



“Summary of article by Samuel Bowles: The Production Process in a Competitive Economy: Walrasian, Neo-Hobbesian, and Marxian Models” in Frontier Issues in Economic Thought, Volume 4: The Changing Nature of Work. Island Press: Washington DC, 1998. pp. 29-32

Social Science Library: Frontier Thinking in Sustainable Development and Human Well-being

“Summary of article by Samuel Bowles: The Production Process in a Competitive Economy: Walrasian, Neo-Hobbesian, and Marxian Models”

Economists have proposed a range of theories of the firm and the production process, with differing implications for the analysis of labor markets and employment. This article presents a mathematical model formalizing a Marxian theory of the firm, based on the hypothesis of a fundamental conflict of interests between employers and workers. The model can be contrasted to both a Walrasian theory, which views production in technological rather than institutional terms, and a neo-Hobbesian view which sees the firm as a mechanism to reduce transaction costs and prevent workers from shirking or “free riding” on the job.

Three propositions that are surprising or counterintuitive from a conventional perspective arise as natural deductions from the Marxian model. First, capitalists will generally favor mechanisms that maintain control over workers, even at the cost of some inefficiency. Second, it is in the interest of capitalists to foster division among workers, even if this means discriminating among equally productive workers. Third, significant involuntary unemployment -- Marx’s “reserve army of the unemployed” -- is a permanent, necessary feature of a capitalist economy. These are not based on collusion, market imperfections, or a failure to maximize profits; rather, they are normal outcomes of market competition among profit-maximizing firms.

THE EXTRACTION OF LABOR FROM LABOR POWER

The analysis of production depends crucially on the social relations within the firm, which are not entirely reducible to technological or market relationships. Labor is a unique factor of production, which is inherently social in three respects: first, labor cannot be separated from the people in whom it is embodied; second, work is generally less costly when done by many people together in one location; and finally, the work process shapes the attitudes, skills, and preferences of workers, as well as being shaped by them.

The fact that employers own and control the means of production creates a fundamental conflict of interest between them and their employees. This does not mean that workers always want to avoid work; it just means that it is more profitable for employers to control the pace and direction of the work process, rather than leaving such decisions to the employees’ discretion. Because employers control the terms of employment, they can impose costs on employees who fail to carry out their wishes. In particular, employers can modify the pay or other conditions of employment, or even fire workers for nonperformance on the job.

Although it is profitable for employers to control their employees on the job, it is also costly to do so; analysis of these costs creates the distinctive features of the model presented here. Employers hire hours of labor, but the input needed for production is labor *effort*. Labor effort per hour depends on both the employer's level of surveillance of the workforce, and the cost to the employees of losing their jobs. Either more surveillance or greater costs of job loss will make workers work harder and more steadily, in order to increase their chances of keeping their jobs.

For the employer, the problem is to find the least-cost strategy for obtaining the maximum effort from the employees. In Marx's terms, the employer is extracting labor from labor power; in more modern language, he is extracting work from the workers. Increased surveillance is presumably available, at a known cost. The employer can also increase the cost of job loss, by paying employees more than they can earn elsewhere. The "carrot" and "stick" strategies are close but not perfect substitutes for each other, so there is an "iso-effort curve" showing the combinations of surveillance and wage increases that result in the same effort level (comparable to the production isoquants of standard microeconomics). The price of surveillance determines the least-cost point on the iso-effort curve; that point represents the unique mix of surveillance and wage increases which is the employer's optimal strategy.

THE RESERVE ARMY OF THE UNEMPLOYED

Paul Samuelson's famous remark, "in the competitive model, it makes no difference whether capital hires labor or the other way around," is consistent with the non-Marxian models of the firm, but not with reality. In fact, there is a basic asymmetry between the positions of capital and labor. The effect of involuntary unemployment is to render labor time a nonscarce input, weakening the bargaining power of workers. In a full employment economy there would be little cost to job loss, since workers could find new jobs with little trouble or delay. This would remove the employers' most powerful threat, allowing workers to demand escalating wages and/or reduce their effort to levels of their own choosing.

The existence of unemployment makes the threat of job loss a serious one, and hence motivates workers to exert increased effort. However, unemployment will persist only if labor costs exceed the competitively determined, market-clearing level of wages. Why would employers pay more than the market-clearing cost for labor, particularly since it is not scarce? There are two answers. First, the cost of labor to the employer includes surveillance costs as well as wages and benefits. Second, employers may choose to pay workers more in order to increase the cost of job loss, motivating workers to provide greater, more consistent effort.

CAPITALIST TECHNOLOGY

Similar reasoning shows that a profit-maximizing employer will not always choose the most efficient technology. Efficiency means that a given output is produced with the smallest possible quantity of inputs; in a conventional model, efficient production is always the profit-maximizing strategy. However, the Marxian model shows that it is sometimes more profitable for an employer to choose an inefficient technology because it allows greater control over employees.

Some kinds of machinery, computers, and other information technologies play a joint role in production, both contributing to the marketed output of the firm and producing information on the work performance of employees. Such capital goods will be “overused”: the rational capitalist will not just use such inputs up to the point at which their marginal contribution to output equals the input price (the conventional standard for efficiency), but will use more of them, up to the point at which their combined contributions to output and to the extraction of labor effort equal the input price. That is, control-enhancing capital goods will be used beyond the efficient level.

An alternative argument makes the same point. Any given level of labor effort can be extracted with many different combinations of surveillance and wage increases. Surveillance consumes real resources, while wage increases do not. Hence, if the employer’s optimal strategy involves any surveillance -- as it virtually always does -- then there are other ways of obtaining the same effort and the same quantity of final output, while using fewer surveillance inputs and the same amount of all other inputs.

DIVIDE AND RULE

It is sometimes rational for employers to pay different amounts to identically productive workers. The rationality of discrimination rests on the effects of worker unity on the work process and the level of labor effort. Increased unity -- for simplicity, assumed to be measured by the degree of wage equality within the workforce -- may lower both the probability that a worker will be detected pursuing nonwork activities during working hours, and the probability of being terminated if detected. Thus, all else being equal, increased unity among workers reduces the amount of labor effort that is provided. Discrimination that fosters inequality would therefore increase labor effort, by reducing solidarity.

NEO-HOBBSIAN AND MARXIAN MODELS

Could the undesirable outcomes of involuntary unemployment, technological inefficiency, and discrimination be deduced from a different model? The neo-Hobbesian model, focusing on the need for the firm to control worker malfeasance, or shirking, is superficially similar to the Marxian model presented here. Ronald Coase proposed an influential conception of the firm as a mini-command economy which exists to minimize transaction costs; this suggests that workplace hierarchy is an efficient response to the universal tendency to shirk responsibilities on the job.

Yet derivation of the results presented above within the Coasian or neo-Hobbesian framework requires restrictive and implausible assumptions about human nature and exogenously given technologies. Perhaps more fundamentally, the claim that the hierarchical firm is an efficient response to shirking can be refuted. A different workplace organization, if perceived to be more fair or respectful to the workers, might lead to more labor effort with less surveillance inputs; the inability of the hierarchical firm to reach this outcome constitutes a market failure. Only in the Marxian model is this outcome understandable as a result of the endogenous creation of worker (and capitalist) attitudes, and of the labor extraction function.