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RELATIONSHIPS AND NATURE OF CONTRACTS IN THE DISTRIBUTION STRUCTURE FOR RESPONSIBLE TRADE

Florence LACHET-TOUYA

CATT-UPPA
Collège Sciences Sociales et Humanités (SSH)
Droit, Economie, Gestion
Avenue du Doyen Poplawski - BP 1633
64016 PAU Cedex
Tél. (33) 5 59 40 80 61/62
Internet : **http://catt.univ-pau.fr/live/**

UNIVERSITÉ DE PAU ET DES PAYS DE L'ADOUR

Relationships and nature of contracts in the distribution structure for responsible trade

Florence LACHET-TOUYA*

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Abstract

Aware of the high importance of consumers' private information concerning their willingness-to-buy fair trade goods and taking into account the superior price they are willing to pay for this kind of goods with respect to conventional ones, we choose to feed the debate relative to the appropriateness of the different potential retailing channels. We use a common agency game framework to analyze the changes in the price level according various schemes of upstream-downstream organization and relationships. It appears that the private information parameter as well as the nature of the relationship between suppliers on the one hand and the retailer on the other hand are the key variables that determine the price paid by consumers. We examine several competitive setting, that proves that only the presence of benevolent retailers can bring the outcome close to the socially optimal one in a simultaneous game whereas a sequential process cannot be implemented if the mainstream firm is not granted the leader role. We also propose other types of organisation (as a dedicated retailer, corresponding to a merged case) and of cooperative equilibrium, the latter resulting as a new direction to consider in order to reduce the double-margin effect of the expropriating one resulting from the competitive schemes.

Keywords : Responsible trade, Informational asymmetry, Common Agency, Nonlinear prices, Retail, Cooperatives, Cooperation, Pro-social preferences.

JEL Classification : D72, D82, H23, H30, H32, H71, H77.

*CATT, Université de Pau et des Pays de l'Adour. florence.lachet-touya@univ-pau.fr

1 Introduction

Fair trade seeks to guarantee "better prices, better resources and stable trading conditions" (Zerbini *et al.*, 2019) and is expected to reach "greater equity in international trade" (Poret and Chambolle, 2007).

The first necessary step to meet these goals deals with the setting of a price high enough not only to cover the cost of sustainable production in a safe and fair environment but also to improve living conditions (De Pelsmacker *et al.*, 2006)[1]. Besides, fair trade often involves a development premium, dedicated to funding educational, health, or social programmes (Herrel *et al.*, 2017). Last, the long term nature of contracts guarantees the stability of trading relationships.

Beyond these features, producers are increasingly encouraged to make their production processes more responsible, i.e. aligned with sustainable development requirements. This is confirmed by the observation that consumers are attracted by products benefiting both from a fair trade label and from an organic one[2]. As a by-product, the following analysis also applies to organic goods and, generally speaking, we may indifferently refer to responsible goods throughout the paper.

Despite many studies showing how fair trade can lead to improved living conditions[3], the costs fair trade producers have to bear can sometimes become too heavy in the short run[4]. The organisation of the relationships between producers and retailers constitutes a key element to ensuring producers an improvement of their welfare. The work performed by Ruben and Fort (2011) is quite enlightening in this respect. Though enhancing the favorable impact of fair trade upon the living conditions of affiliated coffee farmers through a better access to funding and training, Ruben and Fort (2011) nevertheless find weak income and product benefits (higher yields seem offset by the greater investment in labor required). Yet, they show that sustainable cooperatives can be seen as a key success factor. This result is consistent with Bosbach and Maietta (2019).

As it is the case in Chambolle and Poret (2008), generally farmers upstream sell their raw products to manufacturers who provide the final good to downstream retailers.

As a by-product, the way of delivering such goods and the distribution of the bargaining power among producers and retailers represent important issues. Some years ago, consumers' lack of knowledge, the difficulty to find or deepen market opportunities, favoured the insertion of fair trade goods into the large scale distribution network. The traditional channel has foste-

[1] Namely a fair remuneration, safe and healthy working conditions, the absence of discrimination...

[2] In France, in 2018, 84% of equitable international products were also labeled organic, which was the case for 47% of French fair trade goods (CREDOC, 2018).

[3] See for instance Barham and Weber (2012), Balineau (2013), Smith (2009), Arnould et al. (2011), Chiputwa et al. (2013), Chambolle and Poret (2008).

[4] These costs are for instance costs of certification (Jaffee, 2007), costs related to labour requirements or downward pressure upon yields resulting from the introduction of restrictive environmental labels (Blackman and Rivera, 2010, Benchelt and Zeller, 2011). Yet, this effect generally can be explained by specific elements (such as the difficulty to substitute organic treatments to chemical inputs, as suggested by Becchetti 2012, Thavat, 2011). A clear distinction must be made between short term costs and long run potential gains (when means are required to preserve natural resources, more sustainable revenue will be derived later).

red the provision of information and, consequently, of sales. In France, in 2018, international networks represented two-thirds of sales, half of them were realized by conventional retail chains (CREDOC, 2018). However, contrary to the integrated industry, its core principles are quite different from those of fair trade and may even jeopardize them through potential downward pressures upon prices, lack of commitment, the creation of private and softer labels (Poret and Chambolle, 2007). As a result, a highly debated topic is the place where fair-trade products have to be sold in order to keep consistent with the system core principles. We can wonder whether there is a trade-off between upholding the main principles at the root of fair trade versus developing the access to fair trade products for a greater range of consumers. Must fair trade products be reserved to specialized, *ad hoc* stores, or is it more relevant to make them enter the shelves of large-scale retailers ?

