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Co-Production and Managed Competition in Mixed Quasi-markets

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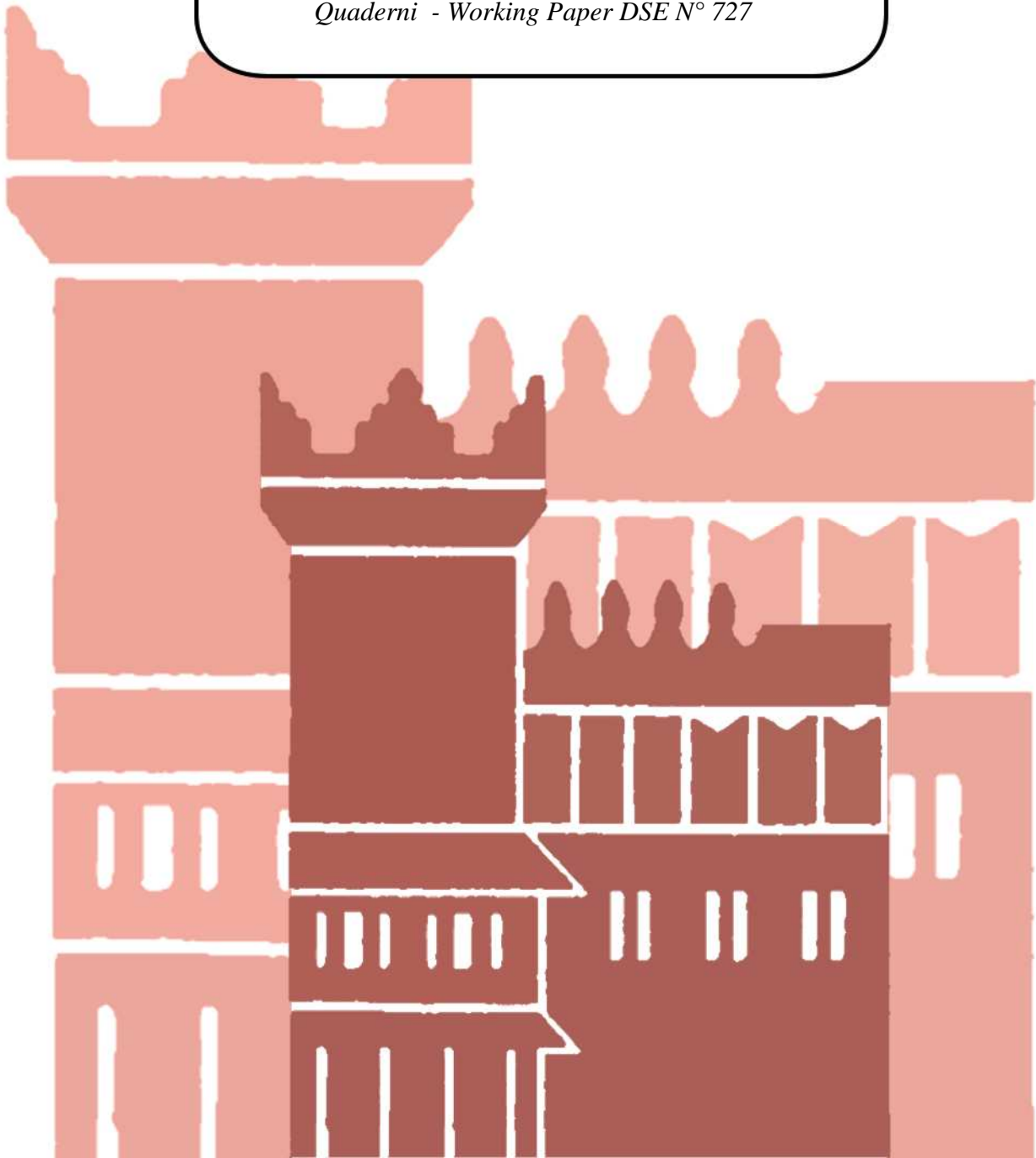


