INVESTMENT AND FINANCING IN A LABOR-MANAGED FIRM AND ITS SOCIAL IMPLICATIONS

*HANS G. NUTZINGER**)*

> »In fact, the distinction between la-
> bor-managed and non-labor-managed is far
> more significant than the distinction bet-
> ween socialist and nonsocialist. While the
> former involves a whole way of life-bearing
> on every hour of man's active day, the lat-
> ter, from an individual's point of view, may
> not mean much more than a different di-
> stribution of wealth and income.«
>
> *Jaroslav Vanek***

I. INTRODUCTION

Traditional economic theory has for a long time failed to examine systematically the real nature of production, especially that of the modern industrial production process. Due to concentration on market coordination *between* competing firms and its effects on the allocation of goods in the economy, broad areas of decision-making and non--market allocation, like bargaining, voting and, especially within the firm, direct subordination, have been largely neglected both by giving less emphasis on these questions and by constructing too close analogies between market and non-market coordination.[1])

On the other hand, Marxist political economy has always emphasized the social nature of modern industrial production. Its main

---

**) *The General Theory of Labor-Managed Market Economies*, Ithaca, N. Y. and London: Cornell University Press, p. 397.

[1]) The latter case is well illustrated by the approach of Alchian and Demsetz in the investigation of the internal structure of the firm; see their well-known article »Production, Information Costs and Economic Organization«, in: *American Economic Review* Vol. 52 (1972), pp. 777—95, especially pp. 777—8.

topic is the interaction between the prevailing technical conditions of production, the state of productive forces *(Produktivkräfte)*, and the social relations of production *(Produktionsverhältnisse)*. Especially in the famous first volume of *Das Kapital*, Marx analyzes the real conditions of (capitalist) production, and in Chapter 51 of the third volume *(Produktionsverhältnisse und Distributionsverhältnisse)* he gives a clear exposition of the fundamental distinction between intrafirm and inter-firm allocation.[2]) But Marx' analysis of the market coordination between firms and its influence upon the social relations within the single producing units is not very satisfactory and detailed.

This very global consideration seems to indicate the need for a simultaneous approach combining the social *and* economic aspects of the production process. Since such a unified approach is not available — at least at the moment — we shall try to handle our subject by some kind of »mixed methodology, more specifically by starting with the neoclassical theory of the firm, but then taking into account the hitherto underrated problems of property rights[3]) and of the decision-making structure within the firm. The problem of investment and financing in a labor-managed firm (i.e. an enterprise run by its own workers under some idealized conditions) seems especially appropriate for illustrating the interrelationship between economic, social and legal aspects of the production process. To quote Joan Robinson, we shall try to use »academic methods to solve the problems posed by Marx«[4]).

In connection with this, we will also look at some aspects of the Yugoslav Economy and at the possibilities of building labor-managed sectors in Western countries, although this is not our primary aim; one should also bear in mind that the ideal models of labor-management are far from Yugoslav reality (by now the only country with prevailing workers' management) and from imaginable future cases in the advanced countries.

II. THE LABOR-MANAGED FIRM — ITS MAIN CHARACTERISTICS

During the last twenty years, interest in questions of market socialism has revived. The classical Barone — Lange — Lerner models tried to apply the traditional rules of perfect competition to the case of a more-or-less market socialism, and they have therefore very little

---

[2]) Karl Marx: *Das Kapital*. Kritik der politischen Ökonomie. Vol. I (1867), Vol. II (1885), Vol. III (1894); reprinted in: K. Marx/F. Engels: *Werke*, Berlin: Dietz, Vol. 23—25, 1962—1964. English translation: *Capital*. A Critical Analysis of Capitalist Production, Moscow: Foreign Languages Publishing House, 3 vols., 1957—1961.

[3]) Only in recent times some literature on the influence of property rights on allocation and distribution has evolved. For a good survey of the more orthodox approach on this field see E. G. Furubotn and S. Pejovich: »Property Rights and Economic Theory: A Survey of Recent Literature«, in: *Journal of Economic Literature*, Vol. 10 (1972), pp. 1137—62; idem (eds.): *The Economics of Property Rights*, Cambridge, Mass.: Ballinger, 1974. A new, more fundamental property theoretic approach with special emphasis on selfmanagement is followed by David Ellerman in different articles; we will touch on this approach later on.

[4]) *An Essay on Marxian Economics* (1942), new edition: London: Macmillan 1971, p. 95.

to say on the internal structure of the firm, but at least implicitly presume an analogous 'socialist' hierarchy of central planning board, director, technician, and worker.[5] In contrast, our new approach starts with the question of the probable outcome of a labor-managed firm in which (in the most simple case) every worker partakes of the firm's decisions and yields with exactly the same weight. This does not necessarily exclude some form of specialization in the process of decision--making which may prove inavoidable; but it must be guaranteed that (1) each worker has the same chance of influencing and controlling the firm's decisions, not only by electing the respective committees and individuals, but also by his *practical* eligibility for these positions[6]; and (2) the control of the decisions delegated to managers and commissions by the working collective must be effective in the sense that the choice of alternatives to be voted on should not be left solely to the specialists.

In reality, both these ideal conditions are far from fulfillment and in any case can only be approximated. But since some negative sanctions are always open to the workers, such as recalling managers and delegates (in the worst case), and, above all, denial of reelection[7]), the scope of this authority is clearly limited and in any case much narrower than in a traditional capitalist or 'socialist' enterprise. But as theoretical and empirical investigations of political democracy reveal, only a considerable extent of direct participation can hinder information monopolies and other privileges of individuals and groups at the top levels which are inherent in the common model of a 'division of labor' in democracy.[8] Even these few observations show the importance of the social dimension for a labor-managed system.

But for the moment let us assume that these questions could be resolved in practice, or that they have, if unresolved, no distinct influence upon the market behavior of the firm. Then, in the pure case, the most probable outcome will be the maximization of the firm's income (net of non-labor costs) per working unit which may be thought of as a working hour of unskilled labor, with other types of labor in predetermined proportions to this basic unit.[9] As has been shown by Ward and, more generally, by Domar and Vanek among others[10]),

[5] For a survey of the ‚classical' debate on socialism see B. N. Ward: *The Socialist Economy. A Study of Organizational Alternatives*, New York: Random House 1967, chapter 3, and Hans G. Nutzinger: *Die Stellung des Betriebes in der sozialistischen Wirtschaft*, Frankfurt/M. — New York: Herder & Herder, 1974, part II.

[6] This latter condition poses special difficulties in Yugoslav practice where low qualified workers are significantly underrepresented in the relevant institutions; see for example P. Blumberg: *Industrial Democracy: The Sociology of Participation*, London: Constable 1968, pp. 217—221; recent investigations seem to support his observations.