Though it is necesary to consider the information gap consumers have to face as regards the attributes of the products they may purchase, this work will try to shed new light upon this question thanks to an approach enabling to take also into account information asymmetry concerning consumers' willingness-to-buy responsible goods (from which firms may "suffer").

Indeed, an important point to tackle into account when trying to bring pieces of answer to this question is the knowledge concerning consumers' interest for such products and the price they should accept to pay for them, as consumers' willingness-to-pay is a private parameter and a wide heterogeneity characterizes their interest for biologic or fair products. By the way, they are not always ready to implement what they prone for various reasons (their income and their priorities, the social picture dimension and its impact upon their purchases, the availability of such goods...). To put it in a nutshell, firms only have *a prioris* about consumers' taste for the product they offer. This information asymmetry (adverse selection) typically affects the price they can charge.

That's why this work will envisage this organisation question while taking into account the heterogeneity among consumers concerning their appetence for the good. To this end, we introduce uncertainty over the amount of income likely to be spent in biologic and/or equitable consumption and we choose to generalize pricing schemes *via* instruments that make prices depend on the level of purchase (indeed, for instance, in some cases price advantages can be provided according the quantities traded).

After an introductive section, section 2 addresses the notions related to pro-social preferences upheld by many economic agents and introduces the importance of information in particular as regard the "intentions-behaviour gap" on the other hand. Section 3 presents the framework of the common agency game model used while section 4 tackles the initial setting of a unique level of firm (producers), highlighting the multistakeholder cooperative case regarded as the benchmark case. Sections 5 and 6 introduce another tier in the game, namely a retailer, differentiating on the one hand the dedicated store case from the conventional channel setting on the other hand. Section 6 concludes.

2 From the willingness-to-cooperate to the willingness-to-buy and -to-pay

2.1 Pro-social agents display a wish of cooperation

Sustainable trade (Geiger et al, 2018), which seeks to preserve ecologic and socio-economic conditions for coming generations being able to satisfy their needs, involves feeling concerned about some general interest dimension.

Fair trade is narrowly related to the notion of cooperation, in its many dimensions, not only as a form of organization but also as a pro-social behavior. Indeed, according Bowles and Gintis (2011), cooperation refers to the action of engaging with others in a mutually profitable relationship, which is corresponds to one of the most fundamental principles of fair trade. The authors add that "*people cooperate not only for self-interested reasons but also because they are genuinely concerned about the well-being of others, try to uphold social norms, and value behaving ethically for its own sake*". As stressed by the IPSP report (2019)[5], this mechanism entails supporting collective actions directed towards "*the group's greater good*" even if it may be at the expense of individual welfare.

Following Laffont (1975) who explains pro-social behaviors through Kant categorical imperative rule, Roemer (2010)[6] shows that a cooperative behavior can emerge when preferences are enlarged and allow taking into account less standard arguments. In accordance with this view, Alger, Lehmann and Weibull (2018) confirm that "individual utility must integrate collective preferences such as altruism, equality or reciprocity".

Going beyond the conventional view that considers economic agents as individual maximizers, many researches have proven that other parameters were taken into account in decision-making processes. Benabou and Tirole (2006) explain that "people's actions reflect a variable mix of altruistic motivations, material self-interest and social or self-image concern".

In many cases, it can be qualified of genuine, disinterested, designing the fact of withdrawing satisfaction from others' pleasure (Andreoni, 1989). Yet, altruism can also be instrumental (Garapin, 2009) and reflect concerns about reciprocity, consistently with the feature of conditional cooperators suggested by Charness and Rabin (2002). Reputation concerns, the search for social approbation and even personal approbation are widely evidenced. *Appendix 2 provides more details.*

If altruism seems to be a pre-condition for cooperation to emerge, mutual trust, as stressed by Oström (2015), is a necessary ingredient and values, as well as social rules of conduct (called institutions by Seabright, 2010), make it possible. Indeed, Ostrom's seminal work has shown that communication, trust, reputation and reciprocity were at the very heart of social link.

Besides, as reminded by Seabright (2010), only *homo sapiens* has conditioned her existence on the cooperation among unrelated individuals and emotions are at the heart of this process.

[5]Indeed, contributing to the success of a common project, though at an individual cost, triggers satisfaction, pride and even joy. See Appendix 1 for more details.

[6]Roemer (2015) makes a clear distinction between altruism, supported by the desire to improve others' social welfare, and cooperation, which could derive from the want to help oneself.

