Endogenous consumers' preferences as drivers of green corporate social responsibility

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Abstract

Purpose – *This paper's main objective is to expand the demand-driven strategic field by developing a model where endogenization of consumers' preferences for clean(er) products becomes the driver of the firm green corporate social responsible (GCSR) profit maximization behavior.*

Design/methodology/approach – *The model proposes that in undifferentiated markets, firms using a conventional technology manage production-related negative externalities via information asymmetries. In turn, when consumer socially responsible individuals (CnSR) discover the nature of the information asymmetries, they then reveal their preferences. The building block of the model is that CnSR derive value both from intrinsic as well as extrinsic product features, and derive negative satisfaction from the production negative externalities. In turn, CnSR preferences offer a higher willingness to pay for a combined intrinsic (private good and direct utility) and extrinsic (public good and feel good–do good utility) product.*

Findings – *The model demonstrates that the firm's GCSR behavior is a technological-driven process directly affecting the extrinsic component of the product through the development of a safe technology, and exclusively targeting CnSR type of consumers. The corollary of the model is that for the firm pursuing a GCSR behavior, the development of a competitive advantage with higher firm performance leads to profit maximization when exclusively serving the GCSR segment of the market. Thus, GCSR is the result of unusual innovation efforts.*

Originality/value – *This paper presents a model that expands the field of strategic management through the demand-driven incorporation and respective modeling. To the best of the author's knowledge, this is the first model to explicitly develop this relationship in this format.*

Keywords *Endogenous consumers' preferences, Firm strategy and corporate social responsibility, Information asymmetries, Intrinsic and extrinsic value creation activities*

Paper type *Research paper*

1. Introduction

This paper studies the role that internally accounting (endogenization) of consumers' preferences for green corporate social responsible (*GCSR*) products has on firms' strategy, sustained competitive advantage and superior economic performance. This is a relevant topic because increased awareness of consumers' preferences for social responsible production processes leads firms to develop a *GCSR* behavior. To account for these issues, this paper develops a model where consumers' preferences for environmentally friendly production processes become internal (endogenous) to the firm's strategic behavior. Thus, in this theoretical framework, I argue that firms' *GCSR* behavior is the result of an endogenization process of consumers' preferences into their strategic management and consequently capability to discover, create and capture value. In addition, the paper argues that a sustained *GCSR* behavior is the result of unusual innovative efforts leading to the development of safer technologies. In this paper, I place particular emphasis in markets where the presence of

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information asymmetries precludes consumers from knowing about negative externalities in production processes. These conditions are prime ground for *GCSR* behavior to develop as an optimal business strategy, provided that consumers (ex ante) have strong preferences for socially beneficial products. In the approach that I developed in this paper, I make the clear assumption that corporate social responsibility (CSR) refers to what others have called in the literature green behavior. For simplicity, I equate the social part of CSR to refer to direct environmental impact of production processes. In this regard, consumers' preferences for the social component of firms' *GCSR* behavior directly relate to their impact on the environment. For a more comprehensive set of definitions on CSR, see the work by Moir (2001).

As early as in Akerlof (2006), he states that "Some information may be hard to access since those possessing it may have few incentives to share it." In most such cases, information is generated at the internal of the firm, and remains as such as firms keep it away from consumers. To a larger extent, markets characterized by the existence of information asymmetries preclude consumers from achieving positive benefits deriving from the economic organization on preferences, that is learning (Bowles, 1998). However, the implicit rationale on the firm's part is to keep information regarding negative externalities away from consumers because if consumers were to know, they might not buy the product and most likely reduce their willingness to pay. Herein, I propose that in reality when one looks at the issue from the demand side, the reverse effect tends to predominate and give way for the development of a systematically differentiated exchange process. In this sense, the paper argues that when information asymmetries become known, and consumers learn about the existence of negative externalities of production, they then share the information with other consumers and reveal these preferences to firms through a higher willingness to pay for a product that is "freer" of negative externality, even if the cost of production is higher. It follows that consumers' revealed preferences for this family of products drive the *GCSR* behavior on the firm's part. Nevertheless, the conventional approach to study *CSR* behavior has been limited to assume that firms act in a *CSR* fashion as a response to pressures from stakeholders, but not necessarily as a result in changes in consumers' demand. That is, the existent theory continues to assume that consumers' preferences are exogenous, homogeneous and given. Becchetti *et al.* (2014, p. 2) note that "CSR is rapidly emerging as a new relevant competitive force in product markets." Garcia-Gallego and Georgantzis (2009) also argue that some degree of consumer heterogeneity exists, yet it is driven by firms' capability to create value. Thus, this paper's main objective is to expand the demand-driven strategic field by developing a model where endogenization of consumers' preferences for clean(er) products becomes the driver of *the firm GCSR* profit maximization behavior. In other words, the demand-driven approach this paper adopts models consumers' preferences as a function of firm's actions, and thus, firm's strategic *GCSR* is driven in turn by the changes in consumers' preferences.

To be more specific, exchange processes between producers and consumers marked by information asymmetries limit the amount of dynamic externalities of knowledge spillovers that may occur. Particularly, as consumers learn about negative externalities of production processes, this result in behavioral changes affecting willingness-to-pay (*WTP – hereafter W*). However, firms and, in general, the field of strategic management assume that consumers' preferences are both exogenous and invariant to the firm performance model. In reality, the generation of a competitive advantage and consequent firm performance are intrinsically/ endogenously determined by the *W* of consumers' preferences for both product intrinsic and related extrinsic characteristics. Thus, I bring forth the hypothesis that the presence of product extrinsic (public good) characteristics determines the potential for the product to become of the *GCSR* type. The lack of understanding regarding the role consumers' preferences play is most obvious in the field of strategic modeling. To fill this theoretical gap, a series of recent studies have attempted to incorporate this idea more explicitly. For instance, Priem (2007) introduced the consumer benefit experience (CBE) framework to explore the role of human capital in the level of satisfaction/valuation a consumer gives; Schmidt and Keil (2013) introduced the firm idiosyncratic valuation of resources as a function of consumers'

preferences; Adner and Zemsky (2006) provide a theoretical model to study value creation and alternative technology paths; Garcia-Gallego and Georgantzis (2009) assume consumer heterogeneity; and Priem *et al.* (2013) talk about the consumer-driven need for research in strategic management. However, the philosophical question of how consumers' preferences are determined and how they affect firms' competitive advantage and related performance still remains elusive to most management strategic theory formulation. This is particularly more evident in the field of *GCSR*, where the existence of information asymmetries shapes the rules of engagement between consumers and producers in the exchange process. I further argue that *GCSR* behavior is technological-driven and the result of unusual innovation efforts to reduce negative externalities. That is *GCSR* behavior has all required characteristics to lead to a firm profit maximization result.

This paper contributes to the extant literature in at least three strands. First, by developing a model to account for the presence of asymmetric information regarding negative externalities deriving from production and the effect that consumers with *GCSR* preferences have on shaping firm strategy. Second, by explicitly endogenizing consumers' preferences into firm's strategy and leading to a market-driven solution to ameliorate the effects of negative externalities without the need for government intervention. Third, by bringing the consumers' preferences for *GCSR* products to the forefront of firm strategy when conventional production has negative effects on the environment, that is by providing a direct answer of the observed increase in consumers' social consciousness on firm behavior. This paper particularly contributes by explicitly modeling that consumer heterogeneity for *GCSR* products leads to the creation of separable markets.

Based on the ideas expressed above, the rationale of this paper is to create a demand-derived business strategic model for the firm. In this model, the key concept is the role that horizontal differentiation plays, in response to consumers' preferences for products that meet the requirements to be socially and environmentally responsible. This response is fundamental in shaping a firm's strategy to follow a *demand-driven value discovery* process that meets the consumers' unrevealed preferences for the public good component of otherwise typical private good. In the traditional firm strategic approaches – conventional resource-based valuation (RBV) and structure conduct performance (SCP), and later firm positioning Porter's five forces – firms make use of resources to produce goods and services (G&S) that firms believe consumers desire, or will come to enjoy. In a way, perceived value is pushed onto consumers through products' qualities/features. Nevertheless, these approaches assume that consumers' preferences (utility functions) are exogenous and homogeneous/undifferentiated to the model, and therefore, firms assume that consumers respond to supply. In this paper, although I recognize that in highly competitive markets, firms place a large business emphasis on cost reduction (outsourcing for instance or cost leadership strategies) as a mean to increase profitability and improve performance, I depart from this traditional view. Instead, I assume that there is an array of highly specialized G&S for which consumers' preferences are the main drivers of firm strategy. This family of products includes but is not limited to carbon-neutral production processes, low-environmental-impact products, organic products, non-genetically modified products and renewable and resource conservation practices, to name a few. Intuitively, *GCSR* behavior is similar to the case where firms produce highly customized products along consumers' preferences, but with the marked difference that now firms internalize consumers' preferences to bridge the initial existence of information asymmetries regarding negative production externalities. However, notice that in the case of customized products, most if not all utility derived is directly related to the intrinsic characteristics of the product. Because my interest is in products affected by the existence of negative externalities in production, the assumption now is that there is a component (quite large in some cases) of the utility that is extrinsic to the product. That is, consumers derived utility from the type of production process, i.e. technology used. This segment of the strategic analysis has been largely overlooked in the literature, and it has been assumed that the only feasible way to

eliminate negative externalities is through government regulation. And although many government regulations do take care of some negative externalities, these actions do not lead to firms' behavior along the lines of *GCSR* behavior.

The counterintuitive result of this paper is that as consumers' preferences for *GCSR* products become revealed, then a dual market structure setup develops. The mutual separation leads to the development (albeit temporary) of a monopoly in the *GCSR* segment, and a perfectly competitive structure in the non-corporate social responsible (*NCSR*) segment. The *GCSR* segment is characterized by a new and safe technology, and consequent certifications to guarantee value creation in the public good component of the private good; the *NCSR* segment uses the conventional technology and thus produces a non-differentiated product.

The rest of the paper is organized as follows. At the inception, I provide a brief yet comprehensive review of the most salient literature on the issues relating to CSR and consumers' preferences. I then proceed to model a two-part *value discovery (demand-driven value creation)* process with endogenous consumers' preferences and negative externalities in production accounting for the effect of horizontal product differentiation in an imperfect competitive setting. Therefore, the main contribution of this paper is to elucidate the theoretical implications of a demand-side strategy model, on firm value creation and capturing of a *GCSR* behavior when consumers' preferences drive firm strategy. I conclude the paper with some theoretical and possible policy recommendations.

