CONTRACTING FOOD SAFETY STRATEGIES IN HYBRID GOVERNANCE STRUCTURES

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Contracting Food Safety Strategies in Hybrid Governance Structures

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Abstract

The study consider the relationship between food safety strategies and organizational choice. The poultry sector provides an insightful example to illustrate and to analyse this field. Furthermore, European Union regulation requires change in safety related technologies (i.e., the ban of Antibiotic Growth Promoters), positing several research questions: the focus here is on the possibilities of adoption of new productive techniques when the link between the growing stage and the processing stage is based on contractual relationship. The choice of governance structure is examined and the causal nexus between contract performance and food safety outcomes is stressed. An empirical analysis of growers' preferences for contract attributes is proposed as a support for the negotiation and the realization of food safety strategies.

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1. Introduction[1]

The study considers the relationship between firms' food safety strategy and contractual arrangements. Its main goal is to provide empirical evidences about poultry sector and to investigate the role of contracting in the hybrid governance structures. The most of European poultry production is obtained by vertical integrated large company, which also establish contractual relationships involving a large number of growers. European Union has recently changed its regulation, i.e. banning antimicrobial growth promoters, positing several research and technical issues. A general question thus raises concerning how food safety technological changes could be promoted within a contractual framework. The study considers only some issues related: in the light of transaction costs economics (Tce), it provides a conceptualization of the contractual practices at stake and examines the role of growers' contractual preferences. Namely, attention is paid to the possibilities of adoption of new productive techniques when the link between the growing stage and the processing stage is based on contractual relationships: new contractual terms have to be specified, innovating the contractual understanding. The paper explore this field, assuming that the agents could avoid that costly contract specification and enforcement and monitoring cost would impede to reach the safety outcomes expected. In this framework, the growers' preferences for contractual attributes is

examined following a choice experiment approach. The poultry sector provides an insightful example to illustrate and to investigate this field. Specific safety risks are actually faced by agents, requiring complex technical solutions to be taken into account in organizational arrangements and realized at productive units levels. The outcomes proposed aim at contributing to the base of more detailed studies.

The paper is organized as follows. The analytical framework is presented in section 2: the choice of governance structure is discussed and the role of contracting in poultry sector is taken into consideration. The conceptual framework of the empirical analysis is illustrated in section 3. The discussion of results is presented in section 4. Section 5 summarize the outcomes and delineate opportunities for future research.

2. The analytical framework

The food safety private and public expectations and strategies give rise to several analytical issues. Specialized research streams emerge from clearing up differences between quality and safety issues (Grunert, 2005; Hobbs, 2006), with organizational problems in supply chains playing a key role. Scholars have pointed out the role of information in affecting the safety outcomes and have paid a special attention to problems related to quality signalling and to potential opportunistic behaviours (Hennessy, 1996; Henson, Caswell, 1999; Segerson, 2001; Sporleder, Goldsmith, 2001; Golan *et al.*, 2001; Elbasha, Riggs, 2003).

The analysis of contracts in poultry sector have been mainly taken into account risk sharing and incentive effects. Knoeber (1989) emphasizes the effects of contractual arrangements on technical changes. Knoeber and Thurman (1995) found that price risk and common production risk are both shifted to owners of integrator companies, while price risk determine the main component of total risk. Levy and Vukina (2004) explore differences between contractual arrangements with respect to growers' heterogeneity and production shocks. Goodhue (2000) examines the implicit long-term contract between growers and processors in broiler production and explains the contractual control of input in terms of heterogeneity of individual ability, risk adversion of growers and systemic uncertainty. Under a complementary view, Mènard (1996) points out the key role of growers, the variety of agreements and the nature of the contract as a general framework. The analytical framework of the study examines contractual choices expanding on recent outcomes which emphasizes the diffusion of hybrid governance structures as a consequence of food safety oriented strategies (Mènard, Valceschini, 2005; Martino, Perugini, 2006a, 2006b).

