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**Manufacturing Product Quality:  
The Diversity of Mechanisms of Governance in Agrifood Markets**

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# Manufacturing Product Quality: The Diversity of Mechanisms of Governance in Agrifood Markets\*

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## Abstract:

We explain how to manufacture products' quality referring to all the institutional operations that are necessary for being able to defined and differentiate products related to particular characteristics or attributes and for enforcing the exchange of the promised set of attributes. We review first the main mechanisms used in order to obtain products' quality and then we disentangle alternative "families" of quality devices and rank them on a "public / private" continuum. More importantly, we analyze the interactions among these devices by describing some of their complementarities. We end with an attempt to operationalize the analysis by matching quality attributes and institutional solutions.

**Keywords:** contractual hazards, quality, measurement, interactions, manufacturing quality.

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## 1. Introduction

One of the great achievements of New Institutional Economics (NIE hereafter) has been to investigate and describe the myriad of coordination hazards that might plague a market economy as well as to explain how various devices, whose combination form the institutional framework, may mitigate them (see among others, Dixit, 2004, Greif, 2005, Williamson, 1985). Definition and security of property rights, enforcement of contractual arrangements, are all examples of what Coase called the “institutional structure of production”. As the title of the book suggests, in this perspective markets are “produced”, or “manufactured”. Put differently, even if some markets have a spontaneous origin, a market economy is based on human design and this design is everything but costless.

In this chapter, we develop this perspective on a more narrow issue, namely the hazards and solution related to “manufacturing” products’ quality. As we see it, manufacturing quality is about the operations that are necessary for being able to defined and differentiate products related to particular characteristics or attributes and for enforcing the exchange of the promised set of attributes. This is not a simple task because quality is a multidimensional concept and their definitions requires the existence of a common understanding (sometimes called a “quality convention”) that allow grading and ranking various products within the same category under a common heading and, sometimes, a common labeling. Even the quality of “simple” products that standard textbooks use as examples approximating perfect competition may quite often be described in a variety of way. Take wheat as an example: many buyers and sellers, worldwide competition, simple and (apparently) homogenous product. Previous studies suggest however, that defining wheat quality is not that easy (see Pirrong, 1995).

Industrial organization (IO) and Walrasian economy implicitly assume that the task of defining and enforcing quality has already been set. Unfortunately this is not always the case and, thanks to the NIE contribution, we now have a better knowledge of the consequences of a weak assessment of quality for the efficiency of market exchanges. Our aim is then to review the main mechanisms used in order to manufacture products’ quality. We start by suggesting that manufacturing quality can be fruitfully analyzed through the lens of Transaction Cost Economics, in particular the

“measurement” branch explored by Barzel in various contributions (Barzel, 1982, 2002, 2004). We disentangle alternative “families” of manufacturing quality devices and rank them on a “public / private” continuum. More importantly, we analyze the interactions among these devices by describing some of their complementarities. To give just one example, brand name is an important “private-based” device aiming at assuring quality. However, the ability of private brands to give relevant information for buyers heavily relies on the existence of a (state-designed) trademark system.

In order to provide empirical contents for our analysis, we analyze a specific sector, agrifood where, we believe, issues of products’ quality are highly relevant. Agrifood sectors, in particular fresh food products, are characterized by natural variability and heterogeneity of raw products that translate into uncertainty on products’ quality for consumers. Furthermore, consumers are more and more sensitive to a “larger” conception of quality. By this we mean the fact that they value not only the attributes of the products (like meat tenderness) but also some dimensions of the production process itself (like organic production or fair trade) raising new issues. Finally, a series of high profile food safety issues like Bovine Spongiform Encephalopathy heightened public awareness in various countries and trigger new reflections on the regulation of products quality.

This paper is organized as follows. First, we describe the typical problem regarding the definition and enforcement of quality for agrifood products (section 2). Then we describe the range of institutional solutions that has been designed to make economic exchanges possible. We mostly disentangle public, private and “hybrids” solutions (section 3). Section 4 digs into the interactions among these solutions to show that they both complement and substitute at the same time leading to complex patterns of interactions. Section 5 is an attempt to operationalize the analysis by matching quality attributes and institutional solutions. Conclusion follows.