Alma Mater Studiorum - Università di Bologna
DEPARTMENT OF ECONOMICS

**Co-Production and Managed Competition
in Mixed Quasi-markets**

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Quaderni - Working Paper DSE N° 727



Co-Production and Managed Competition in Mixed Quasi-markets

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Abstract: In this paper, we provide a very simple model to shed light on the issue of managed competition in mixed quasi-markets (i.e. regulated markets in which social and for-profit firms coexist). In doing this, we consider the literature on mixed oligopolies as a reasonable reference point and try to enrich it with the idea of quasi-market. Firstly, our results show that social firms serve the relatively richer portion of the population. Only relatively poor consumers buy units of service from the profit-oriented firm. Secondly, the socially-preferable form of managed competition is to introduce coproduction practices and, hence, to raise profit-oriented firm's production costs. The diffusion of coproduction paradigms ensures maximal service quality and eliminates mark-up from the market.

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1 Introduction

Social firms have been, in recent years, at the centre of the large debate about the social economy. They can solve public and private market failures, ensure a sufficiently high level of positive social externalities as well as implement participatory models of service provision in which users became active agents in defining what service quality means. Despite their central position in the contemporary debate on welfare state reforms, social firms have been seen widely as socially-sensible organizations primarily focused on the needs of the absolutely poor. This is certainly true for economies in which the public sector does not provide directly social services or public-interest goods. In these circumstances, social firms have to play the role of "*provider of last resort*". However, there are cases in which absolutely poor consumers are served by public institutions and the other ones populate regulated markets (*quasi-markets*, henceforth) where social and profit-oriented firms coexist. In this last scenario, competition can be figured out as a market game between technically-efficient, profit-maximizing firms and socially-sensible organizations that implement forms of *coproduction*².

The concept of coproduction is related to the involvement of citizen, or users, in the production process of social or municipal services. This synergy can occur between a service producer (i.e. a public firm or a voluntary organization) and its clients who desire to become, through the service, healthier, better educated or safer persons. These individuals can participate, at various levels, to the organization of the service and their active role induces, at a micro level, virtuous behavior which increases service effectiveness. Indeed, because of shared, democratic and participative production processes³, coproduction social services is likely not only to fosters service users' social participation and self-empowerment capacity, two important goals of any social enterprise, but also to increase social firms' costs. But, how coproduction can affect competition in quasi-market? No research has been, until now, devoted to the last issue.

Competition in quasi-markets can be influenced also by the existence of positive social externalities related to consumption. Social firms can give value to this externality and to the degree of service diffusion, finishing for maximizing their quantity of demand. In this respect, it is worth-noting that Merrill and Schneider (1966), in their pioneering paper, assume that the objective of the public authority is the maximization of the total amount of the commodity produced. Obviously, they impose a budget constraint on the public firm in order to avoid it producing an infinite amount of the good⁴. But hence, how to manage competition in mixed quasi-markets? And, more important, how can

²On the idea of co-production of social and community services see Parks et al. (1981), Ostrom (1999), Pestoff (2009).

³In particular, it is usual to refer to three layers of co-production: (i) *co-governance*, i.e. to arrange forms of participation in the planning and delivery of services; (ii) *co-management*, that is an arrangement such that citizen can assume some strategic decisions and (iii) *direct co-production* in which users produce at least some units of their service.

⁴For a discussion of the relevance of players' objective functions in the analysis of competition in mixed oligopoly, see De Fraja (2009).

we compare different forms of managed competition in markets of this sort? The concept of *managed competition* will be conceived, hereafter, from a *mechanism design* perspective⁵: by using regulatory tools, public authorities can design the market game. Therefore, we shall discuss different *regulatory regimes* among which a regulator can choose⁶. In particular, we take the literature on mixed oligopolies as a reasonable reference point and try to enrich it with the idea of quasi-market, thus providing a very simple model focused on the issue of managed competition in quasi-markets. Firstly, our results show that social firms serve the relatively richer portion of the population. Only relatively poor consumers buy units of service from the profit-oriented firm. Secondly, the socially-preferable form of managed competition is to introduce coproduction practices and, hence, to raise profit-oriented firm's production costs. The diffusion of coproduction paradigms ensures maximal service quality and eliminates mark-up from the market. All this renders us an interesting picture of how mixed quasi-markets operate.

