INRA SCIENCES SOCIALES

N° 5-6 – NOVEMBER 2006

RESEARCH IN ECONOMICS AND RURAL SOCIOLOGY

Food safety and retailers' collective norms: impact on supply and food chains

Nowadays, there is increasing involvement of the retail industry in the implementation of norms securing food products. When norms are the result of coordinated actions, they fall within the scope of inter-firm relationships forcing intermediate market transactions to comply with priory-defined specifications. When they are individual, these initiatives contribute to a better differentiation toward competition, and favour promotion on markets. The question here is to assess those norms' impact on the economic organization of food chains and show how they can effectively contribute to a global improvement in food safety.

Over the last ten years, the European answer to sanitary crises has consisted in promoting quality and origin certifications while radically amending food safety regulations. The European Union passed a series of regulations related to professional obligations (rules 852/2004 and 853/2004 on "hygiene package", 183/2005 on animal feed) and prerogatives on control services (rules 882/2004 and 854/2004). Applicable from January 1st 2006, these different rules set forth general measures on Hygiene and provide the creation of good agricultural practice guides, while making the HACCP method (Hazard Analysis Critical Control Points) compulsory for non-agricultural agents.

A large number of normalization measures for products were then implemented. These initiatives are based on the abovementioned public rules and are, most of the time, supported by farm produce importers, food-processing industries and major food retailers. Frame 1 sets out most of the systems that directly apply to the product itself (some normalizations more specifically linked to respect for the environment are not in this frame), focusing on their method of elaboration and organizational specificity.

Compared to public rules, which today are mainly directed by "obligations to achieve a particular result", these private collective norms instead form a list of "obligations to use all reasonable means to achieve a desired result" to be implemented in order to minimize market risk (damage to reputation) and/or avoid a penalty on firms' liability. The first objective of this collective normalization is not to improve short or medium-term profit but rather to limit market risk in a long-term perspective. So consumers are not necessarily informed (through specific labelling) of the improvement in safety conditions of products.

In parallel with these coordinated actions, there appeared a whole series of individual actions, which are named hereafter "chain brands" and which play a part in food safety ("Filière Qualité Carrefour" (Carrefour quality chain), "Nos régions ont du talent" (our regions are talented), "Engagement dès l' origine" (involvement from the outset), etc.)". However, chain brands more specifically focus on food quality (as regards taste or geographic origin and mode of production), which is then pointed out to consumers. Therefore, the organization of chains corresponds to a direct link between a retailer and a producers' group, based on specifications guaranteeing product quality and respect for good agricultural practices. The operating mode of such chain brands is closer to that of more classical store brands with, however, a fundamental distinction: strengthening production specifications most often allows a better increase in value with consumers.

Chain food security process: the economic logic

In the context of a collective retailers' norm, most often, marketing authorization requires prior investments at the firms' level, be they farms or food processing industries. These investments are related to the improvement of equipment and strengthening of sanitary and working conditions. Later, compliance with traceability procedures requires submitting to other constraints of organization and production management. These procedures may even imply recourse to an appropriate external service or to workers' training. The various expenditure relating to certification has to be added to these costs. It is a matter of knowing if, at the time of the first or second marketing, the product promotion will make up for the invested costs, from every operator's point of view.

Return on investment depends on the chain's economic organization and its capacity to improve the product brand image with consumers in the long term. Therefore, even if the attributes are not directly signalled on the end market, the positive effects on health and absence of potentially harmful residues represent an undeniable "plus" for the long-term economic efficiency of the food chain.

Value sharing between different intermediaries is set by the existence or non-existence of contractual relationships between those partners. As shown in the following section, it also depends on a whole set of strategic interactions between different chain actors.

Typology of organizations

To characterize organizational stakes, let us start from intentionally simplified chain diagrams. Figures 1 to 3 represent producer-retailer relationships, leaving aside all intermediaries, wholesalers or others, who interfere in this vertical relationship. Product flows are represented from the upstream chain (producer level) down to the end market, at the retailer and consumer level.