## **2. The Nature of the Problem: Measuring Quality**

We analyze in this section the main contractual hazard related to exchanging products of various and sometimes unknown quality (at least from one side of the trade) and we relate this problem with the dimension of the transactions that seems more

relevant: the measurement problem. We start by briefly reviewing the “measurement approach” in general (2.1) before applying it to quality issues (2.2).

## **2.1. Measurement Issues as the Core of Economic Transactions**

It is quite usual among NIE scholars to disentangle two branches of Transaction Cost Economics (hereafter TCE). First the “governance” branch mostly associated with the works of Coase (1937) and Williamson (1985). The focus is on the description of the properties of alternative governance structures and the mapping (called “alignment” by Williamson) between transactional attributes and alternative (mostly bilateral) governance structures. The classical “make or buy” problem is the canonical example of this approach. There is also a second branch, called the “measurement” branch which is mainly associated with the work of Barzel (1982, 2002) and the prominent contribution of Alchian and Demsetz (1972). At the root of this second approach is the combination of three factors:

(i) Products and assets have a bundle of attributes embodied in the products. These attributes are the characteristics of the products themselves, like size, color, but also attributes of the production process (eco-friendly products, animal welfare) or even the organization of the supply chain (for instance fair trade). Consumers derive utility from these attributes.<sup>1</sup> For instance, environmentally-friendly production processes gain more and more popularity among European consumers.

(ii) The level of each of these characteristics may vary from one specimen of a product to another. Both external factors and factors directly under the control of economic agents are responsible for this variability. For instance, the protein content of wheat may vary from one year to another because of climatic variations. It also depends on the level of care during the harvesting and storage steps. Without any supporting devices, the level of attributes in a product

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<sup>1</sup> The emphasis of the multi-dimensional nature of any economic good is also the core of the Lancaster’s approach on consumer theory (Lancaster, 1966). However, Lancaster did not discuss the possibility for each specimen of a given commodity to vary. Neither did he integrate in his analysis the possibility of asymmetric information between the buyers and sellers over these attributes.

bought in date  $t$  is not a perfect predictor of these attributes for the same product bought in  $t+1$ .

(iii) It is difficult and costly to ascertain value of goods before the transaction is concluded. For instance, the amount of juice in an orange or the taste of a tomato are difficult to predict by simply looking at the product. According to Barzel, “*virtually no commodity offered for sale is free from the cost of measuring its attributes*” (Barzel, 1982, 28). Economic agents need to spend resources to make some (more or less accurate) initial assessment.

Thus the amount purchased by the buyer is determined not only by the posted price but also by measurement costs. Both sides of the deal need to incur measurement costs. “*In every exchange, both the seller and the buyer will require some verification of the measurements of the exchanged goods: the seller to assure himself he is not giving up too much, the buyer to assure himself he is not receiving too little*” (Barzel, 1982, p. 32). More generally the measurement branch emphasizes as to the true value that factor of productions bring to an exchange (like in Alchian and Demsetz, 1972), or uncertainties as to the value of the outcome of an exchange, inevitably give rise to contracting and monitoring problems.

The presence of this type of costs creates contractual problems. Given that information is not symmetrically allocated among transactors due to different reasons (knowledge, expertise, opportunity cost of time, natural skills, etc.), less informed party should bear search and information cost to solve this disadvantage. Furthermore, opportunistic sellers may take advantage of their informational advantage, for instance promising “good” quality but providing “bad” quality. One famous example is adverse selection Akerlof (1970). This problem may even prevent profitable transactions from taking place and thus reduce total value.