The essay is organized as follows. In the next Section we briefly mention the related literature, then, in Section 3, we present our set-up. Main results are derived and discussed in Section 4. The last Section, as usual, concludes the article.

2 Related Literature

A mixed oligopoly is a market where a good, or service, is supplied by a small number of enterprises to a large number of buyers, and the goal of at least one firm differs from that of other producers. As such, an oligopoly is mixed whenever it houses firms with different objective functions. Although most of the literature has been focused on the coexistence of private (profit-maximizing) firms and public (welfare-maximizing) firms (see De Fraja (2009) for a survey), other types of cohabitation fit the definition of mixed oligopoly. Delbono and Rossini (1992), for instance, consider the interaction between public, capitalistic and labour-managed firms in an homogeneous oligopoly. More recently, De Donder and Romer (2009), by using a more sophisticated model, examine a duopoly where one firm maximizes profit while the other maximizes revenue.

The literature on mixed oligopolies has been fairly large in the last twenty years. Unsurprisingly, one of the main questions addressed in many papers deals with the optimal strategy to be undertaken by the owner of the public firm to achieve other social targets. Of course, the conclusions are sensible

⁵For a different way to model managed competition in oligopoly see Wolinsky (1997).

⁶The literature of the economics of regulation is very large and a wide portion of it has been focused on *second-best regulation*. The issue is traditionally approached by using complete information models and by assessing the relative goodness of different regulatory solutions in terms of social welfare. In what follows, nevertheless, we focus on second-best regulation under complete information.

to the rule of the competitive game, the cost structures of firms and so on⁷. For instance, if we take a private firm and a public one with no capacity constraints, as in De Fraja and Delbono (1989), in order to increase social welfare, the public firm has to behave like a Stackelberg leader only if its cost function is not strictly concave. Contrarily, when costs are concave, a public firm that plays the role of Stackelberg follower is better off by using the so-called *propagation of marginal cost pricing rule*.

Another distinctive feature of this piece of economic literature is its focusing on goods-producing industries. Utilities, airlines, steel, transportation, just to quote few examples. However, despite several waves of privatization, the range of situations in which we observe *mixed competition* is still large in many countries and extends, for example, to service-producing sectors like health care, education, child-care, housing. In particular, social services are usually exchanged through mixed oligopolies in which public providers, not-for-profit organizations and profit-maximizing firms co-habit. These market structures, because of the existence of regulatory interventions on both market sides market - together with some public supply of the service- are usually named *quasi-markets* (see Le Grand (1991)).

The economic literature on quasi-markets has been fairly focused on the main differences between a *quasi-* and a *conventional* market structure. From different viewpoints, many contributions have emphasized five main *spheres of diversity* (see Barlett and Le Grand (1993), Deakin and Michie (1997), McMaster (2001), McMaster (2002)): (*i*) private property rights can be more difficult to define in quasi-markets than in conventional one because of the widespread diffusion of public-private partnerships, or contracting-out policies, which simply delegate private producers to organize service delivery; (*ii*) in quasi-markets, different kinds of service provider (non-profit organization, for-profit firms, public institutions etc...) exist and, since many producers cannot fail or/and are publicly owned, competition alone has a light disciplinary role; (*iii*) the price mechanism can only work imperfectly in quasi-markets because of political prices, vouchers and the like; (*iv*) services provided by quasi-market firms are not simple market commodities, but social goods whose consumption generates positive social externalities; (*v*) regulation policies affect in different ways (quality standards, price regulation, universal service obligations etc...) the supply side of the quasi-market. In the social functioning of quasi-markets, social norms of behavior, social capital institutions and the degree of solidarity between social groups are relevant elements as well.