The referenced organizational situation (figure 1) is the situation that precedes the involvement of private actors in the management of health and safety requirements. The situation corresponds to the case where the product offered to consumers is perfectly homogenous and complies with the minimal marketing norms required by public authorities. Figure 1 describes an intermediate market, a so-called "virtual" place of various exchanges and transactions carried out at this marketing stage. Even if that market does not always actually exist in a strict physical form, (such as in the case of a regional market of raw materials), its representation gives prominence to the formation of an intermediate reference price (parameter "ω_0") reflecting the offer-supply match and being an indicator on how the market economically works. It sends out a message about producers, which has an influence on the quantitative decision of production and marketing (tendency to increase quantities if ω_0 is high or otherwise decrease them). It also has an influence on retailers' strategy as regards stock and commercial behaviour on the end market (quantities sold off and prices displayed to consumers). The final price paid by the consumer is mechanically linked to the intermediate price, with possible effects of temporal postponements if different intermediaries' stocking strategies are considered.

From that situation, we may describe the development modes of current production and marketing by using the other two simplified chain structures, represented by figures 2 and 3. On figure 2, next to the prior intermediate market (generic market, here), retailers' collective normalisation action tends to make a new intermediate market emerge, as regards the respect for a collective norm reinforcement of food safety. For the sake of simplification, this last market is called the "safe market".

Figure 3 represents an integrated chain where only one retailer took the initiative of offering a group of producers the creation of a chain brand that could be easily indicated to consumers. The safe market comes down to a supply contract based on a strengthening of production conditions and a more or less accurate contract covering quantitative supply. Specifications setting production conditions may be held by both retailers and producers' groups, which results in giving credibility to the signal given by the chain brand. As to value sharing inside the chain, it ought to be mentioned that most existing contracts do not set any trading price, but rather set an additional bonus in relation to the daily quotation observed on the generic market.

Normalization and strategic interactions

On figure 2, the product safety quality required on the generic market is lower than the quality required on the safe market. The quality or drawback of the organization diagram (which is an important economic matter in itself) is not to rule out the traditional market that remains true to the minimal marketing standard required by public authorities. The safe market is generally based on producers and retailers' voluntary partnerships who select the (safe or generic) market that is the most suitable. Of course, this strategic choice stems from a complex arbitration between short-term economic interests (prices paid to suppliers and thus, received by the latter) and long-term ones (protection of product reputation and prevention of sanitary crises). It subsequently ascertains the efficient level of health safety on the end market.

What are the economic parameters which influence the development of those organizational structures and their efficient effects on health safety? To answer this question, the first results we obtained come from models developed within the theory of industrial organization. It appears that two essential factors influence the development of private initiatives ensuring market safety (from situation 1 to 2 and/or 3):

The level of public requirement for marketing authorization

The reinforcement of public regulations on production conditions could dissuade retailers from investing in private improvement of safety. This phenomenon is observed even though, in the case of chain brands, safety is indirectly indicated to consumers. We show that, from a certain standard level, it is no longer in the private sector's interest to invest beyond the public norm, which could finally be detrimental to the average safety level of products on the market. In other words, the food safety level could be more satisfactory when public authorities incite a private reaction of safety by moderating the public standard level.

Besides, whether the norm is public or private, its reinforcement brings about the exclusion of producers unable to bear the additional production costs generated by the excessively strict regulation. As regards consumers, they see the market supply grow scarce, causing a structural rise in consumer prices.

The strategic interest of producers and retailers' memberships

Producers may find it not worthwhile to support a private norm. Producers only agree to the investment imposed by

retailers if, in return, they have the hope of being given better profit on the intermediate market (on figure 2, price ω_1 would then be higher than price ω_0). If that expected profit is not an incentive, producers can always withdraw to the generic market. The profit ω_1, obtained by a levelling of retailers' total orders and producers' supply, is then part of the resulting "upstream producer number/ downstream retailer number" ratio. Therefore, to ensure producers' partnerships, it is necessary for a great number of retailers to first decide to get involved in the collective procedure of normalization.