2.1. Food safety and the choice of governance structure

2.1.1. Information and coordination problems

The safety-related *experience* and *credence* attributes of food (Hobbs, 2004) contribute toward determining the asymmetric distribution of information between agents along supply chains and between distributors and consumers, involving many problematic aspects of the supply of safe

foods (Antle, 1999). Information asymmetry can feed opportunistic behaviours that accentuate contractual hazards (Williamson, 1991 1996), and this could imply a reduction of the efficiency of the exchange as well as the supply of safety itself. How agents may mitigate the effects of information asymmetry in order to enhance the degree of safety? This informational issue requires parties to align the governance choice to the transaction in order to minimize the transaction costs taking into account the necessary level of safety.

Furthermore the safety's level of food products depends upon the behaviour of all the agents involved in the food chain. Accidents may actually occur at any stage of the system, while remedies and precautions intentionally implemented may fail due to technological flaws or human errors. Efforts of one agent may not provide the outcomes expected due to events occurring in other chains' stages and to other agents' behaviour. Unexpected contingencies (i.e., emergence of new pathogens, pollution, diffusion of diseases etc.) may give rise to opportunistic behaviours not related to information asymmetry (Klein, 1992, 2002). These factors exacerbate the influence of information asymmetry and asset specificity on the effectiveness on the spot market, hence economic coordination (among agents becomes crucial to ensure safety expected. A general coordination problem does exist, entailing a necessity for agents to invest resources in order to achieve the level of food safety expected: this in turn promotes economic dependence among agents and implies that the safety oriented governance structures rely on a mix of competition and cooperation.
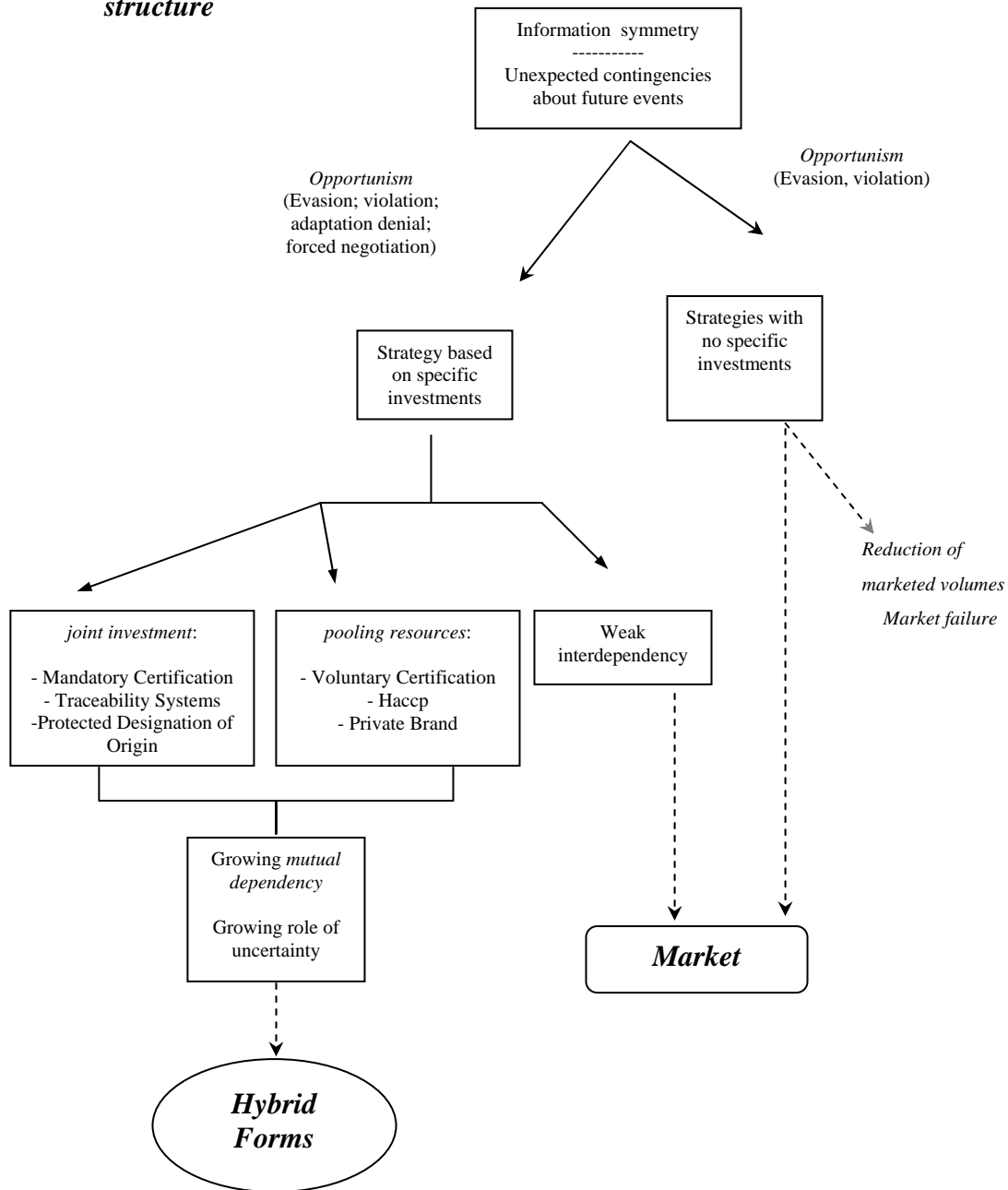
2.1.2. The choice of governance structure

