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Why are Private Standards more Stringent than Public Standards? A Political Economy Perspective

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Abstract

Retailers' private standards are increasingly important in addressing consumer concerns about safety, quality and social and environmental issues. Empirical evidence shows that these private standards are frequently more stringent than their public counterparts. I develop a political economy model that may contribute to explaining this stylized fact. I show that if producers exercise their political power to persuade the government to impose a lower public standard, retailers may apply their market power to install a private standard at a higher level than the public one.

Keywords: Private Standards, Public Standards, Political Economy

1. Introduction

Private standards, introduced by private companies, are increasingly important in the global market system (Henson and Hooker 2001; Henson 2004; Fulponi 2007). Retailers and companies have a variety of motives to implement private standards. First, private standards may reduce consumers' uncertainty and informational asymmetry about product characteristics (Arora and Gangopadhyay 1995; Kirchhoff 2000). Similarly, in a business to business environment, private standards allow to ensure and communicate product attributes which may facilitate firms to gear their activities to one another.

Second, firms may use private standards as a strategic tool to create market segmentation by differentiating their products and softening competition (see e.g. Spence 1976; Mussa and Rosen 1978; Tirole 1988). Several other authors have shown that in a vertically differentiated market a minimum quality standard imposed by the government (a public standard) may raise welfare, depending on the type of competition between producers (see e.g. Leland 1979; Ronnen 1991).

Third, private standards may also serve to preempt government regulations (Lutz et al. 2000). McCluskey and Winfree (2009) argue that by anticipating the standard-setting of governments in setting their own private standards firms may minimize the negative effect of standards on revenues. From a political economy perspective, Maxwell et al. (2000) argue that firms may strategically preempt costly political action through voluntary private standards.

Finally, some authors argue that instead of introducing private standards, firms may favor the imposition of a public standard that applies to all firms, e.g. Salop and Scheffman (1983), Swinnen and Vandemoortele (2008; 2009; 2011), and Maloney and

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McCormick (1982).

Importantly, empirical evidence shows that 80% to 90% of retailers assess their own private standards slightly or significantly higher than public standards. So far, to the best of my knowledge, only the competition-reducing vertical differentiation argument (i.e. the literature on minimum quality standards) and the model of Maxwell et al. (2000) may offer an explanation for this observation. The explanation proffered by the vertical differentiation literature is that those retailers who set their private standard at a higher level than the public minimum quality standard aim at differentiating themselves from other retailers that sell at the minimum quality standard, thus raising profits by reducing competition. However, this does not explain the high percentage of retailers assessing their own private standards as more stringent – one would expect a higher number of retailers assessing their private standards as being as stringent as the public ones. It neither explains the phenomenon that some private standards introduced by organizations such as the BRC (British Retail Consortium) are adopted by almost all European retailers.

According to Maxwell et al. (2000), another potential explanation is that private standards may preempt public standards if the political costs of organizing consumers are sufficiently high. However, this model only explains why in some domains public standards may be lacking while private standards are imposed.

This paper contributes to the literature by offering an additional explanation for the observed relationship between the level of retailers' private standards and the government's public standards. The argument is related to Maxwell et al. (2000) since the perspective taken in this paper is also a political-economic one. However, so far the literature has been concerned with producers' private standards only, without analyzing retailers' private standards. Therefore I explicitly introduce a third party retailer that may set a private standard to regulate the same product characteristics as the government's public standard. The public standard is assumed to be determined in a political game where producers and the retailer have political power to influence the government's standard-setting process, whereas the private standard is set unilaterally by the retailer. I show that a retailer may set its private standard at a higher level than the public standard if the retailer has sufficient market power to impose the larger share of the standards' implementation costs on producers. My model thus combines both the retailer's market power and producers' political power to explain why a private retailer's standard may be set at a higher level than the public standard, and demonstrates which other factors are likely to affect the relative stringency of the private versus the public standard.

