

Self-Managed Market Socialism with "Free Mobility of Labor"¹

ALBERTO CHILOSI

Istituto di Economia e Finanza, Facoltà di Scienze Politiche, via Serafini 3, 56100 Pisa, Italy

Received November 21, 1984; revised January 26, 1986

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In 1934 Breit and Lange presented a model of a socialist market economy in which workers had a right to be employed by self-managed firms. The interest of this model lies in particular in the fact that it eliminates two possible flaws of Illyrian-type socialism: differentiation in per capita earnings across self-managed firms and involuntary unemployment. Analogous features can be found in Hertzka's 19th-century model of market socialism. The purpose of the paper is to analyze an economy with free mobility of labor (Hertzka's expression for the right of workers to employment) both from the point of view of *X*- as well as of allocative efficiency. Finally the possibility of a partial application of the right to employment principle in a capitalist economy is considered.

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Journal of Economic Literature Classification Numbers: 022, 031, 052.

1. INTRODUCTION

In 1934 Breit and Lange wrote a little-known essay containing a blueprint of a socialist market economy with a built-in mechanism for ensuring full employment and equality of income across self-managed firms.² This mechanism consists of a peculiar institutional feature by which self-managed firms "are under obligation to employ all the workers who apply for it." This feature entails the elimination of two possible flaws of Illyrian-type self-managed socialism: the tendency to produce high levels of involuntary unemployment and the tendency to produce sizable differentiation in per capita earnings

¹ I have benefited from a number of comments and suggestions in the preparation of the present paper. In particular, I thank Mario Ferrero for pointing out to me the similarity of Hertzka's and Breit and Lange's models of socialism, and Will Bartlett, Saul Estrin, Stanislaw Gomulka, Michael Keren, Tadeusz Kowalik, Martin Weitzman, and Peter Wiles, together with the editor and the anonymous referees, for their useful remarks. The usual caveats apply.

² Breit and Lange (1934). For an Italian translation with a brief introduction by the present author, see Chilosi (1982).

across self-managed firms.³ The mechanism could also be found in the previous socialist utopia of Herztka, where it is called “free mobility of labor.”⁴ In the present paper, right to employment (RTE), right to access, and free mobility of labor (FML) are all used synonymously. All of them mean the right of workers to be employed by (or to participate in) the firm of their choice; however, we shall usually use FML to indicate the more comprehensive application of the principle to the whole of the national economy.

The main purpose of the paper is to consider whether a self-managed market economy with FML is able to provide incentives to sustain Pareto efficient allocations and to generate *X*-efficiency. In particular, attention is paid to which features can be superimposed on FML in order to ensure a reasonable degree of *X*-efficiency, as well as to the conditions under which a model with FML displays allocative efficiency. Finally, the possibility of a partial application of the right to employment principle in the framework of a capitalist system is discussed.

2. HERZTKA'S AND BREIT AND LANGE'S MODELS OF THE SOCIALIST ECONOMY

Herztka's and Breit and Lange's models of the socialist economy have in common the following basic features: FML, self-management, and market socialism. There is, however, a fundamental difference in the basic philosophy of the operation of the economy. Herztka has a deep confidence in the working of the invisible hand, and can therefore be seen as a true forerunner of modern market socialism.⁵ His self-managed firms (or “associations”) are considered to compete in such a way that “the price of all the products of work, determined through competition, rules in a quite automatic fashion the in- and outflow of labour forces, according to the measure of need for the products of the

³ For these features of the Illyrian model the reader is referred to the relevant literature such as Ward (1958); Vanek (1970); Meade (1972). An extensive empirical analysis by Estrin into the realities of Yugoslav self-management has produced results that are consistent with the previously assumed two tendencies of the theoretical standard Illyrian model (Estrin, 1983, especially ch. 5; see also Estrin and Bartlett, 1983, and the literature quoted by them, as well as Estrin and Svejnar, 1985). It goes without saying that Illyrian-type theorizing is not the only one purporting to highlight the fundamental features of Yugoslav-type self-management. For a survey of results of Illyrian as well as of alternative types of theorizing, see Pryor (1983).

⁴ Herztka (1886, 1890). Herztka's utopia was itself the development of Eugen Dühring's earlier model of “economic communes” (Cf. Dühring 1876, pp. 322 f.; Friedlaender, 1901, pp. 35–37; Albrecht 1927, pp. 245–247). These older models of a cooperative economy with FML, where the issue of free access to land played a particularly important role, can find a recent counterpart in Cohen and Weitzman's interpretation of the functioning of the open field village, where the consequence of peasant mobility between villages was that “the communal principle with its equalizing tendency” must have operated to an extent between villages as well as within a village” (Cohen and Weitzman, 1975, p. 298, quoting P. Vinogradoff, *Villainage in England*, Oxford: Clarendon, 1982).

⁵ Cf. Horvat (1982), p. 122.

different branches of work" (1886, pp. 174–175). In Breit and Lange (1934), on the other hand, "the various branches of production are organized in autonomous general trusts," following in this respect a time-honored tradition in the history of socialist thought.

The weak point of these types of conceptions (such as also guild socialism) lies in the monopolistic power implied by such a type of industrial organization. The originality of Breit and Lange's proposal lies in having introduced the right-to-employment principle as a device to break monopoly power without breaking monopolies, in a context therefore rather different from Herztka's. Thanks to FML, which in some way plays the role of free entry in ironing out excess profits (or excess wages), the invisible hand of the allocative function of the market is supposed to work even in the presence of large trusts, thus finding a mechanism for implementing Heiman's precept that "collective organizations . . . renounce all monopoly gain."⁶ It should also be noted that while Herztka's adoption of FML is considered to be universal in his economy, in Breit and Lange it applies only to that part of the economy which is organized in large socialized trusts and not to the other nonsocialized part, which continues to be organized in small scale, private production units.

