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# **Administrative Burdens in the Dairy Industry – A Proposal for Empirical Research**

**Harry Bremmers, Krijn J. Poppe, Jo Wijnands and Bernd van der Meulen**

Business Administration group, Wageningen University, Hollandseweg 1, 6706 KN  
Wageningen, The Netherlands

[harry.bremmers@wur.nl](mailto:harry.bremmers@wur.nl),

[Krijn.Poppe@wur.nl](mailto:Krijn.Poppe@wur.nl),

[Jo.Wijnands@wur.nl](mailto:Jo.Wijnands@wur.nl)



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*Harry Bremmers, Krijn J. Poppe, Jo Wijnands and Bernd van der Meulen*  
*Business Administration group, Wageningen University, Hollandseweg 1, 6706 KN*  
*Wageningen, The Netherlands*  
*harry.bremmers@wur.nl, Krijn.Poppe@wur.nl, Jo.Wijnands@wur.nl*

### Abstract

The goal of this paper is to frame the effect of regulatory burdens in a research outline which enables the study of their effect on the competitiveness of the food and drinks industry, especially the European dairy sector. A firm perspective is used. We address the basic structure and tendencies in the food sector, the regulatory role of regulatory burdens and their effect on competitiveness. A theoretical foundation is provided by transaction cost economics and total quality management insights. The effects of legislation on administrative costs and competitiveness are mediated by impacts on innovativeness, company strategy, food safety system availability, as well as the available information & communication capabilities. Building on a previous studies showing the negative impact of administrative requirements on competitiveness, this paper focuses at expanding the available research framework and to adjust it to sector (i.e. dairy) specifics. We will connect to previous research (Wijnands et al., 2007) which, among others, generated the following generic results:

- administrative burdens are connected to prevention measures;
- administrative burdens impede on the innovativeness of food companies;
- administrative burdens are influenced by the content of law and by the predictability and clearness of regulations.

### 1. Summary

The goal of this part of the research is to frame the effect of regulatory burdens in a research outline which enables the study of their effect on the competitiveness of the food and drinks industry, especially the European dairy sector. A firm perspective is used. We address the basic structure and tendencies in the food sector, as well as the impact of regulatory burdens in the dairy sector competitiveness. A theoretical foundation is provided by transaction cost economics and total quality management insights. The effects of legislation on administrative costs and competitiveness are mediated by impacts on innovativeness, company strategy, food safety system availability, as well as the available information & communication capabilities. Building on previous studies showing the negative impact of administrative requirements on competitiveness, we intend to expand the available research framework and to adjust it to sector (i.e. dairy) specifics. As the European dairy sector is under pressure, and in general is extremely innovative (but with extreme differences between individual companies), the reduction of administrative burdens is regarded as a key policy objective, to be able to survive in a global arena. We suggest a broad conception of administrative burdens, comprising financial as well as non-financial responses to regulatory changes, as well as voluntary measures. In the empirical investigations we will perform, the concept can be narrowed down to costs of “obligatory information processing”, which is more in line with the ‘standard cost model’. To frame the impact of administrative burdens, especially with respect to food labeling, we discern the following varia-

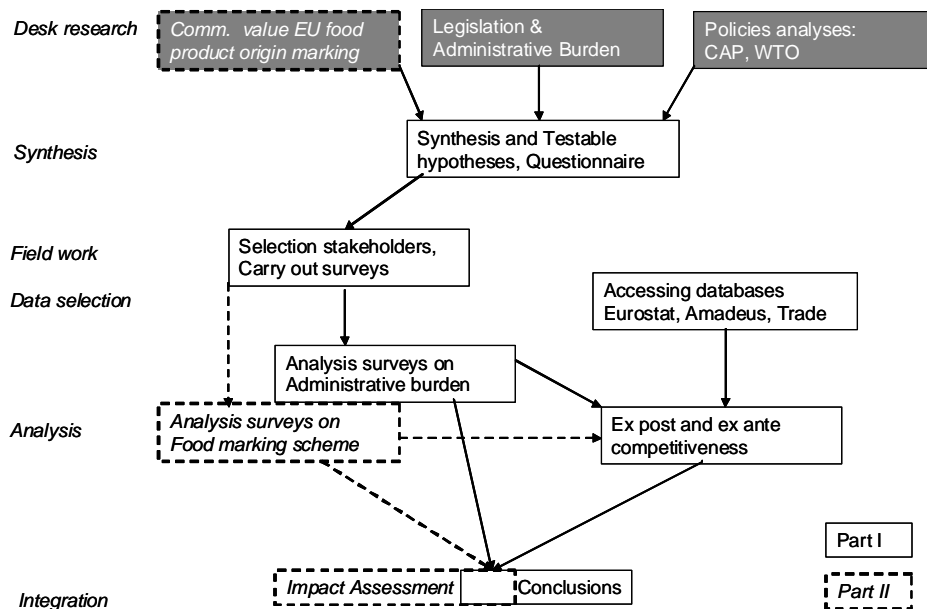
bles: regulatory burdens (content and form), level of innovativeness, company strategy, level of food safety system implementation and available information and communication capabilities. Size, level of network embeddedness, industry and product characteristics will be treated as control variables. We will connect to previous research (Wijnands et al., 2007) which, among others, generated the following generic results:

- administrative burdens are connected to prevention measures;
- administrative burdens impede on the innovativeness of food companies;
- administrative burdens are influenced by the content of law and by the predictability and clearness of regulations (positive relationship).

Hypotheses are formulated to test the proposed relationship between the mentioned variables.

## 2. Introduction

For DG Enterprise we carry out a project on the competitiveness of the dairy sector, the administrative burden and an impact analysis on a labelling scheme. The figure below presents the research framework and sequence of the integrated approach of part I (empirical research) and II (impact analysis of the labelling scheme). A survey will be carried out in 6 EU countries: with a large number PDO/ PGI, with many SMEs, with firms in the top-20 global ranking list, with Common Law and continental law and distributed over the North and South, East and West of Europe. The benchmark countries for the competitiveness analysis are the major dairy producing countries in the world. For the administrative burdens, USA and Brazil are selected. The project will be executed in cooperation with the MoniQa network.



### Research Framework

The part of the research which is described in this paper is on developing a framework to analyze the impact of administrative burdens. The goal of the paper is to frame the effect of regulatory burdens in a research outline which enables the study of their effect on the

competitiveness of the food and drinks industry, especially the European dairy sector. A firm perspective is used. The following two sub-questions specify the activities which are performed in this contribution:

- to delineate ‘administrative burdens’ from other administrative requirements which are connected with a changing legal framework, especially origin labeling;
- to construct a theoretical framework which can be used to explain the relationship between changing legal requirements, administrative burdens (especially connected with origin labeling) and competitiveness of the dairy industry, from a company perspective.