## **2.2. Measuring Quality and Related Quality Uncertainty**

The notion of products’ quality is not that easy to define even if we all have (but not necessarily share) a kind of common sense of what quality means. For the rest of this paper, quality will be defined as the measurement of the various attributes that make up a product. This measurement activity requires three complementary steps:

a) the creation of a metering or grading device. The reference to the economics of standard is relevant here (Kindleberger, 1983, David, 1987) as they describe various types of standards. First, there are definitional or measurement standards like currency, weights, measure. Second, there are standards for minimal admissible attributes or minimum quality standards, like safety level or minimal educational requirement in some professions. Finally there are standards assuring technical compatibility like the physical design of interfaces.

b) The action of comparing individual products quality with that standard or grading system. This measuring activity is not always an easy task. The intensity of this problem depends on the characteristics of the product. Three types of product attributes that determine their potential controversial and uncertain nature have been identified in the industrial organization literature: search, experience and confidence.<sup>2</sup> Search attributes are those that the consumer can determine before purchasing whether the product has them or not (for example, color or shape). Experience attributes are those that are difficult to observe in advance but these attributes can be ascertained upon consumption (for example, the taste of a fruit). Finally, credence attributes, that are those that are difficult or impossible to ascertain even after consumption (for example, the effect that consumption of a product has on one's health). Most agrifood products combine experience and/or credence attributes which make asymmetric information a great concern, especially when food safety issues are at stake (Foss, 1996). This is especially prevalent as consumers nowadays become more sensitive not only to the attributes of the products but also on the production process (e.g. animal welfare). The consumption of the product does not provide any information on the production process itself.

c) Enforcement of the defined quality is also of paramount importance and we explain it in the next section.

### **3. “Do not Leave Money on the Table”: Mitigating Measurement Issues**

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<sup>2</sup> See Nelson (1970) and Darby and Karni (1973).

One of the major consequences of the “lemon problem” described by Akerlof is that asymmetric information prevents mutually advantageous transactions from taking place. This problem leaves “money on the table” because mutually profitable exchanges do not take place. In a Coasean perspective, rational agents have therefore strong incentives to develop safeguard mechanisms to mitigate contractual hazards and exploit all gains from trade. The definition and implementation of these safeguards generate transaction costs which reduce the total exchange surplus. Parties have a mutual interest in mitigating those transaction costs. In this section, we describe and contrast different “families” of institutional solutions to the quality measurement problem. We start by disentangling “public-order” solutions, private ones and intermediate or “hybrid” systems (3.1). We then describe in more details each of them (section 3.2. to 3.4).

### **3.1. Describing the Institutional Landscape**

In this section, we capture (part) of the diversity of institutional solutions that are used to mitigate the quality measurement problem. We do so by describing various institutional alternatives that we observed in various agrifood chains along a “public / private” axis. Sorting institutional solutions in such a way is a simple way to emphasize some of their structural differences. One of these differences is the implication of the state as a mitigator of measurement problem. In our description, “public manufacturing” of quality means the involvement of the “public machinery” in the definition/enforcement of quality. The state is involved in the production of quality mostly through *ex ante* actions like direct regulation on quality or *ex post* through liability issues. “Private manufacturing” mostly relies on quality definition and enforcement that loosely rely on the public intervention. It means employing extralegal mechanisms to induce compliance including such things as reliance on reputation, private certification and even vertical integration.<sup>3</sup> These two options are just polar forms as there exist a variety of mixed or “hybrid” solutions combining properties of polar forms. For instance, the definition of products’ quality may rely on voluntary

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<sup>3</sup> Another form of private ordering is, of course, violence as used for transactions governed by illegal organizations like Mafias. While we do not analyze this possibility, it should be stressed that violence, boycott or embargo are sometimes used in European agrifood sectors, mostly in the transactions between farmers and large retailers.



initiatives while the enforcement of the defined specifications may be based on public certification. The following table summarizes the main families of institutional solutions.

