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Labor-Managed Firms*
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Although the traditional theory of the firm gave little attention to institutional detail, the common assumption about the units that engage in the production and sale of goods and services was that they are owned and controlled by individuals who provide risk-bearing capital and who hire the services of workers as one among several variable inputs. Worker-run cooperatives had existed in small numbers at least since the industrial revolution, but the study of such firms using formal analytical tools awaited the added stimuli provided by the challenge of understanding collective farm performance in the Soviet Union and China and Yugoslavia's experiment with worker-managed market socialism. The models developed in the late 1950s and thereafter were subsequently applied not only to those cases but also to understanding worker-owned firms in industrial market economies, to investigating hypothetical economies consisting exclusively of worker-run firms, and to attempting to explain why worker control is relatively rare. As studies on the topic multiplied, the term "labor-managed firm" came to be used by economists to describe an enterprise that operates under the ultimate control of those who work in it.

Such a definition of an LMF permits considerable variation in other dimensions. To qualify as an LMF, for example, an enterprise's workers must have control in the sense that managers are appointed and can be removed by them or by their representatives. But the degree of direct worker involvement in decision-making can vary, from the more direct democracy of small cooperatives to the representative structures of large Mondragon cooperatives or the now-defunct Yugoslav firms. A frequent assumption is that the exercise of worker control follows "one worker one vote" lines, but the LMF concept has sometimes been extended to firms that include a class of workers lacking control rights. Most importantly, perhaps, the term LMF has been applied both to firms in socialist economies in which the private ownership of capital is prohibited and the enterprise's capital is the property of "society" or of a collective, and to worker-owned firms in capitalist economies, in which individual workers can hold property rights in their enterprise's assets, for example through "partnership deeds," "individual capital accounts," or shares.

The principal example of an LMF with "social capital" was the Yugoslav social enterprise, which arose from the application of new laws and principles to that country's Soviet-style state enterprises. Collective property was the prevailing legal notion applied to the land and equipment of collective farms in the Soviet Union, China, and other Communist states, and has also accounted for a portion of the assets of some Western worker-run firms. The canonical example of "partnership deeds" is provided by worker-owned plywood companies in the United States. The capital account model was adopted

* Forthcoming in The New Palgrave Dictionary of Economics, 2nd Edition. Lawrence Blume and Steven Durlauf, eds.

by the group of worker-owned enterprises centered in the town of Mondragon in the Basque province of Spain. More hybrid cases with only elements of worker control, such as (a) the partial employee ownership of many American companies, (b) legal, medical, and other professional partnerships, (c) co-determination in Western Europe, and (d) the widespread employee ownership resulting from privatization programs in many transition economies, also continue to stimulate interest in the economic analysis of firms run by workers.

Although the economic analysis of worker-run firms was stimulated by the cases mentioned, interest in the concept appears to be explained by other factors as well. Normative dissatisfaction with the capitalist employment relationship, in which workers assume a subordinate role in the production process and lack claims on enterprise profits, can be found among leading economists ranging from John Stuart Mill and Leon Walras to James Meade and Jacques Drèze. In his *Principles of Political Economy*, Mill, who dominated English political-economy in the mid-19th century, wrote “To work at the bidding and for the profit of another, without any interest in the work—the price of their labor being adjusted by hostile competition, one side demanding as much and the other paying as little as possible—is not, even when wages are high, a satisfactory state to human beings of educated intelligence, who have ceased to think themselves naturally inferior to those whom they serve.” He predicted the extinction of the capitalist firm (“There can be little doubt that the relation of masters and workpeople will be gradually superseded by partnership”) and opined that the result “would be the nearest approach to social justice, and the most beneficial ordering of industrial affairs for the universal good, which it is possible at present to foresee.” Modern political theorists such as Carol Pateman and Robert Dahl have argued that self-government of the workplace by workers is an implied requirement of the principle of control of government by the governed, and that it would help to deepen democracy in more traditional political spheres.

Another source of interest in LMFs is the fact that the theoretical analysis of such firms promises insights into why the large majority of firms in market economies are established and controlled by investors rather than workers (Dow, 2003). Whether that fact is to be attributed to social custom, to the exercise of economic power by the wealthy, to aversion to risk by the poor, or to other factors, seems important for judging policies such as the expansion of co-determination or the use of worker ownership in future privatizations. It also has an important part to play in the ethical evaluation of the economic system as a whole.

