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Worker Attitudes Towards Employee Ownership, Profit Sharing and Variable Pay

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PROFIT SHARING AND VARIABLE PAY**

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ABSTRACT

Using the NBER Shared Capitalism Database comprised of over 40,000 employee surveys from 14 firms, we investigate worker attitudes towards employee ownership, profit sharing, and variable pay. Specifically, our study uses detailed survey questions on preferences over profit sharing, forms of employee ownership like company stock and stock option ownership, as well as preferences over variable pay in general, to explore how preferences for these different types of output-contingent pay vary with worker risk aversion, residual control, and views of co-workers and management. Our key results show that, on average, workers want at least a part of their compensation to be performance-related, with stronger preferences for output-contingent pay schemes among workers who have lower levels of risk aversion, greater residual control over the work process, and greater trust of co-workers and management.

Keywords: Employee Ownership, Profit Sharing, Variable Pay, Worker Preferences, Residual Control, Risk Aversion, Perceptions of Co-Workers and Management
JEL Classifications: J54, J33, M52

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I. INTRODUCTION

The prevalence of employee ownership, profit sharing and other performance-based pay schemes has been growing in the past several decades in the U.S. and other advanced economies. According to the 2006 wave of the General Social Survey, which is a nationally representative survey of individuals conducted by the National Opinion Research Center, over a third of U.S. workers are covered by profit sharing, 18 percent own company stock, and 9 percent own company stock options. Coverage is similar in France, Great Britain, Italy and Japan (Del Boca et. al. 1999, Jones and Kato 1995). A large part of the previous research on shared capitalist pay schemes in which employees participate in the financial performance of their place of work has focused on the effects of such programs on worker and firm outcomes like productivity, turnover, and profits (Craig and Pencavel 1992, Kruse and Blasi 1997, Kruse 2002, Park, Kruse and Sesil 2004). But an important aspect that has not yet been explored is worker preferences for different participatory compensation programs, largely due to the dearth of available datasets that are conducive to the analysis of this subject. The current paper sheds light on this topic by examining preferences over profit sharing, forms of employee ownership like company stock and stock option ownership, as well as preferences over variable pay in general, and how these preferences depend on worker risk aversion, residual control, and perceptions of co-workers and management.

Economic theory predicts that workers will be more favorable towards performance-related pay schemes when they: i) have low levels of risk aversion, ii) have greater control over the work process generating payouts (residual control), iii) trust their co-workers, so that the free rider problem associated with group incentives can be overcome by a cooperative solution, and iv) trust their managers not to exploit information asymmetries when distributing financial

payouts. We investigate the role that each of these factors play in workers' preferences over employee ownership, profit sharing and variable pay using a unique set of questions asked in the NBER Shared Capitalism Survey of more than 40,000 employees from 14 firms.

This is a novel research area in the employee ownership literature and our findings help to understand how workers respond to different types of participatory compensation schemes. We consider both pay that is tied to overall company performance (profit sharing, company stock and stock option ownership), as well as individual performance-based variable pay (individual bonuses, commissions), and we will refer to these collectively as *financial participation* throughout the paper.

A strength of our data is that we have individual-level measures of risk aversion, which is often discussed as an important factor in financial participation but is rarely measured. The NBER Shared Capitalism Survey additionally provides unique information on worker residual control and worker perceptions of co-workers and management which are also central to our analysis. We use this detailed information to investigate how preferences for different types of financial participation are shaped by worker risk aversion, residual control, and views of co-workers and management. Our key results show that most workers want at least a part of their compensation to be output-contingent, with stronger preferences for performance-related pay among workers who have lower levels of risk aversion, greater residual control of the work process, and greater trust of co-workers and managers.

II. THEORY AND PRIOR LITERATURE

Our discussion focuses on the following theoretical factors central to perceptions about shared capitalism and variable pay: risk aversion, residual control, and trust in co-workers and management.

Worker preferences for employee ownership and other forms of financial participation will reflect the perceived potential costs and benefits of such plans. Risk aversion is viewed as a key factor in most theoretical models of pay-for-performance (Holmstrom 1979, Shavell 1979), since the variability of rewards can represent a significant cost for risk-averse workers, and has indeed been found to reduce preferences for output-contingent pay in laboratory experiments (Cadsby, Song, Tapon 2007). Moreover, people with lower wealth and base salary will generally be more averse to financial risk since they have less money for discretionary spending and a reduction in income or assets may force them to cut back on necessities.

Attitudes towards financial participation will also depend on the perceived potential for higher income, which will depend on worker skills and opportunities for influencing workplace performance. Workers are likely to view group-based rewards more favorably in the presence of practices such as employee involvement in decisions (increasing opportunities to influence performance), training (increasing skills that contribute to performance), and job security (providing assurance that one will be able to receive the fruits of higher performance). This can be thought of in the context of the theory of residual returns and residual control, which argues that those who receive residual returns (financial participation) should also receive residual control (power over the work process) in order to provide proper incentives and achieve value-maximizing decisions (Milgrom and Roberts 1990, Jensen and Meckling 1992, Holmstrom and Milgrom 1994, Prendergast 2002). Several empirical studies have found support for this

hypothesis (DeVaro and Kurtulus 2010, Ben-Ner, Kong and Lluís 2010, Foss and Laursen 2005). Moreover, employee involvement in firm decision-making may create expectations or desires for sharing in the fruits of those decisions, and workers may become dispirited without some sort of financial reward tied to the consequences of those decisions (Levine and Tyson 1990, Ben-Ner and Jones 1995).