Public ordering		“Mixed” ordering	Private ordering		
Direct regulation	Product liability	Self-regulatory collective organization	Private certification	Brand names	Vertical integration

### 3.2. “Public- ordering” types of institutional solutions

In most developed countries, national regulations establish the main principles concerning food quality, food safety and consumer protection. Most of the time, the state provides both minimum quality requirement and definition of quality, *i.e.* devices to assess and meter quality allowing to define a quality ranking.<sup>4</sup> Minimum quality standards are a well know *ex ante* regulatory instruments. Another issue that is important for our purpose is the public regulation of information provided by firms (Rubin, 2000). For instance, the state heavily monitors marketing programs in specific markets in order to avoid confusion on the consumer side. Finally product liability is an *ex post* regulation punishing firms that sold defective products. In this sense, it acts as direct incentives for quality assurance. It seems especially relevant for food safety. In all cases, dedicated public bodies or product liability are the main devices used to enforce the standards.

Most of these regulatory requirements have costs and benefits. Some costs are already well known as testified by the large literature on pressure groups initiated after the work of Stigler (1971). In addition, regulatory error in establishing mandatory standards is also an issue. There is substantial asymmetry between the consequences of the regulatory errors (laxity or excessive strictness). The risk with laxity can at least in

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<sup>4</sup> We can point out that public regulation can also define the “type” of a product or its ability to carry a particular denomination. The famous French “baguette” has a regulated definition. As a consequence, only shops with particular characteristics can call themselves “bakery” (bread has to be made “in house”) while other stores only heating frozen breads cannot call themselves bakery.

part be corrected by the market (through switching decisions to other providers) and, moreover, does not pose obstacles to using other types of devices, like a private standard, additional warranties or particular monitoring. The risk of excessive strictness is more difficult to correct: all firms, whatever their quality, are forced to fulfill the mandatory standards, regardless of their real demand by consumers (Arruñada, 2000). Finally, in order to be effective the breach from the standard must be verifiable by third parties in order to litigate and obtain a legal sanction.

Regulation also has benefits. Barzel (2004) points out that both definitional and minimum quality standards reduce buyers' measurement costs. On the one hand, the definitional standard ease the measure and the comparison among products and, on the other hand, minimum quality standards reduce the variance in product quality because they truncate the distribution of quality and then mitigate search and measurement costs borne by individual consumers. Goldberg (1976) provided a broader perspective viewing regulations as "administered contract". In his analysis, consumers "delegate" to the regulator the task of mitigating part of the quality uncertainty problem through regulation. The regulator provides private parties with tools to mitigate some measurement problems. The efficiency of quality regulation in this framework does not have to be assessed with reference to a first best situation but more in comparison with other imperfect institutional alternatives.

### **3.3. Private Ordering Institutional Solutions**

Mandatory regulation on products quality does not exhaust the set of devices used in modern economy to mitigate measurement hazards. Firms spontaneously adopt various standards and organizational patterns with a view to reducing quality hazards. Sellers may offer non-mandatory warranties to the consumer. They give the purchaser a direct insurance against defaults when it occurs and act as an incentive to minimize the probability of defects because an extensive warranty is expensive for the seller if the goods are likely to go wrong (Barzel, 1982).<sup>5</sup>

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<sup>5</sup> Other devices that enhance the value of reputation in the same way are money-back assurances, free trials and long-term warranties.

Private systems also include various forms of certifications by third party. In “markets for certification”, individual or collective profit-oriented organizations ease and frame the competitive landscape by providing information on quality to consumers based on private standards.<sup>6</sup> The outsourcing of this monitoring activity to an *independent monitor* tries to infuse credibility by limiting collusion between the auditor “auditor” and the “auditee”.<sup>7</sup> Such voluntary certifications are important in agrifood sectors. Some firms specialize in providing consumers with information about the quality of particular products and/or the reliability of particular firms.<sup>8</sup>

Other firms may also decide to adopt a quality assurance scheme like International Organization for Standardization (ISO) norms or collective codes of good practices. These schemes are on a voluntary basis and certified by a third party. Another interesting voluntary quality assurance device in the agribusiness sector is the EurepGAP (now GlobalGAP) system founded as an initiative of some of the larger European retailers. EurepGAP members include retailers, producers/farmers and associate members from the input and service side of agriculture. Its mission is to develop widely accepted standards and procedures for the global certification of “Good Agricultural Practices” (GAP). It also helps to reduce the costs of monitoring by individual retailers and to ensure compliance with national liability rules (Codron *et al.*, 2005).