An important lack of the quasi-market literature is its loose analysis of how market competition between differently-motivated firms takes place. On the one hand, given the applied nature of most of the contributions on quasi-market reforms, this weakness seems natural. Some articles, for instance Chalkley and Malcomson (1996), discuss the topic, but they do not propose any formal model. On the other hand, because the idea of *managed competition*, i.e. a competitive

⁷See De Fraja and Delbono (1990) for a taxonomy of the early literature and De Fraja (2009) for a more recent review. See also the interesting paper by Matsumura and de Kanda (2005) with its references.

game between private players organized and managed by public institutions, should suit well in the economics of quasi-markets, the above lack is quite surprising. However, to the best of our knowledge, the concept has been widely neglected by scholars involved in the subject. Such a missed link, however, has caused permanent deficits of quasi-market models and generated vague policy guidelines without solid foundations in competition theory.

Exactly to approach the issue of managed competition, the mixed oligopoly literature, joint with some elements of regulation economics, can advance our understanding of how quasi-markets operate. Consistently, we propose to analyze competition in a mixed oligopoly in which some regulatory constraints alter the market game. More precisely, we consider a no-regulation equilibrium and compare it with alternative market equilibria which result from possible forms of managed competition. Furthermore, we build an analytical set-up consistent with features *(ii)* and *(v)* of a quasi-market. On the supply side, we suppose to have a profit-maximizing firms and a social firm interested in the diffusion of the service in the population (e.g. a firm that maximizes the quantity of demand). On the demand side, we shall consider only those members of a given population who have no right to access, for some reasons, to publicly-financed services. Actually, in this way, we shall limit our discussion to *mixed* (private and regulated) *quasi-markets*.

3 The Model

In this Section, we provide definitions and notation. Before we start, however, two elements have to be stressed. First of all, consumers we consider are only a part of the whole population of service users. The number of consumers acting in the quasi-market is here assumed to be the welfare-maximizing one⁸. Secondly, the regulator cannot implement, even if the market game is a perfect information game, first-best regulation because it cannot use more than one regulatory tool at the same time (in our case one variable among c , θ and s). Such a scarcity of policy instruments with respect to policy goals reminds the old political economy literature (see, among others, Mundell (1960)) in which a loss functions was used in order to choose between suboptimal outcomes. Our function of expression (7) is inspired by those contributions.

3.1 The Demand Side

Consider N consumers, equals in all respects except for the willingness to pay (δ) for a given service. Willingness to pay is uniformly distributed on the

⁸A possible model for making endogeneous the number of consumers to be served by a quasi-market can be found in Lanzi (1998).

unit interval $[\underline{\delta}, \bar{\delta}]$ with $\bar{\delta} = \underline{\delta} + 1$ and each consumer buys always only one unit of the good/service. Buyers' preferences are supposed to be represented by the following utility function:

$$u_k = \delta(s_k + \theta s_{-k}) - p_k \quad (1)$$

where p_k is the price, s_k stands for the hedonic quality of the good provided by firm k (with $k = i, j$), s_{-k} indicates the quality of service of the other firm and $\theta \in [0, 1)$ is the degree of *systemic integration* between the two services. When $\theta \rightarrow 1$, the total quality of service k is equal to the aggregate system quality and we have full systemic effects. Contrarily, if $\theta = 0$ no systemic effects on quality exist. Hence, total quality coincides with service-specific hedonic quality. Without loss of generality, we suppose that $s_k \in [\underline{s}, \bar{s}]$ with $\bar{s} = \underline{s} + 1 > 1$ ⁹.

Under standard assumptions, the indifferent consumer can be identified as follows:

$$\delta'(s_i + \theta s_j) - p_i = \delta'(s_j + \theta s_i) - p_j \quad (2)$$

or, if $s_j > s_i$, as

$$\delta' = \frac{p_j - p_i}{(1 - \theta)(s_j - s_i)} \quad (3)$$

By using expression (3), we obtain firms' demand functions:

$$\begin{aligned} D_i &= N \left[\delta' - \underline{\delta} \right] \\ D_j &= N \left[1 + \underline{\delta} - \delta' \right] \end{aligned} \quad (4)$$

The substitution of (3) in (4) gives us their complete specification.