Due to information asymmetry parties transacting along supply chains (i.e. grower and processor) face contractual risks affecting the degree of food safety supplied. Several safety ensuring systems have been introduced in order to deal with safety's issues, i.e. practices embedded into Haccp, which in turn may increase the economic dependence among agents.

Nonetheless, private care about food safety also emphasizes the importance of possible contingencies regarding future events. Klein (1992, 2002) points out that this may give rise to opportunistic behaviour even in the case of equally distributed information: this means that also in the case of low monitoring costs, unexpected contingencies – frequently occurring in the field of food safety -may influence the degree of safety of the product supplied. The problem of the choice of governance structure in the field of food safety can be addressed in the light of the alignment principle (Williamson, 1996), whereas the organizational solutions (private or public) depend on institutional environment (Henson and Caswell, 1999, p.594) which is in turn innovated by new regulatory approaches.

The supply of safe foods requires a firm to select suppliers able to provide the degree of quality needed and to invest resources both in specifying the characteristics of foods and in monitoring activities. On the other hand flexible and coordinated reactions are also needed in order to deal with exogenous disturbances. Strategy base on specific investments accrue the mutual dependency between parties (Mènard, 2004). This requires the transactors to choose hybrid structure, except that in the case of

weak interdependency. Spot market is usually chosen whether the specifity

of assets is not crucially large (figure 1).

Figure 1: *Information, asset specificity, and choice of governance structure*

Information symmetry

Unexpected contingencies about future events

Opportunism
(Evasion; violation;
adaptation denial;
forced negotiation)

Opportunism
(Evasion, violation)

Strategy based on specific investments

Strategies with no specific investments

Reduction of marketed volumes Market failure

joint investment:

- Mandatory Certification
- Traceability Systems
-Protected Designation of Origin

pooling resources:

- Voluntary Certification
- Haccp
- Private Brand

Weak interdependency

Growing *mutual dependency*

Growing role of uncertainty

Market

Hybrid Forms

Source: adapted Martino, Perugini (2006b)

2.1.3. The contracting nature of hybrid structures:

suggestions from Tce

The previous analysis suggests that to mitigate the contractual hazard allows agent to enhance the degree of safety of the product. A contracting base contributes to characterize the economic nature of hybrid forms (Mènard, 2004). Three broad motives are usually associated with contracting: a) risk transfer; b) incentive alignment; c) transaction costs economizing. The design of the contract will depend on which of the three motives dominates (Masten, 2000, p.27). Tce approach to contracting has received empirical corroboration and works are concerned with several aspects: i) make or buy; ii) role of incentives; iii) prices in contracting (Shelanski, Klein, 1995; Boerner, Macher, 2001). The central assumption in Tce approach to contracting are: a) the agents are unable to anticipate all possible contingencies that affect the contractual relationships; b) the agents are able to foresee major contractual hazards stemming from potential opportunism by their contractual partners, and to devise contractual structure to mitigate them (Shelanski, Klein, 1995). Bogetoft and Olesen (2002) have stressed the role of contract as coordinating mechanism: the analysis of contractual arrangements thus allow one to examine the way the agents choose to coordinate their activities in order to reach common goals (Mènard, 1994).