Preferences for rewards based on company performance are also likely to critically depend on workers' perceptions about co-workers. The well-known free rider problem in group incentives has been modeled as a prisoners' dilemma game, in which each participant has an individual incentive to shirk. If the game is repeated in an ongoing relationship, however, several equilibria are possible, including a cooperative equilibrium in which the participants establish a collective agreement to cooperate so that the rewards are higher for all participants (Axelrod 1984, Fudenberg and Maskin 1986). Workers in group incentive plans may establish and maintain a commitment to high work standards through cooperation and monitoring, which can generate higher payouts for workers than in a non-cooperative setting (Weitzman and Kruse, 1990). This points to co-worker relations as a key ingredient in the effectiveness of employee ownership. Preferences for employee ownership and profit sharing are likely to be low if workers think co-workers are not interested in workplace performance and there is little potential for productive cooperation under group-based rewards, and higher if they think co-workers are interested in workplace performance and can achieve the cooperative equilibrium in the prisoner's dilemma game by working well together.

Finally, preferences for financial participation are likely to be shaped by attitudes towards management. First, workers are unlikely to favor variable pay plans if they do not trust managers to manage well so that there will be rewards to distribute to workers for their hard

work. The second issue stems from informational asymmetries inherent in many incentive plans: it can be difficult for workers to determine whether rewards under variable pay systems are being calculated correctly and fairly by management, whereas this is easier under fixed wage contracts since workers know exact pay levels *ex ante*. One of the objections of unions to profit sharing, for example, is mistrust that managers will calculate profits in a way that properly rewards workers for their performance (Zalusky 1986, Zalusky 1990). If workers do not trust managers to calculate the payouts from financial participation in a competent and honest way, they will be less interested in participating.

In sum, based on theory and past research, we expect attitudes towards financial participation to be more positive among workers who are less risk averse, have more residual control, and who trust management and think co-workers are more interested in workplace performance.

There has been little published research on the topic of worker attitudes towards financial participation. Kruse and Blasi (1999) summarize thirty public polls conducted between 1975 and 1997 with questions on general perceptions about financial participation systems, finding that a majority of people expressed favorable views of employee ownership and its effects on workplaces; for instance, in one survey 75 percent said they would like to work for an employee-owned and -controlled company, as opposed to a company owned by outside investors or government, and in another survey 69 percent thought employee-owners work harder. A number of studies have examined the effect of variable pay on overall job satisfaction among British workers: Green and Heywood (2008) found that performance-related pay in general was associated with increased job satisfaction, Brown and Sessions (2003) showed that workers who participated in performance bonuses, share ownership, and profit sharing were more satisfied

with their work environment, and McCausland et. al. (2005) found that the influence of performance pay increased satisfaction for the more highly paid but lowered it for the less highly paid. Drago, Estrin and Wooden (1992) found the use of individual and group bonuses to be a positive determinant of job satisfaction in a sample of Australian workers. Cornelissen, Heywood and Jirjahn (2008) showed that among German workers who received performance pay, risk aversion was inversely correlated with overall job satisfaction.

Our paper contributes to the literature by investigating worker preference for various forms of financial participation and how these preferences depend on key worker and workplace characteristics.

III. DATA AND VARIABLES

We use the NBER Shared Capitalism Database, which consists of detailed information collected from more than 40,000 employee surveys from 14 firms, to explore preferences for different forms of employee ownership and variable pay. The NBER data comprise one of the largest worker-level datasets on labor practices and worker sentiment ever collected. The survey was conducted during 2002-2006 using a combination of web-based and paper survey methods, and had a high response rate, averaging 53 percent over the 14 companies. The firms participating in the survey included large multinationals with employment spanning North America, South America, Europe and Asia, as well as smaller firms with mostly US employees. The sample included eight firms in the manufacturing industry, two high-technology firms, and four in the service industry. Three of the fourteen companies exceeded 10,000 employees, five employed between 1,000 and 10,000 workers, and the remaining six employed fewer than 1,000 workers. All of the firms had employee ownership, profit sharing and variable pay programs, though of varying forms and degrees: thirteen had individual bonus plans, nine had workgroup-

based or department-based performance bonus plans, eleven had broad-based profit sharing plans, five had broad-based stock option plans, eight had standard employee stock ownership plans (ESOPs), one had a 401(k) employee stock ownership program, four had employee stock purchase plans, and three had 401(k)'s with company stock. Most had combinations of these plans.

To investigate the role that risk aversion, residual control, and perceptions of co-workers and management play in workers' preferences for financial participation, we make use of a unique set of questions asked in the NBER Shared Capitalism Survey capturing these concepts. We now turn to a discussion of the key variables used in our empirical analyses.

Dependent Variables

We examine four variables reflecting worker preferences for financial participation as dependent variables in our regression analyses. The first one captures worker preferences for variable pay broadly and is based on a question asked in the NBER Shared Capitalism Survey indicating the percentage of pay the respondent would like to receive as variable compensation (which includes all forms of output-contingent pay that is based on individual, group and company performance). Next we examine worker preferences for various forms of employee ownership based on questions indicating the respondent's preference for being paid at least in part based on company performance (profit sharing, company stock, or stock options), preference for the extent to which the respondent's next pay increase depends on company performance, and preference for getting a portion of compensation in the form of company stock and stock options. These four dependent variables are defined formally below.

Worker Preferences for Financial Participation:

<i>Preference for Variable Pay</i>	Proportion of pay the worker would like to receive as variable compensation (13 firms surveyed)
<i>Preference for Company-Based Incentives</i>	Dummy variable equaling 1 if the worker prefers that he or she be paid in part with a variable amount dependent on company performance, through profit sharing, company stock, or stock options; 0 if all fixed wage or salary, with no profit sharing, company stock, or stock options (13 firms surveyed)
<i>Preference for Company-Based Incentives in Next Pay Increase</i>	Worker's preference that his or her next pay increase come in the form of 1 = All fixed wages, with no profit sharing, company stock, or stock options; 2 = Split between fixed wages and profit sharing, company stock, or stock options; 3 = All in the form of profit sharing, company stock, or stock options (5 firms surveyed)
<i>Preference for Stock Over Cash Incentives</i>	Worker's preference for getting some of his or her compensation from company stock and stock options as opposed to a cash incentive plan on a 1 (cash incentive plan) to 5 (company stock and stock options) scale (3 firms surveyed)

Key Independent Variables

The key independent variables in our analysis are those that capture worker risk aversion, residual control, and perceptions of co-workers and management.

