NBER WORKING PAPER SERIES

DOES EMPLOYEE IGNORANCE UNDERMINE SHARED CAPITALISM?

John W. Budd

Working Paper 14236
http://www.nber.org/papers/w14236

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
August 2008

I am grateful to Richard Freeman, Doug Kruse, and Joseph Blasi for giving me the opportunity to write this paper, to Doug for his help with the data, and to Doug, Joseph, Brigitte Madrian, and seminar participants at the University of Minnesota and Iowa State University for helpful comments. An earlier version of this paper was presented at the NBER Shared Capitalism Research Conference in October 2006. The views expressed herein are those of the author(s) and do not necessarily reflect the views of the National Bureau of Economic Research.

Does Employee Ignorance Undermine Shared Capitalism?
John W. Budd
NBER Working Paper No. 14236
August 2008
JEL No. J33

ABSTRACT

The potential of shared capitalism to improve individual and organizational performance through financial incentives depends on employees knowing about and participating in compensation plans that link rewards to performance. This paper therefore analyzes a survey of employees from multiple companies to assess the extent to which employees are ignorant about company, group, and individual-based incentive pay plans and ESOPs. The findings reveal significant amounts of employee ignorance in both under- and overstating the extent to which such plans apply to them individually.

John W. Budd
Ctr for Human Resources & Labor Studies
University of Minnesota
3-300 Carlson School of Management
321 19th Avenue South
Minneapolis, MN 55455-0438
jbudd@umn.edu

Since the birth of the modern employment relationship a few centuries ago, employers have struggled with how to reward and motivate employees. Contemporary information technologies, global competitive pressures, and demographic changes have heightened these struggles as the employment relationship is increasingly characterized by contingencies rather than stability (Cappelli, 1999). Against this backdrop, shared capitalism compensation plans seek to motivate employees by tying their pay to various measures of organizational and employee performance (Gates, 1998; Freeman, 2001; Conyon and Freeman, 2004; Kruse, Freeman, and Blasi, 2006). But shared capitalism will likely only be successful in motivating employees if employees know about and understand such plans, especially the extent to which they are individually covered by forms of shared capitalism. In other words, incentives that are unknown to employees are unlikely to affect their behavior.

We know that in general, knowledge is often imperfect. Various Gallup polls leave little doubt of this fact.[1] In a 2005 poll, 29 percent of Americans indicated that they believe that both evolution and creationism are probably true, in spite of the contradictory nature of these two theories. On the 60th anniversary of D-Day, 35 percent could not identify Germany as the Allied forces' D-Day enemy. More than 50 percent of Americans cannot identify the first 10 amendments to the Constitution as the "Bill of Rights." A large majority of American admit that they know very little about the European Union, including 80 percent who don't know that it has a larger population than the United States. And 18 percent incorrectly believe the sun revolves around the earth. With respect to economic knowledge, only 34 percent of adults managed to get

[1] The polls cited here are dated August 5-7, 2005, May 21-23, 2004, August 28-September 15, 2003, and June 25-27, 1999.

an “A” or “B” on a basic economics quiz done by the National Council on Economic Education in 2005 (Markow and Bagnaschi, 2005).

As will be shown in the next section, previous research has also uncovered significant amounts of ignorance in the employment relationship, specifically pertaining to employees’ imperfect understanding of privately- and publicly-provided benefits. As such, it is reasonable to hypothesize that some employees are ignorant about shared capitalism compensation programs. To test this hypothesis, this paper analyzes over 20,000 employee surveys linked to employer-provided shared capitalism coverage information from 10-14 private sector companies collected under the NBER Shared Capitalism research project. Consistent with the literature on other aspects of the employment relationship, significant levels of misunderstanding and inaccuracy are uncovered. Employee ignorance might very well undermine shared capitalism.

Research on Employee Ignorance

Previous research shows that employee ignorance of privately- and publicly-provided employee benefits is not a trivial concern. For example, the 1998 British Workplace Employee Relations Survey (WERS98) contains manager-provided indications regarding whether several family-friendly benefits are available in the workplace along with individual-provided responses on whether the employee thinks these benefits are available to him or her. Among workplaces with a family-friendly benefit (according to the manager), large fractions of employees do not indicate that this benefit is personally available to them. For example, even after trying to control for imperfect workplace coverage, only one-quarter of employees in workplaces with parental leave benefits correctly perceive that they are entitled to parental leave. The analogous fractions for job sharing arrangements and employer-subsidized child care benefits are one-quarter and

one-fifth, respectively. In other words, there appears to be a significant discrepancy between availability and awareness (Budd and Mumford, 2004, 2006).

Several studies of retirement benefits provide additional documentation of employee ignorance of privately-provided benefits. Mitchell (1988: 35) matched survey responses for over 600 workers to administrative pension plan data and found that "pension misinformation and missing information are quite widespread." Luchak and Gunderson (2000) surveyed employees of a large public utility and found moderate levels of pension knowledge—employees responded correctly to seven questions about their pensions about half of the time. Only 28 percent of the employees accurately knew the formula used to calculate benefit amounts and only 36 percent could identify one of the eligibility requirements for retiring early. Analyses of individuals in the University of Michigan Health and Retirement Study also uncover significant levels of pension ignorance (Chan and Stevens, 2004; Gustman and Steinmeier, 2005). For example, one-third of the respondents are not able to provide enough information to construct any estimate of their pension's present value; among those providing enough information, only half estimate their pension's present value within a factor of two (Chan and Stevens, 2004). An imperfect understanding of how 401(k) retirement plans work is illustrated by Choi, Laibson, and Madrian's (2005) finding that half of vested employees aged 59½ years and older at seven firms with employer matching policies fail to take advantage of this match even though this is essentially giving up free income because there are no tax penalties for these workers to immediately cash out these contributions. With respect to health insurance, Reschovsky, Hargraves, and Smith (2002) find that 25 percent of respondents cannot correctly identify whether they are covered by an HMO or non-HMO plan.

Turning to publicly-provided benefits, a phone survey in 1995 and another in 2000 revealed that 40 percent of U.S. workers had not heard of the Family and Medical Leave Act (FMLA) which was enacted by the U.S. Congress in 1993; moreover, among those who had heard of the law, 50 percent were unsure as to whether they were personally eligible to use it (Budd and Brey, 2003; Waldfogel, 2001). Though not a publicly-provided benefit per se, there are also serious shortcomings in workers' knowledge of the employment-at-will legal doctrine. For example, in the United States is it legal to fire someone to make room for another employee to do the same job at a lower wage, and also to fire someone who is mistakenly believed to have stolen money. But Kim (1997) documents that less than 20 percent of surveyed employees can correctly identify these scenarios as being legal. In separate surveys, Rudy (2002) and Freeman and Rogers (2006) similarly document extensive employee ignorance about the general lack of legal restrictions on firing workers. In two surveys of low-income workers in New York City, less than 20 percent could correctly identify the value of the minimum wage (Brennan Center for Justice, 2006).

The imperfect use of publicly-provided social insurance programs is also partially attributed to imperfect knowledge of these programs. Twenty-five to forty percent of unemployed individuals eligible for unemployment insurance do not receive it (McCall, 1995). Budd and McCall (1997, 2004) find a significantly higher take-up rate among blue collar unionized workers relative to comparable nonunion workers and ascribe this, in part, to the role that unions provide in providing information and combating uncertainty and ignorance. Hirsch, Macpherson, and DuMond (1997) similarly attribute greater levels of workers' compensation receipt among unionized workers, compared to similar nonunion individuals, at least partially to

union-provided information on workers' compensation systems. That unions can play such a role indicates that employees are not fully aware of these types of employee benefits.

