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High quality exports and consumers' trust: a development perspective

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Abstract

We analyze the impact of the effectiveness of internal regulation for the development of internal and export markets for credence goods, particularly for a developing country which is an exporter (or a potential exporter).

In the model, since goods of actual different quality can be sold as high quality goods, expected quality is a function of consumers' beliefs about the effectiveness of regulation. Foreign consumers, who cannot observe foreign regulation as closely as domestic ones, may partly base their expectations on the level of development of the exporting country. Low effectiveness, negative stereotype and low consumers' trust may cause a failure in the market for high quality, and there may be a trap of underdevelopment and no high quality exports. The main policy implications are that increasing the effectiveness of regulation improves export prospects; standard setting and enforcement by external actors, such as supermarkets, or NGOs in the case of certain niche markets, is likely to be beneficial.

J.E.L. Codes: L15, F13, O12

1. INTRODUCTION

The perception consumers have of the effectiveness of regulation on product quality and safety in a country is generally important for the development of internal and especially export markets. Such perception and trust become crucial when consumers cannot really evaluate some or all of a product's attributes, especially process attributes: it may be prohibitive to find out whether a product is actually "environmentally friendly", "organic", or simply completely safe. Therefore consumers' notion of quality will be directly related to their trust in regulation. In the EU, several major food safety crises during the last decades provide a vivid illustration of the role of consumers' trust and how its drop can cause severe damage to the sector involved.

However, developing exporters may have special problems in this area: a July 2007 report (BBC, 2007) according to which "From pet food to toothpaste, tyres to jewellery and seafood to toys, questions have been raised over the reliability of Chinese-made goods.... part of the problem is that the speed of China's expansion into the global export market has not been matched by the growth of a countrywide regulatory infrastructure..." illustrates widespread perceptions in the media. Similar perceptions may be associated to smaller developing exporters.

There has been a growing literature on informational problems when quality –of goods and services- is not fully observable before purchase by consumers. Many contributions have analyzed the economics of various forms of labeling, including geographical indications, genetically modified organisms and eco-labeling (see for instance Anania and Nisticò, 2004;

Costa et al., 2009; Menapace and Moschini 2010 and related references). This paper focuses specifically on the role of the effectiveness of internal regulation on quality, and of consumers' trust in such regulation, in the context of "credence" goods for high quality markets, and particularly for a developing country who is an exporter or a potential exporter.

Trust or credence goods have the common characteristic that consumers cannot evaluate some or all of their attributes either by inspection or after the experience of consumption (Darby and Karni, 1973), therefore standards and consumers' trust are crucial for the development of their markets. It is a vast and relevant category of products, because actual quality is very often difficult to judge.

Although the term regulation usually refers to governmental standards, the term standards and regulation will be used here indifferently to refer to all standards, public or private, involving certification.

The term "effectiveness of regulation", unless better specified, indicates the scope of regulation i.e. to what extent standards meet consumers demand for product quality and safety; the quality and relevance of the standards in terms of meeting the defined objectives; the efficacy of the monitoring system in ensuring that producers actually meet the standard. The latter two characteristics also indicate to what extent consumers can trust regulation, e.g. the probability that a product labeled "environmentally friendly" actually is environmentally friendly.

The paper is organized as follows: sections 2 briefly reviews credence goods and the relationship between standards and trade; section 3 introduces the model's hypothesis on consumers' expectations about quality; section 4 presents a model on the relationship between consumers' trust and the internal and export markets for high quality credence goods¹.

There are two development dimensions of the problem. First, regulation may often be less effective in developing countries. Second, foreign consumers may partly base their expectations about product quality on the level of development of the producing country as a proxy for the effectiveness of its regulation, i.e. on general notions about the relationship between regulation on quality and income level. Hence developing country exporters may suffer from a specific "trust" problem regarding the effectiveness of internal regulation, which may hamper high quality exports: low effectiveness of internal regulation could have an heavy impact on foreign demand for high quality credence goods, in general, but more so for a developing country.

In such circumstances mutual recognition may not be a solution, since it does not address the trust problem. Improving the public supply of standards and the effectiveness of internal regulation, acquiring reputation also through NGOs and the pursuit of harmonization are better strategies. Standard setting and enforcement by external actors such as supermarkets along value chains is also beneficial in the context of ineffective internal regulation and/or prejudice.

2. CREDENCE ATTRIBUTES, STANDARDS AND TRADE

The information environment for different product attributes may be search, experience, or credence in nature: the consumer can learn about the quality level prior to purchase (search),

¹ For a discussion focused on organic and fair trade agricultural products see Cuffaro and Liu (2008).

after purchase and use (experience), or not at all (credence). Credence attributes can obviously be of a very different nature, but, restricting the discussion in this paper to goods², there are two major classes that have received increasing attention:

- (i) Attributes that have health/safety consequences³;
- (ii) Consumers' demand/(willingness to pay) for attributes that are of "altruistic" nature, i.e. related to concern for "others", typically to the production processes (fairness of distribution, the environmental cost of production, the use of child labor, the animal welfare standards applied). An important example is the demand for "fair trade."

