

ALCHIAN AND DEMSETZ'S CRITIQUE OF THE COOPERATIVE FIRM THIRTY-SEVEN YEARS AFTER

Bruno Jossa*

University of Naples

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ABSTRACT

The author discusses the critique of cooperatives implied in Alchian and Demsetz's argument that efficiency is maximized when the central agent managing the firm and watching the labour force at work is the residual claimant. Entering upon a number of criticisms that Alchian and Demsetz's approach attracted over the years, he concludes that their critique does not hold, and his basic argument is that cooperative firms vesting the monitoring function in elected managers will not be less efficient than capitalistic firms in the same situation.

1. INTRODUCTION

Alchian and Demsetz's (1972) theory of the firm is sometimes held to provide the most exhaustive and convincing explanation of why capitalistic firms outnumber and outperform cooperatives in any free market economy. However, numerous points raised for discussion in later years ignited a divisive theoretical debate to which this paper is intended to make a contribution.

In our opinion, Alchian and Demsetz's critique of cooperatives is unacceptable and is bound to crumble under the weight of the numerous objections it comes in for. Hence our decision to provide an overview of these criticisms and try and assess their bearing on this debate.

Holmström and Milgrom (1994) have made it clear that incentives to firms are subsumed within three complementary and mutually reinforcing categories. The first of these has to do with creating a design of the job, i.e. laying

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down in detail the purposes of individual classes of operations. The second, more direct incentive is appointing a monitor, making him or her responsible for supervising the full range of the firm's operations and remunerating him or her in proportion to his or her measured performance. In their opinion (p. 972), the analysis of Alchian and Demsetz (from now on AD) falls entirely within this category. The third and, in Holmström and Milgrom's words, 'most forceful' incentive is vesting ownership of production means in stakeholders—as is the rule in cooperative firms. Leaving aside first-category incentives, the purpose of this analysis of AD's approach is to test the argument that cooperatives are underperforming in such a crucial area as second-category incentives.

The aim of this paper is not to refute the full range of anti-cooperation criticisms that may have a bearing AD's contribution albeit indirectly. Its specific focus is on the central point of AD's approach, which—let this be repeated—is widely held to be the strongest objection ever raised against democratic firms: the idea that *one* weakness of the democratic firm stems from the fact that the person in charge of the monitoring function is not the residual claimant.¹ Accordingly, instead of exploring new research directions, we intend to provide a detailed and more exhaustive review of AD's central idea than those made available in the published literature so far.

The text is organized as follows. Section 2 sets out AD's theory; sections 3 and 4 examine and discuss criticisms levelled against it over the year; section 5 develops a critique of cooperatives, which, although not raised in any analyses of AD's contribution so far, has a specific relevance to the main point we wish to make in this paper; section 6 examines the case of cooperatives of professionals. Section 7 discusses the link between production effort and pay rates in capitalistic versus cooperative firms; and section 8 states an ultimate issue.

2. COOPERATIVES IN ALCHIAN AND DEMSETZ'S THEORY OF THE FIRM

Alchian and Demsetz's pioneer contribution is first and foremost a theory of the firm explaining why associations of producers of the type we name 'firms' arise. Their starting proposition is that firms are mainly created because team production is more efficient than individual production, i.e. because the

¹ The assumption that the comparatively small number of cooperatives in existence is evidence of scant efficiency is not dealt with in this paper, but is specifically addressed elsewhere (*inter alia*, Dow, 2003; Jossa, 2007).

aggregate output of a team exceeds the arithmetic sum of the individual outputs that the team members would generate if each of them were to work on his or her own.²

‘It is common—they argue—to see the firm characterized by the power to settle issues by fiat, by authority, or by disciplinary action superior to that available in the conventional market. This is a delusion’ (see AD, 1972, p. 777). In their opinion, a firm arises from a set of contracts and its disciplinary action or authority is by no means different from that deriving from ordinary contracting between any two parties in the market. As an individual consumer, the firm may instruct a grocer to supply the commodities it needs and cease buying from that vendor upon becoming aware that its orders are not properly performed: similarly, an entrepreneur can tell his or her employees what they are to do and the latter are free to leave if they do not like the jobs to which they are assigned.³ ‘To speak of managing, directing, or assigning workers to various tasks is a deceptive way of noting that the employer continually is involved in renegotiation of contracts on terms that must be acceptable to both parties’ (see AD, 1972, p. 777; see also Nozick, 1974, pp. 160 ff.).⁴ Wherein do employer–employee relations differ from customer–grocer relations?—AD ask themselves. In the fact—they answer—that the firm is (a) a team engaging in production, and (b) an organization in which a central agent enters into contractual arrangements with all the remaining team members.⁵

Team production will prove efficient provided the members of the team are remunerated in proportion to the quality and quantity of their inputs. However, as the contributions of individual members to the team’s aggregate output are difficult to measure, it is common for some members of a firm to reduce their effort without suffering appreciable wage cuts.⁶ Hence, major

² Team production of good Z requires at least two inputs, X and Y , and the condition that $\partial^2 Z / \partial X \partial Y \neq 0$.

³ The idea that neither the employer nor the employee is obliged to protract their contractual relationship indefinitely led AD to argue that long-term employment contracts are not an essential attribute of the firm (see AD, 1972, p. 777). On this point, though, Alchian changed his mind some time later (see Alchian, 1984, pp. 38–9; Williamson, 1985, p. 53, note 11; Williamson, 1986, pp. 241–2).

⁴ This amounts to a criticism of Coase’s theory of the firm that was shared by Hart (1989), but that Alchian himself dropped at a later stage (see further on).

⁵ AD’s approach is automatically endorsed by those authors who argue that workers accepting employment in capitalistic firms voluntarily barter the title to exercise control over production for other benefits (see, *inter alia*, Miller, 1989, p. 36).

⁶ Demsetz’s definition of shirking is ‘the amount by which on-the-job consumption, given positive monitoring cost, exceeds the amount of consumption that would take place when modelled with zero monitoring costs’ (see Demsetz, 1988a, p. 192).

requirements in any firm are putting in place procedures to measure the quality and quantity of different inputs and defining pay rates by reference to marginal productivity levels. In this connection, though, AD call attention to the causation issue: whereas traditional theory holds that pay rates are adjusted in such a way as to equate a given level of productivity, they argue that this relation is often reversed, i.e. that particular productivity responses can be elicited through purposely designed remuneration systems.

To discourage employee shirking, each firm establishes a corporate function specifically responsible for monitoring and supervising the performance levels of individual team members. This is the task of the entrepreneur, monitor or central agent who hires and dismisses team members, enters into contractual agreements with them and sees that all of them perform their tasks to the best of their abilities. But who will monitor the monitor? In 'classical' capitalistic firms this problem is solved by empowering the central agent to appropriate the balance between revenues and costs, for this creates an incentive for the entrepreneur to discipline team work at a high level of efficiency. As AD put it, the reason why the classical capitalistic entrepreneur is allowed to appropriate the firm's profit, i.e. the difference between revenues and costs, is not so much the greater willingness to bear risks of those who go into business (as Knight assumed in his celebrated 1921 contribution; see Knight, 1921),⁷ as the consideration that this is the most effective way of remunerating a person monitoring and measuring the effort that individual team members put in their work.⁸

In short, AD's central proposition is that the entrepreneur is he or she who takes upon himself or herself the task of watching team members at work and should therefore earn an income increasing in proportion to the team's performance level. In Demsetz's words, the main aim of AD's 1972 paper was to relate different firm organization modes to the different monitoring requirements they generate (see Demsetz, 1988b, p. 153).⁹

According to AD, this explains why firms tend to organize themselves more often along capitalistic than cooperative lines. If profit—they

⁷ Models vesting the monitoring function in those who are least risk-averse have been proposed by Kihlstrom and Laffont (1979) and Eswaran and Kotwal (1989).

⁸ Demsetz himself revealed that the greater part of his own and Alchian's line of reasoning in the 1972 paper was based on suggestions drawn from Knight (see Demsetz, 1988b, pp. 163–4, note 6).

⁹ According to others, AD's main contribution is to have answered the 'who-will-monitor-the-monitor' question in the 'classical' firm by suggesting that the monitoring function should be vested in a residual claimant with an incentive to self-monitor himself or herself (see Eswaran and Kotwal, 1989, p. 162). But does this necessarily entail that the monitor must be a residual claimant? This issue will be addressed further on.

argued—were apportioned among workers (as is the rule in cooperatives) instead of being entirely appropriated by the person responsible for watching others at work, the workforce would be induced to work both harder and better, but as the monitor would have a lesser incentive to see to his or her tasks properly, productivity losses from a lower level of central monitoring would probably exceed the productivity gains generated by the workers' lesser incentive to reduce their work inputs (see AD, 1972, p. 786).¹⁰ Even more so, in a firm distributing all its profits to the workers without adopting a specialized monitoring function AD hold it reasonable to assume that effort levels would slow down despite the workers' greater interest in the efficient running of their firm (see also Jensen and Meckling, 1979, p. 485).¹¹

Alchian and Demsetz do not deny that cooperatives may be viable under certain circumstances. A case in point on which they focus is small-size firms: especially in firms where a fairly small number of members are 'actively' engaged within the team (and aware of their major contribution to the results of the team's joint work)—they suggest—experience has shown that profit sharing and a participatory organizational structure may carry noticeable advantages. Another reason why profit sharing may be a particularly appropriate solution in smaller firms is that mutual control is both easier and more effective when production activities are carried out by a fairly small number of participants.