In fact, issues of employee knowledge, ignorance, and usage of privately- and publicly-provided benefits are important enough for Budd (2004) and Budd and Mumford (2004) to add a union facilitation face to Freeman and Medoff's (1984) famous monopoly and voice faces of labor unions and for others to devote significant attention to how to make labor policies effective (e.g., Weil, 1996, 2005). A lack of perfect knowledge is also consistent with theories of bounded rationality in which time constraints and cognitive limitations prevent individuals from gathering and processing complete information (March and Simon, 1958; Simon, 1982). So employee ignorance of privately- and publicly-provided employee benefits is a meaningful concern and it is reasonable to hypothesize that similar issues apply to shared capitalism compensation plans.

With that said, an important issue in much of this research is measuring employee coverage or eligibility. Typically, researchers have only an imperfect indicator of this key variable. Studies of publicly-provided benefits typically must impute eligibility from administrative eligibility criteria. Budd and Mumford's (2004, 2006) studies of privately-provided family-friendly benefits rely on matching employer information about whether a specific benefit is available for any employees in a workplace to employee responses about whether they personally could use this benefit. Similar issues are present in the analyses below in that the employer-provided information on coverage of shared capitalism programs might not be perfectly accurate for each individual employee. So while the previous literature supports the need to empirically examine the extent of employee ignorance of shared capitalism programs, it also reminds us to be careful as to how ignorance is measured.

Measuring Ignorance of Shared Capitalism Programs

To analyze employees' accurate knowledge or ignorance of their employers' policies and programs requires two levels of data: company-provided reports pertaining to coverage or applicability and employee indications of awareness. As summarized in Figure 1, with these two sources of information, four outcomes are possible: the employee accurately responds that they are not covered by a policy, the employee accurately responds that they are covered by a policy, the employee indicates that they are not covered by or aware of a policy for which the company indicated that they are (employee ignorance), and the employee indicates that they are covered by a policy for which the company indicated that the policy is not offered by the employer generally or to that employee specifically (false positive). Frequently-analyzed surveys like the Current Population Survey that only contain individual-level data can only be used to measure employee awareness while organizational surveys just capture coverage rates. Linked employer-employee data are required to assess employee accuracy and ignorance.

The NBER Shared Capitalism data set contains linked employer-employee information on several shared capitalism programs and can therefore be used to analyze the accuracy and shortfalls of employees' understanding of these programs. The NBER Shared Capitalism data set was collected by a research team directed by Joseph Blasi, Richard Freeman, and Doug Kruse that administered surveys to over 100,000 employees across 14 companies. The goal of this data collection effort was to allow the research team to analyze the effect of shared capitalism programs on workers and companies (e.g., Kruse, Freeman, and Blasi, 2006). Surveys were completed by 46,907 employees for an overall response rate of 45 percent, although the presence of missing values reduces the sample sizes used in the analyses below. The survey dates range from 2001 to 2006 with most of the surveys completed in 2005; 78 percent were completed by

employees working in the United States. Forty-four percent of the surveys were completed via the internet; the remainder were completed via a paper survey instrument. The organizations are all private sector manufacturing, services, technology, or finance-related companies that range in size from roughly 200 to 50,000 employees. The sample sizes and response rates across these organizations range from 200 to 32,000 and from 10 to 80 percent, respectively.

While the companies represent different industries and sizes, they were targeted for inclusion because of their use of various shared capitalism programs. For example, nine of the companies have employee stock ownership plans. The companies are therefore not representative of the entire population of U.S. companies, but this is not a major concern for the analyses below because the focus here is on measuring employee ignorance in shared capitalism firms rather than on estimating coverage rates across the population. If anything, the results might be biased against employee ignorance to the extent that information about the plans of interest might be disseminated more widely in firms in which shared capitalism programs are prominent (as in the sampled firms) compared to companies in which they are not.

The employee surveys ask questions pertaining to the respondent employee's job, supervision, relations with co-workers, attitudes, and demographic characteristics. Of particular interest for this paper are a number of questions pertaining to participation in, and sometimes awareness of, various shared capitalism programs—performance-related pay, employee stock ownership, 401(k)s, deferred profit-sharing, stock options, and employee stock purchase plans. The applicability of these programs to sets of employees was determined through interviews with managers and from the companies' Form 5500 filings with the Internal Revenue Service. In a majority of cases, the shared capitalism programs include or exclude all employees uniformly, but the performance-related pay plans sometimes vary across different groups of workers. For

example, one company reports that a profit-sharing plan only applies to managerial employees while another company reports that an individual bonus program excludes unionized employees. These types of variations in coverage are matched to the employee surveys using the employees' self-reported job characteristics. Four of the smaller companies are omitted from some of the analyses below because employees were not directly asked about their perceived eligibility for performance-related pay.

As shown in Figure 1, whenever an individual's response to whether or not a specific shared capitalism program applies to them personally does not match the company-provided information for that employee, it is characterized here as an employee inaccuracy—either in the form of ignorance or a false positive. This assumes that the company-provided information is accurate for each individual employee. While the company responses are matched to each employee based on any job characteristics that the managers indicate determine coverage, it is useful to explicitly note that this falls short of the ideal situation in which employee-by-employee administrative data are available. As such, one cannot rule out the possibility that some employees have better information on the applicability of specific programs than are contained in these data. For example, a relatively new employee might be excluded from a program until after completing a probationary period. The multivariate analyses below will try to control for some of these possibilities by using job and demographic characteristics as control variables (see Appendix Table 1 for variable definitions and summary statistics), but ultimately the measures of employee inaccuracy may overstate the true extent of inaccuracy.

Aggregate Shared Capitalism Ignorance Rates

Table 1 presents aggregate coverage, perceived coverage, and ignorance rates for several shared capitalism programs. Profit-sharing plans are those in which pay or bonuses depend on

company profits or performance. Seven of the companies indicate that a profit-sharing plan applies to all employees, six have plans that apply to some employees, and one reported no such plan.[2] As shown in column 1 of Table 1, this means that according to their employer, 85 percent of employees are covered by a profit-sharing plan. Employees were separately asked if they were eligible for performance-related pay in which the size of the payments depended on company profits or performance; 70 percent of the employees perceived that they are covered by such a plan. Comparing this to the company-reported 85 percent coverage rate reveals a significant discrepancy. Moreover, this aggregate comparison understates the extent of mismatch because false positives can be offsetting ignorance (recall Figure 1). In fact, for profit-sharing plans, 25 percent of the employee responses fail to match the company-reported response (see column 3 of Table 1). Columns 4 and 5 decompose these mismatches. Among the 38,829 employees that the companies say are covered by profit-sharing plans, 8,960 employees (23 percent) report that they are not covered. While there are other explanations, this is interpreted here as employee ignorance; approaching this from the other direction, column 4 implies that the remaining 77 percent of employees are correctly aware that they are covered by a profit-sharing plan. Turning to column 5, among the 32,164 employees who perceive that they are covered by a profit-sharing plan, 2,295 of them are not covered according to their employer. In other words, seven percent of perceived coverage stems from false positives.