Standards are increasingly important for trade for several reasons: first, the shift from mass markets to markets with differentiated products and niches serving consumers with relatively high incomes, who increasingly demand high quality, safety and "credence", attributes; second, the trend towards outsourcing for cost reduction⁴; third, the significant decline of tariff barriers, implying that differences in product and process standards gain importance for trade flows and in the trade liberalization arena.

Standards may be set by governments or by the industry itself, producers, buyers or retailers. Many standards are also set by NGOs and in some cases also trade unions. Finally, governments, the private sector and NGOs may form coalitions to set standards.

There are sectors, such as agribusiness, where growing public concern about safety has increased the scope and stringency of public standards. Such stringency and the obligations placed on companies, combined with the need to simplify the management of sourcing have generated an explosion of collective private standards (Humphrey, 2006).

The privatization of standards has been more pronounced in the developing countries, where the effectiveness of public standards – their scope, their quality and relevance in terms of meeting the defined objectives and the effectiveness of the monitoring system in ensuring that producers actually meet the standard - was generally lower⁵.

² An important class of trust products is medical and legal services and a variety of repair services. The peculiarity is that it is very difficult for consumers not only to discover quality but also to determine the extent of the service that was needed and how much was actually performed, even when the success of performing the service is observable. This information asymmetry creates obvious incentives for opportunistic behavior by the sellers. Models tend predict that either experts over treat consumers, or search and diagnosis costs are excessive, or there is fraud in the form of overcharging consumers, or experts have inefficient capacity levels (Emons, 1997 and 2001; Wolinsky, 1983).

³ Often the level of assurance "demanded" by (groups of) consumers is "higher" than the assurance provided by existing, well established regulation, based on objective, scientific assessment of risk. For example in the case of food there is a demand for a "lower" level of chemical residues on fruits and vegetables or drug residues in meat.

⁴ As extensively discussed in the literature, the combination of branding (as a strategy to add value to products), increasing standards requirements (by consumers and governments) and outsourcing spreads a pattern of industrial organization whereby production is coordinated across borders by a lead firm that defines and enforces multiple product and process standards.

⁵ In agribusiness privatization has occurred in two distinct ways: on the one hand large firms, mostly supermarkets and large processors and especially multinationals, created private standards generally meeting or exceeding the stringency of public standards and insured their implementation through

From the point of view of developing countries several theoretical arguments militate in favor of concentrating efforts towards improving the effectiveness of internal regulation and pursuing the multilateral harmonization solution.

Consumers' perception of quality is influenced by the product's intrinsic attributes as well as by extrinsic indicators and cues provided by the seller of the product. Extrinsic indicators (e.g., certification, labeling) and cues (e.g. brand name, packaging, price) convey search information to the consumer, since they are available prior to purchase. An attribute can switch between the categories of search, experience, and credence. For example, a regulation such as mandatory labeling can change a priori credence characteristic such as uses of genetically modified organisms (GMOs), into a search characteristic (Caswell, 1988; Grolleau and Caswell, 2005).

However the role of regulation and standards in the market for experience or credence goods depends also on how much consumers can "trust" regulation, i.e. to what extent they believe that a product marked "high quality" is actually a high quality good.

Regulation may be ineffective for several reasons. For example, in many countries firms apply to independent labeling agencies for a license to use a particular label stating that their product is environmentally friendly, socially responsible or safe. These ecolabeling programs are often applied to products where consumers would generally be individually unable to determine the actual environmental friendliness (e.g. the biodegradability of a product) and the firm's compliance is gauged by random monitoring. But when monitoring is random, certification must be viewed as noisy. Furthermore, the certifying party cannot be certain that the firm always uses an environmentally friendly technique, nor that the monitoring scheme is able to perfectly detect any violations. Even if the certifying process is perfectly able to evaluate a product's compliance with the test's standards, standards may not be perfectly correlated with "environmental friendliness"⁶ (Engel, 1998; Mason, 2006).

In addition, certifiers have mixed incentives: the incentive to maximize the number of clients, the incentive to maintain their reputation. In other words, third party verification does not automatically guarantee impartiality or absence of conflicts of interest⁷.

Finally, enforcing a process standard may be a very difficult problem in the context of value chains coordination across borders, as illustrated by the recent safety crisis within the US toys industry in relation to production in China⁸.

vertical co-ordination. On the other hand, NGOs have provided the standards and the monitoring and enforcing mechanism for many credence products with "ethical" attributes, occupying a fast growing market segment of products originating in the poor countries (Reardon et al., 1999).

