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Incentive Effects of Profit Sharing

1. Introduction

As evidenced by its appearance as a topic at this conference, there is widespread interest in profit sharing and related forms of pay for group performance. There are probably several reasons for this interest.

The primary motive probably has to do with the perception that by giving workers a partial stake in their company's performance, profit sharing may, under certain circumstances, lead to desirable outcomes that ultimately increase productivity. If this perception contains an element of truth, widespread profit sharing might conceivably improve national "competitiveness," with consequent policy implications. In such a context, but also for more general reasons, it becomes important to sort out and evaluate as systematically as possible the evidence concerning a possible link between profit sharing and productivity.

Another reason for interest in profit sharing concerns the possible employment effects. It has been argued that a profit-sharing system might possibly lower the marginal cost of labor, relative to a wage system, thereby making it easier to hire labor during good times and less advantageous to lay off workers during bad times. If this kind of observation contains a germ of truth, then it is at least conceivable that profit sharing might have beneficial macroeconomic effects because it could lead to a somewhat improved unemployment-inflation tradeoff.

It should be noted that even if these claims are only partially true, then profit sharing would deserve careful scrutiny. Productivity and employment are two of the most important issues facing any economy, and a system change promising even the hint of an improvement, even if not a panacea, should merit careful attention.

In both cases—productivity and employment—the essential idea is that profit sharing might have beneficial effects by changing the underlying incentives. If profit sharing has good consequences, it is by favorably altering incentives to be more productive or to maintain higher employment levels. Accordingly, this paper reviews the possible incentive effects of profit sharing. I look mostly at theory but also at some empirical evidence. No claim is made here

that anything of a highly original nature emerges. Much of the material in this paper has appeared elsewhere, in one form or another. Still, an overall review of the theory and evidence may be useful, and seemingly has not yet appeared in the format of this paper. At the end, I will also touch briefly on the possible differences between private and social benefits of profit sharing, as this distinction has particular importance for the issue of whether government support might or might not be warranted to prevent some form of market failure.

The remainder of the paper is organized as follows. The next section attempts to use contemporary economic theory to shed some light on the possible connections between profit sharing and productivity. Then I try to summarize the existing, and rather large, literature on the relationship between profit sharing and productivity (including the admittedly loose anecdotal evidence that emerges from observing comparative economic systems). After that, I attempt to do an analogous verbal analysis of theory and loose historical/anecdotal evidence for the link between profit sharing and more-full employment. Then comes a section attempting to summarize the results of formal studies on the relationship between profit sharing and employment. The final section summarizes the state of our knowledge and tries to address briefly the externality arguments so as to shed some light on the possible role of government policy.

Thus the sequence of the paper is: (1) introduction; (2) profit sharing and productivity: theory; (3) profit sharing and productivity: evidence; (4) profit sharing and employment: theory; (5) profit sharing and employment: evidence; (6) tentative summary and conclusions.

At this point I wish to jump ahead to my basic conclusion. Although I am trying to be reasonably comprehensive, detached, and objective in this survey, the possible links between profit sharing and productivity or employment ultimately do not lend themselves to crisp proof or disproof. In that sense, the situation here is no different from most of economics. (For example, we are still arguing vehemently about the effects of minimum wage legislation, which is a simple proposition about supply and demand.) When it comes to the effects of profit sharing we cannot honestly give decisive answers and must end up instead with the traditional plea for more research. And more research is genuinely needed in this area. Yet, without denying all that, I think it is also fair to conclude that total agnosticism is not warranted. Profit sharing is not as equally likely to impair as to improve productivity or as equally likely to weaken as to strengthen employment. The weight of the evidence leans to the direction of a positive link. From a large number of different sources, a moderately consistent pattern emerges of *weak support* for the proposition that profit sharing improves productivity and employment. Any one piece of evidence can legitimately be challenged because no single piece is conclusive. But, taken as a whole, the many different parts do add up to a fairly coherent picture of a weak

positive link between profit sharing and productivity and an even weaker, although still positive, link between profit sharing and employment.

2. Profit Sharing and Productivity: Theory

At the outset I want to say generally what I am trying to do in giving a verbal discussion of the productivity (and, later, employment) effects of profit sharing from a perspective of economic theory. As a generalization, economic theory can provide a powerful organizing framework for thinking consistently about certain economic issues. And it often suggests the outlines of an answer to some specific question. But pure theory rarely provides a definitive answer. For every model there is a countermodel, and judgments about which models apply to which situations are ultimately empirical. The particular issue under examination here—the relation between profit sharing and productivity or profit sharing and employment—is no exception to this generalization. Actually, the subject involves a particularly complicated interplay of economic and other motivations, which rubs awkwardly against the confines of conventional theorizing. Nevertheless, I think that economic theory can be used here both to frame the major theoretical issues and to offer some explanatory power. I begin with the simplest conventional model and work my way up to more complicated contemporary models that incorporate increasingly sophisticated considerations. Throughout, the emphasis will be on talking through a particular application—what the models might say about the real world connection between profit sharing and productivity (and, later, employment)—not on modeling *per se*.

I start with the simplest model. The simple one-person case is what most people have in mind as a prototype example of the advantages of profit sharing. It illustrates nicely many of the major issues and can serve as a point of departure for more sophisticated models.

Suppose that an individual produces a single output from a single input according to some well-defined production function. The input is most easily thought of as some kind of generic combination of hours of work and effort. The hours part of labor-input can be measured, but the effort part largely cannot. Effort might stand for all sorts of unobservable things like working harder, working smarter, taking initiative, taking advantage of unforeseen opportunities of time and place, and so forth. Individual small-scale farming might be a good example of this kind of paradigm, but there are many others.

A “wage system” in the present context would pay the hired farmer-worker a fixed wage in return for a fixed number of hours of labor. The fixed hours, in conjunction with a certain verifiable level of effort set by implicit or explicit standards, would yield some level of output. Unfortunately, there is no guaran-

tee that this output level is efficient. In particular, with effort both unpleasurable and difficult or otherwise costly to monitor (at least beyond a certain point), the wage system would result in too little output being produced relative to what is socially optimal. In other words, a wage system tends to result in low productivity equilibria, where the marginal value of an extra unit of effort exceeds its marginal cost.

The obvious solution in this context is to pay the hired farmer the value of his output over and above some fixed amount accounting for economic rent. This kind of profit sharing will automatically guarantee the efficient outcome, where the marginal value of an extra unit of output is equal to the marginal effort-cost of producing it. When the farmer-worker is paid on the basis of what he produces, he will automatically adjust his effort to the optimal degree. In the present context, then, a switch from a wage system to a profit-sharing system would increase productivity.