2. Literature review

To better understand the issues stated above, let us look at what the literature attempting to establish the case for CSR and consumers' preferences has accomplished. The traditional business model and consequent strategic development process have relied on the strong assumption that consumers' preferences are exogenous, invariant and based on perfect information. These assumptions lead to an exchange system where a "large number of price taking anonymous buyers and sellers supplied with perfect information" (Hirschman, 1982, p. 1473) interact to achieve an equilibrium. However, developments in microeconomic theory point out the existence of asymmetric information (Akerlof, 2006) and incomplete contracting issues, as in the case of credit and labor markets. As Bowles (1998) notes, in the presence of incomplete contracts, costs tend to be higher than otherwise, and therefore, other elements could potentially have a significant effect on the behavior of consumers/producers. Take for instance the case when there is an externality (negative) resulting from the production process of a product that otherwise would be considered standard and undifferentiated. How would consumers' preferences be affected when information regarding these externalities becomes available? Would all consumers react in the same way to this revealing information? In these circumstances, the preferences of some consumers would go beyond tastes alone, and other considerations such as a values and terms of commitment should be accounted for (Bowles, 1998). This is to say that for a *CnSR* consumer (Vitell, 2015 introduces the concept of consumer social responsibility as *CnSR*), the enjoyment of a product is based off the intrinsic characteristics of the product and the extrinsic elements related to "doing something good" beyond the pure utilitarian value of the product. If one assumes that human capital affects preferences (like CBE in Priem, 2007), it is relevant to note that preferences are directly affected by learning processes, where learning-by-doing (know-how) through production and learning-by-consuming processes affect individuals' behavior. These variations in consumers' preferences evolve through time, and need to be incorporated into firms' strategic management decision-making processes as well. However, as mentioned above, there is little to no formalization to this reality. Priem *et al.* (2013) clearly indicate the need for consumer-driven research. Elsewhere, Barboza and Pratt (2016) provide a thorough review of the extant literature and classify the state of consumers' preferences in shaping firm

strategy in the *GCSR* movement, among the difference between consumers and producer behavior and the main reasons for a *GCSR*.

Therefore, looking at the work done in the field of firm strategy and strategic management, one observes the early dominance of the teaching of the RBV (Barney, 1991, and subsequent work), the S-C-P (Bain–Mason industry-level work) and the positioning strategy approach (best represented in Porter 1979 and 2008 Five Forces model), and the endless debate between them. Though significant progress has been made in the field of business strategy, these approaches share the commonality of relegating consumers as an external force in the model. In them, the emphasis is on firm behavior; consequently, the easiest and most convenient way to deal with consumers is to assume them exogenous and homogeneous. These – strong – assumptions leave us with several relevant and sufficiently large implications deriving from them.

For instance, the RBV approach to business strategy assumes that resources are valuable as they relate to the product market they serve (for instance, see Priem and Butler, 2001). However, the RBV considers value creation only from the perspective of product valuation and not necessarily through the production process and possible externalities related to resources' transformation or technology used in the creation of a product. In this sense, value capturing or creation activities related to the value of the resources leave out considering the negative effects on resources' value deriving from the above-mentioned externalities. That is, in this perspective, the negative value created by negative externality processes remains hidden in the form of information asymmetries in the exchange process, and consumers are left to believe that all value sources (positive and negative) have been accounted for; for instance, as in the recent emission scandal by Volkswagen, where only after the fact, became evident that VW has concealed valuable and relevant information regarding the real amount of negative externalities.

On the other hand, in the S-C-P framework, and its extensions – best represented in the Porter's Five Forces model (Porter, 1979, 2008) – the role of consumers' preferences is understood under the power of buyers. Here the main emphasis has to do with the degree or capability that buyers might have in negotiating lower prices or finding relatively close substitutes. Consumers' preferences are assumed exogenous, and therefore not a main driver of firm strategy. In this sense, consumers are capable of expressing their preferences best in the presence of high levels of competition, and when switching costs are low, large numbers of substitutes are available and product differentiation exists. Notice that a direct incorporation of consumers' preferences is not included as a driver of firm strategy.

To better understand the role of strategy, let us assume that firms behave as profit-maximizing agents. Now, whether they maximize their potential and extract the largest amount of consumer surplus to increase their profits as in the case of perfect price discrimination monopolistic behavior, or work as not-for-profit organizations, the truth is that some level of profits must be made, either economic or above economic. To this end, when a firm produces a product, it must sell it to a given set of customers at a price equal or higher than the cost of production. In the event that other firms produce about the same product, a firm cannot charge a higher price than its competitors unless it is able to create value for which consumers are willing and more importantly able to pay, above and beyond the prevailing market price. The sustained hypothesis here is that a firm pursuing a *GCSR* approach can find a way to perform and withstand its business in the end. That is, firms capable of differentiating their products, by creating value added to meet customers' preferences, are able to capture a specific segment of the market and charge a differentiated price. The literature provides little reasoning for this and instead emphasizes on the well-known, *doing well by doing good*. Some of the most recent work in this area, and particularly the role of social planning of doing well beyond doing good, is presented by Husted *et al.* (2015). The question that remains unanswered is, where do firms obtain this

information about consumers' preferences? More specifically how do firms react when consumers reveal the particular preferences for *GCSR* type of products?

Let us elaborate further and concede that as consumers become more knowledgeable of both the existence of negative externalities and the possible actions that firms can take to ameliorate them, then individuals revealed their *GCSR*-type preferences to producers. Producers in turn realize the existence of a potential demand for an extrinsically differentiated product. Because of the theoretical gap in the literature regarding how valuation differences between use and exchange value may occur (Bowman and Ambrosini, 2000), it is precisely here that I introduce the idea that firm strategy for *GCSR* products is a demand-driven strategy that considers factors and conditions above and beyond the traditional strategy approaches to business mentioned above. In this context, firm performance is marked by behavior such as corporate social activity, beyond the simply doing well by doing good (Husted *et al.*, 2015, p. 149). By the same token, it is widely assumed that consumers' preferences are exogenous to firms' strategy and, more importantly, consumers' preferences follow firms' actions. In these cases, the models assume the role of consumers as passive and given. In the most progressive approaches, the role of human capital is included as consumers learn from firms about the quality and properties of products (Priem, 2007). This is to say, a consumer only responds to what the firm believes is relevant for the market development of its products. Some even argue that consumers' preferences are only the concern for those in fields like marketing but clearly not in strategic management. Neglecting the role of consumers' preferences on strategic planning and positioning leaves several relevant gaps for effective and efficient *GCSR* firm behavior.

In what follows, I take exclusive interest in the case of unregulated negative externalities in production – a clear market failure – and argue that they are prime grounds for firms to develop a potential *GCSR* behavior. Yet within the standard value capture/creation framework, externalities are not considered part of the firm's strategic behavior because they are neither value creating nor a firm can capture value deriving from them. In fact, by definition, externalities create negative value for the firm, and the best way to derive value from them is by creating information asymmetries and hide them from potential consumers/ stakeholders. However, if firms were to expand their sphere of action away from the basic understanding of strategic modeling, then they would be capable of benefiting from learning spillover effects deriving from consumers' preferences endogenization. Barboza and Pratt (2016) call this the producer benefit experience (PBE) learning effects of endogenizing consumers' preferences for *GCSR* products. This is a potentially interesting group of products, as feasible market solutions could be achieved to eliminate negative externalities when information asymmetries are accounted for. Specifically, the argumentation developed here proposes that endogenizing consumers' preferences into the production function would provide a way to affect firm's strategy and consequently lead to horizontal differentiation to achieve higher extrinsic value leading to a market-driven solution.

Another relevant strand of research attempts to explore issues on consumers' preferences heterogeneity and firm strategy. This research deals with both provision of public goods by firms, which are linked to private goods, and the effects that those may have on market structure and consumers' *W*. For instance, Bagnoli and Watts (2003, p. 422) indicate that "To analyze how firms compete for socially responsible consumers of their products, we focus on models of competition in which each firm chooses whether to link the sales of its product (a private good) to the private provision of a public good (the benefit to socially responsible consumers from buying the firm's product)." On a related issue, Calveras and Ganuza (2015) speak of the importance that observable signal on unobservable qualities in products plays in increasing preferences and *WTP* for *GCSR* consumers, whereas Bagnoli

and Watts (2003) emphasize the role of firms' provision of private good in public goods segments.

To this extent, it is clear that both Calveras and Ganuza (2015) and Bagnoli and Watts (2003) provide an alternative modeling on how to incorporate consumers' preferences. Garcia-Gallego and Georgantzis (2009) also state that there is an increasing trend among consumers to prefer green products, and more importantly, consumers have heterogeneous *WTP* for green products. In general, green products embraces any product that uses a superior technology and creates a lower level of negative externality *vis-à-vis* its close substitute with almost identical intrinsic characteristics. Orsato (2006) provides evidence in favor of CSR green behavior that results in firms' improved performance and development of a sustained competitive advantage, for instance. More specifically, Bagnoli and Watts (2003, p. 419) note "Many public goods are privately provided either through direct contributions by individuals or by firms as part of their marketing or business strategy." Although I find valuable the approach developed in Bagnoli and Watts (2003), the approach in this paper clearly differs from that of Bagnoli and Watts (2003), as in our case, the emphasis is on private goods produced by private firms, yet with possible public good characteristics linked to the presence of negative externalities deriving from conventional production methods.

Two issues become fundamental in this line of argumentation. First, Calveras and Ganuza (2015) point out that gaining credence attributes through information accuracy is key to consumers. Calveras and Ganuza (2015) refer to these characteristics as observable signal of unobservable product quality. Bagnoli and Watts (2003) and Garcia-Gallego and Georgantzis (2009) refer to these as linked public good features of the firm strategic provision of private goods. Second, and perhaps more importantly, there is the case where information asymmetries (Barboza and Pratt, 2016; Calveras and Ganuza, 2015) prevent consumers and other stakeholders from realizing the presence and magnitude of the possible source of externality. In such a case, consumers must optimize behavior subject to not only incomplete but also asymmetric information. As is the case in Bagnoli and Watts (2003) and Garcia-Gallego and Georgantzis (2009), Calveras and Ganuza (2015) also indicate that firms may manipulate information provided to consumers and affect the consequences it has on *GCSR* behavior. That is, they all assume that consumers' *W* heterogeneity is a function of firm provision of public goods. Here Garcia-Gallego and Georgantzis (2009, p. 238) note, "Our basic assumption is that, all other being equal, consumers have some preferences for products sold by socially responsible manufacturers. Increases in the consumers' *WTP* for a firm's CSR may increase or decrease consumer heterogeneity."

Of particular interest is the fact that the literature is not completely clear on how consumers form and develop preferences for *GCSR* products. Thus, one can argue that *GCSR* type of consumers can gain the necessary and required knowledge to ignite their latent *GCSR* preferences in many ways. For instance, Calveras and Ganuza (2015) claim that partnerships between firms and NGO may reveal this information, and social media may increase awareness, among others. In this sense, these sources of knowledge could serve as the spark to turn consumers into stakeholders and manifest through their wallets their preferences. Garcia-Gallego and Georgantzis (2009) assume that firm behavior through the provision of public goods may increase consumers' heterogeneity, and thus affect *W*. The common factor is that in all these cases, firms have the upper hand in driving consumers' preferences. Of course, one can assume that *CnSR* gain knowledge to bridge information asymmetries in production and related externalities, from other stakeholder groups, and then react to the new information by revealing their preferences. This assumption would not change the fundamental analysis and implications I am making here. Calveras and Ganuza (2015) provide some analysis in this regard.

