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From Wage Flexibility to Value Added Distribution.
The Structure of Labour Remuneration in Labour Managed Firms (LMFs)

Ermanno C. Tortia

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From Wage Flexibility to Value Added Distribution. The Structure of Labour Remuneration in Labour Managed Firms (LMFs)[§].

Ermanno C. Tortia[♦]

Abstract

The literature concerning incentives, profit sharing, and internal labour markets has grown steadily in recent times. The research on labour management has developed some themes related to property rights theory, the accumulation of capital and to the reaction of self-managed production organisations to external market stimuli. Not all problems concerning the cited topics are settled. For example the ownership of a labour managed firm still awaits a clear definition. Furthermore, very little work has been devoted so far to the study of the internal structure of labour managed firms, specifically with respect to structure of incentives and career advancement. An attempt to apply incentive theory, profit sharing theory and internal labour market theory in their latest developments to the case of workers co-operatives can give potentially fruitful results. The present work is intended to head in that direction.

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[♦] Doctoral Program in Economics and Institutions. Department of Economics Institutions Territory, University of Ferrara and Department of Economic Sciences, University of Bologna, Italy. Via del Gregorio, 13 - 44100 Ferrara. Tel. no +39 0532 293017. Fax no. +39 0532 205307. E-mail address: Tortia@economia.unife.it

1. Introduction

In the ambit of the economic literature concerning labour-managed firms (LMFs) great attention has been devoted by past research, especially to two or three research agendas. They are: property rights of LMFs, the reaction of this type of firm to market stimuli (variations in prices and cost of capital) and the accumulation of capital in LMFs. The first problem has been widely analysed starting from the basic neoclassical model introduced by Ward in 1958 and broadened by other basic contributions due to Vanek (1970a, 1970b, 1996a, 1996b), Domar (1966) and Meade (1972, 1980)[1]. The research concerning the second and the third set of items took its initial moves from the pioneering work by Furubotn - Pejovich dated 1970.

Much less work has been devoted so far to the study of the internal working of LMFs, specifically with respect to the economic analysis of workers' motivation, incentive giving, productivity enhancing organisational arrangements, career advancement etc More briefly, there has been a lack of attention to the structure of labour remuneration and value-added distribution in LMFs.

In recent years, there has been an impressing flourishing of both theoretical and empirical research on the items just mentioned as applied to capitalistic firms. The object of the present study will be an attempt to apply the most recent development in the theory of incentive giving, profit sharing and internal labour markets (i.e. the theory of the structure labour remuneration in general) to the case of LMFs.

The first and relevant difficulty is encountered in trying to introduce the theory of incentives and profit sharing in two different types of firms with heterogeneous structures already at the level of founding values and property rights, but also at the level of distribution of income and governance. For this reason, the following section will be dedicated to a comparative exposition of both similarities and differences between the two types of firms in all the aspects listed above. Though all but exhaustive, it should serve to render the reader aware of the dangers implicit in the attempt to apply the same theoretical apparatus to different institutional structures.

The third section will be devoted to the analysis of the practicability and relevance of the theory of incentives in the case of LMFs. The conclusions of the argument presented will be that incentives as traditionally intended (especially gain sharing and, more specifically, piece rates, i.e. incentives not linked to the economic

[1] The literature endeavouring to define the main features of LMF is very wide. Good introductory textbooks to this literature are the ones by Bonin - Putterman (1988), George (1993), Jossa - Cuomo (1997), Jossa (1999). Especially important is the distinction pointed out by Vanek (1970) and defended by Jossa - Cuomo (1997) and Jossa (1999) between *labour manage firms* (LMF) and *workers' managed firms* (WMF). LMFs are characterised by a complete separation between labour and capital remuneration. Since labour is accorded residual control and is remunerated by a residual variable, capital remuneration will be decided in advance and needs to be fixed or nearly fixed. In other words the LMF is entirely financed with loaned capital. It is important to stress that financing through loaned capital does not imply that the LMF is externally financed. Worker-members may well be supply part or all the loaned capital. Hence what really characterise the LMF is the separation between labour and capital remuneration and not external financing. The WMF is instead characterised by the fact the remuneration of labour and capital are not distinguished. In this kind of co-operative usually we find a residual variable that is saved and invested in indivisible reserves and we do not have a clear separation between the part of these reserves destined to labour and the part destined to capital (Jossa, 1999, pp. 89-92).

results of the firm) are superfluous if not harmful in the case of LMFs. The reason, as it will be explained, lies just in the different structures of the two types of firms. The structure of LMFs is likely to be incompatible with incentives.

The fourth section will treat the problem of profit sharing in LMFs. The very absence of a profit (intended as the remuneration of full risk capital) in LMFs requires a careful specification and redefinition of this issue. Profit-sharing in CMFs will be compared by analogy to the sharing of the residual variable *(total net labour earnings)* in LMFs. This type of labour remuneration (as opposed to wages) stems out of control over the firm's distributive system and it is likely to imply greater workers' involvement in the activity of the firm. In turn, a greater involvement may entail higher productivity of labour.

The fifth section will treat the possibility of the formation, persistence and usefulness of internal labour markets and career advancement in LMFs. Internal labour markets have been attracting considerable attention during the last decades, starting from the classical work by Doeringer - Piore (1971). Coriat (1991), Lazear (1995) and many other authors have studied them in the case of CMFs. The study of their emergence and relevance in LMFs is almost absent in the literature. A nearly perfect compatibility between this type of incentive mechanism and the structure of LMFs will be hypothesised.

2. Property rights, distribution of income and governance in LMFs and CMFs.

CMF and LMF firms have structures, which present notable differences. Before trying to apply recent developments of the theory of incentives, profit sharing and internal labour markets to LMFs it is advisable to highlight those differences in order to render the reader aware of the difficulties existing in introducing those theories in a LMF framework.

Jossa - Cuomo (1997) and Jossa (1999) clearly states that there is (or there should be) a radical difference between LMF and CMF:

> "In capitalism capital hires labour, pays to it a fixed income and obtains the residual; in self-management, , labour hires capital, pays to it a fixed income and gets the residual. The overturning of the capital-labour relationship consists in the fact that in capitalism decisions are taken by capitalists, whilst in self-management decisions are taken by workers. As a consequence in capitalism workers have a fixed income and capitalists have a variable income (this way bearing the economic risks of the productive activity), whilst in self-management capitalists have a fixed income and workers a variable income. This way they accept the responsibility of the decisions they take" (Jossa, 1999, pp. 70-71).

Hence, in CMFs capital hires labour whilst in LMFs labour hires capital[2]. The inversion of the hiring factor is likely to have stringent consequences both on the side

[2] A vast literature as developed so far both within the neoclassical and the institutional schools maintaining the thesis that there would be serious economic reasons strongly limiting the possibilities of labour hiring capital. This literature starts from the classical seminal study by Alchian - Demsetz (1972), passes through

of property rights and on the side of the governance of the firm. I will analyse the two aspects in sequence.

2.1 Property rights

It is usually accepted the idea that, in capitalist firms, the property of the firm is to be attributed to the entrepreneurial activity or to shareholders, i.e. to the hiring factor. It seems safe to affirm that the factor which controls the firm and bears the ensuing economic risks obtains the property (actually a qualified bundle of property rights) over the firm. This point of view is consistent with some of the best known definitions of the property of an asset. For example, Hart states that:

> "Ownership of an asset goes together with the possession of residual claims of control over that asset, that is, the owner has the right to use the asset in any way that is not inconsistent with a prior contract, a custom, or any law" (Hart, 1990, p. 160).
>
> " residual rights of control are important because, through their influence on asset usage, they affect ex-post bargaining power and the division of ex-post surplus in a relationship. This division, in turn, affects the incentives of agents to invest in that relationship" (Hart, 1990, p. 161).

If we consider the firm as a risky asset, it becomes evident that the characterisations given above fit quite well with the differences between CMFs and LMFs highlighted by Jossa. They should lead to accept the idea that worker members are (qualified) proprietors of the labour managed firm they work in. They bear the economic risk of their activity, take all the relevant strategic decisions and, because of these reasons, are entitled residual rights of control.

It should be note that there isn't agreement in the literature about this specific point. While it seems reasonable to defend the idea that the property of a labour managed firm is to be attributed to workers, the most part of the authors who studied this issue prefer to attribute the property of LMFs to the state. For example Vanek (1996b), Furubotn - Pejovich (1970), Pejovich (1990), Jossa - Cuomo (1997) and Jossa (1999). This tendency may have been influenced by historical events. The most important example of a labour managed system existed in the past is the former-Yugoslav one. It can be characterised as a form of usufruct accorded by the State to self-managed workers' co-operatives over socially owned capital equipment. I cannot go into the details of its working mechanisms. I will only note that, being the most important, it has strongly influenced past research, especially in the case of Yugoslav authors such as Furubotn and Pejovich. Personally, I fail to see any intrinsic characteristic of a labour-managed system that should lead us to think that workers' ownership of the LMF is an unavailable or unsuitable possibility. Jossa writes:

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a second classical article by Jensen - Meckling (1976, 1979) and arrives to more recent contributions, such as the one by Eswaran - Kotwal (1989). I do not have the space here to enter the interesting arguments defended by these authors. The readers willing to find a precise and well-structured reply to Alchian and Demsetz's argument can consult Jossa - Cuomo (1997).

> Since all the capital that finances the LMF is borrowed capital and since member do not have to confer equity to the firm, neither to become member nor at a later stage, the property of such type of firm cannot be assigned neither to workers' members nor to the capitalist who finance the firm. As a matter of fact, the property of the firm cannot be assigned to capitalists for obvious reasons, but it cannot even be assigned to workers, because they confer at most loaned capital. That is, they confer a type of capital that is remunerated with an interest and not with a dividend, and that can be withdrawn when they leave the firm. (Jossa, 1999, p. 78).