2.2. Food safety strategies and the hybrid forms

A governance structure has to contribute to safety oriented technological standards and to ensure flexible reactions to exogenous shocks and to establish. The interests of consumers and producers at stake become thus compatible within the organizational adaptation promoted by supply chain's agents. The hybrid contracting base allows agents to react to changes and enhancements in safety technologies, explicitly taking into account the related terms within the contract. Correspondingly, contract also allows agents to plan monitoring activities and to specifies remedies and reactive behaviours to eventual accidents. The governance structure also allows agents to set sanctions concerning unacceptable behaviours and to establish incentives for the behaviours needed, also emphasizing individual agents expectations.

Law and authority tend to limit the individual property rights in order to enhance the level of safety of foods. Formal technological rules and standards are established by law for all the agents along a supply chain, whereas successful approaches to rule technologies and behavior are increasingly adopted which are base upon standards shared among agent in hybrid governance structures. On the other hand, exogenous shocks are likely to occur despite any attempts to protect food chains; furthermore, incomplete knowledge about sources of accidents and their effects tends to emphasizes the opportunities for adopting precautionary approaches. Thus liberties of agents, event thought framed within law and authority, can be thought of as systemic resource to deal with unexpected contingencies,

emphasizing the flexibility of a food chain. Individual property rights and contract (Ménard, 1994) then contribute to food safety strategies implementation.

As the contract provides a base for dealing with the organizational problem mentioned, individual contractual preferences have to be taken into consideration. Growers' preferences could actually taken into consideration in order to lead their choices toward safety objectives. The hybrid as a whole may influence the individual preferences. The contracting actually implies that authority facilitates coordination by altering the set of possible choices available to member by: a) delineating the domain of action of members; b) influencing the conditions in which choices can be made; c) inducing members to change their plan and modifying their preferences (Ménard, 1994, p.236).

The contractual framework provided by hybrid is necessarily incomplete (Mènard, 2004). Contractual incompleteness generate enforcement problems and agents have to implement self-enforcing mechanism in the governance structures they construct (Brosseau, Fares, 2000, p. 411). As self-enforcement mechanism affect contractual performance, it can also influence the safety characteristics of the product. According to Klein (1992, 2002) the difference between the short term gains by not performing consistent with contractual understanding, say W_1, and the discounted expected future profit stream transactor will lose if the relationship is terminated for such non-performance, say W_2, affects the possibility of self-enforcing the contract. Namely, the difference between W_1 and W_2 defines

the self-enforcement range of the contract (Klein, 2002).The next section expands on these propositions and provides the conceptual base of the empirical analysis.

3. Empirical analysis: context, aims and method

3.1. Conceptual elements of the contract in Italian Poultry Sector

In poultry sector food safety troubles accrue the difficulties in anticipating all possible contingencies. This induce parties to establish contracts which enable them to adjust and cooperate.The critical transaction between growers and processor is usually a written contract establishing a complex set of technological, economic and financial terms. Physical and human capital investments are made both by the processors and the growers in order to enhance the degree of efficiency of the production process. The processor has authority over both economic and technical farms' areas. According to the criteria introduced by Raynaud *et al.* (2005) the relationship between a grower and the processor here examined can be classified as a hybrid structure:

Criteria	Values
Impersonal relations	no
Ex ante restrictions on choice of partner	no
Formalization	yes
Term of duration	medium/long
Enforcement	courts/certification
Financial participation	no
Degree of vertical integration	no

Broadly speaking, contract in poultry supply chains performs the following basic functions: a) it provides a base for efficient coordination

(Ménard, 1996; 1997): for example, the "price-formula", not price, is fixed, technical tolerance is admitted; intensive flows of information are supplied; b) it reduces the possibility of opportunistic behavior; c) it is tailored to ensure the safety degree of the product, both constraining technology and relying on ability of growers in adapting it to real farm's conditions. In the empirical context faced here the contract provide a robust operational framework, namely contractual attributes may be managed in order to optimize the alignment of transactions to the government structure.