Although Garcia-Gallego and Georgantzis (2009, p. 238) argue that "firms' corporate strategies imply a contribution to a public good, which is not captured by consumers' valuations," I propose to present and develop a more private for profit approach where both *CnSR* and *GCSR* producers seek an equilibrium with social reduction of negative externality effects. The question of interest in this paper is: when, how and why consumers reveal these preferences?

Thus, in this paper I look at the provision of private goods with extrinsic public good considerations; that is, the public good characteristics must be directly related to the private good, so *CnSR* find value in buying the *GCSR* product. Particularly, I take a more direct approach and argue that products are of two types:

1. the *NCSR* has a negative externality embedded and it is not differentiated, that is it is sold in a highly competitive market; and

2. the *GCSR* type of product has an embedded public good characteristic, as it creates lower (hopefully zero) negative externalities through the use of a safe technology.

The public good characteristics are extrinsic to the private good component, yet they generate positive utility for *CnSR* type of consumers. In this context, differing from Bagnoli and Watts (2003), the model herein developed provides an actual valuation of negative externality and therefore of value from the consumer perspective. This consumer-driven valuation is the cornerstone for the firm to act in a *GCSR* fashion. I argue that the provision of the *GCSR* public good characteristics is directly related to the provision of the private good in my model; that is, a firm cannot provide a public good that trade-offs quality on the private good, as the private good characteristics remain unchanged, yet public good characteristics enhance the extrinsic characteristics of the private good.

As noted then, the interest of this paper focuses specifically on the family of *GCSR* type of products that clearly reflect a high level of horizontal differentiation so that customers are willing to pay a differentiated price (higher) compared with their undifferentiated (non-*CSR* type) close competition. In this case, meeting the existent (normally unrevealed) demand is only possible if firms conduct an extraordinary effort to bridge the gap between conventionally produced products *vis-à-vis* products that are more sophisticated. The unusual effort is normally the result of innovation to develop a superior and safer technology that allows for a feasible *GCSR* firm behavior. In this context, I propose to integrate public good characteristics into the production of private goods. To this end, it is relevant to note that the nature of the problem that a firm faces has to do primarily with unobservable extrinsic qualities – that the literature has modeled as separated public goods added to private goods in an effort to increase marketing and sometimes strategic firm actions. This paper argues that in the case of *GCSR* products, the differences are normally not at the product level, or the utility directly derived from its consumption, but on the impact that the production process has on third parties and what valuation consumers place on it. However, precisely because sophisticated consumers derived a higher level of satisfaction from products that meet the *GCSR* specifications, consumers are also consequently willing and able to pay a higher price for this type of products. Thus, *GCSR* products require significant differences in the production process to guarantee that they meet the more demanding conditions of *GCSR*-type consumers. It is here that horizontal differentiation comes along because of demanding consumers. As a spoiler alert, one interesting result of the model below is that increased *W* for the extrinsic characteristics of a product also results in a welfare redistribution effect. Incidentally, firms developing and successfully adopting a safe *GCSR* technology are capable of extracting a portion of the consumer surplus, which leads to the possibility to appropriate higher profits despite the fact of increased cost of production for the *GCSR* type of product. Consequently, I argue that the role of consumers' preferences as a main driver of firm strategy has been significantly

overlooked and downplayed as a driving force of the *GCSR* proliferation in markets. I proceed to elucidate the model in the next section.

3. Model of consumers' preferences for *GCSR* products without a negative production externality

In this section, I develop a simple firm strategic model with endogenous consumers' preferences for a *GCSR* type of product. The model considers consumption and production decisions simultaneously under the existence of a negative externality in production. The paper uses this model to identify the effects that social responsible behavior from consumers (Vitell, 2015) have on firms' strategy, and consequently the market equilibrium and corresponding price determination. I assume that a firm's *GCSR* behavior requires specific actions intended to reduce the externality beyond any mandatory regulatory measure enforced by a central planner (government).

To construct the model, I use a set of assumptions regarding consumers' preferences, initial market structure, resources availability and overall firm's objectives. To be more specific, I assume that firms are profit-maximizing agents and may choose to respond to several demands from stakeholders (particularly consumers) to behave socially responsibly. I acknowledge that firms could potentially face several demands for social responsible behavior from several different groups, each with a particular interest including but not limited to labor issues, human rights, endangered species, genetically modified food, corruption and transparency. Second, let us initially assume that firms operate in a perfect competitive market and are, therefore, price-takers producing a relatively undifferentiated product using a conventional technology. Third, consumers are rational individuals with the objective to maximize utility given a standard budget constraint. Fourth, all income must be spent each period. Fifth, let us assume the existence of a negative and unregulated production externality deriving from the use of the conventional technology. Let us also assume that there exist information asymmetries between the producer and the consumer regarding both the source and amount of the externality. That is, producers do not have any economic incentives to disclose information about the nature and extent of the externality, and consumers are unaware of it, and cannot observe/discover the externality by simply looking at the product or when consuming it. That is, the externality creates an extrinsic characteristic to the product, without affecting the intrinsic properties of it. In the words of Bowman and Ambrosini (2000), initially the negative externality does not affect use value or exchange value, yet it creates an advantage to the firms by concealing valuable information for *CnSR* type of consumers.

Because of its conventional use in the strategic behavior literature and its parsimonious representation, let us use a simple value capture/creation framework to understand the possible impact of a negative externality deriving from production and the role that consumers may play in shaping firms' strategy. Therefore, I begin by using the following specification of value:

$$V_{i,m}(t) = W_{i,m}(t) - c_i \tag{1}$$

where *V* is value, *W* is willingness-to-pay, *c* is the marginal cost of production, *m* refers to the type of market segment *GCSR* or *NCSR* and *i* denotes the type of technology available where 1 = safe and 2 = incumbent.

Thus, an essential element that sets the model apart from studies such as Bagnoli and Watts (2003) and Garcia-Gallego and Georgantzis (2009) is that now I assume a complete separability between *GCSR* and *NCSR* segments of the market. This separability is non-reconcilable once information asymmetries relating to production-driven negative externalities are bridged; that is, I prefer to model under the assumption that *the firm* must choose which segment of the market to serve. Under this assumption, a true *GCSR* firm will

not serve the *NCSR* segment. Contrary to our argumentation, in the work by Calveras and Ganuza (2015), firms may produce for the two segments using the dirty or clean technology, respectively. This is a fundamental difference from my approach. In addition, Bagnoli and Watts (2003) also assume the existence of free-entry equilibria in the provision of the public good. Contrary to this, the model herein proposed indicates that free-entry equilibria in the provision of the public good characteristics of the private good is not feasible, as safe technology (a required condition to provide the public good characteristics) is a barrier to entry in the *GCSR* segment of the market.

Following a similar formulation of value as in Adner and Zemsky (2006), I am able to define *W* as:

$$W_{i,m}(t) = a_m^{1-h\delta+\theta+\rho}[x_i(t)]^\beta \tag{2}$$

where a_m is the consumer preference, $x_i(t)$ is product performance and it is dependent on the type of technology used and β is a factor that measures the degree of diminishing marginal utility as noted in the work by Adner and Zemsky (2006). However, I introduce several modifications to Adner and Zemsky's (2006) original specification of value by endogenizing consumers' preferences. In this context, I define the preferences parameters in equation (2) as follows:

- $0 \le \delta \le 1$ is a parameter reflecting the possible degree of disutility generated by consuming a product that has an associated negative externality in production.

- $h > 0$ is the amount of negative externality deriving from the use of the conventional technology. More on it later.

- $0 \le \theta \le 1$ is a parameter reflecting the degree of negative externality reduction that *the firm* using a safe technology is capable of undertaking. In other words, θ is the *GCSR* behavior parameter as defined by unusual efforts to innovate.

And $0 \le \rho$ is a non-negative factor that indicates the degree of certification – either number of certifications or quality of certifications – that *the firm* developing and successfully implementing a safe technology can secure to consumers. At this point, I will assume that two certifications are strictly preferred than one, and three to two and so on. We are not making considerations regarding the quality of the certifications. In the special case when $\theta = 0$, $\delta = 0$ and $\rho = 0$, the preferences between segments are identical, and the firm will only produce *NCSR* type of products, as consumers do not value *GCSR* products.

To be more specific, the consumers' preferences are a_m, where it could take two forms along the lines of:

$$a_m => \begin{cases} i. & a_{NCSR} & \text{if } m = NCSR \\ ii. & a_{GCSR}^{1-h\delta+\theta+\rho} & \text{if } m = GCSR \end{cases} \tag{3}$$

To this extent, consumers' preferences follow a specification such that the *GCSR*- and *NCSR*-type preferences are given by $a_{GCSR}^{1-h\delta+\theta+\rho}$ & a_{NCSR}, respectively. Bagnoli and Watts (2003, p.424) assume "that all consumers are, to some extent, social responsible consumers"; here I assume that consumers are either *CnSR* or non-*CnSR*; yet within the *CnSR* segment of the market, there could be degrees of socially responsibility preferences. This degree of social responsibility is a direct function of the level of disutility derived from the negative externality. Notice that when the firm produces *NCSR*, the model specification is equal to the generic case presented in Adner and Zemsky (2006). Regardless of type, all consumers have a utility function so that $U' > 0$ and $U'' < 0$; that is, utility is positive and decreasing on consumption.

I further assume two scenarios. First, under a perfect competitive setting with no negative production externalities or with information asymmetries regarding the possible existence of a negative externality, then there is only room for one possible type of market segment, as all consumers would have identical preferences. In this case, the firm will assume that all consumers have *NCSR* preferences and will prefer to keep the information asymmetries as they are. So, when information asymmetries between producers and consumers prevail, then consumers do not know about the externality and the two potential market segments are treated in a non-differentiated way. In this case, there is no need for a firm to pursue any differentiation strategy, as there is no reason for any type of consumers to have a higher *W*. Utility is bound by information asymmetries, consequently. *GCSR* efforts to develop a superior technology would not be matched by conventional consumers and would only reflect on higher cost of production. The exchange between consumers and producers occurs under the strong assumption that information is perfect and readily available to all market participants. Here exchange and use value are equal. This analytical approach has predominated in the business strategic field.