The cost of measuring worker input quantity and quality increases in proportion to the difficulties entailed in correlating individual performance levels to behaviour. From AD's perspective, this explains why solicitors, doctors, advertising specialists and other professionals whose individual contributions to overall team performance are unusually difficult to measure (and with respect to whom monitoring hardly makes sense) tend to be formed into partnerships or to enter into profit-sharing arrangements.¹²

In our opinion, AD's paper fails to lay special emphasis on the notion that individual effort choice in well-monitored capitalistic firms is closely related

¹⁰ On the poor efficiency of small shareholder control or, generally, control by a large group of persons, see Hart (1995, pp. 682–3).

¹¹ The argument that a democratic firm structure may weigh on efficiency because managers have insufficient authority over the members by whom they are appointed (see Jensen and Meckling, 1979) was first set out in 1899, when Bernstein argued that upon the abolition of the capitalistic ownership structure without concomitant organizational changes the firm's organs would dissolve through loss of their common convergence point (see Bernstein, 1899, p. 159).

¹² Theorists who support AD's free-rider approach include Jensen and Meckling (1979), Alston and Gillespie (1989), Barzel (1989, chapter IV) and, although with some qualifications, Cugno and Ferrero (1992, pp. 139–42) and Brosio (1995, pp. 43, 93–5).

to individual remuneration, i.e. that monitoring makes it possible to re-establish the close link between effort and wages that the practice of fixing pay rates at the inception stage of a production process has severed. However, as this argument is not directly relevant to our main point in this paper, it is mentioned at the beginning of this paper and will just be touched upon in a self-standing section that is but loosely related to our line of reasoning.

3. CRITICISMS OF ALCHIAN AND DEMSETZ'S APPROACH

Alchian and Demsetz's starting assumption, i.e. the idea that the entrepreneur's power in manager–employee relations does not exceed that of a party to any contract entered into in the market, is called into question by theorists who look upon the firm as a hierarchical structure mainly typified by specific investments (see, *inter alia*, Williamson, 1975).¹³ To refute AD's argument that dismissal from a job is, to a worker, tantamount to switching over to a different grocer, Daems and others have emphasized that finding a new job is far more costly than securing fresh orders for a number of reasons (see Daems, 1980; Dahl, 1985, pp. 114–16, 18; Gould, 1985, pp. 206–8). With respect to this point, though, it is worth mentioning that Alchian made a U-turn in later years (see Alchian, 1984; Williamson, 1986, pp. 241–2).

The idea that the employer wields no power over his or her employees is also called into question in a number of analytical approaches aimed to show that different monitoring methods, the division of labour and other organizational patterns serve the dual purpose of ensuring efficiency and adding to the employer's authority (Braverman, 1974; Marglin, 1974; Edwards, 1979; Putterman, 1982; Bowles, 1985).¹⁴ As pointed out by Howard and King

¹³ Developing AD's analysis with focus on firm-specific investments, Demsetz (1991) argued that the specialized human capital involved in any team production project increased in value when pooled with the capital of other team members (instead of being used on an exclusive basis) and that individual member productivity levels were not only conditional on team membership as such, but also, and especially, on inclusion in a team assigned to a specific task; if this holds true, it further complicates AD's original theory by blurring the assumption that team members who are aware that their qualifications add to the expertise of a particular team will only accept a pay rate commensurate with their (short-term) opportunity cost.

¹⁴ In this essay, Bowles sets out to show that shirking is both congenital to human nature and greatly dependent on the way production is organized. To account for the greater efficiency of employee-managed firms, he argues that workers who do not feel that they are being exploited have a lesser incentive to shirking than workers in capitalistic firms, in which business is not carried on in their interests. But this is probably a self-evident truth.

(2001, p. 796), the role of coercion as a coordination tool in fully developed capitalistic systems is one of the subjects on which Marx drew attention in connection with capital–labour relations. As contracts can hardly be worded in such a detailed manner as to provide for any possible events, he argued, the terms on which labour services are exchanged are necessarily contestable and conflict is consequently bound to be endemic.¹⁵

Be that as it may, the main point on which we intend to focus in this paper is the monitoring issue, for this is what AD hold to be the main obstacle to the establishment of cooperative firms. According to Jensen and Meckling (1976, 1979, pp. 470–1) and more recent agency theorists, the firm is a ‘nexus of contracts’ and agency is the relationship whereby one person, named the principal, directs the agent to see to a task for his or her account.¹⁶ To reduce the inevitable divergence between his or her own and the interests of his or her agent and confine the resulting losses, the entrepreneur uses the agency contract and the monitoring function. Agency costs include monitoring costs, those of interesting the agent in the proper performance of the contract and the resulting loss; and the tools used to minimize such costs are the agency contract and the monitoring function.

Do our reflections so far actually support AD’s argument that the agency contract between the capitalistic firm and its management vouchsafes greater efficiency than is obtainable in a cooperative?

The problem facing cooperatives is doubtless one of corporate governance, but differs from corporate governance problems in other types of firms because it stems from a multiple ownership (or multiple usufruct) structure. When the monitoring function is vested in a plurality of individuals—it is argued—individual monitors have a lesser incentive to see to their tasks efficiently because they know they will appropriate no more than a fraction of the greater income generated by their monitoring costs; and the resulting inducement to free riding will be all the stronger, the more the ownership or usufruct structure is fragmented. But is this really the main drawback on the advancement of the cooperative movement?

¹⁵ The correct approach is that those who have no option but to do what is crucial to their subsistence or well-being cannot be assumed to be free (see, *inter alia*, Cohen, 1978).

¹⁶ Finding fault with the definition of the firm as ‘a nexus of contracts’, Screpanti (2004) and Zamagni (2005) have argued that the capitalistic firm is first and foremost ‘a nexus of employment contracts’ and that theorists of the ‘nexus of contracts’ unduly equate employment contracts with the myriad other types of contract entered into by firms (see Zamagni, 2005, p. 45). Their argument is fully in keeping with our line of reasoning so far.

In situations where all the workers engage in monitoring—as is assumed to be the case in cooperative firms—the first objection¹⁷ to AD's analysis comes in for is as follows: compared with the central monitor cashing the whole of the residual, individual workers will doubtless have a lesser incentive to perform their monitoring functions at a high level of efficiency, but whereas in a capitalistic firm this function is vested in one or a few specialized monitors, in a cooperative it lies with *all* the members—and a hundred pairs of eyes are better than one. In other words, in a cooperative where all the members engage in monitoring, none of them is specifically responsible for this function, but all of them will nonetheless be watching others at work out of self-interest, in their dual status of monitors and residual claimants (see, *inter alia*, Putterman, 1984; Miller, 1993, p. 306; Hansmann, 1996, p. 70). And there is no evidence that a single monitor, however strong his or her incentive, will be seeing to this function any better than a plurality of monitors with a lesser incentive. Those performing the monitoring function in democratic firms without a designated monitor are residual claimants—and this is what makes the difference.

An implicit 'auxiliary' hypothesis on which AD provided focus is the idea that production costs tend to increase when the residual is not entirely assigned to the central monitor, and this is tantamount to assuming that losses from manager shirking would exceed gains from reduced team member shirking (see AD, 1972, p. 786).

Turning to the issue of monitoring costs, let us mention that in firms that do not hire any monitors this function can be performed at no cost. In a simplest-case scenario, individual workers will be monitoring those next to them; each worker processing raw materials or semi-finished products will be able to quality-check the materials conveyed to him or her by others without incurring appreciable costs; and no video camera will be needed to watch people taking a coffee-break since those working beside them will record the fact at no cost.¹⁸

¹⁷ In this paper we are only dealing with criticisms relevant in economic terms. Political or psychological objections such as Weisskopf's argument that these approaches betrayed a deep mistrust of democracy are not addressed (see Weisskopf, 1993, p. 131). However, AD's monitoring theory lies open to the far more pervasive objection that AD themselves raised against Coase (see Hart, 1989): the criticism that it is not clear why team production and monitoring issues should be addressed within the firm instead of via the market mechanisms.

¹⁸ Analysing plywood production in cooperatives versus capitalistic firms, Greenberg (1986, pp. 43–4) remarked that the single monitor of the former was often matched by six or seven monitors in the latter.

Needless to say, even peer monitoring entails a variety of costs: the time and effort it takes to watch others at work, the guilt and shame that those monitored feel on being caught in the act of shirking and the resulting frictions, since the members of a cooperative (a) have no authority over their fellow-workers and (b) may resent control from their peers. Peer pressure is distinguished into internal and external: it is internal when we incur a disutility (a sense of guilt) for doing harm to others even though we are not found out; it is external when this disutility (shame) is conditional on whether we are, or are not, found out; and the costs associated with either type of pressure are greater when guilt and shame come to bear on friendly relations such as those between fellow-members. Hence the conclusion that for the reasons just explained, the aggregate utility of peer monitoring to a member may be smaller despite its potential for adding to individual worker incomes (see, in particular, Kandel and Lazear, 1992, p. 805).¹⁹

Nonetheless, it is clear that peer disapproval is likely to be a powerful deterrent to shirking, especially because free riding is perceived as a far more odious practice among peers than in employer–employee relations, in which workers have traditionally played cat and mouse with employers. Furthermore, as shirking is an infectious disease, there are reasons to assume that the members of a democratic firm will have an incentive to work hard in order to set an example for others to follow.