[7] In order to hinder the establishment of a new elite of selfmanagement officials, even the possibilities of re-election were severely restricted by Yugoslav law, but from practical reasons the restrictions have been lowered by the amendment XV (1968); see e. g. H. Hamel (ed.): *Arbeiterselbstverwaltung in Jugoslawien*, München: Beck, 1974, p. 43.

[8] A very useful treatment of this problem, with extensive references, is given by Carole Pateman: *Participation and Democratic Theory*, Cambridge University Press, 1970, especially chapters 1, 2 and 4.

[9] This is one type of the well-known Marxian ‚reduction problem' to be resolved by collective agreement which may pose severe difficulties in practice. The classical Marxian solution to this, however, was the application of value theory to the case of different training expenditures.

[10] Instead of to a vast body of literature we refer only to Vanek's systematical exposition, *The General Theory. . .*, op. cit,- chapters 2 — 5, and, for recent literature, to Nutzinger, *Die Stellung. . .*, op. cit., part III. 1, each with further references.

under the usual conditions, the results of the optimization model dif-
fer from the comparable capitalist twin only with respect to the use
of labor: all factors being paid at the value of their marginal products,
the residual income is to be distributed between the workers according
to the predetermined weighting scheme for different types of labor.
Assuming for the moment only one type of homogenous labor and the-
reby avoiding the difficulties of weighting, we might say that the
implicit wage rate is not necessarily equal to the value of labor's mar-
ginal product. As is well known from Euler's Theorem, the fulfillment
of this optimality condition holds in fact only if the firm operates in
the range of constant returns to scale. This is exactly the case where
the capitalist twin operates at a zero profit, and hence, with equal
given prices and same technology, we are in a situation characterized
(1) by equality of predetermined contractual wage rate and income per
worker (the implicit wage rate), and, as a further consequence, (2) by
an identical allocation of both firms.

Going from partial analysis to the general equilibrium properties
of both systems, we observe a similar analogy. In the model of tradi-
tional perfect competition it is the mobility of capital which tends to
equalize the profit rates in different branches by entry to markets
with excess profits and by exit from markets where your cannot earn
the average rate of profit. This is the central mechanism for the attain-
ment of a general equilibrium under idealized capitalist conditions,
and it reflects clearly the dominating rôle of the entrepreneur or the
firm within the capitalist society. The corresponding equilibrating
mechanism under labor management represents labor''s central status
as the residual claimant: the adjustment process is now determined
by the size of income per worker in different firms and branches.
A labor-managed firm which cannot earn the average implicit wage
rate will, at least in the long run, be left by part of its workers and
eventually will be withdrawn from this market, while firms and bran-
ches with more than average income per working unit will attract new
workers. If they cannot enter existing firms[11]), they will attempt to
create new ones thereby reducing the excessive incomes in the respec-
tive markets. In conclusion, it is exactly the residual claimant status
which determines the specific forms of the adjustment process towards
general equilibrium: to the capitalist tendency of an equalization of
profit rates, there corresponds an analogous law of equalization of in-
comes per worker. Whereas the »hiring party«[12]) determining the social
structure of the firm — and hence the equilibrating mechanism — in
the two systems is quite different, the existence of a general equili-
brium holds under quite the same conditions. This is rather intuitive
and can be proved formally.[13]) This very general consideration on the
mode of economic operation under labor management enables us to

---

[11]) This becomes very probable if the firm has already reached its partial optimum
with a higher implicit wage rate and hence feels no reason to lower it by additional workers.

[12]) This illustrating term has been used by David Ellerman to characterize the nature
of the firm. See, e. g. his paper »The ownership of the firm is a myth«, mimeo., Boston 1974.

[13]) For this see J. Drèze: »The Pure Theory of Labour—Managed and Participatory
Economies«, 1975, Core Discussion Paper No. 7122.

comprehend the differences between the two systems in a more ab-
stract manner than is done in most of the existing literature. Under
our assumptions, a different behavior will always occur when the
capitalist wage rate and the labor-managed income per working unit
differ. The most probable case to which we shall confine ourselves is
that of an income per worker higher than the respective wage rate.
But this means exactly that the capitalist twin operates at a nonzero
profit, or, using the principle of factor remuneration according to the
value of the marginal product, that it operates in the range of decreas-
ing returns to scale.

The general observation from this hypothetical comparison con-
cerns the use of labor in both systems. Whenever the capitalist firm
earns a positive profit, its labor-managed counterpart evaluates each
succeeding working unit higher than the former one. The labor-mana-
ged firm facing the same market and technological conditions will
hence employ less labor relative to the other factors, by the principle
of cost minimizing. In the absence of Hicksian regression[14] it follows
that the other factors because of the positive cross derivatives between
labor and non-labor inputs will also tend to be reduced. It is therefore
reasonable to assume that the average size of a labor-managed firm
will be less than that of its capitalist twin. This conclusion is even
strengthened by the non-economic aspects of labor management: since
the working collective forms the basic decision-making unit of each
enterprise, the technological entity »plant« and the legal entity »firm«
tend to coincide, whereas the merger of different plants is a natural
and frequent consequence of capital expansion and the decision-making
power derived from capital ownership. In short, »there is a far grea-
ter desire within democratic structures to decentralize than in non-
-democratic ones«[15]. An important consequence of this result concerns
the market behavior of a labor managed firm facing given prices. When
the market prices for its goods rise, if it maintains the initial allocation
this implies an increase in the implicit wage rate; if Z be the price
increase, the new income per worker increases will be Z/L, where L is
the original labor input. But this enforces a reallocation between labor
and non-labor inputs as labor has become more costly. The income
effect of price increase at the first stage is followed by a substitution
effect, quite analogous to the traditional Slutsky equation. When labor
input is reduced, there arises a tendency towards output reduction
which is normally countervailed by the increased value of the margi-
nal products of non-labor inputs as a result of the price increase; hence
the non-labor inputs tend to be raised. But in comparison to the tra-
ditional profit-maximizing firm, the output increase will be weaker
under labor management as a consequence of the labor reduction. In
some highly unrealistic cases, with labor as the unique or dominating
variable input, we even arrive at a reduction of output. These extreme
cases are very improbable from both the economic and the social point

[14] See J. R. Hicks: *Value and Capital*. 2nd. ed. Oxford U. P. 1946, pp. 96—98.

[15] J. Vanek: »Decentralization Under Workers' Management: A Theoretical Appraisal«.
in: *AER* Vol. 60 (1970), pp. 1006—14, quoted page 1008.

of view, despite their popularity within part of the literature where
they are taken as proofs of misallocation by labor management. An
anomalous market behavior is hardly to be expected if one takes into
account the substitution effects between the inputs, the transformation
effects in favor of the higher priced outputs, the choice between work-
ing time and leisure, and, last but not least, the general equilibrium
properties and the respective long run adjustment proceses.[16]) And
even if from the pure economic point of view we would except a reduc
tion of labor, this may come in contradiction with the social structure
of a labor-managed firm. As many writers have observed, in contrast
to capitalism, under selfmanagement the number of employed workers
is not variable in the short run hence we have the problem of laboı
rigidity[17]), but rarely that of output reduction. Except for variations
of working hours, labor can only be reduced in the long run (by reti-
rement, death, and voluntary withdrawal); this we shall discuss in the
next section.

