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EMPLOYER'S MORAL HAZARD AND THE EMERGENCE OF WORKER COOPERATIVES

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Employer's moral hazard and the emergence of worker cooperatives^{*}

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Abstract

We argue that in a capitalist enterprise the need to fix wages is a consequence of the asymmetric distribution of decision-making power, since this power can entail the use of private information in favor of the strongest contractual party (the employer), and against the weaker contractual party (the employee). The capitalist entrepreneur holds control rights over the production and strategic decision making in the firm, up to the power to liquidate it. S/he moreover has contrasting interests with the workers he hires, and has private information on market conditions and risks. He has therefore the possibility to take decisions whose negative consequences are borne by workers, for example in terms of lower wages, which would increase his/her profits. In order to escape the emerging risk of employer's moral hazard, a fixed wage is paid, but this implies that workers face the risk of layoffs. The organizational form that can guarantee employment stability (by allowing wages to fluctuate) is therefore the worker cooperative: here, we depart from the framework of the interaction between a principal and an agent with contrasting interests and private information, because workers themselves have decision making power. The case of worker coops falls into the category of self-organized collective action among a "group of principals". Hence we observe greater employment stability in worker coops, as demonstrated by various empirical studies.

Key words: risk aversion, employment contract, moral hazard, wage rigidity, worker cooperative

JEL Classification: J54, J64, J83.

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Employer's moral hazard and the emergence of worker cooperatives

1. Introduction

A usual argument to explain why in capitalist relations wages tend to be fixed and firms can adjust the size of the employed workforce, is workers' risk aversion. Our starting point is a critique to this approach. We think that the theoretical connection between workers' risk aversion and wage rigidity is basically flawed and misleading since it appears to assume the explanandum, that is the degree of workers' risk aversion in capitalist firms. While workers' risk aversion is taken to be a psychological assumption, no convincing explanation connecting the behavior towards risks faced by workers with the institutional features of the interaction between the worker and the firm is put forward. This appears to be a relevant explanatory shortcoming since different institutional settings are likely to make workers face different risks, therefore inducing them to undertake different choices, even when the subjective attitude to risk of different workers is identical.

This paper is written to highlight the limitations of the traditional explanations of wage rigidity. Coherently, we will endeavor to develop a new explanatory framework that bears on different arguments, which are linked to the asymmetric distribution of power and information between employers and employees, hence to the risk of employer moral hazard in the determination of wages. To put it differently, we will try to explain why it is possible to observe markedly different behavioral responses in terms of managing the risk connected with labor relations even in subjects that show similar subjective attitudes to risk. In our framework the differences in behavioral responses can be explained by security-oriented choices related to the institutional features of the employment relation.

We start from the Labor Process Literature (Pagano, 1989), that claims that the institutional setting in which factors of productions are combined (namely property rights on the production process) influence the behavioral responses of the resources employed, not the reverse (as usually claimed by the New Institutional literature)¹. As a corollary to our argument, at this basic level of analysis, we do not need to take into consideration problems of

¹ Pagano's work focuses on asset specificity, but we can extend it to the attitude towards risk, by analyzing the exposure to opportunistic behavior of the different stakeholders of the firm.

inverse causality whereby the institutional structure is also able to influence overtime individual behavioral responses, though we are aware that inverse causality and endogeneity can play a significant role when taking a long run perspective.

While it is common in the literature to refer to the opportunistic behavior of the employee in a principal-agent framework, it is very unusual that the other side's opportunism is taken into account. Hence, in this paper we will develop the idea of employer's moral hazard and the consequences that this has on the setting of wages since we believe that this second side of the employment relation coin is crucial to a complete determination of the behavioral impact of the employment contract.

As a counterfactual, we will analyze wage determination in worker cooperatives, that are firms that avoid the agency relation between the employer and the employee. We consider worker cooperative as entrepreneurial initiatives taken by groups of self-organized principals, where the hierarchical relation characterizing the employment contract is substituted by horizontal labor relations connected with the membership status in the cooperative. Given the described nature of industrial relations in worker cooperatives, we hypothesize that the absence of the risk of employer moral hazard allows a decrease in wage rigidity and a greater employment stability is also reachable.

2. Wage rigidity and the assumption of workers' risk aversion

A very usual assumption in the theory of the firm concerns workers' risk aversion; this is crucial in the seminal contribution by Knight (1921), and in the implicit contract theory (Azariadis, 1975, Azariadis and Stiglitz, 1983). This assumption is often brought to bear on wage rigidity: the reason why workers don't want to be remunerated residually, but instead prefer a fixed wage, is their higher risk aversion compared to investors that, besides being endowed, on average, with much greater financial wealth, are also able to differentiate financial risks by investing in different projects. The evidence supporting the connection between wage rigidity and workers' risk aversion is found in workers' tendency to prefer fixed rather than fluctuating wages.

As initial support to the idea that wage rigidity is not properly explained in traditional approaches we can highlight two different typologies of empirical evidence. First, wages show a relevant degree of variability also in investor owned organizations and for-profit

firms. Indeed this variability has been growing overtime. This evidence defeats the idea that risk aversion is an intrinsic characteristic of workers. In a recent contribution on personnel economics, Lazear and Shaw (2007) show that wage variability in the US economy has been steadily growing over the last 30 years. Wages for most occupations are now much more variable than in the past and this pattern is functional to tightened market competition. The two authors explain this evidence by stating that wages can become variable when the output is observable, as it happen, for example, in the case of sale representatives, or executives in investment banks.

We will only maintain here that observability runs in both direction in the employment relation. Not only employers can measure more easily worker productivity when the output is easily observable, but also the worker can more easily rely on a wage linked to his/her productivity, since it is relatively easy to demonstrate the existence of productivity increases that accrue to the profit of the employer. Not the same is true when the output or its quality are difficult to observe, or when the relevant temporal horizon over which results can be observed is found in the long run. In these cases, for both the employer and the employee will be more difficult to measure productivity and its increase overtime due to human capital accumulation and learning. Hence, the mutual convenience to contractually define a fixed level for the wage will increase.

Second, it has been noted various times (Craig and Pencavel, 1992, 1994; Pencavel et al., 2006; Burdin and Dean, 2009) that there exist at least one organizational exception to the dominance of wage rigidity as related to workers' risk aversion, and this exception is the worker cooperative. Many empirical tests show that wages (or, more generally, labor income) in worker cooperatives show significantly stronger variability than in profit maximizing firms.² This, again, runs against the idea of risk aversion as an innate feature of workers. Furthermore, this variability is not related to the level of employment, which tends instead to be more rigid than in profit maximizing firms. In other words, worker cooperatives accomplish an almost complete inversion relative to what is usually observed in profit-making firms: employment becomes rigid in the short run, while labor income tends to fluctuate.