In my view, Jossa's argument is based on the idea that the factor which confers capital, and more specifically, equity capital, should be attributed the property of the firm. Since we cannot have equity as we usually intend it in LMFs, the property of the firm cannot be attributed either to capitalists or to workers. As a consequence it needs to be attributed to the state. However, if we accept a different perspective our conclusions may change radically. First of all, in LMFs, from a normative point of view, the central role is attributed not to equity, but to labour. The logical consequence is that the property of the firm will be attributed not to the factor, which confers full-risk financial capital, but to the factor which confers human capital, i.e. labour. Secondly, if the property of the firm is to be attributed not to the factor, which confers equity, but to the hiring factor, then workers' (qualified) ownership in LMFs becomes a clear and simple implication. As we saw above, the hiring factor needs to bear the risk intrinsically connected to the economic activity of the firm. Its capability to properly manage the economic activity gives it the right to appropriate the residual. In this respect, workers' ownership in LMFs seems to be justified. The fact that workers in LMFs confer only loaned capital, as Jossa correctly states, is no obstacle because they can use the money loaned in the past to absorb possible losses and as collateral. In other words, money loaned in the past by worker-members to their own firms can have functions similar to the functions of equity in CMFs. The fact that a worker-member can leave the firm withdrawing the funds she loaned is not necessarily a fatal impediment. If the firm is not able to pay in cash the amount loaned in the past, that amount can be converted in a debt equal to the others contracted by the firm with external financial supporters and refundable on the basis of a predefined schedule. Overall, it seems that solutions can be found to all the relevant problems arising out of the attempt to entitle workers with the ownership of the firm. At any rate, this crucial issue needs further and more careful enquire.

2.2 Distribution of revenues

Different property rights have notable consequences on the distribution of firm revenues as well. In CMFs labour income is considered a cost and detracted from the revenue to obtain a final residual gain (profit). The profit has various functions among which the most important are the remuneration of full risk capital (equity) invested in the firm, the remuneration of entrepreneurship and the finance of new investment projects.

The value added is the economic value that the firm as a productive organisation creates anew. Following Meade (1980, pp. 89-93) we can define the ***net value added (NVA)*** as value of sales *plus* value of increase in stocks *less* tax on sales *less* any tax related to the business, but not related to the personal income of the workers *less* purchase of raw materials and other current inputs (but *not* less purchase of fixed capital goods) *less* depreciation on fixed capital goods. It is important to note that, in this definition, *fixed interest and rents* are *included* in the value added. If we subtract fixed interest and rents from the value added we obtain, in the case of labour managed firms, a variable that Meade names ***total net labour earnings (TNLE).*** Formally: NVA=TNLE + amount paid in interest and rents.

In CMFs we can isolate two relevant parts within the value added. The first one is the already mentioned profit, whilst the second is the cost of labour. Two heterogeneous variables coexist. We have also a third component, i.e. fixed interest on loan contracted with external financial supporters. As it will be better explained below, I do not think this component of the value added can be considered a relevant one for our aims because it is the objective function of subjects (lenders) who do not have a really active role in the operation of the firm. The profit is the objective function of the principal (employer), the cost of labour (wages) is a crucial component in ì the objective function of workers (agents). As it is well-known, the two objectives are usually considered to be contrasting. This fact causes a sub-optimal allocation of workers' effort and can require the introduction of incentives to help align the principals' and agents' interests (Prendergast, 1999, p. 7).

In LMFs labour income is not a cost to the principal. Indeed, the difference between the principal and the agent should disappear because the only economic actors active within the firm should be workers. This fundamental asymmetry with respect to CMFs arises because in the latter case capital (the employer) is considered to have an active economic and organisational role within the firm together with labour. In the case of LMFs suppliers of capital funds are considered not to be an active party in the operation of the firm, i.e. all the relevant economic activities are performed by worker-members. Capital remuneration is basically fixed and decided in advance of the operation of the production process. The type of remuneration, which characterises the agents in CMFs (the wage) should itself disappear and be transformed in a fraction of the value added net of fixed interests and rents (total net labour earnings in Meade's definition). Labour remuneration comes to represent a residual variable itself. Non-labour costs and interest paid on loans are subtracted from the total revenue of the firm.

The *inclusion of fixed interest* in the value added could cause some problems in the exposition of my argument because fixed interest may be considered the objective function of capital lenders in LMFs as well. In this case, we would have two different objective functions in the value added of LMFs too. The two objective functions could be considered as carrying contrasting interests. However, I do not think it would be a correct interpretation. Whilst in CMFs the representatives of capital, be they entrepreneurs or be the management appointed by a board of directors, have an active role both in strategic planning and in the ongoing management of the production process, the situation in LMFs should be different. Capital lenders could at most bargain the remuneration of their loans with worker-members or their representative. External control and pressure on the decisions taken by members is

not to be excluded, especially if the amount loaned is conspicuous, but direct control by financial supporters should be ruled out. Furthermore financial capital is by definition a perfectly fungible factor of production. In other words it should not be firm specific, at least if financial markets do not present too many imperfections. As it is easy to understand, the same fact is not true in the case of labour, which is always at least partly firm specific, even when workers are asked to perform very easy and standardised tasks. Finally, we can understand that we do not have two different objective functions in the value added of LMFs because we cannot expect any type of moral hazard behaviour on the side of loaned capital. We do not need incentives to help align the interests of worker-members and capital lenders in LMFs.

For these reasons we can accept the idea that financial supporters' remuneration in LMFs (i.e. fixed interest and rents) does not enter the objective function of the firm itself, which coincides with labour remuneration (TLNE).

As far as labour is concerned, we can always consider workers as having some active role in the production process of the firm, both in CMFs and LMFs, even when a minimal one. Labour is not a homogeneous and fungible factor of production, unlike capital. Furthermore, it is never completely passive as capital is, some kind of active response by labour is always required. To a greater or lesser extent labour always becomes firm specific in terms of its human capital, unlike financial capital. Workers need to acquire some amount of knowledge that is at least partly tacit and firm specific (Polany, 1962, Nelson - Winter, 1982, Hodgson, 1999, Giudetti, 1999, 2000). Actually, the most recent developments in the literature concerning human resource management and industrial relations tend more and more to emphasise the role of innovative and participatory work practices (Michie - Sheehan, 1999, 2000) and good industrial relations coupled with codetermination of objectives (Cainelli - Fabbri - Pini, 1999b). To conclude, we can defend the idea that the objective function of labour in CMFs has a different nature with respect to the objective function of capital in LMFs insofar as labour has always some kind of active role in CMFs. If this is true, then it will be true that we have contrasting interests in CMFs between capital and labour, not so in LMFs where capital is simply a fungible factor of production whose remuneration is basically fixed and defined ex ante. As a matter of simplicity, from this point on I may use the term *value added* to indicate labour's objective function in LMFs even if it should be clear that this objective function does not include fixed interest and rents and that we are referring to *total net labour earnings*.

The presence of a unique objective function and the absence of contrasting interests do not eliminate *potential rivalry among members' interests*. As a matter of fact, the mere scarcity of resources is sufficient to create rivalry. The main implication is that the distribution of the revenues of the firm needs to be carefully regulated in order to avoid lack of consent, and incompatible claims over the value added. The most part of the literature agrees on the idea that the constitutive rules in LMFs need to indicate a continuum or a discrete set of pay levels in advance of the distribution of revenues[3]. A second implication of rivalry of interests coupled with heterogeneous

[3] The concrete way in which TNLE is sliced among worker-members is likely to present some complication. It would not be a good idea just to fix percent quotas with respect to TNLE, because the percentage would vary with the number of members. As far as the absolute value of each member's income is concerned, it would depend from the elasticity of TNLE with respect to the number of members. In any case, it would be possible for each member to worsen her situation both with respect to the other members and in

distribution of inborn capabilities is that the management needs to have decision making power to correctly evaluate workers' performance and career advancement[4]. Skilled workers are likely to ask for a correct and precise evaluation of their performance relative to fellow workers. At any rate, the necessity of regulation and evaluation cannot constitute a basis for the existence of contrasting interests in the above defined sense since all worker-members, though rival with each other, still have the same objective function.

2.3 The governance of the firm

The differences in property rights and in the distribution of income we have been highlighting so far have strong implications on the side of the governance of the firm too. By governance here I refer to the basic rules that distribute managerial and decisional rights to actors active within the firm, not just to the organisational arrangements necessary to steer the production process. I could as well have referred to this issue as the *basic institutional structure* or *constitutional structure of the firm*. As it is well known, LMFs usually embrace the rule "*one member, one vote*" instead of the rule that assigns equal power to the units of money invested as full-risk capital. The intention backing this radical change in the rules governing the firm was traditionally to shift the central role within the firm from capital to labour. If the shift of attention is clearly known and highlighted in the literature, I think its meanings and implications are not always carefully analysed. For example, there is a banal, but important difference between labour and financial capital: the former is usually (or better, always) a heterogeneous factor of production, whilst the latter is

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absolute terms. In order to avoid unwarranted volatility of incomes, it could be advisable to devise payment systems preserving members' purchasing power. A reasonable solution may be to fix take home pay in absolute terms for each worker and to add the residual part of TNLE at the end of the accounting period in the form of a proportional extension of current income. It will be negative in the case revenues are inferior to current expenses.

This technique would have various advantages: TNLE would still be sliced in predetermined quotas. The relative weight of different quotas could vary, but this fact should not be harmful. Indeed, it is likely to be necessary if competition among workers is accepted. What is important to stress is that this distributive technique would tend to preserve each worker's purchasing power and the level of consumption. It would respect the well-known rule that wants the profile of consumption to be smoother than the profile of saving and investments. Take home pay would be used mainly for consumption and would tend to be constant or to increase gradually, whilst the residual part would be saved in order to finance investments, to serve as a collateral and to absorb possible future losses.

[4] It is easy to understand that management's decision making power can lead to a new form of contrast of interests with the other worker-members both with respect to the *distribution of revenues* and with respect to *power of control*. As far as the former issue is concerned, if managers are given the right not only to evaluate their fellow workers' performance, but also the right to fix their own income, they will strive to maximise their own TNLE quotas at the expenses of the other members. A contrast of interests within the firm would arise again. For this reason, it is advisable to entitle some other institutional subject with the right to fix managers' remuneration. For example, the board of directors elected directly by workers could be given this task. This way nobody in the firm would decide her or his own remuneration.