⁹In order to appreciate the role of θ in our model, an example can be useful. Suppose to have a private producer who is unable to mobilize all necessary resources for achieving a given level of service quality. With no systemic integration ($\theta = 0$), he/she has no access to other firm's infrastructures and facilities and, therefore, his/her service quality will decrease. Contrarily, with full systemic integration ($\theta \rightarrow 1$) the producer at stake will have full access to its rivals' resources for quality, and he/she will be able to mitigate service quality reductions. Real world examples of this kind of systemic integration between service providers can be found in health and social sectors.

3.2 The Supply Side

On the supply side, we have two producers who do not face capacity constraints. First, a profit-oriented firm (i) that produces one unit of good at a constant marginal cost $c_i > 0$. Firm i maximizes profits with respect to p_i and s_i and its decisional problem can be written as follows:

$$\max_{p_i; s_i} \Pi_i = D_i (p_i - c_i) \quad (5)$$

The second player is a social firm that produces, by using coproduction models, one unit of the good at a constant marginal cost $c_j > c_i > 4 - c_j$. The social firm maximizes with respect to price and quality the number of users it reaches under a balanced-budget constraint; formally:

$$\max_{p_j; s_j} D_j = N - D_i \text{ s.t. } (p_j - c_j) D_j = 0 \quad (6)$$

Finally, let us suppose that quality and price decisions are made sequentially. More precisely, we deal with a two-stage game with perfect and complete information. In the first stage, players set quality, then, in the second stage, they decide selling prices. As usual, we use backward induction to determine subgame perfect equilibria (SPE, henceforth).

3.3 The Regulatory Policies

The mixed oligopoly described above can be subjected to several regulatory regimes. A regulatory agency values them in terms of social loss through the following function:

$$L = \sum_k m_k + \gamma + \sum_k \zeta_k \quad (7)$$

where m_k is the absolute mark-up applied by firm k , $\gamma = 1 - \theta$ measures the degree of closedness of the services system, and $\zeta_k = \bar{s} - s_k$ indicates the amount of quality degradation for services k ¹⁰. Obviously, the bliss outcome is:

$$L^{BL} = 0 \implies m_k = \zeta_k = \gamma = 0 \quad (8)$$

¹⁰Another possibility is to assign weights to m_k and ζ_k given by the number of served consumers. In this paper, however, we shall use an unweighted loss function.

In other words, the socially preferable solution is a totally-integrated system of service provision with maximal hedonic quality and competitive prices. This would be, presumably, the outcome chosen by a public monopolist¹¹. However, for some reasons that here we can black-box, this outcome cannot be implemented and the regulator has to select that, suboptimal, regulatory compact that minimizes L . The regulator's choice set is finite and contains the three alternative regimes described below:

SYSTEMIC REGULATION (SR): a regulatory compact that imposes full systemic integration between providers; in symbols: $\theta \rightarrow 1$;

QUALITY OF SERVICE REGULATION (QR): a regulatory compact that sets services' hedonic quality at its maximal levels, i.e., $s_i = s_j = \bar{s}$;

CO-PRODUCTION REGULATION (CR): a regulatory compact which forces private firms to implement forms of coproduction such that $c_i = c_j > c_i$.

The satisfying regulatory solution is defined as the one that, in correspondence of a SPE of the market game, minimizes L .

4 Managed Competition in Mixed Quasi-markets

Using the above set-up, we are able to compare market outcomes in correspondence of different regulatory solutions and, therefore, to give substance to the idea of managed competition. Before doing this, however, we need to determine, as a benchmark case, the results of competition without regulation. The next Proposition characterizes the SPE of the unregulated market game.