In an analysis of the monitoring issue, Bowles and Gintis modelled four distinct ‘effects’. In their opinion, the monitoring issue is first and foremost an instance of ‘market failure’ caused by the non-measurable nature of worker input and the resulting difficulty to word employment contracts in manners that will cover the full range of possible job descriptions. The typical strategy of a capitalistic firm in a competitive labour market is to adopt pay rates well above the ‘reservation wage’, appoint specialized monitors and use the threat of dismissal as a means of eliciting the desired levels of effort. In contrast, the strategy of cooperatives to deal with drawbacks from incomplete work contracts is to leverage the self-interest of their workers as ‘residual claimants’, i.e. to distribute the profits of the production process to them. In this way, they create an inducement to greater effort and can elicit levels of efficiency which in capitalistic firms are generally unknown (see Bowles and Gintis, 1994, p. 210).

¹⁹ The advantages of peer monitoring are discussed in two recent papers that emphasize that penalties are called for with greater determination if those meting them out are members of one and the same team (see Bernhard *et al.*, 2006; Goette *et al.*, 2006). For drawbacks, and empirical methods to deal with them, see Marshall’s (2003) paper on three Japanese service cooperatives.

The greater work effort stemming from the status of workers as residual claimants is what Bowles and Gintis term 'direct residual claimancy effect'.²⁰ This effect is maximized in small-size firms because the workers of larger cooperatives know all too well that only a small fraction of the excess income generated by their greater effort will ultimately be distributed to them. In Bowles and Gintis, the greater efficiency of cooperatives compared with capitalistic firms is also traced to other reasons besides the already mentioned residual claimancy effect. One of these is the considerable effort that workers put in their jobs when they feel responsible for the firm's performance in their capacity as co-owners. Advocates of Vanek's approach (1970) have emphasized that the members of a cooperative tend to increase their rates of work and see to their entrepreneurial functions to the best of their abilities although they are only usufructuaries of their firm, not owners proper; and this is in keeping with the argument that the need for a close link between private ownership and entrepreneurial functions has nowhere been theorized (see Adaman and Devine, 1996, 2002).

There can be little doubt that those self-employed derive more satisfaction from their work than those in employment, or that members identifying with their firm fear dismissal more than workers in capitalistic firms. Both these factors may account for the greater dedication to work that is usually recorded in cooperatives compared with capitalistic firms. At first sight this process, or 'participation effect', may seem to fall in with the direct residual claimancy effect, but on closer analysis it differs from it (see Bowles and Gintis, 1993, pp. 27–8).

Furthermore, those making decisions jointly with others feel responsible for such decisions and tend to maximize their commitment out of a feeling of loyalty (see, *inter alia*, Oakeshott, 1978; Horvat, 1982). This is what Hirschmann terms the 'loyalty effect'. In their 1972 article (p. 790), AD themselves conceded that loyal workers add to the efficiency of a firm (and, accordingly, may help reduce monitoring costs). Hence, this is certainly a major argument for the greater efficiency of cooperative firms.

Fourth, the workers of a cooperative firm can cross-monitor each other at a high level of efficiency. And the information on the inputs of their fellow-workers to which they have access at no cost—let this be repeated—helps them judge if those working beside them are putting enough effort in their jobs. Bowles and Gintis term this process the 'reciprocal monitoring effect'.

²⁰ The main point on which Reich and Devine (1981) as well as Bowles and Gintis (1993) provided focus is the idea that sharing profits with workers reduces incentive costs and external monitoring requirements.

In morale models (Akerlof, 1982; Akerlof and Yellen, 1990), the relation between wage and effort is 'mediated' by satisfaction, a factor that has a bearing on the quality of workers' lives. Similarly, it is possible to argue that income–effort relations in cooperatives are mediated by the satisfaction that stems from the 'residual claimancy' and 'participation' effects.

In short, in the light of the effects defined by Bowles and Gintis²¹ the free-riding criticism is likely to strike us as fairly unrealistic.²²

As mentioned above, one major criticism of AD's free-riding hypothesis has to do with such a major component of human action as reciprocity—a key theme discussed by Fehr and the Zurich school. Although Sen (1994) and Hart (1995, p. 681) have argued that production processes can be classed as merit goods even in capitalistic firms, it is not to be doubted that the impact of reciprocity on efficiency is the greatest in cooperative firms (see Fehr and Schmidt, 1999; Crivelli, 2002, pp. 37, 40) because of inherently closer cross-relations between the behavioural patters of the members of a cooperative compared with the workers of capitalistic firms. In other words, in capitalistic firms worker behaviour is much more strongly impacted by individualistic attitudes than in cooperative firms, where the reciprocity principle is far more influential. In a cooperative, mutual trust is a prerequisite for the efficient running of production and the members' shared aims further add to such trust. Out of a feeling of solidarity binding them to each other, they tend to put greater effort in their work than personal interest calculations would account for. Emulation is no less important, and may greatly raise labour productivity so long as it does not degenerate into mutual mistrust or rivalry between members. An equally influential feeling is the workers' sense of belonging to the firm, which is much greater in cooperatives than capitalistic firms and plays a comparable role in discouraging free riding.²³ A true community monitors the behaviour of its members and makes the most of all the incentives that individuals have traditionally developed in an effort to streamline collaborative work procedures: trust, solidarity, reciprocity, reputation, self-esteem, respect, revenge and retaliation, among others.

²¹ In addition to these, Screpanti (2007, p. 179) defined a fifth effect, which he termed 'anti-shirking effort effect' and traced to the fact that the members engage in monitoring in order to prevent free riders from shifting part of their workload onto them. On closer analysis, though, this effect seems to be subsumed within, or an expansion of, the residual claimant effect.

²² In the opinion of some, the crucial factor determining if central monitoring outperforms mutual monitoring or vice versa is the technological content of the tasks involved (see Putterman, 1984, pp. 173–4).

²³ In the absence of individual incentives, team performance is likely to improve when team incentives come into play (see, *inter alia*, Hansen, 1997; Bowles and Gintis, 2000).

From the importance of mutual member trust in a cooperative, it follows that a task such as monitoring, which is born of mistrust by its very nature, deprives those monitored of the pleasure they draw from behaving correctly (and thereby earning such trust). As a result, such control (or, rather, excess control) as is the rule in capitalistic firms can generate the opposite effect of reducing productivity or increasing labour disutility (see Bewley, 1995; Fehr and Gächter, 2000; Falk and Kosfeld, 2004; Zamagni, 2005, p. 54, 2006, p. 58). Trust adds to the self-esteem of those in whom it is placed and reduces free-riding behaviour accordingly.

The direction in which our line of reasoning leads us to head runs counter to AD's approach. It is often argued that team participation generates joint team interests. In line with Akerlof's so-called 'sociological model' (which Akerlof contrasts with the neoclassical standard model upheld by most economists), the members of any firm (be it a capitalistic company or a cooperative) 'develop a feeling' that binds them to each other and the firm, inducing them to exchange 'gifts'. And it is well known that reciprocity is a major aspect of gift exchanges. In short, the tendency of team members to adopt the rules of the team was emphasized both by Mayo back in 1949 (see Mayo, 1949) and by Akerlof in 1982 (see Akerlof, 1982).²⁴

This approach reverses the conclusions in AD's paper. Due to their commitment to the interests of the team, the members of a cooperative will work more briskly than they would do in self-interest only, and they are likely to do so in an attempt to 'set an example' for others to follow and help establish behavioural norms. As a result (and in part because they are much more concerned with the success of their firm than workers in capitalistic firms), instead of shirking they will see to their duties with the greater dedication flowing from an awareness of team requirements and will arguably work harder than workers in capitalistic firms are generally found to do.²⁵

Approaching this issue from the vantage point of reciprocity, Bruni (2006) distinguished prudential reciprocity from reciprocity-*philia* and

²⁴ At the end of the above-mentioned paper, Akerlof argues that in capitalistic systems pay rates are, at the same time, at least partly determined by workplace regulations and a factor that influences such regulations. Moreover, he adds, worker commitment is at least in part conditional on these regulations (Akerlof, 1982, p. 177). Similarly, it is possible to argue that the earnings of each member of a cooperative depend on the inputs of their fellow-members and that the latter are partly determined by rules of social behaviour. Hence, while it is true that the members of a cooperative who care for the interests of all the members will tend to work harder than they would for reasons of self-interest only, it is no less true—in line with Akerlof's reflections on workers in capitalistic firms—that those prepared to work harder will not step up their inputs to levels at which those less efficient will feel ill at ease.