One of the unique features of the NBER Survey is the presence of information on individual-level risk aversion, which plays a central role in theoretical models of the employee-employer relationship, but is rarely available in existing datasets. Our primary measure of the extent to which the worker is averse to risk is based on the NBER Survey question “Some people like to take risks and others dislike taking risks. Where would you place yourself on a scale of how much you like or dislike taking risks, where 0 is hating to take any kind of risk and 10 is loving to take risks?”, from which we define variable *Risk Averse* such that values greater than or equal to 7 on this scale correspond to “low risk aversion”, greater than 3 and less than 7 is “medium risk aversion”, and less than or equal to 3 is “high risk aversion”. As discussed earlier,

people with lower wealth and base salary will generally be more averse to financial risk since pay variability that results in pay reduction is more likely to force them to cut back on necessities, so we also examine the worker's annual base salary and family wealth under the framework of risk aversion.

Risk Aversion Variables:

<i>Risk Averse</i>	Worker's self-assessment of his risk preference, where 1 = Low risk aversion; 2 = Medium risk aversion; 3 = High risk aversion.
<i>Base Pay</i>	Worker's annual base pay the previous year excluding overtime, bonuses and commissions (in thousands)
<i>Wealth</i>	Assets of the worker and the worker's spouse including the value of their house minus the mortgage, their vehicles, stocks and mutual funds, cash, checking accounts, retirement accounts including 401(k) and pension assets (in thousands)

The second key element that is likely to shape attitudes towards financial participation is residual control, or the ability to influence one's potential for higher income, which will depend on worker skills and opportunities to influence workplace performance through employee involvement in decision-making, training, and assurance that the worker can reap the rewards of higher performance through job security. These variables, which we group under the heading residual control, are defined below.

Residual Control Variables:

<i>Decision-Making</i>	Dummy variable equaling 1 if the worker is involved in organized workplace decision-making through teams, committees or task forces that address workplace issues such as product quality, cost cutting, productivity, health and safety; 0 otherwise
<i>Training</i>	Dummy variable equaling 1 if the worker received any formal training from the employer in the last 12 months, such as in classes or seminars sponsored by the employer; 0 otherwise
<i>Job Security</i>	Dummy variable equaling 1 if the worker's response to the question "Thinking about the next twelve months, how likely do you think it is that you will lose your job or be laid off?" is "not at all likely" or "not too likely"; 0 if the worker's response is "very likely" or "fairly likely".

As discussed earlier, preferences for company performance-based rewards in particular are likely to depend on workers' perceptions about whether their co-workers are committed to workplace performance and whether they trust management to distribute payouts from workplace rewards correctly. We therefore include the below two independent variables.

Perceptions of Co-Workers and Management:

<i>Co-Worker Interest and Involvement</i>	Worker's perception of his or her co-workers' interest and involvement in company-wide issues on a 1-7 scale, with 1 indicating little interest and involvement and 7 indicating great interest and involvement
<i>Management Trustworthiness</i>	Worker's perception of the trustworthiness of his company in keeping its promises on a 0-4 scale, with 0 indicating not trustworthy and 4 indicating highly trustworthy

Control Variables

Beyond the variables that are central to our analysis, all of our regression models include a rich array of worker and workplace characteristics as control variables. These are worker demographic variables including gender, age, and education level; and job characteristics variables including occupation, managerial level, firm tenure, whether the worker is closely supervised, and whether pay is at or above market level. We also control for the ease with which workers can observe their co-workers' effort, since this is likely to influence the extent to which perceptions about how involved co-workers are in company issues (*Co-Worker Interest and Involvement*), one of the main independent variables we consider, affects preferences for shared capitalism. Fuller definitions and descriptive statistics of these control variables are provided in the Appendix.

IV. METHODOLOGY

As a first step in our empirical analysis, we will examine unconditional means of our main dependent variables to explore preferences over financial participation broadly across all workers in our sample. Second, we will examine how preferences for financial participation vary with worker risk aversion, residual control, and perceptions of co-workers and management by estimating cross-sectional regressions of attitudes on these main independent variables, controlling for the array of worker and workplace characteristics described above. We will estimate least squares, probit, and multinomial probit models, depending on whether the dependent variable is a continuous, dummy, or multi-valued variable, respectively.

It is important to note that these cross-sectional regression models do not capture causal relationships, but rather conditional correlations among the variables of interest. For example, it is possible that workers with a greater preference for financial participation sort themselves into firms with greater use of financial participation, greater residual control for workers, and workplace climates with high levels of trust. We investigated this possibility by also estimating regressions that included firm fixed effects, with very similar results for the variables of interest; in the paper we report the results without firm effects to take advantage of both within- and between-firm variation. It also remains possible that within a firm, workers will be sorted into jobs based on personal characteristics correlated with preferences over financial participation. It may be, for example, that being in a decision-making team does not create greater interest in financial participation, but workers with greater interest in financial participation select themselves into positions that are part of decision-making teams. Even in the latter case, finding a positive relationship strongly suggests an important linkage between residual control and residual returns for workers. So while we cannot definitively determine causality (as with most non-experimental data), our results will nonetheless shed important light on how preferences for

financial participation are related to worker risk aversion, residual control and workplace climate, and the conditions under which variable pay plans are viewed positively by workers and are most likely to be effective.

V. UNCONDITIONAL STATISTICS

Summary statistics for the main variables used in our empirical analyses are shown in Table 1, along with distribution charts for selected variables. Most workers desire between 0 and 30 percent of their compensation to be comprised of variable pay, though there is considerable variation in this preference across workers as illustrated in Figure 1, with an average of 20 percent (*Preference for Variable Pay*). When asked whether workers prefer to be paid at least in part with variable pay that depends on company performance through profit sharing, company stock or stock options, as opposed to getting all fixed salary, a vast majority of respondents, 78 percent, say they prefer to have some company performance-dependent variable pay (*Preference for Company-Based Incentives*). Only 27 percent of workers would like their next pay increase to come in the form of all fixed wages with no profit sharing, company stock or stock options, while 60 percent would like a combination of the two types, and 13 percent would like their next raise to consist entirely of profit sharing, company stock or stock options (*Preference for Company-Based Incentives in Next Pay Increase*). Workers' preferences in favor of company-performance-based pay is also evident in the distribution of the variable *Preference for Stock Over Cash Incentives*, where most workers picked categories 3 and 4 on a scale of 1 to 5 indicating their preference for getting some of their compensation from stock and stock options as opposed to a cash incentive plan.