The individual commitment of major retail stores to a collective action does not happen without problems. On the one hand, since the normalization of store behaviours cannot be indicated to consumers, some retail stores may feel encouraged to take advantage of the efforts made by their competitors, in a spirit of "stowaway" behaviour. Moreover, this attitude would correspond to rational opportunist behaviour insofar as some retailers could profit from a good safety level without paying for its implementation. On the other hand, retailers could prefer chain brands' individual actions, which have the advantage of making up for this type of distortion.

Reduction in food sanitary risks: What about price and cost sharing?

Our work shows that it is not certain that retailers' collective approach to normalization systematically changes food risk, even though the collective norm chosen by retailers is of a high level. To explain this result, let us mention that as regards the level of initial equipment, the heterogeneity of firms induces a dissymmetry in the individual efforts of adaptation. In this way, by choosing a high standard, retailers could arouse only the interest of producers who are initially well equipped. Mainly responsible for food sanitary risk, other producers stay on the generic market. Therefore, the norm works like an insurance against penalties for retailers and not like an effective action for a real fall in food sanitary risks.

The other important discussion relates to the effects of the approach to sanitary risk reduction on the final price paid by consumer. The growth rate of the final price can be higher than that of the food safety index and therefore reveal the strengthening of certain market powers. Simulations obtained based on prior representations (figures 1 and 2, particularly) allows us to identify parameters which act on the "final price/safety index" ratio variation. In particular, it appears that the institutional form of retailers' collective partnership charter strongly influences a ratio in favour of consumers. In fact, the conditions governing retailers' entrance into a collective norm should be the subject of greater attention. For instance, in the case of EurepGap, any European retailer may adhere to the certification, freely and without any excessive costs. However, in certain cases, the entrance of a new member may lead to renegotiation of the requirements included in production specifications. From then on, an increasing number of members may lead to a collective norm-strengthening while, paradoxically, lowering food safety.

International stakes

The evolution observed points to the advent of a mixed situation, in which "multilateral" situations (figure 2) and "bilateral" contractual forms of market safety (like in figure 3) co-exist. If this tendency is confirmed, the analysis of norms' influence on international trade, especially North-South relationships, will be confirmed as one of the important parts of economic research in the field of food safety. Surveys with OECD producers' and developing country farmers' associations reveal that producers do not see a better price in the necessity to conform to such a norm, but rather a way not to be excluded from certain growing markets (see the growth of international market of fruit and vegetables controlled by the retail industry). Private collective norms, if multiplied and generalized without any prior harmonization approach may, in the medium term, constitute the new access conditions to international markets, even though, in another way, they contribute to improving a farm's productivity through rationalization of working methods. Already underway, this trend may herald a new situation of economic dependence for producers in developing countries towards the retail industry, which must be analysed with great attention.

Furthermore, to minimize the risk of not finding any new buyer on international markets, intermediaries-exporters may be tempted to conform to the most stringent private standards. This is for a question of considering collective norms as new "trading constraints", which, in fact, work as public standards but this time, no longer enacted by States but by private agri-food chain actors. Those constraints would be indirectly exerted and in a discriminatory way, and the victims would be the weakest producers, economically speaking.

Linda Fulponi, OCDE, Paris, France
Eric-Géraud-Héraud and Hakim Hammoudi, INRA Aliss, Ivry, France
Egizio Valceschini, INRA Darese, Service Affaires Européennes, Paris, France
Linda.fulponi@oecd.org - giraud@ivry.inra.fr - hammoudi@ivry.inra.fr
Egizio.valceschini@paris.inra.fr