In the second and more interesting scenario, sophisticated and more demanding individuals find out about the negative externality in production. With this information now available, the market segmentation takes place along the lines of $\delta > 0$. That is, disutility from the consumption of a negative externality is revealed from consumers to producers. As in Barboza and Trejos (2013), I also assume that there is a $0 \leq \gamma \leq 1$ that defines the size of the potential *GCSR* segment of the market, initially unknown to the firms because of the information asymmetries the firms have created. Garcia-Gallego and Georgantzis (2009) note that "for sufficiently low (high) degrees of consumer heterogeneity the firm may benefit more (less) from an increase in *m* than society as a whole." In the case developed here, once information asymmetries are bridged, the firms choosing not to act in a *GCSR* fashion leave the γD segment of the market unserved. As noted above, I assume that consumers are of two types, and degrees of heterogeneity can only be found within *CnSR* as a function of the degree of disutility she/he derives from the negative externality.

Now on the production side – second component in equation (2) – I denote b_2 as the incumbent or standard technology, and b_1 as the new and safe technology. In other words, b_1 is the *GCSR* technology. I assume as well that both technologies share the inherited capabilities to produce products with identical intrinsic (private good) characteristics, along $x_i(t)$. In this sense, a consumer cannot identify the technology used in the production just by looking at the product itself. More specifically I argue that the technologies yield, respectively, products along the lines of:

$$x_i(t) = \left[b_i\left(t - h_i^\delta\right) + \theta\, r_i^\rho \right]^\beta \qquad (4)$$

where, the performance of $x_i(t)$ is conditional on the type of technology that the firm uses, and by the elements relating to the level of disutility (δ) that consumers with *GCSR* type of preferences derived. More relevantly as noted, $h > 0$ is the amount of the negative externality that becomes known to the sophisticated consumers. Intuitively h measures the amount of information asymmetries regarding the externality in production. As in the work by Barboza and Trejos (2013), only those consumers with a superior valuation find this information useful in their decision-making process and consequently are willing to demand and pay more for them. The introduction of h as an explicit externality is a fundamental block for the argumentation in this paper. In this regard I also introduce $r_i > 0$, and define it as a parameter that allows for a fixed increment in product performance. This performance parameter is a function of the number of certifications a firm may achieve ($\rho \geq 0$). In this sense it follows that certification of externality control ρ is a derived characteristic that only comes from acknowledging the existence of the externality, but more so from an unusual effort by the firm to control it as represented by $\theta\, r_i^\rho$. I will call this parameter the *GCSR*

impact factor for firms using b_1. The higher the impact factor, the more *GCSR* the market becomes and the larger the possible benefit *the firm* acquires. In other words, the impact factor measures the depth and commitment of *the firm* pursuing a *GCSR* innovative approach to reduce/eliminate negative externalities and their matching to *GCSR* type of consumers' preferences. In the default case where information asymmetries prevail and consequently no certification can take place, then the performance parameter take the value of 1, and measures the possible gains to *the firm* from keeping information asymmetries present.

Now, when information asymmetries persist between producers and consumers, i.e. $\delta = 0$, then the level of externality takes the value of zero; that is, consumers will not know of its existence and therefore product performance is technically not affected, as no negative utility will be derived by consumers. Consequently, $\theta = 0$ by definition. That is, *GCSR* innovation efforts do not occur. However, for any other value of $\delta > 0$, then information asymmetries are reduced and firms need to internalize consumers' preferences to account for possible decline in product performance. In the presence of $\delta > 0$, firms have the potential to benefit from experience-related spillover learning effects.

Also, only firms capable of controlling for the externality are in a position to certify it; that is, if $\theta = 0 \rightarrow \rho = 0$. Therefore, let us assume that each technology is specific to the type of firm, so that:

$$x_i(t) = \begin{cases} \text{if } i = 2 \text{ then } b_2 => x_{2,NCSR \text{ is the only outcome}} \\ \text{if } i = 1 \text{ then } b_1 \begin{cases} x_{1,\,GCSR} \text{ if } \rho > 0 \text{ where } \rho \text{ takes discrete values}, 1, 2, 3 \text{ and so on} \\ x_{1,NCSR} \quad \text{if } \rho = 0 \end{cases} \end{cases}$$

Intuitively in the specification above, only when a firm uses the safe technology, it is therefore capable of producing *GCSR* type of products. However, even if a firm uses the safe technology b_1, but lacks proper certifications, then the products would be perceived by the consumers as of the *NCSR* type. This is to say that safe technology is a necessary, yet not sufficient, condition to develop a *GCSR* behavior. Complementarity from certifications is a necessary condition for *PBE* to fully develop and for the firm to be able to appropriate the pecuniary effects. On the other hand, the incumbent technology can only produce *NCSR* type of products. So that when the incumbent technology b_2 is used, then firms can only produce conventional products with intrinsic characteristics and no externality reduction, and consequently no certification can be achieved. In this case, therefore, the production of $x_2(t)$ is marked by:

$$x_{2,NCSR}(t) = \left[b_{2,NCSR}(t) \right]^\beta \tag{5}$$

Where, as stated above, no knowledge exists of the externality along the technology trajectory *t*, and thus exploiting the advantages of information asymmetries. In this case, the level of negative externality is not accounted for because firms manage to hide its existence from the consumers and consequently do not need to make any efforts to assume a level $\theta > 0$ to reduce the externality. An alternative explanation is that although the firm recognizes the presence of the negative production externality, it decides to supply only to the market segment that has *NCSR* preferences. By the same token, the level of consumer disutility is assumed to be non-existent or at least not relevant because the consumer is unaware of the externality, or because the consumer is of the *NCSR* type. This is to say that assortative matching between producers and consumers type will occur in the two segments of the market. Correspondingly, let us assume that when the incumbent technology is used, the marginal cost is a constant $c_i > 0$, given that the firm does not incur in extra production costs to ameliorate the externality.

However, when the *GCSR* firm uses the new technology b_1, then I redefine production and performance of $x_i(t)$ along:

$$x_{1,GCSR}(t) = \left[b_{1,GCSR}(t - h_1^\delta) + \theta\, r_{1,GCSR}^\rho \right]^\beta \tag{5a}$$

with all variables defined as before. Notice that in the case of b_1, *the firm* is capable of explicitly incorporating the negative externality into the characteristics of the product, as consumers are now knowledgeable about its existence. Consequently, *the firm* has the choice to aim at reducing its negative impact if it wants to serve the *GCSR* segment of the market. In addition, because the negative externality affects the performance of the product, *the firm* has the necessity of acknowledging its efforts to eliminate the externality, as dictated by $\theta > 0$, and by incorporating the measure of disutility $\delta > 0$. Furthermore, the firm's efforts to reduce the negative externality should be explicitly marketed to consumers through $1 \le \rho$ to provide information for the consumer to be able to differentiate the safe technology product from the conventionally produced.

On the other hand, for *the firm* developing the safe technology and consequently willing to internalize the negative externality, the new cost function is given by:

$$Cost\, x_{GCSR} = c_{1,GCSR}(x_{GCSR}, \delta) + C\rho x_{GCSR} + Tech(b_1)\, x_{GCSR} \tag{6}$$

where for simplicity, one can assume that if the main differences between $x_{1,GCSR}$ & $x_{2,NCSR}$ are in the extrinsic characteristics relating to the negative externality, then for the intrinsic component of the cost function $c'_{1,GCSR}(x_{GCSR}, \delta) \approx c'_{2,NCSR}$. I relax this assumption later without changing the overall results by much. This allows us to concentrate in the second and third components of the cost function, particularly on the elements relating to the *GCSR* safe technology component as noted by $Tech(b_1)$ and the added certification cost $C\rho$ to validate the firm's effort.

As the safe technology allows for the internalization of the externality, then it follows that:

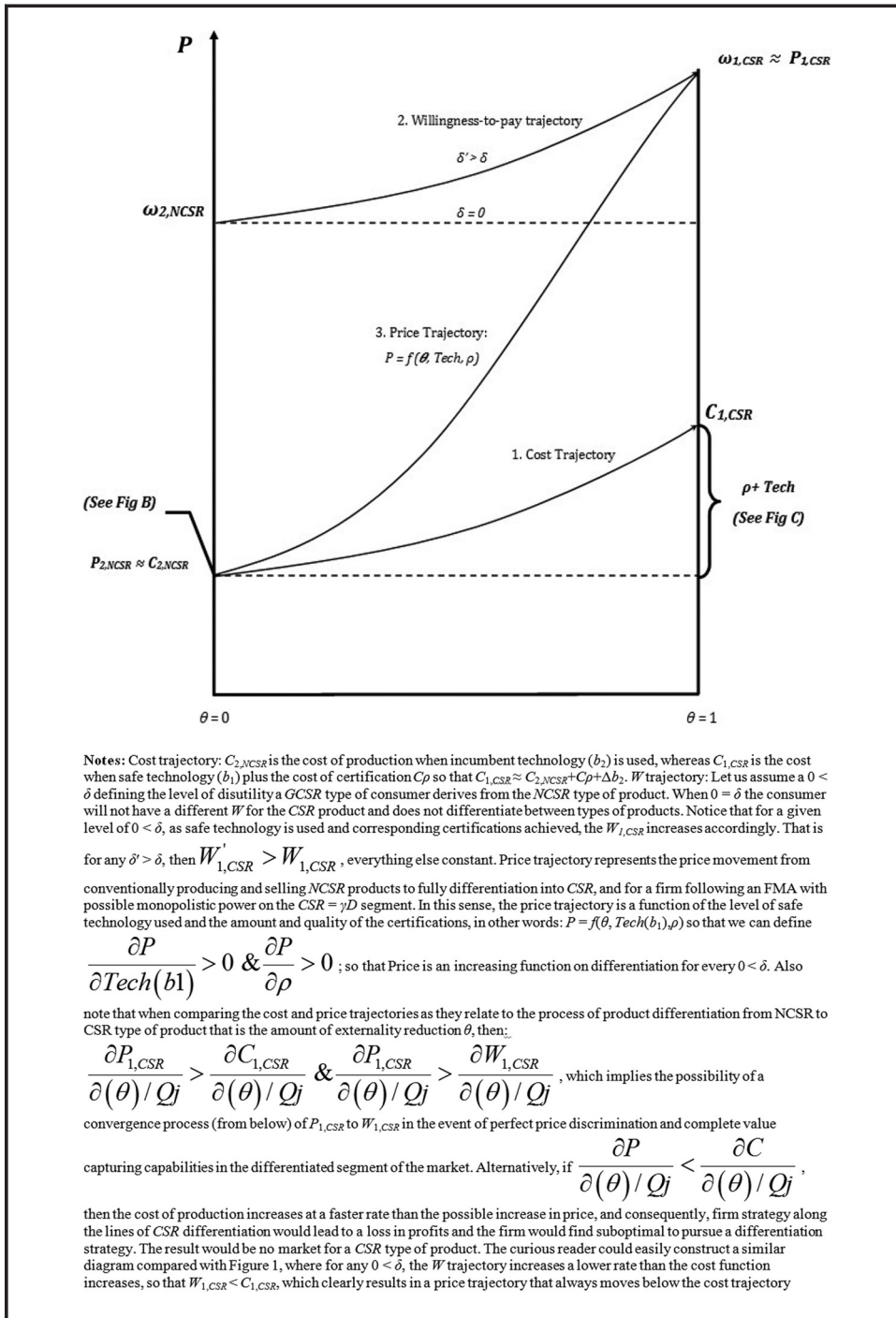$$c_{safe}(Tech, \rho) = c_2 + C\rho + Tech_{safe}$$

Assuming, that $\frac{\partial C}{\partial Tech_{safe}} > 0$ & $\frac{\partial C}{\partial \rho} > 0$, then clearly $c_{safe} > c_2$. That is the marginal cost of using the safe technology is larger than the marginal cost of the incumbent technology. Intuitively, if the safe technology were to be the low-cost technology, then it would be adopted by all firms and become the standard technology, and consequently, no externality would exist by definition. A similar case, albeit at a higher cost, occurs when government regulations are instituted to control well-known and fully identifiable negative externalities.