There is a causal nexus between contract performance and food safety outcomes. Food safety outcomes depend upon contract performance which, in turn, is affected by the contract terms specification (namely the identification and negotiation of enforceable terms) and self enforcement opportunities. The grower's utility about contract terms can be interpreted in terms of individual assessment of gains from contractual relationships. The knowledge of growers' preferences yields information which can be used in order to identify negotiation paths: highest utility terms could be actually selected for reducing the costs contract specification and of monitoring, and for widening the self-enforcement range ($W_1 < W_2$).

The empirical analysis of the growers' preferences for contract attribute thus support the negotiation and the realization of food safety strategies.

3.2. The contractual attributes choice experiment

3.2.1. Theoretical premises

According to Hudson and Lusk (2004), the paper focuses the problem of choice of contract attributes under an empirical point of view. Roe, Sporleder and Belleville (2004) following a similar approach suggest that preferences for contract attributes may influence contractual price range and length but also may induce the choice of diversified supply chain relationships. The utility of a grower depends upon different factors which can be ruled by contract. Having a grower already chosen to produce poultry meat (broiler) connecting its activity to a processor, he cannot easily modify the basic framework of the hybrid relationship. Processor can actually substitute any grower, because of their large number. It is then assumed that the growers' utility (U) can be expressed in terms of a few contractual attributes[2]:

$$U = U(I, L, A, T, R) \tag{1}$$

where:

- I is the variance of grower's income;

- L is the length of the contract;

- A is the degree of entrepreneurial autonomy of the grower;

- T means the specific food safety technology;

- R indicates the risk.

Further we assume that:

$$\partial U / \partial I > 0 \tag{1a}$$

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[2]The expression "contract attribute" is here assumed as a equivalent to "contract term".

$$\partial U / \partial L > 0 \tag{1b}$$

$$\partial U / \partial A > 0 \tag{1c}$$

$$\partial U / \partial R < 0 \tag{1d}$$

and defined $C(T)$ the cost of technology,

$$\partial U / \partial C(T) < 0 \tag{1e}$$

the utility increases as the cost of technology is expected to decrease.

From theoretical point of view each grower can choice among different attributes' level in order to maximize his utility. Figure 2 shows a possible situation where the grower con choice between the levels A* and B* of general contract attributes. i.e. *Length of Contract*, with B* that allow an increase in the growers' utility function. The income axe shows the WTP and the WTA with the correct welfare measures that depend on the grower *status quo.* The relevant measure is WTA if the actual grower level is B* while it is WTP in the other case. This conceptualization allows to evaluate each relevant contractual terms, providing information which could support the contracting process.

Figure 2: Willingness to Pay and Willingness to Accept for contractual attributes
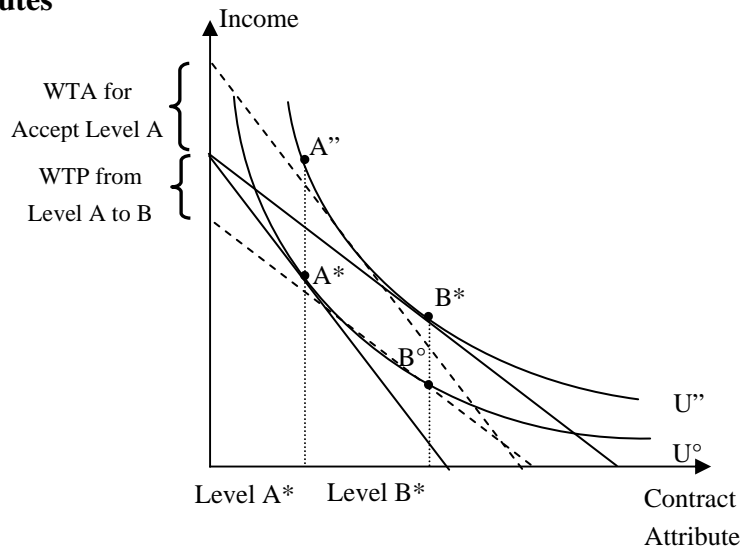
3.2.2. Contractual attributes

The empirical approach is based upon a choice experiment (CE) concerning the contractual attributes. The CE analysis has been extensively applied mainly in the field of consumer choices analysis and of the evaluation of non marketed goods (Louviere, Hensher, Swait, 2000). Hudson and Lusk (2004) refer to this analytical field in order to examine the role of producers' preferences in defining contractual arrangements.