Another solution mainly relies on “relational” incentives. Brand name and its related reputation is a canonical example of such relational agreement (Klein and Leffler, 1981, Barzel, 1982, Shapiro, 1983). Brand act first as a cognitive support devices summarizing the definition of quality. Brands’ goodwill is also a powerful

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<sup>6</sup> Some of these practices, that had a voluntary origin, can become compulsory if moral hazard is an increasing concern or if they become the norm in the industry. One example is that of auditing, that nowadays is mandatory for firms of a certain size.

<sup>7</sup> There is a large literature in industrial organization dealing with issues such as the revelation of information by certifiers (sometimes called middleman), the welfare implication of provision of information on quality by a third-party certicator and so on (see for instance, Biglaiser and Friedman, 1994). Recent controversies about the role of rating agencies in the financial crisis are here to remind us that this issue is still under considerable debate.

<sup>8</sup> For instance, in the wine sector, the Robert Parker’s guide is an important source of information for consumers with low knowledge of the quality of wine. The Michelin guidebook is another example.

“self-enforcing” device as emphasized in the seminal contribution by Klein and Leffler (1981). The fear of losing the consumer’s patronage and the corresponding loss of reputation that make the promise on quality sent by the brand name credible without any intervention by a third-party. The ability of reputation-based mechanisms to safeguard quality is however limited. The price premium necessary to provide sellers with the correct incentives increases with the lag between two transactions and the time needed to discover the “true” attributes (Klein and Leffler, 1981, Shapiro, 1983). Similarly, if most of the relevant attributes of a product to assess its quality are credence attributes, the necessary price premium may be too large. Put it differently, the more severe the quality measurement problem is, the higher the reputational capital must be. Furthermore, if competition among firms increases, the necessary price premium may become difficult to sustain.

The last “private” solution to measurement issues is integration (Barzel, 1982). In business-to-consumer transactions, this takes the form of “home or self-production” by consumers. In business-to-business transactions this takes the form of vertical integration. There is here a trade-off here between the mitigation of measurement costs and gains from specialization. As all stage of the production process are carried out by the same entity, measurement problems are reduced (no need to replicate at each junction costly metering) but at the expense of gains from specialization.

### **3.4. “Hybrid” Solutions Mixing Public and Private Components**

In this last family of institutional solutions, is probably the more complex to describe and study because it is not always easy to draw a sharp line between this family and the two polar cases. There is at least two common factors among the examples we will describe. First, the definition of quality largely has a private nature above some minimum mandatory requirement. Second, the enforcement heavily relies on the introduction of a third (or external) party as the main enforcer of quality. We briefly describe the example of “Geographical Indicators” (GI). “Geographical Indicators” is a catchword to describe situations where a group of firms in the supply chain both rely on a common quality label and are involved in a collective organization managing the brand (called “regulatory council”). It is nowadays one of the prominent quality brands used in various EU agricultural sectors and for various products (wine, cheese, meat,

etc.).<sup>9</sup> From a legal point of view, GIs were established at the European Union level in 1992, when it created the systems known as Protected Designation of Origin (PDO) and Protected Geographical Indicator (PGI) to promote and protect food products (regulation EEC 2081/92 of July 1992).<sup>10</sup> The European regulation on PDO products is similar to a trademark registration that protects property rights on brand names (here geographical names).<sup>11</sup>

The EU system of GI is structured around three types of participant: firms involved in the production process, local or national regulators and inspection agencies. Firms that take part directly in the production process and want to create and promote a GI, need approval by the local or national regulator. As real owner of the GI, local or national governments, delegate to the “regulatory council” the task of running the GI, namely drafting the quality specification, promoting the GI, enforcing the rules collectively set. This council is made of representatives of each step of the supply chain (farmers, processors) but the retailers. Authorisation is conditional on fulfilment of some requirements which focus mainly on the definition of the geographical limits of the designation, technical and health aspects on the rules of production, evidence on the connections between the characteristics of the final product and some characteristics of the local area (like specific soil condition, traditional know-how,...) and finally on strict control of the products to be labelled with the GI. Members of the GI have to nominate a public or private inspective body that will certify the quality requirements on the production process. These inspection bodies must be registered and authorized by national and EU regulators. After acceptance by regulators, the group of firms can use the label and benefits from the legal framework. It is quite common to have the final products carrying several labels, for instance the name of the GI as well as the name or

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<sup>9</sup> Nowadays, around 750 products rely on GI (see Moschini et al., 2008) and many more are pending registration.