² In this paper, for the sake of simplicity, we will use the term "profit maximizing firms" and the term "capitalist firm" interchangeably, though the two concept are not exactly equivalent: capitalist firm may not maximize profits, for example when a non-profit constraint is imposed. However, since this happens in a limited minority of cases, we will overlook them in this article.

Indeed, as early as in 1983 some authors (Myazaki and Neary, 1983) evidenced that “job insurance” instead of “wage insurance” is likely to be the dominant objective in worker cooperative. This way, cooperatives are able to modify the structure of risk (Meade, 1972, Dow, 2003, Miceli and Minkler, 1995), from employment fluctuation to wage fluctuation.

Third, as a corollary to the previous arguments, in the so-called “self-selection argument”, it has been evidenced that workers forming cooperatives need to be more “venturesome” than workers employed by capitalist firms since they are readier to accept fluctuating incomes. Hence, it is said, worker-members in cooperatives need to be characterized by a lower degree of risk aversion than employee in profit-maximizing firms.³ One evidence against this argument is that also in worker cooperatives it may happen that workers choose to smooth wages through the accumulation of locked-assets (Navarra 2010). Hence, worker cooperatives modify the structure of risk and workers’ behavioral responses, but do not modify workers’ attitudes toward risk. Second, as stated, fluctuating wages can represent a relevant phenomenon in profit making firms, but only in those circumstances in which the output is easily controllable in qualitative and quantitative terms by both the worker and the employer.⁴ In other words, the worker can accept a fluctuating wage in specific circumstances, and this evidence plays against the assumption of risk averse employees in capitalist companies.⁵

³ In this paper we use interchangeably the terms “capitalist firm” and “profit maximizing firm” to name investor owned organizations that pursue the maximization of the profit and of the market value of the organization as their main aims. There are exceptions to this equivalence since some typologies of investor owned enterprises are not profit maximizing. Examples are the community interest company in the United Kingdom, the social enterprise in Italy, and the low profit company in the United States (Borzaga and Tortia, 2010). Keeping in mind these distinctions, we stick to the equivalence for the sake of simplifying our exposition.

⁴ At any rate, even in these cases, the introduction of contractual practices similar to piece rates is likely to imply various side-shortcomings, such as the reduction of the quality of the produced output in connection with increased quantity. We further discuss the draw backs connected with piece rates later in this paper.

⁵ We need to point out, however, that the spreading out of flexible remuneration schemes in capitalist firms may not only be to better observability, but also to a loss of bargaining power of workers, for example when the labor market is tight and outside options are scarce. The two competing interpretations would require further enquire, but this is not the main aim of our paper. At any rate, it appears that they can be both valid in different specific contexts. Piece rates are often imposed by employers exploiting the presence of a high unemployment rate. The example of the immigrant poor or young workers in search of first employment are clear enough in this case. On the other hand, workers can decide to accept to be paid on piece rates even when they have other employment possibilities when conspicuous increases in income or other benefits such as faster career advances are expected.

Again, workers' behavioral responses, not attitudes, are modified by the interaction with the institutional environment.⁶

Moreover, workers in profit-maximizing firms, even when wages are fixed, aren't fully insured since the firm is not able to ensure workers against the risk of unemployment (Meade, 1972, or what is called "transfer uncertainty" in Miceli and Minkler, 1995). Hence, we would expect risk averse workers in capitalist companies to require more employment protection than they actually do. Finally, various historical records show that workers and their representatives (unions) have often asked the contractual definition of fixed wages not because of the unwillingness to bear wage fluctuations, but because of the risk of work overloads in case in which the output is not measurable or there exist imbalances in bargaining power between employers and employees.⁷ These arguments undermine the idea of risk-averse workers as the economic root of wage rigidity and the explanatory framework developed in the following sections is going to take into account this forgotten evidence.

To start with, we point out that the evidence characterizing worker cooperatives is likely to be linked to the control rights enjoyed by their worker-membership. Since members are paid with a share of the firm value added, net of capital costs, they can decide whether the effects of exogenous demand shocks are to be absorbed by wage variability or by employment fluctuation. We will show that the absence of the risk of the employer's moral hazard is likely to allow worker-members in cooperatives to accept a more fluctuating income than in profit maximizing firms and, this way, to take care in a more thorough way of employment stability.

We thus need to ask why the same behavioral patterns we observe in worker cooperatives are not observed in profit maximizing firms. In our explanatory framework the relevant argument comes from the absence of control rights undergone by employees in profit-making firms.

⁶ Though this evidence appears to weaken our arguments, it is indeed able to show that flexible wages are functional to increased performance, since they strengthens the incentive to align individual and firm objectives. While wage flexibility is always problematic in capitalist companies given the existence of contrasting interests between employer and employee, it can be considered a dominant course of action, not a sheer exception, in worker cooperatives. One of the main reasons is that, while wage flexibility requires observability in capitalist companies, this is not the case in worker cooperatives, since worker members control the organization and, in the absence of contrasting interests, observability may not be required to guarantee high labor productivity.

⁷ Reference can be made to unions' request for the abolition of piece rates in Italy and in other countries; another reason for the opposition of workers to piece rate contracts has been the "non monetary" disutility of psychological pressure and rivalry.

Since they can't decide about the distribution of the value added, the costs of labor becomes similar to a parametric price that the firm has to pay to a contracted factor of production. As a consequence, the burden of the effects of exogenous demand shocks is mainly borne by employment fluctuations. Wage rigidity is linked, on the one side, with the lack of control rights undergone by workers and, on the other side, with the contrasting interests that the employee has with his/her employer. The existence of contrasting interests between the employer and the employee engenders the risk of bilateral morally hazardous behaviors since, on the one hand, the employee has an interest in reducing work effort and in keeping relevant information secret while, on the other hand, the employer has an interest in imposing on the employee too high work pace and in misrepresenting the employee merits in order to increase his/her profits.

2. Employer's moral hazard

Our claim is that, when the employment relation is characterized by asymmetric information and contrasting interests, as in the well-known account of the emergence of agency costs (Alchian and Demsetz, 1972), contracts are unavoidably incomplete and output cannot be measured adequately, then wage rigidity is the best workers' response to the looming risk of employer morally hazardous behaviors.

These behaviors can become manifest at least in two basic forms: the understatement of the value of workers' production (in quantitative and/or qualitative terms) and the imposition of an increased pace of production to the detriment of workers autonomy and wellbeing. Historically documented episodes of employers' moral hazard in piece rate contracts show that a problem workers faced was the employer's opportunity to revise the rate over time, cutting the unit price paid to workers (Gibbons, 1987, Huberman, 1996).