As the main focus of this paper is to determine/solve/elucidate the effects of endogenous consumers' preferences on firm's strategy, as it relates to the development of competitive advantage, I then go back to the value creation/capturing definition [as in equation (1)] and focus on two general possible scenarios. Each of these scenarios makes a direct reference to the alternative technologies described above, b_1 and b_2 and the two corresponding market segments *GCSR* and *NCSR* (Figures 1, 2 and 3).

In this regard, in Figure 1 left axis, one can depict value capturing when firms use a conventional technology with unknown externalities and a market characterized by information asymmetries. On the opposite axis (right side of the diagram), I illustrate the value discovering process when a firm pursuing a *GCSR* behavior makes externalities known and consequently reveals *GCSR* preferences and the development and use of a safe technology. Under each scenario, I can now redefine the potential value level [equation (1)] in each market segment and the transitional dynamic path for *CSR* behavior to develop as consumers' preferences are endogenized. Notice that I am assuming that each firm in each market segment is capable, at least to begin with, to capture all market value that is created. In particular, if I assume the existence of
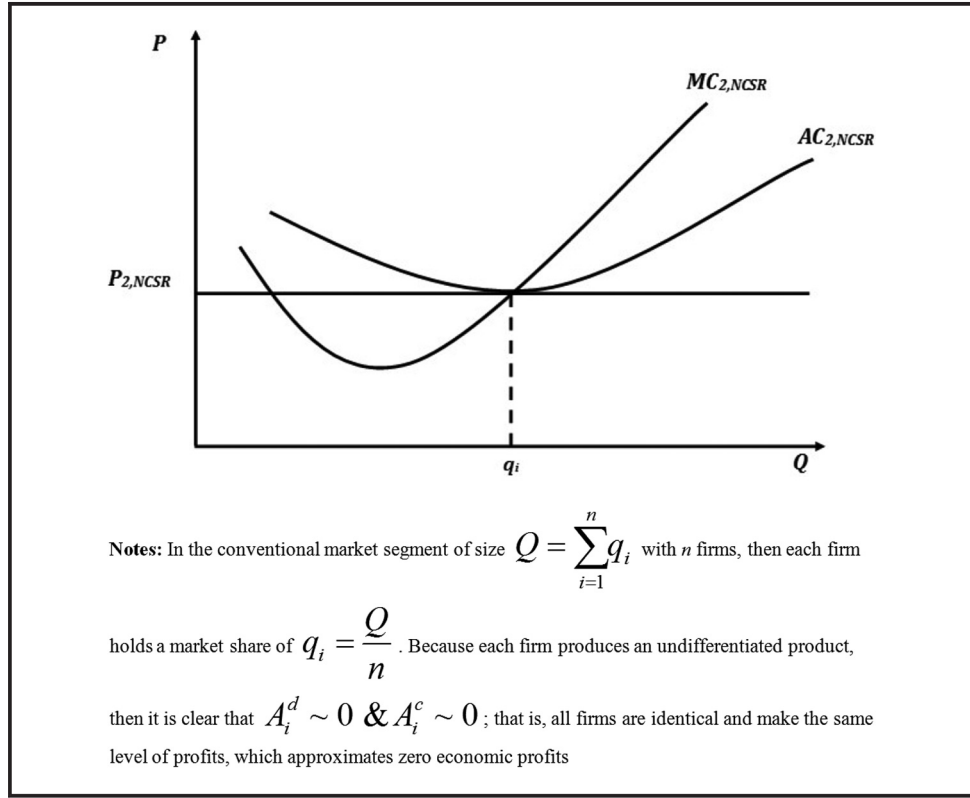
Figure 1 Value discovery with endogenous consumers' preference in the CSR market segment

Notes: Cost trajectory: $C_{2,NCSR}$ is the cost of production when incumbent technology (b_2) is used, whereas $C_{1,CSR}$ is the cost when safe technology (b_1) plus the cost of certification $C\rho$ so that $C_{1,CSR} \approx C_{2,NCSR} + C\rho + \Delta b_2$. W trajectory: Let us assume a $0 < \delta$ defining the level of disutility a $GCSR$ type of consumer derives from the $NCSR$ type of product. When $0 = \delta$ the consumer will not have a different W for the CSR product and does not differentiate between types of products. Notice that for a given level of $0 < \delta$, as safe technology is used and corresponding certifications achieved, the $W_{1,CSR}$ increases accordingly. That is for any $\delta' > \delta$, then $W'_{1,CSR} > W_{1,CSR}$, everything else constant. Price trajectory represents the price movement from conventionally producing and selling $NCSR$ products to fully differentiation into CSR, and for a firm following an FMA with possible monopolistic power on the $CSR = \gamma D$ segment. In this sense, the price trajectory is a function of the level of safe technology used and the amount and quality of the certifications, in other words: $P = f(\theta, Tech(b_1), \rho)$ so that we can define

$$\frac{\partial P}{\partial Tech(b1)} > 0 \ \& \ \frac{\partial P}{\partial \rho} > 0$$; so that Price is an increasing function on differentiation for every $0 < \delta$. Also

note that when comparing the cost and price trajectories as they relate to the process of product differentiation from NCSR to CSR type of product that is the amount of externality reduction θ, then:

$$\frac{\partial P_{1,CSR}}{\partial(\theta)/Qj} > \frac{\partial C_{1,CSR}}{\partial(\theta)/Qj} \ \& \ \frac{\partial P_{1,CSR}}{\partial(\theta)/Qj} > \frac{\partial W_{1,CSR}}{\partial(\theta)/Qj}$$, which implies the possibility of a

convergence process (from below) of $P_{1,CSR}$ to $W_{1,CSR}$ in the event of perfect price discrimination and complete value

capturing capabilities in the differentiated segment of the market. Alternatively, if $$\frac{\partial P}{\partial(\theta)/Qj} < \frac{\partial C}{\partial(\theta)/Qj}$$,

then the cost of production increases at a faster rate than the possible increase in price, and consequently, firm strategy along the lines of CSR differentiation would lead to a loss in profits and the firm would find suboptimal to pursue a differentiation strategy. The result would be no market for a CSR type of product. The curious reader could easily construct a similar diagram compared with Figure 1, where for any $0 < \delta$, the W trajectory increases a lower rate than the cost function increases, so that $W_{1,CSR} < C_{1,CSR}$, which clearly results in a price trajectory that always moves below the cost trajectory

$0 < \alpha^1_{GCSR} \le 1 \ \& \ 0 < \beta^2_{NCSR} \le 1$, as the proportion of the competitive advantage (*W-C*) that a firm captures, then when $\alpha^1_{GCSR} = \beta^2_{NCSR} = 1$, firms' performance is equal to level of competitive advantage. It is relatively easy to demonstrate that the more differentiation exists, the closer the performance parameter will be to one, and correspondingly, the more competition exists in the market segment, the closer the performance parameter will be to zero. For now it should suffice

Figure 2 Profit maximization in the NCSR segment under perfect competitive setting and information asymmetry

Notes: In the conventional market segment of size $Q = \sum_{i=1}^{n} q_i$ with n firms, then each firm holds a market share of $q_i = \dfrac{Q}{n}$. Because each firm produces an undifferentiated product, then it is clear that $A_i^d \sim 0$ & $A_i^c \sim 0$; that is, all firms are identical and make the same level of profits, which approximates zero economic profits

to assume that the performance parameters are equal to 1. That is, I will assume that performance $P_i - c_i = WTP_i - c_i$. I will relax this assumption later on. I define value for the incumbent and *GCSR* technology, respectively, as:

$$V_{2,NCSR}(t) = \beta_{NCSR} a_{NCSR} \left[b_{2,NCSR}(t) \right]^{\beta} - c_2 \tag{7a}$$

$$V_{1,GCSR}(t) = \alpha_{GCSR} a_{GCSR}^{1-h\delta+\theta+\rho} \left[b_{1,GCSR}\left(t - h_1^{\delta} \right) + \theta r_{1,GCSR}^{\rho} \right]^{\beta} - c_{safe}(Tech, \rho) \tag{7b}$$

The difference between the *NCSR* and *GCSR* market segments could be illustrated using Figures 2 and 3. In Figure 2, we observe that the *NCSR* segment is ruled by high levels of competition and therefore low profit margin. Alternatively, in Figure 3, we observe that the *CSR* or differentiated segment is dominated by the firm pursuing a first mover advantage (FMA) and obtaining market power, and therefore able to price differentiate and have profits equal to the degree of competitive advantage by unit sold. This would be similar to the case on Bagnoli and Watts (2003) when the entire segment is served by a monopoly. In other terms, if I use the basic definition of differences in costs and differences in potential *W* to determine any cost and competitive advantage of one firm over the other, then we have:

$$A_{1,GCSR}^d(t) = \alpha_{GCSR} a_{GCSR}^{1-h\delta+\theta+\rho} \left[b_{1,GCSR}\left(t - h_1^{\delta} \right) + \theta r_{1,GCSR}^{\rho} \right]^{\beta} - \beta_{NCSR} a_{NCSR} \left[b_{2,NCSR}(t) \right]^{\beta}$$
$$\tag{7c}$$

