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Incentives, performance and desirability of socially responsible firms in a Cournot oligopoly☆

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ABSTRACT

This paper investigates how socially responsible behaviour influences firms' profits and social welfare when production entails an environmental externality. We study a Cournot oligopoly with pollution, with one CSR operating in the market. A CSR firm not only takes into account its profits but also internalises its own share of pollution and is sensitive to consumer surplus. With a large enough market, the CSR firm obtains higher profits than its profit-seeking competitors, and induces a higher level of social welfare. The results are confirmed when a socially optimal tax on pollution is adopted. Indeed, even if the environmental concern restrains the production of a CSR firm, the social concern expands it. The second effect more than offsets the first one in a large market, making the CSR production strategy be more aggressive compared to its competitors.

1. Introduction

Corporate Social Responsibility (CSR) is a form of corporate self-regulation. A firm that follows rules of CSR (from now on, CSR firm) commits to a behaviour that takes into account not only the shareholder interests (profit), but also how the firm decisions affect the agents dealing with the firm (stakeholders), such as employees, business partners, consumers and the environment.[1]

Over the past decades, an increasing number of private firms adopted a regime of CSR in any industry.[2] Public opinion and media increasingly demand companies to implement the social and environmental consequences of their activities and to provide more transparency with respect to their behaviour (Freeman et al., 2010). As a consequence, CSR has been ranked in 2011 as the number one focus of managers in the global retail and consumer goods sector (The Consumer Good Forum, 2011). While many firms now adopt some form of social responsibility, some are making it a core of their operations. For example, Starbucks has developed its C.A.F.E. guidelines, designed to take care of social and environmental aspects of coffee production. Tom's Shoes donates one pair of shoes to a child in need for each pair sold. Ben and Jerry's makes use of only fair trade ingredients and has created a dairy farm sustainability programme (Fallon, 2014).

One important aspect of CSR behaviour is the commitment towards the environmental impact of the firm. There are generally three explanations on why firms adopt CSR principles with the respect to environmental issues:

[i] the firm may rationally anticipate that environmental regulation will become stricter and therefore her anticipated concerns may create to her a competitive advantage;
[ii] corporate managers have environmental preferences or shareholders have, and ask managers to follow a strategy consistent with them;
[iii] green consumers penalise firms without environmental concerns, raising pollution costs and therefore acting as a sort of Pigouvian tax mechanism.

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[1] To cite some, for the World Business Council for Sustainable Development in its publication “Making Good Business Sense” (Holme and Watts), “Corporate Social Responsibility is the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large”. The CSR definition used by Business for Social Responsibility is “operating a business in a manner that meets or exceeds the ethical, legal, commercial and public expectations that society has of business”. The European Commission hedges its bets with two definitions wrapped into one: “A concept whereby companies decide voluntarily to contribute to a better society and a cleaner environment. A concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis”. For more on this, see www.mallenbaker.net/csr/definition.php.

[2] Recent examples can be found in the reports on CSR of Accenture (2013), KPMG (2011), Ernst and Young (2011), and McKinsey and Company (2007), *inter alia.*

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However, the inclusion of elements other than profits in a firm's objective might be expected to hinders profits themselves, thus one could argue that stockholders might in fact oppose the adoption of any CSR stance, the opinion of any stakeholders notwithstanding. This aspect has been stressed in the early literature on this matter. Friedman (1962, 1970) argued that a corporation's purpose is to maximise returns to its shareholders, and that, since only people can have social responsibilities, corporations are only responsible to their shareholders and not to society as a whole. This argument has been formalised and investigated by Baron (2007).[3]

In this paper we propose an alternative explanation, which shares some features with strategic delegation without invoking the presence of managers and the separation between ownership and control, although the latter could be easily accommodated into our model. We argue that a firm may strategically commit to CSR as this can be profitable against standard profit maximisation. This occurs as the strategic interaction of a CSR firm with profit-maximising competitors may lead to higher profits for the former. We investigate the conditions under which this happens in a Cournot oligopoly with homogeneous goods and pollution. We define as CSR a firm that takes into account not only its profits but also internalises its own share of environmental externality and is sensitive to consumers' surplus ("social concern"). These two aspects have opposite effects on production. While the environmental concern restrains the production of a CSR firm, the social concern expands it. Thus the commitment to consumer surplus may allow the CSR firm to include environmental concern without decreasing production.

Along the paper, we compare profits and social welfare of two markets. In the first market, all the firms are profit-maximising statute while in the second one firm is CSR and, accordingly, takes decisions by considering its own profits, its environmental impact and a share of consumer surplus. The results show that, provided the market is large enough, the CSR firm obtains a higher profit and its presence improves social welfare. The intuition behind it is the following. The social concern more than offsets the environmental concern in a large market, because the positive price effect going along with an output expansion is sufficiently large to outweigh the negative effect associated with pollution. This makes the CSR production strategy be more aggressive compared to the competitors' strategy, and in turn leads the CSR profit to be higher than the profit-seeker profit and social welfare to improve.