The study is based on a choice experiment involving 169 poultry growers in Central Italy (over the period June - September 2005). A preliminary study has been carried out analyzing the current contractual relationship with the management of the company chosen. In this phase the focus was on the general contract attributes, the geographic distribution of farms, the history of the company. The goal of this phase is to define the relevant contractual attributes to be taken into consideration in the experiment. The food safety strategy of the company examined supports the label and relies upon several factors: among them the growers' technological commitments are of strategic interest. The processing company provides to growers inputs and systematic technical assistance. The growers should follow the technical directions in order to increase their income. Growers have to shape the farm organization in order follow the technological rules. Thus, inputs provided by the company are allocated to production process together with other farm resources. Possible contracts have been submitted to growers in order to elicit their preferences about contract attributes. The contract attributes

chosen to design the experiment are illustrate in the following scheme (table 1) and described above.

Table 1: Choice set of contract attributes.

Attributes	Level 1	Level 2	Level 3
Contract length (years)	1	3	5
Production Cycle/Year	1	3	4-5
Degree of Autonomy	Autonomous	In collaboration with the purchaser	Only with direction of purchaser
Disinfection Practices	Chemical products	Heat	Fumigation
Variable Fraction of Price	0%	20%	80%

Contract Length has been considered in order to examine the duration of the link between grower and the company affecting the hybrid stability (Mènard, 2004). Individual grower is expected to have an interest in a sufficiently long contractual length, ensuring her/his product to be traded. On the other hand too much large length tend to be not preferred as they may reduce the grower's opportunities for better arrangements.

Production Cycles/year has been introduced as proxy of the annual income (the average annual net income is estimated equal to 15.000 euro/year/farm) in order to avoid bias in responding to question directly concerning the amount of income. Then the number of both chosen and not chosen alternatives has been multiplied by a scalar corresponding to the average income/cycle.

Degree of autonomy has been included because of three reason. Growers are involved in managing agricultural firms not specialized in poultry production, then may be interested in shaping organization and technology in order to meet individual goals. Growers have joined the company during

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the last years. Third, autonomy is an attribute clearly addressed in literature, pointing out its role in defining the contractual relationship (Hudson, Lusk, 2004). The variable technology could be variously specified.

Disinfection practice has been chosen in order to take directly into account the role of food safety strategy in contractual arrangements. The food safety strategy in production stage has been considered under different views, but mainly in terms of internal technological and organizational change. Recently Yapp and Fairman (2006) have discussed several factors affecting the firm's quality/safety systems. Nespeca *et al.* (1997) have showed the need of correct specification of tools of inquiring. In this field there is a problem of adequate specification both of individual behavioral expectations and of technological commitments. An examination of these aspects has been conduct both with the company's technicians and with academic experts. Finally the simple specification of disinfection practice chosen would capture the link between commitment and behavior.

Variable fraction of price has been introduced to take into consideration the role of the risk (Hudson, Lusk, 2004; Allen, Lueck, 1995). The focus is on price risk assuming it can capture a relevant part of the risk faced by growers. Price is linked to productive yield in a complex "price formula" included within the contract. Then the variability of price is (non linearly) correlated to the (technological) efforts of the growers and depends upon on the not easily controlled technological variability. A higher contract price may be contrived whereas the variable fraction was high. The interaction effects between income and other variables have been considered.