Almost all employers insisted that they would never cut a price once it was set, yet every employer did cut prices... Unless workers collectively restricted output they were likely to find themselves working much harder, producing much more, and earning only slightly higher wages.

Clawson cit in Gibbons, 1987, p. 416

Huberman (1991) indicates indeed in unremunerated intensification of work the problem related to piece rate contracts in the case of Manchester cotton spinning in the first half of

XIX century, where a labor force with a strong bargaining power managed to obtain stable piece rates from the spinning firm.

These historical documented examples clearly exemplify the risk of morally hazardous behavior by the employer and of the spread of biased information and decisions. But many others can be added. For example, the employer may not disclose his/her decisions concerning strategic choices on the closure and/or relocation of the industrial activities. Such choices are likely to impact, through expectations, on workers' choices concerning wage rigidity: wage cuts can be accepted during downturns of demands when future recovery is expected. However, not the same is true when discontinuity in industrial activity and/or in the control of the firm is expected, since in these cases workers would face different employment perspectives and no guarantees of wage recovery or job stability would be forthcoming. More generally, a contract introducing a state-contingent wage creates an incentive to hide the employer's decisions concerning the firm economic and financial conditions, and the continuity or discontinuity of the activity in the future. Information beyond worker control can be biased in order to support wage cuts that are not justified by the financial and economic condition of the firm. The incentive to produce and use private information in a biased way in strategic decision-making is one of the main sources of the risks connected with state contingent wages in capitalist firms and of the ensuing behavioral responses by the workers, i.e. the demand for wage rigidity and the rarity of state contingent wage contracts.

The foregoing arguments make it clear the necessity to deepen our understanding of the nature and implications of the employment contract in capitalist firms: to most prominent authors it implies the renouncement of control by the worker over his/her labor and, conversely, the acquisition by the employer of the authority to decide on the utilization of labor services beyond the constraints explicitly imposed by the contract (Coase, 1937, Simon, 1951, Screpanti, 2001). This authority of the employer is implied by the asymmetry in property rights: the employer has residual rights of control (Hanmann, 1988), hence the right to decide about all contingencies that are not explicitly included in signed contracts. Among these contingencies crucial for the employment relation is strategic decision making concerning the delocalization of the productive activity, to closure of some production plants in favor of others, and, in the extreme case, the liquidation of the activity without the need to consult employees (Putterman, 1993).

A second fundamental element in the employment relation is the presence of conflicting interests between the employer and the employee. The literature on agency relations has widely considered the possibility that the presence of contrasting interests between the employer and the employee (or between the owners and managers) engenders an incentive to lower work effort or otherwise to behave in ways that are not aligned with the firm's objectives. These basic tenets concerning workers' behavior can be indeed considered and analyzed. However, we do here evidence the reverse and much less analyzed risks connected with the employment relation: the employer has the interest to lower the labor costs by misrepresenting work quality and increasing work pace since this is conducive to profit maximization.

Employer's moral hazard in the employment relation becomes relevant only in the presence of private information with a strategic relevance. In the Incomplete Contract literature, the presence of the asymmetric information about the ex-ante characteristics and the ex-post behaviors of both contractual parties is straightforward and has been considered in most contractual settings (Grossman and Hart 1986, Hart and Moore 1990). When the employment relation is considered, on one side of the relation the worker has private information concerning his/her effort, ability, and future decisions, as widely acknowledged by both the neoclassical and new-institutionalist literature (*inter alia* Alchian and Demsetz, 1972, Stiglitz, 1975, Holmstrom, 2000, Screpanti, 2001). By the same token, in our perspective it is necessary We think instead that it is reasonable to assume that the employer has private information too.⁸ First of all, we assume that the employer has private information on the probability of future events, such as demand shocks, and on prospective profits. One reason why the employer has more information on the probability of futures states of the world is that he has access to knowledge through entrepreneurial social networks⁹, but it is also important to underline that the future states of the world can be endogenous, meaning that the very decisions taken by the employer can modify the probability of different states occurring in the future. For example, the decision to distribute more profits may undermine the financial strength of the firm, and increase the probability of future lay offs. Further risks are added because of the employer incentive to hide information concerning the financial and economic

⁸ Few authors consider this possibility, but its implications are not worked out (Hall, 1980).

⁹ We derive this intuition from the works of some economic sociologists such as Granovetter (1985, 1992), who underline the importance of the social context in which economic actors are embedded, in order to understand their economic actions.

stability of the firm. Indeed, recent crises have shown that the assumption of transparency of the financial structure of the firm may be often misplaced.

More importantly, in the employment relation, contrasting interests and the asymmetric distribution of decision making power in conjunction with the presence of private information can engender abuse of authority. This is linked to the fact that, while both parties cannot exactly observe what the other party is doing and programming, one party, the employer, has the possibility to exploit his/her the decision making power attached to control rights, while the employee does not have the same possibility. The employer, therefore, has private information on his future decisions, which, on the side of the employee, are to be considered exogenous events beyond the employee control. Choices concerning new and competing technologies, or what managers to hire, and what organizational models to implement represent obvious examples.

The costs of the decision taken by the owner of the organization, for example concerning layoffs, delocalization of production, and the sale or closure of the firm, are borne at least partly by workers, without their direct responsibility in taking wrong or damaging decisions. That is to say that workers lack control over decisions, whose consequences are instead borne by themselves, while the employer-decision maker may have an interest in taking decisions harmful to them. Hence the risk of moral hazard connected with the abuse of authority. These are the reasons why employees, anticipating the existence of the above mentioned risks, can be expected to oppose resistance, for example through unionized action or individual initiatives, to employers' attempts to lower wages and otherwise negatively modify the organization of production, even in cases in which the economic and financial conditions of the firm would advise to do so. If the negative effects of the employment contract in terms of exploitation and unsafety of the job are serious enough, the worker may well decide to ask the fixation of the wage in order to limit those dangers. This way, however, the risk of unemployment is increased.

In a principal-agent framework, we would thus have to introduce the possibility of principal's opportunism, favored by private information, contrasting interests, and the ensuing abuse of authority, that translates into risk of workers' exploitation. As stated by Stiglitz (2009, p. 357),

The problems of exploitation are important, not only when competition is limited but also when there are information asymmetries, in which one party can exploit the other, or asymmetries in bargaining power.