Following Damasio (2007) who identified the link between reason and emotion, Gollier (2016) confirms that cognition and emotions are not independent. As they influence ex post utility, they also affect ex ante decisions, consistently with Sen (2009) argument about the narrow link between decision-making and emotional mechanisms. This is a very important finding as moral feelings affect the emergence of pro-social behaviors (Elster, 1998)[7]. In this respect, Zerbini et al. (2019) consider the impact of emotional empathy on the willingness-to-buy fair trade goods. Empathy fosters pro-social behaviors (Kedia, 2009) and sustains the capacity to cooperate (Thoron, 2017). Singer and Fehr (2005) argue that the individuals who develop the greater form of emotional empathy are the most able to grasp others' mental spirit which may limit selfish tendencies and urge them to adopt more altruistic behaviors (as proved Artinger *et al.,* 2014)[8].

As a result, responsible consumers can be expected to commit to cooperative behaviours and actions.

2.2 The "intentions-behaviour" gap

Responsible consumers' intrinsic motivations, in particular in relation with the perceived efficiency of the system and their wish to be consistent with their values, play a fundamental part in their choices. Socially responsible products are different from conventional ones in that they bring consumers a private satisfaction and a utility related to the positive impact of this good for other social groups.

Beyond the intrinsic quality of the good, its socio-economic and environment characteristics are taken into account. A significant heterogeneity has been proved among consumers. Indeed, they can be distinguished with respect to their willingness-to-pay. Bougherara and Combris (2009) led an experiment showing that consumers were willing to pay more when they received positive information about the product, which was confirmed by Disdier and Marette (2012). De Pelsmacker, Driesen et Rayp (2005) or Loureiro et Lotade (2005) proved, through contingent analysis, that consumers were ready to pay more for fair trade coffee with respect to conventional coffee. Besides, always in a fair-trade coffee setting, Arnot et al. (2006) observed that fair-trade coffee consumers were less sensible to price changes and kept on purchasing such a good even when the price rised.

In addition to the wish to enhance quality, to protect oneself (health...) or to protect environment, as argued by Mann (2008), external preferences explain the willingness to-pay for responsible goods[9]. Basil et al. (2006) stress the importance of both the sense of responsibility (related to a feeling of guilt) and the presence of others in prosocial behaviors. Doran (2008) highlights the role of benevolence in other-regarding concerns and behaviors and shows that this value is more widespread among fair traders. As far as they are concerned, De Pelsmacker

[7]For instance, Rabin (1993) presents the impact of anger and guilt on negative reciprocity and altruism.

[8]See for instance, Poteete, Janssen and Ostrom (2010).

[9]Becchetti and Rosati (2007) "intrinsic motivations, non-pecuniary incentives, inequity aversion, social preferences".

et al. (2006) explain how personal norms and the attitude towards goods are impacted by the combination between awareness and emotional empathy.

It is important not only to understand the pro-social motivations at stake but also to get clues allowing to explain the "intentions-behaviour gap" which appears quite significant concerning fair trade or organic purchases.

Carrington et al. (2010) who remind us of the role of personal values, moral norms on purchasing intentions but stress the weak actual involvement. Focusing on the gap between the ethical concerns expressed by citizens and their real purchases, Etilé and Teyssier (2013) stress two potential limits to a genuine responsible purchase : consumers' real willingness to pay, which depends on their income and their social preferences, and the degree of information asymmetry between the producer and the consumer that may deter responsible purchase behaviors (lack of information, lack of capacity to verify). Likewise, De Pelsmacker and Jansseris (2006) show how willingness-to-buy is influenced by fair trade knowledge, perceived information both from a quantity and a quality point of view. Wang and Chen (2019) also hint at the importance of trust in fair trade organization and the perceived effectiveness of their action for fair trade purchases.

Indeed, a main feature associated with fair trade is the degree of information asymmetry that separates producers from consumers. Balineau (2015) shows that bringing information concerning the product attributes and its mode of production should help consumers' purchase decision, enhance their trust towards this kind of goods and, consequently, develop the demand for fair trade products. As underlined by Balineau and Dufau (2010), stakeholders have to deal with two kinds of uncertainty as regards fair trade products. It is difficult to assess whether greater equity is actually reached, and to value the relevance of fair trade schemes, on the one hand, and to ascertain that all fair trade requirements are met on the other hand. This kind of uncertainty stems from the fact that fair trade products are differentiated through attributes that do not appear in the final good, the conditions of every stage of the production process are not publicly observed[10]. Balineau and Dufau (2010) explain that the fact that all actors are concerned by the first uncertainty prevents fair trade goods to be regarded as credence goods[11] *stricto sensu* and rather makes them likely to be assimilated to indeterminate goods in the sense of Lupton (2005)[12]. As indicated previously, the same kind of conclusion can be applied to organic products.

[10]Indeed, fair trade goods are neither search goods as consumers cannot learn their quality through a search process prior to purchasing them nor experience goods designing products the quality of which can be detected through consumption. As a consequence, fair trade actors have to send signals to consumers and certification by a third-party becomes essential.