The paper is structured as follows. First I specify the different agents in my model, i.e. consumers, producers, and the retailer, and determine the market equilibrium for a given standard. Second, I analyze how a standard affects these different market players. Third, I analyze the level of the government's public standard when the latter is determined in a political economy game where producers and the retailer contribute to the government to influence the public standard-setting process. Fourth, I determine the retailer's optimal private standard in an environment where the retailer has market power to impose a private standard. Fifth, I compare the level of the retailer's optimal private standard with the politically optimal public standard and show under which conditions the private standard is set at a higher level than the public one, and which factors influence these conditions.

2. The Model

I assume that consumers are ex ante uncertain about the characteristics of the product (see also Leland 1979). Standards may thus improve upon the unregulated market equilibrium by providing information on the product's credence characteristics (Nelson 1970; Darby and Karni 1973) and reducing the asymmetric information between consumers and producers. Similar to most studies, I assume that the introduction of a standard implies compliance costs for producers (see e.g. Leland 1979; Ronnen 1991). A novel feature of my model is the inclusion of an intermediary agent – a monopolist retailer. This retailer is able to set a private standard that regulates the same characteristics as the government's public standard. I limit the analysis to a closed-economy model to refrain from potential barriers-to-trade issues.

2.1. Consumers

Consider a standard which guarantees certain quality/safety features of the product. Such a standard positively affects utility as it reduces or solves informational asymmetries. I assume a representative consumer utility function $u(x,s)$ where x is consumption of the good, and s is the standard. A higher s refers to a more stringent standard. Consumer utility is increasing and concave in both consumption $(u_x > 0; u_{xx} < 0)$[2] and the standard $(u_s > 0; u_{ss} < 0)$. I further assume that $u_{xs} > 0$, i.e. that a standard has a larger marginal impact on consumer utility if consumption is larger. The representative consumer maximizes consumer surplus Π^C by choosing consumption x:

$$\Pi^C = \max_x \left[u(x,s) - px \right], \tag{1}$$

where p is the consumer price. The first order condition of this maximization problem is

$$\frac{\partial \Pi^C}{\partial x} = u_x - p = 0 . \tag{2}$$

Rewriting Equation (2) gives

$$p = u_x(x,s), \tag{3}$$

which implicitly defines the inverse demand function $p(x,s)$. The inverse demand function is downward sloping with $p_x = u_{xx} < 0$. For simplicity, u_{xxs} is assumed to be zero. Hence the reduced-form expression for consumer surplus is

$$\Pi^C(x,s) = u(x,s) - p(x,s)x . \tag{4}$$

2.2. Producers

I assume that production is a function of a sector-specific input factor that is available in inelastic supply. All profits made in the sector accrue to the specific factor owners and producers are price-takers. I assume that a standard imposes some production constraints which increase production costs. To model this, I assume a representative producer with

[2] In the remainder of the paper, subscripts denote partial derivatives to x or s, and superscripts refer to consumers (C), producers (P), the retailer (R), social welfare (W), or the government (G).

cost function $c(x,s)$ that depends on respectively output and the standard.[3] The cost function is assumed to be increasing and convex both in production $(c_x > 0; c_{xx} > 0)$ and the standard $(c_s > 0; c_{ss} > 0)$. I further assume that $c_{xs} > 0$, i.e. that a standard has a larger marginal impact on production costs for a larger output. Producers are price takers, maximizing their profits Π^P by setting output x:

$$\Pi^P = \max_x \left[wx - c(x,s) \right], \tag{5}$$

where w is the producer price. The first order condition of this maximization problem is

$$\frac{\partial \Pi^P}{\partial x} = w - c_x = 0. \tag{6}$$

Rewriting Equation (6) gives

$$w = c_x(x,s), \tag{7}$$

which implicitly defines the inverse supply function $w(x,s)$. The inverse supply function is upward sloping with $w_x = c_{xx} > 0$. For simplicity, c_{xxs} is assumed to be zero. Hence the reduced-form expression for producer profits is

$$\Pi^P(x,s) = w(x,s)x - c(x,s). \tag{8}$$

In the remainder of the analysis I assume that production costs are sufficiently convex and consumer utility sufficiently concave in s to ensure global maxima.