This simple paradigm of the farmer-worker is what most people have in mind as the common sense logic behind their intuition that a profit-sharing system can be expected to increase productivity relative to a wage system. The worker will work harder and produce more output under profit sharing than under a rigid wage system because he has some stake in the outcome. While the basic message of this paradigm can be diluted by more sophisticated formulations, the germ of truth tends to remain in some form. The key insight is that under profit sharing high productivity is rewarded with more pay and there thus tends to be *some* pressure to move towards modes of behavior that increase output.

As applied to an individual farmer-worker, the proposition that profit sharing increases productivity is one of the more spectacular examples of simple theory giving an essentially correct insight that is confirmed by experience. Throughout the world, it is surely a fair generalization that, other things being equal, agriculture run on a decentralized "responsibility system" with rewards directly linked to output is more efficient than agriculture run on a centralized, labor-for-hire-type system with rewards far removed from performance.¹

The simple prototype model described above omits many features of reality that might seem important. In the following discussion I treat what I consider to be the three most important deviations from the basic model. These are: (1) the free rider problem of individual incentives becoming diluted in a group setting where rewards are linked to group effort; (2) risk bearing issues associated with profit-sharing exposing workers to an unacceptable degree of pay variation; (3)

¹ Of course there are exceptions that prove the rule, such as, perhaps, some aspects of California agribusiness.

the possible weakening of capitalist property rights under profit sharing via some form of codetermination. These issues are now treated in turn.

I begin with the free rider problem. An important set of difficult issues is connected with understanding what extension of the paradigm of the single farmer-worker, if any, applies to a multiworker setting where profit sharing is naturally tied to group performance. In this context there appears to be a dilution or free rider problem whenever it is difficult to monitor a single person's contribution, which is presumably frequently the case. An externality is present because any one person's reward depends on everyone else's effort. With n members of the group, the extra profit-sharing reward associated with marginal effort on any single worker's part is diluted by a factor of $1/n$. The result is an inefficiently low level of effort, which is lower as n is larger. Following the logic of the static Nash equilibrium framework, profit sharing might not have very much effect on a large organization because every member would hold back effort while trying to free ride off the others.

The free rider story outlined above is often used to argue that group incentives will be ineffective for any reasonably large value of n , and therefore, by default, relatively greater stress should be placed upon individual incentives. This argument doubtless contains important elements of truth. Yet, there is an important caveat. In a repeated game setting, the conclusions may be quite different.

The profit-sharing "game" is a form of prisoner's dilemma. All members of the collective are potentially better off if everyone works harder. Yet there is always a temptation for any single individual to shirk because per capita output and reward of any member of the group will not be much affected when one person's individual effort is reduced. (Hence the conclusion in a static context that one-shot profit sharing will not have much effect on effort and output.) But when the game is repeated, which corresponds to a long-term relationship among the workers, a much richer set of strategies emerges in the resulting noncooperative "supergame." Depending on specifics of how the technology of observation and production is modeled, workers may punish other shirking workers by withholding their own effort or, if feasible, ostracizing the offending antisocial shirkers. In such a setting, there can be an enormous number of dynamic equilibrium strategies. Among the equilibria, if the discount rate is sufficiently small, is the cooperative strategy where all participants choose to work at the socially optimal level. (This is a particular application of the so-called "Folk Theorem" of noncooperative game theory.)² Thus, there is a rigorous sense in which profit sharing may defeat the prisoner's dilemma free

² On this see Fudenberg and Maskin (1986). For a very readable account of a broad series of related issues, see Axelrod (1984).

rider problem and induce greater productivity in a multiperson setting. By contrast, a rigid wage system does not have a chance to improve productivity because rewards are independent of effort. With profit sharing, as opposed to a rigid wage system, there exist modes of behavior that can make everyone better off, and it may be individually rational to pursue such modes for the long-term benefits they yield.

The theory outlined above—that repetition allows for the possibility of self-enforcing socially desirable outcomes when rewards are linked to group performance—is not without its difficulties. Profit sharing *may* induce greater productivity, so that the single farmer-worker paradigm can be extended to groups, but other outcomes, like narrowly self-interested shirking, are possible as well.

Equilibrium is a rest state from which no agent has an incentive to deviate given that all other agents are at equilibrium in the same rest state. When there are multiple equilibria (in this case an uncountable infinity of them), the relevant equilibrium depends on a complex, typically unspecified, interaction between the underlying dynamic process and initial conditions. At the present time, theory does not offer much guidance on which equilibria are more likely to emerge under what conditions. In a way, the theory can be interpreted as highlighting considerations of history, chance, culture, exhortation, institutional detail, and the like.³

In the end, repeated game theory delivers a complicated message about the likely effects of profit sharing on productivity in a multiperson organization. It is possible that profit sharing can lead to increased productivity. But it is possible that it will not. The outcome would appear to depend on considerations concerning whether or not an organization can convince its members that everyone pulling together is essentially a better idea than everyone pulling separately. There can be equilibria where it is in my long-term self-interest to pull together because everyone else is pulling together, and if I do not I risk the danger of unraveling the social compact. There can also be self-fulfilling equilibria where it is not in my long-term interest to pull together because no one else is pulling together and I do not think my good behavior is going to influence anyone else.

An attempt at summing up the implications of this particular application of theoretical research to the effect of profit sharing on productivity might go something like the following. To some extent, the door is open for believing that a group-based reward system, by comparison with an unresponsive wage system, can improve productivity. But it would appear to be not enough for management just to install a profit-sharing-type system and merely walk out the

³ For related interpretations, see Kreps (1984) and Radner (1986).

door. To obtain the productivity-enhancing effects, something more may be needed—something akin to developing a corporate culture that emphasizes company spirit, promotes group cooperation, encourages social enforcement mechanisms, and so forth.

I now consider issues of risk. I return to the prototype point-of-departure paradigm of a single farmer-worker. The simple model abstracted away from risk. In a deterministic context, linking the pay of a worker to his output makes good sense because it will encourage the socially optimal degree of effort. But what happens in the presence of uncertainty? Then the correct contract is not so clear. A higher degree of profit sharing relative to the base wage will elicit more effort from the worker, but also exposes him to greater risk. Sometimes the risk exposure argument is put forth as if it were a compelling reason why workers should be paid only base wages without any profit shares. But, upon closer examination, the argument is not decisive.