The European food and drink industry is, with a turnover of €800 billion and 4 million people employed, the biggest manufacturing sector in Europe (CIAA, 2006). 11% of world exports of agricultural and food and drink products originate from the EU; the share however is shrinking while shares of China, Brazil, Australia and New Zealand are increasing (CIAA-b, 2006, p.7). Dairy product exports reach up to 12% of food and drink exports, but have declined significantly in recent years. The expansion of this sector relies to a large extent on its competitiveness outside the EU and the level of quality & safety assurance inside. The promotion of food quality and avoidance of food hazards is of immanent importance for consumer safety and for safeguarding a competitive position in the international arena. However, an abundant system of prescriptive legislation has been created, both at the level of the Community as on National levels. In many cases, administrative and other compliance costs increased excessively. As a result of the Lisbon call “to become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion” (cited in CIAA-a, 2005), initiatives have been taken to improve legislation and (thereby) reducing administrative burdens. Administrative burdens are a result of public intervention, which is an alternative to the rule of the free market. Public intervention may use instruments like: information procurement, process standards, product performance standards and pecuniary measures (Henson and Traill, 1993).

### *Governance of the food industry*

In this paper we assess the factors that affect the competitiveness of sectors in the European food industry, especially with respect to labeling and (the connected) administrative burdens. Costs which result from regulation play an important role in the willingness to comply to it, especially for those food firms which are exclusively or dominantly profit-seeking.

Governance of the European food industry poses a choice between self-regulation (of which voluntary labelling is an example) and command-and-control (of which mandatory food labelling is an example), or a combination of these (Sinclair, 1997). “Pure” self-regulation could have negative consequences for the welfare of nations if public goods (like environmental sustainability, population health) are involved, for which property rights are ill-defined, or if a lack of transparency (like of food safety level, origin, or GMO-content) creates a situation of asymmetric information (with possibilities of opportunistic behavior; Williamson, 1985). An example of the first is the adoption of environmental sustainability by private enterprise. A “neo-classical” approach to the environmental problem presupposes unlimited resource-substitution possibilities, a “time-less” world in which technological innovation is produced instantly and at will, and a voluntary internalization. Self-regulation as such does not make companies survive in a competitive environment, on the contrary (Rumelt 1990, Reinhardt 1999, Christmann and Taylor 2001). In the past, regulatory stringency has been the dominant instrument to achieve food safety and sustainable production. The deployment of a “hierarchical enforcement”-policy

is considered by many as inefficient and costly, stifling innovation and inviting enforcement difficulties (Fairman and Yapp 2005). Carried out to the extreme, this policy would require the use of so many natural and social resources that the net-benefits would be marginal. With respect to the food industry, pure self-regulation could go at the cost of consumer's health. Moreover, leaving food supply to the market would possibly lead to price deterioration to an extent that individual firms would perish in the long run. For a long time, theories of industrial organisation fostered the influence of market structure on profitability of firms (Roquebert et al., 1996). It considers firms as passive entities, which is a narrow view on reality. Many firms in the present European food industry have the power to pursue a market strategy. Food companies' strategies should be considered in the effect of rules and regulations. Nevertheless, the "passive model" of reactive adjustment to environmental forces applies to many companies in the European food industry, since most of them belong to the SMEs (< 250 employees), employing 61.3% of personnel in the sector (CIAA-a, 2005, p.4). Lengthy customs' procedures are one indicative factor explaining the lack of export growth (CIAA-b 2006, p.28). The "active model", however, stresses the inner strength of companies by exploiting its basic resources (a stream called the resource-based view; Barney, 1991).

Why should companies comply to burdensome public regulations? As to Cornelissen (2004b) the profit-seeking firm will comply to regulatory requirements if the benefits of complying are bigger than the costs, or alternatively, if the disadvantages of not-complying exceed the costs of complying. Costs and benefits can be vested in profits or reputation (damage). Positive compliance decisions will be made comparing the perceived marginal benefit of compliance or the perceived marginal cost of non compliance with the perceived marginal costs of compliance (Henson and Heasman (1998) referring to Baron and Baron (1980)). With respect to information costs to be made to comply, rational firms and individuals will spend such costs to the point where the marginal benefits (discounted error costs) are equal to the marginal costs of information procurement (Ogus, 1992). If marginal error costs are low, it follows that individuals will not spend much money on information costs. Where marginal error costs are high (for instance: possibility of death, heavy injury, costly recalls in food industry etc.), the willingness to spend money on information procurement will be high. Since food consumption is perceived as a serious cause for possible personal harm, the willingness to spend costs on reducing such risk through information may be high.

In general, excessive administrative burdens increase transaction costs in the market and will therefore impede on the competitiveness of food firms. It is not clear in advance whether administrative requirements are higher in a common law system (UK, US) or in a regulatory (European, continental) system of law. Possibly the ex ante costs (costs of acquiring and assimilating information before the legal rule is formulated) are higher (Ogus, 1992) in a continental system, which is based on prevention of risks, in stead of litigation. On the contrary, the ex-post costs in a common law system will presumably be higher. Excessive administrative burdens is only one with which the European food and drink sector is confronted. It is related to other tendencies which provoke a loss of competitiveness (CIAA-a, 2005, p.4):

- lack of investments in R&D and innovation performance; as SMEs have lower profit margins, budgets for R&D are presumably low also. Spendings on R&D are relatively low with 0.32% of output in the EU.
- globalization and increased competition from countries with comparative advantages in basic food production;
- slow productivity growth.

How can the dairy sector address these problems, and what role does the legislative process play in this respect? To be able to formulate a conceptual model to address this question, the administrative burden concept is first delineated in the next § 3.

### 3. Administrative burdens: delineation of concepts

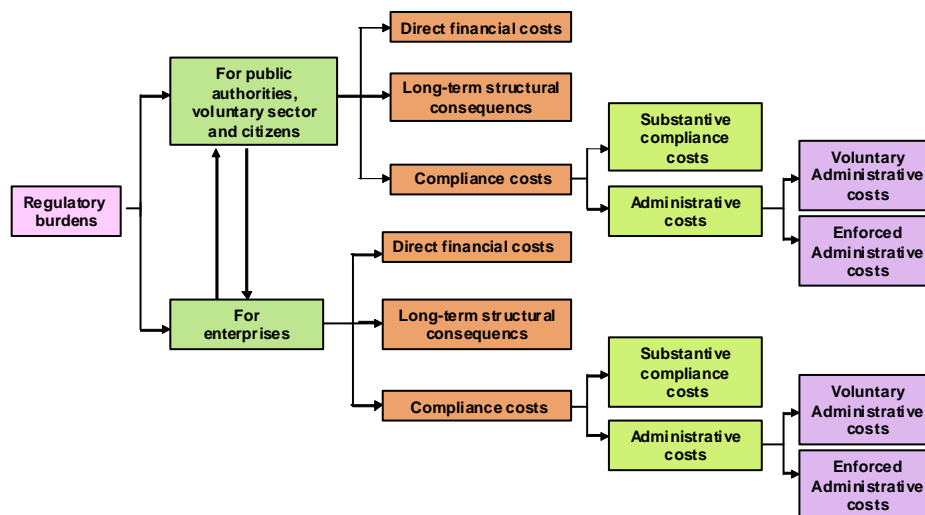
It is an expressed goal of the Commission to reduce administrative burdens by 25% in 2012. The effect that is expected from a reduction on EU- as well as national levels is an increase of GDP of 1.4% (€150 bln) in the mid-term (COM(2007)23 ref. to: Gelauff and Lejour (2005)). For instance, for The Netherlands at the end of 2002 the administrative burdens were €23,780 per firm (€16.4 bln for 689 623 companies in total, as to the Dutch EIM/CBS; Suyver and Tom, 2004), while in 2007, on the basis of Ministry plans in 2002, these burdens should be €3 bln lower, reducing the average burdens with €4,500. However, it was also projected that large firms would benefit 13x more than small firms. Small companies were projected to benefit €3560 (in total: 76%), medium-sized companies €7327 and big companies €45,735 (Suyver and Tom, 2004, table 2). Other countries and organizations have proposed similar policy goals. In Sweden an action plan was initiated to select areas of regulation that can be simplified or changed to reduce burdens, on the basis of the Dutch Standard Cost Model. Also organisations like CIAA have proposed initiatives to improve and simplify the EU regulatory framework (CIAA-a, 2005, p.3). CIAA is especially concerned about the research drain in biotechnology, the cost of pre-market approval of novel foods, regulation about legal additives, easing up regulations for nutrition and health claims, food labelling (modernisation, simplification and consolidation, the stimulation of self-regulation and the exclusion of food and food ingredients from the scope of Reach (Revised Chemicals policy).