For further information

Fulponi, L. (2006). Private voluntary standards in the food system: the perspective of major food retailers in OECD countries. Food policy, vol 31, n° 1, pp 1-13.
Giraud - Héraud, E. Rouached, L. ; Soler, L.G. (2006). Minimum quality standards and premium private labels. *Quantitive marketing and Economics*, n° 4, pp 31-55.
Giraud - Héraud, E.; Hammoudi, H; Soler, L.G. (2006). *Food safety, liability and collective norms*. Cahiers du Laboratoire d'Econométrie de l' Ecole Polytechnique, n° 2006-06 - http://ceco.polytechnique.fr/fichiers/ceco/publications/pdf/20006-06-02-1451.pdf.
Ménard, C.; Valceschini, E. (2005). New institutions for governing agrifood industry. *European Review of Agricultural Economics,* vol. 32, n° 3, pp 421-440.
Valceschini, E.; Saulais, L.; Barrey, S. (collab.) (2005). *Articulation entre réglementation, normalisation et référentiels privés dans les industries agro-alimentaires* - DPEI-ADEPRINA - décembre 2005: Etude sur le système de standardisation de la sécurité alimentaire dans les IAA, 117 p. http://www.agriculture.gouv.fr/spip/IMG/pdf/referentiels-iaa-etude-2.pdf

---

Published by the INRA Social Sciences, Agriculture and Food, Space and Environment
Publishing unit
Editorial Director: Hervé Guyomard – Editor: Didier Aubert (Chief Editor),
Ttranslation and composition: Ariel Gille

Frame 1: **Main systems of product normalisation (Source: Valceschini and Saulais, 2005)**

Systems	Examples	Elaboration mode	Main functions	Implementation
Regulations	- Regulation 178/2002, - " Hygiene Package"	- Enacted by States	- Consumer protection - To ensure trading loyalty - Environmental protection	Compulsory
Norms	- ISO 9000 - ISO 22000 - "Agri-confiance" (Agri-trust)	- Elaborated by the involvement of public and private actors representative of a sector - Result of a negotiation between various trades or sectors concerned by the norm	- Technical supervision - Information - Guarantee against risks - Market control	Voluntary
Professional systems of reference Implemented for agri-food industries operators	- Firms' systems of reference (NQS)	- Development by firm, in-house	- Implementation of statutory requirements - Implementation of firms general policy - Reconnaissance by joint-trade organization or by clients	Voluntary
	- Professional systems of reference, Good Agricultural Practices, Good Hygiene Practices: Inter-firm joint-trade unions, network of professional and inter-professional joint-trade organizations for safety and quality of animal products)	- Implementation by a group of professionals, recognized by public authorities or groups of organisms (joint-trade unions)		
Clients' private systems of reference For suppliers or subcontractors	- Industries' specifications for subcontractors (AIB), - Systems of reference shared by retail stores (EurepGap, IFS, BRC, SQF 2000, GFSI, EFSIS,.)	- Elaborated by a clients' group for their suppliers or subcontractors	- Control of client - supplier relationships	Generally required by contracts

AIB: American Institute of Baking; **BRC** : *British Retailers Consortium*; **EFSIS** : *European Safety Inspection Service*; **EurepGap** : *Euro-retailer Produce Working Group-Good Agricultural Practice*; **GFSI** : *Global Food Safety Initiative*; **IFS** : *International Food Standard*; **ISO** : *International Standard Organization*; **NQS** *: Nestlé Quality System*; **SQF**: Safe Quality Food.

Food safety and retailers' collective norms: impact on supply and food chains
Linda Fulponi, OCDE, Paris, France
Eric-Géraud-Héraud and Hakim Hammoudi, INRA Aliss, Ivry, France
Egizio Valceschini, INRA Darese, Service Affaires Européennes, Paris, France
Linda.fulponi@oecd.org - giraud@ivry.inra.fr - hammoudi@ivry.inra.fr
ISSN 1778-4379 - N° 5-6 - November 2006