This set of issues has been extensively examined in the theoretical literature under the heading of the so-called principal-agent problem.⁴ In the present setting the agent is the worker-farmer, while the principal represents the hiring party who is ultimately interested in output. On the one hand, an efficient contract should link the agent's reward closely to output because that will elicit greater, or more attentive, work effort. On the other hand, in a world of uncertainty the agent's pay should be made relatively stable, because the agent is typically more averse to risk than the principal. (A company can diversify risks more easily than a worker, whose pay constitutes the major component of his income portfolio.) The optimal contract balances these two opposing considerations of effort and risk exposure.

The theory can be used to derive a formula for the optimal "mix" of base wage and profit share (see, e.g., Weitzman, 1980). The formula for the optimal profit share is typically a complicated function inversely related to the degree of risk aversion or the amount of uncertainty, and directly related to the elasticity response of output to increased effort. Explicit modeling of risk considerations does not per se eliminate the argument for profit sharing, although it probably lowers the degree of profit sharing in the optimal pay formula (from 100 percent) in order to soften the exposure to risk. More importantly, the theory shows that it is fundamentally implausible, under standard assumptions, to have a corner solution where the efficient pay contract involves only straight wages and no profit sharing.

An additional consideration in any analysis of the risk aspect of a profit-sharing contract is the effect on employment. Standard principal-agent theory evades this issue. The theory is, in essence, about the individual high-seniority

⁴ For a survey, see Hart and Holmström (1987), and the references cited there.

worker who already has job tenure, not about the aggregate of all would-be workers. In a world of sticky pay parameters, it is possible that profit sharing may help to reduce employment fluctuations. If that is the case—and this interpretation is controversial—the argument for profit sharing might perhaps be somewhat stronger than what is suggested by standard principal-agent theory.⁵ I defer discussion of this important set of issues to sections 4 and 5 of the current paper except to note here that there is some overlap with the themes of this section.

Now I will discuss briefly some issues of codetermination. The repeated prisoner's dilemma argument previously outlined shows that, other things being equal, profit sharing may improve effort and productivity even though there is a dilution or free rider problem. In effect, it may be in the self-interest of each member of the work collective to act over time like one artificially aggregated worker, and therefore to work harder under profit sharing. However, this argument neglects one potentially significant aspect.

If workers share more profits, then capitalists, of necessity, share less. We must therefore worry about whether diluting the capitalists' incentives might not weaken or fatally compromise their motivation, discretion, power, or authority. A concrete example of this problem is the idea that increased worker profit sharing may lead to increased worker demands for codetermination in enterprise decision making. Germany is often cited as a case in point here.

The theoretical arguments, pro and con, concerning this set of issues are quite complex because the applicable models are typically concerned only with partial aspects, and in any event they are not fully developed. A complete model would be very messy technically, including as it should considerations of information, monitoring, supervision, dynamic gaming, risk sharing, insider vs. outsider workers, and many other issues. At present we do not fully understand on a theoretical level the possible connection between increased worker profit sharing and increased codetermination in enterprise decision making.

At a practical level, the connection between profit sharing and codetermination is also poorly understood. There are numerous examples of profit sharing without codetermination. Indeed, this would appear to be the typical pattern in the U.S.A. It seems possible to believe that some profit sharing is basically productive, while the more extreme forms of European-style legislated codetermination are essentially counterproductive. Thus, I am admittedly on uncomfortable grounds in this paper when I attempt to concentrate on profit sharing per se while blurring the already murky boundary with issues of worker control.⁶ Most of the critiques and defenses that have arisen here are really of

⁵ See, for example, Weitzman (1983).

⁶ For more on the latter, see Tyson and Levine in Blinder (1990).

worker management rather than of profit sharing per se. No one, so far as I can see, has attempted to carefully disentangle the two issues.

In the extreme case of perfectly costless monitoring and supervision, an efficient outcome requires that management be given all the residual claims on profits and all decision-making power. This basic insight underlies the claims of some members of the "property rights" school (see, e.g., Alchian and Demsetz, 1972; Jensen and Meckling, 1979) that profit sharing, to the extent that it involves worker management, is likely to be inefficient because it diverts vesting of property rights from the capitalist central monitors to individualistically oriented workers whose motivation is diluted by the free rider problem. In this view, profit sharing would be associated with lower productivity due to more shirking, increased enjoyment of on-the-job leisure, slowed or incorrect managerial decisions, a too-short time horizon, an excessively risk averse attitude due to a nondiversified pay portfolio, and the like. Although there are many variations, the basic theme of the critique of codetermination by the property rights school revolves around the idea that: (a) the essence of the firm concerns monitoring because otherwise labor does not work well, (b) capital can effectively monitor labor, and, therefore, (c) efficiency requires that capital be given all residual claims on profits and all decision-making power.

The defense of profit sharing and worker participation largely involves challenging the basic assumptions of the property rights school.⁷ In less extreme settings than perfectly costless monitoring and supervision, finding the optimal degree of profit sharing becomes an extraordinarily complicated problem in the theory of the second or third best. Some profit sharing may be desirable in a world where workers can sometimes monitor, supervise, and motivate each other more effectively than management can, or where workers are able to provide technical information to management that would otherwise be costly or time-consuming to obtain. For what it is worth, the popular literature is full of talk about the importance of corporate culture, cooperative work environments, team spirit, peer pressure, and the like (see, e.g., O'Dell and McAdams, 1986; Kantor, 1987). Proponents of profit sharing and worker participation stress the potential for improved channels of information processing, better conflict resolution, greater possibilities for acquiring on-the-job human capital from other workers, a more positive attitude towards the introduction of new technology, and other good things, all of which intuitively seem to be increasing in importance over time.

This survey of the worker control issue is a necessarily brief review of some subtle and complicated arguments, whose connection with profit sharing is

⁷ For well-developed arguments, see, e.g., Putterman (1984) and Nalbantian (1987).

poorly understood.⁸ The main strand in the debate seems to center on the appropriate model of monitoring, supervision, and incentives to shirk. Explicit consideration of property rights does not per se eliminate the argument for profit sharing, although such considerations might well influence the optimal degree of profit sharing. I think the appropriate application of the theory of property rights indicates that quite extreme assumptions are required to derive a corner solution where the efficient pay contract would consist entirely of base wages with exactly zero profit sharing. In this sense, the conclusions are analogous to those I drew from principal agency theory.

One could go further in applying modern economic theory to analyze the likely effect of profit sharing on productivity, but I believe the main themes have been covered. Let me close this section of the paper by attempting to summarize how I think that economic theory considerations inform us on the relation between profit sharing and productivity.