One reason why the possible dangers connected with the employer decisions has not been adequately dealt with in economics to date may be that the employer objectives' are coincident with the objectives of the organization. Hence, it is stated, his/her decisions cannot be questioned within the logic inherent to the analysis of profit maximizing behavior. All negative effects borne by employee fall then under the label of negative external effects,¹⁰ which are unexplained by the model. However, these arguments are not tenable anymore when a comparative perspective is embraced and different organizational contexts and sets of property rights are considered. The consideration of the consequences of employer moral hazard is necessary, for example, when comparing capitalist companies with worker cooperatives, where the principal-agent relation can be absent given the self-organized and mutualistic nature of the cooperative endeavor.

It is now clear that the introduction of the risk of employer moral hazard in the explanatory frame makes workers' behavioral responses to risk dependent on the institutional framework. Workers may ask for insurance within the employment contract not because of a inherent psychological characteristic, but because they face the threat of opportunistic behavior from the other contractual party. By the same token, it is possible to argue that the institutional structure of capitalist firms may induce the employer to choose too risky strategies, regardless his/her subjective attitude towards risk. The reason is that control rights allows him/her to take risky decisions whose negative consequences are at least partly or completely borne by workers.

3. Employer's moral hazard and wage rigidity

The crucial question and starting point of research asks why the employment contract usually implies the rigidity of wages with the possibility for the employer to lay off workers. In principle, if some workers prefer employment to wage stability, and if the expected costs of the two solutions are equal to the employer, the necessity to keep industrial relations quite

¹⁰ Of course, we do not consider here other possible typologies of negative externalities engendered by employers' behaviours and borne by stakeholders different from workers, most prominently customers and users.

would lead to observe both behaviors. However, the empirical records concerning contractual relations and disputes (both individual and collective) evidence the dominance of the demands for wage stability more than for employment stability, even if also the latter appears prominently among the main objectives of the workers (Carpita et al., 2010). Hence, it is necessary to ask why the worker should prefer wage stability over employment stability since, at least in principle, it is possible to choose between the two objectives also within the framework of the employment contract. Our answer is that wage fluctuations in presence of the contractual power of the employer are too dangerous for the worker, since he/she cannot control the extent of the processes inside the firm generating those fluctuations. While in case of lay-off, the worker can look for another job, economic exploitation inside the firm excludes the existence of compensating wages by other firms. In order to keep the risks of exploitation at bay, workers ask for the fixation of a fair wage, while incurring in the risk of layoff. Stating our hypothesis differently, workers do not take employment stability as their main objective not because they do not want to, but because the employment relation leads them to prioritize wage stability over employment stability, given the risk of ex-post opportunistic wage reductions.¹¹

In presence of workers' demand for fixed or quasi-fixed wages, the employer cannot guarantee the accomplishment of both objectives, the payment of a fixed wage, and employment stability, at the same time. She can accept to guarantee workers' main demand, that is the fixation of wages. This way, however, employment levels become uncertain and employment stability is substantially reduced. Putting it differently, the fixation of both the wage and employment would require the firm to disinvest its assets during downturn of demand in order to guarantee the stability of employment for the whole workforce, that is paid a fixed wage. However, as a norm, the owners of the organizations have as their main objective the maximization of the value of their investments by means of profit maximization.

¹¹ Our hypothesis could be also cast in the theoretical framework of social psychology. In the works by Abraham Maslow (1943, 1954) a hierarchy of needs in all human beings is identified whereby more basic needs are to be satisfied before the others. Maslow singles out five layers of needs where at the bottom we find physiological (survival) needs, while the other layers are represented by the need for security, belonging, esteem and self-actualization. In our case, the need for a fair wage would pertain to the first layer (survival) while the need for employment stability would pertain to the second layer (security). Though we will not pursue a social psychology perspective in this paper, this simple argument makes it clear why workers tend to prefer wage protection over employment protection and why in some circumstances they may be ready to exchange higher wage protection with lower employment protection.

Hence, they would not endorse disinvestments of fixed capital leading to the reduction of the value of their financial assets. This type of solution is instead possible in worker cooperatives, because in their case the assets of the firms are owned by worker members who can decide to reduce their value in order to preserve both employment and wage stability during downturns of demand. In this specific sense, the assets of work cooperatives have also an insurance function (Navarra, 2010), which is to be added to their function as collateral (Tortia, 2006) and to their function as financial basis for investment programs (McCain, 1977).

If we look at the historical evolution in the features and usage of labor contracts, the story would usually start from the spread of piece rate as the most simple example of labor contract in which worker remuneration is closely tied to the quantity produced. In such a contractual arrangement, the employer is strongly induced to exploit asymmetric information by asking increased effort and quantity produced, and by lowering the remuneration of the factors used in the production process. If the wage is flexible, the employer may reduce it opportunistically, exploiting his private information on the future performance of the firm, e.g. reducing it beyond what it might be necessary to recover from a downturn. The worker may not be able to detect the true signal. She does not know whether wage cuts are due to real downward turns in demand (or to a real positive probability of a downturn), or if instead they are opportunistically introduced by the employer in order to increase profits. This form of asymmetric information combined with the presence of contrasting interests and risks of abuse of authority is likely to imply that the workers' response is a demand for wage rigidity.

Authoritative strands of literature provide arguments to explain wage rigidity: on what concerns the choice between piece-rate and fixed wage contract, we know that a limited amount of asymmetric information and/or contractual incompleteness can be sufficient to threaten the very existence of contractual equilibrium, or to lead to equilibria that can be Pareto inferior to those reached by paying fixed wages. Piece rate usually spread in the production of simple and standardized goods, for which the quality of the produced good is readily controllable. On the other hand, while in the presence of complex and functionally differentiated production processes, for example organized in teams, or when long term learning patterns are required, piece rates are more rarely observed since they engender too high contractual costs on both sides of the contract. Hence the observed convenience for both sides to move away from piece rates to different contractual solutions, such as fixed wages. However, this shift does not remove the roots of employer moral hazard. Fixed wages can be

mutually convenient for the employer and the employee when they reduce contractual costs, but even in the presence of fixed wages, the employer can retain private information and abuse his/her authority.¹² For example, the theory of partial gift exchange (Akerlof, 1982 and 1984) can explain why in many situations contracts that seem inefficient from the effort incentives point of view (fixed wages) can be more efficient than contracts connected to high powered monetary incentives (piece rates). When trust or reputation in the presence of asymmetric information and contrasting interests represent a relevant behavioral dimension in the contractual relation, piece rates are likely to become an inferior solution. In such cases, the instability of the contractual equilibrium linked to piece rates is supplanted by more stable contractual relations that can generate long run mutual benefits. This argument doesn't exclude ours: it might be argued that the need to establish trust among parties implies that the employer "ties his hand" with respect to the possibility to exploit asymmetries of information and power within the firm. Still, wages are fixed and employment stability cannot be guaranteed for the above mentioned reasons.