The first wave of models of worker-management abstracted from issues of ownership and financing by assuming a fixed charge for capital or land, presumed to be rented by the firm but fixed in quantity in the short run. By contrast, the number of worker-members was taken to be variable, and the firm’s main decision problem was to select a level of this input. In the seminal model of Ward (1958) and in subsequent treatments by Domar (1966), Vanek (1970), Meade (1972) and others, the objective was taken to be maximizing revenue per worker net of capital, land, or other charges. The first and most frequently noted finding of such models was that with the maximand being the (endogenous or firm-specific) net earnings of a variable input, output might not

respond normally to changes in the product price. In particular, Ward showed that if labor is the only variable input, workers share net revenue on an equal basis, and the firm's objective is to maximize the earnings of each worker employed (without concern for workers who might have to be expelled to achieve earnings maximization for those remaining), then an increase in the product price would reduce optimal employment and thus the firm's output level. An industry consisting entirely of worker-run firms would accordingly exhibit a downward rather than upward-sloping short-run supply curve, so that output would go down, rather than up, in response to increased demand (assuming that a short-run equilibrium is even possible). Labor would be misallocated among firms in the short-run equilibrium of a labor-managed economy, since those with high marginal product of labor would have no incentive to accept workers from those with low marginal product. As an added oddity, the firm would seek more workers if the cost of its fixed factor or a lump sum tax rose, and it would reduce its membership if the opposite occurred.

Long run outcomes are less peculiar. Abnormal returns would attract new capital investments by existing firms and entry of other firms into the industry, giving the long-run supply curve a more conventional shape. In the very long run, with both the number of firms and their utilization of all factors being variables, equilibrium behavior of labor-managed and conventional firms would be identical (Drèze, 1976). Even short-run perverse supply responses would be rendered unlikely by a variety of factors. For example, Domar (1966) showed that the tendency of hypothetical LMFs to take on additional workers as output prices fell or as net revenue was reduced by higher charges for fixed factors, could be annulled by incorporating in the model the supply of labor facing a firm. Other factors tending to weaken or reverse the "perverse output supply response" include (a) use of variable inputs additional to labor, (b) flexibility of working hours, (c) reallocation of labor between product lines in multi-product firms, (d) reluctance to vote for the expulsion of incumbent members, perhaps because the voters face similar probabilities of being selected for expulsion, and (e) tradable membership rights.

Empirical research failed to provide evidence for backward supply responses by LMFs. Chinese collective farms were found to increase their output in response to higher government-set prices. Yugoslav firms were sometimes argued to be reluctant to take on new workers, in line with Ward model predictions, but no evidence has been adduced that they had insufficient flexibility over work hours or an inability to allocate workers among tasks and product lines so as to respond positively to better market conditions for a given product. In what is probably the most rigorous study of the supply response of worker-owned firms, that on U.S. plywood cooperatives by Craig and Pencavel (1992), the authors concluded that the firms' output was significantly less responsive to product price changes than that of conventionally-owned competitors, but they rejected backward bending supply at high levels of significance.

Property rights and investment incentives were another major concern of the LMF literature beginning in the late 1960s. In Yugoslavia, workers were empowered to elect councils which selected and had governing authority over their companies' managers, but

the capital stock of the company was legally owned “by society,” with workers having rights to current revenue but obligation to maintain and ideally to add to that stock. Furubotn and Pejovich (1970) demonstrated theoretically that with this rights structure, self-interested workers would privately value new investments in their company only insofar as they expected to remain employed there and have their pay enhanced by the resulting higher productivity. For capital goods having a useful life exceeding the expected employment horizon of a worker, the privately appropriable rate of return must be adjusted downward to take into account truncation of the future earnings stream from the standpoint of the worker. Furubotn and Pejovich argued that Yugoslavia avoided an otherwise-predicted dearth of investment only because government and Communist authorities continued to have considerable leverage over managers, and because the government encouraged companies to finance their investments with low cost loans from the state banks, although this had the effect of pumping money into the economy and thereby fueling inflation (Pejovich, 1969).

Most economists studying the issue agreed that firms with social ownership of capital would suffer from a horizon problem of the sort that Furubotn and Pejovich identified. More generally, Vanek (1977) argued that failure to consider the scarcity price of capital can lead to inappropriate choice of technology, a factor that he viewed as being of sufficient importance to explain the historical failure of experiments with workers’ management. He noted, however, that this need not be a general feature of LMFs. The truncation of the revenue stream that is considered when evaluating investments is a result not of worker-control but of assuming that workers are deprived of any and all rights to their investments’ returns after separation from their firm. The problem could thus be ameliorated or eliminated entirely by several methods, for instance the calculation of a severance payment based on the capitalized value of each worker’s past contributions to their company’s capital stock. Another possibility is for the worker to sell his position as a partner or member of the firm in a market. In a perfectly functioning membership market, the estimated remaining productivity or marketable value of physical and other assets created during the incumbent worker’s career with the firm would be incorporated in the sale price of the membership right. Sertel (1982), Dow (1986), and Fehr (1993) demonstrated the theoretical ability of a membership market to eliminate the inefficiencies of worker control in other dimensions as well. Pencavel (2001) and Dow (2003), however, point out the rarity of such markets and evidence of their imperfect functioning, suggesting this as another place to search for possible explanations of why LMFs are not more common.