Taking all considerations together, what does contemporary economic theory say about the relationship between profit sharing and productivity? The message is complicated and incomplete. Certainly, theory does not rule out the possibility, even in a multiperson context, that profit sharing may increase productivity. Whether this happens or not may depend largely on historical and institutional factors in the workplace. On balance it seems to me that the theoretical considerations point more in the direction of a positive than a negative effect of profit sharing on productivity. It seems unlikely that, when all relevant considerations are factored in, a corner solution consisting of all base wages and zero profit sharing represents an efficient contract. Such an extreme outcome would appear to have probability measure close to zero given reasonable probability distributions on underlying model parameters. While I am very far from being able to give an operational formula for the optimal degree of profit sharing, on theoretical grounds alone a value of exactly zero seems implausible. I think that, taken as a whole, economic theory is suggesting the plausible existence of a positive relation between some modest degree of profit sharing and some modest degree of productivity enhancement. But, as usual, theory gives us few hints about quantitative magnitudes.

3. Profit Sharing and Productivity: Evidence

In this section, I attempt a brief summary of empirical evidence about the link between profit sharing and productivity. I can be brief because Douglas Kruse

⁸ For more detail, see the articles of Alchian and Demsetz (1972), Jensen and Meckling (1979), Putterman (1984), and Nalbantian (1987).

has recently provided an excellent comprehensive survey of formal empirical studies (see Kruse, 1993). While I will attempt to summarize presently in my own words the formal studies surveyed by Kruse, the serious student of this subject should consult his important book directly. But before doing my own summary of the formal econometric studies of the link between profit sharing and productivity, I want to go over the less formal, more anecdotal evidence from comparative economic systems, broadly defined.

The evidence of linkage between profit sharing and productivity from studying comparative economic systems is of necessity very loose. The evidence is loose because so many things differ among economic societies that it is extremely difficult to isolate the pure effects of one particular institution—e.g., profit sharing—while holding everything else constant. In essence, one is forced back on soft, impure arguments by extension and other suspect reasoning that present an easy target for criticism. Still, I think this kind of “evidence” is extremely suggestive and should not be overlooked.

It seems fair to say that capitalism, the system relying primarily on the profit motive, is more productive than socialism, the system promising full employment to everyone at fixed pay. This sweeping generalization is naturally subject to all sorts of qualifications, exceptions, and caveats. Nevertheless, when all is said and done, I think that the evidence—from specific studies of public enterprises, through observations about bureaucracies and private enterprises, to comparisons of socialist and capitalist experiences (see, e.g., Bergson, 1987; Vernon, 1988)—yields as powerful a general message as can be found in economics. Capitalism may not be so good at ensuring economic security or income equality. But it is relatively good at delivering efficiency and productivity. There are lots of exceptions, of course, but this powerful general message remains a broad truth in a world allowing precious few economic truths of comparable scope.

Why is a system based on individualistic, decentralized pursuit of the profit motive more productive than a system based on job security at fixed pay? Probably because capitalism hard-wires into the sociopolitical system a strong local constituency for profitability. Throughout the economy, profit-sensitive or profit-directed agents are effectively installed in key decision-making positions. At some point in the capitalist economic hierarchy, an agent who is rewarded by enterprise profitability—typically the owner or his surrogate—will put pressure on subordinates to take measures, frequently politically or socially unpopular, to increase profits. This constituency of profit-sensitive agents with decision-making power, then, has the authority to make seemingly antisocial decisions in pursuit of their own goals. The essential argument for capitalism is that such a seemingly paradoxical power arrangement actually works fairly well in practice—compared with the alternatives. The capitalist system auto-

matically delivers efficiency and productivity because that is profitable for the key decision-making agents who benefit from the profits. Socialism, on the other hand, has a less distinguished record for efficiency and productivity because rewards are not tied closely to performance and there is no comparable local constituency for profitability to resist seemingly more immediately humanitarian aspirations, various "higher goals," bureaucratic inertia, and other features of the system.

From this line of reasoning, it seems but a temptingly short leap to conclude, as a kind of heuristic argument by continuous extension, that, other things being equal, and within a reasonable range, the broader and deeper the constituency for profitability, the greater the pressure on the system to increase productivity. The thought goes: "If the profit motive is good for productivity, so is profit sharing." This argument by continuous extension from comparative systems to profit sharing is not rigorous, but it is not implausible either. If pay of managers as well as owners is linked to profitability, the managers have a more direct incentive to be alert to productivity-enhancing measures. If workers, as well as managers and owners, have bonuses linked to profits, other things being equal they are probably going to work harder and be more sympathetic to the introduction of new machinery or flexible work rules that increase productivity. On a personal note, it never ceases to amaze me how, when profit sharing is imposed on a company, ordinary workers suddenly become very interested in many aspects of the company's profitability, a concept whose very existence they had previously been uninterested in and even unaware of.

This general line of argument—that in order to enhance productivity local agents who care about local profitability must be installed throughout the system—is widely perceived as having an important ring of truth in the current discussion of "transition economics." There seems to be a widely shared general perception that linking rewards to performance enhances productivity. Without overdoing the point, it does not seem totally unfair to use a basic empirical generalization from studying comparative economic systems to permit some modest part of the productivity luster of the for-profit system to rub off on profit sharing.

There is evidence of a similarly suggestive but slightly "cleaner" flavor from comparing capitalist countries. Japan, Korea, and Taiwan all have widespread bonus payment systems with strong profit-sharing overtones. (Singapore is now also strongly encouraging the introduction of profit sharing.) In Japan, bonuses paid twice a year constitute about 25 percent of an average worker's total pay. The bonus-to-base-wage ratio is statistically significantly correlated with profit-

ability, although the elasticity is well less than one.⁹ In Korea and Taiwan, the quarterly bonuses constitute about 15 percent of an average worker's total pay and, at least in the case of Korea, there is a statistically significant correlation between the bonus-to-base-wage ratio and profitability (Kim, 1988).

An important question is what role, if any, this type of unusual bonus payment system plays in the remarkable productivity and employment records of the Japanese, Korean, and Taiwanese economies. The question is easy to ask, but difficult to answer. I think it is fair to say that serious research on this subject has just scratched the surface. It will probably be hard to reach firm conclusions for all of the usual reasons, including, perhaps especially, the extreme difficulty of disentangling the role of one particular factor in the very complicated set of institutional arrangements we call an industrial relations system.

