# Company Share Plans - Gift or Incentive?
# Evidence from a Multinational Corporation

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Abstract

Many large listed firms offer workers the opportunity to buy shares of stock at discounted rates through employee stock purchase plans (ESPP). The discounted rate creates a gift exchange, where the firm hopes that workers who accept the gift reciprocate with greater loyalty and effort. But ESPPs diverge from standard gift exchange or efficiency wage models. Employees have to invest some of their own money by purchasing shares at the discounted rate to accept the gift. A sizeable number choose to reject the gift. In addition, the value of the ESPP gift varies with the share price and thus with the performance of the firm and the effort of workers in total. For workers who buy subsidized shares, an ESPP sets up a group incentive pay system analogous to a profit sharing, all-employee stock options, or an employment ownership scheme that makes part of workers' compensation depend on company performance.

Using data from the UK establishments of a multinational firm that places its ESPP at the heart of its employee compensation system, we compare the workplace behavior of employees who join the ESSP Plan with that of observationally equivalent workers who do not join the plan. We find that workers who purchase shares at subsidized prices work harder for longer hours and have lower quit and absence rates than workers who do not join the plan, but are no more involved in co-monitoring the performance of fellow employees than non-Plan members. We also find some workplace or peer effects in the decision to join the plan and in workplace behaviour. These findings highlight the distinct place of subsidized share purchase schemes in the spectrum of gift exchange and group incentive pay systems.

Key-words: share ownership; job search; quits; sickness absence; effort; gift exchange
JEL-codes: J24; J33; J54; J63; M52

Many large listed firms have employee stock purchase plans (ESPP) that offer workers the opportunity to buy shares of stock at discounted rates. The discount is generally high enough that workers who participate in an ESPP can make a profit even if the share price does not change or falls moderately. In this sense, an ESPP resembles a gift exchange in which the firm offers workers a gift in the hope that this induces productivity-enhancing or cost-reducing behavior that increases profits and pays for the gift. But ESPPs are not standard gift exchanges. Workers have the choice of accepting or rejecting the gift. They must put down some of their own money to buy the discounted shares and must hold the shares for a specified period before they can cash in on the gift. During that time the share price/value of the gift can vary.

For the workers who join an ESPP plan, the plan resembles a group incentive contract like profit-sharing, gain-sharing, all-employee stock option plans, or some other employee ownership scheme. Workers as a group have an incentive to be more productive and raise the share price but they and the firm have to overcome the free rider problem in order to make the group incentive work. But an ESPP differs from a standard group incentive system. It covers only workers who join the plan rather than all workers. By giving workers the choice of accepting or rejecting the gift/incentive contract, an ESPP creates a dual labor market within the firm between workers with an ownership stake that makes their incomes depend on how the stock market values the firm and workers paid fixed wages.

Most ESPP plans offer sufficiently large discounts on share prices that should make them financially appealing to most employees. Even so, studies of ESPPs find that many workers turn down the gift of the subsidized shares (Engelhardt and Madrian, 2004; Pendleton et al. 2009, Babenko and Ren, 2010, Bryson and Freeman 2010a). Our analysis (Bryson and Freeman 2010a) found that approximately half of workers in ShareCo (a pseudonym), a multinational firm that places its ESPP at the heart of its employee compensation system, did not join the share plan and that many others delayed joining when it was in their financial interest to join immediately. Some workers had economically rational reasons for not joining. They were planning to leave the firm shortly or were sufficiently cash-strapped to make it difficult to finance the purchase of shares. But others seemed to reject the gift for reasons more aligned with behavioral economics findings about hyperbolic discount rates, procrastination, and the influence of peers rather than economic calculation.

In this paper we compare the work behavior of employees who joined the ShareCo ESPP with that of observationally equivalent workers who did not join the plan. Our analysis is based on a survey we conducted of the firm's UK and Ireland employees in 2010. Section one describes ShareCo's share plan, the survey we administered to workers, and the statistical model we use to measure differences in behavior. Section two gives our estimates of the differences in behavior between observationally equivalent workers who accept and reject the gift/incentive and our assessment of whether the differences reflect responses to the ESPP or the selectivity of who joins. Section three concludes with a theoretical interpretation of the differences among pure gift exchanges, group incentive systems, and employee stock purchase plans.