Before going on to the investment decision, we note that our com-
parative exercises were somewhat artificial. The comparable capitalist
twin was thought of as facing the same prices, technology and factor
endowment as the labor-managed firm. This neglects the positive
effects of participation on productivity, human capital and workers'
self-monitoring, which have been widely observed.[18]) But since it is in
favor of participatory structures it can only strengthen our positive
results and weaken the negative ones.

III. THE INVESTMENT DECISION

We are now in a position to judge both the central importance
of investment and growth for the functioning of labor managed sy-
stems, and its economic and social peculiarities as compared with
traditional investment criteria.

Applying the kind of analysis used up to now, we might conclude
that the peculiarities of labor-managed investment could be completely
derived from the change of the firm's objective function and from its
particular decision-making structure. But here, a third element hitherto
neglected intervenes: ownership. This seems to question both the neo-
classical approach and our starting quotation from Vanek. But as we
shall demonstrate, the property question may be solved under various
institutional and legal arrangements, and hence loses much of its im-
portance for a *final* evaluation of the efficiency of selfmanaged socia-
lism, quite in contrast to Pejovich's belief.[19])

---

[16]) See e. g. Vanek, *The General Theory...*, *op. cit.*, chapters 3—5; Nutzinger, *Die Stellung...*, part III. 1; as an example of an exaggeration of the anomalous cases see, among others, various contributions in Hamel, *op. cit.*

[17]) This is also an important problem of the Yugoslav economy; cf. e. g. Hof and Wagner, in Hamel, *op. cit.*, pp. 108—34.

[18]) See e. g. the references in F. FitzRoy H. G. Nutzinger, »Entfremdung, Selbstbestim-
mung und Wirtschaftsdemokratie«, in: J. Vanek: *Marktwirtschaft und Arbeiterselbstverwaltung,*
Frankfurt/M. — New York: Campus, 1975, pp. 165—223, especially to Seymour Melman and,
for Yugoslavia, to Ichak Adizes.

[19]) Cf. S. Pejovich: »The Capitalist Corporation and the Socialist Firm: A Study of
Comparative Efficiency«, mimeo. (1975).

Before going into the details of investment, it seems useful to derive the general characteristics of investment and financing in labor-managed firms. While the capitalist enterprise will carry out only those projects which are expected to increase its (appropriately discounted) profit, its labor-managed counterpart takes the expected increase of its income per working unit as the main decision criterion. As before, both criteria coincide if (1) the capitalist firm operates initially at a zero profit and hence, other things being equal, w — the capitalist wage rate, equals g — the income per worker, and if (2) the increase of the implicit wage rate due to the investment equals the increase of the explicit (capitalist) wage rate after investment. The latter condition is in clear contradiction with the socio-economic structure of capitalism where the wage rate in different periods (before and after investment) is normally determined outside the firm on the labor market (i.e. by bargaining between employers and unions) and is hence independent of the single entrepreneur's investment decisions[20]) so that it may be judged as highly unrealistic. Assuming identical prices and quantities in both of the firms we obtain the capitalist profit in the initial situation (by subtracting the objective functions and after some rearranging) as a function of income per worker (g), capitalist wage rate (w), and initial employment (L):

(1) $G = (g - w)\, L.$

By taking the total derivative, we can approximate the profit increase due to the investment as follows

(2) $dG = dL\,(g - w) + L\,(dg - dw).$

Since the capitalist's criterion for undertaking the project is clearly $dG > 0$, while for the labor-managed firm $dg > 0$ is the corresponding condition, the decision criteria in our very simple two period model are quite different. As is easily verified, the labor managed firm shows a tendency in favor of labor-saving and against labor-using projects: in some cases it will undertake profit decreasing projects, if they are very labor saving, and, correspondingly, will omit profit increasing ones ,if they increase the number of workers beyond a certain level All possible combinations are obtained by inspection of our formula

(2a) $dg = 1/L\,[dG - dL\,(g - w)] + dw > 0.$

This does not argue for our labor-managed economy since it seems to indicate an inefficient allocation of investment.[21]) But here

---

[20]) Of course, this does not hold on the macro level: if all firms increase their profits by investment, then by renegotiation wages will rise. We allow for this case and merely assume that $dg > dw$, which must on the average hold as long as the entrepreneurs can save part of the gain from investment. This assumption appears not too unrealistic.

[21]) As we know from the preceding section, the identity of allocations with different labor remuneration cannot be optimal for at least one of the firms. But since we are interested in the comparison of two, states (before and after investment), this non-optimality does not touch our *qualitative* conclusions.

again we must look at the general equilibrium properties and the dy-
namic adjustment processes. In a more or less static context where
technology and knowledge are open to all — existing or potential —
firms, we have a simple equilibrating mechanism:[22]) Those enterprises
which earn more than average incomes in the initial situation can be
assumed to have exploited most of their investment possibilities, whe-
reas firms with less than average income per worker are apt to under-
take the more profitable projects; finally, new firms entering the mar-
ket (by our assumptions, without specific costs) have the whole spec-
trum of investment possibilities at their disposal. By undertaking these
investments, there is a clear tendency to equalize the incomes of all
firms in the market, and this, in turn, implies a tendency for vanishing
of the corresponding capitalist profits. After arriving at this stage, the
general equilibrium properties apply and the investment criteria coin-
cide again. In disequilibrium, investment by labor-managed firms, even
if undertaken according to a different criterion may well lead to a Pa-
reto optimal situation.

There are probable cases where (1) differences in income cannot
be traced back to differences in the extent of investment undertaken
before, and (2) where technology and knowledge is not open to all
firms in the market, at least not at the same cost. Under these condi-
tions, market entry and growth of new and small firms is hindered.
Moreover, the investment behavior may well be disequilibrating as it
can strengthen monopoly positions hereby increasing income differen-
ces instead of reducing them. The negative macroeconomic consequen-
ces on employment, price level and consumers' welfare are all too
obvious. Hence we have a clear need for some kind of market regu-
lating institution which may prove necessary from other reasons too.
This may be Vanek's »National Labor Management Agency«[23]) (NLMA)
which we shall discuss later on.