Management's power of control should be restricted within appropriate limits as well. In this perspective, it is usually recognised that managers should receive a mandate lasting a limited period of time (e.g.: some years). However, their decision making power should not be impeded in the ordinary operation of the firm. The efficient functioning of the production process requires management's right to take decisions. We can think differently in the case of extraordinary events both within and outside management's responsibility. Categories of events that lay outside managerial decision making power should be defined explicitly.

homogeneous by definition. The clear implication of this difference is that each unit of capital will receive the same remuneration, whilst heterogeneous workers will receive different incomes[5]. A less obvious question is why all worker-members should be guaranteed the same power in the election of their representatives if their inborn capabilities, their acquired skills, their levels of effort, the number of hours worked etc can differ widely. The answer usually given to this question refers to the centrality of individual worker-members in co-operatives. They need to be guaranteed the same rights and, therefore, the same possibility to elect their representatives. The justification is clear from the point of view of the theory of democracy, but it is not easy to reconcile it with pure economic arguments. The idea may be defended that any rule different from the "one member, one vote" rule would create an imbalance of power among worker-members that could exacerbate overtime. For example, if workers received a number of votes proportional to their share in the value added of the firm, workers with greater shares would have more power to elect and influence management, this way having the possibility to widen still more their share of value added. A kind of circularity would be created between the partition of the value added and the power of control over distribution within the firm, where greater shares reinforce power and vice versa. The rule "one member, one vote" may constitute a fixed starting point preventing the above mentioned circularity. However, the rule "one member, one vote" does not imply equal shares for all worker members. The basic reason is that, as already stated, labour is a heterogeneous factor of production. Each unit of labour may well receive different shares of the TNLE. The exhaustive study of these fundamental questions concerning the governance of LMFs is not an issue at stake in this work, and, therefore, I will not pursue further this issue here.

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[5] Once it has been concluded that heterogeneous workers should receive different levels of remuneration, it remains to be understood if there is some optimal way to decide the differences between the pays of different workers and how big could be the difference between the maximum and the minimum income.

It is doubtful that it could be possible to define a kind of quantitative rule or a able to determine precisely the level of remuneration of different workers. The variables influencing the dimension of the quotas are too many and they are not measurable enough. The procedure that is most likely to deliver the best results is managerial evaluation. It can include quantitative measurements of some aspects of workers' performance.

More technically, one possible way of implementing the payment system outlined in note no. 3 above can be to fix the minimum level of take home pay. Each worker member is then assigned a multiplying parameter whose minimum value is 1. Each worker's take home pay is obtained simply by multiplying the minimal pay by the parameter. The parameter may vary within a fixed range (i.e. it may have a maximum value) as it happened until recently in the group of co-operatives located in Mondragon, Spain. In this case, more solidarity among worker-member and a more equal distribution of income is guaranteed, but the risk is to create difficulties in the recruitment and permanence of skilled and highly qualified workers. The alternative is to let the maximum pay be potentially as high as possible. In this case, the multiplication parameter would not have a maximum value. Though this solution may create a less equal distribution of income, it would be more suitable for production organisations that operate in highly competitive sectors where the recruitment of highly qualified workers (e.g. top managers) is a necessary condition for the survival of the organisation.

At any rate, the fact that the range between the minimum and the maximum level of labour income can be as wide as possible does not mean that it would be easy to observe very high realisations of the parameter. Indeed, in the case of LMFs, quite the contrary is likely to happen. The democratic control over the firm and its distributive mechanisms are likely to constitute a powerful force pushing as much as possible in the direction of an equal distribution of income. For this reason, the range between the minimum and the maximum income should remain inferior, on average, with respect to comparable CMFs. Figures from Mondragon clearly show this kind of tendency. Competitive pressure coming most of all from the external labour market will push the distributive variables in the opposite direction.

A different direction is indicated by authors such as Meade (1980, 1995), who proposes a form of Capital-Labour partnership based on the issuing of Capital shares and *Worker shares*. The value of both these types of shares is to be linked to the net value added gained each year by the firm. In this case, presumably, the number of votes held by workers would be linked to the number of labour shares they own, i.e. they would not necessarily be equal. In my opinion the institutional construct envisaged by Meade can be subjected to serious critiques, some of which are already highlighted by the author himself (Meade, 1980, pp. 102-108).

The first critique is the one just expounded and deriving from the circular interaction between the number of shares held by each worker and the power of decision about the definition of that number.

A further difficulty in Meade's scheme is that it is not clear how the power of control over the firm would be divided between labour shares and capital shares. It seems that the relative weight of the two kinds of shares would be left free to change. However, it can be easily predicted that both categories of shareholders would have a strong interest in obtaining the majority of votes. In the absence of a predefined partition of votes, the relative weights of the two categories would result from a power relation. Conflict would risk ensuing. For example, the issuing of new capital or labour shares could be undertaken not as a matter of efficiency, but in order to increase the relative power of control of one category of shares.

2.4 The structure of LMFs and its influences on incentive mechanisms.

The form of property rights, distribution of revenues and governance we have been highlighting so far is the necessary starting point for an analysis concerning incentives in LMFs. The peculiar structure of this type of firm may imply the introduction of certain types of incentives instead of others. Workers' ownership of the firm and workers' risk bearing seem to lead to a strong form of profit sharing, i.e. value added sharing, as the most "natural" and proper way in which LMFs will distribute earnings among members. The absence of contrasting interests between principals and agents do not support the introduction of gain sharing schemes since there are no principals and agents any more. Finally, the peculiar governance structure and insiders' power leads to envisage a particularly strong form of internally administered mechanisms for career advancement.

3. Gain sharing and LMFs.

We can define ***gain sharing*** as the partition between employers and employees of gains arising out of an increase in labour productivity or out of a reduction in non-labour costs. According to Jones - Kato - Pliskin: "With gain sharing the focus is on improvements in labour productivity (rather than profits) and employees share in cost saving, typically as a salary supplement soon after the labour productivity improvements are determined" (1994, p. 3). Gain sharing can be considered the typical kind of incentive mechanism that needs to be introduced in the presence of asymmetries in information and contrasting interests between a principal and an

agent. Contrasting interests and asymmetric information are both necessary and, when taken in conjunction, sufficient conditions to obtain sub-optimal allocation of the agent's effort. The principal strives to increase workers' effort by conceding wage-increases linked to some measure of workers' performance.

Given the structure of the claims over the value added highlighted in the previous sections, it is important to be clear about the possible roles that could be attached to various kind of incentives. The absence of the distinction between a principal and an agent and the ensuing absence of contrasting interests seems to eliminate the main reason for the introduction of gain sharing in LMFs. Let's proceed a bit more carefully.

The contemporary theory of wage flexibility encompasses various items apart from incentives proper: *profit sharing*, and *internal labour markets*. Baker - Jensen - Murphy (1988), Del Boca - Kruse - Pendleton (1999), Lazear (1999), Murphy (1999), Prendergast (1999), Cianelli - Fabbri - Pini (2000) and Mancinelli - Pini (2000) clearly distinguish the first type of incentives from the other ones. Other studies consider all categories together and analyse their conjunct effects on workers' productivity: Jones - Kato - Pliskin (1994), Lebow - Sheiner - Slifman - Starr-McCluer (1999), Murphy (1999), Gittleman - Handel (1999), Booth - Frank (1999).

Studies that focus on the internal structure of LMFs, on the effects of value-added sharing and on the progression in careers in such type of firm are much less numerous. Among the few I found treating the effects of income distribution on the productivity of labour, I can recall: Meade (1980, 1995), Brulin - Himmelstrand - Swedberg (1986), Klinedinst (1991).

In the literature, I follow the stream that stresses the importance of *distinguishing the theory of incentives proper from the theory of profit sharing and the theory of internal labour markets*. The principal uses incentives intended as gain sharing to induce the agent to pursue her own objectives (i.e. to maximise the principal's profit). This is the most classic meaning that is to be attached to the term incentive. When we analyse the economic meaning of profit-sharing we can be induced to think that it is an incentive mechanism as well, especially if it has some type of (positive) effects on labour remuneration. For this reason, it needs to be assimilated to other incentive mechanisms such as piece rates. In my view this is not the case for two main reasons:

- profit sharing can be introduced not as incentive a mechanism, but as a risk sharing device. In other words, the objective of the principal in introducing profit sharing may not be to increase workers' productivity, but to share with workers the economic risks faced by the firm. This is the thesis defended, for example, by Ichino (1989, 1994);
- secondly, when workers share in the economic results of the firm employing them, they also acquire, at least partly, the same objective of the principal. Up to a certain extent, they may change their standard behavioural characteristics and assuming some of the principal's attitudes. They may feel more involved in the activity of the firm insofar as their objectives become closer to the objective of the firm employing them. They may pay more attention to the strategic decisions taken by the management, for example about investment projects. The reason is that their future remuneration comes to depend directly on those decisions, not only via the necessity to preserve their jobs and wage levels. The direct involvement is supposed to

push workers to see the activity of the firm as their own venture and to feel as part of the production organisation intended as a holistic activity. The main positive result ensuing should be the reduction of the contrasts between workers and management, since workers do not feel any more management's decisions as extraneous and averse. These elements are not present in traditional incentive mechanisms such as piece rates. In that case the role of principal and agent remain completely separated and contrasting interests cannot be reduced. They are only counterbalanced by the incentive mechanism that does not weaken their intensity.

Because of the reasons given above, profit sharing should be considered as having different nature with respect to incentive mechanisms that do not link labour remuneration to the economic results obtained by the firm on the market (i.e. gain sharing). The conclusion is that, even when profit sharing has positive effect on labour productivity, it does not become an incentive mechanism, mainly because it implies a change in the objectives pursued by the actors and in their behavioural attitudes, contrary to what happens in the case of gain sharing.