## 1.The ShareCo Plan, Data, and Estimating Model

ShareCo is a multinational business services corporation whose employee share purchase plan is a major part of its compensation package. Most of the firm's employees are white collar workers, who receive considerable information from the firm about the plan. The plan is a Shareholder Incentive Plan (SIP) that qualifies for tax exemptions under United

Kingdom government rules so that workers benefit from tax breaks as well as the firm's subsidizing the price of shares.[1] All employees paying tax in the UK can join the plan without regard to age, tenure or hours worked. SIP rules provide tax advantages for employees who contribute a minimum of £10 each month up to a maximum amount of £125 or 10 per cent of their monthly pre-tax earnings, whichever is the lower amount, to purchase shares. The money spent on shares is exempt from income tax and national insurance contributions as long as the employee retains the shares for at least five years. The employee who sells the shares in the first two years after purchase pays income tax and national insurance on the full value of the shares at the time they are sold. Shares sold in years 3 or 4 are taxed on the value of the shares when the employee bought them or at the current market value, whichever is lower. Thus there is a substantial tax break for holding the shares for five or more years and a smaller tax advantage to retaining them for three years before selling them.

ShareCo matches each share an employee purchases up to a value of £125 per month on a one-for-one basis. By matching share purchases one for one, ShareCo effectively gives one free share for every share the worker buys or alternatively gives a gift of half the price of every share the worker buys (up to the specified limit). The matching shares are taxed in a similar way as shares bought under the SIP rules. Employees can invest their dividends in dividend shares. Barring a catastrophic fall in share prices, most employees should find the ESPP financially attractive. A worker holding shares for three years would double their money if the share price held steady due to the gift of matching shares. The worker would break even if the price fell to one half its purchase price.[2]

In November-December 2010 we surveyed employees in the UK and Irish business operations of ShareCo.[3] With the assistance of company management we designed a web-based questionnaire and invited the company's 1,740 employees in the UK and Ireland to visit a password-protected survey website and fill out the questionnaire. Because we had company support for the survey, we obtained a high response rate. Seventy-two percent of employees (1,251) visited the survey website, 96% of cent of whom answered the survey (1,205), giving a 69% response rate relative to the total workforce.

The survey contained 72 questions divided into subsets relevant to persons with different share plan membership and purchase histories. Respondents answered the appropriate subsets so no one answered the full 72 questions. The survey asked about employee demographics (age, gender, household circumstances, education), attitudes toward risk and sociability[4]; the job (wages, occupation, hours worked, whether the worker was paid

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[1] Firms following these tax guidelines have discretion as to the precise nature and generosity of the plan, including offering free shares. ShareCo's matching scheme is typical of SIP plans in the UK. We thank to Michael Landon for discussion of this point.

[2] These are not "phantom shares" because they do confer voting rights. ShareCo's shareholding employees have the right to instruct the trustee holding their shares how to vote at shareholder meetings, though the total amount of stock held by employees is too small to be a major factor in meetings.

[3] As a multinational ShareCo has operations in several other countries. The pecuniary incentive to join the share plan differs across countries because the firm offers different matching rates to workers and because each country gives different tax advantages for ownership. The Australian scheme was more generous, while the South African and US schemes were considerably less attractive than the UK SIP (Bryson and Freeman, 2010).

[4] The risk scale is based on the question "Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?" where 1="unwilling to take risks" and 10="fully prepared to take risks".The sociability scale counts the number of times employees ticked a box in response to the following question: "Do you take part in the following activities, either as part of your job or outside work? Please select as many as apply to you...Member of a trade/professional body or association; work in schools, colleges, universities; involved in charities or voluntary bodies; member of a social, sports or arts club; active member of a political party; active member of a religious group; socialising with co-workers outside of work".

hourly, on a salary basis, or on a salary with a commission); the business unit and office in which the employee worked (which allows us to compare behavior within workplaces); membership in the share plan, share holdings, contributions; questions about attitudes towards the job and the company, the factors that influenced decisions to join or not join; and what is critical to this study, effort and time at work, absences, job search, and prospective quits, and whether or not they intervened when they saw other workers not working as they should.