[2] Three of the companies with universal applicability and the one company with no coverage are dropped from the analyses because employee-level coverage was imputed rather than asked directly. The next three measures in Table 1 were also imputed at the employee level for these same four companies so they are again dropped from the analyses. For gainsharing plans, all four reported no coverage. For individual-level performance pay, one reported uniform coverage, one no coverage, and two partial coverage. For all forms of performance pay, three of the dropped organizations have uniform coverage and one has no coverage.

The remaining rows of Table 1 repeat this exercise for other measures of shared capitalism. Only three percent of the employees are covered by gainsharing plans (pay-for-performance based on team or group performance) according to the companies, but 21 percent of the employees believe their pay depends on team or group performance. Only half of the employees covered by such plans accurately report this coverage, and more than 90 percent of the employees' affirmative responses are incorrect. A similar qualitative pattern is apparent for individual-based performance pay. Twenty percent of the observations are mismatched while more than one-third of individuals covered by an individual-based performance pay plan are unaware of this and one-third of the affirmative responses are false positives. These levels of misunderstanding might stem from explicit versus implicit views of performance-based pay such that companies report a lack of formal gainsharing or individual-based programs while employees nonetheless believe that their pay ultimately reflects team, group, or individual performance even in the absence of a formal, formulaic incentive program.

The performance-based pay variable in the fourth row of Table 1 is coded as a yes if any of the previous three plans—profit-sharing, gainsharing, or individual-based plans—are coded as a yes. The level of ignorance and the rate of false positives are lower for this broader measure. So there is less disagreement between companies and their employees about performance-based pay generally. But if the specific nature of the a performance incentive is important, then one needs to remember that the first three rows in Table 1 reveal greater discrepancies between employees' understanding of specific performance-based pay programs and their employers' descriptions of these same programs. Moreover, the first two rows of Table 2 reveal other dimensions of employee ignorance about pay-for-performance programs. Twenty percent of the 9,295 employees who did not indicate that they are eligible for performance-based pay actually

do not know if they are eligible. Of those who did not state that they earned performance-based pay last year, 8 percent do not know if they did so.

Returning to Table 1, the fifth row presents the summary results for eight of the companies that have employee stock ownership plans (ESOPs).[3] As shown in column 1, these ESOPs apply uniformly to all employees in these organizations. Among the employees in these eight companies, 82 percent indicate that they participate in the ESOP while 18 percent indicate that they do not. Even though the question is worded as participation rather than coverage or eligibility, this 18 percent non-participation rate likely reflects a significant amount of ignorance. ESOPs rarely exclude large groups of employees except, in some cases, unionized employees and probationary employees. So setting these exclusions aside momentarily, lack of reported participation equates to lack of awareness. But what about these potential exclusions? None of the companies indicated that unionized employees are excluded and re-calculating the statistics in row 5 of Table 1 for nonunion employees only reduces the mismatch rate by less than one percentage point. Turning to probationary exclusions, the mismatch rate falls to 16 percent when employees with less than 6 months of tenure are excluded, and to 13 percent when those with less than one year of tenure are omitted. So perhaps the rate of ignorance for ESOPs is around 15 percent (roughly). Also, row 3 of Table 2 shows that of the 798 self-reported non-participants, 32 percent indicate that they don't know if they participate in the ESOP.

The Shared Capitalism data set contains several other measures of shared capitalism programs, but an analysis as in Table 1 is not appropriate because participation is voluntary and

[3] A ninth ESOP company is excluded from the analyses because employees in this company were not asked if they participate in the ESOP.

employees were generally not asked about eligibility in the surveys. For example, of the employees eligible for 401(k) plans according to their employer, 16 percent indicate that they do not participate in a 401(k) plan. But this might reflect a choice not to participate rather than ignorance. There are, however, some questions about these programs that reveal a certain amount of employee ignorance (see Table 2). For example, among employees who fail to say that they participate in a 401(k) plan, 18 percent of them indicate that they do not know if they participate. Of those who did not indicate that they have ever received stock options, 14 percent responded that they do not know if they have ever received stock options. Uncertainty about exercising stock options, currently holding stock options, and buying company stock, however, is negligible.

Predicting and Explaining Employee Ignorance

Multivariate estimation can be used to assess the extent to which demographic, job, and company characteristics predict mismatches between employer and employee beliefs about the coverage of shared capitalism pay programs. Characteristics that are strong predictors of these mismatches might hold important clues to explaining the sources of inaccuracy and mismatch. To this end, Tables 3, 4, and 6 present probit results in which the indicators from columns 3-5 of Table 1 are the dependent variables: overall mismatches, employee ignorance, and false positives for each of the shared capitalism plans. The estimates reported in these tables are marginal effects, rather than probit coefficients, calculated using the standard algorithm: all of the variables are set to their sample mean values, and the marginal effects for continuous independent variables are calculated as the change in probability for a small change in the variable while the marginal effects for dummy variables are calculated as the change in probability associated with changing the dummy variable from zero to one. The standard errors

are robust to arbitrary forms of heteroskedasticity. The sample sizes are smaller than in Table 1 because of missing observations for the independent variables, especially educational attainment. Sample means of the independent variables are reported in Appendix Table 1.

Table 3 reports probit results for overall mismatches.[4] More specifically, the sample for each model includes all non-missing observations and the dependent variable equals one if the employer and employee responses for the particular shared capitalism do not agree. In terms of Figure 1, all four interior cells are used and the dependent variable indicates observations that fall into the two inaccurate cells. These models therefore pool both ignorance and false positives. Column 1 reports the results for profit-sharing plans. Recall from Table 1 that 24.6 percent of the responses are mismatches. Compared to high school dropouts, employees who graduated from high school or attended college are significantly less likely to erroneously report profit-sharing coverage. Women, married individuals, higher-paid employees, employees who expect to work at the employer for a long time, and U.S. employees are also less likely to be mismatched. Age and tenure both exhibit a quadratic relationship with the probability of mismatch; increases in each of these measures reduces the predicted probability of a mismatch up to 33 years of age and 19 years of tenure. Sales employees are much more likely to erroneously report whether they are covered by a profit-sharing plan as are unionized employees.

Turning to gainsharing plans (column 2), women and U.S. employees are again less likely to have a mismatch with their employers' responses and tenure has a similar quadratic relationship. Higher paid employees, those who expect to work at their employer for a long time,

[4] Tables 3 and 6 do not include results for ESOPs because there are no false positives; as such, the overall mismatch results reduce to the employee ignorance results reported in Table 4.

sales occupations, and non-white individuals are predicted to have a higher a likelihood of an erroneous response; as will be shown in Table 6 these results apparently stem from these employees overstating the frequency of gainsharing plans. With respect to individually-based performance pay plans (column 3), those who are estimated as being associated with a lower probability of a mismatched report are non-white, higher-paid, and U.S. employees and those who work in larger companies. In contrast to the other types of performance-based plans, increases in tenure are associated with a greater likelihood of a mismatched response. But looking at performance-based pay overall (column 4), age and tenure both reduce the likelihood of erroneous responses (at least up to the inflection points of 44 and 18 years, respectively). Higher paid, sales, and U.S. employees are less likely to improperly assess whether or not they are covered by any type of performance-based pay whereas the opposite is true of hourly and unionized workers.