3.1 Other elements that do not advise the introduction of gain sharing in LMFs.

Up to this point, it has been explained why gain sharing is unsuitable to the structure of LMFs, starting from the absence of a distinction between a principal and a agent and the ensuing absence of contrasting interests. There are other elements, which do not favour the introduction of gain sharing in LMFs. They are linked to the way workers react to this type of incentive mechanism and to the possibilities of measurement of workers' productive results. These aspects will be listed and some conclusion will be drawn:

- because of their intrinsic characteristics individual incentives, but also group incentives push workers to *focus and concentrate* only on specific tasks. This fact is banally true in the case of piece rates, even in the case of group incentives. These features of individual and group incentives seem to be particularly at odd with the internal structure of an LMF. Here workers should be required to pay attention to the whole working of the productive process and to be involved in the concern at each and every level: individual, group and firm level. A more holistic approach is required to increase labour productivity in LMFs;
- gain sharing, in its most traditional forms, such as piece rates, is far from inducing the formation of a cohesive organisation, where workers are induced to collaborate. As a matter of fact, they tend to induce competition and to reduce the motivations for collaboration among workers. They reduce the possibility of formation of horizontal relations within the firm. Since this kind of relation seems to be particularly important in LMFs, in their absence the risks of contrasts and lack of organisational equilibrium would be particularly pronounced. These risks would be dangerous in LMFs, where there is a lack of possibility of authoritative conflict resolution;

- to carry out a precise measurement of individual's or group's productive results can be extremely difficult, especially when production processes are complex and contributions are interdependent. These problems exist in CMF as well and it is one of the main reasons why incentive mechanisms such as piece rates are very rarely encountered nowadays. Furthermore, this kind of problems seems to be more severe in some of the most advanced organisational settings, such as learning organisations, both in the case of LMFs and CMFs;
- as it will be better explained in the section concerning internal labour markets, the possibility to lay-off workers seems to be particularly reduced in LMFs, if not excluded. This fact is likely to require a quite strong degree of workers' functional flexibility. Multi-tasking may be a necessary solution. If tasks are not limited in number and precisely distinguishable from each other, measurement problems are likely to increase;
- quantitative measurement of workers' productive results lacks the capability to highlight important elements such as tacit knowledge, which has crucial effects on the basic routines governing the firm. For example, as far as organisational arrangements are concerned, the maintenance of an internal equilibrium in the organisation, the training of newcomers, the acquaintances with subjects external to the firm are likely to require skills that are not measurable. The presence of tacit knowledge is more likely to be taken into consideration by incentive mechanisms different from gain sharing, such as internal labour markets, which are often based on tenure. One of the main reasons may be that time spent within the firm is a good indicator of the amount of tacit knowledge acquired. Even if two workers produce the same amount of items, a greater endowment of tacit knowledge in the older individuals may justify higher pays. The validity of these last remarks would rule out the suitability of payment systems that are exclusively based on piece rates. More experienced workers would not accept them;
- the assumption of contrasting interests is coupled by the one of asymmetric information as necessary conditions for the introduction of gain sharing. Maintaining the idea that there can be symmetry of information in LMFs is not an easy venture, but it does not need to be wrong, if an institutional system favouring workers' access to the most relevant information concerning the firm is present.

3.2 The problem of free-riding in CMFs and LMFs.

Incentives, in the form of gain sharing, can be *individual* or *collective.* In the latter case, the well-known problem of ***free riding*** may arise[6]. On the one hand, each

[6] The problem of free riding is present in the case of profit sharing as well. As a matter of fact, we only need the partition of some type of benefit deriving from the activity of a collective of workers to generate a problem of free riding. The introduction of profit sharing is anticipated in this sub-section concerning free riding.

individual worker will reap only a limited part of the increase in production her bigger effort will produce because of incentives. On the other hand, each worker has a convenience in reducing effort and reaping the fruits of her fellow workers' increased productivity. She will loose only a limited part of her wage, but she will benefit greatly from the reduction in the negative utility deriving from effort. If all workers behave this way, group productivity will decrease (the reader can consult, for example, Jones - Kato - Pliskin, 1999, pp. 10-11, Zamagni, 1998, Prendergast, 1999, pp. 39-41, Crudeli, 2000, p. 12-13). It is not the aim of this paper to treat in depth the problem of free riding. I will only introduce few remarks. At the theoretical level, various solutions have been proposed, ranging from *increased hierarchical control and monitoring*, *increased cost to shirking* through threat of various forms of penalties and of being fired (e.g. the theory of efficiency wages), control exerted through *peer pressure*. The last type of remedy to free riding seems to be particularly effective when workers perceive that the spreading of free riding behaviour will endanger their own wage and, eventually, their own job. For this reason they will seek control of each other actions and punish fellow workers who are shirking, for example by excluding them from the benefit of co-operative work. This type of exclusion can be a serious disadvantage where the circulation of information among workers is important, as it happens in learning organisations.

Though the empirical literature evidences the existence of various free riding mechanisms, it also leads to conclude that the problem of free riding is often less severe than the theoretical insights would make us expect. Furthermore, it also evidences that when labour remuneration is linked to the economic results of the firm (e.g. profit sharing), the free riding problem is likely to be overcome if all other conditions remain unchanged (Prendegast, 1999, pp. 39-41). These findings indicate the existence of contrasting forces and tendencies. Team incentives may lead to lower productivity than individual incentives, but when co-operation among workers is important and individual performances are difficult to be measured, it can become the best solution. Furthermore, the solutions to the free-riding problem listed above may help explain some of the positive results obtained by group incentives. Workers' capability to rationalise the advantages of co-operation and common effort and the dangers that shirking entails for group cohesion, morale and productivity may serve as a further explanation of positive findings.

In the case of LMFs, we need again to stress that the absence of contrasting interests between principals and agents should render superfluous any type of gain sharing mechanism, also in the case of team production. For this reason, the free riding problem is not an issue at stake with respect to the problem of gain sharing. The situation is different in the case of profit sharing. As it will be more clearly explained in the following section, it is the very structure of LMFs that requires a substantial use of profit sharing in the more comprehensive form of TNLE sharing. As already stated, some empirical evidence about CMFs seems to indicate that profit sharing is able to overcome the problem of free riding. The reasons are not easily found. It may be because of the increased involvement that firms employing profit sharing schemes can guarantee to workers, or it may be because profit sharing

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Profit sharing and value added sharing in LMFs will be thoroughly treated in all other respects in the following section.

distorts less than collective incentives the structure of labour remuneration. At any rate, the evidence cited by Prendergast concerns very specific settings and does not entail at all that the presence of profit sharing is sufficient, by itself, to eliminate the risk of free riding.

The more so in LMFs, where shirking behaviour is particularly favoured by the reduced hierarchical control and authority, even in the presence of a very strong form of profit sharing (value added sharing). For this reason, LMFs too need mechanisms able to reduce free-riding to a level low enough not to endanger the correct operation of the production process. As a matter of fact, free riding in LMFs can be particularly dangerous because it may come to involve the entire activity and because of the absence of an external authority control[7]. The most important way in which LMFs can be expected to face shirking problems is via *peer pressure* and exclusion of free-riders. The spontaneous perception of the dangers deriving from free riding and the ensuing peer pressure is likely not to be a sufficient solution in the absence of enforcing mechanisms that guarantee sanctions against shirking individuals, the more so the greater and the more complex is the organisation involved. Proper institutional solutions, both formal and informal, aiming at supporting reciprocal control and monitoring need to be devised.

4. Profit-sharing in CMFs, and value-added sharing in LMFs

As already stated, we do not have a variable that can be defined as profit in LMFs. The reason is that the profit in CMFs is the objective function of principals and it is to be distinguished from workers' objective function, i.e. wages. In LMFs we have a unique objective function which coincides with the value added and labour remuneration. We do not have a residual that is left after labour costs have been paid.

The fact that most workers' co-operatives usually pay anticipated labour income prior to the end of the accounting period and use the (positive) residual to finance investment programs should not confuse the reader. The partition of the value added in LMFs is to be considered as a simple accounting technique whereby a part of the value added is used for current expenses and the remaining part is saved. The behaviour of a workers' co-operative, in this respect, is similar to that of a household, whilst CMFs have a different behaviour.

Given the differences underlined, the analogy between wages in CMFs and anticipated labour income in LMFs is evident and indicates similarities in the way the two types of firm work. Workers in LMFs usually prefer to get constant incomes during the accounting period and to leave the most fluctuating part of the value added in the form of a residual, whose destination they manage at the end of the period. We observe a similar phenomenon is CMFs. In this case, though, the different behaviour of the current and residual part of the value added is associated with

[7] The existence of hierarchy and control is not to be excluded in LMFs. Indeed, in the presence of big and complex organisational settings, workers co-operatives are forced to introduce hierarchical ladders and some degree of monitoring. However, it remains true that, in a genuine LMF, the authority of individuals or institutional subjects external to worker-members power of decision and control over the activities of the firm should be ruled out.

different subjects and different objective functions. As it is well-known, the principal is usually considered to be less risk averse than the agent. The employment contract plays an insurance function with respect to the agent. Risk-averse workers will prefer a lower but stable income. Financial capital can be invested in different projects. For this reason principals will tend to be less risk averse than workers are and will accept higher but more uncertain returns. This type of argument is clearly not applicable to the case of LMFs. Here workers receive the whole residual, but they do have to bear the main part of the economic risks faced by the firm. They will need to reinvest a part of the value added within their own firm in order to constitute a base of equity and collateral. In the absence of a distinction between a principal and an agent we may not have different degrees of risk aversion within an LMF. Income smoothing is not supported any more by the insurance function of the employment contract. We can imagine, in this case, a form of self-insurance whereby workers prefer to have a smooth profile of consumption, leaving to the saved part of the value added the absorption of unexpected results. A well-known critique addressed at the viability of labour management states that risk-averse workers cannot invest all their financial and human resources in the same venture. Since they do not have the possibility to diversify their human capital they would need the insurance function of financial capital (Meade, 1972, p. 426). A thorough answer to this relevant objection would take me astray from the main topic of the paper. I will only note that, as far as investment in human capital is concerned, the condition of worker-members in LMFs is by no means inferior to the condition of employees in CMFs, it is actually likely to be well superior. Both categories of workers cannot diversify their human capital[8], but members in LMFs enjoy the whole value added, whilst employees enjoy only part of it[9]. LMFs, because of their very structure and constitutive functions tend to protect workers' jobs more than CMFs. This fact will reduce workers' exposure to the risk of layoff and it is likely to reduce their degree of risk aversion with respect to wage variability. Workers in LMFs control investment projects and they will plan investments in their own interest, contrary to what happens in CMFs. Their human capital can result to be more protected in the former than in the latter type of firm. Finally, members of an LMF can save on their take-home pay and invest in diversified projects, in exactly the same way as workers in CMFs can save on their fixed wage. The situation of worker members in LMFs may turn out to be not inferior to the one of employees in CMFs with respect to financial capital as well.