<sup>10</sup> Some European countries like France and Italy already have a long tradition of geographical designation. Moschini et al. (2008) provided a more detailed presentation of the GIs institutional framework.

<sup>11</sup> A PDO covers the term used to describe foodstuffs that are produced, prepared and processed in a given geographical area using recognised know-how (Bureau and Valceschini, 2003). In the case of the PGI, the geographical link must occur in at least one of the stages of production, processing or preparation.

brand of the processor.

#### **4. Interactions among Solutions: Complements or Substitutes?**

Up to now, we mostly organize the description of the “institutional landscape” related to the manufacturing of quality. In this last section, we now look at the interactions among the various institutional solutions we described. Do we need private solutions when public ones are available and run smoothly? Is there any benefits of having different solutions coexisting with each others? The point is that we actually do observe all the described solutions at a given moment in time and for the same types of products. What we suggest is that these institutional solutions are both substitute and complement. This is very similar in spirit to the analysis of the interactions between formal and informal (or relational) contracts provided by Klein (1996).<sup>12</sup> The mere presence of public solutions provide support for private-based solutions. But, at the same time, what is done at the public level probably does not need to be replicated by private solutions. The rest of this section illustrates these interactions among institutional solutions.

Previous works substantiate the existence of substitutions among the institutional alternatives. For instance Raynaud et al. (2005), contrast the governance of upstream vertical chains when agents rely on a private brand (private solution) or a GI (mixed solution) to signal quality to consumers. They found that the governance of transactions is more “market-based” in the case of GI than in the case of private brands. They claim that vertical coordination is important when the goodwill of the brand critically relies on the behavior of agents at different stages of the chain. Formal contracts and vertical integration are such coordination devices. Vertical coordination is thus an instrument in order to safeguard quality all along the chain. On the other hand, in GI, part of the

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<sup>12</sup> “*This analysis illustrates a fundamental complementarity between court-enforcement and self-enforcement. The two enforcement mechanisms are substitutes in demand in the sense of a positive cross elasticity of demand, so that an increase in the price of one of the mechanism leads to an increased use of the other mechanisms.....But the two enforcement mechanisms are complements in supply, in the sense of a positive cross elasticity of supply, so that an increase, for example in the quantity of reputational capital, leads to an increase in the marginal productivity of court-enforcement. That is, the two mechanisms work better together than either of them do separately*” (Klein, 2000, p. 75).

contractual hazards related to quality enforcement is solved through third-party certification of the final product and all successive steps in the supply chain. This economizes on the extent of quality controls that are needed in order to assure quality (assuming that the certifying organization has the correct incentives to fulfill its task) because the task is already done elsewhere.

The “complement” perspective, on the other hand, emphasizes the benefits of simultaneously relying on formal/public and informal/private arrangements. In this perspective, the mere presence of, for instance, public-like solutions enhance the benefits of relying on private ones. This has been described by Aoki (2001) as situations of institutional complementarities. While this is out of the scope of this paper to provide a complete analysis of this complementary, we provide several examples. In our taxonomy of institutional solutions, reputation-based solution like private brands is seen as an alternative to public standards. However the efficiency of private brands as quality safeguard extensively relies on public institutional supports. For instance, intellectual property rights and trademark law are critical “support” factors for the working of brand names. They provide incentives to invest in such intangible assets because they mitigate fake copy and insure owners of brand against uncompensated exploitation. Similarly, the mere existence of public quality standards may make reputation-like solutions more effective. Recall that the strength of reputation as a quality enforcement device critically depend on the ability of consumers to progressively learn quality and on the size of the price premium. For some quality attributes, like food safety, it is difficult to know even *ex post* if the product is safe or not. Relying on public control / standardization for safety attributes mitigates the weakness of the reputation system.<sup>13</sup>