The results for company size and unionization merit a special note. These two variables are included in the results here because one would expect that unionization and company size can affect the quality and quantity of employee information. But recall that the NBER Shared Capitalism data set consists of employees from 14 companies, and four of these are not used here because the eligibility questions for performance-related pay were imputed. As such, the results are based on only 10 companies. All of the unionized employees are concentrated in three of these companies. And the variable on total employment only takes on 10 distinct values (one value for each company). As such, it is difficult to distinguish these variables from company-specific effects and unlike for the other variables in these models, the results for unionization and company size are not robust to the inclusion of company-specific effects. So the results for these two variables are presented here with caution.

Table 4 presents the probit results for employee ignorance. In these models, the samples are restricted to individuals for which the company indicates they are covered by the relevant shared capitalism program. The dependent variable equals one if the employee does not perceive him or herself as being covered. In other words, the dependent variable indicates those individuals I am labeling as ignorant or unaware. In terms of Figure 1, these models are limited to the second column and estimate the probability of being in the top cell (employee ignorance) in this column. Negative coefficients indicate a reduced likelihood of ignorance or lack of awareness. None of the predictors are consistent across all of the shared capitalism plans, but some patterns appear to hold across two or three plans. Greater educational attainment generally reduces employee ignorance as do higher earnings and expectations of working at the employer for a long time. Hourly employees are more likely to fail to recognize coverage by a performance-based pay plan relative to salaried employees as are unionized employees except for the case of gainsharing plans. Sales employees are more likely to be unaware of company-level profit-sharing plans but, not surprisingly, are less likely to be ignorant of individual-based incentives. Age and tenure exhibit quadratic relationships with the probability of ignorance, though increasing the quantities increases rather than decreases ignorance pertaining to individual-level performance pay plans. The overall results for ignorance about ESOPs appear generally similar as for the performance-based pay plans.

As the results for each variable tend to vary from program to program, an alternative way to approach these results is to ask what each model as a whole implies for the predicted probability of employee ignorance across different profiles of employees. For example, the results in column 1 of Table 4 predict that the probability of being ignorant about the existence of a profit-sharing plan is 62 percent for a single, 21 year-old, non-white, high school dropout

father of two making $25,000 per year with no expectation of working for a long time for his 200 employee company of one year in a union-represented, non-sales, hourly job in the United States. In contrast to this less-educated, low-paid, young worker profile, consider a better-educated, salaried, experienced worker profile: a married, 45 year-old, white, college-educated, childless woman making $75,000 per year with expectations of working for a long time in her 200 person company of 15 years in a nonunion, non-sales, salaried job in the United States only has a 4 percent chance of failing to correctly realize that she is covered by a profit-sharing plan. Table 5 summarizes these predictions for the various shared capitalism plans. The pattern of results are quite similar with the exception of the gainsharing results—younger, inexperienced, low-educated, and low-paid employees are significantly more likely to be unaware of shared capitalism programs than their middle-aged, higher paid, better educated, salaried counterparts.

Besides ignorance or lack of awareness, the second dimension of employer-employee mismatches consists of false positive responses—situations in which employees' perception that they are covered by a shared capitalism program contradicts their employers' statements that they are not. Table 6 presents the probit results for false positives. In these models, the samples are restricted to individuals who indicated that they are covered by the relevant shared capitalism program and the dependent variable equals one if the company did not indicate that this employee was covered. In terms of Figure 1, these models are limited to the second row and estimate the probability of being in the left-most cell (false positives) in this row. The results are mixed and job characteristics seem more consistently important than demographic characteristics for explaining false positives. This suggests that variations in false positive responses stem more from variations in employer offerings of shared capitalism plans than from variations in employee beliefs about their prevalence. In other words, employees in jobs that are less likely to

have a pay-for-performance plan are more likely to make a false positive error. Except for the case of gainsharing programs, higher paid employees are less likely to make a false positive error whereas hourly and unionized employees are more likely to make this mistake. Table 7 repeats the exercise of Table 5 in presenting the predicted probabilities of a false positive for two different employee profiles. Younger, inexperienced, low-educated, and low-paid employees are significantly more likely to misunderstand the applicability of company and individual-based performance pay plans than their middle-aged, higher paid, better educated, salaried co-workers.

Other Measures of Shared Capitalism Ignorance

The primary focus of this paper is trying to assess the extent of employee ignorance about shared capitalism programs by analyzing mismatches between employer and employee statements pertaining to the applicability of three pay-for-performance plans plus ESOP plans. However, there are several other questions in the NBER Shared Capitalism data set that can be used to examine the importance of employee ignorance for potentially undermining employee involvement in decision-making. The responses to six relevant questions are summarized in Table 8. Nearly 30 percent of employees at three companies believe that their company only occasionally or never reaches out to them to provide them with information about company goals and workplace changes; nearly 45 percent at two companies report that they personally seek out such information on their own only occasionally or never. A quarter of employees at one large company failed to agreed with the statement that they have the information needed to their job; around 40 percent failed to agree with the statements that they are kept abreast of important issues in the organization and in their jobs. And 15 percent of employees across seven companies believe that they understand their company's plan for being successful only a little or not at all.

To the extent that shared capitalism programs aim to provide workers with incentives for making better decisions, these questions are relevant to the understanding of such programs. More specifically, the responses to these six questions reveal non-trivial numbers of employees who believe that they have insufficient information and are not kept up-to-date on important changes. As nearly all of these questions were asked in only one or two companies, additional research needs to assess generalizability of the responses, but the pattern of results is suggestive of employee ignorance that can undermine shared capitalism programs by creating roadblocks to informed decision making. This is another dimension of employee ignorance that should not be overlooked.

The Impact of Ignorance

Space considerations prevent a comprehensive analysis in this paper of the effect of ignorance on the operation of shared capitalism programs. But the employee mismatches documented here are a form of a measurement error that can affect econometric estimates of the effect of shared capitalism on various outcomes. The NBER Shared Capitalism data do not contain performance measures per se, but consider two questions that are perhaps related to individual employee performance: willingness to work hard and loyalty. For the former, employees were asked to respond on a 1=strongly disagree to 5=strongly agree scale to the statement "I am willing to work harder than I have to in order to help the company I work for succeed." There is widespread agreement with this statement with a mean response of 4.02 and a standard deviation of 0.899. For the latter, employees were asked "How much loyalty would you say you feel toward the company you work for as a whole?" with response choices of 1=no

loyalty at all, 2=only a little, 3=some, 4=a lot.[5] The average response to this question is 3.33 with a standard deviation of 0.798.

One might expect that if shared capitalism programs are effective that they would improve workers' willingness to work hard and their loyalty toward their employers. Columns 1 and 3 of Table 9 show that in regressions with and without additional control variables similar to those in the probit models, employees who believe they are covered by any performance-based pay plan have higher levels of willingness to work hard and loyalty. These are the type of regression models that one might estimate in these data ignoring issues of mismatch and ignorance. But again, these effects might be biased because of measurement error associated with mismatch and ignorance. Columns 2 and 4 therefore include separate indicators for three cells of Figure 1: accurate yeses, employee ignorance, and false positives; accurate no's are the omitted reference category. With the exception of the loyalty model with control variables, the effect size for accurate yes is always larger than the estimates in columns 1 and 2. In most of the cases, the employee ignorance estimate is smaller than the accurate yes estimate, though surprisingly individuals who are labeled as ignorant about performance-based pay are estimated to have higher levels of willingness to work hard and loyalty than individuals in the accurate no category. The false positive employees have the largest effects in many cases which is consistent with them acting as if they were covered by performance-based pay plans even though they may or may not be in reality. In sum, the overall pattern of results in Table 9 is consistent with information being important, including the existence of measurement error in the econometric

[5] In actuality, the response scales of both of these questions in the original data collection were the opposite of what are presented here, but I have reverse-coded them so that higher numerical responses indicate higher levels of willingness to work hard and loyalty.

models and also with the potential for shared capitalism programs to be more effective when employees and employers have good information.