The idea that CSR firms account for consumer surplus in this setting is very closely related to the literature on strategic delegation and sales targets for managers in oligopolies (Fershtman and Judd, 1987; Vickers, 1985). Essentially, firms have incentives to commit to put a greater weight on output in an oligopoly so as to induce rivals to reduce their output. In the light of this literature, the reason why profits can be higher for a CSR firm is that committing to being a CSR firm can be one way of strategically committing to higher output.[4] Notice that accounting for consumer surplus has already been considered in the CSR literature (Goering, 2008a,b; Kopel and Brand, 2012, *inter alia*). However these contributions set aside the interaction with environmental concern, which is nonetheless an essential part of CSR behaviour.

The paper considers next the introduction of an anti-pollution, first-best taxation policy. The results are qualitatively similar to the baseline case. With optimal taxation (and hence optimal social welfare), a sufficiently large market ensures higher profits for the CSR firm. Conversely, the presence of one CSR firm can increase the profits of its profit-seeking competitors provided that the market is not too large. Finally, we endogenise the market structure by allowing firms to decide whether to be profit-maximising or CSR. Accordingly, we provide the stability conditions for a mixed market in general and for the case considered with one CSR firm.

The literature on CSR only recently started developing in the economic literature. One strand proposes a definition of CSR that sounds very much like the private provision of public goods, coupled with an alternative interpretation that CSR is a signal of reliability for firms selling private goods (see, e.g., McWilliams and Siegel, 2001; Bagnoli and Watts, 2003; Kotchen, 2006; Siegel and Vitaliano, 2007, and Besley and Ghatak, 2010). Other contributions study the desirability of CSR (Baron, 2001), the role of CSR in selecting motivated agents (Brekke and Nyborg, 2008) or the firm competition in the presence of "green" consumers (Arora and Gangopadhyay, 1995; Garcia-Gallego and Georgantzs, 2009) or social pressure (Baron, 2009). The presence of a CSR firm in oligopoly has been considered in Lundgren (2007), although he disregards the action taken by other firms, i.e., there is no strategic interaction in the industry. Finally, some recent works examined the presence of CSR firms in dynamic oligopolies (see Kopel et al., 2014; Becchetti et al., 2014; Saha, 2014, and Lambertini et al., 2014, *inter alia*).

Our contribution nests on the analysis of strategic effects of CSR, and it is closely related to Manasakis et al. (2013) and Alves and Santos-Pinto (2008). In their setups, the strategic effect of producing higher output for a CSR is quite similar to the one considered in our approach. Manasakis et al. (2013) consider a duopolistic market in which consumers appreciate a socially responsible behaviour and owners decide whether to appoint profit-maximising or socially responsible managers. Products are differentiated both according to substitutability of the product and to CSR effort in the production. In equilibrium, both employers hire socially responsible managers, and the occurring equilibrium presents higher outputs and profits than a duopoly industry in which managers are profit maximisers. Alves and Santos-Pinto (2008) also consider a duopoly with differentiation according to the CSR commitment and socially concerned consumers. They find that firms commit to CSR when products are complements but not necessarily when products are substitutes. Unlike these contributions, we abstract from consumers' preference towards CSR, we consider an oligopolistic market in which the good is homogeneous, and production entails an environmental externality. Finally, Kopel and Brand (2012) found similar results to ours (the CSR firm may achieve a higher market share and profit) in a quantity-setting duopoly where competition occurs between a profit-maximising and a CSR firm.

Compared to these contributions, we model a CSR firm with both social and environmental concerns. This approach may provide a more realistic representation of how CSR firms operate, since environment is important in CSR codes of conduct.[5] Also, implementing environmental concern modifies the common wisdom on the behaviour of CSR firms, given its opposite effect on a firm's strategy compared to social concern. Indeed, a CSR firm makes higher profits only if the market is large enough. Finally, this framework allows us to investigate how the presence of a CSR firm affects the equilibrium when an optimal environmental policy is adopted.

The remainder of the paper is organised as follows. Section 2 presents the model. Section 3 presents the baseline results. We begin by examining the strategic interaction between one CSR firm and the profit-maximising competitors, we then turn to analyse how the presence of a CSR firm influences the market equilibrium, profits and welfare. We then study the first best taxation with and without a CSR firm in the industry (Section 4). In Section 5, we endogenise the market structure and we provide the conditions under which a mixed market is stable. Section 6 concludes.

[3] For a summary of the related debate, see Benabou and Tirole (2010) and Kitzmueller and Shimshack (2012). For a definition of CSR on emerging markets, see Al-Malkawi et al. (2014).

[4] In line with the idea of strategic delegation, Chirco et al. (2013) show that behavioural heterogeneity may be the equilibrium outcome of the strategic interaction of *ex-ante* identical agents.

[5] See, for instance, the reporting guidelines of the "Global Reporting Initiative, 2013", an international certification for CSR conduct.