At the very minimum, however, the experiences of Japan, Korea, and Taiwan strongly suggest that bonus payment systems with profit-sharing overtones are not inherently counterproductive. Of course we are not able to say exactly what role the profit-sharing bonus per se is playing, since it is so intertwined with other factors. Nevertheless, these three economies are otherwise sufficiently distinct that the common strand of a meaningful bonus system is quite intriguing. On the face of what evidence and observations we now have, I think it is unreasonable to suppose that profit sharing is not playing some productivity-enhancing role in the economies of Japan, Korea, and Taiwan, although the overall effect of this role may be quite modest. The common-sense impression of on-the-scene participants and observers tends to be that the bonus system is not just a form of disguised wage, but is there and stays there for a reason. The reason most commonly cited follows the familiar story line about a group performance payment mechanism helping to unite the interests of workers and management by giving everyone a stake in the outcome and reinforcing—at least symbolically—positive, flexible, productivity-enhancing workplace behavior.

What emerges from these broad observations of comparative systems is admittedly loose and subject to multiple interpretations. Taken by itself, this evidence is not compelling. Nevertheless, while very far from being conclusive or decisive, the "big picture" from comparative economic systems seems at least suggestive of a positive relationship between profit sharing and productivity.

Before turning to formal studies of the effects of profit sharing on productivity, I comment briefly on the relationship of profit sharing to employee stock ownership plans (ESOPs).

⁹ For a description of the Japanese bonus system (and an attempt at assessing its economic impact), see Freeman and Weitzman (1987) and the references cited there.

The public often thinks of profit sharing and employee ownership as essentially similar, but they are conceptually quite different. ESOPs have a profit-sharing component, in that participants (along with outside stockholders) receive dividends (or share price increases) on stock allocated to their accounts; however, the primary company contributions to ESOPs are not profit-based. Profit-sharing plans and ESOPs are sometimes used in tandem to motivate and compensate employees, although evidence on U.S. publicly held companies indicates that the overlap between profit sharing and ESOPs is not very different from what would be expected by random assignment (Kruse, 1988). The institutional differences between the plans are likely to be important, and I do not propose to explore those here. There is a growing empirical literature on ESOPs;¹⁰ a fair generalization is that ESOPs are often associated with better firm performance, but the link is by no means automatic and it is often weak or nonexistent when adequate controls are applied. In this sense, the situation is somewhat different between ESOPs and profit sharing. A fair generalization based on a broad overview of the empirical literature seems to be that the case for a positive link between employee ownership and productivity is weaker (maybe one should say “even weaker”) than the case for a positive link between profit sharing and productivity, although not, perhaps, to the point of being nonexistent.¹¹

Turning now to the formal econometric studies on the relationship between profit sharing and productivity, I rely heavily on the recent survey of Kruse (1993), and the earlier survey of Weitzman and Kruse (1990), which it largely supersedes. Here I define a formal econometric study as one that uses standard regression analysis (typically in a production function framework) with an objectively measured productivity-like dependent variable (like value added per employee), and some type of profit-sharing-like measure (such as a dollar figure, or percentage of compensation, or a zero-one dummy variable) as an independent variable, with several other explanatory variables that should be included because they would appear to be important determinants of productivity (such as capital intensity).

After an extensive, and seemingly comprehensive, literature search, Kruse (1993) identifies 26 such studies. The studies vary greatly in data sources, methodologies, and attempts to control for biases. Several different countries and organizational forms are covered. It should be noted that the relation of

¹⁰ This literature is summarized in Blasi (1988).

¹¹ This conclusion comes out fairly clearly from the econometric studies of cooperatives, which typically show that profit sharing has a more significant effect on productivity than workers' capital ownership or participation. (Coefficients on the latter two variables are often negative and/or insignificant.) See also Kruse (1988), Bloom (1985), Voos (1987), and U.S. General Accounting Office (1987).

profit sharing to productivity was not the primary focus of several of these studies.

Generally speaking, the studies use either value-added or sales per employee (typically in logarithm form) as dependent variables, while profit sharing is measured, alternatively, as: a dummy variable, profit share per employee, profit share as a percentage of compensation, and/or percent of employees covered by profit sharing. The specification is most often based on a Cobb–Douglas production function, although several studies also use the more general CES and translog functions. In the studies that attempt to control for endogeneity, the most common approach is instrumental variables. (Typically, the use of instrumental variables does not change the results greatly relative to the OLS specifications.) Since each econometric study generally includes a number of specifications, it is convenient to have some summary measure of the estimated profit-sharing effect and the significance levels. In this review I present the fraction of positive and negative profit-sharing coefficients reported, as well as the proportion of profit-sharing *t*-statistics that indicate statistical significance at the 5-percent level.

Salient problems in the estimation of the effect of profit sharing on productivity include: all the standard econometric problems of production function estimation, the potential endogeneity of profit sharing, omitted variable biases due to the unobservable character of managerial quality and other firm-specific variables. Without in any way trying to minimize the difficulties in interpreting the results, or saying what they mean, a first question is whether or not there is something to discuss. Does a pattern emerge? The answer to this narrowly posed question is a strong yes. There appears to be a very strong statistical association between profit sharing and productivity—even after controlling for all other reasonable variables that can be identified and quantified.

As noted, from an exhaustive literature search Kruse (1993) identified a total of 26 econometric studies that regressed some productivity-like dependent variable on independent variables that include some measure of profit sharing. From these studies, in a grand total of 265 estimated coefficients measuring the effects of profit sharing on productivity, only 8.3 percent take on a negative value, with less than 0.8 percent having a *t*-statistic less than -2 . By contrast, 91.7 percent of the coefficient estimates are positive, with 57.4 percent having *t*-statistics greater than $+2$. Even after accounting for all possible reasons for such one-sided results, a fairly strong general conclusion seems inescapable. Empirically, profit sharing is positively related to productivity.

Unfortunately, these 26 studies provide little information about causality or the channels by which profit sharing might influence productivity. Kruse (1993, Chapter 4), in what is to my mind the most carefully crafted study of this genre, attempts to disentangle the causality link between profit sharing and productiv-

ity by analyzing statistically the effects of profit-sharing adoption and presence, and the roles played by different plan types, formulas, firm sizes, and information-sharing and personnel policies. Kruse makes use of a new data base, which he constructed by meticulously matching 500 “identical twin” U.S. public companies—half with profit sharing and the matching half of each pair without. Extensive telephone and mail surveys with personnel executives, when combined with public information on company characteristics, yielded an extraordinarily rich panel data set allowing far more statistical power than had previously been available for answering basic questions about profit sharing and productivity.