Conclusions

An analysis of the NBER Shared Capitalism data set of thousands of employee responses linked to company-provided information from 10-14 private-sector organizations reveals significant fractions of employees whose perceptions of whether or not they are covered by various shared capitalism programs do not match their employers' policies. In fact, between 18 and 25 percent of the employee responses on the perceived coverage of company, group, and individual-level incentive pay plans and of ESOPs disagree with the employer-provided coverage information. There is a particularly large discrepancy between employee and employer understandings of group or team-level gainsharing plans, but non-trivial levels of ignorance and false positive responses are observed for all of the plans. Probit analyses allow a comparison of middle-aged, highly-paid, well-educated, salaried workers to those that are younger, inexperienced, low-educated, and low-paid; the latter are significantly more likely to be unaware of or misunderstand the coverage of company and individual-based performance pay plans.

Such shared capitalism programs seek to tie employee pay to performance. If this is intended simply as a risk-sharing mechanism between employers and their employees, then ignorance of shared capitalism plans is detrimental to employees, but is probably not a significant concern with respect to corporate performance. In contrast, if a goal of shared capitalism programs is to provide incentives for employee performance, then employee ignorance has the potential to undermine this goal. Put simply, how can incentives work if employees are not aware of their existence? For example, 37 percent of employees that their employers say are covered by individual-based incentives fail to perceive that they are in fact

covered by such an incentive plan. Other research shows that employees act upon their own imperfect information—Chan and Stevens (2004) found that misinformed individuals based their retirement decisions on their own, misinformed views of their pension wealth. These regression results for employee attitudes regarding their willingness to work hard and their loyalty to their employer are consistent with other research and further suggest that ignorance can undermine both the practice of shared capitalism programs, and the econometric estimation of their effects.

With that said, the previous literature on employee ignorance reminds us that some caution is warranted. The figures reported here assume that the company-reported information is completely accurate for each individual employee. In some cases employees may have better information than their employers. But it's difficult to imagine that this can explain away ignorance rates as large as 37 percent. Moreover, if employees are excluded from various compensation programs, this is most likely on the basis of tenure (if probationary employees are excluded) and job characteristics (such as certain occupations or unionized workers being excluded). But the probit results show that inaccuracies are also correlated with demographic characteristics and with whether an employee expects to work for the organization for a long time. The possibility exists that these characteristics are substituting for incomplete job-level controls in the econometric models, but to the extent that this is only partially true, these multivariate results suggest that at least some of the observed inaccuracies are due to misunderstandings and ignorance. The results on the fraction of negative responses that are explicitly "don't know" (Table 2) and employee perceptions of imperfect levels of job-related information (Table 8) are also consistent with non-trivial amounts of employee ignorance.

In addition to employee ignorance, the analyses document significant numbers of false positive responses—that is, employees that believe they are covered by a shared capitalism

program when their employer states that they are not. This aspect of overall inaccuracy might not undermine the incentive intentions of shared capitalism if perception becomes reality: workers that believe they are covered by an incentive-based plan might act as if there are incentives, at least until they find out they were wrong. In fact, the results on false positives suggests that rhetoric has perhaps outpaced reality. False positive responses occur when employees overestimate the presence of pay-for-performance plans. The probit results show that workers who are lower paid, paid hourly, or unionized are particularly likely to overestimate the presence of pay-for-performance plans. In other words, these workers believe that they are covered by an incentive-based plan—perhaps based on contemporary rhetoric on the contingent employment relationship—even when they are not (at least not formally according to their employers). As such, there might be an opening for companies to increase the presence or formalization of pay-for-performance plans among these workers. On the other hand, the false positive results are similar to the results on the lack of awareness of shared capitalism programs in revealing the complexity of informational issues for shared capitalism programs—significant numbers of employees differ from their employers in their understandings of critical issues pertaining to pay determination and, especially in the case of gainsharing plans, are covered by programs administered by local managers that the corporate-level human resources staff has difficulty monitoring.

The results of this paper are also important for researchers. The mismatches between employer and employee reports of shared capitalism programs represent a form of measurement error which can have the usual econometric problem: regression estimates of the effects of these programs on, for example, organizational performance, are likely biased toward zero and therefore underestimate the true potential of shared capitalism programs with perfect

information. Finally, not only can employee ignorance undermine both research on and the practice of shared capitalism, but it should also give pause to economists and others that continue to assume that workers have perfect information. Contemporary theories as well as private and public policies must reflect the complexities of imperfect labor markets with information gaps.

REFERENCES

Brennan Center for Justice. 2006. "Do New Yorkers Know the Minimum Results from a Spot Survey of Employers and Workers in New York City." Economic Policy Brief No. 4, NYU School of Law, accessed at http://www.brennancenter.org/dynamic/subpages/download_file_34916.pdf on November 26, 2006.

Budd, John W. 2004. "Non-Wage Forms of Compensation." *Journal of Labor Research*, vol. 25, pp. 597-622.

Budd, John W., and Angela Brey. 2003. "Unions and Family Leave: Early Experience under the Family and Medical Act." *Labor Studies Journal*, vol. 28, pp. 85-105.

Budd, John W., and Brian P. McCall. 1997. "The Effect of Unions on the Receipt of Unemployment Insurance Benefits." *Industrial and Labor Relations Review*, vol. 50, pp. 478-492.

Budd, John W., and Brian P. McCall. 2004. "Unions and Unemployment Insurance Benefits Receipt: Evidence from the CPS." *Industrial Relations*, vol. 43, pp. 339-355.

Budd, John W., and Karen Mumford. 2004. "Trade Unions and Family-Friendly Policies in Britain." *Industrial and Labor Relations Review*, vol. 57, pp. 204-222.

Budd, John W., and Karen Mumford. 2006. "Family-Friendly Work Practices in Britain: Availability and Perceived Accessibility." *Human Resource Management Journal*, vol. 45, pp. 23-42.

Cappelli, Peter. 1999. *The New Deal at Work: Managing the Market-Driven Workforce*. Boston: Harvard Business School Press.

Chan, Sewin, and Ann Huff Stevens. 2004. "What You Don't Know Can't Help You: Pension Knowledge and Retirement Decision Making." Unpublished working paper, University of California, Davis.

Choi, James J., David Laibson, and Brigitte C. Madrian. 2005. $100 Bills on the Sidewalk: Suboptimal Saving in 401(k) Plans." National Bureau of Economic Research Working Paper 11554.

Conyon, Martin J., and Richard B. Freeman. 2004. "Shared Modes of Compensation and Firm Performance: UK Evidence," in David Card, Richard Blundell, and Richard B. Freeman, eds. *Seeking a Premier Economy: The Economic Effects of British Economic Reforms, 1980-2000*. Chicago: University of Chicago Press, pp. 109-146.

Freeman, Richard B. 2001. "The Shared Capitalist Model of Work and Compensation." *Reflets et Perspectives de la vie Economique*, vol. XL, pp. 169-181.

Freeman, Richard B., and James L. Medoff. 1984. *What Do Unions Do?* New York: Basic Books.