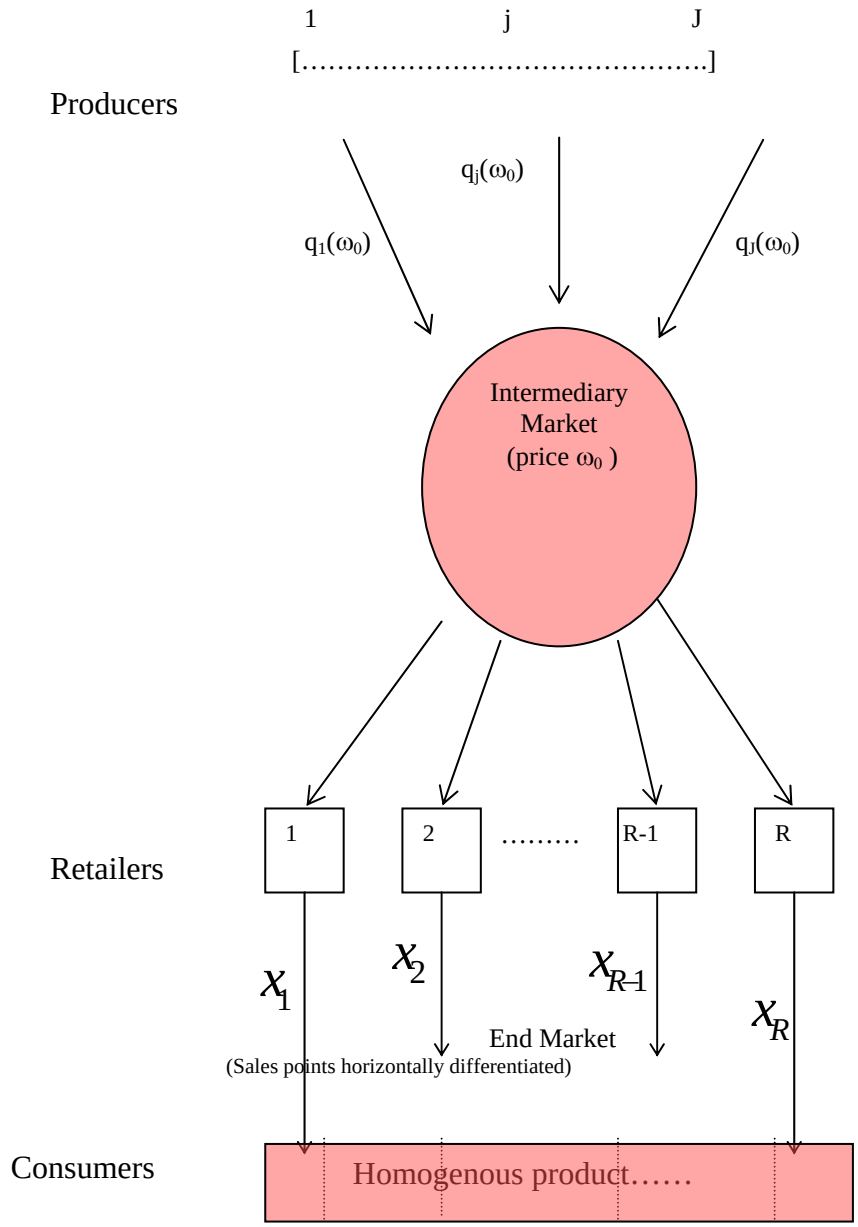

Figure 1: Vertical relationships between producers-retailers-consumers

Linda Fulponi, OCDE, Paris, France
Eric-Géraud-Héraud and Hakim Hammoudi, INRA Aliss, Ivry, France
Egizio Valceschini, INRA Darese, Service Affaires Européennes, Paris, France
Linda.fulponi@oecd.org - giraud@ivry.inra.fr - hammoudi@ivry.inra.fr
ISSN 1778-4379 - N° 5-6 - November 2006