$$A_{1,GCSR}^c(t) = c_{2,NCSR} - c_{safe}(Tech, \rho) \tag{7d}$$
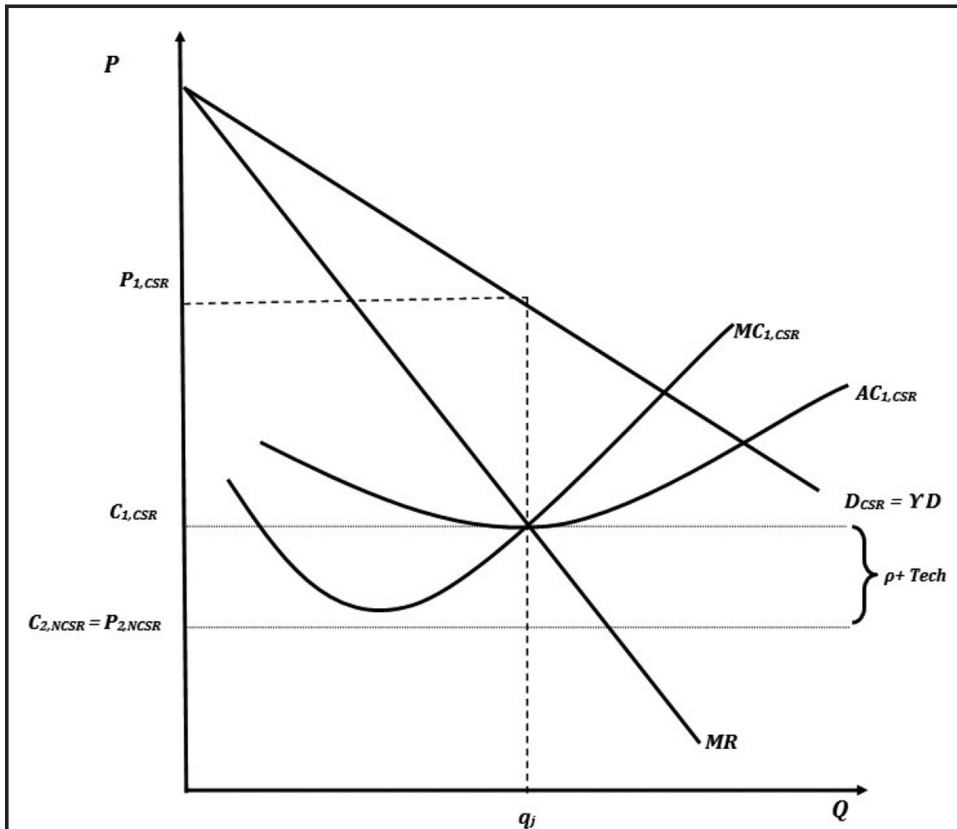
Notes: In the case of the differentiated segment of the market, we can clearly identify three effects, when a given firm decides to bridge the information asymmetries regarding the nature of a negative externality of production. First, we can assume that

$$q_j > q_i \text{ iff } \gamma D > \frac{(1-\gamma)D}{\sum_i^{n-1} q_i}$$, that is the segment market with *CSR* preferences

is larger than the average market size each undifferentiated firm holds. Second, $W_{1,CSR} > W_{2,NCSR}$, which allows for a price differentiation strategy where the $P_{1,CSR} > P_{2,NCSR} \approx C_{2,NCSR}$ and leads to a situation where $P_{1,CSR} - C_{1,CSR} > P_{2,NCSR} - C_{2,NCSR} \approx 0$. Notice as well that $C_{1,CSR} \approx C_{2,NCSR} + \rho + Tech$. Given these conditions, we can observe that

$$A_j^c < 0 \ \& \ A_j^d > \left| A_i^C - A_j^c \right| 0$$ for firm j to have an absolute competitive

advantage through product differentiation into the CSR segment of the market

Recall that the definition of competitive (dis)advantage is equal to the differences in W in each segment of the market along $A_{1,CSR}^d(t) = W_{1,CSR}(t) - W_{2,NCSR}(t)$ and the cost (dis)advantage $A_{1,CSR}^c(t) = c_{2,NCSR} - c_{1,CSR}$; similar expressions can be constructed for the other firm, using the conventional technology and serving the *NCSR* segment. Per the previous analysis, it is not difficult to observe that $A_{1,GCSR}^c(t) < 0$. Pursuing a safer technology is always more

expensive and requires an added certification cost to be fully validated. Therefore, a firm using the safe technology would develop more value than its non-differentiated competitors iff $A^d_{1,GCSR}(t) > 0$, and it is larger than the cost disadvantage. This is to say that a firm will proceed to replace its current technology practice, to reduce negative externalities as a response to consumers' preferences, iff the competitive advantage offsets the cost disadvantage. To determine the level of competitive advantage for the firm using b_1 and producing a certified $x_{1,GCSR}$, we combine equations (7c) and (7d), yielding:

$$A^d_{1,GCSR}(t) + A^c_{1,GCSR}(t) = a^{1-h\delta+\theta+\rho}_{GCSR}\left[b_{1,GCSR}(t-h^\delta_1) + \theta r^\rho_{1,GCSR}\right]^\beta - a_{NCSR}\left[b_{2,NCSR}(t)\right]^\beta$$
$$- c_{2,NCSR} - c_{safe}(Tech, \rho) \tag{7e}$$

or its reduced form:

$$= V_{1,GCSR}(t) - V_{2,NCSR}(t) \tag{7f}$$

which will only be positive if a firm creates a competitive advantage through product differentiation in the *GCSR* segment of the market. This is the case given that the cost of production is clearly greater when using the safe technology.

Therefore, the fundamental question for the endogenization of *GCSR*-type consumers' preferences is going to be determined by the existent relationship between $V_{1,GCSR}(t) \lessgtr V_{2,NCSR}(t)$ knowing for certain that $c_{safe} > c_2$. In addition, it is relevant to remember that value capturing is conditional to the appropriation factors. Which according to the model specification is on itself a function of the prevailing level of competition in each of the market segments. As a rule of thumb or as the crow flies, firms using b_2 should face more competition than those using b_1, as the incumbent technology is more readily available and it is cheaper. So I can safely state, that there exists a $\alpha^1_{GCSR} > \beta^2_{NCSR}$ for which:

$$\alpha^1_{GCSR} V_{1,GCSR}(t) > \beta^2_{NCSR} V_{2,NCSR}(t) \tag{8}$$

Notice that as asymmetric information is reduced, and the negative production externality becomes known, a segment of the market $\gamma > 0$ is no longer willing to buy from the *NCSR* segment production. This in turn reduces the *NCSR* market size to the level $(1-\gamma) > 0$. Now the segment using the standard technology sees an increase in the level of competition owing to a lower market size. This increased competition results in a lower β^2_{NCSR} because the product (*NCSR*) is undifferentiated. This is to say, the firm will need to reduce its value capturing margin, as its resources, including technology, are less rare, easier to imitate and easier to substitute and do not lead to a sustained competitive advantage. With increased competition, then value capturing decreases as $\beta^2_{NCSR} V_{2,NCSR}(t) \downarrow$ in the conventional segment of the market.

Alternatively, the value creation and value capturing and discovering options for the firm using the safe technology are different. A firm creates a competitive advantage through horizontal product differentiation in the *GCSR* segment if the effects of certification and reduction of negative externality more than offset increased costs. The result is that adopting a safe technology leads to an increase in $W_{1,GCSR}(t)$ large enough to cover the extra costs and create a competitive advantage based on value discovering strategies (see Figure 1 for an illustration). A firm that is capable of successfully incorporating *GCSR* consumers' preferences benefits from learning knowledge spillover effects of *PBE*.

Also, in the event that a firm uses a safe technology but does not certify its process, then I shall call this product a *GCSRw/o* certification and consequently *W* would be dictated by the condition $W^{wo-cert}_{1,GCSR}(t) - W_{2,NCSR}(t)$, along the lines of Priem's (2007) human capital argumentation. This could be a case where labeling of a product is an attempt to mimic a certification process, but in reality, it does not hold any value to the customer or does not serve as a sufficient source of differentiation. In practice, this is the phenomenon of overlabeling.

Intuitively, the *GCSR* segment of the market cannot differentiate the product using the safe tech and, therefore, has a *W* equal to the lower quality product or even lower, given that now it is known that the product carries an extrinsic negative externality. I assume that prices are constant at every level or type of product, that is there are no price differentiation within categories and adjusted for possible peak demand such as in the case of energy, where consumers may be willing to receive rebates to stay away from demanding at peak hours (see *Economist*, January 21, 2015). I can include further price variation in the model to account for these possible differences in pricing within each category, but the added level of complexity does not result in a significant modification to the prescriptions drawn from the model.

Now in the *GCSR* segment, we observe that value capturing capability is reflected by $\alpha^1_{GCSR} \uparrow$, as the firm using the safe tech faces less competition. This is because the firm enjoys an FMA and as the presence of the disutility parameter δ reflects higher preferences for the certification process, and the θr^p_i amount the firm is reducing the negative externality by. This is to say, even when a $A^c_{1,GCSR}(t) < 0$ occurs, the firm developing and adopting the *GCSR* safe technology might achieve a $W_{1,GCSR}(t) > W_{2,NCSR}(t)$ with or without $V_{1,GCSR}(t) > V_{2,NCSR}(t)$, and with a large enough α^1_{GCSR}. Nevertheless, the lower the level of competition in the *GCSR* segment, the higher α^1_{GCSR} will get (Figure 1).

4. Profits

The previous analysis provides the opportunity to compare the firm performance and expected levels of profits in both segments of the market, that is before and after the information asymmetries are bridged. The objective here is to determine the effect of endogenization of consumers' preferences as a mechanism to shape firm strategy. In this regard, I am going to analyze both the benchmark case where information asymmetries regarding the negative externality in production are not revealed, and therefore, firms produce only *NCSR* type of products and sell them in a perfect competitive setting (Figure 2). Second, and more importantly, the differentiated segment when *GCSR* products are produced and the public good component is added to the product. In the latter case, the firm developing a safe technology is able to create a horizontal differentiation leading to price discrimination and larger profits (Figure 3). As noted, the source of the horizontal differentiation is in the embedded public good characteristic deriving from the safe technology. I proceed to analyze these scenarios.

Let us begin with the benchmark case where the firm can only produce the undifferentiated product, and therefore, consumers' preferences are exogenous and homogeneous. In this case, I refer to the graphical representation in Figure 2. Here the firm is able to only capture value where cost of production is equal to price because of the perfect competitive setting prevailing in the market. In this the Plain Vanilla case, where information asymmetries in the exchange process between consumers and producers persist, and firms take consumers' preferences as exogenous and homogeneous, all value capturing activities are related to price competition in an undifferentiated segment. That is, firms are able to satisfy the maximization of profits conditions under perfect competitive settings and make enough to achieve an economic profit equal to zero (Figure 2).