3.2.3. Variables coding

Attribute variable *Production Cycles* has been transformed into a new variable *Income* by multiplying each value by the scalar 15.000 euro/year/farm. Both *Income* and *Lenght* have been included in the model as continuous variables. Remaining attributes variables have been coded as effect codes. Thus the model includes: *Coll* (Degree of Autonomy: in collaboration) and *Aut* (Degree of Autonomy: autonomous); *Chemp* (Disinfection practices: Chemical Products) and *Heat* (Disinfection practices: Heat); *Risk20* (variable fraction of price: 20%) and *Risk0%* (variable fraction of price: 0%).

A noteworthy aspect of the approach chosen is that it provides estimates of Willingness to Pay (WTP) or Willingness to Accept if it is "negative" (WTA) for each attributes.

In the context of contracting nature of the organization these evidence may be of interest: a) to gain a more detailed comprehension of the organizational relationships; b) to delineate possible path of negotiating in order to reach specific goals, i.e. in the field of food safety strategy; c) to analyse the economic role of commitment related to food safety strategy.

The design of experiment is thus based on five attributes with three levels. This generate a full-factorial design including 3^5=243 possible contracts. Since this number cannot be handle in the experiment, a fractional-factorial design has been determined (Kuhfeld *et al.*, 1994) including 54 possible contracts. These contracts have been randomly distributed obtaining 18 choice sets, each including three choice alternative.

Each growers has been then requested to chose one contract among three proposed.

4. Empirical results

The table 2 summarize the general characteristics of the sample.

Table 2. General characteristics of the Farmers and Farms

Characteristics	N. of respondents	Relative frequency (%)
A) FARMERS		
Education	**121**	**100.0**
Primary School	52	43.0
Secondary School	59	48.7
University degree	10	8.3
Frequency of technical training	**121**	**100.0**
Never	23	19.0
Rarely	56	46.0
Systematically	42	35.0
B) FARMS		
Poultry Houses (m^2)	**90**	**100.0**
1.000-1.499	13	14.5
1.500-1.999	8	8.5
2.000-2.499	11	12
2.500-2.999	11	12
3.000-3.499	11	12
3.500-3.999	5	5
4.000-4.499	12	13.5
4.500-4.999	2	2.5
5.000-5.999	7	7.5
6.000-6.999	4	4.5
7.000-7.999	2	2.5
>8.000	4	4.5
Poultry Gross Product /Year (%)	**90**	**100.0**
< 250.000	63	70
250.000-500.000	25	27.7
> 500.000	2	2.3

Source: Poultryflorgut WP5 - Database A

Table 3 illustrates the model estimates and the basic econometric results[3].
At first the Income's coefficient estimated appears positive and significant
(at 1%), supporting the hypothesis that expectations about income really
contribute to shape the producers preferences in contracting.The *Length*'s
coefficients are negative and significant at 1% and 10% respectively, this
contribute to the comprehension of the specific hybrid form and to the
assessment of the its degree of stability.

The variables relating with the autonomy degree are partially significant
indeed only (*Coll*) parameter is significantly different from zero (10%). This
results suggests that grower prefer a limited degree of autonomy: this
reflects the usual relationship in poultry sector and the extent to which
authority (Mènard, 1994, 1996) is expected in the context of the hybrid at
stake.

Table 3: Conditional logistic regression (Main effects)

Variables	Coef.		Std.Err
Lenght5	-1.2468	[a]	0.3441
Lenght3	-2.0626	[c]	1.1383
Income	0.0003	[a]	0.0001
Coll	1.6021	[c]	0.8918
Aut	0.2685		0.5681
Chem.	3.0605	[b]	1.4580
Heat	0.2632		0.6194
Risk100	1.5119	[c]	0.9086
Risk80	-2.3020	[c]	1.2974

Dependent variables = Choice; Log likelihood = -29.903
Number of obs. 363, LR $\chi 2(9)$ = 206.06; Pseudo R^2 = 0.7750
(a) significant at 1%, (b) significant at 5%, (c) significant at 10%

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[3] The three contractual alternatives are "equivalent" in terms of exit option: a Hausman test has been
then performed by simply excluding the first alternative in each choice set. The test (χ^2=2.74(0.84))
indicates that of the IIA hypothesis is not rejected.