[11]Darby and Karni's (1973, pp. 68–69) : "credence qualities are those which, although worthwhile, cannot be evaluated in a normal use. Instead the assessment of their values requires additional costly information". Bonroy and Constantatos (2008, pp. 238) add that a credence attribute is a "characteristic the quality of which cannot be evaluated even after consumption". Balineau and Dufeu (2010) relates the distinction between credence and search or experience goods to the level of cost consumers have to bear to assess their quality. See also Loureiro and Lotade (2005).

[12]Lupton, S. : 2005, 'Shared Quality Uncertainty and the Introduction of Indeterminate Goods', Cambridge Journal of Economics 29(3), 399–421.

3 Framework and main assumptions

This model is derived from Lachet-Touya (2012).

3.1 Players of the game : the principals

Throughout the different settings that will be examined, various layers of firms will be considered : producers or providers of the responsible good at one tier, sellers at another tier that can be a dedicated store or conventional retailers.

We assume that the objective function of each decisionmaker may be composed of :

- the firm profits corresponding to the net receipts collected from the sales,

- the satisfaction of consumers (which may be regarded as a rent as it depends on their private taste for this good)

- the beneficial effects triggered by this activity in terms of social welfare (positive externalities from an environmental, social, or health point of view for instance).

3.2 Players of the game : the agents

In this context, it is equivalent to consider a continuum of consumers or a unique consumer (see for instance, in the tax litterature, Laussel and Lebreton, 1992, 1993).

We assume that consumers can buy the good supplied in a responsible way or that they can prefer a product manufactured by a conventional firm. The participation constraint of consumers writes $U \geq U_0 \geq 0$, since they can decide not to buy the good if it doesn't result profitable for them (i.e. if they do not derive a non-negative utility). U_0 can be set equal to 0. Consumers purchasing probability, tightly related to their willingness-to-pay for virtuous goods, remains the unknown parameter.

The price set by a firm i is π_i. We suppose $0 < \pi < 1$.

Consumer buying probability is $\Pr[\theta - \pi \geq 0] = 1 - \Pr[\theta \leq \pi] = 1 - F(\pi)$. Let θ, random variable defined on the set $\Theta = \left[\underline{\theta}; \overline{\theta}\right]$, characterized by the density function $f(\theta)$ and the cumulative distribution function $F(\theta)$, and the monotone likelihood ratio property $\dfrac{d\left[\left(1 - F(\theta)\right)/f(\theta)\right]}{d\theta} \leq 0$.

Throughout the paper, we consider that the cumulative and the density function do not change whatever the decisionmaker.

3.3 Timing of the game

The game is an intrinsic common agency game[13] : consumers have to simultaneously accept or reject all the contracts offered to them.

[13] See Bernheim and Whinston (1986), Martimort and Stole (2004).

1) Firms know the distribution of the random variable θ and choose the prices they are going to levy. The different layers of decisionmaking' *a prioris* concerning θ are assumed identical.

2) Consumers compare their willingness-to-pay to the price they are submitted to in order to acquire the product, then they decide to purchase it or not.

4 Production stage

4.1 Programme of a producer acting on her own

We consider a company or several firms that transform the raw products provided by upstream farmers with whom they have contracted in a fair trade relationship.

Let the objective function of a firm be likely to comprise sales receipts, the satisfaction consumers derive from the consumption of the good (which can be assimilated to an informational rent left to consumers as they have private information about their taste for responsible products) and the potential additional beneficial effects induced by this socially responsible activity for other stakeholders (for instance for the local community, on social climate, on health, on environment and biodiversity...) :

$$\{(1+r)\,\pi\,[1-F(\pi)]-K\}+\int_{\pi}^{\overline{\theta}} f(\theta)\,(\theta-\pi)\,d\theta\;+\gamma\varepsilon\,[1-F(\pi)] \tag{1}$$

The first term describes the utility derived from the firm, with r designing the reputation effect from which she benefits, the second argument represents consumers' satisfaction and the last one corresponds to the potential externalities induced by responsible trade[14] with $0 \leq \varepsilon \leq 1$ (for instance a network effect acting as a driver on responsible production, benefits for employment, for biodiversity...).

4.2 Benchmark : the price is defined by a benevolent decisionmaker

A decisionmaker may be called benevolent when she equally takes into account all the arguments described above. For instance, it can be the case of a co-operative firm the board of which is composed of representatives of multiple stakeholders, namely a multistakeholders cooperative[15].

Fleurbaey (2018) puts forward the social and economic advantages of democratic firms. "*Human-scaled firms that foster cooperation within their organization are much more effective at producing satisfactory results both for their bottom line and for their human impact.*" Indeed,

[14] This external effect materializes if and only if the fair trade product is bought.

[15] "A co-operative is an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly owned and democratically-controlled enterprise" (ICA, 2017).

they are likely to improve trust and cooperation among several kinds of stakeholders, to involve fewer negative externalities (environmental, social. . .) and better take into account the local dimension, to lessen the disruptive effects triggered by competition and foster workers' commitment, to be less risky and more long run focused. The cooperative scheme is widespread and embodies quite well these principles.