A case in point about wage downwards rigidity is efficiency wage theory, that provides an argument to claim that the employer himself is not willing to decrease wages down to the market clearing level since this would increase the incentive of employees to shirk and would reduce the efficiency of the employment contract, and would reduce loyalty to the firm too (Akerlof 1984, Yellen 1984)¹³. In line with this approach, but maintaining a somehow different argument, is the Shapiro and Stiglitz (1984) approach, which claims that the wage isn't brought to the market clearing level because a positive level of unemployment rate makes layoffs a credible threat, thus eliciting increased worker effort. We don't think that our claims are in conflict with this approach either, since it does not explain why wages are fixed, but only why wages don't shrink down to the market clearing level¹⁴. Efficiency wage theory, in its various versions, shows that the employer may be willing to stabilize the employee

¹² As said, also the worker can exploit private information and behave opportunistically by reducing effort in the presence of both piece rate and fixed wages. While this is not the central topic in our paper, it is important to stress that workers' opportunistic behavior can be engendered to the imposition of work overloads functional to profit maximization.

¹³ More precisely, in the model illustrated by Yellen (1984), the firm will not offer a wage lower than w^* such that the elasticity of effort with respect to wage is unity.

¹⁴ Whether they represent sufficient incentives for the employer not to reduce wages opportunistically can be a possible follow up of this study.

position by paying an above-market clearing fixed wage level in order to eschew the risk of shirking and high turnover. On the other hand, efficiency wage theory too does not explain why, in the employment contract, preference is given to wage protection, while employment is left fluctuating.

4. A counterexample: worker cooperatives

To corroborate our claim, we use a counterexample: when conflicting interests linked to the different objectives of the employer and of the employee cease to exist, as it is the case in worker cooperatives, we can observe stronger wage flexibility also in the presence of asymmetric information. As we mentioned earlier, in worker cooperatives there is evidence of a modification of the objective features of the risk faced by workers, allowing increased wage fluctuations and, at the same time, stabilization of employment. Craig and Pencavel (1992) detect a greater effect of price variation on wage fluctuations, rather than on employment variation, in their sample of US plywood cooperatives as compared to similar capitalist companies. Pencavel et al (2006) compare Italian cooperatives and capitalist firms and find evidence of greater volatility of wages and more stability of employment in cooperatives. Burdin and Dean (2009), observe the entire population of Uruguayan firms, and highlight a greater response of wages and a lower response of employment to idiosyncratic changes in output prices in the case of cooperatives rather than in capitalist firms.

Our explanatory strategy of this empirical evidence starts from the process of creation of worker cooperatives. When workers create a cooperative, capital becomes a simple factor of production that workers can hire and use to pursue their production objectives. In this sense, capital becoming a “still” factor of production has two major implications. First of all, workers, as entrepreneurs, participate in the definition of the strategic objectives of the firm and in the development of the governance model. Hence the relations among members cannot be interpreted in terms of the principal-agent model and of its basic tenets, which are connected with the presence of contrasting interests and asymmetric information between the principal and the agents (Jensen and Meckling, 1976). Second, capital is left with a purely instrumental role in allowing production to be carried out, and in guaranteeing worker members against future risks. The two highlighted implications represent indeed two sides of the same coin, since capital becomes instrumental only if the firm is controlled by workers and not by investors.

The institutional and governance structure of worker cooperatives implies a reduction of uncertainty from the viewpoint of workers' objectives and decisions, integrating the workers' objectives in the firm objective function. Hence it can allow for more wage flexibility. It also opens the door to accomplish a higher degree of employment stability than what we observe in capitalist companies. Since the cooperative needs to pursue both wage and employment stability at one and the same time, the observed degree of wage fluctuation can be considered at least in part functional to the achievement of employment stability. In a capitalist firm this would not be possible because of its objective (profit maximization) and of the connected risk of moral hazard: the impossibility to have fluctuating wages carries with it also the impossibility to stabilize employment. In the words of Gui (1994), while in capitalist firms "the satisfaction of workers' objectives is an indirect and unintended result, mediated by an imperfect labor market, worker managed firms adopt workers' objectives as their own objectives." (Gui 1994, p. 176).

We have therefore to abandon the principal agent framework and interpret cooperatives as entrepreneurial actions initiated by groups of self-organized principals seeking common returns and stable labor relations that are obtained through a mutual-benefit organization of the economic activity. This interpretation of the cooperative is also suggested by the definition of cooperative itself provided by the International Cooperative Alliance: "an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise".

Cooperative members have the problem of sharing equitably the limited amount of resources generated by the operation of the firms, of taking coherent and effective entrepreneurial decisions, and of performing adequately in terms of the motivational content of their action, of work effort, and of labor productivity. However, they do not risk to undergo morally hazardous behaviors by the controlling principal, since all the members enjoy the same control rights over the operation of the firms and over the distribution of the surplus.

The value added produced by a cooperative has the nature of a common good, hence it is rivalrous, because it has to be shared among the different members of the firm, and not excludable, since its distribution is decided collectively by the whole membership. Hence, different distributive rules can engender marked differences in the relative well-being of members. The existence of cross-sectional and temporal trade-offs in the distribution of

resources engenders the need to develop an appropriate set of governance and working rules for the effective management of common resources (Ostrom, 1994; Sacchetti and Tortia, 2010), and to implement an appropriate mix of incentives, both pecuniary and non-pecuniary, aimed at reconciling individual motivations and objectives with organizational objectives.¹⁵

In the context of collective action organized on an equal rights basis various risks of shirking and free riding cannot be under-evaluated. In the well-known statement by Mancur Olson: “how a group of principals who are in an interdependent situation can organize and govern themselves to obtain continuing joint benefits when all face temptations to free-ride?” (Olson, 1965). Following Ostrom (1990), the development of governing rules devised by the same members of the organization, who also possess the best knowledge about the features of the production process, has the potential to forestall free-riding and to support the accomplishment of adequate efficiency levels. In situations exemplified by the prisoners’ dilemma and by the tragedy of the commons, the Pareto inefficient outcome is avoidable when a community is able to produce norms that induce all members to follow the cooperative strategy. The setting up of collective rules governing the cooperative endeavor represents an initial cost which, nonetheless, makes short-run payoff linked to defection become an inferior outcome when compared with the long run gains accruing to cooperative behaviors. This is so because the implementation of credible rules, with connected rewards and punishments, induce a lower discount rate of future benefits.¹⁶

¹⁵ Another reason to consider the cooperative as a solution to a collective action problem is that it includes a public good element in its objective function. Many important authors (namely Sen, 1994) point out that every production process has a public good component. Indeed, the cooperative is formed by a collective of members *because of* the need to produce the public good (or merit goods) represented by participatory rights in the sphere of production and better working conditions on the job. Hence, the production of a public good does not represent a mere by-product of collective action, but its intended outcome as the precondition for the achievement of a viable organization of production (scale and scope economies). Not the same is necessarily true in the case of capitalist companies since, as a rule, they are formed to pursue the exclusive interest of the investor-owners.