[8] In this respect, there is not a relevant difference between employees and members of an LMFs because of the very nature of labour as a factor of production.

[9] An important objection to this statement is that, even if workers in LMFs enjoy the whole residual variable, they need to save and reinvest part of it in the firm. Their condition will end up being no better than in CMFs. However, there can be a radical difference between the two situations. Even if workers have to save part of their TNLE share, they will retain the property of that amount part in the case it is reinvested in the form of personal loans to the firm. Though that amount of money may not be readily disposable during the permanence of the worker within the firm, it will become disposable upon retirement and, at any rate, it constitute a reserve of value whose property is entitled to the individual member. The property of invested capital will give workers higher degree of control over the activity of the firm. The situation is clearly different in CMFs where reinvested profits are property of full risk capital owners and workers do not invest relevant sums of money within the firm.

4.1. The structure of the distribution of the value added in LMFs

The residual part of the value added that is left after current labour income has been paid can be distributed in different ways. The most widespread distributive paths are three:

- the residual is distributed *proportionally on the capital quotas* invested by worker-members in the firm. These quotas are often equal or very similar for all worker-members. In this case, the residual is divided in equal parts as well;
- the residual is distributed into *collective and indivisible reserves*. In this case no individual worker-member will be entitled to withdraw quotas of the capitalised residual;
- finally, the residual can be intended as *an extension of current labour remuneration* already paid during the accounting period. In this case, it is usually distributed in proportion to what worker-members have already obtained in the form of take-home pay.

The three distributive methodologies can be mixed with each other. Indeed, it is rare to observe the isolate presence of only one of them. It is important to stress that, among the three, the only one that is most coherent with the property rights and distributive structure of LMFs seems to be the third one. As a matter of fact, since in LMFs all the value added should be considered as labour-remuneration, the first distributive solution seems to be quite at odd with that principle. If the residual is distributed proportionally on the capital quotas invested by worker-members, it assumes much more the features of capital remuneration then of labour remuneration. The second methodology is probably the most widespread among workers' co-operatives, especially in Italy. In this case, the residual saved in collective reserves can be considered as a mix of labour and capital remuneration. Usually this methodology is followed to reinforce the collective character of the firm and to support capital accumulation. The literature has already highlighted various problems arising from this type of distributive and accumulative mechanism[10], but I will not deepen the issue here. The third way represent, in my view, the most coherent one insofar as, if we take into account the whole accounting period, the value added produced by the firm results precisely sliced into quotas that represent exclusively labour remuneration. Obviously, the quotas are not required to be equal. Indeed, usually they will be different depending on various elements such as inborn capabilities, acquired skills, effort, tenure etc

[10] Only to cite the best-known study on the issue, Furubotn and Pejovich (1970) maintain the thesis that, with investments in collective and indivisible reserves, workers' co-operatives will tend to under-invest. The mismatching between the time horizon of members active within the firm and the time horizon adequate for profitable projects will push investment decisions toward short term and inefficient projects. Their result was based on the analysis of property rights and institutional settings existing in the former Yugoslav self-managed system.

4.2. *The effects on productivity of profit-sharing and its consequences*

We have now seen what are the differences and the analogies between wages and profits in CMFs with anticipated labour remuneration and residual part of the value added in LMFs. It has now come the time to try to understand if value added sharing can have positive effects on workers' productivity. We cannot have an incentive effect in a proper sense since, as already highlighted, incentives are given by a principal to an agent to induce the latter to pursue efficiently the principal's interests (Prendergast 1999, 7). However, value added sharing in LMFs may lead to increased productivity of labour. With this aim, we can take the average productivity of labour in CMFs as a benchmark. Various recent studies have been dedicated at least partly to the analysis of the effects of profit-sharing on productivity in CMFs: Clayre (1980), Baker - Jensen - Murphy (1988), Jones - Kato - Pliskin (1994), Booth - Frank (1999), Del Boca - Kruse - Plendleton (1999), Gittleman - Handel (1999), Lebow - Sheiner - Slifman - Starr-McCluer (1999), Murphy (1999), Prendergast (1999, pp. 41-44). The results delivered by most empirical studies indicate a positive relation between profit sharing and productivity. The results are not completely univocal and the evidence is often not robust. Other authors, such as Leoni - Tiraboschi - Valietti (2000, p. 6) who refer their observations to empirical studies carried out in Italy, maintain that the positive correlation between profit sharing and productivity could be spurious and due to other variables that are usually present in conjunction with contracts introducing profit sharing.

Following Jones - Kato - Pliskin (1994, p. 16) we can hold the *prima facie* position that profit sharing enhances productivity in CMFs as a valid one. I have already discussed in the previous section the reasons why a positive effect of profit sharing on labour effort cannot be considered as an incentive mechanism, at least in the standard sense of gain sharing[11]. If a positive effect exists, it is important to understand what are the possible consequences of this fact in the case of LMFs. Some empirical evidence concerning this specific comparative problem is available and indicates a positive effect of workers' risk sharing in workers' co-operatives (Bonin - Jones - Putterman, 1993). From a theoretical point of view, if the share in profits workers are accorded in CMFs can be assimilated to the residual part of the value added they enjoy in LMFs, then we can compare the two cases. If the effect of profit sharing on productivity is positive in CMFs, we have good reasons to think that the effect on productivity of value added sharing should be at least as positive, if not greater, all other conditions being the same. The reason is that workers in LMFs enjoy the whole residual value added and not only a limited part of it. They should come to perceive the whole activity of the firm as their own activity. In LMFs workers' involvement in the common concern should reach its maximum possible level.

One of the reasons why the effect of profit sharing in CMFs is reported to be limited and the evidence is contrasted can be that the amount of profits workers receive is normally quite limited if not negligible. Both the ratios of workers' profit quotas to the overall dimension of the economic results obtained by the firm and the

[11] In LMFs, we do not have a distinction between a principal and an agent and, for this very reason, we should not have contrasting interests between workers' members. One necessary condition for the introduction of gain sharing is lacking.

ratios of the same quotas to workers' wages are limited. From workers' point of view, the relevant ratio is clearly the latter. The obvious solution, where the aim is to increase labour productivity, would be to increase the percentage of profits distributed to workers. However, various serious obstacles are present in this direction. First of all, in CMFs labour is the hired factor and its remuneration traditionally is considered a cost, not a part of the residual. The theory of the firm usually assigns the residual to the hiring factor, here capital. The remuneration of the hired factor tends to be fixed. For these very simple reasons, there seems to be little room for workers to obtain a relevant part of the profit in CMFs. In conjunction and as a consequence of the basic problems, there are many others that can become more and more serious as we try to increase the profit quota distributed to employed workers. They can be divided into two groups:

The first one concerns ***risk-sharing*** and the ***degree of risk-aversion.*** Genuine profit sharing always implies risk-sharing insofar as the profit itself is an intrinsically variable residual:

- as Mancinelli and Pini (2000) state, in CMFs workers have a higher degree of risk aversion with respect to shareholders and, in the absence of their participation in the definition of the strategic objectives of the firm, the management[12] is likely to choose investment projects too risky compared to workers' preferences. Ichino too (1989, 1994) treats this problem. He demonstrates that when workers share in the economic risk faced by the firm, the management can have an incentive to further increase the degree of economic risk of investments. If the author is right, then risk sharing can become counterproductive from workers' point of view. The problem is likely to become more and more severe as the profit-quota conceded to workers increases both with respect to the absolute value of their wages and with respect to the value of the profit itself. For these reasons, it is difficult to imagine a wide part of profits assigned to workers. One solution could be to give workers or their representatives some degree of managerial power, by letting them have a voice in the decision about the strategies to be followed by the firm and investment plans. This is the direction suggested by the theory of *industrial democracy*. It is evident that this type of solution would render CMFs progressively more similar to LMFs insofar as workplace democracy is a crucial component of LMFs as well. However, even a partial democratisation of CMFs could not be sufficient to protect workers against the danger of riskier investment projects. Indeed, in co-determined systems too, such as the German and the Danish ones, the amount of votes assigned to workers' representatives in the ordinary assemblies of the firm is quite limited and by no means sufficient to allow a relevant influence on the decisions about investment projects. It can have at most a consultative and controlling relevance. On the one hand, as long as the majority of votes are assigned to shareholders, workers' power of decision is bound to be limited. On

[12] The reason why managers, in CMFs are less risk averse then the other employees is that managers are appointed by shareholders and their investment decisions should, at least partly, mirror shareholders' investment preferences. Shareholders are usually considered to be less risk-averse than employees because of the well-known capability to differentiate investments in financial capital. Furthermore, shareholders and the appointed management do control the activity of the firm, whilst employed workers do not. As a consequence, they will have easier access to relevant information about the firm.

the other hand, if the majority of votes were assigned to workers, we could not speak of a CMF any more. We do not have a simple and clear-cut solution to this type of problem;

- the combined presence of both shareholders' and workers' representatives on the board of directors is likely to create contrasts, the more so if the power of control the two parties are entitled to is similar. They defend two different and contrasting interests and they have different objective functions;
- another problem arises because, as Jossa (1999, pp. 72-74) clearly states, the part of the profit assigned to workers in CMFs cannot be a residual variable as well because there cannot be two different residuals in a unique production organisation such as a firm. Workers need to be assigned a certain part of the unique residual. This part can be fixed formally by a law or simply by customs. It can be also bargained periodically at the level of the nation, sector or firm. At any rate, it needs to be fixed in advance of the end of the accounting period. It means that the system is not able to determine endogenously the part of the profit to be distributed to workers. It needs to be arbitrary and, therefore, contested. There can be the risk to introduce another element of tension between capital and labour apart from bargaining over wages. Again, as workers' partaking in profits increase, their stake will be more and more relevant and capable to cause contrasts;
- the bigger the profit quota assigned to workers, the more pressing becomes the problem of *loss-sharing*. In standard profit-sharing contracts, workers are entitled a part of the net economic result of the firm, if this result is positive. If it is negative, no profit quota is assigned. This type of partition mechanism is not likely to be sustainable any more were the profit quota assigned to workers to increase. If profit sharing take the form of employee stock ownership, losses will be indexed by the decreased value of the shares. If instead workers receive a cash payment, then they would be forced to accept a reduction in current wages in the case the residual is negative. Given their lack of control over strategic decisions and over the distribution of the revenue in CMFs, loss-sharing seems to be an unreasonable solution. However, if it is true that, without workers' loss-sharing, the amount of the residual assigned to workers is bound to be limited. We obtain this way a new and stringent constraint on the dimension of that amount;
- in CMFs, by definition, workers do not enjoy control over the firm. They are the hired factor and their remuneration is considered to be a cost by the firm, i.e. it is not a part of the residual. The lack of control they undergo is likely to increase their degree of risk aversion. For example, since they do not take relevant decisions about the distribution of the revenue of the firm, they can assume a more conservative attitude with respect to the wage they accept and prefer a lower, but fixed wage, instead of a higher, but variable one. Fear of management's moral hazard and arbitrariness may well be able to fuel their risk aversion. Without a real and substantial participation in the definition of the strategic objectives of the firm, they are not likely to change their moods. This fact too restrains the expansion of the profit quota assigned to workers, this time because of workers' intention.