Maximizing social welfare and optimizing with respect to π yields to an optimal price[16] :

$$\overset{*}{\pi} = -\frac{\varepsilon}{1+r} + \frac{r}{1+r}\frac{1-F\left(\overset{*}{\pi}\right)}{f\left(\overset{*}{\pi}\right)} \tag{2}$$

4.3 Potential competitive settings

On the one hand, the firm may be primarily focused on her utility and seeks to maximize her profits. Such a framework may characterize a setting involving few competition, which may enable the firm to be considered as leader on the market

$$\left\{(1+\alpha)(1+r)\pi\left[1-F(\pi)\right]-K\right\} + \int_{\pi}^{\overline{\theta}} f(\theta)(\theta-\pi)\,d\theta \; + \varepsilon\left[1-F(\pi)\right]$$

with $0 \leq \alpha \leq 1$, representing the extra-weight put on the firm profits.

As a by-product, the price that maximizes her objective function is higher than in the previsous case and writes

$$\pi_P = -\frac{\varepsilon}{(1+\alpha)(1+r)} + \frac{\alpha + r(1+\alpha)}{(1+\alpha)(1+r)}\frac{1-F(\pi)}{f(\pi)}$$

On the other hand, the firm may be willing to attract consumers. This situation may arise either when there is strong horizontal competition or when the firm wants to foster her production and to expand her consumers base. Indeed, the main goal is to develop the purchases of responsible goods and a way to help achieving it may lie in a price decrease. Either because competition is fierce or because the firm wants to differentiate herself and get an advantage, in order to attract consumers that might stay at the willingness-to-cooperate stage and not reach the willingness-to-pay one, the firm will prefer choosing limited prices.

$$\left\{(1+r)\pi\left[1-F(\pi)\right]-K\right\} + \left\{(1+\beta)\int_{\pi}^{\overline{\theta}} f(\theta)(\theta-\pi)\,d\theta\right\} + \varepsilon\left[1-F(\pi)\right]$$

with $(1+\beta)$ the extra-weight put on consumer' satisfaction : $0 \leq \beta \leq 1$.

[16] In a perfect information setting, the firms knows the price that can be defined to rapt all the surplus : $\overset{*}{\pi} = \theta = \frac{1-G(\theta)}{g(\theta)}$. With information asymmetries, on the other hand, the determination of the unique price allows generating some kind of elasticity. Information asymmetries modify the strategy of the decisionmaker through a mechanism analogous to a horizontal competition exerting a downward pressure upon tax rates.

The corresponding price becomes lower than in the benchmark case

$$\pi_C = -\frac{\varepsilon}{1+r} + \frac{r-\beta}{1+r}\frac{1-F(\pi)}{f(\pi)}$$

Additional conditions must be included to ensure that the price does not become negative : externalities must not be too important, the reputational impact strong or the extra-weight put on consumers' satisfaction does not exceed a given threshold, as expressed below

$$\varepsilon < \frac{r-\beta}{1+r}\frac{1-F(\pi)}{f(\pi)}\ ;\ \ \beta < r - \frac{\varepsilon}{\dfrac{1-F(\pi)}{f(\pi)}}\ ;\ \ r > \varepsilon + \beta\frac{1-F(\pi)}{f(\pi)}$$

To sum up

$$\pi_C < \overset{*}{\pi} < \pi_P \tag{3}$$

5 Introduction of a retailing channel : the choice of a dedicated network

The store or the retail organization makes no profit but receives a part of receipts to deliver the good and then share the benefits.

In such a framework, firms set their prices, collect sales receipts, transfer a part of them to the retailer and they benefit from communautary expenditures.

We consider that these expenditures depend on the receipts received by the upper level and, as a consequence, depend on the consumer' purchase probability. Thus, with n firms, and π_i the price applied by firm i, these transfers write $\sum_{i=1}^{n}\delta_i\pi_i\left[1-F(\pi_i)\right]$, where δ_i is the fraction of receipts transferred to the higher level, $\delta_i \in [0;1[$.

A firm i gets the following part from these expenditures $\gamma_i E(\sum_{i=1}^{n}\delta_i\pi_i\left[1-F(\pi_i)\right])$, where γ_i represents the part of expenditures accruing to firm i, $\gamma_i \in [0;1[$. For simplicity sake, we may consider that $E(\sum_{i=1}^{n}\delta_i\pi_i\left[1-F(\pi_i)\right]) < \sum_{i=1}^{n}\delta_i\pi_i\left[1-F(\pi i)\right]$. Besides, we assume that $E'(\cdot) > 0$ and $E"(\cdot) < 0$. It also seems quite consistent to consider that $\dfrac{dE}{d\pi_i} \leq 1$. Indeed, as on the one hand each firm contribution to the upper tier only represents a fraction of total receipts and, on the other hand the number of firms participating to the process is greater than two, then a rise in the price defined by one firm cannot trigger a greater rise in the amount of common expenditures.