⁶ In the Mason (2006) model of ecolabeling, the certifying test is subject to two types of errors: there are some green sellers that would fail the test and some brown sellers that would pass the test.

⁷ Evidence on opportunist behavior in the certification systems in the EU is reported in Jahn, Schramm and Spiller (2005).

⁸ In the summer of 2007 RC2, which operates in China through coordination of a local network of contract manufacturers, without owning factories, recalled 1.5 million trains and accessories because a supplier had coated them in lead paint. The same summer lead paint prompted Mattel – which outsources to up to 50 manufacturers in China - to recall 967,000 toys, according to company sources because either a contract manufacturer used paint from a non certified supplier or a certified supplier cheated (BBC, 2007).

The development of credence goods markets depends crucially on consumers' trust in regulation, therefore trust in domestic and foreign regulation is the problem to be addressed.

3. CONSUMERS' EXPECTATIONS ABOUT QUALITY

We use three main hypothesis regarding consumers' expectations about quality.

First, expected quality is a function of consumers' beliefs about the effectiveness of regulation.

Second, domestic and foreign consumers may hold different beliefs. Domestic consumers know the effectiveness of internal regulation and the incidence of cheaters and base their expectations on such incidence. Foreign consumers base their expectations on the percentage of imports from the country which failed border quality inspection, which is in turn linked to the effectiveness of internal regulation in the exporting country, but are also influenced by a country of origin stereotype. Their trust in the regulation of product quality increases with the level of development of the exporting country.

The second assumption is based on the idea that since foreign consumers cannot observe regulation in each country of origin of their imports as closely as domestic consumers, they may partly base their expectations about product quality on general notions about the relationship between regulation on quality and income level.

In general what foreign consumers can observe about the effectiveness of regulation in exporting countries is a very loose indicator of such effectiveness. For example Jaffee and Henson (2004) report that over a typical three year period the US Food and Drug Administration (FDA) undertakes inspections of all domestic firms that produce low-acid canned foods, yet the same inspections are undertaken on just 3 percent of foreign facilities exporting such products to the United States. Even after substantially increasing resources for the inspection of food imports, the FDA still inspects only 1 to 2 percent of the more than six million consignments of food and cosmetic products imported each year. Regulatory oversight for certain products and markets is more stringent on domestic, rather than imported supplies (World Bank, 2005).

Marketing and business research shows that consumers do use country of origin as a quality signal especially when information about quality is ambiguous⁹. Country of origin is regarded as a cognitive cue, viz., an informational stimulus about or relating to a product that is used by consumers to infer beliefs regarding product attributes such as quality, and since it can be manipulated without changing the physical product, it is an extrinsic cue like price, brand name and retailer reputation.

The cognitive processes underlying the effects of country-of-origin on product evaluation may be explained through different hypothesis, some of which are especially relevant for credence attributes. For example research on the role of stereotypes suggests that these may be used as a heuristic basis for judgements especially when the amount of attribute information is large and difficult to integrate or when other information is lacking. Thus, subjects who learn that a product is originating in a country with a reputation for high quality may use this

⁹ In a country of origin study typically consumers are asked to form an overall evaluation of a product alternative that is described verbally by a number of cues, including country of origin.

knowledge as a basis for evaluation without considering information about the product's specific attributes, especially if evaluating the information is difficult (Hong and Wyer, 1989); Maheswaran (1994) examines consumer expertise and attribute information as moderating the effects of country of origin, and shows that all types of consumers use country of origin evaluations when attribute information is ambiguous.

Product/country images contain widely shared cultural stereotypes. For example, consumers recognize that the production of high-quality technical products requires a highly trained and educated workforce; hence, they perceive that such products are of better quality when produced in developed countries (Verlegh and Steenkamp, 1999). In a review of country-of-origin effects on product evaluation, Bilkey and Nes (1982) point out that several studies found a hierarchy of biases, including a seemingly positive relationship between product evaluation and degree of economic development. Han and Terpstra (1988) show specifically that products with a country-of-origin label from a developing country were rated inferior to those with an industrial country-of-origin label and Head (1993) reports that a 'Made in Germany' label evokes the concepts of reliability, precision and punctuality. Liu et al. (2001) provide empirical evidence of a 'level of development' factor in the market for organic foods.

Verlegh and Steenkamp (1999) evaluated the findings of past country-of-origin studies within the marketing and business literature for the period 1980-1996 and found that the country-of-origin effect is strong especially for perceived quality and that one factor closely related to the evaluation of products in general is the level of development: the country-of-origin effects are significantly larger when products from more developed countries are compared with products from less developed countries. This finding supports the notion that consumers believe that products from LDCs are lower in quality, and associated with a larger risk of bad performance and dissatisfaction (Cordell, 1992) ¹⁰.