Alternatively, if we look at the case of interest when a firm makes an unusual effort and innovates to develop and adopt the safe technology, then we recognize that it could potentially face two possible sources of revenue and overall value capturing activities. Let us remember that consumers' preferences for the differentiated product must be matched by both the use of superior and more expensive technology, and also a validation process undertaken by third-party agencies guaranteeing the veracity of the certifications, which are also expensive. This is reflected along the cost trajectory path in Figure 1. The potential sources of revenue depend proportionally on which segment of the market the firm is selling to. This is given by the firm's capability to produce any of the two possible types of product *GCSR*, and *GCSRw*/o, and sell them at the corresponding price. In addition, the price trajectory in Figure 1 indicates how the price

for the *GCSR* product increases along the lines of the degree of externality reduction and corresponding certifications, provided the existence of a market segment that strictly prefers the *GCSR* type of products. In this context, Bagnoli and Watts (2003) and Garcia-Gallego and Georgantzis (2009) assume that a price change is feasible in alternative segments and thus consumers may buy more or less of a public good linked to a private good, or just more or less of the private good accordingly. Here, I argue that individuals with *CnSR* preferences would only buy the public good (extrinsic characteristics) if they are directly and permanently linked to the private good, regardless of what the price of the private good is. Notice that under the assumptions that $W_{1,GCSR}(t) > W_{2,NCSR}(t)$ and that $\alpha^1_{GCSR} > \beta^2_{NCSR}$, then $\frac{\partial P_{1,GCSR}}{\partial(\theta)/Qj} > \frac{\partial C_{1,GCSR}}{\partial(\theta)/Qj}$. However, based on the rationale developed earlier, it is reasonable to assume that *the firm* developing and consequently using b_1 technology does not want to continue using b_2 technology, and specializes in the production of *GCSR*-type products exclusively. Using the formulation developed earlier, we have now that profits for *the firm* opting to follow a differentiation path and act in a socially responsible fashion are given by:

$$\pi_1(t) = \gamma A_{1,GCSR}(t) + (1 - \gamma)A_{1,GCSRw/o} \tag{9}$$

Intuitively, I can assume that a rational firm committed to the unusual effort to develop the *GCSR* type of technology will also pursue certification processes and consequently only sell to the *GCSR* segment of the market. That is, the second term of the profit maximization equation (9) could be dropped. Given this, I can represent the profit function as:

$$\pi_{1(t)} = P_{1,GCSR}\big(x_{1,GCSR}, \theta, \rho, b_1\big)x_{1,GCSR} - C_{1,GCSR}(b_1, \rho) \tag{9a}$$

And then the corresponding profit maximization function for the undifferentiated market segment *NCSR* as:

$$\pi_{2(t)} = P_{2,NCSR}x_{2,NCSR} - C_{2,NCSR}(b_2) \tag{9b}$$

Several interesting scenarios develop from equation (9-9a-9b). First, I will consistently assume that firms of type 2 use only the standard technology 2 and therefore do not pursue a differentiation strategy and produce only x_2. As noted this is the benchmark case. That is $b_{2=standard\ tech} \rightarrow x_{2,NCSR}(t)only$ and therefore faces the existence of a negative externality affecting negatively the performance of x. This is relevant for *CnSR* consumers, but not otherwise.

Second, for *the firm* innovating and adopting the *GCSR* safe technology b_1, it produces the *GCSR* type of product, but needs to secure certification(s) to sell it as a differentiated product. That is the certifications will reduce the original information asymmetries, and now *the firm* can specifically state how much of the negative externality has been reduced by an amount $\theta > 0$. If *the firm* fails to provide adequate certifications ($\rho = 0$), then the consumer will perceive the product to be almost identical to the *NCSR* type; and incidentally be willing to pay $W_{2,NCSR}(t)$ or a lower price, given that now she/he knows about the negative externality. This could be represented as:

$$b_{1=safe\ tech} \rightarrow \begin{cases} i) \ x_{1,GCSR\ w/Cert}(t) \rightarrow\uparrow \ \theta \ h_1 \downarrow \\ ii) \ x_{1,GCSR\ w/o\ Cert}(t) \approx x_{2,NCSR}(t) \end{cases}$$

If ρ & *Safe Tech* under (i) above, then one expects that $\uparrow W_{1,GCSR}(t)$ & $c_{1,GCSR}\uparrow$ with an undisputable positive change in $V_{1,GCSR}(t)$, because of the market power gained by the firm differentiating and capacity to increase price.

However, if the firm uses the safe tech, yet fails to achieve a valid and reputable certification ($\rho = 0$), then under ii) above, although the product is technically of the *GCSR* type, the lack of certification makes it appear to *GCSR* consumer as an *NCSR* product, thus in such a case, $\downarrow W_{1,GCSRw/oCert}(t)$ & $c_{1,GCSRw/o}\uparrow$ so that $V_{1,GCSRw/oCert}(t)\downarrow$ always. In other words, the level of competitive advantage declines and could potentially be negative. This is to say that using safe

technology is a necessary condition, but not sufficient to ensure value creation for the *GCSR* segment of the market. This is why I assume that a firm pursuing a *GCSR* strategic should not supply the *NCSR* segment of the market, once the information asymmetries have been revealed. The public component of the private good will only have value to the *CnSR* segment of the market if it accompanied by the respective certifications. The provision of the public good component on the private good produced without negative externalities could only be sold as an added component to the product, and in the form of extrinsic characteristics of the intrinsic product.

Thus, from the comparison between equations (9a) and (9b), I can deduct that a firm pursuing the *GCSR* safe technology differentiation has the potential to outperform the conventional firm, if it properly learns from consumers and endogenizes their preferences as an integral part of its business strategy. A firm can do well by doing good strategic planning and recognizing that consumers' preferences are a fundamental building block of competitive advantage and performance in the *GCSR* segment.

5. Discussion and implications

The previous model leads to the following discussion and managerial implications. Let us begin by analyzing a series of possible scenarios.

Scenario 1. Information Disclosure: Firms' differentiation strategy and profits are an increasing function in information disclosure of a negative externality and consequent strategic development and adoption of a GCSR safe technology, provided the existence of a $\gamma > 0$ segment of the market with GCSR-type preferences.

When information asymmetries prevail and no knowledge of a negative externality in production exists, that is $\delta = 0$, only *NCSR* type of products will be delivered to the market. Firms have no incentive to disclose information regarding a negative externality, as it would hurt their performance, even if the firm were fully aware of the existence of it. Recall that in the model assumptions I indicated that the source of the negative externality is not currently regulated. That is, firms operating in this market are not acting in any form outside the law or hiding information that they are required to provide to the market. However, self-disclosure of the externality would clearly hurt the firm's performance, and therefore, it is irrational to assume that a firm would do this voluntarily and unilaterally. However, when consumers gain access to information regarding the existence of this negative externality, then two events take place. First, consumers now reveal her/his dislike (disutility) on consuming a product that has negative extrinsic characteristics. Second, the *GCSR* segment of the market is able and willing to speak with their wallets, both to not buy an *NCSR* type of product and to offer a higher W_{GCSR} for the *GCSR*. Therefore, once $\delta > 0$, knowledge spillover about the negative production externality is discovered by consumers, then *GCSR* behavior (consumers initiated) is possible for those firms willing to engage in a learning process driven by consumers' *GCSR* preferences.

Notice that in our case, the working mechanism is initiated by consumers who have gained knowledge of the negative externality. The fact that the externality is now known generates dynamics externality of knowledge spillover in consumption that work their way through to production processes, leading to the creation of incentives in support of a *GCSR* safe technology. That is, the firm engaging in *GCSR* achieves an FMA by purposely disclosing the nature, amount and correcting mechanism of the negative production externality.

Scenario 2. Value Creation and Value Discovery: For a given GCSR market size of $\gamma > 0$, there is a profit market segment for GCSR differentiation, given the existence of a disutility level on the externality of size $\delta > 0$. This is to say that value creation and value discovery are increasing on relative market share for GCSR products (γ) and the level of disutility (δ).

As noted earlier, the main assumption of the analysis presented here is that there is a segment of the market that has preferences for a differentiated product. According to Vittel

(2015), the presence of *CnSR* is a fundamental condition for *GCSR* behavior at the firm level. In particular, I called this product family as *GCSR* and corresponding preferences as a_{GCSR} with specific characteristics along $a_{GCSR}^{1-h\delta+\theta+\rho}$. The larger the γ, the lower the level of disutility δ needs to be for a *GCSR* differentiation strategy to be a feasible business strategy for the firm that is willing to adopt the safe technology.

Let us think about it using reverse induction. Let us assume to begin with that $\gamma = 0$. In this case then, there are no consumers with *GCSR* preferences, and consequently, the firm will not pursue any differentiation strategy, as there is no market asking for a different product with perfect substitutes in the intrinsic characteristics. Alternatively, if one looks at the extreme case of $\gamma = 1$, then the opposite occurs; that is, there is only one market segment and all consumers in this segment are only willing to purchase a product that meets the *GCSR* characteristics. A possible case in this regard is a market where government regulations have forbidden the production of products that create a negative externality. In these cases, the standard technology has been discontinued and only the new/safe technology is available for production. All firms must meet this new set of regulations and standards, and adopting the safe technology will not lead to a horizontal differentiation strategy. This leaves us with the considerations of a proportion of the market only wanting and willing to pay for the *GCSR* product. So here what one observes is that given a level of disutility, the firm's incentives to differentiate will increase as the market size for the differentiated product also increases. This, however, will also increase the incentives for other firms (competitors currently using the standard tech) to move into the differentiated segment of the market.

Scenario 3. Disutility and Certifications: For any given level of consumer disutility, $\delta > 0$, there must be a corresponding level of certification $\rho > 0$ for which the $V_{1,GCSR}(t)$ increases proportionally and results in increased profits $\pi_1(t)$ for the firm pursuing the horizontal differentiation in the GCSR segment market.

As I did before, let us use reverse induction to better understand the role that certifications play in achieving a sustained competitive advantage and an increased in performance in the differentiated segment of the market leading to increased profits. Let us assume first that certifications are non-existent. In this case, the *GCSR* consumer cannot obtain valid information regarding the processes undertaken by a *GCSR* producer to eliminate the negative externalities; consequently, the *GCSR* consumer is not willing to pay a higher price than what was initially paid. The firm pursuing the differentiation strategy would see an increase in cost but not a concomitant increase in price, given that no certification can be provided. Therefore, profits would unequivocally decline. However, when individuals reveal a level of disutility in the consumption of products affected by the presence of a negative externality in production, firms must also perform due diligence and achieve valid certifications demonstrating that the new product (*GCSR*) has lower levels of negative externalities associated to it, that is increased public good qualities. Because consumers place value in the reduction of information asymmetries regarding, first, the existence of a negative externality and, second, in the quality and quantity of certifications, then firms pursuing valid and meaningful certifications would see as a result of this process an increased Value (creation and capturing) and higher profits for the firm acting in the *GCSR* fashion. This is to say increased certifications increase profits. In sum, firms should seek valuable and profit-increasing certifications, to be able to capture more value and increase profits.

Scenario 4. Consumption Learning Spillover Effects: The value discovering, and consequently value capturing, capability of the firm through learning effects is increasing with product quasi-differentiation certification. This is to say that in the GCSR segment, there is a value capturing parameter α_{CSR}^1, and in the NCSR segment, there is a corresponding value capturing parameter β_{NCSR}^2, so that for every $\gamma > 0$, $\delta > 0$ & $\rho > 0 \rightarrow \alpha_{GCSR}^1 > \beta_{NCSR}^2$.