We just described some examples of public solutions supporting private ones. The interaction however probably runs both way in that private solutions may help to

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<sup>13</sup> The emergence of global safety standards initiated, among others, by large retailers is an example of safety hazards dealt with by intermediate or mixed governance. These standards have a collective and voluntary basis, stating the minimum safety requirements that suppliers (worldwide) must respect in order to sell to (mostly) European large retailers.

improve public solutions.<sup>14</sup> Like most public institutions, public standards are slow to evolve and there is quite often a gap between the compulsory criteria and the evolving needs of private actors. One way to reduce this gap is to empower private actors with the ability to participate in the elaboration of the quality regulation. This is quite often described as “regulatory capture” in the economic literature. While this literature (rightly) emphasizes the danger of having a regulatory design partly driven by private interests, the involvement of the private sector might also carry some benefits. Bringing the private sectors into the “regulatory game” may reduce the potential maladaptation of public rules.<sup>15</sup> The point is that enhancements of initial public regulation may heavily rely on feedbacks from the private sector.

## **5. Matching Quality Dimensions with Institutional Solutions**

One of the great strengths of the TCE “governance branch” is to provide empirical predictions linking transactional attributes with the relative efficiency of alternative governance structures (Williamson, 1985). A necessary step was to identify the relevant dimensions to which transactions differ. Can we develop the same reasoning for the “measurement branch”? Can we define an alignment between quality dimensions and the institutional solutions we described?

Williamson (1985, p. 81) seemed skeptical and stressed that the critical dimensions for matching measurement problems and institutional solutions have not been completely discovered. At the same time, progress has been made to generate and test sound empirical predictions of the measurement branch (see for instance, Leffler et Rucker, 1991; Leffler et al., 2000). With regards to our setting, this effort of matching measurement hazards and institutional solutions should first start to define the relevant dimensions to which this should apply. Standard industrial organizations describe different intensities of the measurement problem by disentangling different types

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<sup>14</sup> In some cases, private initiatives can even try to bypass public rules if private actors feel that public solutions are maladapted and/or corrupted.

<sup>15</sup> This point is emphasized in the literature on self-regulation. One of the advantages of self-regulation vis-à-vis public one lies in the firms’ superior knowledge of the regulatory issue at stake and the related lower transaction costs of the self-regulatory process (see, Grajzl and Murrell, 2007, for more on this).



of products attributes, namely, search, experience, credence attributes. The harder it is to *ex ante* easily describe quality, the larger the measurement problem. The work of Barzel suggests to dig deeper and look at the attributes level. A given good is made of various attributes and the severity of the measurement problem will vary among attributes even for a single good. The direct consequence is that there is no one to one correspondance between the “quality” of a given good and an institutional solutions. Multiple solutions should coexist for a given good.

What are the comparative advantage of each institutional solutions to solve particular sub-classes of measurement problems? The literature provides different and sometimes opposite answers. On the one hand, certification has been analyzed as a way to provide information on difficult-to-measure attributes like credence ones (e.g food safety). Several papers in industrial organization point out the difficulty in achieving an efficient market for certification (see for instance, Emons, 1997). This suggests that public intervention, what we call, public-ordering institutional solution, might be a good thing in this particular area. It is thus quite understandable that we observe so much public interventions in the area of food (more generally products) safety. On the other hand, Barzel (2004) suggests that aspects or attributes of the quality that are relatively easy to directly monitor are more cheaply enforce through explicit specifications like public standardization (or self-regulated standards). Other attributes that are more difficult to contractually define are more cheaply enforced through implicit arrangements among parties that heavily rely on self-enforcement (our private-ordering solutions). If we take again the example of food safety as a difficult to measure attributes, and thus difficult to *ex ante* contractually define, this suggests that for such attribute, self-enforcing solutions work better.