3. THE INCENTIVE COMPATIBILITY OF A MODEL WITH "FREE MOBILITY OF LABOR": THE INCENTIVES TOWARD ALLOCATIVE EFFICIENCY

Let us now consider whether a self-managed market economy with FML (which we shall dub as Freelandia) is compatible with incentives leading to allocative as well as to X -efficiency. With an extension of the original notion by Hurwicz (1972), where the term referred to the incentives toward generation of the informational requirements for efficient planning mechanisms, we shall dub this issue that of incentive compatibility. It seems in fact logical to extend the concept of incentive compatibility to the general issue of whether a system has built-in incentives to bring about given desirable outcomes, such as those relating to allocative and X -efficiency.

It is quite obvious that a model of an economy with FML faces great difficulties from the point of view of X -efficiency. Let us, however, set aside this issue for the moment and suppose that the production function of the self-managed Freelandian firm is the same as that of the Illyrian and entrepreneurial firms.⁷ In other terms, the level of production is supposed to be the same for comparable endowments of the factors. Accordingly, we shall consider first the issue of whether the system is incentive-compatible (in our

⁶ Eduard Heiman, *Mehrwert und Gemeinwirtschaft*, Berlin, 1922, p. 185; quoted in Landauer, 1959, pp. 1643–1644.

⁷ We use the term "entrepreneurial" in the same sense as Meade (1972), to indicate in general the profit-maximizing firm.

general sense) from the side of allocative efficiency. In what follows, as is usually the case in this type of discussion, we disregard the possible relationship between amount and type of work performed and individual welfare.

Some informal consideration of the issue of allocative efficiency is provided by Breit and Lange (1934) and by Hertzka (1886, pp. 174–175; 1891, p. 92). In both cases the authors believe in the existence of some mechanism, centered on the working of the market and on FML, which brings about allocative efficiency in their models. In order to see if this belief is justified, let us first simplify things as much as possible and assume only one good to be produced by cooperative firms with homogeneous labor as the only variable factor. Suppose that net income is distributed equally among cooperative members and that labor can move instantaneously and costlessly among firms. Suppose also that for whatever reasons, such as different locations, different know-how, different availability of nonreproducible resources (on which, according to Hertzka, no rents should be paid), and, in the short run, different capital endowments, the production functions of firms are different. Then, in equilibrium the *average* income per worker will be equalized everywhere because of FML, but the marginal productivity of labor in general will not, and the allocation of labor will not be optimal. This is in fact just a particular instance of the general case of free access equilibrium, which “is inefficient because what tends to get equated among alternative uses is the average product of the variable factor instead of its *marginal* product” (Weitzman, 1974, p. 225). This result, on the other hand, depends on the existence of barriers to entry hindering reproduction of the best knowledge technology or access to the existing limited natural resources through competitive bidding for the price of their services, up to the level where they do not bring about any differential advantages to producers holding them. We shall see below that in fact, under standard perfectly competitive assumptions, an economy with FML in long-run equilibrium is characterized by Pareto optimality.

Let us first continue to suppose that only one good is produced in the economy (alternatively one could consider what follows as referring to production in any given industry, through the usual partial equilibrium approach that characterizes these types of discussions)⁸ and suppose that no barriers to entry exist, technology is public only, and there are only two factors of production, capital (allocated through an equilibrium interest rate, but still adjustable only in the long run) and homogeneous labor. Let us also assume that the (differentiable) production function of competitive firms satisfies Frisch’s “regular ultra-passum law”—in other words, that it shows first increasing, then locally constant, and finally decreasing returns to scale.⁹ Suppose

⁸ Cf., e.g., Meade (1972).

⁹ Cf. Frisch (1965, ch. 8). This is the law of production that generates the usual U-shaped cost curve.

also that the point at which returns are locally constant implies sufficiently little production to render the nonconvexities of production functions of no practical importance at the level of the economy. In other words, firms are "small." Then, as is well known under Illyrian institutions, in short-run competitive equilibrium marginal and average productivities of labor (net of per capita interest charges) are equalized within each firm. In the long run the equalization of net average labor productivities through free entry brings about allocative efficiency.¹⁰ Under FML, if we continue to suppose the movement of workers toward better-paid employment to be costless and instantaneous, what is equalized in the short run is *average* labor productivity, net of capital costs.¹¹ In the long run, however, free entry brings about the equalization of marginal productivities both of capital and labor across the economy and this, under the circumstances, entails an efficient allocation of the factors of production.¹² In order to show this, let x be the value of the capital of the representative firm, r the rate of interest, y the quantity of the homogeneous product produced by the firm, p its price, z employment, and c the value of short-run equilibrium per capita earnings in the economy. Then in long-run equilibrium

$$\frac{py - rx}{z} = c; \quad (1)$$

$$c = \max_{x,z} \frac{py - rx}{z}. \quad (2)$$

As a matter of fact, long-run equilibrium implies not only that per capita earnings are equalized all over the economy (which in the present model is the short-run equilibrium condition), but also that per capita earnings in each firm are maximized both with respect to capital as well as to labor. Were the latter conditions not realized, workers from overstuffed firms could improve their revenues by joining together, hiring capital, and forming new firms with the "right" quantities of capital and labor. Likewise, should a firm be "understaffed," workers could improve their lot by joining in. In both cases the given situation could not be a long-run equilibrium.