The second category of items that constitute an obstacle to the increase of workers' share in the profit in CMFs concerns the ***accumulation of capital***. As it is well known, the profit constitutes a vital financial source in CMFs, both as a direct source for investments and as collateral for the debts contracted by the firm. If a relevant part of the profit were assigned to workers in the form of current income, there would be clear risks of insufficient accumulation of capital and lack of collateral for debts. It is true that profit-sharing can be deferred. However, even in the case of deferred profit-sharing, important constraints on the profit quotas assigned to workers are present. First of all, when workers receive shares instead of current income, the amount of shares they receive is bound to be limited because otherwise they would accumulate enough capital to challenge majority shareholders in the election of the board of directors. The firm would cease to be a standard CMF. Assuming that this cannot be the case, at least workers cannot be assigned more than half the total amount of shares[13]. Since they are minority shareholders, they will face the already mentioned problems concerning lack of control, managerial moral hazard, different degree of risk aversion with respect to external shareholders etc
Even if the upper limit of half the total of shares is quite a loose one, because of risk aversion, workers' are likely not to accept wide and uncertain profit quotas and to prefer a lower, but less variable remuneration. Summarising: if workers do not accumulate capital for their firm at all their profit quota will be limited to avoid under-capitalisation. If they accumulate capital for their firm, the amount cannot be relevant in order not to endanger the existing hierarchical structure. In turn they will refuse to bear relevant quotas of risky assets.

Workers can be assigned deferred profit quotas in the form of pension funds as well. These quotas have some common features with profit-sharing, but also various differences. Like in the case of standard profit-sharing their dimension is linked to the economic results of the firm. However, to guarantee at least a minimum level of retirement pension, the quotas assigned to the fund cannot be exclusively dependent on the economic results of the firm. There needs to be a fixed amount that cannot be considered as profit-sharing, since it is decided in advance. Usually pension funds quotas do not carry voting rights. As long as their amount is limited, workers can accept this type of profit-sharing mechanism. However, when the value of quotas increases, workers will again undergo the cited problems concerning differential degree of risk aversion, lack of control over investment projects etc

4.3 A simple formalised definition

I hope I have shown the seriousness of some difficulties, which would be encounter in trying to create productive organisations that lie half-way in between the two extreme and pure forms of LMFs and CMFs by starting from the latter

[13] Here, the possibility of differentiated preferences about the organisation of the firm and about alternative investment plans among different categories of workers within the same firm is not taken into consideration as a matter of simplicity. Contrasts and diversified position may well arise among workers as well. However, all categories of workers have at least one crucial element of common interest: they all strive to maximise the same type of objective function. If they obtained the majority of votes the maximisation of workers' utility function (which crucially depends on wages) would acquire momentum in the life of the firm.

model. The theory of industrial democracy (George 1993) and the theory of capital-labour partnership (Meade 1980, 1995) are two relevant examples. The problems I have been dealing with are mainly linked to property rights definition, the distribution of the revenue of the firm, and to the power relationships among the two factors of production, less to organisational and governance issues[14]. Letting aside, at this point, obstacles of an institutional character, we can introduce a formalised definition of value added, in accord with Meade's definition given at page 7. This way it is easier to understand what can be the link between the two pure models of CMFs and LMFs. We define *L* as the fixed part of labour remuneration (wages), *K* as the fixed part of capital remuneration (interests on debts and rents), *k* as the variable and risky part of capital remuneration (profit) and, finally, *l* as the variable and risky part of labour remuneration (profit quotas assigned to workers in CMFs and value added shares in LMFs). We obtain the simple relationship representing the value added *(VA)* of a generic firm:

$$VA \equiv L + l + K + k$$

As already stated, *K* is included in the value added, but it does not represent the objective function of any actor having an active role within the firm. Furthermore,

$$TNLE \equiv VA - K = l + L + k$$

In the pure LMF model $k=L=0$, $VA=l+K$ and $TNLE=l$. We have used the term value added throughout the paper as a simplification because it is better known and because fixed interest *(K)* is not relevant for the purpose of this work. When $l=0$ we obtain the case of the pure CMF where labour remuneration (wages) is fixed and all the economic risk faced by the firm is borne by capital. Two relavant variables are left within the value added *(L* and *k)*, which represent the two objective function. We obtain the pure LMF model when all the economic risk is borne by labour and there is a unique objective function within the value added *(l)*.

We can also imagine a process leading form the pure CMF model to the pure LMF model. The broad feature of this process will be that as the variable quota in labour remuneration increases, the fixed quota decreases. Models in between the two extremes will present a situation were workers get a mixed remuneration with the variable part that come to represent a more and more relevant part. The way the variable part is distributed is also very relevant, but we are here highlighting only the broadest quantitative tendencies. At the same time, we will observe a progressive decrease in the weight of the variable part in capital remuneration. It means that there is a necessary trade off between the variable parts of labour and capital remuneration. The reason is that we can consider the overall economic risk faced by the firm as given, and the more risk is borne by labour the less risk will be borne by capital. Finally, it is easy to understand that as the variable part of capital remuneration decreases, the fixed part in labour remuneration will decrease as well because the less risk is borne by capital the less "guaranteed" remuneration will be

[14] These types of problems will be present as well and they need to be a major concern on the road to industrial democracy, but I have not the space to introduce them here.

possible for labour. The process leads to the other extreme where only *l* and *K* are present within the value added, i.e. the pure LMF model.

3.4 Value added sharing in the pure LMF model

In LMFs workers are both assigned the whole value added and entitled to the definition of the strategic decisions about investment projects. Risk bearing is a necessary consequence of the wider bundle of inalienable rights they enjoy. Furthermore, we only have one objective function. For these reasons, the distribution of the value added in LMFs should be able to exert the whole possible positive effect on workers' productivity, if efficacious solutions have been found to the problem of free riding[15]. We do not have any more the problem of *differential degrees of risk-aversion* because the only active party that is left within the firm is workers. Whatever their degree of risk aversion, the decisions about investment projects, which are taken by workers' representatives, will take into account that degree in a proper way. Furthermore, since workers enjoy control over the firm, their degree of risk aversion with respect to wage variability is likely to decrease. I think it can be safe even to assume that, in LMFs, worker-members are risk-neutral or, at any rate, less risk averse than in CMFs. This kind of tendency is already present in certain kind of CMFs. Jobs may be particularly protected if long run employment relations are guaranteed or probable, as it usually happens in *J-firm* models (Coriat, 1991, Jones - Kato - Pliskin, 1994). Here, workers tend to show higher willingness to accept risk sharing linked to the economic results of the firm. A substantial part of their wage comes to be constituted by profit sharing[16].

In LMFs, the whole value added is assigned to workers. They are now entitled the only available residual. The remuneration of the other financial sources will tend to become more regular, if not fixed. The reasons are similar to the ones expounded before in the case of CMFs. Even if a part of the residual is assigned to alternative financial sources, it is bound to be limited. This time we will have the danger of workers' moral hazard on funds borrowed by the firm. For this reason, external financial supporters will not accept any more a very variable, though higher, remuneration. They will tend to prefer a lower, but more certain return, i.e. their degree of risk aversion will increase.

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[15] The problem of free-riding is a crucial one and deserve to receive careful inspection and a specific treatment.

[16] An alternative interpretation of the same phenomenon is to consider the degree of workers' risk aversion as given and to impute their increased willingness to accept economic risk, as it seems to happen in J-firms and LMFs, to increased information about the economic performance of the firm. Indeed, the two interpretations may be linked to each other. For example, if access to information depends on control over the firm, workers' attitude toward economic risk may change in organisational settings where a higher degree of control over the activity of the firm leads to easier access to relevant information. In this sense, the degree of risk aversion would not be independent of the control over the common concern and access to information, but these elements would show some degree of interrelation. It is possible to hypothesise some kind of mutual and cumulative causation between the characteristics of the individual and the features of the social structure where the individual happens to operate. Even if we admit that each individual has some kind of innate degree of risk aversion, we do not need to conclude that her or his degree of risk aversion will remain independent of any external influence, such as the institutional environment. Institutions may influence the degree of risk aversion as a shift parameter that alters the level of the variable without changing the intrinsic tendencies of the individual.

As far as the problem of *accumulation of capital* is concerned, workers now will have to devise mechanisms able to guarantee a proper rate of saving and investments[17]. The obvious solution is to use a part of the value added. The dimension of the amount to be reinvested in the firm can be fixed and decided in advance, or obtained as a fluctuating quantity after current income is distributed. The most widespread solution is the second one because workers tend to prefer a kind of self-insurance as far as take home pay is concerned and to average out revenue fluctuations through reserves of capital accumulated in the past. Usually, both the level of current labour income, and, by exclusion, the reinvested quota, is decided by the management and approved by workers representatives. The decisions about the quota to be reinvested could also be left to the free decision of individual worker-members. In this case, the whole value added would be distributed to individual members, who would then decide how much to save and reinvest in the firm. It should be noted that the most successful groups of workers' co-operatives are observed to follow the former pattern and not he latter[18]. This type of empirical evidence is likely to be revealing of important mechanisms at work in collective will formation, decision procedures and behavioural patterns in self-managed production organisations. It would deserve more careful analysis. Briefly, if the choice about how much to save and reinvest were left to individual worker-members, the reinvested quota may result to be inefficiently low. The reason may be that each worker-member has an interest to increase her individual take-home pay, leaving the other members carry the burden of saving and risky investments. It is a manifestation of the free-riding mechanism in the case of deferred consumption and saving. Centralised decision making at the level of the firm can be hypothesised to be the most effective way to treat this specific problem. As a matter of fact, managers are appointed to take decisions applicable to the whole membership and bypassing misalignment of individual interests. Since it is not the topic of this chapter I will leave the analysis at this point.