How to reconcile these opposites conclusions? Note that the IO-oriented literature emphasizes certification as a solution, not necessarily public certification. Private certification might provides the necessary tools to mitigate the measurement problem. For instance, fair trade, a credence attribute, is now a growing concern among consumers in developed countries. Up to now, at least, there is no public regulation worldwide but only private certifications (for instance the Max Havelaar logo). The globalGap system described before is another illustration of a (worldwide) private

certification system. The point is that we probably need to dig deeper in the description of the relevant attributes, in particular beyond the search / experience / credence classification, because attributes belonging to, say credence category, might be organized in different ways. Other relevant factors need to be described in order to have a more accurate picture. For instance, the perishability of products also affect probably the efficiency of alternative institutional solutions. The freshness and organoleptic content of a product can spoil quickly after harvest. The timeliness of compliance is thus critical raising potential contractual hazards if the supplier needs to find alternative buyers on short notice.<sup>16</sup> Public solutions experience a comparative disadvantage in measuring quality in a timely fashion and in enforcing these transactions. The emergence of “private institutions” to handle these issues provide a solution (see Richman, 2004, for a more detailed analysis of private institutions).

## **6. Conclusions**

We have surveyed and analyzed how various institutions solve or at least mitigate the information asymmetry about quality and related measurement costs. Both quality definition and quality enforcement are key factors in this process of “manufacturing quality”. Economic literature has traditionally considered two ways to solve the informational asymmetry problem. On the one hand, the non-informed party should invest resources in obtaining the hidden information. Apart from consumer direct observation and supervision, the most important mechanisms are certifications and standarization, such as ISO certifications or rating companies. The second solution relies on an alignment of parties interest in such a way that the well informed party has no incentives to take advantage of its better knowledge. Credible signaling is probably the main safeguard.

Real world problems regarding the quality require complex combination of both types of solutions. In this paper, we disentangle and classify alternative way of manufacturing quality or alternative families of institutional solutions to the quality measurement problem. We then described the interactions between these various

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<sup>16</sup> In the “governance branch” of TCE, this has been described as temporal specificity. It refers to the timing of delivery and its effect on product value.

solutions claiming that they are both substitute and complement. If one of previous devices is absent or no effective (e.g. a reliable food safety regulation in some developing countries), private actors may initiate individual or collective solutions to handle the problem at stake. On the other hand, private solutions like branding heavily depend on public institutions like trademark law.

This complementarity among alternative solutions has important implications for regulators. Let us describe two of them. First, designing effective quality regulation is a complex issue because of potentially important externalities among various regulatory instruments. When deciding on a particular regulatory instrument related to products' quality, the regulator must not only take into account the expected and direct effects of this instrument but also the range of indirect consequences the decision will have. All the other devices that have a complementary relations with the targeted one will be affected. Assume that the regulator decides to ban certain contractual provisions or practices in the food sector. This might be for instance the prohibition to easily terminate a contract without "good cause" in the relations between farmers and processors. Assume that this particular provision is an essential part of the system developed by these providers to control the critical steps of the vertical chain in order to safeguard quality. By preventing processors to use such provision, the regulation might increase the costs of monitoring quality along the chain, threatening the sustainability of the processors' brands as quality assurance toward consumers.

Second, it is possible, thanks to the very same logic, that in order to reach a given target, the regulator strategically uses the complementarities among various instruments. Assume for instance that the regulator wants to promote a particular decision or behavior, for instance, decreasing the consumption of "junk food" because this will improve the health of the population. Taxing junk food is the most evident option the regulator has. This may well be strongly opposed both by firms of the food sector as well as by some consumers' concern about the increase in price. Another regulatory option, might be to increase the informational content of labeling by explicitly stressing the negative side effects on health of such products or to dedicated money to run public campaigns promoting healthy food. The important point is to

stress that the regulator can try to bypass direct opposition by relying on an instrument that complement the one it cannot rely on in order to reach a particular target.

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