From Eqs. (1) and (2), one derives

¹⁰ Cf., e.g., Meade (1972, pp. 396–399); Vanek (1970, ch. 2). It should be considered that in the model, "in the short run the cost of entry is infinite", while "entry is costless in the long run" (Jensen and Meckling, 1979, p. 478).

¹¹ For a simple theoretical analysis of the short-run behavior of producer cooperatives with open membership, as opposed to the behavior of cooperatives where the membership is closed, see Heflebower (1980, pp. 17–20). An analysis of open producers' cooperatives as opposed to closed ones, in the case of physicians' cooperatives, can be found in Pauly and Redisch (1973).

¹² For a similar statement see Cugno (1983), where a form of proof is attempted, in the very particular case of a Cobb–Douglas production function and free capital.

TABLE 1
EQUILIBRIUM OF ENTREPRENEURIAL, ILLYRIAN, AND FREELANDIAN FIRMS

	Short-run equilibrium	Long-run equilibrium
Entrepreneurial firm	$p \frac{\partial y}{\partial z} = w$	$\max_{x,z} (py - rx - wz) = 0$ $\Rightarrow p \frac{\partial y}{\partial z} = w \quad p \frac{\partial y}{\partial x} = r$
Illyrian firm	$p \frac{\partial y}{\partial z} = \frac{py - rx}{z}$	$\max_{x,z} \frac{py - rx}{z} = c$
Freelandian firm	$\frac{py - rx}{z} = c$	$\Rightarrow p \frac{\partial y}{\partial z} = c \quad p \frac{\partial y}{\partial x} = r$

Note. $y = y(x, z)$; by given r , in long-run equilibrium $w = c$.

$$p \frac{\partial y}{\partial x} = r; \quad (3)$$

$$p \frac{\partial y}{\partial z} = c. \quad (4)$$

The marginal productivities of the factors are equalized all over the economy. Q.E.D

Furthermore, from Eqs. (1), (3), and (4), one derives

$$y = \frac{\partial y}{\partial z} z + \frac{\partial y}{\partial x} x. \quad (5)$$

In long-run equilibrium production takes place under constant returns to scale, the same condition that applies under similar circumstances to Illyria¹³ as well as to competitive capitalism. The previous results are summarized in Table 1, where w is the competitive wage rate.

Let us turn to a general equilibrium context such as that of Drèze (1976), where the above simplifying assumptions regarding the number of products, factors, and types of labor and the absence of nonreproducible resources are discarded, without affecting the result concerning the allocative optimality of

¹³ See Estrin (1983, pp. 38–39); Vanek (1970, pp. 30–31, 40). This result corresponds to the statement by Pauly and Redisch (1973, p. 94) that a system of “not-for-profit hospital or physician cooperatives” produces the same “long-run industry equilibrium” in the case of closed staff as well as of open staff (where RTE applies), and in the case of discriminatory hiring (which corresponds to the inegalitarian cooperative case).

FML equilibrium, as we shall see. In Drèze, agents are workers endowed with different tastes and working capabilities for the different types of work. Firms maximize net value added per equivalent worker, where the different types of work are weighted by "unit shares" which are "within each firm, a set of weights defining value shares for the different types of labor," by given parametric prices, and by rents for the use of nonreproducible resources. In the Drèze self-managed economy, "the definition of budget sets implies perfect mobility of labor across firms", in so far as in the definition of budget sets, alongside prices and endowments enter also the "unit shares" of the different types of works in the different firms. In this framework Drèze, relying on a previous research paper (Drèze, 1974), states two important propositions, namely that every labor-managed equilibrium can be translated into a competitive equilibrium and that the set of Pareto optima can be sustained either as competitive or as labor-management equilibria and coincide with the set of the latter (Drèze, 1974, p. 1127).¹⁴ In other words, "labour mobility between labour-managed firms entails the same equilibrium properties as competitive labour markets" (Drèze, 1974, p. 28) and "in equilibrium, either labor mobility or competitive labor markets lead to labor incomes geared to marginal productivity" (Drèze, 1976, p. 1127). A straightforward institutional interpretation of the model is that there is FML, meaning that workers have the right to be employed according to their qualifications by the firms of their choice, while firms determine the unit shares for the different types of labor in such a way that the different types of workers requiring employment are just in such a number as to maximize value added for adjusted unit of labor. These were not the institutions that Drèze had in mind, but the overall result is the same as if the legal setup required the consent of management for the admission of workers to the different firms, such as in the Illyrian framework to which Drèze directed his analysis. Obviously this is true only in the case of general equilibrium. In the case of disequilibrium, the behavior of the two systems could be very different indeed.

The previous analyses of perfectly competitive situations clearly do not apply to the Breit and Lange case, where firms are huge trusts embracing a whole branch of production. In this case prices cannot be taken as parametric (unless they are determined centrally; but this does not correspond to the Breit and Lange context), nor can returns to scale be supposed to be constant or be decreasing at a "small" production level (otherwise there would be no reason to organize production in large general trusts). In general there will therefore be no question of market processes bringing about Pareto optimality

¹⁴ The two propositions are proved in Drèze (1974) under assumptions which are standard in general competitive models. The assumptions needed for proving the first proposition are minimal. The second, however, like the second theorem of welfare economics of which it is an extension, requires the rather strong assumption of convexity of production sets.

on their own. However, as expounded by the authors, because of the right to access, the behavior of their trusts will be less restrictive, in terms of output and employment, than that of their entrepreneurial counterpart¹⁵ and, owing to well-known analyses of self-managed Illyrian monopoly,¹⁶ that of the Illyrian counterpart.