But there is another problem put forward first by Pejovich[24])
which concerns the distinction between (individually) owned and non-
owned assets. Since investment in one period means reduction of cur-
rent income in that period, from an individual's point of view there
arises the choice between individual saving (in owned assets) and giving
part of his current income for the firm's investment.[25]) The latter,
however, is collectively owned, and since it is irreversible from various
reasons[26]) only the future returns accrue to the workers while the
initial outlay, and hence the individuals' share of it, gets lost.[27]) Neglec-

[22]) This is Vanek's objection to the non-optimality blame put forward e. g. by Ward.
Cf. Vanek, *The General Theory. . .* , pp. 302—3; Ward, *op. cit.,* pp. 212—15.

[23]) Cf. J. Vanek, *The General Theory. . .* , chapter 15.

[24]) See S. Pejovich: »The Firm, Monetary Policy and Property Rights in a Planned Eco-
nomy«, in: *Western Economic Journal,* Vol. 7, September 1969.

[25]) If there is no positive interest rate on private saving, this problem of choice and
all connected problems will disappear; from a socialist point of view there are good reasons
for a zero interest rate on individual saving deposits. But even in the state socialist countries,
a moderate interest is paid so that, at least empirically, this problem is relevant.

[26]) The most important reason is the protection of the productive capacity from being
converted to current income which would contradict both the owners' interests (state or other)
and the interests of the society as a whole. According to Yugoslav law, the book value of
the assets must be maintained at any time.

[27]) There are, however, property right structures conceivable (and even applied in
practice) which avoid this loss; see the next section of our paper.

ting the non-monetary effects of investment, such as improvement of working conditions, and differences among workers — but only for the moment — due to the loss of initial capital outlay, our »representative worker« must earn a higher interest rate in non-owned, than in owned assets (e.g. saving deposits, or loans). The difference between the interest rate in non-owned assets, i, and the interest rate in owned assets, r, necessary to induce self-financed investment, is easily determined by the simple steady state formula[28])

(3) $(1 + i)^T - 1 \geqq (1 + r)^T$.

Hence, for any given market rate r, i must be higher than r, and the difference increases as the expected useful life of the equipment, T, shortens.[29]) More specifically, for any fixed r^*, i is a monotonically decreasing, convex function of T, with r^* as a lower bound:
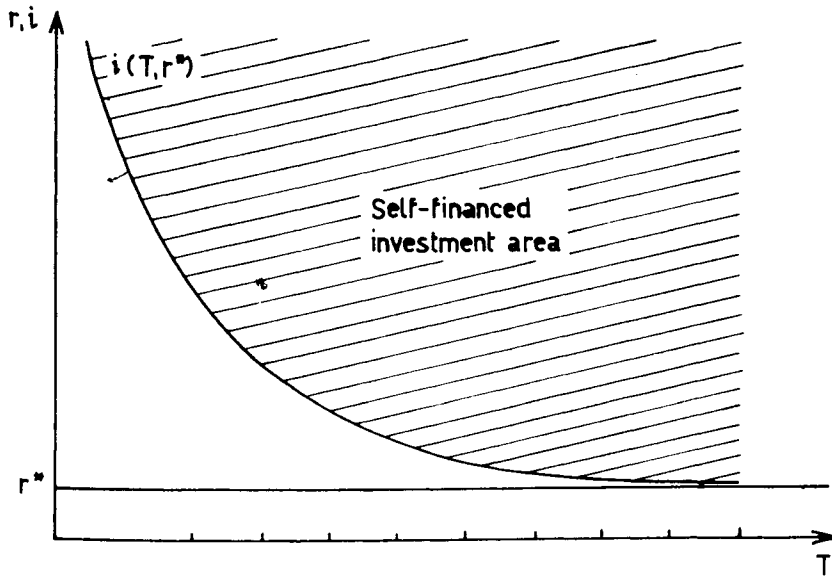

Fig 1

This state of affairs has the obvious microeconomic consequences for the firm, such as a tendency to underinvestment and short run income maximization. Its effects for the labor-managed economy as a whole are even more distorting. This is easily verified by an obvious consideration analogous to the classical »housewives' paradox«.

---

[28]) The more complicated formulae used by Pejovich, Vanek and others lead to the same qualitative conclusions; hence we take our steady state condition for the sake of simplicity.

[29]) If the expected membership of the »representative worker« is shorter than the expected useful life, then the former space of time applies which in turn increases the difference between i and r further.

Assume, only for simplicity, that all firms in a branch (or the whole economy) face the same investment possibilities and the same income situations. If all the firms lend each other investment funds at the market rate and if these loans are owned by the respective workers[30], each firm's investment decision will depend on r instead of i, and hence the extent of sectoral (or total) investment will be much higher than without this mutual exchange of worker-owned funds. This simple change of property rights has strong consequences upon the investment undertaken. (According to equation (3), by this operation, the minimal profitability of investment falls from 105 to 5 percent, if $T = 1$, $r = 5\%$.)

Surely, investment undertaken by the self-financing criterion is far from optimal even on the macro level. Moreover, the decision rule for self-financed investment is easily counteracted by adequate institutional arrangement which will be discussed in detail in part IV below. The conclusions drawn from our simple example hold, to some degree, even if there are some differences in the investment opportunities and income situations of the firms, as long as there are individual property rights of the mutual loans. Since investment must be based on clear *economic* evaluation of different alternatives (not necessarily) based on our simple income considerations[31]), and should not crucially depend on the legal arrangements, we have here identified a major shortcoming of labor-managed systems *without appropriate property structures*, but not of labor management as such. We conclude this section by discussing the social implications of self-financing for the internal structure of the firm. As Vanek has observed[32]) the central social problem of self-financing under the assumed property structure stems from the fact that it tends to merge two distinct, and under some circumstances conflicting, principles: the principle of participation by work which is the essence of labor management, and the principle of participation by ownership which may be viewed as a birthmark of capitalism. In fact the final failure of the nineteenth century cooperative movement in England and Germany, and with less importance in France, can exactly be traced back to this confusion. These cooperatives relied heavily on self-financing, partly because of the insufficient opportunities of obtaining external funds (from cautious if not hostile banking institutions), and partly because of their lack of knowledge of its theoretical and historical implications. Though systematical investigations of the historical development are scare, the incidental observations support almost all of the theoretical conclusions.[33])

---

[30]) i. e. the workers have the full rights to their shares of the principal and to the current interest returns even after leaving their firm.

[31]) We can easily allow for the more realistic and more sophtisticated objective criteria proposed in literature (e. g. by Vanek, Horvat, Pejovich, Furubotn and FitzRoy). But they would only complicate our analysis without changing much of our *qualitative* line of argument; for this, see section IV below.

[32]) Cf. »Some Fundamental Considerations of Financing and the Right of Property under Labor Management«, Department of Economics, Cornell University, Ithaca, N. Y. Working Paper, 1971; id.: »The Basic Theory of Financing of Participatory Firms«, Working Paper, Ithaca, N. Y. 1971, to be published in: J. Vanek (ed.): *Selfmanagement: Economic Liberation of Man*, Harmondsworth: Penguin 1975.