Roth and Romeo (1992) argue that consumers' evaluations are based on the match between product and country: consumers prefer a country as an origin for specific products when they believe that there is a match between its perceived "strengths" and the skills that are needed for manufacturing the product under consideration: a strong positive match would exist when the country is perceived as being very strong in an area that was also an important feature for a product category.

Actually in the case of credence goods an important feature is the effectiveness of regulation, which in turn depends on good general and dedicated institutions. This is the specific skill required and consumers may establish a positive association with the level of development just as for the case of high quality technical products.

In fact there is empirical evidence on the lower effectiveness of product regulation in developing countries. Stephenson (1997) provides a description of the situation at the beginning of the 1990s, showing for example that the number of national standards in developing countries, including large Latin American countries, for which data were available, was at least ten times lower than the corresponding number in the US and also the proportion of mandatory standards was comparatively low. Furthermore an indirect indication that standards are lower is provided by a vast literature on value chains coordination by multinationals, pointing out that

¹⁰ Also, there is anecdotal evidence that in some poor countries some producers unlawfully package their products with a country of origin label different from their own, a "better" country of origin.

one of the main advantages for developing countries is the upgrading of standards (Cuffaro and Liu, 2008).

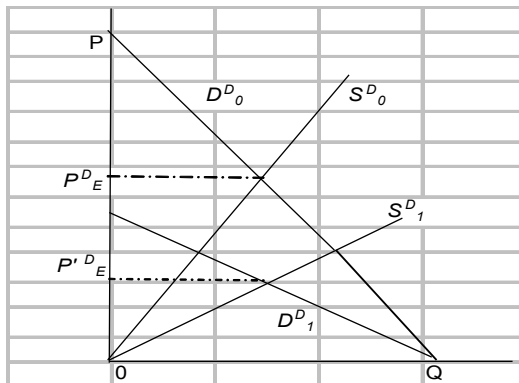
4. CREDENCE GOODS, TRUST AND THE MARKET FOR HIGH QUALITY

The model analyses the impact of the effectiveness of regulation on the development of the market for high quality credence goods, i.e. in a market where goods of actual different quality can be sold as high quality goods (examples are goods labeled environmentally friendly, or bio, or safe for children).

The effectiveness of regulation is measured by the probability λ of being caught cheating on quality, internal consumers know that measure, and expected quality depends on it. Figure 1 shows the domestic market before trade. With perfect regulation only high quality producers participate in the market and the supply function is S_0^D . The demand function is D_0^D with the equilibrium price being P_E^D .

If $\lambda < 1$, the supply function shifts to S_1^D which represents the sum of product offered by cheaters and high quality producers. As consumers are aware that $\lambda < 1$, the demand curve rotates towards D_1^D , the equilibrium price decreases and consumers surplus is reduced.

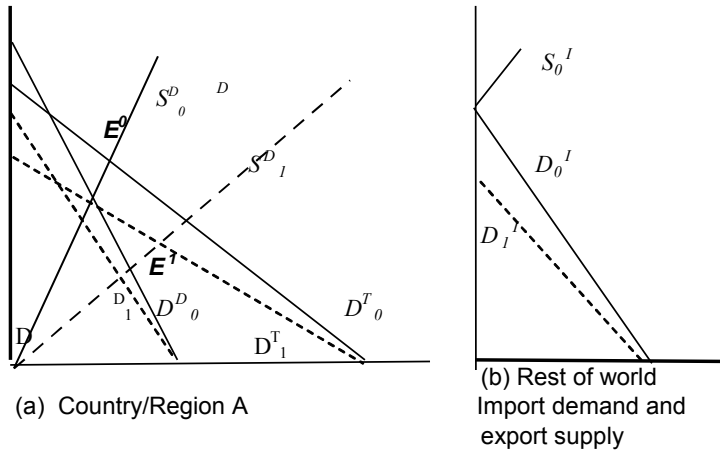
Figure 1 - Domestic market



Extending the basic idea to trade, let's assume that country/area A is a large exporter (country A has a comparative advantage based on factor endowment) and world price is formed on the internal market of A as a result of the interaction between internal demand D^D plus the demand for imports from the rest of the world D^I and supply in A, S^D (the same result could be obtained summing the excess function of this large country to the market of rest of the world).

With perfect regulation ($\lambda=1$) the internal supply and demand functions are S_0^D and D_0^D and the demand for imports from the rest of the world is D_0^I , in country A total demand is D_0^T and the equilibrium is E^0 . A lower λ would reduce the expectations of internal and foreign consumers about quality in country A. Internal supply, internal demand, the demand for imports and total demand for the high quality product rotate (dotted lines in figure 2a) and the new equilibrium is E^1 . A negative stereotype would instead only rotate D_0^I .

Figure 2 Trade of credence goods



In both cases if there were a minimum price of high quality, known to consumers, below that price there would be no supply and no demand (as consumers know that the good cannot be high quality) i.e. there may be no high quality production and export.