Summing up, one can see that where FML comes crucially into play is not in the perfectly competitive long-run equilibrium, where the properties of the entrepreneurial economy, self-managed Illyria, and self-managed Freelandia are analogous for comparable models. Instead, FML is crucial in short-run equilibrium, in the static properties of monopoly or monopolistic competition, and first and foremost, under disequilibrium conditions, where unlike the other two economies, an economy with FML by definition does not allow involuntary unemployment. Moreover FML obviously avoids the well-known possible perverse dynamic behavior of the Illyrian firm. For instance, if the price of the product of the firm increases, in the case of FML new workers will join in and employment and production will increase, ruling out the possibility of a decrease as may happen in Illyria. On the other hand, one should also take into consideration that outside the long-run equilibrium position, misallocation of labor, because of lack of a tendency to equalize its marginal productivity in the short run, may be quite serious. In the longer run, even independently of free entry, which will presumably take a long time to fully work out its effects, some tendencies toward equalization of marginal productivity of labor may set in through investment behavior. Investments in fact could prove more efficient where labor is relatively more plentiful and its marginal productivity is lower. As remarked by Nuti, this adaptation of the capital structure to the structure of employment could be sped up by mergers.¹⁷

¹⁵ This can be explained analytically as follows: Suppose that there is at least one monopolistic firm in a capitalist environment experiencing excess profits because of the control of the market. At the same time, in sectors where barriers to entry do not exist, competitive firms' current surpluses will be just enough to pay for renting fixed assets. Suppose wages to be the same everywhere. Shifting to an FML environment, in which allocation of the means of production continues to be through a competitive market, the monopolistic firms will experience an influx of workers willing to share the previous excess profits, now becoming excess wages, that the competitive firms will be unable to pay. The influx will cease once monopolistic excess profits (or excess wages) disappear, and the monopolistic FML firms will have greater employment and greater production than their capitalistic counterpart. It is worth noting, however, that if the elasticity of demand facing the FML monopolist is less than one when its labor force is fully employed in production, its revenue improves if it reduces production. Therefore it may leave part of its labor force idle, or at least allow some slack, in order to maximize per capita earnings, creating in such a way some hidden unemployment.

¹⁶ The conclusion being that "in any given monopolistic conditions the cooperative will always be more restrictive than the corresponding entrepreneurial firm" (Meade, 1972, p. 405).

¹⁷ See Nuti (1983).

4. THE INCENTIVE COMPATIBILITY OF A MODEL WITH "FREE MOBILITY OF LABOR": THE INCENTIVES TOWARD *X*-EFFICIENCY

Let us consider the issue of *X*-efficiency. A first incentive toward *X*-efficiency is provided by the fact that until a compensatory movement of labor takes place, a firm producing a higher income per worker than elsewhere allows higher earnings for its workers. However, reasonably, this incentive will be rather weak, for three reasons:

(1) It will be only transitory, and all the weaker the shorter the time span of adjustment.

(2) It will be related only to the influence that the work effort of a member of the cooperative has on his own earnings through its effect on the overall income of the firm. But this effect for the rank and file member of a large cooperative could be negligible.¹⁸ Of course sociological mechanisms of emulation and social control could set in, which would be enhanced by the cooperative character of the firm, and would probably be stronger the smaller its size, but the concrete importance of those mechanisms is uncertain.

(3) According to the Yugoslav experience, in a cooperative economy it is highly probable that a tendency will set in for cooperative firms in economic difficulties to fall back on the collectivity for financial support, a tendency that political factors may sometimes render irresistible. Moreover the same kind of behavior may render it very difficult to force bankruptcies, as is actually the case in present day Yugoslavia.¹⁹ However, one can also think that bankruptcies could be less difficult to force in an economy with FML, and therefore with no involuntary unemployment.

On the other hand, a solution to this issue of which Herztka is well aware²⁰ can be found in his provision of a seniority premium: "the elder workmen—that is, those that have been engaged a longer time in an undertaking—enjoy a constantly increasing premium; their work-time has a higher value by several units per cent. than that of the late comers."

It should be noted first that for an incentive scheme based on seniority such as that formulated above to be practicable, there should be some sort of barriers to entry and time should be necessary for the growth of the firm

¹⁸ For considerations of this type, see Meade (1972, p. 395). What is implied in the text is that the effort supplied cannot really be monitored and measured in an objective way so as to be included in the calculation of the amount of work supplied altogether by individual members, and to affect in a corresponding way their shares of the net income of the cooperative. However, for an interesting consideration of the contrary case, see Sen (1966).

¹⁹ Cf. Lydall (1984, pp. 219–220); Jones and Svejnar (1982, pp. 88, 90–91); Knight (1985, pp. 105, 114, 115).

²⁰ See Herztka (1891, p. 277).

(because, for instance, of "learning by doing" or because the opportunities for collecting external finance depend on internal accumulation), as indeed is the case in reality. Otherwise there would be an interest for "late comers" to join together and form new firms instead of being happy with a lower share in the net product of existing ones, so that the "vintage" of a firm would be also that of its crew and older firms would be able to enroll new workers only by offering them the same share as senior ones.