VI. WHICH WORKERS PREFER FINANCIAL PARTICIPATION?

The above discussion showed that most workers want at least a part of their compensation to be output-contingent, and prefer to be paid at least in part based on company performance. But it may well be that there is variation across these attitudes by the worker's degree of risk aversion, residual control, and perceptions of co-workers and management. We now explore what types of workers prefer variable pay, and what kinds of variable pay they prefer, by estimating regressions of our various preference measures on the main independent variables of interest, and controls.

Table 2 illustrates least squares regression results for *Preference for Variable Pay*, indicating the proportion of total pay the worker would like to receive as variable compensation, and provides strong support for our hypothesis on the relationship between risk aversion and preferences for variable pay: the proportion of compensation workers would like to receive as variable pay is negatively related with their degree of risk aversion—an increase in risk aversion from the “low” category to the “high” category is associated with a decrease in the desired proportion of pay comprised of variable compensation of over 8 percentage points, on average. Also, the proportion of compensation workers would like to receive as variable pay is statistically significantly positively related with family wealth and base salary which can insulate workers against fluctuations in compensation created by variable pay. Second, there is some support for the hypothesis that workers have greater preference for residual rewards when they also have residual control—the proportion of pay the worker desires in his or her compensation is significantly positively related with employee involvement in workplace decision-making, and is also positively related with formal job training and job security though these last two estimates are not statistically significant at conventional levels. Third, in support of our hypothesis on

perceptions of co-workers and management, preference for variable pay is positively related with co-worker interest and involvement in company-wide issues and trust in management, and both of these relationships are statistically significant at the one percent level, indicating that workers are more interested in shared capitalism when they can trust others in the workplace.^{1,2}

Table 3 illustrates the probit marginal effects for $\text{Prob}(\textit{Preference for Company-Based Incentives}=1)$, the probability that the worker prefers that he or she be paid in part with variable pay based on company performance (such as profit sharing, company stock, and stock options) over being paid fully in the form of fixed salary. We find even stronger evidence in favor of our hypotheses here than in the previous table: preference for company-performance-contingent pay is negatively associated with risk aversion, positively associated with family wealth and base salary, positively associated with all three measures of residual control, and positively associated with confidence in co-workers and management, as predicted.

We next turn to workers' preferences over the portion of pay increases comprised of company-performance-based variable pay by focusing on the three-valued *Preference for Company-Based Incentives in Next Pay Increase*, which equals 1 if the worker prefers that his or her next pay increase is comprised of all fixed wages, with no profit sharing, company stock, or

¹ Apart from these main results on how preferences for variable pay depend on risk aversion, residual control and perceptions of co-workers and management, we also uncovered some interesting findings on the relationships between the control variables and *Preference for Variable Pay*. For example, women have a lower preference for variable pay, which aligns with evidence from past studies using laboratory and field experiments that women tend to be more risk averse than men (Niederle and Vesterlund 2007, Dohmen et. al. 2007, Dohmen and Falk 2006). We also find that workers in sales and customer service occupations have the strongest preference in favor of variable pay, a possible explanation for which is that output is more readily linkable to individual performance than for workers in many other occupations (e.g., number of units sold or number of customers assisted), and this reduces problems of free-riding so that such workers may view output-contingent compensation as a more fruitful reward for their effort. Among other interesting results is that workers with longer tenure at the firm prefer a lower share of variable pay, supporting the idea that workers who are closer to retirement are often loathe to introduce risk into their compensation as they have less time remaining in the labor market to recoup potential losses. To streamline and focus our discussion around the key variables of interest (risk aversion, residual control, perceptions of co-workers and management) we do not present these results in the paper, but they are available from the authors.

² Since *Preference for Variable Pay* has a lower bound of zero we also estimated an analogous regression using a tobit model and obtained very similar results.

stock options; 2 if it is split between fixed wages and profit sharing, company stock, or stock options; and 3 if it is all in the form of profit sharing, company stock, or stock options. Table 4 illustrates marginal effects from a multinomial probit regression of *Preference for Company-Based Incentives in Next Pay Increase* on our risk aversion, residual control, and co-worker and management perceptions variables, and worker controls, with the three columns corresponding to the probability that a worker chooses values 1, 2, or 3, respectively. We find that workers who are more risk averse are less likely to want their next pay increase to be partly or completely comprised of company-performance-based pay, and more likely to prefer that it is entirely comprised of fixed wages, corroborating our hypothesized relationship between risk aversion and attitudes toward financial participation. On the other hand, wealth and salary do not exhibit statistically significant relationships with *Preference for Company-Based Incentives in Next Pay Increase*. Table 4 provides mixed evidence supporting the notion that residual control improves preference for residual returns: job training and job security are associated with a higher likelihood of preferring one's next pay increase to be comprised of both company performance related pay and fixed wages, though the relationship between employee involvement in decision-making and *Preference for Company-Based Incentives in Next Pay Increase* is not statistically significant. Finally, though trust in management is associated with wanting a portion of one's pay raise to be contingent on company performance, co-worker interest and involvement in company-wide issues does not have a statistically significant relation with *Preference for Company-Based Incentives in Next Pay Increase*.