[33]) For Germany, see e. g. the observations put forward by H. Wittelsberger: »Sozialistische Marktwirtschaft — ein Modell zur Reform der Unternehmensverfassung?«, in *Ordo*, Vol. 20 (1969), pp. 69—102.

The first effect to be expected springs from the fact that after investment self-financed capital equipment becomes some kind of »free« good. Hence, income per worker tends to be raised if members leaving the cooperative (or the labor-managed firm) are not replaced, which in turn increases the capital-labor ratio. If the use of foregone invest- ment causes no specific costs, there is a clear tendency towards a re- ductio ad absurdum[34]) where the last man runs the whole firm, of course after restructuring the capital equipment in favor of automa- tion. But even if we have some low costs for keeping capital (but less than the marginal value product of capital) intact, we observe essen- tially the same tendency.[35]) Historically, there were two forms of this type of »self-extinction«: One where the cooperative was dissolved once the founding members had died or retired, and the other where the remaining founders, instead of replacing the retiring members, decided to employ wage-workers (this was done with the explicit in- tention to increase their own income by hiring traditional workers and to avoid sharing the fruits of their former investment or absten- tion from consumption with other people).

This self-extinction may be strengthened by the following effect of this »passive« restoration: if increase of capital intensity implies decrease of marginal product of capital, this may disturb the initial equality of the members' (average) rate of time preference and the mar- ginal product of capital and hence provoke the attainment of a new equilibrium position by selling part of the capital equipment; this in- crease the current income and tend to restore a situation in which there is no incentive for the firm either to invest or to disinvest. Even if selling (without replacing) is forbidden by law (as in Yugoslavia) there are clearly some possibilities to do so implicitly by replacing only part of capital depreciation while maintaining the accounting value of the firm's assets. This also tends to destroy the labor-managed firm and might be observed historically as well.

Even if investment is carried out and the firm is not dissolved or retransformed into a traditional capitalist enterprise, we must remem- ber the »underinvestment force« caused by the higher discount rate for non-owned assets (this has been discussed above). It should be added that this tendency, in turn, leads to a long run size of the firm below the optimum, i.e. in the range of increasing returns to scale. We only mention the problems of monopoly and welfare losses which may arise from this.

Finally, we must consider again the labor saving tendency of in- vestment, derived before. This effect is caused by both the property structure and the particular objective function. But since self-financing hinders investment, employment and new entry, it also impedes the attainment of general equilibrium, where the investment criteria would

[34]) Vanek, The General Theory..., p. 306.

[35]) For a more formal and detailed analysis see Vanek, »The Basic Theory of Finan- cing...«, op. cit.; Vanek's analysis is discussed at some lenght by Nutzinger, Die Stellung des Betriebes..., part IV. 2. A very illustrative list of negative effects to be expected from self-financing is given by Vanek, »Some Fundamental Considerations...«, op. cit.

coincide; hence this »never-employ effect«[36]) can also be derived from the property structure.

So far, we have treated the working collective as homogenous, consisting exclusively of »representative workers«. Now if we look at the distinct interests of different groups in the firm, self-financing is very likely to destroy the working collective as a »social body«. Since the decrease of current income in favor of self-financed investment affects the different groups in different ways, severe conflicts of inte-rest will arise. Members with high current income and an expectation of long future membership (e.g. managers and experts) will be more inclined towards investment since their relative sacrifice (of actual consumption) tends to be small and their relative yield (also in non--monetary terms) will be large. This is not so with low qualified wor-ker earning low income and possibly expecting uncertain future mem-bership. Other differences depend on the life-cycle and individual mo-bility. We may construct conflicting groups such as »the rich« and »the poor«, or »the young« and »the old«, or even »the mobile« and »the immobile«; without going into details, it becomes quite clear that workers' solidarity will be weakened, and power structures (such as coalitions, decisive groups etc.) may arise. So, the apparently »non--economic« consequences may prove even worse. But from the econo-mic point of view one should not underrate fact that self-financing creates a tendency for labor dismissal and at the same time for labor immobility; the same reason which dampens the subjective willingness to leave reduces the objective chance to obtain a new job: the sharing of the yields from self-financed investment.

IV. APPROPRIATE FINANCING AND PROPERTY STRUCTURES

In the concluding section we discuss some possible institutional and legal arrangements which may lead to optimal investment, from both the economic and social points of view.

First, we suppose the traditional property arangements which give the owner of a thing the complete disposal of it (within the limits po-sed by law). Then, there are two imaginable forms of financing:

(1) Complete borowing of the investment funds on the (perfect) market, or from the National Labor Management Agency;

(2) Financing of the firm's assets and investment by non-voting shares[37]) to be traded on the capital market.

Both possibilities might be viewed as forms of external financing although in the case of non-voting shares there could be an (incidental) identity of share owners and workers. One should note that the distinc-

---

[36]) For details see Vanek, »The Basic Theory. . .«, op. cit., and Nutzinger, *Die Stel-lung. . .* , op. cit., part IV. 2.

[37]) Those non-voting shares were quite common in the nineteenth century, e. g. for creating railway companies, and their rates of exchange were not much below that of com-parable »voting« shares. In our century, the widespread shares of denationalized firms in Germany with narrow voting limits, such as shares of VW and Preussag, are very close to this former type and suffered only little (if any) disadvantage from these peculiarities.

tion between »socialist« and »non-socialist« labor-management now gains more importance than in our earlier considerations. Traditional capital markets seem to contradict the classical notion of socialism as some form of »social ownership« (in practice, state ownership), and, therefore, the second possibility will not be open to socialist labor--management; in the socialist case capital markets will be restricted to the production sphere, i.e. to socially owned banking institutions and firms. On the other side, a national (or sectoral) labor-management agency providing the funds necessary for investment and establishment of new firms, might seem to contradict the principles of »non-socialist« labor-management. Applying the kind of analysis used in the preceding sections, it becomes quite clear that the distorting effects of self-financing will disappear if capital markets are »perfect« in the following sense: (1) if borrowing and lending rates tend to be equal, and (2) if investment projects with profitability above the market interest rate if the labor managed firm decides to undertake them are completely financed from outside. Provided those »perfect« capital markets define away the investment problem rather than solve it, one could argue that the »imperfections« of capital markets — especially significant differences between lending and borrowing rates and limits to the proportion of external funds — arise from the very nature of both borrowing and investment: they always involve some risk and uncertainty arising from necessarily insufficient knowledge of the future. Specifically, borrowing involves the risk of losing part or whole of the credit, and investment expectatiions may fail. So, there must be some premium for incurring those risks which in turn destroys the notion of a perfect capital market. Moreover, we must consider the fact that the state of knowledge is not the same for the two contracting paries: usually, the lender has less knowledge of the specific conditions determining the expected profitability of the investment project(s) to be financed than the firm itself, and hence he may well insist on some kind of participation by the firm, i.e. on partial self-financing, as a form of insurance against too risky projects. Also, there will be some absolute limits to borrowing determined by the value of the firm's assets in relation to its burden of debt which may prove more restrictive than in the capitalist case as there is no personal liability[37a]) and anyone might be tempted to get rid of any obligation by leaving the firm. But one should not overate these problems since they are partly common to all existing economic organizations; and a moderate share of selffinancing with its probable effects towards increased responsibility and productivity could easily outweigh the small distorting effects.