2.3. The Retailer and the Market Equilibrium

I assume that output from producers is sold to consumers through only one intermediary agent – a monopolist retailer. Handling costs are normalized to zero. The retailer is a Stackelberg leader who sets consumer and producer prices such that, under optimal price-taking behavior of consumers and producers, consumption and output equal at the level that maximizes the retailer's profits, Π^R. Formally, the retailer's profits are

$$\Pi^R = \max_x \left[\left(p(x,s) - w(x,s) \right) x \right]. \tag{9}$$

The first order condition of this problem is

$$\frac{\partial \Pi^R}{\partial x} = p - w + x\left(p_x - x_x \right) = 0, \tag{10}$$

and hence the equilibrium quantity $x^*(s)$, for a given level of the standard s, is

$$x^*(s) = \frac{u_x - c_x}{c_{xx} - u_{xx}}, \tag{11}$$

where the asterisk sign denotes the market equilibrium. The reduced-form expressions for consumer surplus, producer profits, and retailer profits at market equilibrium can be written as respectively

$$\Pi^C(s) = u\left(x^*(s), s\right) - p\left(x^*(s), s\right) x^*(s); \tag{12}$$

$$\Pi^P(s) = w\left(x^*(s), s\right) x^*(s) - c\left(x^*(s), s\right); \tag{13}$$

[3] Since in equilibrium consumption equals output I use the same symbol x for both output and consumption.

$$\Pi^R(s) = \left[p\left(x^*(s), s\right) - w\left(x^*(s), s\right) \right] x^*(s). \tag{14}$$

Social welfare, $W(s)$, is defined as the sum of consumer surplus, producer profits, and retailer profits:

$$W(s) = \sum_j \Pi^j(s), \text{ with } j = C, P, R. \tag{15}$$

3. The Impact of a Standard

Before determining the optimal public and private standards, I analyze the impact of a marginal change in the standard on the market equilibrium, the interests of the market players, and social welfare. Consider first the supply and demand effects. The impact of a marginal change in the standard on the inverse supply function, $w\left(x^*(s), s\right)$, is

$$w_s = c_{xs} + x_s^* c_{xx}, \tag{16}$$

where the first term on the right hand side is the direct marginal impact on the inverse supply and the second term is the marginal change in the equilibrium quantity multiplied by the slope of the inverse supply function. The impact on the inverse demand function, $p\left(x^*(s), s\right)$, of a marginal change in the standard is

$$p_s = u_{xs} + x_s^* u_{xx}, \tag{17}$$

where the first term on the right hand side represents the standard's direct marginal impact on the inverse demand and the second term is the marginal change in the equilibrium quantity multiplied by the slope of the inverse demand function. The impact of a marginal change in the standard on the equilibrium quantity, $x^*(s)$, is

$$x_s^* = \frac{1}{2} \frac{u_{xs} - c_{xs}}{c_{xx} - u_{xx}}. \tag{18}$$

The denominator of Equation (18) is always positive because production costs are convex and consumer utility is concave in x. However, the sign of the numerator is undetermined since the direct marginal impacts on the inverse supply and demand function, c_{xs} and u_{xs}, are both positive. Therefore the equilibrium quantity increases with a more stringent standard if the direct demand effect, u_{xs}, is larger than the direct impact on supply, c_{xs}; and vice versa.

Second, consider the marginal impact of a change in the standard on the different market players' interests. By the envelope theorem, the marginal change in consumer surplus, $\Pi^C(s)$, is

$$\frac{\partial \Pi^C(s)}{\partial s} = u_s - x^*(s)\left(u_{xx} x_s^* + u_{xs}\right). \tag{19}$$

The marginal change in consumer surplus consists of the *efficiency gain*, i.e. the positive marginal utility impact, u_s, minus the marginal change in consumption expenditure, $x^*(s)\left(u_{xx} x_s^* + u_{xs}\right)$. The sign of the latter term is undetermined, so consumer utility may either increase or decrease with an increasing standard. The second part of the marginal change in consumption expenditure, $x^*(s) u_{xs}$, is the *rent-redistribution* from consumers to the retailer.