The rationale for the larger value capturing capability in the differentiated *GCSR* segment of the market is a consequential conclusion of market power gained by the firm that pursues an FMA

and addresses the needs of a new market segment. This is the direct result of a firm developing a learning spillover effect through the endogenization of *GCSR* consumers' preferences. It is relatively easy to see that the ability of the firm to increase its value capturing potential depends largely on the level of competition that the firm encounters in each segment of the market. As the new market segment is defined by consumers who derive a negative utility of consuming *NCSR* type of products, and consequently a larger utility from *GCSR* type of products, their *W* is higher. The key factor is the capability that a firm may have to increase its value capture potential through internalizing consumption-related learning spillover effects. Consequently, as the level of competition is lower in the *GCSR* segment of the market, then the firm achieves higher market power (in the extreme case temporarily monopolist power), and therefore is able to price differentiate. That is, the firm pursuing FMA in the *GCSR* segment can charge a higher price per unit sold, provided that a certification is conducted and meets consumers' preferences and expectations. In this regard, the higher the level of differentiation, the lower the level of competition the firm faces in the market, and the larger the value capturing capabilities in the newly created extrinsic value (public good properties). These conditions must be met for value capturing differences to exist. Without proper certification, even if consumers express their interest for differentiated products, the higher value capturing capabilities would not be obtained.

Scenario 5. Technological Change: The degree of competitive advantage ($WTP_i - c_i$) and consequently of firm's performance ($P_i - c_i$) is directly related to the level of negative externality reduction θ, so that as $\theta\uparrow$ for every given $\uparrow\delta > 0$, the firm is able to increase its profits through the development and adoption of GCSR safe technology. This is to say that firm's GCSR behavior is unequivocally driven by technological change.

Let us recall that the potential higher level of competitive advantage is given by the consumers' *W* for *GCSR* products, which I have demonstrated is higher than in the conventional market segment. In addition, as this value is endogenously determined and consequently achieves a maximum per consumers' preferences, then a firm has the capability to maximize its performance (difference between *P-C*), as it addresses consumers' desires for a differentiated and negative externality free(r) product. Firm performance will be defined along the price trajectory on the differentiated market. In this regard, it is relevant to note that in the new market segment (*GCSR*), price discrimination is feasible for the firm pursuing a differentiation strategy, given that the firm also achieves market power. However, let us recall, that to bridge the existence of information asymmetries, the firm must also be able to provide valid and useful information for the *GCSR*-type consumer that the negative externality has been reduced or controlled for. In this regard, the type and amount of certifications are direct reflections on the quality of safe technology used to achieve the externality reduction. That is, the capabilities to provide more of the public good component linked to the provision of the private good. Safer technology that effectively reduces more of the negative externality will yield higher quality and more rigorous certifications that are better suited to match the level of disutility consumers have. Therefore, firm's performance is directly related to its capabilities to increase price, which is in turn a direct function of the certification achieved and the increased value capture possibilities. That is the ability of the firm to increase price and extract the maximum amount of consumer surplus available.

Scenario 6. Green Comes Last: In the presence of information asymmetries in an industry, the GCSR market segment is the last segment in which a firm enters to discover and capture value, and only after consumers have learned and accumulated knowledge about negative externalities in production.

Contrary to Adner and Zemsky's (2006) argumentation, whereby in an industry with high- and low-end segments, all firms first create value in the high-end segment, I argue that in markets characterized by information asymmetries, firms first capture value in the low segment of the market precisely to avoid falling prey to a cost disadvantage. Capturing the high-end market segment in the presence of negative externalities of production will occur iff there exists a segment of the market that, as a necessary condition, first reveals high-end preferences for extrinsic product characteristics (public good features), beyond the simple use value derived from the

direct consumption of the product (private good). In this sense, a firm willing and able to develop a *GCSR* behavior must also be able to develop a high-end technology capable to absorb and attack the source of the negative externality. *GCSR* behavior is the result of unusual technological innovation, which comes only after the primary (conventional) market has been developed, and then information asymmetries are removed as a reactive response to *CnSR* preferences.

This argumentation leads to the development of the affirmation that *GCSR* behavior is technological-driven and is a direct response to consumers' preferences for a differentiated product, away from its conventional counterpart. In other words, consumers' human capital regarding production techniques and possible negative effects deriving from unsafe technologies are the main drivers of the *GCSR* movement. This is a direct juxtaposition to the conventional view that has predominated in the field of strategic management, where consumers' preferences are exogenous and constant. Profit maximization firms must act on the presence of information asymmetries to engage in value creation and value capturing activities that promote serving higher-cost yet higher-value markets.

Scenario 7. NCSR is Always First: In the presence of increased cost (cost disadvantage) in the GCSR segment, firms will enter the low-end segment of the market first.

As noted by *Scenario 6*, in the presence of information asymmetries that result in possible *W* to be reduced for the *NCSR* segment market, rational firms will enter first the market segment with the initial lowest cost of production, given that the potential for value capturing is higher even though the level of competitive advantage is lower. In here, I assume that if there exists a large level of competition in the *NCSR* and cost leadership strategies predominate in the segment, then a firm will find optimal to first serve the low-cost segment and compete along the lines of cost reduction instead of seeking to serve the higher-cost segment through horizontal differentiation. The nature of the cost disadvantage is on the amount and severity of the negative externality disutility created by the use of the conventional technology in the *GCSR* market segment. For these reasons, a firm would be initially discouraged to initiate any significant effort to enter the more demanding segment of the market. Seeking a quasi-differentiation strategy and targeting the high-end segment of the market would follow only after the low-end segment has matured and information asymmetries are disclosed.

Scenario 8. High Cost Strategy: A GCSR strategic move is always a high-cost strategy. In other words, developing a competitive advantage in the GCSR segment is always the result of an initial cost disadvantage associated with a technological innovation that is also more expensive, and requires third-party certifications to validate it.

GCSR behavior on the firm side is the result of unusual innovation efforts. These efforts come along with an undisputable increase in production cost. *GCSR* strategies seek to fulfill the needs of more sophisticated and educated customers with higher *W* for more sophisticated products – those private goods with public good linked features. As the nature of the added consumers' demands resides on the extrinsic characteristics of the product, the new technology is more expensive. By reverse induction, I argue that if the *GCSR* were to be the least cost strategy, then all firms would pursue it as a fundamental driver for profit maximization. However, as *GCSR* is the exception and not the rule, then it follows that in a highly competitive market, this strategic move has to be the one with the higher cost. The cost is also an increasing function to the level of externality reduction, certification process and technological development (see cost trajectory in Figure 1). That is, the easiest part of the externality reduction would occur first, and consequently, we expect an increasing marginal cost to externality reduction as the rule.

6. Limitations and future research

The model developed and presented here expands the contributions made by demand-side strategy and clearly expands beyond the SCP, the industry positioning view and the RBV frameworks. However, there are several possible venues for future research that

remain open. For instance, it would be of interest to study how consumers' preferences could potentially affect specific resource valuation beyond the added development of *GCSR* technologies. In this field of research, one could study the managerial implications that company-specific practices may have on recruiting workers with clear socially responsible preferences, who could dictate to the internal of the firm the best practices when developing, adopting or implementing *GCSR* behavior. In a related line of research, future studies could explore more approaches to studies of sustainable purchasing and supply management-related topics. Furthermore, studying and demonstrating the hard effect of sustainable variables in consumer's preferences could yield relevant and useful implications for managerial and strategic management practices.

In addition, it would be interesting to study how market structures could be affected by consumers' preferences and, therefore, how the overall Porter's Five Forces model may be revisited. In this line of research, exploring the development and persistence of a sustained competitive advantage obtained by first movers in the socially responsible segment of the market may be supported by less-than-perfect competitive settings. Furthermore, the research presented in this paper could be expanded to study the implications that social responsibility demands from stakeholders (other than consumers) may have in terms of resource allocation and reduction of negative externalities as well. Continuing research to understand the role that stakeholders play in formulating firm strategy is also an interesting topic, as it may provide venues to better understand how market participants could achieve solutions to social problems.

In addition, the current model does not incorporate variables including but not limited to industrial sector characteristics, market features and organizational characteristics. Furthermore, it is also relevant to acknowledge that the development of customer's awareness is not an issue just to the manufacturing firm and retailer. In this context, the supply of sustainable products depends on joint actions between manufacturing companies, retailers, government, unions, the financial system, customers and influencers, as a process of value in the network. These are all interesting and relevant issues, yet beyond the scope of this paper.

7. Conclusions

In this paper, I study the role that consumer preferences for CSR produced products play in shaping the firm's strategy. By endogenizing such preferences, I find that given the correct set of conditions, market solutions to social issues are a feasible outcome to achieve a sustainable and permanent equilibrium, where firms can maximize profits while being socially responsible. Particularly, endogenization of consumers' preferences for CSR production processes leading to differentiated products is a fundamental element of a sustainable firm strategic approach to maximized profits while serving the triple bottom line objectives. To this end, considering consumers' preferences as an endogenous element in the maximization process leads to the development of an innovative approach to solve previously considered problems that a social planner must address. This paper specifically adds to the more recent demand-side strategy work, brought forth by Adner and Zemsky (2006) and Priem (2007). Thus, I argue that sustainable *GCSR* behavior is the result of unusual efforts and initiatives to develop safer technologies to reduce the negative effects of externalities in production. *GCSR* behavior is the result of both responsible consumers and producers.

This paper sheds light on the formalization of endogenous consumers' preferences as a fundamental force to shape firm strategy. Traditional strategic management studies have assumed consumers' preferences as exogenous and invariant, particularly the works of the RBV and Porter's industry positioning views. Although in highly competitive markets, these assumptions may fair well, the presence of information asymmetries in more complex markets makes evident that a strategic approach in which demand-side considerations are more predominant and play a central role is capable of yielding superior results. This paper also finds that the provision of public good characteristics directly linked to the provision of a private good is a fundamental piece for a *GCSR*

behavior that leads to profit maximization as well. As in the paper by Bagnoli and Watts (2003), this paper also finds (yet not surprisingly) that more of the public good is provided in less competitive market structures.

As in the work by Garcia-Gallego and Georgantzis (2009), I find that the socially responsible producer benefits the most by meeting the *GCSR* preferences of consumers. I, however, arrive to similar results from different paths. In this paper, I assume that *GCSR* preferences are exogenous to producers' action, yet they become manifested when information asymmetries regarding production-derived negative externalities become known. As noted, Garcia-Gallego and Georgantzis (2009) argue that consumer heterogeneity is the result of firm's *GCSR* behavior. I, however, argue that firm's *GCSR* behavior is the result of already existent and endogenous consumer heterogeneity.

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