Table 5 shows results from a least squares regression of preference for receiving some compensation from company stock and stock options as opposed to a cash incentive plan on a 1 to 5 scale (*Preference for Stock Over Cash Incentives*). We can interpret this as capturing

whether the respondent prefers having stock or cash in his or her pocket. The worker's self-assessment of his or her own risk aversion is strongly negatively correlated with preference for stock-based compensation as opposed to cash incentives, as expected. However, family wealth and base salary have a statistically significant positive, albeit small, correlation with preference for stock-based compensation over cash incentives. All of our residual control variables and management and co-worker trust variables are positively related to *Preference for Stock Over Cash Incentives*, in support of our hypotheses.³

VII. CONCLUSION

This paper uses the NBER Shared Capitalism Survey to study a relatively unexplored topic in the research on participatory pay schemes, namely worker preferences for employee ownership, profit sharing and variable pay, and how these preferences depend on three key worker and workplace characteristics: worker risk aversion, residual control, and perceptions of co-workers and management.

We find that, on average, workers desire around 20 percent of their compensation to be comprised of variable pay. Most workers prefer to be paid at least in part based on company performance, through profit sharing, company stock, or stock options, and in particular they prefer getting stock and stock options as opposed to cash incentives.

Furthermore, our regression results clearly indicate that risk aversion is a major factor reducing preferences for variable pay plans. This is supported not only by the strong coefficients on the risk aversion variable, but also by the coefficients on two key employee characteristics that are expected to be related to risk preferences, namely base pay and family wealth.

³ As a robustness check we also estimated all of our regressions with firm fixed effects, and the results were very similar to the baseline results we report here, both in magnitude and significance. These additional results are available from the authors.

An important finding, though, is that workplace policies help to improve worker perceptions of variable pay. The finding that workers are more likely to prefer performance-based pay if they have decision-making power, formal job training, and job security at their workplace supports the theory that residual control and residual returns are complementary. Future research would be valuable on the form of this relationship (e.g., linear or non-linear, including whether there are threshold effects), and whether complementary residual control practices can help make shared capitalism more appealing to groups who are more risk-averse.

Workplace culture also is a key variable. Workers are unlikely to favor variable pay plans if they do not trust managers (either to manage well so that there will be rewards, or to calculate rewards accurately and honestly). Their attitudes are also influenced by how they perceive their co-workers: if they have little reason to expect their co-workers to perform well under a performance-based pay plan, they will not be optimistic about the prospect for rewards.

The findings on workplace policies and trust of co-worker and managers indicate that preferences over variable pay plans are not determined by any fixed mindset or personal characteristic of workers, but appear to depend on the context in which the plans are implemented. This is consistent with research on the performance effects of employee ownership and profit sharing, which shows that while these plans are associated with higher performance effects on average, there is substantial dispersion in estimated effects across and within samples (Doucialiagos, 2005; Kaarsemaker, 2006; Freeman, 2007). This dispersion is likely to be explained in part by employees' neutral or negative reactions in workplaces that do not provide supportive environments, in contrast to positive reactions with increased employee effort and cooperation when the environment is supportive. Research has begun to identify how specific workplace policies condition the effects of group incentive plans (Kruse et al., 2010).

Further research that delves into the role of workplace policies and cultures in financial participation would be valuable in determining how and when these plans can affect performance and worker welfare, and the likelihood that they may expand in the 21st century.

APPENDIX

Definitions and Descriptive Statistics of Worker and Workplace Control Variables

Variable	Definition	Mean	S.D.	Obs.
<i>Female</i>	1 if worker is female; 0 otherwise	0.312	0.463	38,325
<i>Age</i>	Worker age	40.933	10.503	36,791
<i>No High School</i>	1 if worker does not hold a high school degree; 0 otherwise	0.037	0.189	35,758
<i>High School</i>	1 if worker's highest educational degree is a high school degree including GED; 0 otherwise	0.230	0.421	35,758
<i>Some College</i>	1 if worker has attended some college but has not received a bachelor's degree; 0 otherwise	0.217	0.412	35,758
<i>Associate Degree</i>	1 if worker's highest educational degree is an associate's degree; 0 otherwise	0.084	0.277	35,758
<i>College</i>	1 if worker's highest educational degree is a bachelor's degree; 0 otherwise	0.280	0.449	35,758
<i>Grad School</i>	1 if worker's highest educational degree is a master's, professional or doctoral degree; 0 otherwise	0.138	0.344	39,436
<i>Production</i>	1 if worker's occupation is production; 0 otherwise	0.434	0.496	45,816
<i>Administrative Support</i>	1 if worker's occupation is administrative support; 0 otherwise	0.061	0.238	45,816
<i>Professional and Technical</i>	1 if worker's occupation is professional and technical (including engineers and scientists); 0 otherwise	0.295	0.456	45,816
<i>Sales and Customer Service</i>	1 if worker's occupation is sales and customer service; 0 otherwise	0.085	0.280	45,816
<i>Lower Management</i>	1 if worker's occupation is lower management (including front-line supervisors); 0 otherwise	0.101	0.302	45,816
<i>Middle Management</i>	1 if worker's occupation is middle management (including managers and directors); 0 otherwise	0.075	0.263	45,816
<i>Upper Management</i>	1 if worker's occupation is top management (executives); 0 otherwise	0.022	0.147	45,816
<i>At Market Salary</i>	1 if the worker believes that his annual base salary at the firm is at or above the going market rate for employees in other companies with similar experience and job descriptions in the region; 0 otherwise	0.592	0.491	36,236
<i>Tenure</i>	Worker's tenure at the firm, in years	9.540	8.979	45,755
<i>Hours</i>	Worker's weekly hours worked	45.789	8.137	45,696

<i>Close Supervision</i>	Measure of how closely the worker is supervised on a 0-10 scale, with 0 indicating that the worker works independently of close supervision and 10 indicating the worker is closely supervised	3.347	2.631	45,978
<i>See Co-Workers</i>	Worker's rating of how easy it is for him to see whether his co-workers are working well or poorly on a 1-10 scale	6.784	2.740	45,874