To sum up the foregoing section, the division of the value added between current labour income and final residual in LMFs appears to be strikingly similar to the division between wages and profit in CMFs. The two parts of the value added in the two types of firm have the same role to a large extent. I hope the exposition so far has been useful to make us understand that the differences between the two cases are very relevant as well.

4. Internal labour markets, tournaments, careers.

Doeringer and Piore (1970, pp. 1-2) define an *internal labour market*[19] as: " an administrative unit, such as a manufacturing plant, within which the *pricing* and

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[17] As already stated in note n. 1, I am taking into consideration the LMF scheme, where the firm is exclusively financed by loaned capital. Various other financial schemes suitable for workers' co-operatives can be imagined, but they will not be treated explicitly in this work.

[18] One example is the group of co-operatives existing in Mondragon, Basque regions, Spain (White and White, 1988, Morrison, 1997).

[19] Some authors, such as Hodgson (1988, pp. 175-176), criticise the very use of the term *market* for the internal and administered organisation of career advancement within the firm. "Internal market" would be a

allocation of labor is governed by a set of administrative rules and procedures" (emphasis added).

Hence, internal labour markets are administered (i.e. non-market) patterns of labour remuneration that takes place within the firm. In Doeringer and Piore their main function is allocative. They usually comprises incentives mechanisms, the most important being career advancement based on tournaments and/or tenure. They also increase the power of insiders with respect to outsiders in the distribution of the revenues of the firm. Insiders will have the opportunity to share quasi-rents arising out of firm-specific investments. If a participatory way of organising the production process is present, internal labour markets can also increase insiders' power of decision about organisational settings and the strategic objectives of the firm. The problematic linked to internal labour markets, career advancement and organisational change in LMFs is widely unexplored, at least within the recent economic literature about industrial organisation. A first attempt to introduce these issues can reveal to be useful for a deeper understanding of the internal working of LMFs. Since it is necessary to introduce the theory of internal labour markets almost by scratch, the best idea, I think, is to base our reflections on the seminal contribution by Doeringer e Piore (1970). They have been the first to systematise the already wide body of knowledge existing on the issue at the time the book was edited. It is important to remember that their study was based on surveys and interviews carried out in firms that still embraced a mainly Tayloristic organisation of production. As it is well-known, we are now considered to live in a post-Tayloristic era in many respects. Therefore, it is important to integrate older studies and recent developments in the literature on organisational change. Contributions on multitasking and skill formation are particularly interesting. Snower (1999a,b) treats the first topic. Guidetti (1999, 2000) concentrates his analysis on the latter. Gittleman - Handel (1999) study innovative work practices and their impact on wage levels as it applies to low wage and unskilled workers. Gibbons (1997) and Prendergast (1999) develop general issues concerning career advancement and team production. Various authors study the problems and consequences arising out of unionism and organised wage bargaining. Snower (1999b) delivers a critical contribution about the compatibility between centralised bargaining and work reorganised in the form of multitasking. Cappellari - Lucifora - Piccirilli (1999) concentrate on the endogenous formation of preferences for union activists with respect to organisational change. Soresen (1997) maintains that trade unions do not necessarily worsen the economic

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misleading way for indicating interactions and exchanges between employers and employees because no real exchange of property rights is effected. It is possible to maintain that employees sells labour power to the employer, but the management of this labour power does not entail exchange of property rights. In Hodgsons' words: "… "internal labour markets" within firms are not markets in the sense defined above, in that no systematic and institutionalised process involving the buying and selling of labour power is normally to be found. As Doeringer and Piore (1971, pp. 1-2) themselves suggest, "internal labour markets" are not governed primarily by the price mechanism but by "a set of administrative rules and procedures". But a consequence of this point is to give strength to the argument that the term "internal labour market" should be dropped, despite the value of the associated analysis, and an alternative such as "internal labour allocations" should be used instead".

Keeping in mind this relevant objection, I will still use the term "internal labour market" to adequate to the most widespread terminology existing in the literature.

performance of firms and can play a key positive role in favouring investments in human capital and workers' skills formation. Fianally, Budd and In-Gang Na (1999) show that the level of wages obtained by American union members is higher both with respect to non unionised workers, but also with respect to non-union members covered by a union collective contract. This finding should reinforce the idea of union impact on organisation of the firm and level of bargained wages.

Other classical works within this literature are the ones by Coriat (1991), who compares the internal organisation of American and Japanese corporations and by Lazear (1995). The latter attempts to reinterpret career advancement and work tenure in a neoclassical fashion, and Williamson - Wachter - Harris (1996), who link the problematic of internal labour market to the study of the nature of the employment contract. The competence model defended by Leoni - Tiraboschi - Valietti (2000a, 2000b) and Koike (2000) can itself be considered a development in the literature concerning internal labour markets and skill formation.

Coming back to the contribution by Doeringer - Piore (*ibid.*, 39), they state: " internal labour markets are a logical development in a competitive market in which three factors (usually neglected in conventional economic theory) may be present: (1) *enterprise-specific skills*, (2) *on-the-job training*, and (3) *custom*". These are the main economic conditions favouring the emergence of internal labour markets starting from a competitive labour market. Guidetti (2000, pp. 13-17) takes a critical stance on this basic issue. He maintains quite rightly that the firm-specific skills are not very much a consequence of internal labour markets. They could be better interpreted as a consequence of the formation of an internally administered management of human resources, and not vice versa as Doeringer and Piore state.

When internal labour markets become an accepted pattern of behaviour at the microeconomic level, they usually cause an increase in the rigidity of the rules governing the internal administration of labour mobility within the firm. Even the regulation of fluxes from and to the external labour market becomes less flexible.

To Doeringer and Piore, the three preconditions listed above favour the formation of internal labour markets. They can be present in various degrees and their intensity will not necessarily be sufficient to make us observe a process of substitution of competitive labour markets by internal labour markets. To the authors, this substitution will intervene when the reduction in costs caused by the formation of internal labour markets is sufficiently high. The types of cost that internal labour markets can help reduce are:

- *costs of labour through a positive value of internal labour markets to the workforce.* Since rigid and administered rules increase *job security* and *chances of advancement in career,* they will reduce risks for workers who, being risk averse, will accept a lower but more stable wage. The reduction in expected costs will in turn induce management to prefer administered labour markets to competitive ones. Improved *equity* and *due process* causes the same type of increased value to the workforce. Workers will appreciate the lower risks of managerial arbitrariness that are present with long lasting employment relations. For this reason too they will be induced to accept lower expected wages;
- *turnover costs* and *turnover reduction.* When there is skill-specificity, labour becomes a quasi-fixed factor of production and acquires some of the features traditionally attributed to capital. We will observe an increase in

replacement and *termination costs.* The process of recruitment, screening and training will require more resources if skills are firm-specific. For this reason turnover will become more costly to the employer and there will be a tendency to reduce labour-turnover. Turnover reduction will cause lower costs for firm specific skills, and it will enhance the formation of internal labour markets because it will require a more rigid administrative structure and rules to regulate on-the-job training, advancement and tenure;

- *technical efficiencies in recruitment, screening, and training.* When turnover is reduced, we will have rigidities regulating advancement in careers ad tenure. These rigidities give management the opportunity to better keep in touch with the behavioural characteristics of the workforce. Knowledge about these characteristics will reduce recruitment, screening and training costs with respect to external labour markets.

These are the main features of internal labour markets as expounded in the classical study by Doeringer and Piore.

Given the administrative rigidities existing in internal labour markets and causing reduction in turnover, the problems of ***careers advancement*** and its regulation becomes particularly relevant. The most important mechanisms accounting for career advancement in internal labour markets are ***tenure*** and ***tournaments***. The first one, in assigning vacant jobs to candidates, gives the precedence to the past duration of their relationship with the firm, not to the skills they demonstrate to possess individually at a certain point in time. The second one assigns a limited number of valued jobs to the best candidates whose performance is assessed on the basis of subjective and/or objective criteria. The two mechanisms of advancement in career are quite different, but they end usually end up being more complementary than conflicting. They are rarely found in isolation and most firms tend to use a mix of the two.

Tenure serves to give a more stable perspective to workers advancement. In firms where tenure is respected workers know that they will obtain promotions at predictable intervals. Where firm-specific skills are relevant in the production process and costly to be replicated, tenure serves to render workers more faithful to the firm by reducing their desire to accept other work opportunities. Furthermore, tenure can help management to reduce the costs of new-comers. They can be paid under the level of their marginal productivity if the perspective of career and future pay increases is sufficient to halt their search for better opportunities. Younger workers are paid less than experienced ones also because the management has less information about their behavioural characteristics. For example, it is very difficult to predict if the fruits of money spent on training young workers will rest within the firm or not. For this reason, the firm will prefer to share the costs of training with its young employees by reducing their wages. These dangers are more and more reduced as the skills acquired by workers become firm-specific and as workers become experienced and have less possibilities to find equivalent jobs in other firms. Finally, it should not be forgotten a potentially negative feature of tenure: since career advancements are quasi guaranteed, it does not give strong incentives to foster workers' productivity. For this reason, tenure is often coupled with tournaments in various ways.

Tournaments have the clear advantage to select workers on the basis of their skills and capabilities. In this respect, they can guarantee more efficient results than tenure. However, they have disadvantages as well insofar as they give workers less stable perspectives of advancement in career. This uncertainty can hinder workers' willingness to spend time and effort in developing firm specific skills. If the probability of reaching a certain position is too low or too uncertain, the best solution for workers can become to invest in generic skills saleable on competitive labour markets[20].

5.1 The case of LMFs

So far in this section I have been outlining the most important features of internal labour markets in order to render the reader capable of critically translating these notions to the case of LMFs.