¹⁶ The history of the well known group of worker cooperatives in Mondragon, Basque Region, can be cited as a case in point (Whyte and Whyte, 1988; Morrison, 1991). After the cooperative educational programs started by father Arizmendi Arrieta started in 1941 soon after his in the Mondragon district, the first cooperative of the group, which nowadays employs about 100,000 workers worldwide, was created no sooner than 1956, after 14 years of intense rule building and elaboration.

The risks of shirking and free riding are never optimally dissipated. They are always present and exert some degree of influence on the firm survival and expansion potential. Hence, though the organizational equilibria reached through collective actions can never be optimal, they can be characterized by competitive advantages that are absent in more traditional governance models. Among the main competitive advantages of democratic governance we will list only the one linked to the circulation of information, to the accumulation of knowledge, and to trust relations. The democratic governance and the self-defined nature of rules eliminate or reduce the barrier to the circulation of non-biased information and can allow a more sustained accumulation of firms specific knowledge. Trust relations more easily develop among members' bestowed with equal rights of control. Trust, in turns, favors the long term development of the organization since, by escaping the narrow focus on short term monetized objectives, it reinforces loyalty and reduces turnover.

The worker cooperative emerges as the only organizational form that can guarantee employment stability because of the absence of contrasting interests between workers and the capitalist employer. In the cooperative, decision making power is not any more attributed to a subject that has contrasting interests with employees and holds private information exploitable in an opportunistic way. These differences in industrial relations can result into higher productivity of labor in cooperatives relative to the capitalist counterpart (Estrin 1991 and Bartlett et al 1992 on Italy). Since higher productivity is not reported to translate into higher wages, under the plausible assumption that the monetary remuneration and workers' effort are positively correlated, one could argue that the higher productivity is due to the overcoming of the capitalist's moral hazard problem and to the overcoming of profit maximization as the main objective of the firm. In other words, worker cooperatives can be considered more efficient organizational forms than profit maximizing ones since they are able to increase labor productivity relative to their capitalist counterpart without increasing labor costs.

In worker cooperatives the problem of asymmetric information linked to the implementation of the employment contract ceases to exist since the absence of an employer eliminates also his/her information advantages. Private information is instead in possession of the group of principals controlling the organization. The promise not to reduce wages in an opportunistic way becomes a credible promise because of the absence of contrasting interests between the employer and the employee. Hence it is possible for worker members to accept flexible wages

in exchange for employment stability.¹⁷ It cannot be excluded, however, that also in the worker cooperative interests can be divergent between different members, and this fact can generate organizational impasses, contrasts, and inflated decision-making costs (Hansmann, 1996), Private information can also be held by managers of cooperatives, and this situation can generate new cases of retention of private information and morally hazardous behavior. Since managers in coops can be considered agents of a principal represented by the collectivity of members, agency costs can be reduced if directors and managers are properly controlled by members and if proper governance solutions are devised (Borzaga and Tortia, 2010). In any event, these problems pertain to the specificities of the governance of cooperatives and will not be dealt with thoroughly in this paper.

To summarize and complete our arguments, we introduce a synthetic representation of the features of the labor contract settings that are relevant in our study. They can be represented by means of a diagram that takes into consideration two dimensions: wage uncertainty and employment uncertainty.

Table 1. Wage, employment and different forms of labor contracts

	Wage uncertainty		
		Yes	No
Employment uncertainty	yes	Piece-rate	Employment contract
	no	Worker cooperative (wage fluctuation choice)	Worker cooperative (wage smoothing choice)

¹⁷ To be noted that wage flexibility is not the only way for cooperatives to stabilize employment. They can follow two routes: either by allowing wages to fluctuate, since contrasting interests and the risk of bilateral moral hazard is absent; or by accumulating reserves with wage smoothing function (Navarra 2010). Short term wage fluctuations can be absorbed by common funds. This means that worker cooperatives may be able to guarantee employment stability and wage stability at one and the same time.

Piece rates gives the lowest degree of guarantee to workers. Employment is uncertain, but also the wage is not fixed, since it depends on productivity and on market demand. The employment contract coupled with the fixation of wages represents an initial step forward relative to the initial position since it is able to stabilize worker remuneration. The traditional model of the worker cooperative in the bottom left part of the diagram, for example the one analyzed by Ward in 1958, delivers the so-called income maximizing firm, and it has been shown both by theory and by empirical tests to be able to guarantee a high degree of employment stability (Meade, 1972, Dow, 2003, Craig and Pencavel, 1992, Pencavel et al., 2006). The last model of the worker cooperative in the bottom right quadrant of the diagram represents a further step forward because, by accumulating collective reserves (locked assets) and other collectively-owned assets, worker members guarantee for themselves both “job insurance” and “wage insurance”.

As final word, something has to be said about the macroeconomic implications of our argument. Wage rigidity has well known macroeconomic implications: it prevents wages from adjusting to marginal productivity, thus allowing for positive unemployment. Wage rigidity has been often indicated in the Keynesian literature as a factor worsening the effects of external negative shocks and other downturns of demand in capitalist economies (Jossa, 2005). On the contrary, wage flexibility has the potential to substantially reduce the negative effects of the business cycle by means of countercyclical behaviors. Worker cooperatives are reported to preserve employment in bad economic conditions by lowering labor income, and to react more weakly to increases in demand for their goods because of the weaker stress put on short term surplus maximization and of the stronger stress put on the long term stability of employment (Craig and Pencavel, 1992, 1994; Jossa, 2005; Pencavel et al., 2006). The countercyclical behavior of cooperative firms has been evidenced in many works and confirms the different behavioral propensities of for-profit and cooperative firms. This way, the institutional structure of worker cooperatives allows for a smoother transition from negative demand shocks to economic recovery.

Conclusions.

In this paper, we have tried to enter into the debate on the possible forms of labor contract in different firm types. We have focused our attention on the features of the relations between employment and wages in worker cooperatives and in capitalistic firm. Our arguments show

that wage rigidity is a necessary consequence of the risk of moral hazard by the better informed and stronger contractual party. Moral hazard can stem from various sources. Among these, the presence of private information held by the employer on market conditions and value of sales, the contrasting interests between him/her and the employed workers, and the control power he/she has on the production process. These elements imply the ensuing risk of morally hazardous behavior and abuse of authority.