Estimating differences in worker behavior

As a first step in examining the potential impact of accepting the gift of the subsidized shares on worker behavior we estimate differences in the workplace behavior of workers who join the ESPP and those who do not. We use multivariate regressions with covariates for demographic and job characteristics and for some employee attitudes to isolate differences in work behavior associated with plan membership and differences due to differences in observable personal and job-related factors.[5] Our baseline equation relates the work behavior of worker i to plan membership, conditional on personal characteristics and the characteristics of their job:

1)

$$E_i = \beta_1 Plan_i + \beta_2 PCMEMB_i + \beta'_x X_i + \varepsilon_i$$

where Ei measures worker behavior defined in various ways for individual i, Plani measures the plan status of the individual, the Xi's are a vector of individual-level demographic and job characteristics; PCMEMBi is a measure of individual i's perception of the percentage of employees in the business unit who belong to the Plan[6], and εi represents the error term.

In this specification β1 estimates the effect of plan participation on worker behavior while β2 estimates the potential indirect effect on behavior from working in close proximity with persons whom the worker believes to be plan members.

To further narrow the comparison group, Equation 2) adds to the regression measures of earnings and indicators of the strength of the psychological contract between employee and employer as indicated by organizational loyalty, and perceptions of fair pay:

2)

$$E_i = \beta_1 Plan_i + \beta_2 PCMEMB_i + \beta_3 Wage_i + \beta_4 Loyal_i + \beta_5 Fair_i + \beta'_x X_i + \varepsilon_{if} ,$$

By adding variables for organizational loyalty and commitment and the level of wages and workers' perception of whether they are paid fairly[7] , we compare workers with similar

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5 Results are not sensitive to the use of alternative estimation techniques.

6 Responses are coded in seven bands from 'none' through to 100% with the mid-band being 40-59%.

7 These measures are the log annual wage and two scales capturing employees' degree of identification with the firm. The first of these is an additive scale capturing employees' sense of loyalty and attachment to the firm. Employees are invited to code themselves along a five-point Likert scale running from "strongly agree" to "strongly disagree" in response to the statements "I feel very loyal to this organization", " I find that my values and the company's values are very similar" and "Overall this company is a good place to work". The scale is scored from 3 (low attachment) to 15 (high attachment) and a scale reliability coefficient of 0.84. The second is an additive scale based on the same Likert-scale coding in response to the statements "I am fairly paid relative to my ShareCo colleagues in a similar job" and "I am fairly paid relative to employees with similar jobs in other companies". The

financial and non-financial parts of the compensation package independent of the share purchase scheme. If the relationship between worker behaviour and plan membership is picking up effects that are due to those other aspects of a job, addition of these measures would reduce the estimated coefficient on plan membership.

For each dependent variable we also estimate models where we add dummy variables for the work unit of the employee.[8] Inclusion of work unit dummies means that our estimate of differences in behavior between workers who joined the plan and those who did not join is based on behavior within the same office/business units. This controls for unobservable fixed elements of the working environment which might induce plan participation and affect behavior. If the relationship between our dependent variables and plan membership is picking up effects common to a workplace, inclusion of these dummies would reduce the estimated β1 coefficient.

Causal impacts vs selectivity

Estimates of equations 1 and 2 will pin down the β1 coefficient that measures differences in behavior between observationally equivalent persons who have joined the ShareCo stock purchase plan and those that have not. But estimated differences in work behavior need not be due solely (or at all) to responses to the ESPP. Accepting the gift/incentive may induce people to change their behavior along the lines of gift-exchange/efficiency wage or of group incentive models of behavior. There is sufficient evidence from econometric and laboratory studies to make such an interpretation of differences in behavior a reasonable one.[9] But selectivity of persons into the ShareCo stock purchase plan based on characteristics of workers that are unobservable to us could also explain differences in work behavior: a worker who is gungho about their job and the firm may accept the gift but not change their behavior when they join the ESPP.