REFERENCES

- Axelrod, Robert (1984). *The Evolution of Cooperation*. New York: Basic Books.
- Ben-Ner, Avner, Fanmin Kong, and Stephanie Lluís. 2010. "Uncertainty and Organization Design." Working paper, University of Minnesota.
- Ben-Ner, Avner, and Derek C. Jones (1995). "Employee Participation, Ownership, and Productivity: A Theoretical Framework." *Industrial Relations*, Vol. 34, No. 4. (October), pp. 532-554.
- Brown, Sarah, and John G. Sessions. 2003. "Attitudes, Expectations and Sharing". *Labour*, Vol. 17, No. 4, pp. 543-569.
- Cadsby, C. Bram, Fei Song, and Francis Tapon. 2007. "Sorting and Incentive Effects of Pay for Performance: An Experimental Investigation", *Academy of Management Journal*, Vol. 50, No. 2, pp. 387-405.
- Cornelissen, Thomas, John S. Heywood, and Uwe Jirjahn. 2008. "Performance Pay, Risk Attitudes and Job Satisfaction", DIW Working Paper.
- Craig, Ben, and John Pencavel. 1992. "The Behavior of Worker Cooperatives: The Plywood Companies of the Pacific Northwest". *American Economic Review*, Vol. 82, pp. 1983-1105.
- Del Boca, Alessandra, Douglas Kruse, and Andrew Pendleton. 1999. "Decentralisation of Bargaining Systems and Financial Participation: A Comparative Analysis of Italy, U.K. and the U.S.". *Lavoro e Relazioni Industriali*, Summer.
- DeVaro, Jed and Fidan Ana Kurtulus. 2010. "An Empirical Analysis of Risk, Incentives, and the Delegation of Worker Authority". *Industrial and Labor Relations Review*, Vol. 63, No. 4 (July).
- Dohmen, Thomas, Armin Falk, David Huffman, Uwe Sunde, Jürgen Schupp, and Gert Wagner. 2007. "Individual Risk Attitudes: Measurement, Determinants and Behavioral Consequences". *The Journal of the European Economic Association*, forthcoming.
- Dohmen, Thomas, and Armin Falk. 2006. "Performance Pay and Multidimensional Sorting: Productivity, Preferences and Gender". *American Economic Review*, forthcoming.
- Doucialiagos, C. 1995. "Worker Participation and Productivity in Labor-Managed and Participatory Capitalist Firms: A Meta-Analysis," *Industrial and Labor Relations Review*, Vol. 49, No. 1, pp. 58-77.
- Drago, Robert, Saul Estrin and Mark Wooden. 1992. "Pay for Performance Incentives and Work Attitudes". *Australian Journal of Management*, Vol. 17, No. 2, pp. 217-231.

- Foss, Nicolai J., and Keld Laursen. 2005. "Performance Pay, Delegation and Multitasking Under Uncertainty and Innovativeness: An Empirical Investigation". *Journal of Economic Behavior and Organization* Vol. 58, pp. 246 – 276.
- Freeman, Steven F. 2007. "Effects of ESOP Adoption and Employee Ownership: Thirty years of Research and Experience". Working Paper No. 07-01, Organizational Dynamics Programs, University of Pennsylvania.
- Fudenberg, Drew, and Eric Maskin (1986), "The Folk Theorem in Repeated Games with Discounting or with Incomplete Information," *Econometrica*, 54(3), pp.533-554.
- Green, Colin, and John Heywood. 2008. "Does Performance Pay Increase Job Satisfaction?". *Economica*, Vol. 75, pp. 710-728.
- Holmstrom, Bengt. 1979. "Moral Hazard and Observability", *Bell Journal of Economics*, Vol. 10, No. 1, pp. 74-91.
- Holmstrom, Bengt, and Paul Milgrom. 1994. "The Firm as an Incentive System". *American Economic Review*, Vol. 84, No. 4 (September), pp. 972-991.
- Jensen, Michael C. and Meckling, William H. 1992. "Specific and General Knowledge, and Organizational Structure". In *Contract Economics*, Lars Werin and Hans Wijkander (Eds.). Oxford, UK: Blackwell Publishers.
- Jones, Derek C., and Takao Kato. 1995. "The Productivity Effects of Employee Stock-Ownership Plans and Bonuses: Evidence from Japanese Panel Data". *American Economic Review*, Vol. 85, No. 3, pp. 391-414.
- Kaarsemaker, Eric C.A. 2006. *Employee Ownership and Its Consequences: Synthesis-Generated Evidence for the Effects of Employee Ownership and Gaps in the Research Literature*. York, UK: University of York.
- Kruse, Douglas L., Joseph R. Blasi, and Rhokeun Park. 2010. "Shared Capitalism in the U.S. Economy: Prevalence, Characteristics, and Employee Views of Financial Participation in Enterprises". In Douglas Kruse, Richard B. Freeman, and Joseph R. Blasi (Eds.). *Shared Capitalism at Work: Employee Ownership, Profit and Gain Sharing, and Broad-Based Stock Options*, Chicago and London: The University of Chicago Press.
- Kruse, Douglas, and Joseph R. Blasi. 1999. "Public Opinion Polls on Employee Ownership and Profit Sharing", *Journal of Employee Ownership Law and Finance*, Vol. 11, No. 3 (Summer), pp. 3-25.
- Kruse, Douglas, and Joseph R. Blasi. 1997. "Employee Ownership, Employee Attitudes, and Firm Performance: A Review of the Evidence". In David Lewin, Daniel J.B. Mitchell, and Mahmood A. Zaidi (Eds.). *The Human Resource Management Handbook, Part I*. Greenwich, Connecticut and London, England: JAI Press Inc.