While a brief summary such as this cannot do justice to the richness and nuances that Kruse uncovered, he seemingly was able to put somewhat more confidence in the direction of causality. Kruse’s own summary of his main findings is:

Does profit sharing affect productivity? A wide range of past evidence is surveyed in chapter 3, focusing on 26 statistical studies that attempted to estimate the effect of profit sharing after accounting for other influences on firm performance. A substantial amount of the prior evidence indicates that employee profit-sharing plans are associated with higher company performance, although the causality and mechanisms are unclear. Accounting for past performance and a variety of influences on productivity, this study found that profit-sharing adoption is associated with productivity increases of 3.5 to 5 percent, which are maintained with no subsequent positive or negative trend. The average productivity increases are found to be larger for small companies and for companies adopting cash plans, and are unaffected when accounting for personnel policies that may affect productivity. There is, however, substantial dispersion in the outcomes, and very little evidence on the mechanisms through which profit sharing may affect productivity, since it does not strongly interact with measures of information-sharing or other policies in affecting productivity. (Kruse, 1993, p. vi)

It is interesting to note that the estimate of the productivity effect of profit sharing emerging from Kruse’s relatively sophisticated panel study—other things being equal, adoption of profit-sharing results in an average productivity increase of 3.5 to 5 percent—is essentially identical to a previous finding of Weitzman and Kruse (1990, pp. 138–139) that, from a comprehensive survey of all then-existing econometric studies, the median productivity increase associated with profit sharing was 4.4 percent.

4. Profit Sharing and Employment: Theory

A theme of this paper is that profit sharing may change incentives, and hence behavior. I have reviewed the theory and evidence for incentive effects on productivity. Here I turn to possible incentive effects on employment.

Let me begin by stating, in the form of a parable, the essential idea why profit sharing might have an influence on employment and macroeconomic stability.

Suppose there are two kingdoms, called Old Lakeland and New Lakeland, which, by a miraculous coincidence, are absolutely identical in every way—except for the seemingly minor institutional detail that Old Lakeland pays wages while New Lakeland pays shares of output. Physically, Old Lakeland and New Lakeland are mirror images of each other. The economies of both identical-twin kingdoms consist exclusively of fishing from the numerous privately owned lakes and exporting all the fish at given world prices. For each lake, fishing production functions are stable and known. By miraculous coincidence, everything—the lakes, the population, the production functions—is identical in both countries. The *only* difference between the two kingdoms is the form of labor payment.

Both kingdoms practice complete *laissez-faire* except for the following institutional curiousum. In Old Lakeland, the monarch has decreed that the *money wages* to be paid throughout the year at each lake are to be freely chosen by each lake owner but *must be posted on 1 January of that year and cannot be altered until 1 January of the next year*. In New Lakeland, the monarch has decreed that payment of each lake shall consist of a *share* of the value of the fish caught per worker—the *share fraction* applying throughout the year is freely chosen by each lake owner but *must be posted on 1 January of that year and cannot be altered until 1 January of the next year*. Other than the form of labor payment, Old Lakeland and New Lakeland are absolutely identical. In both economies, once the pay parameters (wages in Old Lakeland and share fractions in New Lakeland) are chosen, and then posted, by the lake owners, workers are free to migrate to the highest-paying lake that wants to employ them.

Suppose that the world price of fish has been steady for as long as anyone cares to remember. Then Old Lakeland and New Lakeland will have settled into a long-run competitive equilibrium that is exactly identical—a complete isomorphism—in every respect except that pay is called “wages” in Old Lakeland and “shares” in New Lakeland.

Next, suppose that, suddenly and unexpectedly, the world price of fish drops precipitously on February 1 of some year. By royal decree, pay parameters cannot be changed to reflect the new situation until the next January 1, eleven months hence. At that time equilibrium may be restored. But what happens in

the meantime, in what might be called a short-run disequilibrium where pay parameters are temporarily fixed?

The answer differs, depending on the pay system. In Old Lakeland, the lake owners will choose to lay off workers in classical textbook style, until the marginal value of labor equals the fixed wage, so that Old Lakeland will exhibit unemployment. But some introspection reveals that New Lakeland will remain at full employment even after the fish-price shock.

The reason is that, *once the share parameters have been fixed* in New Lakeland, the lake owners and fishermen-workers are in effect dividing revenues, with a fixed percentage (the share fraction) going to all fishermen working on the lake and the remaining fixed fraction of revenues going to the lake owner. From the lake-owner's standpoint, *once the share parameters have been fixed* in such a contract, the more fisherman the better (so long as the marginal product of one more fisherman-worker is positive), because then the owner's take-home share of the revenue pie is higher. So *once the share parameters have been fixed*, the incentives of the lake owner are to retain workers, and even to expand their employment if possible.

This story could readily be extended to mixed systems of base wages plus profit shares, although the strength of the employment retention and expansion effect would be weakened as the share component of pay was diminished. The employment incentive effects created by a move from a pure wage system of labor payment to an "equivalent" mixed system that pays the same overall amount of pay but now in the form of lower base wages exactly compensated by increased profit share can be analyzed as follows. Decompose the transition into two stages. First there is the lowering of base wages. Second there is the increased profit share that exactly offsets the lowered base wage so that in the end the worker is paid exactly the same as before. The employment incentive effect of the first step is expansionary, since, other things being equal, lower wages stimulate an employer to want more workers on the margin. The employment incentive effect of the second step is neutral, since it is like a fixed proportional tax on profits, and, other things being equal, this has no effect on employment, since the employer still wants to hire labor to the point where profits (before or after the proportional tax) are maximized. The combined effect of adding an *expansionary* employment incentive in stage one to a *neutral* employment incentive in stage two is thus an *expansionary* employment incentive overall.

This basic parable can be amended in a number of ways without destroying its essential message. Other things being equal, a share economy will have a greater tendency to remain closer to full employment after contractionary shocks, because share employers want to retain workers, while a wage econ-

omy will probably exhibit more unemployment during a recession, because it is profitable for the capitalist owners of wage firms to shed labor.

The hypothesized employment effect of profit sharing represents an externality of this payment system that is potentially of significant importance. The risk of unemployment is probably the largest income risk faced by labor as a whole, as opposed to the median tenured worker, and it is concentrated on the marginal or outsider worker. If more variable pay for the individual helps to preserve full employment for the group, while fixed pay for the individual tends to contribute to unemployment, overall welfare might be improved by having more profit sharing because of the difference between first-order Okun-gap type unemployment losses vs. second-order Harberger-triangle type random redistribution losses. Of course the insiders, whose pay is made more variable by profit sharing, may resent the sacrifice being extracted on behalf of the outsiders, whose employment is possibly made more secure, and may react adversely. Any attempt to balance this out by side payments from outsiders to insiders could in practice represent a serious labor relations problem, so that there might be present here a genuine externality problem.