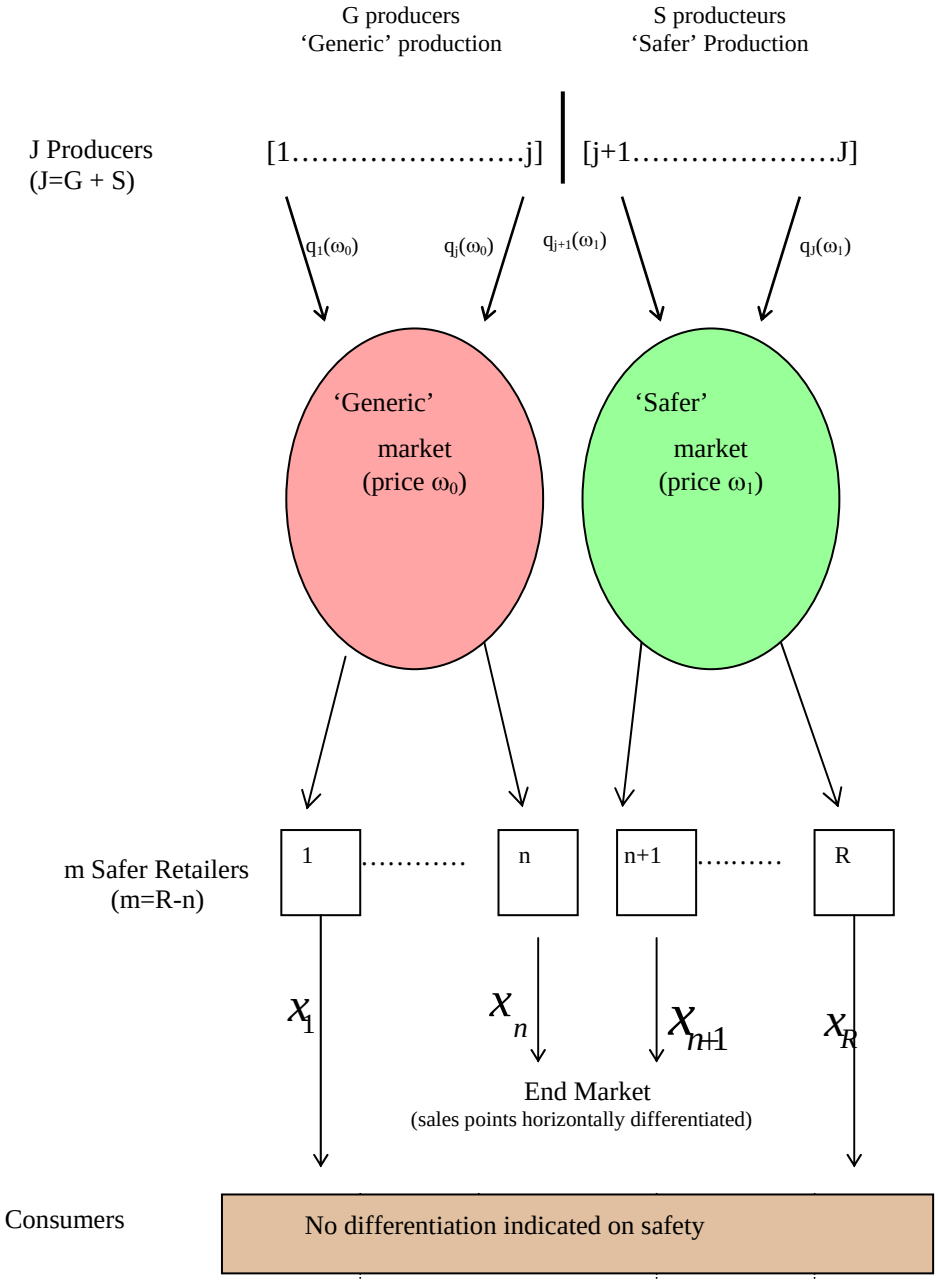

Figure 2: Vertical relationships with safer chains

Linda Fulponi, OCDE, Paris, France
Eric-Géraud-Héraud and Hakim Hammoudi, INRA Aliss, Ivry, France
Egizio Valceschini, INRA Darese, Service Affaires Européennes, Paris, France
Linda.fulponi@oecd.org - giraud@ivry.inra.fr - hammoudi@ivry.inra.fr
ISSN 1778-4379 - N° 5-6 - November 2006