By the envelope theorem, the marginal change in producer profits, $\Pi^P(s)$, is

$$\frac{\partial \Pi^P(s)}{\partial s} = x^*(s)\left(c_{xx}x_s^* + c_{xs}\right) - c_s, \tag{20}$$

where the first term is the marginal change in producer revenue and the second term is the *implementation cost*, i.e. the direct marginal cost increase. The sign of the former is undetermined, so producer profits may increase or decrease with a change of the standard. The second part of the marginal change in producer revenues, $x^*(s)c_{xs}$, is the *rent-redistribution* from the retailer to the producers.

The marginal change in the retailer's profits, $\Pi^R(s)$, is

$$\frac{\partial \Pi^R(s)}{\partial s} = x^*(s)\left(u_{xs} - c_{xs}\right). \tag{21}$$

The first term, $x^*(s)u_{xs}$, is the marginal increase in the retailer's revenues and equals the rent-redistribution from consumers to the retailer. The second term, $x^*(s)c_{xs}$, is the marginal increase in the retailer's expenditures and equals the rent-redistribution from the retailer to the producers. The retailer's profits thus increase if the rent-redistribution from consumers is larger than the rent-redistribution to producers; and vice versa. The second factor in Equation (21) is the same as the numerator of Equation (18), and therefore x_s^* has the same sign as $\frac{\partial \Pi^R(s)}{\partial s}$. Hence if the equilibrium quantity increases $\left(x_s^* > 0\right)$, the rent-redistribution from consumers to the retailer is larger than the rent-redistribution from the retailer to the producers, and the retailer's profits increase with an increase in the standard.

Deriving the marginal impact of the standard on social welfare, $W(s)$, gives

$$\frac{\partial W(s)}{\partial s} = u_s - c_s + x^*(s)x_s^*\left(c_{xx} - u_{xx}\right). \tag{22}$$

The marginal change in social welfare equals the direct welfare effects, i.e. the efficiency gain u_s minus the implementation cost c_s, plus a term that is positive when the equilibrium quantity increases $\left(x_s^* > 0\right)$. Therefore social welfare may increase or decrease, depending on the relative size of these factors. It is instructive to rewrite the third term in Equation (22):

$$\frac{\partial W(s)}{\partial s} = u_s - c_s + \frac{x^*(s)}{2}\left(u_{xs} - c_{xs}\right). \tag{23}$$

This shows that the third term is only positive if the marginal impact on the retailer's revenues is positive (see Equation (21)).

A first key result is that all market players may gain or lose from a change in the standard, and that this change involves rent-redistribution between the different market players. Likewise, social welfare may either increase or decrease with a change in the standard, depending on the relative size of the efficiency gain, implementation cost, and rent-redistributions. Hence, a political-economic analysis is desirable.

4. The Politically Optimal Public Standard

In this section I build on the political economy model of public standards by Swinnen and Vandemoortele (2011) to analyze a government's optimal standard-setting. Consider a government that maximizes its own objective function which, following the approach of Grossman and Helpman (1994), consists of a weighted sum of contributions from interest groups and social welfare. I restrict the set of policies available to politicians and only allow them to implement a public standard s. I assume that both the producers and retailer are politically organized into separate interest groups that lobby simultaneously.

The 'truthful'[4] contribution schedules of the producers and retailer are of the form $C^k(s) = \max\{0, \Pi^k(s) - b^k\}$ with $k = P, R$. b^k is a constant, a minimum level of profits the interest groups do not wish to spend on lobbying. The government's objective function, $\Pi^G(s)$, is a weighted sum of the interest group contributions, weighted by α^k, and social welfare, where α^k represents the relative lobbying strength of the interest groups:

$$\Pi^G(s) = \sum_k \alpha^k C^k(s) + W(s). \tag{24}$$

The government chooses the level of the public standard to maximize its objective function. The politically optimal public standard, s^G, is therefore determined by the following first order condition, subject to $s^G \geq 0$:

$$\begin{aligned} &\alpha^P\left[x^*\left(s^G\right)\left(c_{xx}x_s^* + c_{xs}\right) - c_s\right] + \alpha^R\left[x^*\left(s^G\right)\left(u_{xs} - c_{xs}\right)\right] \\ &\qquad + \left[u_s - c_s + \frac{x^*\left(s^G\right)}{2}\left(u_{xs} - c_{xs}\right)\right] = 0. \end{aligned} \tag{25}$$