The basic story being told here is subject to a large number of potential criticisms and objections. The model is incomplete and *ad hoc* in the assumptions it makes at several critical points. Some potentially significant issues in the employment decision are being downplayed or disregarded. It is theoretically possible to construct countermodels that neutralize or even reverse the good employment effects of a share system outlined above. (This is, of course, a problem with applying economic theory more generally, and not just restricted to the particular context described above.)

I do not propose here to go through the many theoretical arguments, counterarguments, counter-counter-arguments, and so forth, about the possible employment incentives of share contracts, since there is already an extensive literature dealing with this subject.¹² Instead, I want here to sum up what I think is the bottom-line message that emerges from the "theory" of profit sharing and employment.

I think, in the end, the basic message of the original parable rings true. Although lots of theoretical counterexamples can be conjured up, my general *ceteris paribus* conclusion is the following. *Sharing arrangements generally make it easier to consummate, and less desirable to dissolve, an economic union of those who are hired with those who do the hiring.*

¹² Many of these criticisms and counter criticisms emerged in response to the thesis put forth in my book *The Share Economy* (1984) and related publications such as Weitzman (1989).

When someone asks of an ordinary wage system why company X is hiring *this* many workers rather than more or fewer, the first instinctive response of the economist is to give an answer in terms of labor being hired to the point where its marginal revenue product to the company is equal to its marginal cost. We economists know there are many caveats to be made and that a large number of models can be constructed that weaken or even negate this simple classical answer. Yet, in the end, most of us come back to the marginal revenue product equals marginal cost explanation as the basic “big picture” employment story we keep in the back of our heads. And this is certainly the first employment story that we tell the students in our introductory Econ-10 courses.

The theoretical story I end up believing about the effects of profit-sharing on employment incentives is essentially a logical extension of the simple, standard, classical marginalist paradigm under conditions when there is an alternative “sharing” payment mechanism. It then turns out that the resulting share system adheres closer to full employment than a corresponding wage system as various underlying parameters are perturbed around their long-run equilibrium values. If we try to tell the simple Econ-10 employment story with a money wage now replaced by an equivalent amount of profit sharing, the resulting macroeconomy has better employment-stabilizing properties because, in effect, the marginal cost of labor is lower. The standard IS-LM story can be told “as if” the underlying short-run cost of labor is the base wage, which, in essence, means that a profit-sharing system modulates unemployment fluctuations, relative to a wage system (see Weitzman, 1985).

My feeling is that, at the end of the day, the theory gives some hints or suggestions that macroeconomic performance may be somewhat improved under widespread profit sharing. Not, of course, exactly in the mechanical, highly formal description of the model world of Old and New Lakeland. I think that the theory of profit sharing, formalized, as it must be, by overly crisp-looking models, is in the end pointing in the direction of an internally consistent economic system with better macroeconomic properties than the more conventional wage system.

5. Profit Sharing and Employment: Evidence

Having only touched upon the theoretical side, because this issue is well covered elsewhere, I turn now to the evidence that profit sharing may, or may not, have an influence upon employment.

There is not really a large amount of evidence to relate here. I start with some anecdotal stories, proceed to talk briefly about the experience of Japan,

Korea, and Taiwan, and then summarize very succinctly the few econometric studies that have been done on this issue.

At the anecdotal level, I think it is fair to say there is some indication or sense that the increased pay flexibility allowed by profit sharing might translate into more employment on the margin. Sometimes, this idea is viewed by noneconomists as being just common sense. A good statement of the “common sense” case was made by the British former Chancellor of the Exchequer Nigel Lawson in his 1986 budget speech before the House of Commons:

The problem we face in this country is not just the level of pay in relation to productivity, but also the rigidity of the pay system. If the only element of flexibility is in the numbers of people employed, then redundancies are inevitably more likely to occur. One way out of this might be to move to a system in which a significant proportion of an employee’s remuneration depends directly on the company’s profitability per person employed. This would not only give the workforce a more direct personal interest in their company’s success, as existing employee share schemes do. It would also mean that, when business is slack, companies would be under less pressure to lay men off; and by the same token they would in general be keener to take them on.

There are many specific instances in which (the analogue of) profit sharing clearly increases (the analogue of) employment. Take textbook publishing as one example. In the United States, the primary method of remunerating an author is by royalty payments that are essentially proportional to sales, which makes them a kind of “as if” profit sharing between publisher and author of the book. The result is that publishers are extremely keen to sign up authors of new textbooks, and the market is flooded by a great many new textbooks all the time—perhaps too many. It is not difficult to imagine what would happen if authors were paid instead by an analogue of the wage system. Then an author would receive some fixed payment for writing a textbook, more or less independent of the ultimate sales and profitability. Does anyone doubt that such a wage system of compensating textbook writers would result in a much more cautious approach by the textbook publishers and the commissioning of many fewer new textbooks? The flexibility of the profit-sharing royalty payment system encourages textbook publishers to “hire” far more textbook writers than they would under a wage system.

Or, take farming as another example. The family farm essentially uses a profit-sharing payment mechanism. And we note that whether the market for farm products is strong or weak in a given year, the farmer and his family work equally hard at producing output. This system maintains full employment, with the “give” being on the side of prices of agricultural produce. Imagine what would happen if the farmer insisted on paying himself and his family members

a fixed wage. Then in years when the prices of agricultural outputs are low, the farmer would find it more profitable to “lay off” himself and his family members, thereby economizing on wage payments, which in such years exceed the marginal revenue product of labor. As things now stand, with an “as if” profit-sharing agricultural payment system, society is guaranteed a full-employment level of agricultural output no matter what. If agriculture were run on a sticky wage system, agricultural output would be subject to business cycles like industrial products.

Such anecdotal examples may seem fanciful. But they illustrate vividly, I think, the deeply intuitive sense that the greater flexibility of profit-sharing systems generally provides more incentives to take on and keep workers at higher levels of employment.

Japan, Korea, and Taiwan have bonus systems where a significant fraction of an average worker’s pay comes in the form of a bonus. In Japan, the bonus constitutes about 25 percent of an average worker’s total pay, while in Korea or Taiwan it is closer to 15 percent. At least in the case of Japan and Korea, where econometric investigations have been made, it has been established that the bonus has a profit-sharing component in the rigorous sense that the ratio of bonus payments to base wages is procyclical at statistically significant levels of confidence (see, e.g., Weitzman, 1986; Freeman and Weitzman, 1987).

In what follows, I will discuss the Japanese case, which is the best documented, but to some extent the same issues seemingly apply to Korea and Taiwan.