Under a theoretical point of view, one could argue that the idea of dependence of preferences from both institutional environment, governance forms and individual introduced by Williamson (1996) could explain this evidence.

About technological choices only *Chem* shows significant coefficient indicating that are some of interest for growers and that in particular they would prefer negotiate some technical prescriptions.

Results concerning the attribute "*Variable fraction of price*" show that the risks' coefficients are significant at 10% level suggesting an role for price risk.

Even thought the IIA assumption is not violated, under an economic point of view the hypothesis of heterogeneity of preferences could be directly taken into account (Hudson, Lusk, 2004). A Random Parameter Logit model approach (McFadden, Train, 2000) has been used. First of all, the hypothesis that parameters are randomly distributed has been tested following the procedure illustrated by Hensher, Rose and Greene (2005). According to Hudson and Lusk (2004) the variable Income has been not included within the set of potential variables with randomly distributed parameters. Due to converge issues, testing together the remaining variable does not yield any readable results. Thus subsets of these variable have been taken into account in order to obtain significance test for artificial variables.

The model including the artificial variable derived from *Risk20%* and *Risk0%* shows that this variable is statistically significant indicating that the price risk parameters may be randomly distributed. Nonetheless the results

of the Random Parameters Logit (25, 50, 100, 200, 300, 350, 500, 1000, 2000) indicates that parameters are not statistically significant.

The table 4 illustrates the estimated WTP or WTA derived from the estimated model. The parameters are calculated from 1089 draws from the sample. For each draw, relevant parameters, deviation standard and confidence intervals have estimated.

Table 4: WTP and WTA computation

Variables	Coefficients estimated		Std. Err.	Conf. Interv. 95%	
Lenght5	-8630.84	[a]	1842.57	-12242.20	-5019.48
Lenght3	-5855.87	[a]	1865.75	-9512.68	-2199.07
Coll	5280.86	[a]	1700.34	1948.26	8613.45
Aut	-1083.34		1717.86	-4450.27	2283.60
Chem	9217.45	[a]	1890.66	5511.82	12923.07
Heat	-2146.04		1720.62	-5518.40	1226.32
Risk0%	2944.78	[b]	1484.82	34.59	5854.98
Risk20%	-3361.84	[b]	1624.51	-6545.81	-177.86

Dependent var. = Choice; Nr. of obs. 363; Bootstrap Rep. 1089
(a) significant at 1%, (b) significant at 5%, (c) significant at 10%

The growers would prefer to be compensated as the contractual *Length* increases: namely, the amount of compensation increases as the contractual duration increases. Since, growers have to preserve the value of investments which can be allocated just in poultry sector, the evidence may reflects the grower' search for better arrangements and the existence of a competition process among hybrids.

The amount of growers's WTP for enhancements of the degree of collaboration with the company (see *Coll* variable's WTP) is large (about the 61% of the average income of a production cycle) indicating the large utility the growers expect to achieve. Analogously, WTP for introducing *chemical disinfection practices* indicate that changes in this field are really

requested; this could also suggest a specific concern for the food safety strategy of the company.

The growers would pay to minimize the level of price risk they are usually bearing. This result is compatible with evidences from literature and confirm that grower tend to hold a stable, quasi-integrated relationship with the company. This may also reflect the producers awareness about the impossibility of modify the contractual "price formula" or, in other words, in terms of preference endogeneity (Williamson, 1996).

5. Conclusions

The study assumes that hybrid organizational forms may be efficiently chosen by the agents in order to enhance the degree of food safety supplied.

The empirical analysis has taken into account the contracting dimension of hybrids in poultry sector. The choice experiment approach suggests that the growers sufficiently prefer hybrid's stability and accept both authority and quasi-rent distribution (a low risk is preferred with the acceptation of the contractual price-formula). Evidence about disinfection technology indicates that there is room to promote changes related within the contractual framework.

The study could be enhanced by increasing the size of sample, in order to take into account further groups of growers. This may be helpful in achieving better results about the heterogeneity of preferences. Furthermore, the role of preference on the contracting process within hybrid forms should be examined under a theoretical point of view.

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