Proposition 1: *With no regulation, the strategy profile $(p_i^*, p_j^*, s_i^*, s_j^*)$ such that:*

$$\begin{aligned} p_i^* &= \frac{1}{2}(c_j + c_i) - \frac{1}{2}\delta [(1 - \theta)(s_j^* - s_i^*)] \\ p_j^* &= c_j \\ s_i^* &= \bar{s} - \frac{1}{1 - \theta} \frac{[(c_j - c_i)(c_j + c_i - 4)]^{1/2}}{2\delta} \\ s_j^* &= \bar{s} \end{aligned} \tag{9}$$

is the unique SPE of the market game.

¹¹Note that we do not have costs for quality, therefore public production will select always the maximal quality level.

Proof: Take the FOCs with respect to price of both decision problems. As it can be easily checked, they entail the following equilibrium prices in the last stage of the market game: $p_j^* = c_j$ and $p_i^* = \frac{1}{2}(c_j + c_i) - \frac{1}{2}\underline{\delta}[(1 - \theta)(s_j - s_i)]$. By substituting expression (3), and equilibrium prices, into expression (4), we can obtain players' objective functions at the first stage of the game. These are given by:

$$\begin{aligned} D_j^* &= 1 + \frac{3}{2}\underline{\delta} - \frac{(c_j - c_i)}{2[(1 - \theta)(s_j - s_i)]} & (10) \\ \Pi_i^* &= \frac{1}{2}[(c_j + c_i) - \underline{\delta}(1 - \theta)(s_j - s_i) - 2c_i] \left[\frac{(c_j - c_i)}{(1 - \theta)(s_j - s_i)} - \underline{\delta} \right] \end{aligned}$$

As usual, the FOCs with respect to s give us the best-reply functions of the two firms. They are:

$$\begin{aligned} s_i &= R_i(s_j) = s_j - \frac{1}{1 - \theta} \frac{[(c_j - c_i)(c_j + c_i - 4)]^{1/2}}{2\underline{\delta}} & (11) \\ s_j &= R_j(s_i) = \bar{s} \end{aligned}$$

Intersecting these functions ends the proof¹². ■

Intuitively, unregulated competition leads firms to select different market strategies. The social firm sets competitive prices and the highest possible hedonic quality. Contrarily, the profit-maximizing firm reduces service quality in proportion with its cost advantage. The lower marginal cost of production allows her to select lower prices, with respect to the social firm's ones, and to gain economic profits. Moreover, in coincidence of this market outcome we observe a peculiar distribution of consumers. The relatively wealthier ones buy from the social firm, while the others prefer the profit-oriented offer. In this way, relatively poor consumers end to consume low quality goods. We can link, therefore, Proposition 1's result to the "*cream-skimming*" argument against quasi-markets. As well known, one of the main drawbacks of introducing profit-oriented providers in social services markets is that private firms, in order to increase profits, might decide to serve only low cost consumers, and to "*cream-skin*" the others. As obvious, such a practice raises equity concerns, and it is one of the main fears which slow down pro-competitive reform of social sectors¹³. Proposition 1, however, illustrates that through mixed competition

¹²Note that in the SPE any level of θ can be selected by private producers.

¹³Many of the possible drawbacks of introducing competition in social services markets are discussed, for the NHS, in Chalkley and Malcomson (1996).

is possible to soften the danger of cream-skimming by private providers. Since only relatively poor consumers are served by profit-oriented firms, an excessive focalization on low-cost and poor users will excessively reduce private providers demand with serious consequences on their ability to remain in the market.

Quality degradation by profit-maximizing providers, indeed another painful risk of quasi-market reforms, can be avoided in two ways. On the one hand, we can have direct quality regulation¹⁴; on the other hand, coproduction practices can be normatively imposed. The next two propositions deal with these cases.