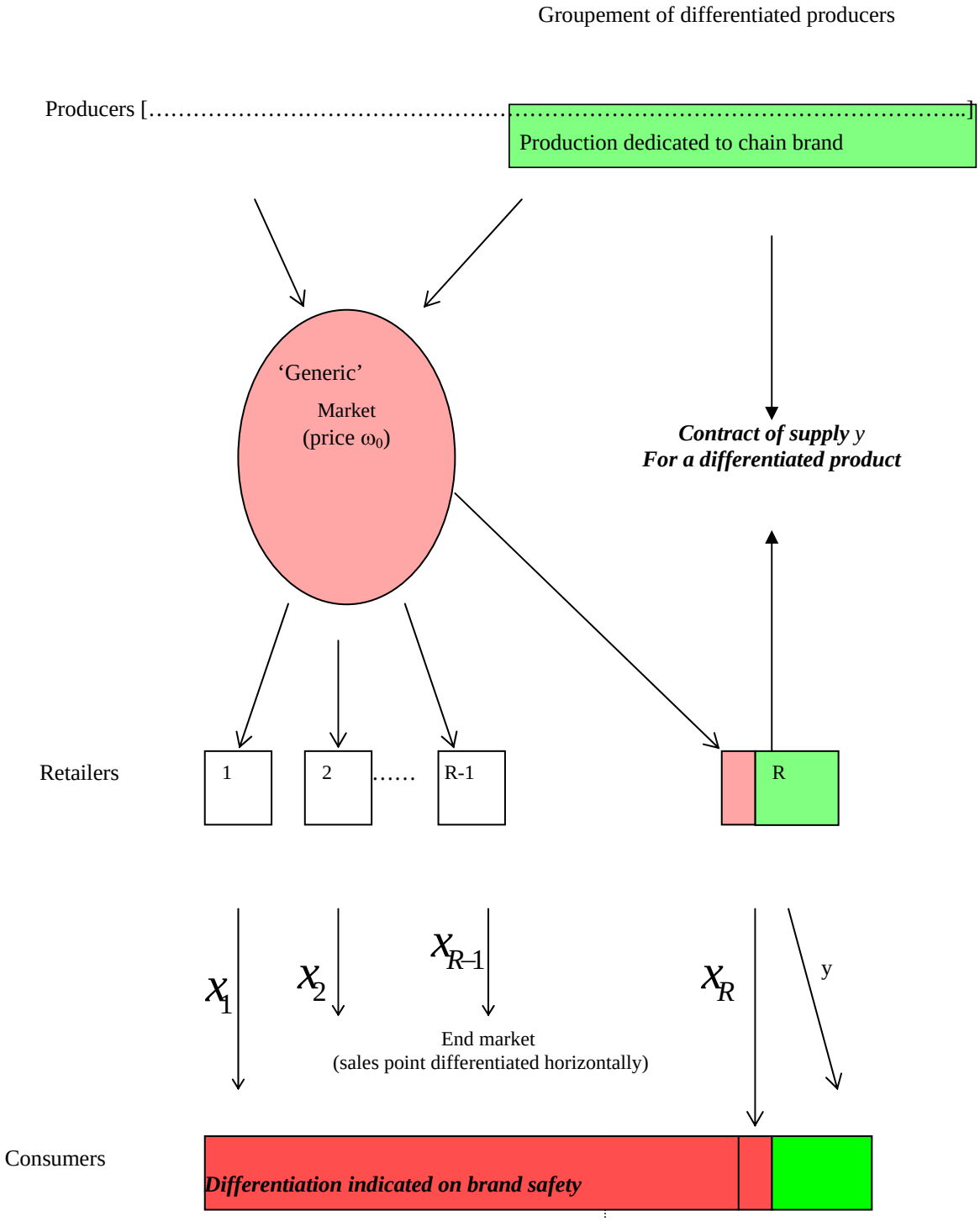

Figure 3: Vertical relationships with safer chain

Linda Fulponi, OCDE, Paris, France
Eric-Géraud-Héraud and Hakim Hammoudi, INRA Aliss, Ivry, France
Egizio Valceschini, INRA Darese, Service Affaires Européennes, Paris, France
Linda.fulponi@oecd.org - giraud@ivry.inra.fr - hammoudi@ivry.inra.fr
ISSN 1778-4379 - N° 5-6 - November 2006