5. The Optimal Private Standard

I assume that the retailer may set a private standard that regulates the same product characteristics as the public standard. Since the monopolist retailer is the only intermediary agent between producers and consumers, producers must comply with the retailer's private standard. The retailer maximizes profits by setting a private standard, given the market equilibrium in Equation (11) that takes into account the retailer's own optimal price-setting behavior and the consumers' and producers' optimal price-taking behavior. Hence the retailer maximizes profits by setting both the equilibrium quantity and the private standard. Formally, the retailer maximizes its reduced-form profit function in Equation (14), and the optimal private standard, s^R, is determined by the following first order condition, subject to $s^R \geq 0$:

$$x^*\left(s^R\right)\left(u_{xs} - c_{xs}\right) = 0. \tag{26}$$

First order condition (26) shows that $u_{xs}x^*\left(s^R\right) = c_{xs}x^*\left(s^R\right)$ at s^R. Condition (26) implies that the rent-redistribution from consumers to the retailer equals the rent-redistribution

[4] The common-agency literature (e.g. Bernheim and Whinston 1986) states that a truthful contribution schedule reflects the true preferences of the interest group. In our model this implies that lobby groups set their lobbying contributions in accordance with their expected profits and how these are marginally affected by the standard.

from the retailer to producers at s^R.

Before I turn to comparing the optimal public and private standards, it is instructive to analyze the marginal impact of the retailer's optimal private standard on consumer surplus, producer profits, and social welfare. At s^R, the marginal impact of the standard on consumer surplus is

$$\left.\frac{\partial \Pi^C(s)}{\partial s}\right|_{s=s^R} = u_s - x^*\left(s^R\right)u_{xs}, \tag{27}$$

which equals the efficiency gain minus the rent-redistribution to the retailer and may be positive or negative. Similarly, the marginal impact of the standard on producer profits at s^R is

$$\left.\frac{\partial \Pi^P(s)}{\partial s}\right|_{s=s^R} = x^*\left(s^R\right)c_{xs} - c_s, \tag{28}$$

which equals the rent-redistribution from the retailer to the producers minus the implementation costs. The sign of expression (28) is also undetermined. From Equation (23) it follows that at s^R the marginal impact of a standard on social welfare is

$$\left.\frac{\partial W(s)}{\partial s}\right|_{s=s^R} = u_s - c_s, \tag{29}$$

which may be positive or negative depending on the relative size of the efficiency gain and the implementation cost.

These marginal impacts demonstrate that only under very specific circumstances the interests of consumers and producers coincide with the retailer's interest. Only if Equations (27) and (28) simultaneously equal zero at s^R, the interests of consumers, producers, and the retailer coincide. In that specific case, social welfare and the government's objective function are also maximal at s^R.

6. The Optimal Private Standard versus the Optimal Public Standard

I now compare the optimal private standard, as preferred by the retailer, to the optimal public standard set by the government. Since production costs are sufficiently convex and consumer utility sufficiently concave in s to ensure that both Π^G and Π^R are concave in s, it suffices to determine the sign of the standard's marginal impact on the government's objective function at s^R, $\left.\frac{\partial \Pi^G(s)}{\partial s}\right|_{s=s^R}$, to evaluate how s^G and s^R compare. Specifically, if $\left.\frac{\partial \Pi^G(s)}{\partial s}\right|_{s=s^R} > 0$ then $s^R < s^G$, and vice versa.

Inserting into Equation (25) the results of Equation (26) that $u_{xs} = c_{xs}$ and $x_s^* = 0$ at s^R, the expression for the standard's marginal impact on the government's objective function at s^R is

$$\left.\frac{\partial \Pi^G(s)}{\partial s}\right|_{s=s^R} = u_s - c_s + \alpha^P\left[x^*\left(s^R\right)c_{xs} - c_s\right], \tag{30}$$

which may be positive or negative. Hence, a priori, it is not determined which of the two

standards is more stringent.

I focus on the case where Equation (30) is negative. This allows unveiling the factors that contribute to private standards being more stringent than public ones, i.e. $s^R > s^G$. Naturally, these same factors – in opposite direction – lead to the reverse situation where the preferred private standard is less stringent, $s^R < s^G$. This situation is less relevant since a private standard is redundant if less stringent than the public standard.