A much-discussed dimension of worker control and ownership is that of work incentives. Vanek argued that as a means of motivating workers to give their full energies to their jobs, sharing profits is likely to be far superior to paying a fixed wage, since the worker on fixed pay receives the contractual wage regardless of how intensively she works and regardless of how the firm fares. At a theoretical level, such a claim can be disputed. On the one hand, the short-run insulation of the worker from the effects of her varying quantity or quality of effort need not imply the total absence of a connection, since the wage can be adjusted over time, including by performance-contingent promotions. Efficiency wage models also demonstrate the potential to elicit effort

through the threat of firing for sub-par performance. A company's very survival may depend on the effort it obtains from its workforce. On the other hand, if workers share equally or according to predetermined proportions in the same pool of profit, then the incentive provided by profit-sharing suffers from the profit's dilution among many workers, and the prediction of a static or finitely repeated model of effort choice is that rational workers will choose to free ride.

Despite this inconclusiveness of theory, empirical studies have given Vanek's intuition about profit-sharing and motivation more support than refutation. Profit-sharing has often appeared to boost work incentives, in part because it changes the dynamics of worker-worker interactions—each worker now being far more inclined to show disapproval at a co-worker's slackness. The prevalence of mutual monitoring in worker-run firms is associated with concrete cost-saving from using fewer hired supervisors. Craig and Pencavel (1995) found total factor productivity to be between 6 and 14% higher in worker-owned than in conventional plywood firms. Weitzman and Kruse (1990) found a positive effect of profit-sharing on productivity in a meta-analysis of studies of both worker-owned and conventional firms linking pay to profit. A similar finding is recorded by Doucouliagos (1995) in a meta-analysis of studies focusing on the effect of worker participation in decision-making.

If worker-run firms don't actually suffer from dysfunctional responses to changes in their economic environments, if they aren't dissuaded from investing by horizon problems, and if they motivate work effort at least as effectively as do conventional firms, why aren't they as common as Mill predicted they would one day be? Among the answers that have been proposed is that control by investors is superior to control by workers because investors' representatives can reach decisions more easily, the idea being that investors share a uniform objective of maximizing the firm's market value, whereas workers have multiple interests (job security, pleasant working conditions, higher earnings) upon which each may place a different weight, thus defying easy consensus (Hansmann, 1990). Another answer, suggested by Kremer (1997), is that less productive workers tend to use the firm's internal decision process to obtain a flatter wage dispersion, which weakens incentives for the more productive workers to stay with the firm. Still another possibility, formalized by Ben-Ner (1984) and Miyazaki (1984) based on an earlier suggestion by Mikhail Tugan-Baranovsky, is that successful LMFs have an incentive to replace retiring members with non-member hired workers, concentrating the profits in the hands of a smaller member group which, in the limit, collapses to contain only one member, a proprietor. Studies of the life-cycle of cooperatives, from creation to dissolution, find few cases following precisely this scenario, but situations in which workers sell their firm to private owners and become their employees are reported, e.g. in the U.S. plywood sector.

Possibly the most promising place to search for explanations is in the area of financing. Because inputs are committed before output value is certain and because time passes between the utilization of input services and the realization of revenue from product sales, firms typically need the services of both risk-bearers and financiers. There is no technical reason why all input suppliers, including workers, could not share in

providing these services by accepting payments in the future and by working for shares of an uncertain total revenue, rather than for fixed wages. What is observed, however, is consistent with the view that the supply of risk-bearing and financing services follow comparative advantage: specialists with greater willingness to bear risk and/or ability to pay for inputs up front become the suppliers of equity and debt finance, while workers are paid within short intervals in amounts promised in advance and not contingent on the firm's results. The fact that workers typically have less wealth and thus both less ability to supply funds or to finance their consumption from savings, as well as less willingness to bear risk, is likely to play an important part in explaining this (Putterman, 1993). The thinness of potential markets for worker partnership shares and thus the absence or imperfection of the partnership market may add to the burden that financing their own firm imposes on workers (Dow, 2003).

Although workers do accumulate substantial assets in pension funds in the United States, risk-aversion (and pension fund regulations) may deter them from investing too much of it in their own company or in any other single project. In a world in which wealth was quite equally distributed and was held mainly by workers, workers as principal owners of their own firms might still remain rare because workers might prefer to hold diversified portfolios containing shares of many firms other than their own.

If control (by managers) and ownership (by shareholders) are in any case separated in modern corporations, why not worker control with (outside) shareholder ownership? The fact that the de-linking of ownership and control remains incomplete even in those firms where ownership is most diffuse (in other words, the fact that shareholders retain ultimate control rights in publicly traded corporations) suggests an answer. Presumably ownership and control are almost universally linked in a market economy because the owner, the return on whose investment is subject to so many uncertainties, is unwilling to cede control over key decisions affecting that return. Until worker desires for control of their enterprises are strong enough that they are willing to bear considerable financial risk, or until market outcomes are altered by government interventions facilitating the de-linking of control rights from financial risk-bearing, LMFs appear likely to remain the exception to the rule in market economies.

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