Analytically, in analogy with the model of Anania and Nisticò (2004), we assume that markets are competitive and there are high quality producers and low quality producers who try to cheat.

There are n_H identical high quality producers and n_L identical low quality producers, with marginal cost functions

$$\begin{aligned} c_H &= \beta_H q_H \\ c_L &= \beta_L q_L \end{aligned}$$

With $\beta_H \neq \beta_L$

Each high quality producer produces a quantity such that

$$P = \beta_H q_H$$

Depending on the probability λ of being caught cheating, a fraction $(1 - \lambda)$ of low quality products is sold on the H market, therefore the expected marginal revenue of cheaters is $P(1 - \lambda)$. Hence each low quality producer offers on the H market a quantity such that

$$P(1 - \lambda) = \beta_L q_L,$$

The aggregate supply in the high quality market is:

$$S(P) = n_H \frac{P}{\beta_H} + (1 - \lambda) n_L \frac{(1 - \lambda) P}{\beta_L} \quad (1)$$

Assuming for simplicity that there is a continuum of mass 1 of producers of each type, $n_H = n_L = 1$, equation (1) becomes:

$$S(P) = \frac{P}{\beta_H} + (1 - \lambda)^2 \frac{P}{\beta_L} \quad (1bis)$$

The first term in the right hand side of equation (1bis) reflects the supply from high quality producers and the second term that from low quality producers that cheat.

It is assumed that consumers agree on the order of preferences, they prefer a higher quality for a given price but have different intensity in their taste for quality, represented by a parameter θ , a real positive number. They have net utility $U = \theta E(k) - P$ if they buy a good of expected quality $E(k)$, where k is a random variable which can take two possible values, associated respectively to high or low quality, at price P .

Although this framework implies a tradeoff between quality and price, it can be applied also to a context in which consumers are only interested in high quality –in the sense of a product with the specified standard, e.g. “bio”– but quality is probabilistic and there is a tradeoff between the likelihood of getting the unwanted “attribute” and price.

Willingness to pay for a quality $E(k)$ is given by $\theta E(k)$, and increases with θ and $E(k)$. Demand is equal to the number of consumers with parameter θ such that $\theta E(k) \geq P$. Derivation of the demand function uses the ‘threshold’ consumer with a taste parameter $\tilde{\theta}$ who is indifferent to buying or not buying a unit of product of expected quality $E(k)$ at price P , $[\tilde{\theta} E(k) - P = 0]$, implying that $\tilde{\theta} = \frac{P}{E(k)}$. Under a number of assumptions (Mussa and Rosen, 1978; Cuffaro, 2008) demand is

$$D(P) = M \left(1 - \frac{P}{E(k)} \right) \quad (2)$$

where M is the total number of consumers.

Domestic consumers are aware of the measure of the effectiveness of regulation λ and know also the other parameters of the supply function. They expect high quality with probability

$$\pi_H = \frac{P/\beta_H}{\frac{P}{\beta_H} + (1-\lambda)^2 \frac{P}{\beta_L}} \quad (3)$$

this probability is one if regulation is perfectly enforced ($\lambda=1$) and expect low quality with probability

$$\pi_L = \frac{(1-\lambda)^2 P/\beta_L}{\frac{P}{\beta_H} + (1-\lambda)^2 \frac{P}{\beta_L}} \quad (4)$$

This probability is zero if regulation is perfectly enforced ($\lambda=1$).

k is a random variable which can take only two possible values, k_H and k_L , with probabilities π_H and π_L . Assuming $k_H=1$ and $k_L=0$ expected quality $E(k)$ is equal π_H

$$E(k) = \frac{P/\beta_H}{\frac{P}{\beta_H} + (1-\lambda)^2 \frac{P}{\beta_L}} = \frac{\beta_L}{\beta_L + (1-\lambda)^2 \beta_H}$$

Expected quality $E(k)$ is increasing in λ and it is equal 1 with $\lambda=1$.

Abiding by the general functional form of equation (2), and setting the mass of consumers $M=1$ domestic demand can be specified as follows:

$$D(P) = 1 - P / \frac{\beta_L}{\beta_L + (1-\lambda)^2 \beta_H} \quad (5)$$

Assuming that there is no learning or very slow learning on the part of consumers because of the credence nature of the attributes considered, in these type of markets in equilibrium products of different qualities can be sold as high quality products, in the sense of products that respect the specified standard.