Supposing that the above conditions apply, we now show that the seniority scheme really works. In general, there will be an interest, on the part of elder workmen at least, in the performance of the firm. Assuming an incentive scheme which is a slight generalization of Hertzka's scheme of seniority premium, let the rate of earnings of the workers of seniority of j years, d_j , be determined by the distributive formula

$$d_j = \frac{a_j(y - rx)}{\sum a_i z_i}, \quad (6)$$

where y is the value added produced by the firm, a_i is the weight of workers with seniority i in the distribution of net product, $a_{i+1} > a_i$, z_i is the number of workers of seniority i (working, by assumption, a standard working day), n is the seniority of the most senior workers, r is the rate of interest, and x is the amount of borrowed capital. The weights a_i are supposed to be determined exogenously by law. This is indeed the case in Hertzka, where the seniority premium is stated in the "model statute" of Freeland's associations (Hertzka, 1891, p. 96). As above, $y = y(z, x)$, where now $z = \sum z_i$, and $y(\cdot)$ is differentiable. As far as the structure of employment is concerned, one must remember that firms are obliged by law to accept everybody who wants to be hired. However, any newcomer has the right to have as a distributional weight a_0 only; if a worker moves to another firm he loses his seniority premium in the previous one. Note, moreover, that the distribution formula is well defined in the sense that the sum of payments to workers of the different cohorts is equal to the net product of the firm. In equilibrium $d_i \geq c$ if $z_i \neq 0$ and $z_j = 0$ for all $j \leq i$, if $d_i < c$ where c is the rate of earnings of workers with no seniority prevailing in the economy. The relationship of the rates of pay of workers of different cohorts, j and i , is given by $d_j/d_i = a_j/a_i$, as can easily be seen from Eq. (6). Furthermore, if the rate of earnings of the marginal cohort is c , and i is its seniority, then the equilibrium pay of the workers of the oldest cohort k is given by

$$d_k = \frac{a_k}{a_i} c, \quad (7)$$

and therefore is higher the higher a_k/a_i , namely the lower i .²¹ Now, from Eq. (6) one may see that if the membership of the firm were not to change, d_j would be an increasing function of net income. Therefore, the higher the net income, the lower the cohort whose rate of pay exceeds c . Thus, the higher y , the lower the seniority of workers of the youngest cohort. Given that the earnings of senior workers are inversely related to the seniority of the youngest ones (cf. Eq. (7)), one may conclude that the firm as a whole will have an interest in the maximization of net product. Everybody would fare best if in any year the firm were prosperous enough to ensure the new incoming workers a rate of pay greater or equal to c . The influx of new workers will, however, put a ceiling on the equilibrium amount of pay senior workers would be able to receive in any given year. It must be noted that the mechanism of the seniority premium outlined above should mitigate the inevitable hostility of senior workers toward compulsory employment of (and income sharing with) younger ones. However, no such hostility should exist in the case of incoming workers increasing the earnings of senior ones. In order to see under which conditions this occurs, note that

$$\frac{\partial d_k}{\partial z_j} = \frac{a_k}{\sum a_i z_i} \left(\frac{\partial y}{\partial z} - d_j \right).$$

Putting $j = 0$ and $d_0 = c$ yields:

$$\frac{\partial d_0}{\partial z_0} = \frac{a_0}{\sum a_i z_i} \left(\frac{\partial y}{\partial z} - c \right). \tag{8}$$

Now, in equilibrium $\partial y/\partial z$ cannot be greater than c because otherwise $\partial d_0/\partial z_0 > 0$, and workers earning c in other firms, by joining the firm, could benefit from earnings higher than c .²² On the other hand, if $\partial y/\partial z < c$, then earnings of workers of the older cohorts would benefit from reducing employment, but this would not be allowed by the rules of the game. It should be noted that there is no possibility of bribing workers of younger cohorts by giving them side payments for leaving the firm because every potential new-comer would have to be bribed. In fact, as long as $d_0 > c$, enrollment in the firm would increase anyhow, even if $\partial y/\partial z < c$, thus diminishing the earnings

²¹ In reality, the rate of pay of the oldest cohort, if $i > 0$, may be slightly higher because the number of senior workers of any cohort can only diminish (if they change firms), but not increase, in order to bring down the rate of pay of the marginal cohort exactly to c . It could also be lower, if "marginal" workers are unwilling to leave the firm and thus forfeit the potentialities of future higher pay provided by their seniority should the performance of the firm improve in the future. All this, however, does not change the picture in a really important way.

²² In fact, as it turns out from Eq. (8), entry of a new worker increases above c the earnings of the workers with no seniority in the firm, previously earning c , and so also of the new entrants.

of other cohorts until equality of d_0 and c is reestablished. In this case, obviously, senior workers will lose by the entry of new members and could try to put up some obstacles to the right of entry of newcomers.²³ It should also be noted that the contradiction between the interests of new and older members, who are bound to suffer from the entry of new ones after a certain threshold of membership is reached, is a general feature of other types of cooperatives (i.e., farms and consumers) characterized by the open membership feature (Heflebower, 1980, p. 19). The possible contradiction between the interest of senior workers and latecomers is, however, eliminated in Meade's inegalitarian cooperatives, where a seniority premium is implicitly established through the provision that the shares of new members are freely bargained. In this way "the workers-partners . . . who came in early bearing the initial risks in a concern which turns out to do well will earn more than those workers who come in later when the success of the enterprise is already established" (Meade, 1972, p. 419).