Japan has enjoyed the lowest average unemployment rate among the major industrialized capitalist countries over the entire postwar period. This comparatively outstanding employment record survives corrections for discouraged workers, transfers of workers, relatively flexible hours, definitional differences, and so forth. Does the existence of a bonus—constituting about one-fourth of an average worker’s total pay and having a statistically significant “as if” profit-sharing component—help in any way to account for the comparatively low, stable unemployment rate in Japan?

This is an easy question to ask, but a very hard one to answer. The statistical problems are immense, starting with the basic issue of causality. The whole Japanese system, starting with individual psychology, seems to be employment promoting, so it is not easy to isolate the precise contribution made by the bonus system. For example, how do we disentangle whether the flexible bonus payment system is helping to create increased employment stability, *à la* the share economy theory, or, *vice versa*, whether the Japanese social commitment to full employment has caused the flexible bonus payment system to come into existence?

In any event, I think it is a fair statement to say that it would be more difficult for Japanese firms to maintain the full employment commitment—in some cases perhaps significantly more difficult—without the automatic cushion that the bonus system provides. The Japanese experience is suggestive or supportive of the proposition that a profit-sharing system can be used to help promote full employment. But, unfortunately, it is difficult to go much beyond such vague statements at this stage.

Turning now to the formal econometric studies that have been done, I begin by noting at the outset that it would appear to be an extraordinarily ambitious task to attempt to tease out statistically whether profit sharing helps to stabilize employment or not. Virtually every econometric and data problem is encountered here. Sadly, it is not realistic to expect very crisp answers. As Mitchell has noted, empirical research is inconclusive on even such a basic, and intensively studied, issue as the employment effects of the minimum wage, which is a simple matter of supply and demand. “If we cannot settle that issue empirically, what hope is there for convincingly and definitively demonstrating (or refuting) the macro effects of particular pay systems?” (Mitchell, 1993, p. 22).

Be that as it may, Kruse (1993, p. 112), in his masterful study, summarizes the fifteen previous econometric investigations as follows:

Prior research produces no clear conclusion on the relationship of employment and profit sharing. While the productivity theory lends itself to fairly standard tests using a production function, there has been a much greater variety of techniques used to examine the stability theory. Almost all of the studies that directly measure stability find some evidence of profit sharing being associated with greater stability, though the studies on how the profit share is treated in employment decisions are more mixed. Whether these differences in employment behavior are in fact due to profit sharing, or to other company characteristics, is a key question.

In his own research from a carefully constructed panel data set, Kruse is able to provide some partial answers to his key question quoted above, but in the end he concludes that the mix of evidence does not support a clear conclusion.

There is an interesting and potentially important “stylized fact” about profit sharing uncovered by the work of Kruse, Mitchell, and others that should be mentioned here. In almost all data sets so far investigated, there is a positive correlation among the following three variables: (1) profit sharing, (2) productivity, and (3) total pay. This relationship typically survives even in the presence of controls for other standard production-function-type variables, such as capital stock and so forth.

While the positive relationship among these three variables is well established, we do not yet understand the underlying causality.¹³ This has possible implications for the relationship between profit sharing and employment.

The original formulation of the “share economy” thesis argued that increased profit sharing would encourage higher employment because of a correspondingly lower base wage, other things being equal. However, it turns out that on average a profit-sharing firm is associated with roughly the same base wage as a non-profit-sharing firm. At first glance, this finding that profit sharing looks like gravy on top of more or less the same base wage might appear to be a fatal refutation of the “share economy” employment thesis. But it actually is not, because of the simultaneous improvement of productivity in profit-sharing firms. Productivity *and* total pay are both higher in profit-sharing companies. It could well be—and, on the face of it, appears to be the case—that the marginal revenue product of labor in profit-sharing firms exceeds the base wage, which is the key condition needed for increased levels of employment. At the current research stage, we do not know empirically and rigorously whether this proposition, which is critical to the “share economy” thesis, is true or not.

6. Conclusions and Implications

In principle, the promise of profit sharing might potentially be enormous because there are some theoretical grounds for supposing a positive influence on productivity and employment. Since productivity and employment are two really critical components of economic performance, any system change promising even a whiff of improvement merits attention. How does the promise of profit sharing hold up under careful scrutiny?

This paper has reviewed the theoretical and empirical evidence. There exist internally consistent theoretical arguments for favorable productivity and employment effects of profit sharing. But it remains a matter of judgment whether these theoretical arguments are convincing at the end of the day because they are based on specific, if somewhat standard, models of economic behavior that are not beyond challenge.

The empirical evidence is very strong that there exists a positive association between profit sharing, productivity, and pay. While it seems plausible to con-

¹³ Thus, while there is no question that the presence of profit sharing is correlated with increased productivity, we are much less sure statistically about the direction of causality, although, as previously noted, there is some indication that it primarily goes from profit sharing to productivity.

jecture from the available evidence that profit sharing causes a productivity increase, at this stage we just cannot be sure. The empirical basis of concluding that profit sharing has positive employment effects seems weaker than the productivity connection.

My own summing up at the end of the day, after reviewing all available evidence, is that it seems to me that profit sharing is more likely to strengthen productivity and employment than to weaken them. While there seems to me to be a greater implausibility of doing damage to productivity than employment, it also seems implausible that employment would be hurt by profit sharing.

Supposing that profit sharing was a “good thing” for productivity and employment, what are the policy implications?

In the case of positive employment effects, one could reason that if they exist then there is also an externality argument for social encouragement of profit sharing. If the essence of mass unemployment is a coordination failure of some sort, and if profit sharing encourages a firm to break out of the vicious circle by retaining or taking on more workers, then social encouragement of profit sharing could improve overall welfare.

In the case of positive productivity effects, the case for social intervention is less clear. Since productivity gains from profit sharing would appear to accrue largely to the firm, in principle there should be a firm-level incentive to adopt such plans and no “public policy” as such is needed.

Actually, I think the matter is much less settled than the standard argument would seem to indicate. In a competitive evolutionary framework, such as I think is generally appropriate for analyzing this sort of issue, there could be positive externalities to a firm adopting measures like profit sharing that help defeat free rider behavior because such measures contribute to greater competitive pressure throughout the system.¹⁴ When a firm corrects its prisoner’s dilemma internal organization problem, it puts indirect pressure on other firms to straighten up lest they be competitively replaced. In the presence of a public goods component of this sort, it is at least possible that information gathering, exhortation, financial incentives, or other forms of social encouragement for profit sharing might be warranted.

In any event, it appears there is much room for future research on the effects of profit sharing.

¹⁴ For an exposition of these ideas, see Sjostrom and Weitzman (1994).

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