Proposition 2: *Under a CR regime, both firms set prices equal to marginal cost and implement maximal hedonic quality levels.*

Proof: We need to check how the SPE of the market game changes when a CR regime is implement. If this is the case, it must be that $c_j = c'_i = c$ and therefore, see expression (11), that $s_j^* = s_i^* = \bar{s}$. Now, by putting this last condition in expression (9), we obtain that $p_i^* = p_j^* = c$. Like in Loeb and Magat (1979)'s solution, we have marginal cost pricing. ■

Proposition 3: *Under a QR regime, the profit-oriented firm applies mark-up, but its selling price is lower than the social firm's one.*

Proof: As above let us determine the SPE of the market game under a QR regime. With quality regulation, it must be true that $s_i^* = s_j^* = \bar{s}$. With this regulatory constraint at hands, and by using expression (9), it is immediate to verify that $p_i^* = \frac{1}{2}(c_j + c_i) > c_i$ and $p_j^* = c_j$ with $p_j^* > p_i^*$. ■

The main difference between the CR regime and the QR one lays in selling prices. Under a QR regime, even if it applies price margins, the profit-oriented firm can keep the selling price below the social firm's one. This price reduction compensates consumers for the lack of active participation. In opposition, under a CR regime, cost symmetry between firms determines equal prices and no margins. In this case, maximal service quality is chosen by both producers. Just to say: forcing profit-maximizers to mimic social firms can be a way to control service quality. Finally, the last two propositions indirectly confirm that in quasi-markets a direct relation between cost and quality exists. As Chalkley and Malcomson (1996) conclude, in quasi-markets lower prices, as a result of competition, may be associated with lower quality because providers are force to reduce their costs. Our findings, e.g. increasing costs entails quality enhancement replies by private firms, confirm this relation.

In the perspective of social policy, another interesting finding is next the next proposition..

Proposition 4: *Under a SR regime, firms choose service maximum differentiation. Moreover, equilibrium prices are equals to the QR regime's ones.*

¹⁴Notice that a public enterprise may be modeled as an instrument to affect quality in a mixed oligopoly. See, e.g., Delbono, Denicolò and Scarpa (1996).

Proof: The SR regime imposes $\theta = 1$. In this case, by looking at expression (11), we can notice that in the SPE on the game we have $s_j^* = \bar{s}$ and $s_i^* \rightarrow -\infty$. However, since the domain of quality is bounded, the profit-maximizing firm will select, in the SPE of the market game, the minimal quality level (\underline{s}). Equilibrium prices, as can be checked by substituting quality equilibrium levels and $\theta = 1$ in expression (9), are the same of the previous case. ■

Under a SR regime, systemic effects are maximal given the high degree of integration between provided services. Thus, the optimal behavior for the profit-maximizing firm will be to free-ride social firm's maximal quality. As a result, maximal service differentiation emerges. In other words, we can have, exactly because of full integration, very dysfunctional services offered by private firms together with high quality ones provided by social firms. Therefore, at least from a regulatory viewpoint, the centrality of integration strategies between quasi-market providers seems significantly reduced.

Finally, the next Proposition illustrates how the three regimes perform in terms of social loss.

Proposition 5: *In equilibrium, the following ranking holds:*

$$L_{SR} \geq L_{QR} > L_{CR} > 0 \quad (12)$$

Proof: Take the loss function of expression (7) and consider SPE prices and quality for the three alternative regulatory regimes. After some manipulations, it is possible to get:

$$\begin{aligned} L_{SR} &= \frac{1}{2} (c_j - c_i) + (\bar{s} - \underline{s}) \\ L_{QR} &= \frac{1}{2} (c_j - c_i) + (1 - \theta) \\ L_{CR} &= (1 - \theta) \end{aligned} \quad (13)$$

By considering the values of our parameters, the ranking between expressions in (12) follows immediately. ■

Indeed, the CR regime is the more aggressive regulatory solution and, consistently, minimizes the social loss. In this case, the regulator disciplines the methods of production by imposing, for instance, co-governance practices or co-management institutions to private, profit-oriented firms. It is a sort of public acceptance of the fact that coproduction paradigms of social firms create social value, even if they increase average costs in quasi-markets. Service users

pay more for a unit of service, but, given the absence of mark-up, this extra-expenditure is simply the cost to be paid for active participation and stronger empowerment.