The standard's marginal impact on the government's objective function at s^R can be divided into three parts:

$$\left.\frac{\partial \Pi^G(s)}{\partial s}\right|_{s=s^R} = \underbrace{u_s - c_s}_{(1)} + \alpha^P \left[\underbrace{x^*\left(s^R\right) c_{xs}}_{(2)} \underbrace{-c_s}_{(3)} \right]. \tag{31}$$

The first part equals the marginal social welfare effect of the standard at s^R (see Equation (29)), and may be positive or negative. The second part is the rent-redistribution from the retailer to producers, and the third part is the standard's implementation cost. These last two terms are weighted by the political power of the producers' interest group, and together they represent the standard's marginal impact on producer profits at s^R (see Equation (28)) which may be positive or negative as well.

The private standard is more stringent than the public one, $s^R > s^G$, if and only if Equation (31) is negative, or equivalently, if

$$\left.\frac{\partial W(s)}{\partial s}\right|_{s=s^R} < -\alpha^P \left.\frac{\partial \Pi^P(s)}{\partial s}\right|_{s=s^R}. \tag{32}$$

Since both sides of Equation (32) can be either positive or negative, Equation (32) may hold under three different combinations: (i) the left hand side is negative while the right hand side is positive; (ii) both sides are positive; and (iii) both sides are negative. I first present these cases and then turn to the key factors that cause these combinations to occur.

Case (i)

First, consider the combination where the left hand side of Equation (32) is negative and the right hand side is positive, i.e. $\left.\frac{\partial W(s)}{\partial s}\right|_{s=s^R} < 0$ and $\left.\frac{\partial \Pi^P(s)}{\partial s}\right|_{s=s^R} < 0$. Equation (32) then unambiguously holds, and $s^R > s^G$. The fact that social welfare is marginally decreasing in the standard at s^R shows that the retailer's optimal private standard is higher than the socially optimal one, $s^R > s^W$. Additionally, at s^R, producers' profits are also marginally decreasing in which, according to Equation (28), implies that the compensating rent-redistribution from the retailer to the producers is not sufficient to offset the implementation cost born by the producers. Hence producers also favor a public standard that is lower than the retailer's optimal private standard.

The combination of these two factors explains why the government sets the optimal public standard at a lower level than what is preferred by the retailer, i.e. the optimal private standard. First, social welfare is higher under a standard that is lower than the private standard, and second, the government attracts larger contributions from the producers' interest group since producers have higher profits when the standard is lower

than the optimal private one.

Case (ii)

In the second case, both the left and right hand side of Equation (32) are positive. This implies that social welfare is marginally increasing at s^R $\left(\left. \frac{\partial W(s)}{\partial s} \right|_{s=s^R} > 0 \right)$ such that $s^W > s^R$, but that the compensating rent-redistribution from the retailer to the producers does not cover the implementation cost at s^R $\left(\left. \frac{\partial \Pi^P(s)}{\partial s} \right|_{s=s^R} < 0 \right)$. Under this combination, Equation (32) only holds $\left(s^R > s^G \right)$ when the political power of the producers' interest group, α^P, is sufficiently large.

Since producer profits are marginally decreasing at s^R, producers lobby in favor of a public standard that is lower than the optimal private one. If their political power is sufficiently strong, the producers' interest group successfully lobbies the government to set a lower public standard. Because producer lobbying prevents the imposition of a higher public standard, the retailer unilaterally sets its own private standard at a higher level than the politically optimal one.

Case (iii)

Both sides of Equation (32) are negative, i.e. $\left. \frac{\partial W(s)}{\partial s} \right|_{s=s^R} < 0$ and $\left. \frac{\partial \Pi^P(s)}{\partial s} \right|_{s=s^R} > 0$, and social welfare is marginally decreasing and producer profits marginally increasing at s^R. The former marginal effect shows that $s^R > s^W$, while the latter marginal effect implies that the compensating rent-redistribution from the retailer to the producers more than compensates the implementation cost at s^R, and that producers lobby in favor of a public standard that is higher than the optimal private one.