If we consider the firm behaviour, she sets π_i to maximize :

$$(1-\delta_i)(1+r)\pi_i\left[1-F(\pi_i)\right] + \int_{\pi_i}^{\overline{\theta}} f(\theta)(\theta-\pi_i)\,d\theta\ \ + \varepsilon\left[1-F(\pi_i)\right]$$
$$+\gamma_i E\left(\sum_{i=1}^{n}\delta_i\pi_i\left[1-F(\pi_i)\right]\right) - \gamma_i C\left(\sum_{i=1}^{n}\left[1-F(\pi_i)\right]\right)$$

The resulting price writes

$$\tilde{\pi}_c = \frac{\gamma_i C'(\cdot) - \varepsilon}{(1+r)(1-\delta_i+\gamma_i\delta_i E'(\cdot))} + \frac{(1+r)(1-\delta_i+\gamma_i\delta_i E'(\cdot))-1}{(1+r)(1-\delta_i+\gamma_i\delta_i E'(\cdot))}\frac{1-F(\pi)}{f(\pi)} \tag{4}$$

A condition must be set for the price to be non negative, for instance on the marginal cost or for the part represented by the cooperative which is an indicator of the degree of competition :

$$\delta_i \leq \overline{\delta} = \frac{r}{(1+r)(1-\gamma_i E'(\cdot))} + \frac{\gamma_i C'(\cdot) - \varepsilon}{(1+r)(1-\gamma_i E'(\cdot))\dfrac{1-F(\pi_i)}{f(\pi_i)}}$$

For weak externalities or for a significant reputation effect (or a low willingness-to-pay), the price can be postive.

If we compare to the benchmark case[17], it appears that the price results higher if the marginal cost is high or if the part of receipts transferred to the upper level is limited or the reputation effect significant.

$$\delta_i < \frac{\gamma_i C'(\cdot)}{(1-\gamma_i E'(\cdot))\left(\varepsilon + \dfrac{1-F(\pi_i)}{f(\pi_i)}\right)}; r > \frac{\varepsilon(\varepsilon - \gamma C'(\cdot))}{\varepsilon + (1-\gamma C'(\cdot))\dfrac{1-F(\pi_i)}{f(\pi_i)}}$$

When firms decide to sell their products through a dedicated entity which undertakes actions directed towards improving firms' working conditions, production processes and which offers them better conditions (services in health, education, culture...), the level of price may increase when there is competition at the upstream level or when the retailer marginal cost is high.

What's more, one of the conditions for the case to be valid is that the willingness-to-pay and the degree of externalities be weak (the proof with a uniform distribution function is available on request).

6 Introduction of a retailing channel : choice of a conventional network

When sales are organised through a big chain retailing network, i.e. *via* a conventional channel, what is essential is the sharing of the bargaining power between both layers.

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$$\tilde{\pi}_c - \overset{*}{\pi} = \frac{\gamma_i C'(\cdot) - \delta_i(1-\gamma_i E'(\cdot))\left(\varepsilon + \dfrac{1-F(\pi_i)}{f(\pi_i)}\right)}{(1+r)(1-\delta_i+\gamma_i\delta_i E'(\cdot))}$$

6.1 Nash equilibrium

The good provider and the retailer make their princing decision independently and each one chooses unilaterally the level of price she wants to apply.

First of all, the retailer may behave as a responsible one. Such a retailer may be willing to reduce her margin and undertake a fair bargaining relationship with the upstream firm in order to respect fair trade principles, even when both actors make their decisions independently. Consistently with this behaviour, the retailer objective function may set a higher weight upon consumers satisfaction and externalities. She may even integrate producers' utility. The price she sets writes

$$\pi_{RR} = -\frac{(1+\gamma_D)\,\varepsilon}{(1+r_D)} + \frac{r_D-\beta_D}{(1+r_D)}\frac{1-F(\pi)}{f(\pi)} - \frac{1+r}{(1+r_D)}\pi$$

and the total price responsible consumers have to pay for this good, which is the addition of the responsible retailer price with the multistakeholder cooperative tariff, becomes

$$\pi^{NR} = -\varepsilon\left(\frac{1}{1+r} + \frac{\gamma_D}{1+r_D}\right) + \left(\frac{r}{1+r} + \frac{r_D-\beta_D}{1+r_D} - \frac{r}{1+r_D}\right)\frac{1-F(\pi)}{f(\pi)} \tag{5}$$

If, for a simplicity stake, we consider that the reputation effects are identical, the global price is higher than the benchmark one if the retailer valuations of the externalities and consumers' satisfaction are not over-weighted.