The delineation of administrative burdens (based on the standard cost model) is given in figure 1. Administrative burdens, as to EU definitions, refer in a broad sense (including labeling, monitoring, reporting and assessment) to all information requirements (either to public or private bodies) that are induced by regulatory activity and would not be collected if such legal obligations would not exist.

There is much diversity however in the vocabulary which is used to delineate regulatory -including 'administrative'- burdens. The UK Hampton report suggests that the costs of regulation can be split up in (Scrivens, 2007):

- policy costs: the costs inherent in meeting the aims of a regulation (direct cash costs + investments, or changes in organization of a firm necessary to meet obligations);
- administrative costs – costs of gathering information about a business, or checking on a business's compliance.

The report especially addresses the costs of inspection of regulatory bodies to guarantee compliance. It argues, among others, that risk assessment can reduce the number of inspections, that such inspections should be made only with a reason, and forms and procedures should be simplified.



**Figure 1.** Delineation of Administrative burdens (based on COM(2007)23).

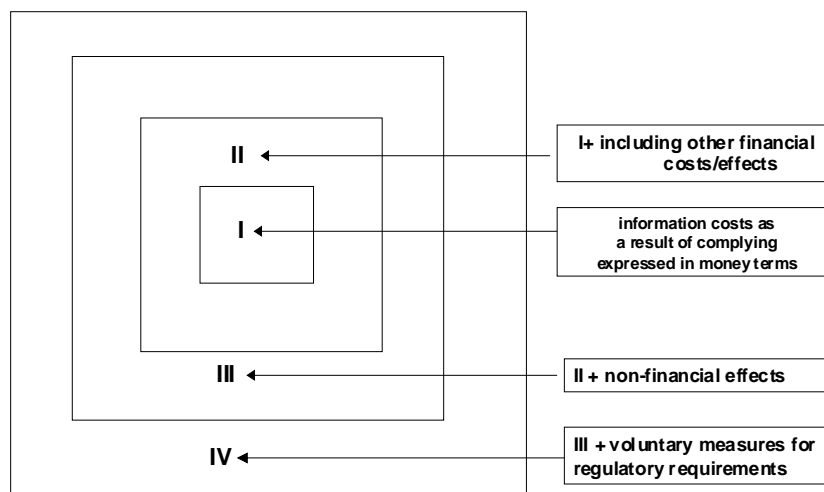
Further specifications of the concept ‘administrative burdens’ are found in the outline that describes the Dutch Standard Cost Model to assess such costs. In the Dutch version (The Hague, 2003) a distinction is made between obligations to “do or don’t”, and information obligations. As to the Dutch system, administrative burdens are costs to enterprises to come up to information obligations which result from regulation and legislation by the government. Costs from self-regulation are not covered by the administrative burden concept. The main difference between the (original) Dutch standard cost system is vested in the fact that the EU-system includes also voluntary information costs of public authorities, whereas the Dutch system only regards the information costs of enterprises. In the original Dutch outline, voluntary measures to come up to information requirements are included in the administrative burden concept, whereas in the derived EU-system, there should be a legal requirement to take information measures. Benefits which are connected to obligatory information requirements are not considered as a “negative” administrative burden. Administrative burdens in the Dutch system are measured using (among others) the following principles (the Hague, 2003):

- concrete and measurable (not qualitative);
- only costs are included, not the benefits;
- if the costs are compensated by a financial compensation, they are not included;
- structural costs should be quantified;
- one-time costs should be quantified and attributed to different periods;
- costs of monitoring legal changes are included in the concept;
- registrations for multiple purposes are attributed to regulation and legislation, that causes the burden.

Within this research administrative burdens, narrowly defined are “the information costs which are caused by changing legal requirements and made for complying with them”. We call these “level 1 costs”. They can be measured for administrative bodies and/or for private enterprises.



A broad view encompasses all impacts to administrative and/or private bodies (so also other costs, expressed in money terms, than information costs are included; this we call: level 2 costs. An even more broadened view encompasses not only financial burdens, but also qualitative burdens (like environmental and social impacts): this is “level 3 costs”. The investigation of such causal effects is of importance for the construction of an impact analysis. Last, also the voluntarily imposed burdens are included (like a private ISO-systems which is installed to protect food safety, and the like (this is level 4 in our analysis) We propose to depart from this broadened view. However, empirical results should be organized in such a way, that also figures on the narrowed levels can be provided.



**Figure 2.** A broad view on administrative burdens

The following hypotheses can be formulated:

H1a: Level 4 administrative burdens will negatively impact the competitiveness of the European dairy food sector.

H1b: Level 4 administrative burdens will be increased by origin labeling.

*Cumulative* regulatory burdens, as defined in COM (2006) 691 of 14 December 2006 are extra legislation which impedes the placing of a food product on the market with the ensuing consequences for competitiveness, or raise costs in an unjustifiable way to economic operators which lead to price increase of the end food product, or prolong the time-to-market. Cumulative administrative burdens are caused by unnecessary legislation. Unnecessary regulation hampers international trade and competition. Regulations are called unnecessary (cumulative) if they are not necessary for coming up to the goal of a legislation or for guaranteeing the level of protection the Treaties offer. WTO-articles (article XX) and Agreements (with respect to Trade, Sanitary and Phyto-sanitary measures for instance), restrict regulation to a level that obstructs international trade more than necessary to reach the legal objective (Kalinova, 2005). Also, the

OECD's Red Tape Assessment ('Scoreboard') project was initiated to compare administrative burdens over several countries (among others: Netherlands, USA, United Kingdom and Italy), using a slightly adapted version of the Dutch Standard Cost Model; similar studies were performed by the World Bank and World Economic Forum (OECD, 2007). As to the OECD the abandonment of additional regulatory requirements which supplement necessary regulations could reduce administrative burdens.

The more open an economy is, the less governments are able or willing to regulate domestic economic activity (Pevcin, 2006 referring to Pryor, 2001)).