At the end of the previous section, we saw that the partition of the value added in LMFs resembles in many respects the one observed in CMFs, even if the differences are crucial as well. In LMFs like in CMFs, current labour income is paid during the accounting period out of the value added and it has a tendency to be less variable than the value added itself. Consequently, it is less variable than the end-of-the-period residual. This is true even if, in LMFs, we cannot draw a proper distinction between profits and wages. In CMFs the employer insures the employees against the fluctuations of income by offering them a lower, but less variable expected wage. In LMFs we can say that worker-members guarantee to themselves a more stable, but lower current income that averages out the sharper fluctuations of the value added. This fact seems to indicate that, as long as the determination of the amount to be destined in the form of current labour remuneration is concerned, CMFs and LMFs behave similarly. If this is true, than we have a first element to affirm that the theory of internal labour markets, as developed for CMFs, is applicable to LMFs as well.

Internal labour markets are likely to emerge in the presence of skill-specificity, on-the-job-training and customs. We now have to ask ourselves if these features, which influence and are influenced by the governance of the firm and its internal organisation, are present in LMFs as well. Here too, the answer seems to be positive. First of all, since LMFs are firms like all the others, they can develop a high degree of skill specificity. The more so if we recall the critique addressed by radical economists such as Marglin (1974), Stone (1974) to the theory of asset-specificity elaborated by Williamson (1985). Marglin states that the property rights structure of the firm determines asset specificity in a crucial way. The factor of production that is

[20] As far as the choice between tournaments and tenure in LMFs is concerned, the former may seem to be more suitable to this kind of firm, since it does not stimulate too though competition among workers. Undoubtedly, a certain degree of competitive pressure is unavoidable and even necessary in LMFs as well. A good solution that would represent a compromise between tournaments and tenure may be the one indicated by the competence model. The reason is that it tends to favour workers' skill formation by way of irreversible incentive mechanisms. While it reduces contrasts for the attainment of the most desired jobs, it is not even based on a purely tenured career advancement. More competent workers will tend to progress quicker than less competent ones.

accorded the property of the firm (we can refer to it also as the hiring factor) will be the most specific one. Since in LMFs labour is the hiring factor, this kind of firm is likely to develop a still higher level of specificity than CMFs. Skill specificity depends on the degree of asset specificity. Therefore, it needs to be an important feature in LMFs more than in CMFs. If skills are firm specific, then they will often need on-the-job training to be properly developed. Doeringer and Piore (1971, pp. 17-22) underline that on-the-job training is often highly informal, but informality of routine formation seems to be a feature of LMFs more than of CMFs. Even the second precondition for the emergence of internal labour markets is respected in LMFs. The third precondition, i.e. the existence of customs that help to render patterns of behaviour and governance rules more rigid in an administered labour-market than in a competitive one, does seem to be clearly fulfilled in LMFs. Indeed, one of the most important reasons for the existence of workers' controlled production organisations seems to be the substitution of a competitive labour market with a system of rules whereby competition and hierarchy are supplanted by co-operation and horizontal relations.

The rigidity of rules and stability of relations characterising internal labour markets in CMFs is likely to be increased in LMFs. For example, internal labour markets in CMFs increase the value of the firm to workers by increasing their job security and their prospects of advancement in career. These are features crucial in LMFs too, and they are still stronger than in CMFs. Theoretical arguments and empirical evidence[21] seem to indicate that the possibility of firing worker-members is extremely reduced if not suppressed altogether in LMFs. The theoretical literature has attempted to explain this fact in various ways. One of the most convincing one (in Jossa-Cuomo 1997, and Jossa, 1999, pp. 57-67) states simply that no worker-member has a real interest in firing other worker-members because her job would be endangered as well. If a majority group of workers within the firm (e.g. the group of incumbent members) decided to lay-off a minority (e.g. the new-comers), risks for the majority group would not be ruled out, because the same situation could happen again in the future. In that case, the younger members within the group of incumbents would see their job endangered. I have used the example of the partition between incumbent members and new comers, but similar mechanisms of collective will formation are likely to be repeated in the case of other kinds of partition of the membership. Any type of formal of informal rule regulating lay-offs of part of the membership is may create major concerns among a vast proportion of associates. This is the basic reason why LMFs are likely to take an extremely conservative attitude toward job protection[22]. If the possibility to fire worker-members in LMFs is

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[21] The reader can refer, for example, Whyte & Whyte (1988) and Morrison (1997) about the group of co-operatives in Mondragon.

[22] Even impossibility the impossibility to fire workers in LMFs does not imply that this type of firm is a closed box, impermeable with respect to the outside economic environment. Members are free to quit the firm. From an economic point of view, it is important to take into account the existence of outside opportunities. Even if the distribution of incomes within an LMF is likely to be more rigid than in the outside environment and wage differential may be quite reduced, the differences in the evaluation of workers' performances with respect to external labour markets cannot be too wide. The wider the differences the strongest the pressures undergone by the internal structure of remuneration. More skilled workers will have an incentive to quit if outside opportunities are particularly favourable. For these reasons, the internal structure of labour remuneration will tend to adapt to pressures exerted by the external labour market. The rigidity of the structure of LMFs will

extremely reduced or absent, members will take this fact into account when evaluating their own job and the increased job security will favour an increase in the value of the firm to members. There is a second implication of the reduced possibility to fire workers in LMFs. Since workers do not face any more the risk to be laid off when redundant, they may tend to accept to bear more risks as far as wage flexibility is concerned. They are almost sure to retain their job and, in time of crisis, they will be more prone to accept wage reductions in order to absorb decreases in the demand for the products of their firm. As already stated in section 3.4 increased control over the firm, coupled with increased job security for worker-members should contribute to render workers less risk averse than in CMFs. In this case too, we can hypothesise a reciprocal interaction between individual behaviour and the structural features of the organisation she works in.

The very structure of LMfs and the rational behaviour it engenders in worker-members creates the preconditions for the formation of internal labour markets, i.e. administered career advancement within the firm. The situation is not so well defined in CMFs. Here we can observe the formation of internal labour markets and there can be important factors leading to their formation, for example in cases where relevant and long lasting investment in human capital are needed for a good performance of the firm. However, this is not a necessary result. We can observe many instances of CMFs where we do not have a well defined internal labour market even when the firms employs highly skilled workers. Human capital can be available on external labour markets as well if professional labour markets are present. For these reasons, the institutional structure of LMFs can be intended as a further and more basic condition favouring the formation of internal labour markets and firm specific skills. The first type of cost reduction indicated by Doeringer and Piore (via *increased value of the firm to workers*) seems to be fulfilled insofar as workers may accept to join a LMF on the basis of a remuneration that is more variable than in CMFs. Many problems arising out of wage rigidity in capitalist economies could be reduced with important positive effects at the macro level as well. The ensuing attenuation of cyclical fluctuations in employment and demand would rise less serious challenges to macroeconomic stability.

The second type of cost reduction pointed out by Doeringer and Piore, namely *reduced costs of the formation of firm-specific skills caused by turnover reduction*, is not an issue at stake in LMFs when we do not have the possibility to fire workers members. At any rate, even if this probability exists, it will be lower than in CMFs. This feature of the firm will advice increased investment in human capital for incumbent members who will tend to develop firm specific skills and will accumulate highly specific human capital. Replacement and termination costs will tend to increase and

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prevent quick adaptations, but it needs to be flexible enough to take those pressures into account. The absence of such flexibility may be able to endanger the survival of the organisation. At any rate, the only type of organisational flexibility we can imagine in LMFs is one mediated by a democratic process of collective will formation. In this respect, LMFs will differ radically from CMFs. Various other issues concerning the relationships between internal organisation of LMFs and the external economic and social environment are of relevant importance and still await a satisfactory treatment from an institutional point of view. For example, a lot remains to be understood about the role of temporary and non-member workers in LMF, about under what conditions they will be accepted as members and what should be their rights and prerogatives in the case they do not have a membership status.

turnover to decrease. Recruitment, screening and training costs should be minimised in such a rigid membership structure.

Finally, a similar argument seems to be applicable to the issue of *technical efficiencies in recruitment, screening and training*. Turnover reduction favours a better management acquaintance with the other workers. Furthermore, knowledge about past performance, inborn capabilities, acquired skills and other behavioural attitudes concerning worker-members should be much more easily available to the board of directors, to the management and to the other workers in LMFs than in CMFs. The reason is that the horizontal relationships should be better developed. Limited authoritative and hierarchical relation, and the absence of contrasting interest should eliminate a relevant part of asymmetries in information. Components of the board of directors and the management in LMFs come from rank and file workers. All key positions within the firm end up being occupied by insiders who posses the best possible knowledge about the working environment and about past record of their colleagues. Even the third type of costs introduced by Doeringer and Piore should be minimised.

We need to keep in mind the already highlighted differences in property rights and organisational structure existing between LMFs and CMFs. However, it does not seem to be an exaggeration to state that the theory of internal labour market is likely to be perfectly applicable to the case of LMFs. Probably it is more suitable for LMFs than for CMFs.

6. Concluding remarks

This work should represent a first attempt to apply the most recent developments in the literature concerning incentives, profit sharing and careers formation to the case of labour managed firms. The strategy followed with that aim has been first to highlight the most important differences existing in property rights, distribution of revenues and governance between capitalistic firms and labour managed ones. Secondly, the various issues in incentive theory have been analysed singularly, focusing specifically on their basic characteristics and on their possible compatibility with the structure of labour managed firms. The possibility to introduce incentives proper as specified by the principal-agent literature seems to be excluded in the case of LMFs. Incentives such as piece rate would at best be superfluous, at worst harmful. They can potentially engender increased conflict between workers and management and among workers themselves. Profit sharing is not directly applicable to labour managed firms because of the different structures of the two types of firm. However, important lessons can be learned from research on profit sharing because this type of mechanism has some features that we find amplified and reinforced in LMFs. The analogy TNLE distribution in LMFs and profit sharing in CMFs can help us envisaging a continuum of intermediate cases laying in between the pure models of the two types of firm. Finally, internal labour markets and career formation seem to be the main way by which the LMF model can favour skill formation and accumulation of human capital for its members. All the conditions necessary for the formation of internal labour markets and the

consequences arising out of the presence of internal labour markets are likely to be present in LMFs and reinforced with respect to CMFs.

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