In order to appreciate the significance of the last Proposition, the idea of *quasi-market failure* has to be reminded. Following Lowery (1998) and Kahkonen (2002), quasi-markets can fail, *inter alia*, because of imperfect competition and, hence, the central question becomes under which conditions regulation can reduce social losses due to the impossibility of perfect competition. Our analysis shows a way to address the issue and concludes in favour of coproduction processes. Coproduction paradigms not only stimulate participation and cultivate social responsibility and active citizenship, but they also work as market discipline devices in the case of mixed competition. Surely, as emphasized above, the main criticism to results of this sort is that the CR regime raises the unitary cost of service. This is true, and this increase is the price to pay for a well-performing regulation. Obviously, if the regulator wants to reduce the cost of one unit of service, the CR regime produces very poor outcomes and the best way to manage the quasi-market is to replace social firms with profit-oriented ones.

5 Concluding Remarks

In this paper, we have analyzed how to manage competition in quasi-markets in which different service providers exist. The main conclusion of our model is that in quasi-markets service coproduction can be a tool of regulation and not only a way to increase service effectiveness and users' participation. Social firms are, in this context, not only instruments for the empowerment of citizens, but also models of production which gives us, by fostering active citizenship and people's empowerment, more effective quasi-markets. This conclusion is reinforced by the fact that, without regulation, mixed quasi-markets can generate a peculiar distribution of users between social service providers. As we have shown, unregulated competition, in equilibrium, divides consumers in two groups: the wealthy one, which purchases units of services by the social firm, and the poor one, whose members are forced to buy from the profit-oriented producer. This means that, without public surveillance of these markets, poor users, who reasonably have a deep need of social assistance, consume badly-produced services of low quality. Hence, to avoid a new source of social inequality, regulation of mixed quasi-markets is needed.

Finally, some observations on the relation between the idea of coproduction and the one of socially-responsible firms. Recently, development studies have analyzed the concept of institutionalised coproduction, i.e. the provision of public services through a regular, long-term relation between State agencies and organized groups of citizen, who make substantial contributions to the delivery of service (see, among the others, Joshi and Moore (2004)). This way

of organizing social services is relatively widespread in poor countries and, in those contexts, it is important to distinguish between logistical and governance drivers of coproduction solutions. When the latter are weak, institutional coproduction produces very bad results in terms of service quality. In more economically-advanced market societies, social firms are the natural candidate for implementing forms of service organization in which users play an active role. In this context, coproduction paradigms can be a key institutional hinge operationalizing the "*technology of the community*" (Rose (1999)) and fostering active citizenship. Consistently, community services should be organized, by using coproduction processes, as a "space of services, a natural, civic and extra-political zone of human relations" (Rose (2000)). Nevertheless, social firms have to institutionalize, govern and manage logistical, motivational and governance tools for coproduction. In the lack of these instruments of economic democracy, an important source of social change will be blocked.

In a lieu of conclusion, let us also mention possible research directions. First of all, it is interesting to consider the sensitivity of our argument to the number of players of the market game. Given that the effects of competition can vary when there are few or many service providers, an interesting research program could be to consider more than two firms. Secondly, it should be possible to introduce incomplete information for the regulator and, in this way, to relate the quasi-market literature with Laffont and Tirole (1993)'s theory of incentives in regulation. However, given the state of the art in the analytic of quasi-markets, such an extension seems us far to provide interesting policy insights. Thirdly, an interesting extension of our model could entail a framework in which firms can negotiate the degree of services integration. Excluding the possibility of unregulated negotiation between players, the difficulty, in the last case, is thinking to alternative negotiation protocols which may restrict parties' possibilities to some, not socially-wasteful, solutions. In doing this, mechanism design tools and categories can be of great help. Finally, it could be interesting to assume that the public authority aims to maximize, in virtue of the *subsidiarity principle*, the total number of served consumers. In this case, the regulator might operate as a Stackelberg follower and serve the residual demand unserved by other suppliers.

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