- Kruse, Douglas. 2002. "Research Evidence on Prevalence and Effects of Employee Ownership", Testimony before the Subcommittee on Employer-Employee Relations, Committee on Education and the Workforce, U.S. House of Representatives, February 13, 2002.
- Levine, David and Laura Tyson. 1990. "Participation, Productivity and the Firm's Environment". In Alan Blinder (Ed.). *Paying For Productivity: A Look at the Evidence*. Washington, D.C.: Brookings Institution.
- McCausland, W.D., K. Pouliakas, and I. Theodossiou. 2005. "Some are Punished and Some are Rewarded: A Study of the Impact of Performance Pay on Job Satisfaction". *International Journal of Manpower*, Vol. 26, No. 7/8, pp. 636-659.
- Milgrom, Paul, and John Roberts. 1990. *Economics, Organization and Management*. New York: Prentice Hall.
- Niederle, Muriel, and Lise Vesterlund. 2007. "Do Women Shy Away From Competition? Do Men Compete Too Much?". *Quarterly Journal of Economics*, Vol. 122, No. 3.
- Park, Rhokeun, Douglas Kruse, and James Sesil. 2004. "Does Employee Ownership Enhance Firm Survival?", In Virginie Perotin and Andrew Robinson (Eds.). *Advances in the Economic Analysis of Participatory and Labor-Managed Firms*, Vol. 8, New York: Elsevier Science, JAI, pp. 3-33.
- Prendergast, Canice. 2002. "The Tenuous Tradeoff Between Risk and Incentives." *Journal of Political Economy* Vol. 110, No. 5 (October), pp. 1071-1102.
- Shavell, Steven. 1979. "Risk Sharing and Incentives in the Principal and Agent Relationship", *Bell Journal of Economics*, Vol. 10, No. 1, 55-73.
- Weitzman, Martin, and Douglas Kruse. 1990. "Profit Sharing and Productivity," in Alan Blinder, ed., *Paying For Productivity: A Look at the Evidence*. Washington, D.C.: Brookings Institution.
- Zalusky, John L. 1986. "Labor's Collective Bargaining Experience with Gainsharing and Profit Sharing," IRRA 39th annual proceedings, pp.174-182.
- Zalusky, John L. 1990. "Labor-management Relations: Unions View Profit Sharing." In *Profit Sharing and Gain Sharing*, Myron J. Roomkin, ed. Metuchen, NJ: Scarecrow Press. pp. 65-78.

TABLES

Table 1: Descriptive Statistics

Panel A: Means, Standard Deviations, and Sample Sizes

Variable	Mean	S.D.	Obs.
<i>Dependent Variables</i>			
Preference for Variable Pay	19.560	18.368	12,804
Preference for Company-Based Incentives	0.783	0.412	13,543
Preference for Company-Based Incentives in Next Pay Increase	1.862	0.616	26,626
Preference for Stock Over Cash Incentives	3.076	1.277	7,994
<i>Risk Aversion</i>			
Risk Averse	1.786	0.755	41,695
Base Pay	54.820	41.997	30,457
Wealth	288.327	586.784	32,466
<i>Residual Control</i>			
Decision-Making	0.348	0.476	42,865
Training	0.562	0.496	43,067
Job Security	0.843	0.364	43,807
<i>Perceptions of Co-Workers and Management</i>			
Co-worker Interest and Involvement	4.217	1.599	42,809
Management Trustworthiness	2.328	1.152	42,437

Note: Based on the NBER Shared Capitalism Survey of N = 46,907 workers.

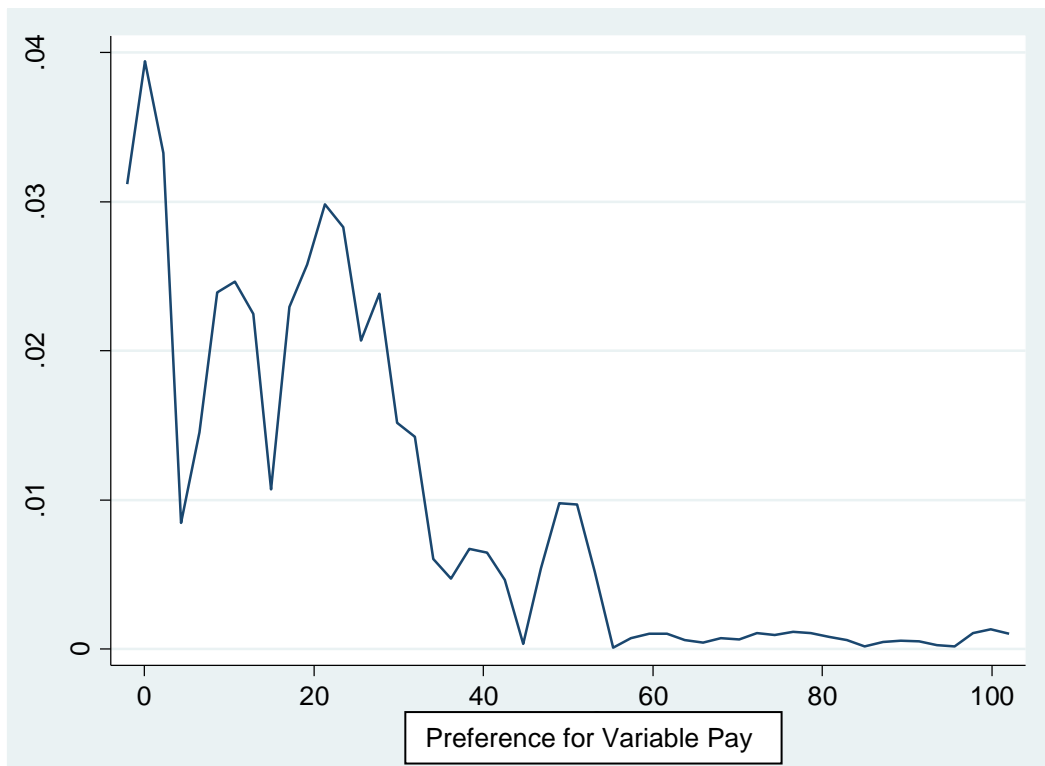
Panel B: Distribution Tables

<i>Preference for Company-Based Incentives in Next Pay Increase:</i>	Freq.	Percent
1 (all fixed wage)	7,143	26.83
2	16,014	60.14
3 (all company-performance-based pay)	3,469	13.03
Total	26,626	100

<i>Preference for Stock Over Cash Incentives:</i>	Freq.	Percent
1 (cash incentives)	1,229	15.37
2	1,279	16
3	2,412	30.17
4	1,804	22.57
5 (stock, options)	1,270	15.89
Total	7,994	100

Note: Based on the NBER Shared Capitalism Survey of N = 46,907 workers.