In this sense our argument runs in the opposite direction to what Stiglitz stated in his 1975 work: “this paper is concerned with the lack of information of the employer and the discretionary actions of the employees”. We are concerned with the lack of information of the employees and the discretionary power of the employer. While the literature insists on asymmetric information favoring the employee in the employment relation, in this paper we concentrate on asymmetric information in favor of the employer. Contractual agreements that are potentially efficient for both the employer and the employee may not be struck at all when there are incentives for the employer to exploit asymmetric information in his/her favor. Specifically, we emphasize that labor contracts between capitalistic firms and their employees making the wage contingent on the realization of different states of the world engender an incentive for the employer to misrepresent such states because this misrepresentation is functional to profit maximization. Correspondingly, since employees are aware of the fact that state-contingent contractual relations would expose them to the risk of the employer’s moral hazard, they may be willing to accept such kind of contract only by making them excessively costly for the employer. Hence, it is not a case if employees in capitalistic firms usually express preferences adverse to fluctuating wages, as the literature concerning workers’ risks aversion points out, and if state-contingent wage contracts between capitalistic firms and their employees are observed only in special cases.

To eschew the risks of undergoing the employer moral hazard in the utilization of his/her labor power, for example in terms of too low labor remuneration and excessive pace of work, the worker can decide to accept a fixed wage. However, to prevent the risk of incurring in morally hazardous behaviors by the employer, upon signing an employment contract, the worker loses the possibility to stabilize his/her employment position. The alternative solution is represented by taking over the control of the production activity by creating a worker cooperative. In this way the worker can borrow the necessary financial support from investors

and reach the objective of stabilizing his/her employment position.¹⁸ Hence the worker has to choose between two options: (1) being employed by investor owned companies by accepting to be paid a fixed wage without employment stability; (2) joining other worker-principals in a self-organized collective action through the creation of a worker cooperative.

Worker cooperatives can thus be interpreted as collective actions aimed at overcoming the risk of the employer's moral hazard by eliminating the agency relation inherent in the employment contract, and therefore avoiding the risk of opportunism of the principal. The process of internalization of workers' objectives into the objective function of the firm leads, in worker cooperatives, to a stronger stress put on employment stability, which represent one of the main attainments made possible by the self-organized entrepreneurial activity. In a similar fashion and with arguments similar to the ones put forward in this paper, it would be interesting to analyze in the same perspective other forms of workers' collective actions, like trade unions. These represent the main tool at the disposition of workers employed in capitalist firms that can be used to face the risk of morally hazardous behaviors by the employer since they can increase workers' collective bargaining power and fill the information gap between the parties.

¹⁸ The behavior of employers in monopsonistic labor markets tends to depress wages and employment in order to increase profits. This has been often considered one of the main causes triggering the creation of worker cooperatives (Hansmann, 1996; Borzaga, 2003; Borzaga and Tortia, 2010). Our argument does not exclude this possibility, but treats monopsony on the labor market as a different case of power concentration on the employers' side. This power imbalance, however, depends on the structure and on the extent of the market, and not on the features of the employment relation. Market power concentration can exacerbate the effects of employers' moral hazard, but the manifestation of moral hazard connected with the employment contract may be present even in the absence of market power. Hence, we expect it to be relevant also when markets are competitive, as the literature on efficiency wages has been able to highlight. In other words, monopsony in the labor market represent a specific case of imbalance in the distribution of contractual power, while our arguments, being referred to the institutional features of the employment relation, refer indeed to a more general case.

Bibliography

- Akerlof G. A., (1982), *Labor Contracts as Partial Gift Exchange*, The Quarterly Journal of Economics, Vol. 97, No. 4 (Nov), pp. 543-569
- Akerlof G. A., (1984) *Gift Exchange and Efficiency Wage Theory: Four Views*, American Economic Review Proceedings, 74, 79-83.
- Alchian A.A., Demsetz H., (1972) *Production, Information Costs and Economic Organization*, The American Economic Review, 62(5), pp. 777-795.
- Azariadis C., (1975) *Implicit Contracts and Underemployment Equilibria*, in Journal of Political Economy, 83(6), pp. 1183-1202.
- Azariadis C. Stiglitz J., (1983) *Implicit Contracts and Fixed Price Equilibria*, Quarterly Journal of Economics, vol. 98 supplement, pp 1-22.
- Bartlett W., Cable J., Estrin S., Jones D., Smith S., (1992) *Labor-Managed Cooperatives and Private Firms in North-Central Italy: an Empirical Comparison*, Industrial and Labor Relations Review, 46(1), pp. 103-118.
- Borzaga C. and Tortia E.C., (2010), The economist of social enterprises. An interpretive framework, in Becchetti L. and Borzaga C. (Eds.) *The Economics of Social Responsibility. The World of social enterprises*, London, Routledge, pp. 15-33
- Burdin G. and Dean A, (2009) *New evidence on wages and employment in worker cooperatives compared with capitalist firms*, Journal of Comparative Economics, 37(4), pp. 517-533.
- Carpita M., Depedri S., Tortia E.C., (2010), The determinants of job satisfaction: new survey finding in Italian social enterprises, University of Trento, Department of Economics, *mimeo*.
- Coase R., (1937) *The Nature of the Firm*, *Economica*, 4(16) pp. 386-405.
- Craig B., Pencavel J., (1992) *The Behaviour of Worker Cooperatives, the Plywood Companies of the Pacific North-East*, American Economic Review, 82(5) pp.1083-1105.
- Craig B., Pencavel J., (1994) *The Empirical Performance of Orthodox Models of the Firm: Conventional Firms and Worker Cooperatives*, The Journal of Political Economy, 102(4), pp. 718-744
- Dow G., (2003) *Governing the Firm*, Cambridge University Press, Cambridge.
- Estrin S., (1991) *Some Reflections on Self-Management: Social Choice and Reform in Eastern Europe*, Journal of Comparative Economics, 15(2), pp. 349-366.
- Gibbons R., (1987) *Piece-Rate Incentive Schemes*, Journal of Labor Economics, Vol. 5, No. 4, Part 1 (Oct., 1987), pp. 413-429
- Granovetter M., 1985, *Economic Action and Social Structure: The Problem of Embeddedness*, in *The American Journal of Sociology*, 91(3), pp. 481-510.
- Granovetter M., 1992, *Economic Institutions as Social Constructions: a Framework for Analysis*, *Acta Sociologica*, 35, 1, pp. 3-11.
- Grossman S., Hart O., (1986) *The Costs and Benefits of Ownership: a Theory of Vertical and Lateral Integration*, in Journal of Political Economy, Aug. pp. 691-719
- Gui B., (1994) *Is There a Chance for the Worker-Managed Form of Organization?*, in Pagano U., Rawthorn R. (ed.), *Democracy and Efficiency in the Economic Enterprise*, Routledge and UNU/WIDER.
- Hall R.E. (1980), *Employment Fluctuations and Wage Rigidities*, in Brookings Papers on Economic Activity, Vol. 1980, No. 1, Tenth Anniversary Issue, pp. 91-123+125-141.