²⁵ Holländer (1990) has emphasized the role that a reference group can play in motivating individuals.

unconditional reciprocity. Prudential reciprocity (which is equated with reciprocity without benevolence) is the behaviour of an individual who fails to take the first step, but is prepared to reciprocate, in terms of responding to the cooperative conduct of others and having regard to their interests. Reciprocity-*philia* is associated with a friendly relation of some sort: it is the attitude of an individual who has regard to the interests of others right from the start, but stops cooperating with those who do not reciprocate. Unconditional or gratuitous reciprocity is the conduct of persons whose willingness to cooperate is not conditional on the way their fellow-beings respond, but whose well-being is nonetheless dependent on whether their fellow-workers do, or do not, reciprocate. In the light of this distinction, it is safe to conclude that the members of a cooperative are likely to shirk their duties if their conduct is the prudential-reciprocity type and their fellow-workers fail to reciprocate, but will hardly do so if their conduct is the reciprocity-*philia* type and their fellow-members reciprocate in response. As far as unconditional reciprocity is concerned, its adoption by all the members of a cooperative would enable the firm to do without a monitor.

With reference to AD's analysis, it is possible to argue that a cooperative can do without a monitoring function if all its members adopt second or third category types of conduct.

4. FURTHER CRITICISMS OF ALCHIAN AND DEMSETZ'S ANALYSIS

A powerful objection to AD's analysis is implied in Veblen's evolutionary theory of entrepreneurship, i.e. in the assumption that owner-entrepreneurs faced with expanding markets and increasing business volumes gradually ceased supervising the bulk of firm processes on their own and substituted impersonal standard wage contracts for the one-time individual agreements they used to enter into with single workers. Veblen suggests that the result of this process was the piecemeal migration of the monitoring function from the entrepreneur to experts specifically trained for this function (see Veblen, 1964, p. 105).²⁶ And as it is hardly to be doubted that cooperatives can hire salaried monitors no less than capitalistic firms, this objection comes to AD's

²⁶ Theorists of the liberal firm, among them Vogt, have argued that coordination and control issues can be tackled both in top-down governance systems and in organizations where these issues are governed by agreements entered into between the parties (see Vogt, 1996, p. 41). On closer analysis, though, the idea of a liberal firm other than the labour-managed firm is barely realistic.

approach as a deadly blow.²⁷ In other words, the most forceful objection to AD's approach is the argument that the members of a cooperative are free to appoint a monitor if they feel this to be in their best interests—as experience in the Israeli kibbutzin movement or the Spanish Mondragon group of cooperatives goes to confirm (see Putterman, 1984, p. 173; Elster and Moene, 1989, p. 28; Sacconi, 1992). Also in the opinion of Eswaran and Kotwal, the insight we ultimately derive from AD's theory is the need for a cooperative to appoint and effectively remunerate a monitor—an argument that does not rule out the possibility that capital be hired by labour (see Eswaran and Kotwal, 1989, p. 162).

The opportunity or need for the workers of a democratic firm to elect their managers was highlighted by the very first theorists of the cooperative movement (see Pesciarelli, 1981, p. 17). The dual control structure of an employee-owned firm has been likened to a combination of two pyramids: the one turned upside down stands for worker-principals who control their managers (be they members or salaried officers) by setting targets and measuring their degree of attainment; the other one, which rests on its base, stands for quasi-principal managers directing and controlling workers in the capacity of quasi-agents (Ben-Ner *et al.*, 1993, p. 231).

As pointed out by Putterman, though, in the opinion of AD managers were incompatible with economic democracy because a manager having the authority to hire and dismiss the workers of a cooperative was simply inconceivable (see Putterman, 1984, p. 172). In Cugno and Ferrero (1992, p. 148) and Sacconi (1992, p. 179), a 'capitalist' is defined as the person responsible for monitoring a firm on behalf of the members, and Cugno and Ferrero (1992, pp. 140 ff.) endorse the idea that the appointment of a monitor turns a cooperative into a capitalistic firm.

On the contrary, in Veblen's opinion, a cooperative hiring a monitor does not cease from its status so long as it abides by the 'one man one vote' principle and distributes the surplus to its members (see also Jossa and Cuomo, 1997, pp. 240–2).

The point of AD's critique of cooperatives to be discussed at this stage is the status of the monitor. In all probability, the reason why AD rated salaried monitors as an ineffectual solution was their assumption that firms—

²⁷ The fact that such typical management functions as firm coordination and control are generally vested in external managers goes to support Proudhon's fairly optimistic idea that the enforcement of cooperation agreements in a transition period would result in merging the proletariat into the middle class at the latter's initiative—an outcome that every brave man or real revolutionary could be expected to welcome (Proudhon, 1851, p. 201). In contrast, it is often argued that the educational potential of cooperation exhausts itself the moment when a salaried manager is appointed in the firm (see Pateman, 1970; Dow, 2003, p. 32).

including cooperatives—whose securities are not quoted in a stock exchange are barely in a position to exercise effective control over the performance of their monitors. But is this true?

In fact, the argument that only a manager with a residual claim will effectively see to his or her monitoring tasks is not supported by practical experience. In limited companies, this function is vested in managers although the residual is distributed to shareholders (see, *inter alia*, Putterman, 1990, p. 168; Mazzoli, 1998, pp. 153–4).²⁸ To counter this objection, AD argued that what refrained managers from shirking their duty to monitor and meter the team members' respective inputs was the competition they faced from other managers inside and outside the company. In other words, in AD's opinion it is the shareholders' right to dismiss and replace shirking managers that ensures effective control over monitors in limited companies (see AD, 1972, p. 788). In point of fact, while nothing can prevent the members of a cooperative from firing a monitor failing to see to his or her duties to their full satisfaction, there are reasons to argue that managers are better 'shielded' from investor control in capitalistic firms than they are from worker control in cooperatives (see Dow, 2003, p. 25).²⁹ Indeed, as a result of their personal involvement in the lives of their firms, the workers of democratic firms have access to information on the conduct of their managers on a continual and even daily basis. One of the findings of a survey on this subject published years ago was that worker control had occasionally benefited managers, in terms of allowing them more scope for action and greater freedom in launching their projects (see Kolaja, 1966, p. 75).

Alchian and Demsetz laid special stress on the fact that the shareholders of a public limited company faced with underperforming managers can and will arguably join forces, form a voting bloc and instruct the general meeting to have them dismissed—although this will entail depriving the myriad smaller shareholders of their remaining power and changing the public limited company into a 'classical' capitalistic firm pooling ownership and control in

²⁸ The ownership–control separation issue is less crucial to an employee-managed firm than to a capitalistic firm. As is well known, the myriad shareholders of a public limited company know all too well that they have no influence on the life of the company and that they only have access to information provided in official documents or published in the press. Moreover, far from investing all their funds in a single company, they tend to diversify their investments and take little interest in the lives of companies. At the opposite end of the spectrum are the members of a producer cooperative, who draw information on their firm from their involvement in its day-to-day business and are both interested in learning the basics needed to monitor the managers of the firms in which they work and in a position to do so (see, *inter alia*, Hansmann, 1996, p. 77).

²⁹ The managers of a capitalistic firm are likely to be much more 'impermeable' to investor control than those of a democratic firm are to worker control (see Dow, 2003, p. 25).

the same persons (see also AD, 1972, p. 788; Demsetz, 1988a, pp. 197–200).³⁰ On closer analysis, though, given that majority groups and control blocs are an option even in firms run in line with the 'one man one vote' principle, the shareholder group seizing control of a limited company and dismissing its shirking managers has an obvious parallel in a group of members seizing control of a cooperative and dismissing a monitor whom they hold to be incompetent.³¹

Alchian and Demsetz themselves made it clear that the prospect of appropriating the firm's profit is by no means the only inducement to efficiency for a manager. An equally powerful incentive is emulation. As mentioned above, the manager in office is in competition with candidates to a comparable function both inside and outside the company.³² A manager failing to protect shareholder interests or to increase the company's efficiency would forfeit his or her prospects of a satisfactory career with other companies as well. To make a career, he or she has to further the interests of his or her current employer and make a name for himself or herself as an able professional, and where his or her inability to eradicate employee shirking should cause loss to his or her company, he or she would ruin his or her reputation and would not be offered employment by any other company (see, *inter alia*, AD, 1972, pp. 781–3, 788; Alchian and Allen, 1983, p. 188). Again, the point we wish to make is that nothing prevents the manager competition hypothesis from being extended from capitalistic to cooperative firms.

The foregoing reflections bring to mind an argument in support of the incentive systems of cooperatives, which implies an additional criticism of

³⁰ The idea of smaller shareholder control over managers is barely endorsed by any theorist. Be that as it may, monitoring managers at work is a costly undertaking that entails, *inter alia*, the cost of collecting the necessary information. In a company whose capital is held by a plurality of persons, the shareholders are not prepared to bear this cost because they know that their votes have a scant weight in decision making and that the benefits they would draw from more efficient managers would come short of the costs they would have to bear (see AD, 1972, pp. 788–9; Stiglitz, 1985, p. 136; Hart, 1995, pp. 680 ff.; Dow, 2003, p. 16).

³¹ In the opinion of some, although the incentive issue is typically addressed in connection with market socialism, i.e. with the need to create incentives for workers and managers, it is equally crucial to a capitalistic system (see Stiglitz, 1994, p. 103). With respect to the monitoring issue, Putterman pointed to similarities between labour-managed firms and capitalistic limited companies, for both of them vest the monitoring function in more than one individual and both of them have recourse to the services of specialists (see Putterman, 1993, p. 139). Conversely, when dealing with the poor performance level of a system of cooperatives is concerned, he traced it back to two causes, namely the one mentioned in the previous note and the fact that no takeovers are envisaged.