Figure 1: Kernel Density for *Preference for Variable Pay*



Note: Based on the NBER Shared Capitalism Survey of N = 46,907 workers. We use an Epanechnikov kernel with bandwidth 2.0128.

Table 2: Relationship Between *Preference for Variable Pay* and Risk Aversion, Residual Control, and Perceptions of Co-Workers and Management

Dependent Variable: <i>Preference for Variable Pay</i>	
<i>Risk Aversion</i>	
Risk Averse	-4.173*** (0.265)
Base Pay	0.051*** (0.005)
Wealth	0.002*** (0.000)
<i>Residual Control</i>	
Decision-Making	0.974** (0.399)
Training	0.671 (0.455)
Job Security	0.626 (0.734)
<i>Perceptions of Co-Workers and Management</i>	
Co-Worker Interest and Involvement	0.427*** (0.127)
Management Trustworthiness	0.720*** (0.188)
Worker and Workplace Controls	YES
Constant	10.580*** (2.678)
Observations	8289
Adjusted R-squared	0.220

Note: Results are from a least squares regression model. Robust standard errors in parentheses. *Statistically significant at the .10 level; ** at the .05 level; *** at the .01 level. The model also includes the full set of worker and workplace controls described in the Data and Variables Section.

Table 3: Relationship Between *Preference for Company-Based Incentives* and Risk Aversion, Residual Control, and Perceptions of Co-Workers and Management

	<u>Pr(<i>Preference for Company-Based Incentives</i>=1)</u>
<i>Risk Aversion</i>	
Risk Averse	-0.046*** (0.005)
Base Pay	0.001*** (0.000)
Wealth	0.000*** (0.000)
<i>Residual Control</i>	
Decision-Making	0.031*** (0.007)
Training	0.027*** (0.008)
Job Security	0.034*** (0.013)
<i>Perceptions of Co-Workers and Management</i>	
Co-Worker Interest and Involvement	0.009*** (0.002)
Management Trustworthiness	0.021*** (0.003)
Worker and Workplace Controls	YES
Observations	8580
Pseudo R-squared	0.202

Note: Results are probit marginal effects for Prob(*Preference for Company-Based Incentives*=1) evaluated at the mean of the independent variable or, for binary independent variables, the change in the predicted Prob(*Preference for Company-Based Incentives*=1) when the independent variable increases from 0 to 1 (evaluating all other covariates at their means). Robust standard errors in parentheses. *Statistically significant at the .10 level; ** at the .05 level; *** at the .01 level. The model also includes the full set of worker and workplace controls described in the Data and Variables Section.

Table 4: Relationship Between *Preference for Company-Based Incentives in Next Pay Increase* and Risk Aversion, Residual Control, and Perceptions of Co-Workers and Management

	Pr(<i>Preference for Company-Based Incentives in Next Pay Increase=1</i>) (1)	Pr(<i>Preference for Company-Based Incentives in Next Pay Increase =2</i>) (2)	Pr(<i>Preference for Company-Based Incentives in Next Pay Increase =3</i>) (3)
<i>Risk Aversion</i>			
Risk Averse	0.052*** (0.005)	-0.032*** (0.006)	-0.020*** (0.004)
Base Pay	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
Wealth	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
<i>Residual Control</i>			
Decision-Making	-0.012 (0.008)	0.004 (0.009)	0.008 (0.005)
Training	-0.021*** (0.008)	0.028*** (0.009)	-0.007 (0.005)
Job Security	-0.006 (0.012)	0.025* (0.013)	-0.018** (0.008)
<i>Perceptions of Co-Workers and Management</i>			
Co-Worker Interest and Involvement	0.001 (0.003)	-0.002 (0.003)	0.001 (0.002)
Management Trustworthiness	-0.026*** (0.004)	0.024*** (0.004)	0.002 (0.003)
Worker and Workplace Controls	YES	YES	YES
Observations	13363	13363	13363

Note: Results in each column are multinomial probit marginal effects for Prob(*Preference for Company-Based Incentives in Next Pay Increase =1*), Prob(*Preference for Company-Based Incentives in Next Pay Increase =2*), and Prob(*Preference for Company-Based Incentives in Next Pay Increase =3*), respectively, evaluated at the mean of the independent variable or, for binary independent variables, the change in the predicted probability when the independent variable increases from 0 to 1 (evaluating all other covariates at their means). Robust standard errors in parentheses. *Statistically significant at the .10 level; ** at the .05 level; *** at the .01 level. The models also include the full set of worker and workplace controls described in the Data and Variables Section.

Table 5: Relationship Between *Preference for Stock Over Cash Incentives* and Risk Aversion, Residual Control, and Perceptions of Co-Workers and Management

	Dependent Variable: <i>Preference for Stock Over Cash Incentives</i>
<i>Risk Aversion</i>	
Risk Averse	-0.231*** (0.022)
Base Pay	0.002*** (0.000)
Wealth	0.000*** (0.000)
<i>Residual Control</i>	
Decision-Making	0.140*** (0.031)
Training	0.102*** (0.037)
Job Security	0.175*** (0.058)
<i>Perceptions of Co-Workers and Management</i>	
Co-Worker Interest and Involvement	0.075*** (0.010)
Management Trustworthiness	0.162*** (0.015)
Worker and Workplace Controls	YES
Constant	1.373*** (0.248)
Observations	6766
Adjusted R-squared	0.151

Note: Results are from a least squares regression model. Robust standard errors in parentheses. *Statistically significant at the .10 level; ** at the .05 level; *** at the .01 level. The model also includes the full set of worker and workplace controls described in the Data and Variables Section.