Until now we have assumed a homogeneous labor force, as far as its productive capabilities are concerned. If one takes into consideration the different qualifications of labor, not only seniority but also specialization, skills, and individual capabilities may be associated with higher weights in the distribution formula; this after all is explicitly envisaged by Hertzka (and considered formally by Drèze; in his model, however, no seniority premium applies).

Let us finally consider the seniority premium from the viewpoint of allocative efficiency. The conclusions in this respect must, however, be rather mixed. On the one hand the seniority premium may be a hindrance to labor mobility; this, however, applies not only to Freelandia but to any economic organization in which seniority as such plays a role in differentiating remunerations, from state bureaucracies to the "length of service" wage system of Japanese firms. On the other, the seniority system may also result in a lessening of the costs to firms associated with greater mobility; in particular it may favor the internalization of the benefits of corporate investment in human capital, thus possibly having beneficial intertemporal allocative consequences in this respect. These may also accompany the increased commitment of workers to the long-run perspectives of labor-managed firms through introduction of the seniority premium, by its ensuing consequences on the concrete aspects of firm financing, especially related to moral hazard, such as expounded by Schlicht and Weizsäcker (1977). It should be noted that in that article, a

²³ It can be remarked, in passing, that the same issue is open in Weitzman's share economy (Weitzman, 1984, pp. 108 f.). This is probably the true Achilles' heel of this unconventional proposal for getting rid of involuntary unemployment. After all, if unemployed workers were ready to accept decreases in their wages for the sake of achieving employment, there would not be much scope for social engineering of the type advocated by Weitzman!

seniority premium “beyond the point which could be explained by corresponding productivity differences” (p. 65) is seen as an alternative mechanism to the maintenance of unemployment for creating mobility costs and furthering workers’ commitment to the firms. These considerations may be somehow generalized to apply also to some aspects of labor relations in other types of economic systems. In a context of lifetime employment such as in Japan, a seniority premium would increase the cost of labor to older firms, which could be thought to be overburdened in principle by seniority payments to senior workers. This could, however, be compensated by the increased commitment of senior workers to the firm, and at the same time by the interest of junior ones to reach a seniority position in the firm where the seniority premium applies. The latter would also apply, however, in the newer firms, provided they are expected to last as long as older ones. But if expectations are such that the future lifetime of a firm is considered, not unreasonably, to be a positive function of its past lifetime, the only way for younger firms to create the same degree of commitment in their workers would be to pay higher wages to their labor force than those paid to workers of comparable seniority in older firms, thus losing an otherwise possible advantage over older firms.

5. THE RIGHT TO EMPLOYMENT PRINCIPLE AND THE CAPITALIST ECONOMY

Until now we have considered the institution consisting of the legal right of workers to be hired by the firms of their choice (RTE) as part of a whole institutional setup, including collective property, self-management, and income sharing. Let us see what could happen if RTE were placed in a capitalist institutional setup. The first obvious consequence would be that the application of RTE to a capitalist economy would solve, by definition, its involuntary unemployment problem; however, this would be at the cost of creating other kinds of problems, in particular with respect to entrepreneurial and other incentives. The idea of somehow applying the RTE principle to capitalism is not so wild as it seems, since a limited application of RTE already exists in a number of countries, providing for forms of compulsory hiring for selected categories of people (e.g., handicapped, refugees). Let us therefore examine whether there is a case for extending this kind of discipline. We shall consider only the arguments in favor of the scheme, since the contrary ones can all too easily be worked out for the reader by himself. It seems to me, however, that on balance there is no motive to dismiss the scheme as impracticable and utopian.

A first application of RTE could be in engineering socially desirable employment (such as, in particular, employment of young persons without work

experience) which might otherwise be blocked because of the impossibility for firms to internalize the external benefits of training.

More generally, compelling firms to employ people on demand under given conditions could indeed be a better system than subsidizing employment or providing for unemployment benefits. The burden on the economy of financing the ensuing public expenditure would be avoided, and this might be greater than that resulting from the adoption of RTE. This could be the case especially if workers employed on demand were to receive reduced wages comparable, e.g., to unemployment benefits or welfare payments they would be entitled to receive under alternative provisions. The net productive gain (if any) of the increased employment should also be considered, besides the possible increase (if any) in human happiness and personal dignity from working on a job (even at reduced wages) rather than living on welfare. One should also appreciate the favorable consequences that keeping otherwise idle individuals busy at work has on social stability and public order. The scheme could be selective, e.g., in the sense of being limited to large firms, where personal relationships matter less. Obviously, in order that no firm would be overburdened by this type of compulsory hiring, a ceiling on workers hired on demand could be set for any single firm (as is actually the case in the already existing schemes mentioned above). For instance, the "limit on the numbers to be so engaged could be set according to a scale taking into account the firm's absolute size and relative profitability or the level of income,"²⁴ or, one may add, according to the amount of profits distributed to shareholders, and so not contributing directly, through reinvestment, to increased employment opportunities. As is usually the case with the already existing schemes, these limits should be set high enough at any given moment to ensure the employment of everyone concerned. Once a worker is rightfully dismissed from a post because of a breach in labor discipline, the possibility of employment on demand in the same firm once again could be excluded. Hiring on demand could also be envisaged as temporary: after a given period the firm could either regularly employ workers hired on demand or dismiss them. This could provide an incentive for compulsorily employed workers to perform efficiently. At the same time it would provide an opportunity for firms to screen a pool of workers to consider in their future hiring of the regular labor force. This opportunity could be enhanced (and the cost of the scheme to firms diminished) by the interest of applicants in joining prospectively expanding firms, increasing their possibilities of being taken on later by the firms as regular employees. It is obvious then that according to the concrete profile of the regulations and the size of the wages for employment on demand,

²⁴ Vanek (1972, p. 278). Vanek mentions that "a scheme of this kind, so far limited to the highly trained newcomers to the work force, is being already in operation" in Yugoslavia.

the scheme could have either a left-wing or a right-wing ideological flavor. In a left-wing optic it could be considered as a kind of social insurance for having a place of work, in addition to having a minimum income. From a right-wing viewpoint it could be considered as a way to avoid making welfare payments to idle individuals. For everybody it could be considered as a way to overcome externalities which could not be taken into account by private bargaining in the labor market, justifying as such the infringement of the principle of freedom of contracting, and to increase effective employment and the level of national income.