As expressed, unnecessary or extra regulations ('goldplating') can cause unnecessary administrative burdens and obstruct competitiveness substantially. For instance, the costs of plant variety protection with a 15 years' protection period are \$ 5687 in China, \$ 10,480 in the EU and \$ 4344 in the US (based on Louwaars et al., 2005 cited in: Tripp et al., 2007). The Action Program (COM(2007) 23) addresses EC-regulations and directives, national transposition and implementing measures connected with these, as well as national and regional abundant information obligations. Expressed priorities with respect to investigation of excessive administrative burdens are Directive 2000/13/EC of the European Parliament and of the Council of 20th March 2000 on the adjustment of Member state laws with respect to the labeling, presentation and advertising of foodstuffs, as well as information obligations with respect to GMO-traceability rules (Regulation 1830/2003). Both regulatory revisions can act upon dairy processors, as well as other companies in the food sector. An example of 'goldplating' outside the food sector is given by Directive 95/46/EU, governing the protection of privacy. The EU-directive contains 72 considerations and 34 articles, while the Dutch implementation (Wbp) contains more than is required with a minimal implementation: 200 considerations and 83 articles.

Within our research, we conceive 'goldplating' as being vested in:

- the translation of EU regulations in national laws and other requirements;
- the translation of national laws and requirements in company information systems and other company devices (like investments, procedures etc.). For instance, misconception of national rules could lead to over-compliance on a company level.

Both could impede (or promote) the competitiveness of the European dairy sector.

H2a: Dairy companies view national requirements with respect to food legislation as too burdensome.

H2b: Origin labeling will induce extra administrative requirements which are disproportionate to the goal that such origin labeling fosters and the benefits that can be expected.

Regulatory burdens are a result of legal content, but also of their form (clearness, consistency etc.) As to Cuijpers (2006) vague and open norms, complexity and uncertainty of interpretation, new procedures and burdens, dis-congruence with the privacy-understanding of the citizen as well as the lack of stimuli for self-regulation are the result of excessive legal requirements. The extra costs to be considered in this respect are classified as mechanic costs (implementation of new prescriptions, handling and IT-costs) as well as organisation costs (education, information etc.) accelerate costs of information processing.

H3: The legal requirements for dairy companies in the EU-food sector are vague, complex and burdensome.

Administrative burdens could distract assets from opportunities to invest in operational and marketing activities, which leads to declining competitive performance. Possibly more than proportional burdens are created in food law requirements. While the creation of food safety systems is automatically affecting administrative burdens and such systems are generally accepted, the implementation of new labeling requirements, GMO- and Novel Food-related impediments and product-oriented requirements of innovation can hamper competitiveness if such requirements are disproportionally distributed over countries. Regulatory and administrative burdens will disproportionally affect competitiveness if:

- 1 - the burdens are not compensated by benefits with respect to food safety and quality, improved transparency or other (societal) factors that positively affect the food system.
- 2 - growth and market shares are affected disproportionally;
- 3 - Innovativeness is obstructed more than necessary.

For dairy products, such international markets exist with respect to novel food products. Before motivating our standpoint further, we will sketch a theoretical perspective in the next paragraph (3) to be able to coherently analyse the influential factors on competitiveness in general, and the effect of administrative burdens in specific.

### **3. Theoretical framework**

Two complementary theoretical orientations can be used to measure the effect of regulatory burdens, including its costs, on competitiveness of individual firms. We propose:

- the total quality management framework (TQM), § 3.1;
- the transaction cost framework (TCE), § 3.2.

#### *3.1 The TQM-framework*

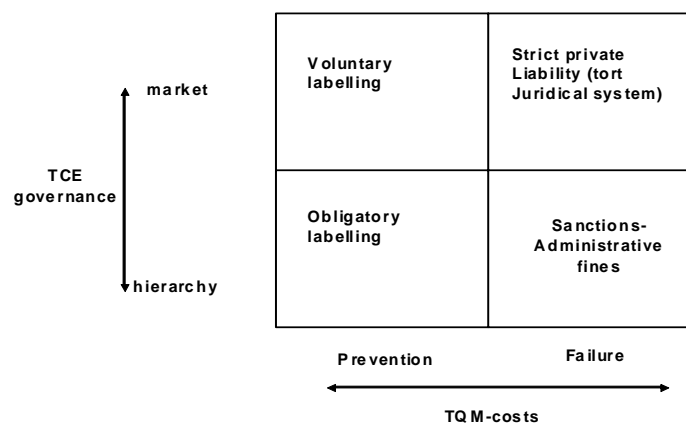
Total quality management is a practical approach to enhance product as well as process quality aspects, strategic attitude (top-management involvement) and organizational behaviour through empowerment of employees. Consumer needs, not technological governance, is the starting-point of all quality processes (Spencer, 1994; Hackman and Wageman, 1995). As opposed to the “Deming’ principles of quality”, the TQM-principles are not universally applicable, but their application depends on the characteristics of a specific firm. Process-control is fostered to reduce unnecessary sacrifices of inputs. In general, it is supposed that the costs of bad quality are far greater than costs of avoiding bad quality (Hackman and Wageman, 1995), although quality has a price which could be excessive. So, with respect to quality costs, two opposing tendencies can be discerned: prevention (including appraisal-) costs and failure costs. Prevention costs increase with higher levels of quality assurance (within this outline: of regulatory stringency), while at the same time failure costs are reduced (costs of non-compliance, such as is the case with food-borne diseases etc.). While the European system fosters prevention (risk avoidance) the US-system of litigation fosters compensation of failure. The question is what, at the firm level, the ‘ideal’ combination is of both policies, given that fact that prevention costs have to be weighted with failure costs.

#### *3.2 The transaction cost approach*

Transaction cost theory provides a new perspective on the structuring of economic organisation. While former theorizing conceptualized a firm as a production function, transaction cost economics regards a firm as a governance mechanism (Rindfleisch and Heide, 1997; Williamson,

1998). Likewise, economic organisation can be governed in a hierarchical way (like a –vertically integrated – firm) or leave the economic exchange and its characteristics to market governance. Hierarchies (integration) cause bureaucratic costs, which induce a tendency towards market governance. However, dimensions of governance like the necessity of asset specific investments (translated to the study at hand: investments in for instance quality assurance systems induced by buyers to enhance food safety, combined with lack of information, asymmetrically distributed information, or (market) uncertainty can lead to opportunistic behaviour and shirking, so that a hierarchy is preferred (translated to our research: governmental intervention is necessary). Transaction cost economics especially regards the consequences of incomplete contracts as a result of limited rationality and information. In general, asset specificity forms a strong bias towards hierarchy (governmental intervention; David and Han, 2004; Geyskens et al., 2006; Poppo & Zenger, 2002). The role of food labels from a transaction cost perspective is to improve information processing so that contracting is facilitated.

Within this research, the following combinations of the two theoretical viewpoints can be discerned (figure 3).