From the social point of view, one should take into account some problems of control and power, not specific to labor management, but central to its performance. We already noted the different degrees of information which could justify some possibilities of controlling the firm by the lending institution. If there is effective competition on the

---

[37a]) This holds for corporations too, but might be judged less important for them as there is some self-interset of the owners against heavy indebtedness. On the other hand, the solvency of a firm implies workers' loss of employment, and this risk might be an additional or even sufficient insurance against too risky investment.

capital market, especially among the banking institutions, the scope of lenders' control over the borrowing firm will be limited to an extent desirable for avoiding to risky projects.[38]) But with increasing degree of monopoly (or concentration) within the banking sector the danger of lenders' monopoly power over the firms demanding funds for investment increases. After the banking reforms in 1965, this seems to be one of the major shortcomings of the Yugoslav economy.[39]) If there is not sufficient competition in the market for funds, the principle of labor-management in the banking sector might well contradict its effective applicability to productive enterprises: maximizing monopolistic income per bank employee could easily imply not only reducing income of productive workers but also narowing the labor-management rights of the firm. This could take place in different ways, e.g. by unjustified obligations connected with the credit and other forms of restricting the firm's autonomy.

One possible way out of these dangers would be the establishment of the National Labor-Management Agency as a central fund for investment. This institution would be obliged to preserve competition by initiating new firms, i.e. giving the funds for working collectives willing to act on a market, and by securing the means for further investment, always with the intention to support the equalization of different incomes per worker. The agency would not be run according to the income maximization principle (which would lead to serious misuse of its monopoly power) but as a state authority. Even if a democratic control of this institution were possible, the bureaucratic inefficiency to be expected in such giant institutions supports a negative evaluation of this proposal. The Agency should be restricted to regional and development planning and to maintaining competition by traditional means.

The problems of control, as sketched above, are by no means restricted to labor management, but tend to be even more serious under both capitalism and state socialism. The reason for this is simply to be seen in the democratic decision-making structure ideally involving all workers in contrast to the authoritarian forms involving only a few individuals at the top levels. The danger of risky or even illegal operations, such as »luring« credits by »embellished« data on the firm's performance and the expected yields from investment, is clearly greater in hierarchical organizations with its possibilities of monopolizing information at the top. This follows not only from the small number of participants in such operations (you cannot conceal those operations with hundreds of confidants)[40]), but also from the different

---

[38]) As J. Vanek has proposed, investment in risky projects could be reserved to the National Labor—Management Agency, thereby preventing individuals or banks from losses and acting as an insurance agency. See his Working Paper No. 83: »Uncertainty and the Investment Decision Under Labor Management and Their Social Efficiency Implications«, Cornell University, Department of Economics, Ithaca, N. Y. 1974, especially p. 25.

[39]) Among the vast literature on Yugoslav banking see e. g. E. Furubotn: »Bank Credit and the Labor—Managed Firm: The Yugoslav Case«, in: Furubotn and Pejovich (eds.), *The Economics of Property Rights*, op. cit., pp. 257—76; S. Pejovich: »The Banking System and the Investment Behavior of the Yugoslav Firm«, in: M. Bornstein (ed.): *Plan and Market*. Economic Reform in Eastern Europe, New Haven and London: Yale U. P. 1973, pp. 285—311.

[40]) This argument is put forth by Vanek, »Uncertainty and the Investment decision...«, op. cit., p. 24.

responsibility structures. In vertical organizations, one can seldom find clear-cut responsability for any economic or legal fault: the burden is shifted from above to below and from below to above. In contrast, under effective worker management, no such easy avoidance of liability is possible. So, the extent of necessary control is definitely smaller than with hierarchical firms, and this, in turn, supports the functioning of capital markets.

This characteristic will also support trading with non-voting shares since part of control is done within the firm. But before concluding that control will be unnecessary one must consider the above mentioned case of a border solution (the dissolution of the firm as a whole) which may not be completely exluded by the risk of losing the job — especially under macro-economic full employment. More sophisticated forms of waste — reducing the firm's profitabity and hence the yields and the value of non-voting shares such as inflating organization, costs of representation, and amenities for the employed — have to be taken into account. This forming of organizational slack is well-known from capitalist (and state socialist) monopolies, and although it works more in favor of all workers under labor management, it is clearly undesirable from the economic and social point of view. So, an exclusive investment by voting shares may be unrealistic.

Our example of non-voting shares leads, however, to the second category of problem resolution. Its main feature is the redifinition of property rights, more specifically, its splitting into at least two parts. Instead of introducing non-voting shares, we might redefine the shareholder's property right as right of obtaining a predetermined share of the firm's net yield. That is, we split the property right into a basic ownership of the shareholders' who may be the individual workers, any people, or, in the socialist case, the state, and usufruct ownership inalienably attributed to the working collective.[41]

Obviously, part of our earlier considerations, especially those on nonvoting shares, apply to these cases too. We shall only discuss the *differentiae specificae* in the order listed above.

(1) Shareholders = Workers

This case, interestingly enough, corresponds both to a proposal put forward by Ota Šik[42], and, approximately, to the empirical case of a participatory firm in Germany[43] (J. F. Behrens in Ahrensburg). Its main characteristics' are on the one hand the restriction of share ownership to the workers of this firm and hence the repayment of shares or its conversion to credit after withdrawal from the firm. In order to avoid an initial payment which would hinder access of new

---

[41] This distinction has been made by Vanek, »Some Fundamental Considerations on Financing. . .«, *op. cit.*, section III.

[42] »Marktwirtschaft ohne Kapitalismus«, in: *Fragen der Freiheit*, No. 87/88, April 1971, pp. 3 — 24.

[43] Cf. cbs-Dokumentation Nr. 1: *Das Ahrensburger Modell — Gesellschaftsvertrag des Modellbetriebes Joh. Friedrich Behrens*, Ahrensburg: Carl—Backhaus—Stiftung, December 1972.

2*

workers, the workers entering the firm receive only labor payment and accumulate the shares of the firm in the following years. According to Šik's proposal, the workers receive inalienable shares of the firm's reinvested net income, in proportion to their current incomes which are resold by the firm (or perhaps by the National Labor-Management Agency), once they leave the working collective, for whatever reasons. (In addition, Šik proposes to determine a repayment somewhat below the market value in order to hinder speculative withdrawal). Since the repayment cannot be re-invested, it can only be used for consumption or saving in the socially owned banks, and the worker must start from a zero point when he enters another firm.