Another unconventional scheme which is claimed to bring about full employment in a capitalist economy (but which is obviously applicable to market economies in general, capitalist or socialist) even in the short run and out of equilibrium, without facing the problems of incentive compatibility which arise in an economy with FML, is Weitzman's share economy. This is because "a share economy equilibrates at *positive* excess demand for labour, and, by continuity, remains at a level of positive excess demand even after undergoing a small disequilibrating shock."²⁵ But in reality, contrary to the assumption on which Weitzman's claim rests, functions are not necessarily smooth, deflationary shocks are not necessarily small, and the economy never rests on a long-run equilibrium position nor necessarily in its immediate vicinity. Thus Weitzman's theoretical solution to the involuntary unemployment issue of a market economy, though of great interest because of its originality and inventiveness, is at most an imperfect one. Moreover the organizational and informational difficulties (such as lack of knowledge of where and for whom employment opportunities are actually available) leading to possible, at least temporary, involuntary unemployment would remain, as would the hindrances toward the employment of low-productivity workers, owing to the cost of contracting, cost of labor force management, moral hazard, etc. With FML involuntary unemployment is ruled out, whatever the amplitude of the shocks, at any moment, in and out of equilibrium. However, both would face the difficulty considered in note 23. Moreover, is involuntary unemployment as such really the problem? Or is it rather qualified unemployment? Or destitution? Or the inability for somebody to be in productive employment and to reach an acceptable and predictable minimum income level?

6. CONCLUSION

The model of the self-managed economy with FML is interesting both because of its historical lineage and because it constitutes a straightforward variant of a well-established model: that of self-managed market socialism.

²⁵ Weitzman (1983, p. 778).

Thus it is worth studying, at least as an ideal type and as a term of reference. The most interesting aspect of the model is that FML eliminates at the root any possible tendency to create involuntary unemployment and large income differentials between firms by way of employment restriction. It presents, however, obvious incentive problems. Incentives toward *X*-efficiency can be introduced by providing for different claims to the net product of cooperative firms in relation to seniority. Moreover the possibility of firing under given circumstances implying misbehavior on the part of the worker would obviously be maintained. In this case, too, the incentive works with respect to senior workers only, since they are the only ones who really stand to lose by being fired. Moreover it remains true that the stimuli provided by the risk of unemployment are lacking. But the risk of unemployment hardly exerts its disciplining impact on worker behavior under any system, capitalist or socialist, where full employment prevails, or, even more so, where the labor market is a sellers' market. Thus this is a problem which is tied more to full employment than to FML as such.

Turning to allocative efficiency, we have seen that under standard assumptions a model of a self-managed market economy with FML is compatible with long-run equilibria that satisfy Pareto optimality. However, the fact that under very special abstract circumstances a model of an economy might provide for Pareto optimality can hardly be considered of paramount importance, given that no such a thing as a Pareto optimum is bound to exist in the real world at any rate; the choice between alternative economic systems is certainly not a choice between first and second best. What is more important is some clue as to the concrete dimensions of inefficiencies that a system can plausibly bring about in practice. The trouble with FML is that the degree of inefficiency (both *X*- and allocative inefficiency, owing to the built-in tendency to the misallocation of labor) could be very substantial indeed. This is true in particular in cases of sizable indivisibilities and limited technological substitutability between factors.²⁶ In sectors where these conditions prevail the system would probably result in far too much employment. While the seniority premium could in some ways take care of the issue of *X*-inefficiency, no easy solution to the allocative inefficiency problem is in sight. It must also be considered that the model involves issues of nonstrictly economic character, such as the issue of freedom of association, in the sense of freedom of forming coalitions (or cooperatives) which entail the possibility of excluding unwanted would-be members. It seems obvious also that FML, like any limitation in the right to hire and fire, whatever the economic system, would unfavorably affect entrepreneurial incentives as such.

²⁶ The fact that "a technology in which labor was highly substitutable in the short run" is a prerequisite for Herztka's "system to work" is stressed by Ward (1967, p. 225).

A final word of caution: Yugoslavs should not be told of the free mobility of labor principle; they might even take it seriously and give it a try, too!