**Figure 3.** TQM and TCE

Figure 3 shows, that labelling can be regarded as an instrument to promote market efficiency, or as an instrument to control firms. Both are directed at protecting buyers from inefficient purchase decisions. Perceptions on the usefulness of labelling information affects the perceptions of consumers whether or not mandatory nutritional labelling would be beneficial (Gracia et al., 2006). However, usefulness of labelling information does not always implicate that behavioural consequences by consumers are taken (see in this respect: Hefle et al., 2007). With respect to origin labelling an extensive research by Loureiro and Umberger (2007) in the US shows, that US consumers that USDA food safety inspection with respect to beef is preferred over country-of-origin labelling. As to these authors indication of origin make sense if the origin stands for higher food safety or quality. Labelling bridges the information gap between consu-

mers/buyers and suppliers with respect to basic characteristics of a product or service. Labelling which is not governed by regulation and certification is possibly victim of opportunism. An example in this respect is eco-labelling. Despite European efforts to establish authorized, non-compulsory ecological labeling (Eco-label I in CEE 92/880 and Eco-label II in CE 1980/2000; Proto et al., 2007), variations in eco-labels are widespread and more confusing than informative. As to Van Amstel et al. (2006) the reliability of information of five investigated food labels showed severe shortcomings, and do not fill the information gap between seller and buyer. The overview we presented in figure 4 coincides to a large extent with Loader and Hobbs' (1999) options to reduce information costs for consumers: (1) product certification or labeling at the firm-level, (2) legislative protection in the form of labeling regulations (also in: Unneveher and Jensen, 1996) and (3) tort liability law (with the chance of market failure).

### 3.3 Research framework

Next, we propose a research model to measure the effect of regulatory burdens and key factors (innovativeness, strategy, food safety system availability and information processing capabilities) impacting on the competitiveness of a highly innovative sector, like dairy is (see figure 5).

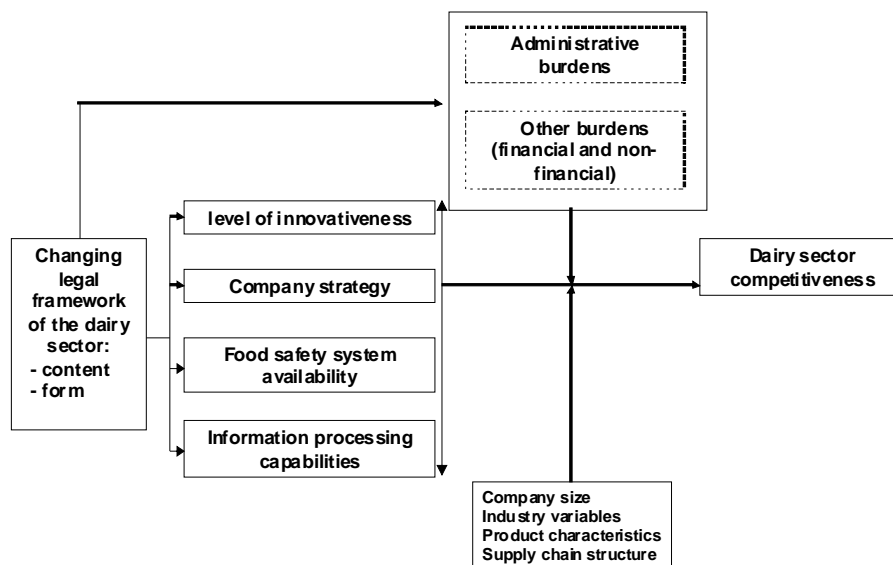


Figure 4: Framework for the analysis of competitiveness of dairy industry

Components of the research framework are addressed next:

- innovation and strategy (§ 3.3.1);
- food safety system availability (§ 3.3.20);
- information and communication capabilities (§ 3.3.3).

#### 3.3.1 Innovativeness and strategy

Administrative and monitoring requirements will hamper the acquisition of capabilities to innovate disproportionately because of resource scarcity at the firm's level (compare: Avermaete et al., 2004; Batterink et al., 2006; Romijn and Albaladejo, 2002; Loader and Hobbs, 1999). 'In-

novativeness' can be radical or incremental of a kind (Ettlie et al., 1984), process- as well as product-innovation, and exploitative and/or explorative changes of product-market configurations, which will have to be taken into account in an empirical research. The net-effect of requirements is associated with a firm's strategy. Regulatory changes influencing innovativeness and converging with the company's strategy will be welcomed more easily than a 'generic' food and drink safety policy. This implicates that the perception of a set of rules being "cumulative" is dependent on the firm-specific aims and strategies that are intended to be deployed. Firm strategies can be classified from 'defender' to 'prospector' (Miles and Snow, 1978; Morgan et al., 2000). A defender company will, in general, tend towards a cost-oriented strategy; it defends its market share by the provision of products with similar quality characteristics as competitors, but at lower prices. On the contrary, prospector companies aggressively seek for new market opportunities and develop new products and/or markets to outperform competitors. Prospector companies are well equipped for product change with available R&D-departments and information and communication resources. Innovativeness and business renewal can be affected by legislative efforts along two routes: formal and content. Searching for causes for excessive administrative burdens should therefore include an investigation of the formal aspects connected to law change: its predictability, consistency, proportionality and the level of perceived behavioral control of changes in production and/or product characteristics. With 'controllability' we depict the possibilities to implement and/or act in conformity with regulator wishes. "Proportionality" refers to a necessary balance of consequences for companies, buyers and competitors, inside and outside the EU. Whether there is proportionality depends on the costs needed to comply versus the positive profitability and cash-flow effects that are earned. With respect to the dairy sector it should be noted that it is highly innovative. Innovation in this sector will likely to be hampered by, among other (CIAA-a, p. 6):

- legislation on genetically modified organisms;
- legislation with respect to nutrition and health claims (the possibility to claim a nutritional or health benefit connected to a product); the changed consumer behavior and consciousness of health consequences of food intake as well as nutritional properties of (novel) foods, makes innovation in this area of extreme importance
- pre-market approval schemes of novel foods and additives with an average time-to-market of two years.

While the European dairy sector in general is innovative, the spread in innovativeness is very wide, ranging from companies that for instance pack milk and try to optimize processes, and companies that modify the basic characteristics of inputs (Omega3 for instance) and/or output (for instance dairy products to which health claims will be attached).

The following hypotheses are to be tested:

- H4a: Companies that foster product innovation will be obstructed by regulatory and administrative burdens more than companies with low levels of product innovation.
- H4b: Companies with high levels of process innovation will welcome regulatory requirements more than companies with high levels of product innovation.
- H4c: Companies with defender strategy will be more willing to implement process control measures than companies with a prospector strategy
- H4d: Mark of origin labeling is more in the interest of process-oriented defender companies than it is in the interest of product-oriented prospector companies.

### 3.3.2 Food safety system availability

Food safety systems can improve transparency and consumer's trust, but in many cases companies are obliged to install or expand information systems (for instance to adjust for food labelling requirements) (see: Caswell and Padberg, 1992; Przyrembel, 2004), which require extra costs. Especially SMEs will possibly be more than proportionally affected in their profitability, while at the same time they cannot easily harvest the "quality-premium". Administrative burdens are among others induced by compulsory quality systems (like HACCP). Costs of quality assurance can be measured with the P-A-F method (prevention, appraisal and failure costs; Schiffauerova, 2006). If these costs exceed perceived benefits, food legislation effects on competitiveness will be registered. The rationale behind the model is that lower failure costs are to be compared with increasing appraisal and prevention efforts, if product quality is improved. The scheme can easily be adapted to serve purposes in other fields, like environmental management (see for instance: Watson et al, 2004), or the costs of law implementation. Formally, administrative burdens could be arranged under each category of quality costs, but the appraisal costs will be the biggest causal factor (= costs of "operating" food safety assurance systems). Executing food safety requirements causes operational costs, while also prevention costs will accelerate administrative requirements. Prevention costs are costs which are made to prevent a-conformity with legal requirements. Companies can be confronted with higher administrative loads, but could take this for granted for different reasons, like improved competitive power and/or a better food and drink safety/quality. Food safety and quality assurance systems may be adopted on a voluntary basis. While the systems on the one side cost money, they may reduce transaction costs in international trade by assuring a certain level of quality. They may therefore also serve as trade barriers (Holleran et al, 1999), and in this way, adversely, stimulate competitive performance.