³² Bardhan and Roemer (1992, pp. 106–7) and Bardhan (1993, pp. 145–50) have suggested that the goal of controlling managers in a socialist system would more readily be achieved by creating a market for managers, rather than a capital market or stock exchange.

AD's approach. Holmström and Milgrom (1994) mainly trace the complementariness of the three mutually reinforcing incentive categories defined by them (and mentioned in the opening section) to the fact that 'a greater incentive for just one task could cause a worker to devote too much effort to that one task while neglecting other aspects of the job' (see Holmström and Milgrom, 1994, p. 973). If this argument is correct, those cooperatives that use all three incentive categories would be—from this vantage point—as efficient as classical firms vesting ownership and control in the same persons, and even more efficient than limited companies, in which the roles of shareholders and managers are strictly separated (see also Baker *et al.*, 1994).

At this point, it is probably worth pointing out that none of our reflections so far goes to support either the alleged need to pay managers variable incomes, or the assumption that cooperatives paying their managers fixed salaries will necessarily be underperforming.³³

Addressing situations in which it is difficult to watch individuals at work or meter the part of the team output that is attributable to each of them, Holmström argued that incentive and monitoring difficulties of this kind might be solved by entering into a contract with the team as a whole and giving the team members a pay-off of zero in the event the firm's output should fall short of the level that would have been obtained if all of them had put an efficient level of effort in their work (see Holmström, 1982). However, although this practice would afford dispensing with the monitoring function altogether, it is nowhere observed in the ordinary course of business and there are reasons to believe that by its very nature it would be more easily adopted in a cooperative than in a capitalistic firm.³⁴

In sum, whereas AD's idea that the poor productivity levels of cooperatives can mainly be traced to the absence of a specialized monitoring function is objectionable in many respects (see also Faccioli and Scarpa, 1998, pp. 70–2; Dow and Putterman, 1999; Bruni and Zamagni, 2004; Zamagni, 2005),³⁵ the argument that the free-riding hypothesis in team work can barely explain why labour is usually hired by capital (and not vice versa) is

³³ A board of directors is barely in a position to exercise effective control over the way the company's managers see to their tasks (Fama, 1980, p. 393). Fama and Jensen (1983) stress the need for large-size companies to segregate monitoring from managing functions and to establish an organizational structure in which owner representation is vested in separate supervisory bodies in charge of monitoring the management function.

³⁴ For analyses of Holmström's approach, see Mookherjee (1984), Eswaran and Kotwal (1984), Rasmusen (1987) and Cugno and Ferrero (1991, 1992).

³⁵ According to Faccioli and Scarpa, producer cooperatives seem to be particularly numerous 'in contexts where internal hierarchical monitoring is unusually difficult and in which mutual control systems play a crucial role' (see Faccioli and Scarpa, 1998, p. 80). Theorists subscribing to this view include Brosio (1995, p. 93).

supported by the findings of comparative studies of work effort, productivity and monitoring costs that point to negligible differences between capitalistic and cooperative firms (see Bonin *et al.*, 1993; Morse, 2000; Dow, 2003).³⁶

5. MUTUAL MONITORING AND A CRITIQUE OF COOPERATIVES

An anti-cooperation criticism that both AD and their critics failed to consider is closely related to our approach in this paper.

In present-day society—it is often argued—workers tend to hold together because it is their joint interest to oppose exploitation from employers. Joining forces against the ‘master’, they often succeed in contracting tolerable hours and work terms thanks to trade union bargaining. In contrast, the moment they turn into masters themselves, their compact bloc threatens to break up if they feel that some of them are shifting part of their work load onto their fellow-members in an effort to maximize their earnings while minimizing effort.

In other words, one of the most forceful criticisms ever raised against capitalism is the argument that its main driving force, the profit motive, makes businessmen greedy and heartless. The first to articulate the idea that greed and callousness connote all those entrepreneurs whose earnings are positively related to the output levels of their firms was Plato. Tracing the lines of an ideal society, he advocated its division into two strictly segregated classes: on the one hand, the class of magistrates and warriors seeing to the public interest, and, on the other, the class of those in charge of economic functions. And the rationale behind this division and the basic principle underlying all Plato’s political thought was that those working towards the general good were to keep apart from those engaging in earning-orientated trades since these generated greed for money and corruption in its wake. And ever since Plato’s day, the basic communist idea—which is everywhere the same although it may be differently worded—has been the belief that private property breeds egotism and that egotism in turn breeds immorality (see Durkheim, 1928, p. 37).³⁷

A comparable argument is the alleged antithesis between the typical mindset of a worker and that of entrepreneurs in a capitalistic society.

³⁶ An empirical study of the Mondragon group cooperatives has found that these firms have more effective ‘peer’ and ‘top-down’ control procedures than most capitalistic firms (see Bradley and Gelb, 1981).

³⁷ Setting out from Plato’s well-known definition of money as an agent of corruption, Rousseau, among others, vindicated the influence of social institutions on the individual psyche. Analysing behaviour, which he looked upon as a major aspect of social life, he argued that human behaviour was socially determined and that the feelings of rivalry, hatred and envy that were

Workers typically earn a fixed income and few of them strive to boost their earnings by doing extra work; for this reason, they are held to be eager to shun the effort entailed in hard work but untouched by greed.

Combining these two generalizations with a well-known definition of the members of cooperatives by John Stuart Mill, it is possible to argue that one major drawback of cooperative firms is the tendency to make workers 'their own masters' and thereby implant the profit motive in the minds of the only class of capitalistic society so far not infected by it.³⁸

Although this forceful criticism of a system of producer cooperatives should not be taken lightly and should be carefully weighed against the benefits of such a system, it can be restricted to small-size firms for two main reasons. First, self-interest is inversely related to firm size because in a cooperative apportioning its income among all those involved in production each worker is aware that the pay increase from his or her greater effort is all the smaller, the larger the firm he or she works for. Second, peer monitoring plays a lesser role in medium-large firms, where the monitoring function is vested in a professional manager. In a three-member firm, for example (where a partner is aware that one-third of the loss in output caused by the lesser effort of a fellow-partner will be deducted from his or her prospective income), each partner will be watching the other two at work much more closely than is the rule in larger firms, whose workers know all too well that they will be suffering little harm if one or the other worker keeps shirking.

6. THE CASE OF PROFESSIONALS AND ARTISTS

The argument that partnerships are the ideal form of association for professionals has been mentioned above. AD traced it back to the difficulty of

generated by private property and inequality tended to affect our natural inclinations to extents that made it necessary to trace the origin of evil entirely back to society.

³⁸ In this connection, having argued that scientific socialists used to look upon the advent of communism, not as a free choice, but as the inevitable product of the immanent historical process, Antonio Labriola wrote:

As is well known, the assumption for such a prediction is embedded in present-day capitalistic production. As a result of the ongoing trend towards socialising production, work is no longer vivifying. It is minutely regulated and put at the service of the requirements of technology, while means of production are being pooled in the hands of a few holders or dealers in shares, who are deserting the workplace and thereby vesting management functions in purposely trained specialists. And as soon as the proletariat, whose solidarity is the heritage of regimentation, gains an awareness of this state of affairs and owners of capital realise that they are no longer in a position to run production activities privately, society will head towards a stage characterised by the takeover of [. . .] production by collective associations. (Labriola, 1965, pp. 117–18)

metering the individual contributions that professionals make to the overall performance of the team and the fact that monitoring hardly makes sense in such a situation.

Their line of reasoning was effectively countered by Hansmann's objection that 'it is relatively easy to assess the quality of a lawyer's work, in part because the work product frequently consists of written documents produced by that lawyer alone' (Hansmann, 1996, p. 70), but Hansmann's approach was marred by a major misinterpretation of AD's analysis. Endorsing the view that a single pair of eyes specifically assigned to the monitoring function is outperformed by more pairs of eyes although not purposely mandated to such effect (a view that we share), he wrongly ascribed to AD the idea that a strong monitoring incentive would induce the members of a cooperative to deal with shirking much more effectively than specialized monitors in capitalistic firms are usually found to do. This means he also ascribed to AD the idea that production processes in which work inputs are unusually difficult to meter are likely to be run by workers. The strong incentive of each member of an employee-managed firm to watch all the others at work, he wrote, 'has led many to argue—most conspicuously Alchian and Demsetz, in a well-known article—that employee-owned firms are particularly likely to arise when monitoring employees is unusually difficult' (1996, p. 70).

In fact, this is not AD's position. AD did present partnerships as particularly numerous in the professions and the entertainment industry, but although they held monitoring to be unusually difficult in such areas they never mentioned the greater efficiency of a hundred pairs of eyes compared with one. In their opinion, in situations where monitoring is difficult it was more sensible to rely on people concerned with increasing output out of self-interest than on a specialized monitors. In a partnership formed of a small number of professionals, they argued, the wish of the members to increase their earnings will result in an added incentive to efficiency despite the awareness that it is difficult to meter their actual rates of effort (see AD, 1972, p. 790).