If competition is scarce and allows the retailer to seek to maximise her profits, the global price increases and becomes

$$\pi^{NP} = -\varepsilon\left(\frac{1}{1+r} + \frac{1}{(1+\alpha_D)(1+r_D)}\right) + \left(\frac{r}{1+r} + \frac{\alpha_D + r_D(1+\alpha_D)}{(1+\alpha_D)(1+r_D)}\right)\frac{1-F\left(\pi^N\right)}{f\left(\pi^N\right)}$$

Contrary to the previous case, when there is strong competition at the retailing level or if the supplier is biaised towards consumers (for instance, if she wants to differentiate from other retailers and attract a new kind of customers), the final price is lower and remains positive if and only if the impact of the reputational effects is great and the additional weight put on consumers' satisfaction weak

$$\pi^{NC} = -\varepsilon\left(\frac{1}{1+r} + \frac{1}{(1+r_D)}\right) + \left(\frac{r}{1+r} + \frac{r_D-\beta_D}{(1+r_D)}\right)\frac{1-F\left(\pi^{NC}\right)}{f\left(\pi^{NC}\right)}$$

6.2 In a sequential situation

If the retailer plays first and impose her conditions to the producer

$$\pi_R^{SR} = -\frac{(1+\gamma_D)\,\varepsilon}{(1+\alpha_D)(1+r_D)} + \left(\frac{\alpha_D + r_D(1+\alpha_D) - \beta_D}{(1+\alpha_D)(1+r_D)} - \frac{r}{1+r}\frac{d}{dt}\left(\frac{1-F(\cdot)}{f(\cdot)}\right)\right)\frac{1-F(\pi)}{f(\pi)}$$

When the retailer increases her price, the cooperative reduces hers and the global price results inefficiently higher. However, for a fair trade good, the cooperative cannot reduce her price, only maybe in the short run in order to have access to the shelves of the retailer. But were this process to last, fair trade principles couldn't be respected any more.

If the cooperative plays first, she has the bargaining power as the retailer is eager to offer fair trade goods to her customers and must rely on fair trade suppliers which enables them to set their conditions. π_C^{SR} writes

$$-\frac{(1+\gamma_D)\,\varepsilon}{(1+\alpha_D)\,(1+r_D)}-\left(\frac{(1+\beta_D)}{(1+\alpha_D)\,(1+r_D)}-\frac{\alpha_D+r_D\,(1+\alpha_D)-\beta_D}{(1+\alpha_D)\,(1+r_D)}\frac{d}{d\pi}\left(\frac{1-F\,(\cdot)}{f\,(\cdot)}\right)\right)\frac{1-F\,(\pi)}{f\,(\pi)} \tag{6}$$

The margin the retailer accepts can even be negative since she wants to gain customers. Indeed, we often can see rebates applied on fair trade transformed products such as coffee, chocolate, which corresponds to a strategy displayed by conventional retailers to attract responsible consumers and make new ones be used to including this kind of goods in their purchases.

6.3 A Kantian equilibrium

A third kind of equilibrium may arise : a Kantian one. As reminded by Laffont (1975), Kant's categorical imperative claims that the actions one should undertake are those one would advise to others. To some extend, we can consider that this can be the case if the social welfare retailer, beyond her profits, consumers' satisfaction and potential external effects, takes into account the cooperative satisfaction. Doing this, she may define an action valuable for all the groups of society involved. In such a cooperative setting, the global price becomes

$$\pi^K=\frac{-\varepsilon}{1+r}+\left(\frac{r}{1+r}+\frac{r_D-r}{1+r_D}\right)\frac{1-F\left(\pi^K\right)}{f\left(\pi^K\right)} \tag{7}$$

It is equal to the socially optimal one if the reputation effect is the same for both tiers of firms.

What's more, when we compare this issue to the *ad hoc* retailing channel, the Kantian price results lower than in the dedicated store case when the weight put upon consumers and externalities in the latter framework are high whereas the oppposite becomes true when these arguments are not ower-weighted to an important extent if the retailer' cost is quite moderate (the same condition as in the comparison with the benchmark case is verified).

7 Main results and conclusion

This work sheds some light on the respective advantages and drawbacks of various possible organisations for responsible trade when a key parameter is taken into account, i.e. the private information concerning consumers' willingness-to-buy and their willingness-to-pay for such goods. We show that the choice of a dedicated structure dos not necessarily appear as the solution, in particular when she has to bear important costs or when there is a great number of upstream production entities, these elements being conducive to an increase in prices. When we examine non cooperative setting, we find that in a simultaneous price-setting scheme, the nature of the firms constitutes a key criteria. What really matters is the convictions upheld by the firms, namely their willingness to genuinely behave as responsible actors eager to improve social welfare. A benevolent objective function and a convergence of interests among all those who take part to the process can bring the outcome close to the socially optimal issue. In a sequential framework, the distribution of the bargaining power is the most important feature. Indeed, a setting granting the role of leader to a non benevolent retailer cannot be envisaged as the provider would be constrained to reduce her price, which is contrary to fair trade principles, whereas if the producer makes her decision first, a retailer eager to enhance responsible trade in her shelves could accept a negative margin, which is not a situation likely to last but which can be conducive to a dynamic equilibrium close to the social optimal price. Last, we have examined a different kind of equilibrium, a cooperative one (which departs from the merged case tackled as the dedicated sales channel) which can be assimilaed to some kind of Kantian equilibrium. Such a setting may arise, thanks to consumers pressure that will model firms' behaviours, to the awareness of the induced effects of trade upon society and environment which may be put forward by other stakeholders (such as investors, employees...). The resulting issue tends towards the socially optimal one.