The following hypotheses will be tested:

- H5a: Dairy companies that already have a certified food safety system at their disposal, will favour regulatory changes which strengthen the norms and standards which have to be applied more than companies which do not possess such systems
- H5b: Companies that have food safety systems at their disposal, will regard tightening norms and standards as contributing to their competitive position.

### 3.3.3 Information and communication capabilities

In situations of asymmetrically distributed information and market imperfections, labelling can enhance flexibility, efficiency, responsiveness and informedness (for instance: the willingness to comply by producers) in the market (see extensively Van Amstel, 2006). Provision of information to the market, in the form of labels, brochures etc., requires the organisation to be able to process information and to communicate in a structured way. Food labels can serve different purposes:

- inform about a certain level of guaranteed food safety;
- conformation of a level of environmental conformity;
- conformation of certain level of social adequateness of the processes behind the food products
- confirmation of identity (origin)
- information about the composition of a product, i.e., its nutritional value (EU-Council Directive on Nutrition Labelling for food stuffs (90/496/EEC).

Marking of origin labelling guarantees that a certain product has (1) passed through, or (2) been produced, or (3) carries the legal assurance of (4) or is to a certain level produced in a certain place, region or country. Labels try to provide a message about safety, quality, taste or any other food characteristic. So they compensate for a lack of informedness on the side of the buyer of a product or service. Food labels are valued positively on an individual or firm basis, if the marginal costs of providing them are lower than the marginal benefits. In the case of marking for origin, the benefit lies in the increased competitiveness or competitive performance for the company, as well as the social and environmental effects of the labelling requirement. The role of labelling should be viewed in connection with the role of direct regulatory bodies (like the FDA in the USA or the EFSA in Europe). The stronger the ex-post litigation, the lower the perceived value of mandatory labelling (providing ex ante information) will be. Since in general the European culture fosters ex ante information and prevention over ex post litigation, it is not surprising that a labelling policy over a system of rules and sanctions will be preferred. Building information and communication capabilities does not enrol overnight, but is a process, which takes place in phases. As Hutter states, responsiveness of firms to regulatory requirements is described in three phases (Hutter, 2001 as cited in Cornelissen (2004a)):

- (1) the design of procedures/rules/systems to introduce the requirements in the organisation;
- (2) the operationalisation phase (auditing, enforcements of rules etc.);
- (3) the phase in which rules/procedures (compliance) are part of normal, everyday life.

In an assessment of competitiveness, the phase in which companies operate, should be taken into account. Other control variables are addressed in the next § 3.3.4.

The following hypothesis can be formulated:

- H6a: The more dairy companies have made rules and regulations a part of daily life, the more respondent they will be towards regulatory changes.
- H6b: The more dairy companies have made rules and regulations a part of daily life, the more respondent they will be towards mark of origin labeling.

### 3.3.4 Control variables

#### *Size*

An important control variable is the size of companies. SMEs might be confronted with disproportionately larger compliance costs, because economies of scale are lacking (Loader and Hobbs, 1999). Administrative complexity has – in the long-run – a negative impact on the level of business ownership and (thus) entrepreneurship (Stell and Stunnenberg 2007). Administrative burdens refer, among others to the costs to be made to investigate changes in the legal system. As to Cornelissen (2004a), small firms –especially in biotechnology- do not necessarily have a limited knowledge and comprehension of the law. The research on the subject is very meagre up-to-date. Cornelissen (2004a) opposes the results of a study from 1993 of Genn (Genn, 1993), who studied the permeation of health and safety regulations in industrial and agricultural business. A distinction was found between highly motivated, proactive employers (with numerous sources of information – and a perception of a need to keep informed and in line with regulations), and a second group of firms with employers who were less motivated and reactive. This distinction was, in further studies, also ascribed to large versus small firms.



The following hypotheses will be tested:

- H7a: Bigger dairy companies are better able to understand legal requirements than smaller dairy companies.
- H7b: Bigger dairy companies will be less respondent towards origin labeling than smaller dairy companies.
- H7c: Bigger dairy companies have more capabilities and assets to respond to legal requirements.

#### *Network embeddedness*

Companies are, to a smaller or larger extent, entangled in a web of relationships, forcing them to adopt the norms and practices in the business network. But they also can be change-oriented and put their own goals and standards first, relying on unique resources to adjust their environment inside-out (Porter and Kramer, 2006). In practice, both tendencies can occur at the same time and in the same organization. Since public monitoring is only possible to a limited amount. Food safety often cannot be inspected ex ante by buyers in the supply chain. A situation of information asymmetry exists, in which sellers usually have more information than buyers (Loader and Hobbs, 1999). The buyer could solve this problem by performing checks themselves, which would lead to an increase of transaction costs (and thus loss of efficiency of markets). These extra costs could be exaggerated to an excessive level. Especially end-consumers experience food risks “seemingly irrational and inconsistent” (Verbeke et al., 2007), exaggerating food risks (compared to experts’ opinions) beyond proportion.

The following hypotheses will be tested:

- H8a: The more embedded in supply chains companies are, the more support they experience in assessing and coming up to legal requirements.
- H8b: Embedded companies will experience lower administrative burdens than companies which operate on a more isolated basis.

#### *Product characteristics*

Specific requirements with respect to dairy product (like almost complete absence of dioxin in raw milk) will have an impact on the production and procurement processes of raw material. Differences between countries will affect the competitive position of European dairy industry.

#### *Industry characteristics*

Generic trends and tendencies in the business environment (which can be categorized by means of Porter’s diamond) will affect the individual business. Differences between countries or regional differences on a global basis will have to be considered.

- H9: Product and industry characteristics will influence the perceived administrative burdens and the effect of legal requirements on their competitiveness.

Summarizing, figure 4 depicts that changing legal requirements (its content and form (clearness, completeness, complexity etc.)), for instance with respect to food safety and/or labelling requirements, have an influence on firm management:

- on the firms’ strategy deployment (will for instance hamper or stimulate the strategy choice (what markets to enter, what products to produce, what consumers to focus at));

- the level of innovativeness; pre-market approvals, the possibility to claim health influences, the level of protection of new products etc. all will directly be affected by legislation; moreover, administrative requirements claim scarce resources which cannot be allocated to more productive destinations.
- The level of system availability; companies that have the systems available to address food safety regulation will possibly better be able to cope with changing legal requirements;
- the routines and competences on information gathering, ordering, interpretation and storage. Origin labelling possibly will be evaluated with available information and communication capabilities, that give opportunities to exploit it commercially.