REFERENCES

- Albrecht, Gerhard, *Eugen Dühring—Ein Beitrag zur Geschichte der Sozialwissenschaften*. Jena: Fischer, 1927.
- Breit, Marek, and Lange, Oscar, "Jak będzie funkcjonowała ekonomia socjalistyczna?" In *Gospodarka-Polityka-Taktyka-Organizacja Socjalizmu*, pp. 170–174. Warsaw: Wydawnictwo "Płomieni," 1934.
- Chilosi, Alberto, "Il modello di economia socialista di mercato autogestita di Breit e Lange." *Riv. Internaz. Sci. sociali* 90, 3:298–300, 1982.
- Cohen, John, and Weitzman, Martin L., "A Marxian Model of Enclosures." *J. Dev. Econom.* 1, 4:287–336, Febr. 1975.
- Cugno, Franco, "L'impresa e il mercato in un' economia con diritto dei lavoratori ad essere assunti." *Riv. Internaz. Sci. sociali* 91, 2–3:296–304, 1983.
- Drèze, Jaques H., "The Pure Theory of Labour-Managed and Participatory Economies—Part I: Certainty." CORE Discussion Paper 7422, Université Catholique de Louvain, 1974.
- Drèze, Jacques H., "Some Theory of Labor-Management and Participation." *Econometrica* 44, 6:1125–1139, 1976.
- Dühring, Eugen, *Cursus der National- und Socialökonomie*, 2nd ed., Leipzig: Reiland, 1876 (1st ed., 1872).
- Estrin, Saul, *Self-Management: Economic Theory and Yugoslav Practice*. Cambridge: Cambridge Univ. Press, 1983.
- Estrin, Saul, and Bartlett, William, "The Effect of Enterprise Self-Management in Yugoslavia: An Empirical Survey." In Derek Jones and Jan Svejnar, eds., *Participatory and Self-Managed Firms*, pp. 83–107. Lexington, Mass.: Heath, 1983.
- Estrin, Saul, and Svejnar, Jan, "Explanations of Earnings in Yugoslavia: The Capital and Labour Schools Compared." *Econom. Anal. Workers Manage.* 19, 1:101–126, 1985.
- Friedlaender, Benedikt, *Die vier Hauptrichtungen der Modernen Socialen Bewegung*, Vol. 2. Berlin: Calvary, 1901.
- Frisch, Ragnar, *Theory of Production*. Dordrecht: Reidel, 1965.
- Heflebower, Richard B., *Cooperatives and Mutuals in the Market System*. Madison: Univ. of Wisconsin Press, 1980.
- Herztko, Theodor, *Die Gesetze der socialen Entwicklung*. Leipzig: Ducker & Humblot, 1886.
- Herztko, Theodor, *Freiland-A Social Anticipation*. London: Chatto & Windus, 1891. Translation of *Freiland. Ein sociales Zukunftsbild*. Dresden: Pierson, 1890.
- Horvat, Branko, *The Political Economy of Socialism*. Oxford: Martin Robertson, 1982.
- Hurwicz, Leonid, "On Informationally Decentralized Systems." In C. B. McGuire and R. Radner, eds., *Decision and Organization*, pp. 297–336. Amsterdam: North-Holland, 1972.
- Jensen, Michael C., and Meckling, William H., "Rights and Production Functions: An Application to Labor-managed Firms and Codetermination." *J. Business* 52, 4:469–506, 1979.
- Jones, Derek C., and Svejnar Jan, eds., *Participatory and Self-Managed Firms*. Lexington, Mass.: Heath, 1982.
- Knight, Peter T., "Financial Discipline and Structural Adjustment in Yugoslavia: Rehabilitation and Bankruptcy of Loss-making Enterprises." *Econom. Anal. Workers Manage.* 19, 1: 101–126, 1985.
- Landauer, Carl, *European Socialism*. Berkeley: Univ. of California Press, 1959.
- Lydall, Harold, *Yugoslav Socialism*. Oxford: Clarendon, 1984.

- Meade, James E., "The Theory of Labour-Managed Firms and of Profit Sharing." *Econom. J.*, March 1972; republished in Jaroslav Vanek, ed., *Self-Management*, pp. 394-422. Harmondsworth: Penguin, 1975.
- Nuti, Domenico M., "Fusioni di imprese ed efficienza nei modelli di economie autogestite." *Riv. Internaz. Sci. Soc.* **91**, 4:487-495, 1983.
- Pauly, Mark, and Redisch, Michael, "The Not-for-Profit Hospital as a Physicians' Cooperative." *Amer. Econom. Rev.* **63**, 1:87-99, March 1973.
- Pryor, Frederic L., "The Economics of Production Cooperatives: A Reader's Guide." *Ann. Public Coop. Economy* **54**, 2:133-172, 1983.
- Schlicht, E., and Von Weizsäcker, C. C., "Risk Financing in Labour Managed Economies: The Commitment Problem." *Zeit. Ges. Staatswissenschaft*, special issue on profit-sharing: 53-66, 1977.
- Sen, Amartya K., "Labour Allocation in a Cooperative Enterprise." *Rev. Econom. Stud.* **33**, 4: 361-371, 1966.
- Vanek, Jan, *The Economics of Workers' Management*. London: Allen & Unwin, 1972.
- Vanek, Jaroslav, *The General Theory of Labor-Managed Market Economies*, Ithaca, N.Y.: Cornell Univ. Press, 1970.
- Ward, Benjamin, "The Firm in Illyria, Market Syndacalism." *Amer. Econom. Rev.*, 1958.
- Ward, Benjamin, *The Socialist Economy*. New York: Random House, 1967.
- Weitzman, Martin L., "Free Access vs Private Ownership as Alternative Systems for Managing Common Property." *J. Econom. Theory* **8**, 225-235, 1974.
- Weitzman, Martin L., "Some Macroeconomic Implications of Alternative Compensation Systems." *Econom. J.* **93**: 763-783, Dec. 1983.
- Weitzman, Martin, L., *The Share Economy*. Cambridge, Mass.: Harvard Univ. Press, 1984.