Analytically the equilibrium price satisfies

$$\frac{P}{\beta_H} + (1-\lambda)^2 \frac{P}{\beta_L} = 1 - P / \frac{\beta_L}{\beta_L + (1-\lambda)^2 \beta_H} \quad (6)$$

Solving equation (6) for P we obtain the following equilibrium price:

$$P^* = \frac{\beta_H \beta_L}{\beta_L + \beta_L \beta_H + (1-\lambda)^2 \beta_H + (1-\lambda)^2 \beta_H^2} = \frac{\beta_H \beta_L}{(1+\beta_H)[\beta_L + (1-\lambda)^2 \beta_H]} = E(k) \frac{\beta_H}{1+\beta_H} \quad (7)$$

The equilibrium price is increasing in $E(k)$ and therefore in λ : better regulation on quality, here intended as the ability of regulators to exclude cheaters from the market, results in higher prices for high quality credence products.

The equilibrium quantity is

$$q^* = 1 - \frac{P}{E(k)} = \frac{1}{1+\beta_H}$$

Consumer surplus is $\frac{Ek}{2(1+\beta_H)^2}$; producer surplus is $\frac{Ek\beta_H}{2(1+\beta_H)^2}$ and they are both strictly increasing in Ek and therefore in λ .

The model described by equations (1)-(6) may also give insight on trade in two distinct cases. Considering a world with two regions, A and B, where A is “developing” and B is “developed, the first case is when there is no internal production in region B; in the case of food this could be because of climate, and therefore it is not an irrelevant case. Supply in A is described by equation (1bis), demand is the sum of demand in A and B. The latter depends on how foreign consumers’ expectations are formed.

The second is a specific category of credence goods: some credence “ethical” products such as “fair trade” products, which by definition are exported only by developing countries. In this case there would be no internal production in region B. Supply in A could be described by equation (1bis), demand in A is solely the demand for imports and it depends on how consumers in region B form expectations about regulation and quality in region A. Generally speaking foreign consumers have less information than internal ones, but in this case they will likely assume that the incentive and/or ability of national regulators in any developing exporter to “exclude” part of the supply from the market is low. Therefore, without alternative mechanisms of regulation, the situation is the same as in Figure 1 with λ “low”, and the demand for imports would be “low” like in the case of D_1^D . The development of these markets requires alternative forms of regulation: indeed for ethical products such as “fair trade” regulation is provided by supranational non profit organizations.

For trade in the general circumstances – there is internal supply in both countries - it is assumed that consumers are aware of the country of origin of the product and the traded product is a perfect substitute for the domestic one, except for consumers’ expectations about quality. Supply reflects factor endowment and regulation, country A (developing) has a comparative advantage based on factor endowment.

The values of k_L and k_H are the same for foreign and internal consumers; in country B the supply function is

$$S(P) = \frac{P}{c} \quad (8)$$

If consumers in B cannot distinguish between domestic production and imports, with trade expected quality becomes some average of the expectations about quality in B and A (as in Bureau, Marette and Schiavina, 1998). Low expectations about quality of imports from A will shift downward internal demand for a credence good in B, reducing consumer surplus and the demand for imports.

Lets consider instead the case where there is a country of origin label.

For prices below the autarchy equilibrium price in B import demand from country B is

$$D^I = \left[1 - \frac{P}{E^B(k)} \right] - \frac{P}{c} \quad (9)$$

where E^B is now depending on the expectations of consumers of country B about quality in region A.

$$D^I = 1 - P \left(\frac{E^B(k) + c}{E^B(k)c} \right) \quad (10)$$

and the inverse function is

$$P = \left(\frac{cE^B(k)}{E^B(k) + c} \right) - \left(\frac{cE^B(k)}{E^B(k) + c} \right) Q \quad (11)$$

$\left(\frac{cE^B(k)}{E^B(k) + c} \right)$ is increasing in $E^B(k)$ (its first derivative in $E^B(k)$ is strictly positive for positive values of c).

Consumers in the importing country are likely to form expectations on the quality of imports on the basis of several factors. They may observe that there are imports which fail border quality inspection: the simplifying hypothesis adopted here is that the rate of failure is the same as the value of π_L in equation (4). However, consumers in any importing country will probably be very uncertain about the conditions of supply for every exporting country and about the technology of border quality inspections (which can be limited and/or variable). Therefore consumers in B may, as implied by the literature discussed in paragraph 3, be influenced by a country of origin stereotype linked to the level of development.

Foreign consumers expect high quality imports from A in line with probability

$$\begin{aligned}\pi_H^I &= \delta \pi_H \\ 0 &\leq \delta \leq 1\end{aligned}\tag{12}$$

and low quality imports from A in line with probability π_L^I

$$\pi_L^I = 1 - \pi_H^I = \pi_L + (1 - \delta)\pi_H\tag{13}$$

Here δ is increasing in the level of development – it is an index of reliability or positive country stereotype- hence $(1-\delta)$ is the negative stereotype, which amplifies the perception of low quality formed through the incidence of import control failures.

Hence both the actual effectiveness of internal regulation in A and the country stereotype influence expectations.