A – to a large extent – non-managerial influence to firms included in figure 4 is the administrative and other burdens that will be affected. These burdens have a negative impact on the competitiveness of the dairy industry. Control variables that mediate between the effect of the mentioned factors and competitiveness are possibly: company size, industry and product characteristics, as well as the supply chain structure (level of integration, transparency, willingness to cooperate etc.).

#### 4. Analysis: a preliminary study

Experience from previous research (Wijnands et al, 2007) has already contributed to a generic insight in the interdependencies between legislation, information obligations (leading to administrative costs) and food safety requirements, innovativeness and competitive performance. A further analysis of the data gathered in 2006, using partial least squares (PLS), has revealed the following interdependencies. The model was based on an analysis of 54 cases of experts and companies in the food and drink industry. The following relationships were derived (t-values between brackets):

$$\text{PREDCL} = 0.541 * \text{SZ} \quad ; R^2 = 0.293 \\ (5.164)$$

$$\text{INN} = -0.349 * \text{CON} \quad ; R^2 = 0.119 \\ (-3.188)$$

$$\text{ADM} = -0.199 * \text{CON} + 0.353 * \text{PREDCL} + 0.564 \text{SAFPRIV}; R^2 = 0.640 \\ (-2.683) \quad (3.081) \quad (5.119)$$

$$\text{SAFPRIV} = 0.569 * \text{PREDCL} \quad ; R^2 = 0.372 \\ (4.333)$$

$$\text{EXPO} = -0.311 * \text{ADM} + 0.820 * \text{SAFPRIV}; R^2 = 0.40 \\ (-2.482) \quad (6.017)$$

It shows that (only effects with t-values > 1.96 (for a 2.5%-significance level) were included in the equations):

- predictability and clearness (PREDCL) of food legislation is significantly related to administrative costs (ADM);
- predictability and clearness of food legislation is significantly related to the instalment of (mandatory) safety and private quality systems (SAFPRIV);
- size (SZ) is significantly related to the predictability and clearness of food legislation (PREDCL); in other words, larger companies are better informed than smaller; this proves the point

that SMEs possibly have more problems in assessing the impact of legislative changes than large companies;

- the content (CON) of European food law is negatively related to its innovativeness (INN); in other words, European food law obstructs innovativeness; also the model proves that the quality of content of law (CON) provokes lower burdens to the companies (ADM);
- Administrative requirements (ADM) are positively related to obligatory and private safety systems (SAFPRIV);
- Administrative requirements are negatively associated with export performance outside the EU (EXPO), while also is shown that systems (SAFPRIV) improve such exporting capabilities.

It is revealed that administrative burdens are substantially caused regulation in general, and specifically by systems deployed to come up to safety and hygiene requirements. Further analysis showed that inside the EU a level-playing field is created and no significant effects are discernable. Companies that assess the quality of EU-food law as good, score low on innovation, or vice versa (Bremmers et al. 20XX, forthcoming). The question remains, and is subject of further study, whether such generic relationships also apply to the dairy sector, what the role is of labelling in the picture, and what specifics within the dairy chain possibly bring different colours in the picture for dairy industry.

## 5. Final remarks

This paper has provided an outline for the further investigation of the effect of administrative burdens on the competitive position of firms in the European dairy industry. This sector is highly competitive and innovative. However, on a world market countries from South-America, Australia and Asia are increasingly catching up. We defined a framework using TQM-cost insights and TCE to express, on theoretical grounds, the effects of regulatory burdens on the competitiveness. Especially for future growth, the dairy industry will have to operate on the world market rather than on the European market, with specialized, innovative and distinctive products. Excessive administrative burdens connected with hierarchical market structure will probably not be in the interest of the dairy industry. A generic study, carried out on the data used in Wijnands et al., 2007, confirms the general picture that:

- administrative burdens are connected to prevention measures;
- administrative burdens impede on the innovativeness of food companies;
- administrative burdens are influenced by the content of law (negative relationship) and by the predictability and clearness of regulations (positive relationship).

A positive perception of the form of regulations is strongly related to the size of companies. As Doyle proposes (Doyle, 2007), firms should be supported to close the gap between regulation dissemination and the translation of such regulation in knowledge at the firm level to maintain competitiveness. Possibilities to monitor the level of compliance are limited. In this context it should be noted that external monitoring and inspection can either address the outcomes, or can address the established procedures for internal control (Scrivens 2007). Especially non- or insufficient compliance could signal a need for simplification of the law system (OECD, 2007). Further research will address the question how the main factors we discerned that interact with regulatory requirements on the one side and competitiveness on the other (strategy, innovation, system availability and available capabilities, see figure 5) interact with sector specifics, to be able to predict the effect of regulatory reform on administrative burdens and competitiveness of the European dairy sector.

## References

- Amstel M. van, Driessen P., Glasbergen P. 2006. Eco-labeling and information asymmetry: a comparison of five eco-labels in the Netherlands.
- Avermaete, T., Viaene, J., Morgan, E.J. with Pitts, E., Crawford, N., Mahon, D., 2004. Determinants of product and process innovation in small food manufacturing firms. *Trends in Food Science & technology* 15, 474-483.
- Batterink, M.H., Wubben, E.F.M., Omta, S.W.F., 2006. Factors related to innovative output in the Dutch agri-food industry. *Journal of chain and network science* 22 (1), 31-44.
- Beckeman, M., Skjöldebrand, Chr., 2006. Clusters/networks promote food innovations. *Journal of Food Engineering* 79, 1418-1425.
- Bremmers H.J., B. van der Meulen, K. Poppe and J. Wijnands. The impact of food safety legislation on the industry's competitiveness. Submitted for review in July 2007.
- Caswell J.A. and D.I. Padberg. 1992. Toward a more comprehensive theory of food labels. *American Journal of Agricultural Economics* 74 (2): 460-468.
- CIAA. 2006. Data & trends of the European food and Drink Industry. [www.ciaa.eu](http://www.ciaa.eu)
- CIAA-a. 2005. reflection paper on food and drink industry competitiveness. CIAA AISBL, Brussels.
- CIAA-b. 2006. CIAA benchmarking report. CIAA AISBL, Brussels.
- Näringsdepartementet Sweden. 2005. The Swedish government's Action Plan to reduce administrative burdens for enterprises. [www.sweden.gov.se](http://www.sweden.gov.se) (downloaded 27 Dec. 2007).
- Communication from the commission to the council, the European Parliament, the European Economic and Social Committee and the committee of the regions. Brussels COM(2007)23; [http://ec.europa.eu/enterprise/regulation/better\\_regulation/docs/com\\_2007\\_23\\_en.pdf](http://ec.europa.eu/enterprise/regulation/better_regulation/docs/com_2007_23_en.pdf)
- Cornelissen F. 2004a. The impact of regulations on firms – a study of the biotech industry. CARR, discussion paper no: 19. London School of Economics and Political Science, London.
- Cornelissen F. 2004b. Justifying non-compliance – a case study of a Norwegian biotech firm. CARR, discussion paper no: 20. London School of Economics and Political Science, London.
- Cuijpers C. 2006. Verschillen tussen de WBP en Richtlijn 95/46/EG en de invloed op de administratieve lasten- en regeldruk. TILT – Centrum voor Recht, Technologie en Samenleving. Universiteit van Tilburg (NL).
- Dagevos H. 2005. Consumers as four-faced creatures. Looking at food consumption from the perspective of contemporary consumers. *Appetite* 45 (2005): 32-39.
- David R.J., SH-K Han. (2004). A systematic assessment of the empirical support for transaction cost economics. *Strategic management Journal* 25:39-58.
- Doyle E. 2007. Compliance obstacles to competitiveness. *Corporate Governance* 7(5): 612-622.
- Ettlie, J.E., Bridges, W.P., O'Keefe, R.D. 1984. Organization strategy and structural differences for radical versus incremental innovation. *Management Science* 30 (6), 682-695.
- Geyskens I., J-B.E.M. Steenkamp, N. Kumar. 2006. Make, buy, or ally: a transaction cost theory meta-analysis. *Academy of management journal* 49(3): 519-543.
- Gracia A., M. Loureiro, R.M. Nayga Jr. 2007. Do consumers perceive benefits from the implementation of a EU mandatory nutritional labelling program? *Food Policy* 32: 160-174.
- Grover V., M.K. Malhotra. 2003. Transaction cost framework in operations and supply chain management research: theory and measurement. *Journal of Operations Management* 21: 457-473.
- Hampton Ph. 2005. Reducing Administrative Burdens: effective inspection and enforcement. HM Treasury, London.