This work will be continued in such a direction. It will be interesting to deepen the emergence and the characteristics of various cooperative equilibrium (Kantian ones but also more sophisticated framework of relationships between actors) and to compare the results obtains to case studies.

8 Appendix

8.1 The desire for cooperation

In 2017, the International Panel for Social Progress (IPSP) threw some light on the American citizens' feelings and expectations towards cooperation. A survey allowed to learn successfully how they considered the importance of competition and cooperation in various domains / fields of their everyday life (at work, in politics, at home, with social relationships. . .) and the feelings they had experienced in situations involving these mechanisms. The main results of this survey stressed a dominating preference for cooperation and the want to see more cooperation in politics especially. It also appeared that most respondents associated positive feelings to cooperation, such as elation, and praised its effectiveness in reducing stress and negative feelings.

8.2 Social dilemma

On the one hand, the dictator game[18] proves that genuine altruism is displayed by many players as they expect nothing in return for their unselfish choice. On the other hand, the ultimatum game[19], popularized by Thaler (1988), shows that the active player makes her decision in a way mutually profitable as the passive player will accept the offer if and only if she doesn't consider it as unfair. Reciprocity is an important motive for pro-social behaviors, as also stressed by Cueva and Dessi (2012). Besides, the investment game[20] indicates that taking into account others' welfare relates to social interactions.

8.3 From individual preferences to collective organizations

Beyond their economic role, their main goal is not to create profit but to comply with shared values so as to serve their members' economic and social needs and expectations. They are thus considered as democratic people-centered firms (ICA, 2018) able to "contribute to social equity and justice". Indeed, one of the most striking features of such organizations lies with the status of their members, who simultaneously own, monitor and run them. What's more, co-operatives have a long term economic activity horizon. Two essential kinds of advantages related to being member of a co-operative can be stressed : on the one hand the ability for producers to take part to the choices through the democratic process of decision-making, on the other hand their improved access not only to relevant prices and funding sources which increase income but also to the provision of highly valuable services offered by the structure which allow improving

[18] Kahneman, Knetsch and Thaler (1986)

[19] W. Güth, R. Schmittberger and B. Schwarze (1982) "An Experimental Analysis of Ultimatum Bargaining", Journal of Economic Behavior and Organization, 1982, 3, 367-388.

[20] J. Berg, J. Dickhaut and K. McCabe (1995) "Trust, reciprocity and social history", Games and Economic Behavior, 10, p. 122-142 ; C. Meidinger, S. Robin et B. Ruȩ eux (1999) "Con. . . ance, réciprocité et cheap talk", Revue Economique, vol.50, n 1, p. 5-44.

returns and living conditions (investment in education, innovation, group purchasing, better selection of purchasing markets. . .). The economic stability is also ensured by the constitution of a reserve. This practice is seen as the first sustainable development practice since it allows answering current needs and at the same time increase the ability of future generations to answer them.

The notions of cooperation and mutual help were already present in A. Smith[21] and Saint-Simon was the first to require firms to be in collectivity's service. The interest for more democratic firms appeared with the development of social economy, as supported in particular by Dunoyer (1830)[22] through her moral approach of economics, de Sismondi who states that the real object of economy is human beings and not wealth, 19th century socialists as Owen or Gide who upheld a social economy based upon solidarity. Influent economists tackled this issue, as Mill who encouraged workers cooperatives, Walras (1896)[23] who defended the idea that the distribution of wealth should be "as equitable as possible" and who promoted cooperatives as a relevant mode of organization, or more recently Meade (1993).

The first co-operative was founded in England to enable its members to benefit from a better access to food, both from a revenue and a quality point of view, and decided to reinvest the profits derived in actions serving the community. Nearly one-third of co-operative entities in the world belong to the food and agriculture sector, in developed countries as well as in emerging economies where they help reaching food security and reducing poverty. Indeed, agricultural co-operatives represent a widespread form of organization in the world.

Beyond the traditional aim of serving the interests of the farmers who are members and owners of the co-operative, this latter exerts enlarged socio-economic impacts in the local area (in terms of revenue, employment, environment, reduction of inequalities. . .). These democratic structures play an important role in developing countries where they both improve farmers' living conditions and, as a by-product, those of the whole collectivity through the provision of fair remunerations and the investment of the premium in local services (health, education. . .)[24], and foster a sustainable agriculture that preserves environment and local communities.

[21] Cf. the idea of "social commitments" that appear in the Theory of moral feelings.

[22] Traité d'économie sociale

[23] Walras, L. (1865) : Les Associations populaires de consommation, de production, et de crédit.

[24] The premium corresponds to the extra-price paid by consumers for the product with respect to the competition price. Indeed, co-operatives do not promote the lower price but a fair price.

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