To account for the tendency of professionals to be joined into partnerships, Hansmann has argued that they preferably provide direct services to clients instead of intermediate services to firms. In his opinion, this results in great mobility, for a professional will retain his or her customers upon switching over to a different firm, and will be less reluctant to leave the current members of his or her team and join with others in establishing a new partnership (Hansmann, 1996, p. 72).

From Hansmann's perspective, an additional explanation of the viability of cooperatives of professionals is the considerable homogeneity of their labour force. As resolutions are much more easily made when voters have

converging preferences, he argued, decision making in cooperatives is expedited by a homogeneous workforce. Furthermore, in his opinion it was reasonable to assume that the partners' similar professional qualifications added to the effectiveness of the monitoring function because the members of a partnership, although lacking any coercive power over their peers, could surely watch their fellow-workers at work more efficiently than they could do in respect of individuals assigned to different tasks from their own.

A related argument is that the efficiency of 'peer monitoring' increases in proportion to the quality content of a job. The quality content of a service is less easy to appraise than its quantitative content, and this may explain why top-down monitoring, which is less 'pervasive' than peer monitoring, is less effective when applied to higher-level services (see Faccioli and Scarpa, 1998, pp. 72–3).

7. REWARDS AND MARGINAL PRODUCTIVITY

At this point, it is time to enter upon an issue that AD raised at the beginning of their paper but failed to discuss in depth. Economic organization—they argued—is optimal when rewards equate the marginal productivity of individual inputs; and the reason for this—they added with regard to labour—is that organizations granting rewards irrespective of the productivity levels of individual workers would fail to incentive productive effort. This is, quite obviously, a criticism of the cooperative firm, in which a member whose greater work input increases the team's productivity level is remunerated with just one- N th of the value of the relevant increase in output (assuming, for reasons of simplicity, that the N team members earn the same pay rates).

As the fixed wage or salary paid to a worker in a capitalistic firm does not increase if he or she puts greater effort in his or her work, this criticism could be dismissed as groundless. The reason why AD thought of the pay rate = value marginal productivity (VMP) rule as generally valid for the capitalistic firm is arguably the belief that those working harder will obtain promotion, i.e. will be rewarded at a later stage, in terms of being paid wage rates commensurate with their marginal productivity levels. Be that as it may, the fact remains that AD have failed to provide such an explanation in their paper and that none of the criticisms of their approach in the published literature has as much as suggested replacing the simplistic assumption that workers in capitalism lack incentives for working harder with the opposite contention that the excess output generated by a worker's greater effort is entirely assigned to the worker concerned. And this is why this argument does not occupy centre stage in our approach.

A mathematical approach can shed light on some aspects of the issue we are addressing.

Let

$$X = X(\bar{K}, N\bar{e}) \tag{1}$$

be the production function of the firm's only output, where N is the number of workers employed, \bar{e} stands for their average production effort, K is assumed to be given and the number of workers employed and their aggregate production effort are perfect substitutes. If

$$U_i = f(y_i, e_i) \quad (i = 1 \dots N) \tag{2}$$

is the utility function of the individual i , which depends on the income the individual earns (y_i) and his or her level of effort (e_i), and if the function is assumed to be both additive and linear, the individual's optimal level of effort will be the level that maximizes

$$U_i = \frac{p_x X - R}{N} - D_i(e_i) \tag{3}$$

where R is the interest payable on loan capital and D the disutility of work.

The average effort of the firm's workers is

$$\bar{e} = \bar{e}_{n-1} + \frac{e_i}{N} - \bar{e}_{n-1}/N \tag{4}$$

where e_i is the level of effort of the worker considered and \bar{e}_{n-1} is the average effort of the rest of the workers. The solution we obtain when (3) is maximized using (1) and the constraint (4) is a Nash equilibrium for the situation in which each worker can freely determine his or her effort on the assumption that the rates of work of the rest are given. The result is

$$\frac{p_x X'(N\bar{e})}{N} = D_i'(e_i) \tag{5}$$

where we assume that the part of the firm's profit earned by each member is unrelated to his or her individual effort and that the income earned by the firm is equally apportioned among the members of the cooperative.

Equation (5) shows that the input, i.e. the productive effort of a member of a cooperative acting in accordance with individualistic profit calculations, will be the level at which the marginal disutility of work equals the marginal productivity of his or her tasks divided by the number of members of the cooperative.

A Pareto social optimum would instead be obtained if

$$p_x X'(N\bar{e}) = D'_i(e_i) \quad (6)$$

Comparing (5) with (6) on the assumptions set out above, we find that:

- (a) The effort each worker puts in his or her tasks falls considerably short of the level that would maximize the benefits for the members of the cooperative. This is because each member is fully aware that, while accepting the whole disutility of a greater production effort, he or she would only receive the fraction of the corresponding benefit obtained by dividing the marginal productivity of his or her effort by the number of members of the cooperative.
- (b) The input of each worker diminishes in an inverse proportion to the number of the members of the cooperative. This obviously depends on the fact that \underline{N} is the number of members entitled to the excess income generated by those working harder than the rest.

Although certainly a severe criticism of cooperation as such, these findings do not support AD's argument that capitalistic firms are more efficient than cooperatives. In a capitalistic firm, a Pareto optimum would only be achieved if workers were free to determine the optimal length of their working week and their levels of effort—which is definitely not the case. In capitalistic firms, the working day and week are predetermined and managerial control over workers prevents the latter from determining their individual levels of effort (in Keynes's own words, the 'second postulate of classical economics' did not apply to the capitalistic firm). Moreover, whereas in a cooperative the greater input of a worker does generate an increase in income, although at times minimal, in capitalistic firms wage levels are predetermined and independent of the productivity levels of their workers. As a result, an added effort on the part of a worker will not result in a corresponding pay increase.

The only use to which the model described above can be put is a comparative analysis of the respective equilibrium situations of a cooperative firm and a hypothetical 'capitalistic' firm where, *by absurdum*, workers are imagined not to be watched at work and the 'second postulate of classical economics' is assumed to apply. And we may ask ourselves what will happen in a specific situation, i.e. if the marginal disutility of work in a cooperative is assumed to be zero and the 'capitalistic' firm with which the equilibrium condition of our cooperative is compared is 'unmonitored'.

Comparing (5), i.e. the equilibrium solution for the cooperative firm on the assumption that $D'(e_i) = 0$, with (6), i.e. the equilibrium level of our (unmonitored) 'capitalistic' firm in a situation of perfect competition, the marginal labour productivity level of the cooperative is found to be zero, while that of

the 'capitalistic' firm will constantly be above zero; and as marginal productivity levels are inversely related to the rates of work used, the cooperative will generate a higher income.

This finding is at odds with the assumption that levels of effort in a cooperative are lower than those in a 'capitalistic' firm allowing its workers to freely determine the length of their working week and the level of their production effort, and this finding holds both for the situation where $D'_i(e_i) = 0$ and for each case in which

$$D'_{i,c}(e_i)N < D'_{i,p}(e_i) \tag{7}$$

where $D'_{i,c}$ is the marginal disutility of work in a cooperative firm and $D'_{i,p}$ is the corresponding value for a 'capitalistic' firm (see Cugno and Ferrero, 1992).

The implications of this finding for the issues of worker input/effort measuring and monitoring raised by AD are apparent.

However, as the monitor is in a position to enforce rules and assess sanctions against transgressors, an optimum can nevertheless be achieved. Let us assume that the members should maximize

$$\frac{X(\bar{K}, L\bar{e})}{L} - D(e_i) - P(\bar{e} - e_i)\gamma \tag{8}$$

where \bar{e} stands for the standard input enforced by the rule, i.e. the team's expected average level of effort, $\gamma > 0$ measures the sanction associated with a less than standard input, $P(\)\gamma$ is the disutility caused by the pressure exerted on the workers by the rule and the penalty for inputs short of the standard value. The first-order maximum condition is

$$\frac{P_x X'(L\bar{e})}{L} - D'(e_i) + \gamma = 0 \tag{9}$$

which reflects the value of γ the manager has to enforce in order to attain an optimum (see Kandel and Lazear, 1992).

8. AN ULTIMATE ISSUE

Our line of reasoning in this paper is in synch with the idea of Robertson and Dennison (1924, p. 121) that the main problem in cooperatives is the 'management issue'. Given the tendency of cooperatives to distribute their income equitably among all the members, it is difficult to deny that few cooperatives are in a position to pay the high salaries that able managers can expect to earn in capitalistic firms.

Whenever a group of people resolve to work as a team—we may add—the member who outperforms the others in initiative and organizational skills will inevitably take the lead. The crux of the matter is that such a person has no incentive to establish a cooperative and share power and earnings with others. He or she will prefer to found a capitalistic firm, where he or she will hold all authority and, if sole owner, appropriate the whole of the surplus (Jensen and Meckling, 1979; Abell, 1983; Leete-Guy, 1991, p. 69; George, 1997, pp. 59–60; Jossa and Cuomo, 1997, p. 317). A case in point is the Basque Mondragon group of cooperatives, which was often left without top-managers, the officers called upon to ensure the company's growth (see Zabaleta *et al.*, 1986, p. 29).

In our opinion, one way to overcome the 'management issue' is to choose managers preferably from among non-members and thereby further the development of a market for managers. Another way is to ignite competition between capitalistic firms and cooperatives and then encourage the transformation of capitalistic firms into cooperatives through a purposely designed taxation system. The rationale behind this idea is the classification of cooperative firms as 'merit goods' (see Jossa, 2004).

