalla sua famiglia e dal suo credo religioso..	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.21. Adora il divertimento. Fare cose che gli procurino piacere è per lui una priorità.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**C1a.** Utilizzando un punteggio da 1 a 7, in cui 1 significa che “Lei non è per niente d’accordo” e 7 significa che “Lei è pienamente in accordo” indichi in quale misura Lei è d’accordo o in disaccordo con ciascuna delle seguenti frasi.

	1 Per niente d'accordo	2	3	4	5	6	7 Pienamente d'accordo
.1. Mi sento una persona molto felice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.2. Sono molto soddisfatto del mio lavoro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.3. La mia è una famiglia molto felice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.4. Mi sento una persona che ha realizzato quello che desiderava .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.5. Il livello di reddito della mia famiglia è pienamente adeguato alle nostre esigenze	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



**C2.** Utilizzando un punteggio da 1 a 7, in cui 1 significa che “Lei non per è niente d’accordo” e 7 significa che “Lei è pienamente in accordo” indichi in quale misura Lei è d’accordo o in disaccordo con ciascuna delle seguenti frasi.

	1	2	3	4	5	6	7
	Per niente d’accordo						Pienamente d’accordo
.1. L’industria alimentare è molto attenta al valore nutritivo dei suoi prodotti.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.2. I metodi moderni di produzione danno luogo a cibi senza vitamine e minerali.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.3. La crisi ecologica che sembra stia affrontando il genere umano è solo una esagerazione del mondo scientifico.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.4. Guardando alla storia, la conoscenza e il progresso hanno sempre rappresentato l’arma migliore nella lotta per la sopravvivenza.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.5. La Terra è uno spazio limitato con risorse limitate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.6. La maggior parte dei cibi perde il proprio valore nutritivo a causa del processo di trasformazione.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.7. L’equilibrio naturale è abbastanza forte da porre rimedio ai danni causati dalle società moderne.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.8. In Italia/Germania grazie al progresso tecnologico viviamo meglio di qualunque altra generazione del passato.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.9. Il grado di civiltà di un paese si misura con il suo sviluppo tecnologico.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.10. Se le società avanzate proseguiranno lungo questo percorso di sviluppo, molto presto gli uomini si dovranno confrontare con gravi disastri ecologici.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.11. L’uomo contemporaneo sta sfruttando eccessivamente l’ambiente naturale.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.12. La tecnologia è la principale forza del progresso sociale.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.13. Attualmente, nei paesi sviluppati la maggior parte dei prodotti alimentari non presenta alcun rischio per la salute.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.14. La gran parte delle imprese agroalimentari è interessata ai profitti piuttosto che alla qualità dei beni che producono.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

.15. Se si investono risorse nello sviluppo tecnologico saremo sicuramente in grado di fronteggiare i problemi futuri.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

**SOSTENIBILITA'**

**D. 1.** Pensi adesso in generale a quando acquista un prodotto o un servizio. La prego di indicare in quale misura Lei è d'accordo o in disaccordo con ciascuna delle seguenti frasi utilizzando un punteggio da 1 a 7 in cui 1 significa che "Lei non è per niente d'accordo" e 7 significa che "Lei è pienamente in accordo. Quando acquisto un prodotto/servizio....

	<u>Per niente</u> <u>d'accordo</u>	<u>Pienamente</u> <u>d'accordo</u>
a/ Penso all'opportunità' per i miei figli di consumare/reperire lo stesso prodotto in futuro .....	1 .....	2 ..... 3 ..... 4 ..... 5 ..... 6 ..... 7
b/ Valuto quanto sia compatibile con il mio reddito (o della mia famiglia) .....	1 .....	2 ..... 3 ..... 4 ..... 5 ..... 6 ..... 7
c/ Penso al piacere che mi dà consumarlo.....	1 .....	2 ..... 3 ..... 4 ..... 5 ..... 6 ..... 7
d/ Penso alle conseguenze che ha sull'ambiente in cui vivo .....	1 .....	2 ..... 3 ..... 4 ..... 5 ..... 6 ..... 7
e/ Valuto chi lo produce e in che condizioni lo fa.....	1 .....	2 ..... 3 ..... 4 ..... 5 ..... 6 ..... 7
f/ Mi preoccupa che sia prodotto con pratiche legali.....	1 .....	2 ..... 3 ..... 4 ..... 5 ..... 6 ..... 7
g/ Mi piace che sia prodotto nella regione in cui vivo .....	1 .....	2 ..... 3 ..... 4 ..... 5 ..... 6 ..... 7
h/ Mi piace che sia indicata la tecnica di produzione.....	1 .....	2 ..... 3 ..... 4 ..... 5 ..... 6 ..... 7
i/ Valuto se promuove uno stile di vita che considero salutare .....	1 .....	2 ..... 3 ..... 4 ..... 5 ..... 6 ..... 7
l/ Considero se promuove azioni di tutela dell'ambiente .....	1 .....	2 ..... 3 ..... 4 ..... 5 ..... 6 ..... 7
m/ Mi piace se è riciclabile .....	1 .....	2 ..... 3 ..... 4 ..... 5 ..... 6 ..... 7
n/ Mi piace se aiuta a migliorare la qualità della vita di popolazioni disagiate .....	1 .....	2 ..... 3 ..... 4 ..... 5 ..... 6 ..... 7
o/ Mi piace se è prodotto in Italia/Germania .....	1 .....	2 ..... 3 ..... 4 ..... 5 ..... 6 ..... 7

**DATI SOCIO-DEMOGRAFICI**

- F1.** SESSO
- F2.** ETA'
- F3.** COMPOSIZIONE NUCLEO FAMILIARE
- F4.** POSIZIONE LAVORATIVA
- F4.** TITOLO STUDIO
- F4.** CONDIZIONE SOCIO-ECONOMICA