Before discussing the social implications of this arangement, it might be illustrative to sketch the institutional arangement which is used in the German firm mentioned above. In this form, any worker is free to become »member« (»Gesellschafter«) of the firm after fulfillment of some formal conditions. Then, in addition to his wage (which is determined by bargaining with the union), each year he receives a share of the firm's net income which is partly distributed and partly retained for capital formation; the relative size of each worker's share depends on his wage bill, and the division between retained and distributed earnings is determined by the participatory committees. The firm's earnings are net of all costs including wage payments and interest payments on the accumulated workers' capital. While due to their accumulated shares, the workers with long membership obtain a larger part of their whole income as non-wage payments, every member has from the very beginning the same say in the firm's decisions. After leaving the firm (even firing is possible) his share is converted into a credit and repaid after some appointed time.

The advantage of the model is quite obvious: Decision-making is determined solely by participation in work; there is (with complete self-financing) no dependence upon external lending or external share--holders. On the other side, differences in income tend to be greater, and dismissal of members with large shares may be very costly (and hence is avoided, to the detriment of new members). As the German experience shows self-management may also operate towards strength-- ening economic recessions: substitution of labor by capital which may become necessary in order to break even when output prices and quantities are falling, is seriously hindered. Moreover, the funds obtai- ned from retained earnings will be insufficient and this in turn leads to (partial) financing from outside; hence the identity of workers and shareholders becomes less important, and some influence from the lending banks will be certainly exercized.

(2) State = Shareholder

This case prevailed in Yugoslavia, until 1963, and might be thought of as necessary for any socialist selfmanagement. The state's claim for participation in the firm yields is derived from its basic ownership

and might take the form of interest payment (discussed above) and/or sharing the firm's net income. The relative size of state's share is expected to be fixed unilaterally by the state itself. While an arrangement of this kind may be inevitable for socialist ownership of the means of production it restricts the firm's autonomy (i.e. its rights of *selfmanagement*) and involves some well known bureaucratic risks. Looking at the social dimension of this model we see the absolute need for a thoroughgoing democratic control of the authorities as a necessary prerequsite for effective labor management.

(3) Anyone (Workers, Households, State) = Shareholder

This last case where anyone can purchase shares of the firm thereby obtaining the rights of basic ownership, but not of usufruct and decision-making, could be termed *labor-capital partnership*. This type of economic organization has historical precursors from the medieval *commenda* and *compagna*[44]) up to the nineteenth century. From the pure economic point of view we observe a considerable invariability of allocation with respect to price fluctuations. Assume that all material inputs except capital are in proportion to labor input (or to output). Then we have, for given capital, net revenue as a simple function of labor input. If there are fixed interest charges[45]) and no set-up costs, the capital labor partnership will act in the same way as our previous labor-managed firm[46]). But these two assumptions do not seem to be very realistic in our case; with set up costs and without fixed debt charges, labor allocation and hence for given non-labor inputs output as well will remain uninfluenced by price fluctuations as capital and labor share the arising gains and losses. Therefore, there is no incentive to leave the optimal position, except for the case where labor's share falls below the subsistence level which will lead either to output increase (an anomalous case very similar to our over-simplified model of section II) or to renegotiation of the shares between labor and capital. The stabilizing effects are effective even in the case of non-proportional material inputs (i.e. substitutability between labor and material inputs) and to a lesser degree in the case of mixed financing by both shares and debts. Moreover, in the latter case it easily proved that increasing the proportion of shares to fixed debt charges improves workers' welfare by dampening wage and labor fluctuations without impairing the situations of »risk neutral« capital owners.

These propositions are easily illustrated by comparing figures 2 and 3. A »traditional« labor-managed firm with fixed capital charge $R = rK$ and given capital K will reduce its optimal output when the market price for its product(s) rises, *provided* the other non-labor inputs (such as material) are either in a predetermined proportion to

---

[44]) For a description of these medieval institutions, see A. Udowitch: *Partnership and Profit in Medieval Islam*, Princeton: Princeton University Press, 1970.

[45]) This would contradict the pure model of a labor-capital partnership defined by sharing the firm's income.

[46]) This follows from the fact that the new objective function is simply changed by the sharing parameter.

labor or are given: the price increase from p_0 to p_1 stretches the net revenue function from E_0 to E_1 and hence reduces optimal output from x_0 to x_1 (setting $p_0 = 1$).

On the other hand, as shown in figure 3, the labor allocation remains unchanged by any price variation; under our assumption this means that optimal output will also be the same (as long as there are no problems of subsistence level). Now we mix the two cases, e. g. assuming that only half of the firm's capital receives the fixed interest rate r, while the other half is given on a partnership basis receiving a fixed proportion of net revenue. Since risk neutral capital owners are assumed to be indifferent between the two types of capital return as long as the expected yields remain unchanged this mixing improves the works' position as it dampens labor reduction due to price increase (from L_0' to L_1').
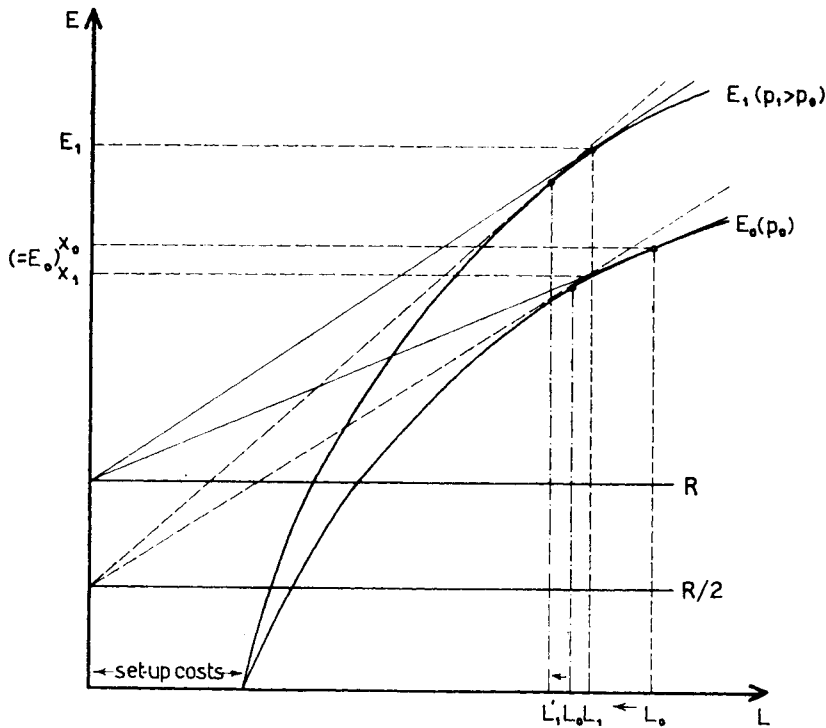

Fig 2

It should be added that this dampening effect holds even if we observe a »normal« supply behavior; this is clear from the fact that sharing of revenue implies constant (implicit) price ratios between labor and capital.