Freeman, Richard B., and Joel Rogers. 2006. *What Workers Want*, updated edition. Ithaca, NY: Cornell University Press.

Gates, Jeffrey R. 1998. *The Ownership Solution: Toward a Shared Capitalism for the Twenty-First Century*. Reading, MA: Addison-Wesley.

Gustman, Alan L., and Thomas L. Steinmeier. 2005. "Imperfect Knowledge of Social Security and Pensions." *Industrial Relations*, vol. 44, pp. 373-395.

Hirsch, Barry T., David A. Macpherson, and J. Michael DuMond. 1997. "Workers' Compensation Recipiency in Union and Nonunion Workplaces." *Industrial and Labor Relations Review*, vol. 50, pp. 213-236.

Kim, Pauline T. 1997. "Bargaining with Imperfect Information: A Study of Worker Perceptions of Legal Protection in an At-Will World." *Cornell Law Review*, vol. 83, pp. 105-160.

Kruse, Douglas, Richard B. Freeman, and Joseph Blasi. 2006. "Do Workers Gain by Sharing? Employee Outcomes under Employee Ownership, Profit Sharing, and Broad-based Stock Options." Unpublished paper, Rutgers University.

Luchak, Andrew A., and Morley Gunderson. 2000. "What Do Employees Know About Their Pension Plan?" *Industrial Relations*, vol. 39, pp. 646-670.

March, James G., and Herbert A. Simon. 1958. *Organizations*. New York: Wiley.

Markow, Dana, and Kelly Bagnaschi. 2005. "What American Teens and Adults Know About Economics." Rochester, NY: Harris Interactive, accessed at http://www.ncee.net/cel/ on September 24, 2006.

McCall, Brian P. 1995. "The Impact of Unemployment Insurance Benefit Levels on Recipiency." *Journal of Business and Economic Statistics*, vol. 13, pp. 189-198.

Mitchell, Olivia S. 1988. "Worker Knowledge of Pension Provisions." *Journal of Labor Economics*, vol. 6, pp. 21-39.

Reschovsky, James D., J. Lee Hargraves, and Albert F. Smith. 2002. "Consumer Beliefs and Health Plan Performance: It's Not Whether You Are in an HMO but Whether You Think You Are." *Journal of Health Policy, Politics and Law*, vol. 27, pp. 353-377.

Rudy, Jesse. 2002. "What They Don't Know Won't Hurt Them: Defending Employment-at-Will in Light of Findings That Employees Believe They Possess Just Cause Protection." *Berkeley Journal of Employment and Labor Law*, vol. 23, pp. 307-367.

Simon, Herbert A. 1982. *Models of Bounded Rationality*. Cambridge: MIT Press.

Waldfogel, Jane. 2001. "Family and Medical Leave: Evidence from the 2000 Surveys." *Monthly Labor Review*, vol. 124, pp. 17-23.

Weil, David. 1996. "Regulating the Workplace: The Vexing Problem of Implementation," in David Lewin, Bruce E. Kaufman, and Donna Sockell, eds. *Advances in Industrial and Labor Relations, Volume 7*. Greenwich, CT: JAI Press, pp. 247-286.

Weil, David. 2005. "Individual Rights and Collective Agents: The Role of Old and New Workplace Institutions in the Regulation of Labor Markets," in Richard B. Freeman, Joni Hersch, and Lawrence Mishel, eds. *Emerging Labor Market Institutions for the Twenty-First Century*. Chicago: University of Chicago Press, pp. 13-44.

Figure 1
Measuring Employee Knowledge and Ignorance

		Coverage (Company Reported)	
		No	Yes
Perceived Coverage (Employee Reported)	No	Accurate No	Employee Ignorance
	Yes	False Positive	Accurate Yes

Table 1
Employee-Level Coverage, Perceived Coverage, and Ignorance Rates of Shared Capitalism Programs[a]

Shared Capitalism Plan	Coverage (company reported) (1)	Perceived Coverage (employee reported) (2)	Mismatches		
			Overall (3)	Ignorance[b] (4)	False Positive[c] (5)
Profit-Sharing Plan (company-based performance pay)	0.849 [45,759]	0.703 [45,759]	0.246 [45,759]	0.231 [38,829]	0.071 [32,164]
Gainsharing Plans (workgroup or departmental-based performance pay)	0.028 [45,759]	0.211 [45,759]	0.210 [45,759]	0.484 [1,261]	0.933 [9,645]
Individual-Based Performance Pay	0.291 [45,759]	0.282 [45,759]	0.209 [45,759]	0.374 [13,319]	0.354 [12,908]
Performance-Based Pay (any of the above three plans)	0.860 [45,759]	0.797 [45,759]	0.186 [45,759]	0.145 [39,365]	0.077 [36,464]
Employee Stock Ownership Plan (ESOP)	1.000[d] [4,362]	0.817 [4,362]	0.183 [4,362]	0.183 [4,362]	0.000 [3,564]

Source: NBER Shared Capitalism data set.
Notes: [a] Sample sizes are in brackets.
[b] Employees who do not perceive that they are covered when their employer says they are; sample limited to covered employees.
[c] Employees who perceive that they are covered when their employer says they are not; sample limited to employees reporting that they are covered.
[d] The results in this row are limited to ESOP companies because individual-level questions were only asked in these companies.

Table 2
Employees that Don't Know about Shared Capitalism Programs

	Fraction of Negative Responses that are "Don't Know"
Eligible for Performance-Based Pay	19.77 % (1,838 / 9,295)
Received Performance-Based Bonuses Last Year	7.83 % (1,219 / 15,560)
Participate in the ESOP	32.33 % (258 / 798)
Participate in a 401(k) Plan	17.55 % (1,506 / 8,583)
Ever Received Stock Options	14.02 % (89 / 635)
Ever Exercised Stock Options, Currently Hold Stock Options, Participate in an Employee Stock Purchase Plan, or Bought Company Stock on the Open Market	All < 1 %

Source: NBER Shared Capitalism data set.

Table 3
Probit Analyses of Employer-Employee Mismatches[a]

	Profit-Sharing (1)	Gain-sharing (2)	Individual-Based Incentives (3)	Any Performance-Based Pay (4)
High school graduate[b]	-0.047*	-0.027	0.010	-0.022*
	(0.014)	(0.022)	(0.021)	(0.010)
Attended college[b]	-0.034*	-0.039	0.038	-0.004
	(0.017)	(0.023)	(0.019)	(0.011)
Employee age (years÷10)	-0.037*	-0.003	0.020	-0.052*
	(0.019)	(0.024)	(0.022)	(0.013)
Age squared (÷1,000)	0.056*	-0.008	-0.021	0.059*
	(0.022)	(0.029)	(0.026)	(0.016)
Female	-0.029*	-0.031*	0.001	-0.0002
	(0.005)	(0.007)	(0.006)	(0.004)
Nonwhite	0.011	0.032*	-0.021*	0.013*
	(0.006)	(0.008)	(0.007)	(0.005)
Currently married	-0.012*	0.002	0.006	-0.012*
	(0.006)	(0.007)	(0.007)	(0.004)
Number of children under age 18	0.008*	-0.002	0.004	0.003
	(0.002)	(0.003)	(0.003)	(0.002)
Tenure at current employer (years÷10)	-0.074*	-0.092*	0.059*	-0.042*
	(0.009)	(0.010)	(0.010)	(0.007)
Tenure squared (÷1,000)	0.195*	0.191*	-0.046	0.117*
	(0.027)	(0.033)	(0.030)	(0.020)
Expects to work for employer for a long time	-0.021*	0.032*	0.015*	-0.009
	(0.007)	(0.008)	(0.007)	(0.005)
Last year's total non-contingent pay (log)	-0.066*	0.149*	-0.017*	-0.062*
	(0.005)	(0.007)	(0.005)	(0.004)
Paid by the hour	0.010	-0.124*	-0.108*	0.043*
	(0.007)	(0.008)	(0.007)	(0.005)
Sales occupation	0.377*	0.126*	0.015	-0.030*
	(0.013)	(0.012)	(0.011)	(0.007)
Unionized	0. 073*	-0.011	0.004	0.082*
	(0.013)	(0.014)	(0.013)	(0.010)
Works in the United States	-0.106*	-0.081*	-0.048*	-0.043*
	(0.010)	(0.011)	(0.010)	(0.008)
Total company employees (÷100,000)	0.022	-0.408*	0.332*	0.109*
	(0.016)	(0.018)	(0.017)	(0.011)

continued

Table 3 (continued)