Equating import demand(10) and export supply (1bis minus 5) the equilibrium price is

$$P^* = \frac{2\beta_H\beta_L c\delta}{c[\beta_L + \beta_H(1-\lambda)]^2[\beta_H + \delta(1+\beta_H)] + \beta_L\beta_H\delta}\tag{14}$$

It is immediate to see that the equilibrium price P^* is strictly increasing in λ . Moreover, an easy computation proves that the first derivative of P^* with respect to λ is strictly positive, i.e. the equilibrium price P^* is strictly increasing in λ , too.

Besides, if a credence attribute is related to safety a change in λ may cause a sudden and more than proportional drop in consumers' confidence, depending on the nature of the problem, causing severe damage to the sector involved, as illustrated by several major food safety crises during the last decades.

In such crises the adverse effects on health and on consumers' confidence were often amplified by a combination of poor communication about risks, mismanagement of crisis responses on the part of governments and private companies and by the media (World Bank, 2005).

The developing exporter whose internal regulation on product quality has recently been most scrutinized is undoubtedly China. China however is not an exporter that can be easily “abandoned” by importers. Smaller countries could be much more damaged by a national stereotype problem¹¹. Indeed the World Bank (2005) remarks that international buyers and consumers are likely to be more tolerant and patient with core and long-standing suppliers that have established a national image in which they have confidence, and conversely, that small

¹¹ An illustration of the possible impact on a small exporter is given by the cyclospora crisis and the change in the US import demand for raspberry from Guatemala to Mexico, a case in which the industry never recovered (World Bank, 2005); a similar sequence is quoted in Chisik (2003) for Colombia's garment industry.

countries and niche products are probably far more vulnerable to loss of markets and reputation in the face of safety or other quality problems.

CONCLUSIONS

There are several important implications of the trust and stereotype problem as represented here for an exporter, especially a developing country.

First, low effectiveness of regulation causes failures in the market for high quality credence goods.

Second, there may be a trap of low levels of development/effectiveness of regulation and failure in high quality exports.

Therefore, strategies to increase the effectiveness of regulation, such as improving legislation and monitoring are crucial to improve export prospects. An important challenge is to increase the supply and quality of public standards and their associated monitoring mechanism. However, if a developing country is not well prepared to achieve high levels of effectiveness of regulation and/or if there is a strong country of origin prejudice, linked to the level of development, standard setting and enforcement by external actors, such as supermarkets, is beneficial. It is likely that this trust effect has been crucial for the growth of high quality food exports in many developing countries.

Furthermore, one may reasonably argue that if there is a stereotype linked to the level of development it is unlikely that in the presence of a large income gap consumers would recognize the equivalence of different country standards. Instead, they are more likely to believe that different standards may be associated with low quality. The pursuit of “mutual recognition” of standards between two trading countries may be a good approach for an experience good, where consumers may verify quality when the good is allowed into the export market, but less so for a credence good. Mutual recognition requires considerable mutual trust, since it involves the presumption that national standards and regulations are merely different means of implementing equivalent regulatory goals and that national institutions do enforce the standards. Such trust is unlikely to emerge between countries with vastly different levels of development (Baldwin, 2000; OECD, 2001).

Therefore, in the long run, pursuing the international harmonization of standards, even if harmonization tends to be “hegemonic” (Baldwin, 2000), is a better strategy for developing countries aiming at export markets. For large producers such as China government to government efforts and/or cooperation between importers and exporters tend to press harmonization. Again it is smaller countries, where this attention may be lacking, that risk more.

Finally, if the standard on a credence attribute is established and monitored by separate, non national entities such as NGOs, there obviously is no divergence between domestic and foreign consumers’ expectations about quality and the national prejudice problem may be bypassed. Trust will be based on the NGO reputation and the perceptions consumers have about NGOs incentives and efficiency in monitoring compliance with standards.

REFERENCES

Anania G. and Nisticò R. "Public Regulation as a Substitute for Trust in Quality Food Markets: What If the Trust Substitute cannot be Fully Trusted?" *Journal of Institutional and Theoretical Economics*, 160 (2004): 681-701.

BBC <http://news.bbc.co.uk/2/hi/americas/6275758.stm> Chinese product scares prompt US fears , by Laura Smith-Spark, BBC News Washington Tuesday, 10 July 2007, 23:42 GMT 00:42 UK, 2007.

Baldwin, R. Regulatory protectionism. Developing nations and a two-tiers world trade system. Centre for Economic Policy Research, paper No. 2574, 2000.

Bilkey, W. and Nes, E. "Country- of-origin effects on product evaluation", *Journal of International Business Studies*, 13 (1982): 89-99.

Bureau, J.C., Marette S., Schiavina A. "Non-tariff trade barriers and consumers' information: The case of the EU-US trade dispute over beef", *European Review of Agricultural Economics*, 25 (1998): 437-462.