- Hansmann, H. (1988), Ownership of the Firm, *Journal of Law, Economics and Organisation*, vol. IV, no. 2, pp. 267-304.
- Hansmann H., (1996) *The Ownership of Enterprise*, The Belknap Press of Harvard University Press, Cambridge/London. Trad. It. (2005) *La proprietà dell'impresa*, Il Mulino, Bologna.
- Hart O., Moore J., (1990) *Property Rights and the Nature of the Firm*, *Journal of Political Economy*, Dec, 96(6), pp.1119-1158.
- Holmstrom B., (2000) *Moral hazard and observability*, in Foss N., *The Theory of the Firm*, Routledge.
- Huberman M., (1991) *Industrial Relations and the Industrial Revolution: Evidence from M'Connell and Kennedy, 1810-1840*, *The Business History Review*, Vol. 65, No. 2, pp. 345-378.
- Huberman M., (1996) *Piece Rates Reconsidered: The Case of Cotton*, *Journal of Interdisciplinary History*, Vol. 26, No. 3, pp. 393-417
- Jensen M., Meckling W., (1976) *Theory of the Firm: Managerial Behaviour, Agency Costs and Ownership Structure*, *Journal of Financial Economics*, 3(4), pp. 305-360.
- Jossa, B. (2005), Marx, Marxism and the cooperative movement," *Cambridge Journal of Economics*, Oxford University Press 29(1), 3-18
- Lazear and Shaw (2007), Personnel economics: the economist view of human resources, *Journal of economic perspectives*, 21 (4), 91-114.
- Knight F.H., (1921) *Risk, Uncertainty and Profit*, London School of Economics and Political Science, Boston.
- McCain R. A. (1977), On the Optimum Financial Environment for Worker Cooperatives, *Zeitschrift für Nationalökonomie*, vol. 37, no. 3-4, pp. 355-384.
- Maslow, A. (1943), A Theory of Human Motivation. *Psychological Review*, 50 (4): 370–396.
- Maslow, A. (1954), *Motivation and personality*. New York: Harper.
- Meade, J.E. (1972), *The Theory of Labor-managed Firms and of Profit-sharing*, *Economic Journal* (82) pp. 402-428.
- Miceli T.J., Minkler A.P., (1995) *Transfer uncertainty and organizational choice*, in Jones D., Svejnar J., *Advances in the Economic Analysis of Participatory and Labor-Managed firms*, vol. 5, pp. 121-137.
- Miyazaki H., and Neary H., (1983) The Illyrian Firm Revisited *The Bell Journal of Economics*, Vol. 14, No. 1, pp. 259-270.
- Morrison, Roy (1997), *We Build The Road As We Travel: Mondragon A Cooperative Social System*, Philadelphia: New Society Publishers.
- Navarra, C. (2010), *Collective Accumulation of Capital in Italian Worker Cooperatives Between Employment Insurance and "We-rationality": An Empirical Investigation*, Euricse Working Papers, N. 004 | 10
- Olson M., (1965) *The Logic of Collective Action. Public Goods and the Theory of the Groups*, Harvard University Press, Cambridge Mass. Trad it. (1983) *La logica dell'azione collettiva*. Milano: Feltrinelli.
- Ostrom E., (1994) *Governing the Commons. The evolution of institutions for collective action*, Cambridge University Press.
- Pagano U., (1989) *Property Rights, Asset Specificity, and the Division of Labor Under Alternative Capitalist Relations*, Working Paper 95, Dipartimento di Economia Politica, Università di Siena.

- Pencavel J, Pistaferri L, Schivardi F, (2006) *Wages, Employment and Capital in Capitalist and Worker-Owned Firms*, *Industrial and Labor Relation Review*, 60 (1).
- Putterman L., (1993) *Ownership and the Nature of the Firm*, *Journal of Comparative Economics*, 17(2), June, 243-263.
- Sacchetti, S. and Tortia, E.C. (2010), "A New Framework for the Economic Analysis of Cooperative Firms: Self-Defined Rules, Common Resources, Motivations, and Incentives", Milan, *Econometrica* WP Series no 21, July, <http://www.econometrica.it/wp/wp21.pdf>
- Screpanti E., (2001) *The Fundamental Institutions of Capitalism*, Routledge, London and New York.
- Shapiro, C. and Stiglitz, J.E. (1984), Equilibrium Unemployment as a Worker Discipline Device. *The American Economic Review*, Vol. 74, No. 3. (June), pp. 433-44.
- Sen A.K., (1994), *Economic Wealth and Moral Sentiments*, Lecture held for Bank Hofmann AG, Zurich.
- Simon, H.A.: 1951, *A Formal Theory of the Employment Contract*, *Econometrica* 19: 293-305.
- Stiglitz J., (1975) *Incentives, Risk , and Information: Notes Towards a Theory of Hierarchy*, *The Bell Journal of Economics*, Vol. 6, No. 2, pp. 552-579
- Stiglitz J., (2009) *Moving Beyond Market Fundamentalism To A More Balanced Economy*, *Annals Of Public And Cooperative Economics* 80:3 Pp. 345–360.
- Tortia, E.C. (2006) 'Self-financing in labor-managed firms (LMFs): individual capital accounts and bonds advances' in S. Novkovic and V. Sena (eds) *Cooperative Firms in Global Markets*, Kidlington, Oxford: JAI Press/Elsevier, pp. 233-61.
- Tortia, E. (2010), The impact of social enterprises on output, employment, and wages, , in Becchetti L. and Borzaga C. (Eds.) *The Economics of Social Responsibility. The World of social enterprises*, London, Routledge, pp. 57-71.
- Ward B., (1958), *The Firm in Illyria, Market Syndicalism*, *The American Economic Review*,. Vol. 48(4), pp.566-589.
- Whyte, William Foote and Whyte, Kathleen King (1988), *Making Mondragon: The Growth and Dynamics of the Worker Cooperative Complex*, ILR Press (an imprint of Cornell University Press), Ithaca & London.
- Yellen J.L., (1984) *Efficiency Wage Models of Unemployment*, *The American Economic Review*, Vol. 74, No. 2, *Papers and Proceedings of the Ninety- Sixth Annual Meeting of the American Economic Association*, pp. 200-205.