Dep. Var. Mean	0.171	0.253	0.220	0.104
Model χ^2 test p-value	<0.0001	<0.0001	<0.0001	<0.0001
Sample Size	23,478	23,478	23,478	23,478

Source: NBER Shared Capitalism data set.

Notes: [a] Each entry contains the marginal effect and robust standard error (in parentheses) from a probit model where the dependent variable indicates employer-employee mismatches about the shared capitalism plan denoted in each column heading.
[b] High school dropout is the omitted category for the two educational attainment variables.
*Statistically significant at the 0.05 level.

Table 4
Probit Analyses of Employee Ignorance[a]

	Profit-Sharing (1)	Gain-sharing (2)	Individual-Based Incentives (3)	Any Performance-Based Pay (4)	ESOPs (5)
High school graduate[b]	-0.058*	---	-0.031	-0.029*	0.042
	(0.013)		(0.055)	(0.008)	(0.036)
Attended college[b]	-0.066*	-0.034	-0.097	-0.034*	0.030
	(0.018)	(0.045)	(0.057)	(0.012)	(0.030)
Employee age (years÷10)	-0.043*	0.169	0.157*	-0.050*	-0.038
	(0.019)	(0.212)	(0.051)	(0.012)	(0.037)
Age squared (÷1,000)	0.067*	-0.175	-0.146*	0.059*	0.042
	(0.022)	(0.248)	(0.060)	(0.014)	(0.045)
Female	-0.029*	0.090*	0.011	-0.002	-0.033*
	(0.006)	(0.045)	(0.013)	(0.004)	(0.012)
Nonwhite	0.023*	0.117	-0.085*	0.017*	0.003
	(0.007)	(0.098)	(0.012)	(0.005)	(0.017)
Currently married	-0.016*	0.061	-0.008	-0.011*	-0.023
	(0.006)	(0.054)	(0.014)	(0.004)	(0.013)
Number of children under age 18	0.009*	-0.024	0.007	0.003	0.006
	(0.002)	(0.018)	(0.005)	(0.002)	(0.005)
Tenure at current employer (years÷10)	-0.087*	-0.082	0.115*	-0.054*	-0.402*
	(0.009)	(0.073)	(0.018)	(0.006)	(0.027)
Tenure squared (÷1,000)	0.228*	0.203	-0.015	0.146*	1.160*
	(0.027)	(0.202)	(0.062)	(0.018)	(0.095)
Expects to work for employer for a long time	-0.025*	-0.012	-0.037*	-0.012*	-0.006
	(0.007)	(0.051)	(0.016)	(0.005)	(0.015)
Last year's total non-contingent pay (log)	-0.074*	-0.126*	-0.213*	-0.059*	-0.080*
	(0.005)	(0.053)	(0.013)	(0.003)	(0.017)
Paid by the hour	-0.004	0.101	0.256*	0.020*	0.022
	(0.007)	(0.091)	(0.032)	(0.005)	(0.015)
Sales occupation	0.412*	-0.296	-0.117*	-0.013	-0.046
	(0.014)	(0.187)	(0.013)	(0.007)	(0.019)
Unionized	0.207*	-0.259*	0.204*	0.124*	0.223*
	(0.032)	(0.090)	(0.080)	(0.023)	(0.085)
Works in the United States	-0.069*	-0.014	0.015	-0.005	---
	(0.010)	(0.329)	(0.015)	(0.007)	
Total company employees (÷100,000)	0.066*	-8.738*	0.530*	0.025*	-1.309*
	(0.019)	(3.389)	(0.044)	(0.012)	(0.412)

continued

Table 4 (continued)

Dep. Var. Mean	0.164	0.495	0.312	0.084	0.151
Model χ^2 test p-value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sample Size	21,325	827	9,435	21,569	2,827

Source: NBER Shared Capitalism data set.

Notes: [a] Each entry contains the marginal effect and robust standard error (in parentheses) from a probit model where the dependent variable indicates employee ignorance about the shared capitalism plan denoted in each column heading.

[b] High school dropout is the omitted category for the two educational attainment variables, except in column 2.

*Statistically significant at the 0.05 level.

Table 5
Predicted Ignorance Rates for Different Employee Profiles
(standard deviations in parentheses)

Employee Profile	Profit-Sharing (1)	Gain-sharing (2)	Individual-Based Incentives (3)	Any Performance-Based Pay (4)	ESOPs (5)
A single, 21 year-old, non-white, high school dropout father of two making $25,000 per year with no expectation of working for this company for a long time and one year of tenure working in a union-represented, non-sales, hourly job in the United States for a company with 200 employees	0.624 (0.117)	0.719 (0.458)	0.697 (0.274)	0.615 (0.122)	0.809 (0.266)
Average over the relevant estimation sample	0.164 (0.129)	0.495 (0.127)	0.313 (0.176)	0.084 (0.072)	0.152 (0.150)
A married, 45 year-old, white, college-educated, childless woman making $75,000 per year with expectations of working for this company for a long time with 15 years of tenure in a nonunion, non-sales, salaried job in the United States for a company with 200 employees	0.040 (0.043)	0.813 (0.262)	0.261 (0.055)	0.019 (0.049)	0.003 (0.121)

Source: Calculated from Table 4.

Table 6
Probit Analyses of False Positives[a]