Caswell, J.A., "How Labeling and Process Attributes Affects Markets for Food", *Agricultural and Resource Economics Review*, (1998) 27:151-58

Chisik R., Export industry policy and reputational comparative advantage, *Journal of International Economics*, Vol. 59, 2 , (2003): 423-451

Cordell, V. V. "Effects of consumer preferences for foreign sourced products". *Journal of International Business Studies*, (1992). 23 (2), 25-269

Costa, S., Ibanez L., Loureiro M. Marette S., Quality Promotion through Eco-Labeling: Introduction to the Special Issue, *Journal of Agricultural & Food Industrial Organization*, Vol. 7 Article 1 (2009)

Cuffaro, N. "Imperfect information, Effectiveness of Regulation and Trade: High Quality Credence Goods and Developing Exporters", University of Cassino, DIPSE Working Paper 1/2008 http://dipse.unicas.it/index.php?option=com_content&task=view&id=129&Itemid=73

Cuffaro N. and Liu P. "Technical regulations and standards for food exports: trust and the credence goods problem", *Commodity Market Review* (2008): 67-84, <http://www.fao.org/es/ESC/en/index.html>

Darby M. and Karni E. "Free competition and the optimal amount of fraud", *Journal of Law and Economics* , 16 (1973): 67- 88.

Emons W., "Credence Goods and Fraudulent Experts" *Rand Journal of Economics*, (1997) 28, 107-119

Emons W., "Credence Goods Monopolists", *International Journal of Industrial Organization* , (2001)19, 375-389

Engel, S. "Overcompliance, Labeling, and Lobbying: The Case of Credence Goods", University of Maryland Working Paper No. 98-25 <http://ssrn.com/abstract=149406> , 1998.

Grolleau G. and Caswell J. Interaction Between Food Attributes in Markets: The Case of Environmental Labeling, Univ. of Massachusetts Amherst, Working Paper No. 2005-5

Han, C., & Terpstra, V. (1988), "Country of Origin Effects for Uni-National and Bi-National Products," *Journal of International Business Studies*, 19(Summer), 235-255

Hong S. and Wyer R., "Effects of Country-of-Origin and Product-Attribute Information on Product Evaluation: An Information Processing Perspective" *The Journal of Consumer Research*, Vol. 16, No. 2, (Sep., 1989), pp. 175-187

Humphrey J., "Policy Implications of Trends in Agribusiness Value Chains", *The European Journal of Development Research*, 18, 4 (2006): 572-589

Jahn G., Schramm M. and Spiller A. "The Reliability of Certification: Quality Labels as a Consumer Policy Tool", *Journal of Consumer Policy*, 28 (2005): 53-73.

Jaffee, S. and Henson S. , Standards and Agri-food Exports from Developing Countries: Rebalancing the Debate. Policy Research Working Paper 3348. Washington, D.C.: The World Bank, 2004.

Liu, P., Boto, I., Kortbech-Olesen, R., Vrolijk, B. & Pilkauskas, P.. *World markets for organic fruit and vegetables: opportunities for developing countries in the production and export of organic horticultural products*. FAO-ITC-CTA, Rome, 2001

Mason C. "An economic model of ecolabeling", *Environmental Modeling and assessment*, vol. 11, n.2 (2006)

Maheswaran D, "Country of Origin as a Stereotype: Effects of Consumer Expertise and Attribute Strength on Product Evaluations Author(s)", *The Journal of Consumer Research*, Vol. 21, No. 2, (Sep., 1994), pp. 354-365

Menapace L., Moschini G., "Quality Certification by Geographical Indications, Trademarks and Firm Reputation", Working Paper No. 09024, Iowa State University, Department of Economics (2010)

Mussa M. and Rosen S. "Monopoly and product quality", *Journal of Economic Theory*, 18(1978):301-317

Oecd, *Regional Integration Agreements*. www.oecd.org , (2001)

Reardon T., Codron J.M., Busch L., Bingen J. and Harris C., " Global change in agrifood grades and standards: agribusiness strategic responses in developing countries" *The International Food and Agribusiness Management Review*, (1999) Volume 2, Issues 3-4, 421-435

Roth, M., & Romeo, J. (1992), "Matching Product Category and Country Image Perceptions: A Framework for Managing Country of Origin Effects," *Journal of International Business Studies*, 23(3), 477-497

Stephenson, S. Standards and Conformity Assessment as Nontariff Barriers to Trade (May 1997). World Bank Policy Research Working Paper No. 1826. Available at SSRN: <http://ssrn.com/abstract=597242>

Verlegh P. and Steenkamp J. "A review and meta-analysis of country-of-origin research", *Journal of Economic Psychology* 20 (1999) 521-546

Wolinsky A. "Prices as Signal of Product Quality", *Review of Economic Studies* (1983): 647-658

World Bank, Food Safety And Agricultural Health Standards: Challenges And Opportunities For Developing Country Exports, Report No. 31207, 2005.