However, Equation (32) only holds under this combination if α^P is sufficiently small. In this case, producers benefit from and lobby in favor of a public standard that is higher than the optimal private one, but the producers' interest group lacks the political power to successfully lobby the government. The retailer then unilaterally sets a private standard that is higher than the optimal public standard, although the latter is closer to the social optimum.

Key Factors

First, the size of the efficiency gain matters. If u_s is smaller, then $\left. \frac{\partial W(s)}{\partial s} \right|_{s=s^R}$ is more negative (first and third case) or less positive (second case). With a lower efficiency gain, Equation (32) is more likely to be negative such that $s^R > s^G$ for a larger range of cost parameter values and producers' political power. A lower efficiency gain induces the government to set a lower public standard because of social welfare considerations. The retailer does not take direct welfare effects into account so that the optimal private

standard is unaffected by a change in u_s.

Second, the size of the implementation cost is also an important factor since it affects both social welfare and producer profits. If c_s is larger, then $\left.\frac{\partial W(s)}{\partial s}\right|_{s=s^R}$ is more negative (first and third case) or less positive (second case). Additionally, $\left.\frac{\partial \Pi^P(s)}{\partial s}\right|_{s=s^R}$ is more negative (first and second case) or less positive (third case). Hence Equation (32) is more likely to be negative with a higher implementation cost, such that $s^R > s^G$ for a larger range of other parameter values. A higher implementation cost causes the government to set a lower public standard, not only because of social welfare considerations but also because the producers' interest group lobbies in favor of a lower public standard.

Third, the rent-redistribution from the retailer to the producers plays an important role. If either c_{xs} or $x^*(s^R)$ is smaller, the marginal transfer from the retailer to the producers is smaller and $\left.\frac{\partial \Pi^P(s)}{\partial s}\right|_{s=s^R}$ is more negative (first and second case) or less positive (third case). In all cases the range of other parameter values for which Equation (32) is negative increases as the producers' interest group lobbies in favor of a lower public standard. Since c_{xs} measures how much the retailer compensates the producers at a given level of the equilibrium output, c_{xs} can be interpreted as an inverse measure of the retailer's *market power*. With a larger market power of the retailer, Equation (32) is more likely to be negative so that $s^R > s^G$.

Fourth, when producers' interests are opposite to those of the retailer, i.e. when $\left.\frac{\partial \Pi^P(s)}{\partial s}\right|_{s=s^R} < 0$ as in the first two cases, a larger political power of the producers' interest group, α^P, leads to a lower public standard, and the range for which Equation (32) is negative and $s^R > s^G$ increases.

7. Conclusions

It is well documented that retailers' private standards are increasingly important in the global economy. Frequently empirical evidence shows that these private standards are more stringent than their public counterparts. Several explanations have been offered to explain this stylized fact, and in this paper I add another potential explanation by taking a political-economic perspective.

In the model, I first show that all market players – consumers, producers, and the retailer – may gain or lose from a change in the standard, and that this change involves rent-redistribution between the different market players. Likewise, social welfare may either increase or decrease with a change in the standard, depending on the relative size of the efficiency gain, implementation cost, and rent-redistributions.

Second, based on the optimality conditions for the public and private standard, I show that only in a very specific situation the retailer's optimal private standard is also optimal from both the consumers' and producers' perspective, and hence socially and politically

optimal as well. In any other case, the market players' interests differ.

Third, by comparing the retailer's optimal private standard to the politically optimal public standard, I show that several factors may cause the private standard to be more stringent than the public one. I demonstrate that a retailer is more likely to set a more stringent private standard when (a) the standard creates a small efficiency gain for consumers; (b) the implementation cost for producers is large; and (c) when the retailer has a strong market power vis-à-vis producers so that the rent-redistribution from the retailer to producers is small and producers bear the larger share of the implementation cost. Additionally, a higher political power of the producers' interest group – and thus stronger lobbying – reinforces these factors if producers' interests are opposite to those of the retailer. Hence producers may use their political power to obtain lower public standards while retailers may use their market power to set higher private standards. In combination these factors contribute to explaining why private standards are frequently more stringent than their public counterparts.

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