	Profit-Sharing (1)	Gain-sharing (2)	Individual-Based Incentives (3)	Any Performance-Based Pay (4)
High school graduate[b]	0.004	---	-0.162*	0.006
	(0.006)		(0.053)	(0.007)
Attended college[b]	0.007*	0.020*	-0.193*	0.009*
	(0.002)	(0.011)	(0.097	(0.002)
Employee age (years÷10)	-0.008*	-0.029	-0.042	-0.007*
	(0.003)	(0.018)	(0.067)	(0.003)
Age squared (÷1,000)	0.009*	0.040*	0.118	0.008*
	(0.003)	(0.022)	(0.078)	(0.003)
Female	0.003*	-0.003	-0.054*	0.004
	(0.001)	(0.004)	(0.015)	(0.001)
Nonwhite	-0.001	0.022*	-0.108*	0.002
	(0.001)	(0.006)	(0.014)	(0.001)
Currently married	-0.002	-0.001	-0.033	-0.002*
	(0.001)	(0.004)	(0.018)	(0.001)
Number of children under age 18	0.001	-0.002*	0.0001	0.0003
	(0.0003)	(0.001)	(0.006)	(0.0003)
Tenure at current employer (years÷10)	0.001	-0.035*	0.135*	0.005*
	(0.002)	(0.008)	(0.025)	(0.002)
Tenure squared (÷1,000)	-0.013*	0.041*	-0.142	-0.022*
	(0.005)	(0.015)	(0.085)	(0.006)
Expects to work for employer for a long time	-0.001	0.008	0.012	0.00001
	(0.001)	(0.005)	(0.020)	(0.001)
Last year's total non-contingent pay (log)	-0.004*	0.008*	-0.356*	-0.005*
	(0.001)	(0.003)	(0.020)	(0.001)
Paid by the hour	0.002*	0.023*	0.582*	0.009*
	(0.001)	(0.005)	(0.024)	(0.001)
Sales occupation	0.009*	0.015*	---	---
	(0.003)	(0.003)		
Unionized	0. 253*	-0.812*	0.519*	0.164*
	(0.026)	(0.033)	(0.069)	(0.020)
Works in the United States	-0.023*	-0.032*	0.167*	-0.022*
	(0.003)	(0.004)	(0.017)	(0.003)
Total company employees (÷100,000)	-0.036*	---	-0.109*	-0.049*
	(0.003)		(0.048)	(0.004)

continued

Table 6 (continued)

Dep. Var. Mean	0.028	0.930	0.297	0.034
Model χ^2 test p-value	<0.0001	<0.0001	<0.0001	<0.0001
Sample Size	18,343	5,949	7,470	18,790

Source: NBER Shared Capitalism data set.

Notes: [a] Each entry contains the marginal effect and robust standard error (in parentheses) from a probit model where the dependent variable indicates an employee-reported false positive about the shared capitalism plan denoted in each column heading.
[b] High school dropout is the omitted category for the two educational attainment variables, except in column 2 where high school dropouts are excluded from the sample.
*Statistically significant at the 0.05 level.

Table 7
Predicted False Positive Rates for Different Employee Profiles
(standard deviations in parentheses)

Employee Profile	Profit-Sharing (1)	Gain-sharing (2)	Individual-Based Incentives (3)	Any Performance-Based Pay (4)
A single, 21 year-old, non-white, high school dropout father of two making $25,000 per year with no expectation of working for this company for a long time and one year of tenure working in a union-represented, non-sales, hourly job in the United States for a company with 200 employees	0.660 (0.342)	0.090 (0.469)	0.999 (0.419)	0.609 (0.290)
Average over the relevant estimation sample	0.028 (0.094)	0.929 (0.221)	0.294 (0.335)	0.033 (0.096)
A married, 45 year-old, white, college-educated, childless woman making $75,000 per year with expectations of working for this company for a long time with 15 years of tenure in a nonunion, non-sales, salaried job in the United States for a company with 200 employees	0.038 (0.083)	0.121 (0.181)	0.265 (0.066)	0.060 (0.075)

Source: Calculated from Table 6.

Table 8
Other Measures of Employee Ignorance

Question [survey pool]	Response Categories of Interest (1)	Frequency of Response (2)
How frequently do you feel that the Company is reaching out to you to inform you (through meetings, newsletters, email or Internet) about the goals of the company, overall workplace performance, changes to workplace organization, or implementation of new technology? [3 companies]	Occasionally or never	28.54 % (735 / 2,575)
How frequently do you reach out to inform yourself (through meetings you set up or conversations that you initiate or material you read, or use of the Internet or other means) about the goals of the company, overall workplace performance, changes to workplace organization, or implementation of new technology? [2 companies]	Occasionally or never	43.97 % (747 / 1,699)
I get the information I need to do my job. [1 company]	Strongly disagree, disagree, or do not know	26.94 % (7,999 / 29,689)
We are kept informed of important issues in the organization. [1 company]	Strongly disagree, disagree, or do not know	45.46% (13,528 / 29,757)
I am kept informed about changes affecting my work. [1 company]	Strongly disagree, disagree, or do not know	43.40 % (12,881 / 29,678)
To what extent do you understand your company's overall plan for being successful? [7 companies]	Not at all or very little	14.76 % (4,981 / 33,747)

Source: NBER Shared Capitalism data set.

Table 9
Regression Analysis of the Effect of Performance-Based Pay on Work Attitudes

	(1)	(2)	(3)	(4)
Dependent Variable: Willingness to Work Hard[a]				
Employee believes covered by any performance-based pay plan	0.183* (0.011)	---	0.083* (0.018)	---
Employer-Employee Matched Responses for any performance-based pay plan (Accurate No is omitted category)				
Accurate Yes	---	0.282* (0.016)	---	0.142* (0.029)
Employee Ignorance	---	0.149* (0.019)	---	0.100* (0.034)
False Positive	---	0.175* (0.023)	---	0.206* (0.042)
Additional Controls[b]	No	No	Yes	Yes
Adjusted R^2	0.007	0.009	0.058	0.058
Sample Size	44,799	44,799	23,507	23,507
Dependent Variable: Loyalty[c]				
Employee believes covered by any performance-based pay plan	0.207* (0.010)	---	0.072* (0.016)	---
Employer-Employee Matched Responses (Accurate No is omitted category)				
Accurate Yes	---	0.251* (0.015)	---	0.037 (0.025)
Employee Ignorance	---	0.071* (0.018)	---	-0.021 (0.030)
False Positive	---	0.226* (0.021)	---	0.275* (0.037)
Additional Controls[b]	No	No	Yes	Yes
Adjusted R^2	0.011	0.011	0.077	0.079
Sample Size	41,278	41,278	23,197	23,197

Notes to Table 9

Source: NBER Shared Capitalism data set.

Notes: [a] To what extent do you agree or disagree with this statement? "I am willing to work harder than I have to in order to help the company I work for succeed." 1=strongly disagree, 5=strongly agree (mean=4.02, standard deviation=0.899).

[b] Controls for education, age, gender, marital status, children, tenure, fixed pay, hourly occupation, sales occupation, union status, and U.S. employee.

[c] How much loyalty would you say you feel toward the company you work for as a whole? 1=no loyalty at all, 2=only a little, 3=some, 4=a lot (mean=3.33, standard deviation=0.798).

*Statistically significant at the 0.05 level.

Appendix Table 1
Independent Variable Definitions and Summary Statistics

	Mean (standard deviation)
1 if employee is a high school graduate but did not attend any college	0.193 (0.394)
1 if employee attended college (includes college graduates and non-graduates)	0.785 (0.411)
Age of employee (years)	41.451 (9.980)
1 if employee is female	0.296 (0.456)
1 if employee's race is nonwhite	0.189 (0.392)
1 if employee is currently married or living as married	0.746 (0.435)
Number of children under age 18	0.987 (1.167)
Years worked for current employer	9.226 (8.661)
1 if employee expects to work at the current employer for a long time	0.844 (0.363)
Log of last year's total non-contingent pay (base pay and overtime)	10.838 (0.646)
1 if employee is paid by the hour	0.411 (0.492)
1 if employee is in a sales occupation	0.072 (0.259)
1 if employee is unionized	0.053 (0.223)
1 if employee works in the United States	0.890 (0.312)
Total number of employees for the company	35,848.998 (16,345.097)

Source: NBER Shared Capitalism data set.
Note: The sample statistics presented here are for the 23,478 observations that have complete information for the probit models in Table 3.