- Hefle S.L., T.J. Furlong, L. Niemann, H. Lemon-Mule, S. Sicherer, S.L. Taylor. 2007. Consumer attitudes and risks associated with packaged foods having advisory labeling regarding the presence of peanuts. *J. Allergy Clin Immunology*. July: 171-176.
- Henson S., B. Traill. 1993. The demand for food safety. *Food Policy*, April: 152-163.
- Henson S., Heasman M. 1998. Food safety regulation and the firm: understanding the compliance process. *Food Policy* 23(1): 9-23.
- Holleran E., M.E. Bredahl, L. Zaibet. 1999. Private incentives for adopting food safety and quality assurance. *Food Policy* 24: 669-683.
- Interdepartementale Projectdirectie Administrative Lasten. 2003. *Meten is Weten*. The Hague.
- Kalinova B. 2005. Regulatory reform in the Russian Federation – enhancing trade openness through regulatory reform. OECD working paper ([www.oecd.org/trade](http://www.oecd.org/trade), accessed 27th Dec. 2007).
- Knight J.G., D. W. Mather and D. K. Holdsworth. 2005. Impact of genetic modification on country image of imported food products in European markets: Perceptions of channel members. *Food Policy* 30(4): 385-398
- Kumar S. and E.M. Budin. 2006. Prevention and management of product recalls in the processed food industry: a case study on an exporter's perspective. *Technovation* 26: 739-750.
- Loader R., J.E. Hobbs. 1999. Strategic responses to food safety legislation. *Food Policy* 24: 685-706.
- Loureiro M.L. and S. Hine. 2004. Preferences and willingness to pay for GM labeling policies. *Food Policy* 29(5): 467-483.
- Loureiro M.L., W.J. Umberger. 2007. A choice model for beef: What US consumer responses tell us about relative preferences for food safety, country-of-origin labeling and traceability. *Food Policy* 32: 496-514.
- Masten S.E. 1993. Transaction costs, mistakes and performance: assessing the importance of governance. *Managerial and decision economics* 14(2): 119-129.
- Miles R.E, M.C. Snow, A.D. Meyer; H. J. Coleman Jr. 1978. Organizational Strategy, Structure, and Process. *The Academy of Management Review* 3(3): 546-562.
- OECD. 2007. Comparing Administrative Burdens across countries. OECD.
- Ogus A. 1992. Information, error costs and regulation. *International Review of Law and Economics* 12: 411-421.
- Pevcin P. 2006. Regulatory activities of government: analysis of determinants. *Zb. rad.fak. Rij* 24(2): 211-224.
- Poppo L., T. Zenger. 2002. Do Formal Contracts and Relational Governance Function as Substitutes or Complements? *Strategic Management Journal* 23 (8): 707-725.
- Proto M., O. Malandrino, S. Supino. 2007. Eco-labels: a sustainability performance in benchmarking? *Management of Environmental Quality: An International Journal* 18(6): 669-683.
- Przyrembel, H., 2004. Food labelling legislation in the EU and consumers information. *Trends in Food Science & Technology* 15, 360-365. Loader, R., Hobbs, J.E., 1999. Strategic responses to food and drink safety legislation. *Food Policy* 24, 685-706.
- Reinhardt F. 1999. Market failure and the environmental policies of firms. *Journal of Industrial Ecology* 3(1): 9-21.
- Rindfleisch A., J.B. Heide. 1997. Transaction cost analysis: past, present and future applications. *Journal of Marketing* 61: 30-54.
- Romijn, H., Albaladejo, M. 2002. Determinants of innovation capability in small electronics and software firms in southeast England. *Research Policy* 31 (7), 1053-1067.
- Roquebert J.A., R.L. Philips, P.A. Westfall. 1996. Markets vs. Management: What drives profitability? *Strategic Management Journal* 17(8): 653-664.

- Rumelt RP. 1990. How much does industry matter? *Strategic Management Journal* 12: 167-185.
- Schiffauerova, A., Thomson, V., 2006. Managing cost of quality: insight into industry practice. *The TQM Magazine* 18, 542-550.
- Scrivens E. 2007. The future of regulation and governance. *The journal of the Royal Society for the Promotion of Health* 127(2): 72-77.
- Sinclair D. 1997. Self-regulation versus Command and Control? Beyond false dichotomies. *Law and Policy* 19(4): 529-559.
- Stel A. van, Stunnenberg V. *Linking Business Ownership and Perceived Administrative Complexity: An Empirical Analysis of 18 OECD Countries*. Jena (Germany), Max Planck Institute.
- Suyver J.F., M.J.F. Tom. 2004. Verlichting Administratieve Lasten 2003-2007 – invloed op sector en bedrijfsgrootte. EIM report M200405.
- Todt O, Munoz E, M. Plaza. 2007. Food safety governance and social learning: the Spanish experience. *Food Control* 18: 834-841.
- Tripp R., N. Louwaars, D. Eaton. 2007. Plant variety protection in developing countries. A report from the field. *Food Policy* 32: 354-371.
- Unnevehr L.J., H.H. Jensen. 1996. HACCP as a regulatory innovation to improve food safety in the meat industry. *American Journal of Agricultural Economics* 78(3): 764-769.
- Verbeke W., L.J. Frewer, J. Scholderer, H.F. de Brabander. 2007. Why consumers behave as they do with respect to food safety and risk information. *Analytica Chimica Acta* 586: 2-7.
- Watson K., B. Klingenberg, T. Polito and T.G. Geurts. 2004. Impact of environmental management system implementation on financial performance. *Management of Environmental Quality: An International Journal*. Vol. 15 (6): 622-628.
- Wijnands J.H.M., B.M.J. van der Meulen, K.J. Poppe (eds). 2007. *Competitiveness of the European Food Industry – An economic and legal assessment*. European Communities, 2007.
- Williamson O. E. 1985. *The economic institutions of capitalism*. New York, Free Press.
- Williamson, O.E. 1998. Transaction cost economics: how it works; where it is headed. *De Economist* 146 (1): 23-58.