Let us close this paper with a warning to those who cling to the idea that sooner or later a system of producer cooperatives may succeed in replacing capitalism thanks to its democratic thrust. As is well known, there are those who hold that the institutions of a capitalistic society can only be understood in terms of the trade-off between losses from disorder and the costs of democracy (see Djankov *et al.*, 2003). To this we object that while the distinction between capitalism and self-management is surely a matter of institutions, institutional differences between capitalism and market socialism must be explained in terms of different forms of democracy and their different costs, rather than in terms of the above-mentioned trade-off.

REFERENCES

- Abell, P. (1983): 'The viability of industrial producer cooperation', in Crouch, C., Heller, F. (eds): *International Yearbook of Organizational Democracy*, Wiley, Chichester.
- Adaman, F., Devine, P. (1996): 'The economic calculation debate: lessons for socialism', *Cambridge Journal of Economics*, 20, pp. 523–37.
- Adaman, F., Devine, P. (2002): 'A reconsideration of the theory of entrepreneurship: a participatory approach', *Review of Political Economy*, 14, pp. 329–55.
- Akerlof, G. A. (1982): 'Labor contracts as a partial gift exchange', *Quarterly Journal of Economics*, 96, pp. 543–69.
- Akerlof, G. A., Yellen, J. L. (1990): 'The fair wage–effort hypothesis and un-employment', *Quarterly Journal of Economics*, 105, pp. 255–83.
- Alchian, A. A. (1984): 'Specificity, specialization, and coalitions', *Journal of Economic Theory and Institutions*, 140, pp. 34–49.

- Alchian, A. A., Allen, W. R. (1983): *Exchange and Production*, 3rd edn, Wadsworth Publishing Company, Belmont.
- Alchian, A. A., Demsetz, H. (1972): 'Production, information costs and economic organization', *American Economic Review*, 62, pp. 777–95.
- Alston, L. J., Gillespie, W. (1989): 'Resource coordination and transaction costs', *Journal of Economic Behaviour and Organization*, 11, pp. 191–212.
- Baker, G., Gibbons, R., Murphy, K. J. (1994): 'Subjective performance measures in optimal incentive contracts', *Quarterly Journal of Economics*, 108, pp. 1125–56.
- Bardhan, P. (1993): 'On tackling the soft budget constraint in market socialism', in Bardhan, P., Roemer, J. E. (eds): *Market Socialism: The Current Debate*, Oxford Economic Press, New York.
- Bardhan, P., Roemer, J. E. (1992): 'Market socialism: a case for rejuvenation', *Journal of Economic Perspectives*, 6, pp. 101–16.
- Barzel, Y. (1989): *Economic Analysis of Property Rights*, Cambridge University Press, Cambridge.
- Ben-Ner, A., Montias, J. M., Neuberger, E. (1993): 'Basic issues in organizations: a comparative perspective', *Journal of Comparative Economics*, 17, pp. 207–42.
- Bernhard, H., Fehr, E., Fischbacher, U. (2006): 'Group affiliation and altruistic norm enforcement', *American Economic Review*, 96, pp. 206–11.
- Bernstein, E. (1899): *Die Voraussetzungen des Sozialismus und die Aufgaben der Sozialdemokratie*, Dietz, Stuttgart.
- Bewley, T. F. (1995): 'A depressed labor market index as explained by participants', *American Economic Review*, 85, pp. 250–4.
- Bonin, J. P., Jones, D. C., Putterman, L. (1993): 'Theoretical and empirical studies of producer cooperatives: will the twain ever meet?', *Journal of Economic Literature*, 31, pp. 701–28.
- Bowles, S. (1985): 'The production process in a competitive economy: Walrasian, neo-Hobbesian, and Marxist models', *American Economic Review*, 75, pp. 16–36.
- Bowles, S., Gintis, H. (1993): 'The democratic firms: an agency theoretic evaluation', in Bowles, S., Gintis, H., Gustafsson, B. (eds): *Markets and Democracy: Participation, Accountability and Efficiency*, Cambridge University Press, Cambridge.
- Bowles, S., Gintis, H. (1994): 'Credit market imperfections and the incidence of worker-owned firms', *Metroeconomica*, 45, pp. 209–23.
- Bowles, S., Gintis, H. (2000): 'Social capital and community governance', *Economic Journal*, 110, pp. 419–36.
- Bradley, K., Gelb, A. (1981): 'Motivation and control in the Mondragon experiment', in Prychitko, D. L., Vanek, J. (eds): *Producer Cooperatives and Labor-managed Systems*, Edward Elgar, Cheltenham.
- Braverman, H. (1974): *Labor and Monopoly Capital*, Monthly Review Press, New York.
- Brosio, G. (1995): *Introduzione all'economia dell'organizzazione*, La Nuova Italia Scientifica, Rome.
- Bruni, L. (2006): *Reciprocità*, B. Mondadori, Milan.
- Bruni, L., Zamagni, S. (2004): *Economia civile*, Il Mulino, Bologna.
- Cohen, G. A. (1978): 'Robert NOZICK AND WILT CHAMBERLAIN: how patterns preserve liberty', in Arthur, J., Shaw, W. H. (eds): *Justice and Economic Distribution*, Prentice-Hall, Englewood Cliff, NJ.
- Crivelli, L. (2002): 'Quando l' homo oeconomicus diventa reciprocans', in Bruni, L., Pelligra, V. (eds): *Economia come impegno civile*, Città Nuova, Rome.
- Cugno, F., Ferrero, M. (1991): 'Il problema degli incentivi al lavoro nella produzione cooperativa', in Zamagni, S. (ed.): *Imprese e mercati*, UTET, Turin.
- Cugno, F., Ferrero, M. (1992): 'L'efficienza delle cooperative nella produzione di servizi pubblici', in Gramaglia, E., Sacconi, L. (eds): *Cooperazione, benessere e organizzazione economica*, F. Angeli, Milan.
- Daems, H. (1980): 'The rise of the modern industrial enterprise: a new perspective', in Chandler, H. D., Daems, H. (eds): *Managerial Hierarchies*, Harvard University Press, Cambridge.

- Dahl, R. A. (1985): *A Preface to Economic Democracy*, Polity Press, Cambridge.
- Demsetz, H. (1988a): 'The structure of ownership and the theory of the firm', in Demsetz, H. (ed.): *Ownership, Control and the Firm; the Organization of Economic Activity*, vol. I, Basil Blackwell, Oxford.
- Demsetz, H. (1988b): 'The theory of firm revisited', in Demsetz, H. (ed.): *Ownership, Control and the Firm; the Organization of Economic Activity*, vol. I, Basil Blackwell, Oxford.
- Demsetz, H. (1991): 'The theory of firm revisited', in Williamson, O. E., Winter, S. (eds): *The Nature of the Firm; Origins, Evolution and Development*, Oxford University Press, New York.
- Djankov, S., Glaeser, E., La Porta, R., Lopez-de-Silanes, F., Schleifer, A. (2003): 'The new comparative economics', *Journal of Comparative Economics*, 31, pp. 595–619.
- Dow, G. (2003): *Governing the Firm: Workers' Control in Theory and Practice*, Cambridge University Press, Cambridge.
- Dow, G., Putterman, L. (1999): 'Why capital (usually) hires labor: an assessment of proposed explanations', in Blair, M. M., Roe, M. J. (eds): *Employees and Corporate Governance*, Brookings Institution Press, Washington.
- Durkheim, E. (1928): *Socialism and Saint-Simon*, Engl. transl., 1959, Routledge and Kegan Paul, London.
- Edwards, R. C. (1979): *Contested Terrain*, Basic Books, New York.
- Elster, J., Moene, K. O. (1989): 'Introduction', in Elster, J., Moene, K. O. (eds): *Alternatives to Capitalism*, Cambridge University Press, Cambridge.
- Eswaran, M., Kotwal, A. (1984): 'The moral hazard of budget-breaking', *Rand Journal of Economics*, 15, pp. 178–81.
- Eswaran, M., Kotwal, A. (1989): 'Why are capitalists the bosses?', *Economic Journal*, 99, pp. 162–76.
- Faccioli, D., Scarpa, C. (1998): 'Il vantaggio comparato delle imprese cooperative: aspetti teorici', in Fiorentini, G., Scarpa, C. (eds): *Cooperative e mercato*, Carocci, Roma.
- Falk, A., Kosfeld, M. (2004): 'Distrust. The hidden cost of control', *Cepr*, No. 4512.
- Fama, E. F. (1980): 'Agency problems and the theory of the firm', *Journal of Political Economy*, 88, pp. 288–325.
- Fama, E. F., Jensen, M. C. (1983): 'Agency problems and residual claims', *Journal of Law and Economics*, 26, pp. 301–25.
- Fehr, E., Gächter, S. (2000): 'Cooperation and punishment in public goods experiments', *American Economic Review*, 90, pp. 980–94.
- Fehr, E., Schmidt, K. (1999): 'A theory of fairness, competition and cooperation', *Quarterly Journal of Economics*, 114, pp. 817–68.
- George, D. A. R. (1997): 'Self-management and ideology', *Review of Political Economy*, 9, pp. 51–62.
- Goette, L., Huffman, D., Meier, S. (2006): 'The impact of group membership on cooperation and norm enforcement: evidence using random assignment to real social groups', *American Economic Review*, 96, pp. 212–16.
- Gould, C. C. (1985): 'Economic justice, self-management, and the principle of reciprocity', in Kipnis, K., Meyers, D. T. (eds): *Economic Justice: Private Rights and Public Responsibilities*, Rowan and Allanheld, Totowa, NJ.
- Greenberg, E. S. (1986): *Workplace Democracy: The Political Effects of Participation*, Cornell University Press, Ithaca, NY.
- Hansen, D. G. (1997): 'Individual responses to group incentive', *Industrial and Labor Relations Review*, 5, pp. 37–49.
- Hansmann, H. (1996): *The Ownership of Enterprise*, Belknap Press of the Harvard University Press, Cambridge, MA.
- Hart, O. (1989): 'Il punto di vista di un economista sulla teoria dell'impresa', in Filippini, L., Salanti, A. (eds): *Razionalità, impresa e informazione*, Giappichelli, Turin.
- Hart, O. (1995): 'Corporate governance: some theory and implications', *Economic Journal*, 105, pp. 678–89.