Considering the favorable features the labor-capital partnership one might be tempted to judge some form of it as an optimal organization for participatory firms. But there remain serious problems of control which must be considered in more detail although they are not specific for labor management.
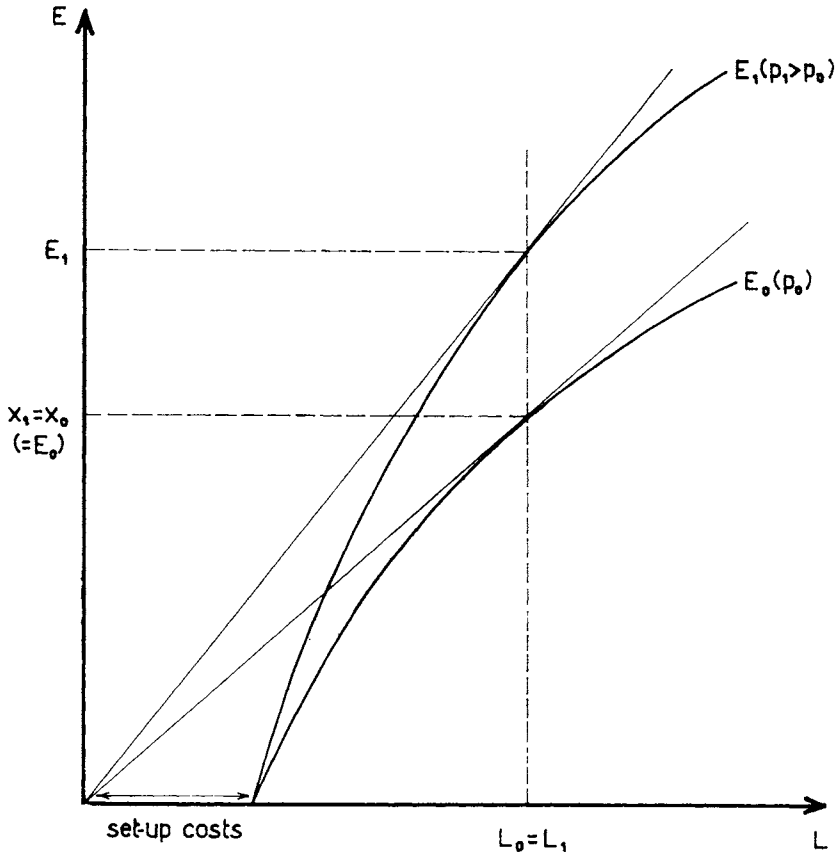

Fig 3

As our discussion has shown there are various possible arrangements for financing and investment in a labor-managed firm. This in addition to the advantages of selfmanagement in both economic and social terms gives rise to the expectation that industrial democracy will prove superior to existing hierarchical organizations of both the capitalist and the state socialist type.

(Rad primljen aprila 1975.)

INVESTICIJE I FINANSIRANJE U SAMOUPRAVNOM PREDUZEĆU I NJIHOVE DRUŠTVENE IMPLIKACIJE

Hans G. NUTZINGER

Rezime

Rad predstavlja pokušaj jednostavnog i uopštenog tretmana problema investiranja i finansiranja u samoupravnoj situaciji. U tipičnom modelu samoupravnog preduzeća obično se pretpostavlja da radničko samoupravljanje pokušava da maksimizira neto dohodak po radnoj jedinici. Umesto da upotrebimo funkciju sa eksplicitnim ciljem ovog tipa, mi izvodimo osnovne karakteristike iz jedne zamišljene samoupravne tržišne privrede na taj način što samoupravno preduzeće upoređujemo sa njegovim kapitalističkim parom koji postoji u istim tržišnim i proizvodnim uslovima; zbog toga višak dohotka koji pripada radnicima posmatramo kao neku vrstu očekivane cene radne snage ili kao »implicitnu platu«. Zanemarujući probleme neizvesnosti, mi smo u stanju da ovu »implicitnu platu« uporedimo sa unapred određenom »eksplicitnom platom« kapitalističkog preduzeća. Razlike između data dva sistema, a naročito tendencija da samoupravno preduzeće upotrebi manje radnih jedinica, zavise pre svega od razlika između »implicitne plate« i kapitalističke »eksplicitne plate«.

U sledećem odeljku, ovaj pristup se primenjuje na određene investicione odluke samoupravnog preduzeća. Ako pretpostavimo da uštede imaju pozitivnu interesnu stopu, pred radnikom i pred radnim kolektivom postavlja se problem izbora između direktnih investicija u preduzeću i individualne štednje. Ova odluka ostvaruje se putem alociranja neto dohotka preduzeća u platne i investicione fondove. U tradicionalnim uslovima vlasništva očekuje se težnja ka individualnoj štednji nasuprot investicijama iz unutrašnjih rezervi.

Ova analiza upućuje nas na to da treba preporučiti investicije spolja, koje se mogu dobiti na različite načine. Razmatramo različite mogućnosti investiranja spolja u kontekstu različitih prava vlasništva. Zajednička karakteristika svih mogućih načina je razdvajanje prava vlasništva na dva osnovna dela: osnovno vlasništvo koje daje pravo na povraćaj predviđen ugovorom i ususfructus-vlasništvo koje je zauvek vezano za radni kolektiv. Ovo poslednje uključuje pravo radnika da rukovode svojim preduzećima u okviru pravnih ograničenja.

Osnovni oblici spoljnog finansiranja ili osnovno vlasništvo mogu da se svrstaju u dva tipa: oblici jednog tipa obezbeđuju vlasniku investiranog kapitala unapred utvrđeni povraćaj. Oblici drugog tipa uključuju neku vrstu raspodele dohotka između radnika i osnovnih vlasnika po unapred određenom odnosu; ove oblike nazivamo »radno-kapitalnim partnerstvom«. U zavisnosti od spremnosti radnika na rizik, moguće su različite kombinacije dvaju tipova oblika spoljnog finansiranja. Jedna od prednosti ovih kombinacija je smanjenje cikličnih fluktuacija; ovo je posledica činjenice da deo dobiti i gubitaka, koji se

javljaju kao posledica fluktuacija, pripada vlasnicima kapitala (državi ili drugim vlasnicima).

Naša analiza pokazuje da čak i u neoklasičnim okvirima uobičajeno tvrđenje o inherentnoj neefikasnosti samoupravnog sistema, koja je posledica problema investicija i finansiranja, ne može da se održi. Naprotiv samoupravnom preduzeću se pružaju različite mogućnosti efikasnog alociranja investicionih fondova.