- Holländer, H. (1990): 'A social exchange approach to voluntary cooperation', *American Economic Review*, 80, pp. 1157–67.
- Holmström, B. (1982): 'Moral hazard in teams', *Bell Journal of Economics*, 13, pp. 324–40.
- Holmström, B., Milgrom, P. (1994): 'The firm as an incentive system', *American Economic Review*, 84, pp. 972–91.
- Horvat, B. (1982): 'Social ownership', Report to the 10th IAFEP Conference, Trent, 6/8 July.
- Howard, M. C., King, J. E. (2001): 'Where Marx was wright: toward a more secure foundation for heterodox economics', *Cambridge Journal of Economics*, 25, pp. 785–807.
- Jensen, M. C., Meckling, W. H. (1976): 'Theory of the firm: managerial behavior, agency costs and ownership structure', *Journal of Financial Economics*, 3, pp. 305–60.
- Jensen, M. C., Meckling, W. H. (1979): 'Rights and production functions: an application to labor-managed firms and codetermination', *Journal of Business*, 52, pp. 469–506.
- Jossa, B. (2004): 'The cooperative as a public good', in Arena, R., Salvadori, N. (eds): *Money, Credit and the Role of the State*, Ashgate, New York.
- Jossa, B. (2007): 'Qualche considerazione sul perché le imprese cooperative non si affermano', *Economia Politica*, 24, pp. 233–64.
- Jossa, B., Cuomo, G. (1997): *The Economic Theory of Socialism and the Labour managed Firm*, Edward Elgar, Cheltenham.
- Kandel, E., Lazear, E. P. (1992): 'Peer pressure and partnership', *Journal of Political Economy*, 100, pp. 802–17.
- Kihlstrom, R., Laffont, J. J. (1979): 'A general equilibrium entrepreneurial theory of firm formation based on risk aversion', *Journal of Political Economy*, 87, pp. 719–48.
- Knight, F. H. (1921): *Risk, Uncertainty and Profit*, London School of Economics and Political Science, Boston, MA.
- Kolaja, J. (1966): *Workers' Councils*, Praeger, New York.
- Labriola, A. (1965): *La concezione materialistica della storia*, Bari, Laterza.
- Leete-Guy, F. (1991): 'Federal structure and the viability of labour-managed firms in mixed economies', in Russel, R., Rus, V. (eds): *International Handbook of Participation in Organizations*, Oxford University Press, Oxford.
- Marglin, S. (1974): 'What do the bosses do?', *Review of Radical Political Economics*, 6, pp. 64–104.
- Marshall, R. C. (2003): 'The culture of cooperation in three Japanese worker cooperatives', *Economic and Industrial Democracy*, 24, pp. 543–72.
- Mayo, E. (1949): *The Social Problem of an Industrial Civilization*, Routledge & Kegan Paul, London.
- Mazzoli, M. (1998): 'Vantaggi e svantaggi comparati delle imprese cooperative nell'accesso ai mercati finanziari', in Fiorentini, G., Scarpa, C. (eds): *Cooperative e mercato*, Carocci, Rome.
- Miller, D. (1989): 'Why markets?', in Le Grand, J., Estrin, S. (eds): *Market Socialism*, Clarendon Press, Oxford.
- Miller, D. (1993): 'Equality and market socialism', in Bardhan, P., Roemer, J. E. (eds): *Market Socialism: The Current Debate*, Oxford Economic Press, New York.
- Mookherjee, A. (1984): 'Optimal incentive schemes with many agents', *Review of Economic Studies*, pp. 433–46.
- Morse, L. B. (2000): 'A case for water utilities and cooperatives, and the UK experience', *Annals of Public and Cooperative Economics*, 71, pp. 467–95.
- Nozick, R. (1974): *Anarchy, State and Utopia*, Basil Blackwell, Oxford.
- Oakeshott, R. (1978): *The Case for Workers' Coops*, Routledge and Kegan Paul, London.
- Pateman, C. (1970): *Participation and Democratic Theory*, Cambridge University Press, Cambridge.
- Pesciarelli, E. (1981): *Un nuovo modo di produrre; la cooperazione nel pensiero degli economisti classici da Smith a Cairnes*, Editrice CLUA, Ancona.
- Proudhon, P. J. (1851): *Idea generale della rivoluzione nel XIX secolo*, partial transl. in Ansart, P. (1978): *J. P. Proudhon*, La Pietra, Milan.

- Putterman, L. (1982): 'Some behavioural perspectives on the dominance of hierarchical over democratic forms of enterprise', *Journal of Economic Behaviour and Organization*, III, pp. 139–60.
- Putterman, L. (1984): 'On some explanations of why capital hires labor', *Economic Inquiry*, 22, pp. 171–87.
- Putterman, L. (1990): *Division of Labor and Welfare; An Introduction to Economic Systems*, Oxford University Press, Oxford.
- Putterman, L. (1993): 'After the employment relation: problem on the road to industrial democracy', in Bowles, S., Gintis, H., Gustafsson, B. (eds): *Markets and Democracy: Participation, Accountability and Efficiency*, Cambridge University Press, Cambridge.
- Rasmusen, E. (1987): 'Moral hazard in risk-averse teams', *Rand Journal of Economics*, 18, pp. 428–36.
- Reich, M., Devine, J. (1981): 'The microeconomics of conflict and hierarchy in capitalist production', *Review of Radical Political Economics*, 13, pp. 27–45.
- Robertson, D. H., Dennison, S. R. (1924): *The Control of Industry*, Cambridge University Press, Cambridge.
- Sacconi, L. (1992): 'I costi di governo e i benefici della proprietà dei lavoratori', in Gramaglia, E., Sacconi, L. (eds): *Cooperazione, benessere e organizzazione economica*, F. Angeli, Milan.
- Screpanti, E. (2004): 'Il capitalismo. Ieri, oggi, domani', Mimeo, Siena.
- Screpanti, E. (2007): *Comunismo libertario*, Manifestolibri, Rome.
- Sen, A. K. (1994): 'Economic wealth and moral sentiments', Zürich Conference, April, Mimeo.
- Stiglitz, J. (1985): 'Credit markets and the control of capital', *Journal of Money Credit and Banking*, 17, pp. 133–52.
- Stiglitz, J. (1994): *Whither Socialism?* MIT Press, Cambridge, MA.
- Vanek, J. (1970): *The General Theory of Labor-managed Market Economies*, Cornell University Press, Ithaca, NY.
- Veblen, T. B. (1964): *Absentee Ownership and Business Enterprise in Recent Times*, reprinted in Kelly, New York.
- Vogt, W. (1996): 'Capitalist versus liberal firm and economy; outline of a theory', in Pagano, U., Rowthorn, R. (eds): *Democracy and Efficiency in the Economic Enterprise*, Routledge, London.
- Weisskopf, T. E. (1993): 'A democratic enterprise-based market socialism', in Bardhan, P., Roemer, J. E. (eds): *Market Socialism: The Current Debate*, Oxford Economic Press, New York.
- Williamson, O. E. (1975): *Markets and Hierarchies: Analysis and Anti-trusts Implications*, Macmillan, New York.
- Williamson, O. E. (1985): *The Economic Institutions of Capitalism*, Free Press, New York.
- Williamson, O. E. (1986): *Economic Organizations: Firm, Market and Policy Control*, Harvester Wheatsheaf, New York.
- Zabaleta, M. J. (1986): 'Mondragon: un'esperienza integrata', in *Cooperare e competere*, Feltrinelli, Milan.
- Zamagni, S. (2005): 'Per una teoria economico-civile dell'impresa cooperativa', in Mazzoli, E., Zamagni, S. (eds): *Verso una nuova teoria economica della cooperazione*, Il Mulino, Bologna.
- Zamagni, S. (2006): 'Responsabilità sociale dell'impres e democratic stakeholding', *Rivista della cooperazione*, 1, pp. 53–62.

Bruno Jossa
 Economica Politica
 Università 'Federico II' di Napoli
 Via Giacomo Piscicelli
 80121 Napoli
 Italy
 E-mail: bruiossa@unina.it