We try to better identify the causal link from accepting the share plan in two ways.

First, we asked employees on our survey about the causal impact of the share plan on their behavior. Some economists may be dubious that workers' self-reports on their responses to a particular company program is credible evidence that the program works. But there is no incentive for workers to "game" the survey, which is anonymous and presumptively incentive compatible. In our earlier study workers said that they paid little attention to what the human resource department told them about the plan (Bryson and Freeman, 2010a). If members of the share plan said that it did not affect their behavior, we would find it hard to argue that it did. If they say it has affected them, and the direction of effects is consistent with the observed differences in behavior between workers who join the plan and those who do not,

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scale, which has a reliability coefficient of 0.75, captures the degree to which employees feel they are fairly paid. Correlations between the five items used for the two scales were explored using principal components factor analysis with varimax rotation. The items loaded on the two dimensions used to compute these two scales with eigen factors of 1.17 and 2.72 respectively.

[8] We use the intersection of ShareCo's 18 business unit and 16 office location to obtain a closer fix on likely "work groups" where employees may interact regularly. This yields 46 work units with more than one person.

[9] Laboratory experiments identify a clear causal relationship between efficiency wages and effort (Fehr et al., 1996) that confirm the "fair wage-effort" hypothesis (Fehr et al., 1993: 437). But Gneezy and List (2006)'s field experiment found the positive impact of the "gift" on effort does not persist over time; and Hennig-Schmidt et al. (2010)'s field experiment find no change in work effort associated with changes in one's own wage and suggest in a follow-up laboratory experiment that employee reciprocity requires knowledge about the surplus at stake. By contrast, Fehr and Götte (2008) find increased wages increase the overall labour supply in total and the hours of work provided, but not the effort per hour.

surely the combined information should move one's prior in the direction of the program having a real effect.

Second, we use an instrumental variables approach to try to tease out the causal impact of plan membership. For this analysis we need a valid instrument. The best we could come up with is administrative data on the proportion of persons at a work-site who were plan members in the past. This is correlated with the plan membership of workers in 2010 and arguably should be independent of their workplace behavior, given that we include workers' perceptions of the current proportion who are members of the plan at their work site.

2.Estimated Differences in Behaviour

Table 1 presents estimates of β1 for eight related measures of workplace behavior. The columns under the title "OLS regression estimates" give the β1 coefficients from equations 1 and 2 without inclusion of dummy variables for work unit. The columns under the title "Fixed Effects Models" give the β1 coefficients for the models differentiated as 1F and 2F with inclusion of the dummy variables for work unit. The key finding in the table is that workers who join the share plan perform better than those who do not join the share plan in all but one area of work behavior regardless of the model specification. The exception is in their response to observing a worker who is not doing a very good job. Here members and non-members do not differ in their behavior.

The first dependent variable in the table relates to work effort relative to others. It is derived from answers to two survey question about work effort. The first question is: "How hard would you say you work?" with responses on a 1 to 10 scale where 10 is "very hard" and 1 is the opposite. The second questions is about the effort of other workers: "At your workplace, how hard would you say that people work?" with responses coded on the same scale as above. Plan members reported an average effort of 8.95. Non-members of the Plan reported an average effort of 8.77 – a difference that is statistically significant at a 99% confidence level. By contrast, both members and non-members rated the effort of other workers similarly. Members give a mean score of the effort level of others of 7.71 and non-members give a mean score of 7.72 . Differences in working harder relative to others between members and non-members thus reflect differences in the own work effort question.

The regressions summarized in the table show a significant member/non-member difference in working hard relative to others in model 1, where we control for demographic and job characteristics; in model 2, where we add the measures of wages, perceptions of fair pay and organizational commitment, and in the analogous models that included dummy variables for work unit fixed effects.

The second dependent variable in table 1 relates to hours worked relative to contractual hours worked. Sixty-seven percent of plan members compared to 44 percent of non-members reported typically working more than their contractual hours each week. Twenty-five percent of plan members said they typically worked at least 10 hours above contractual hours compared to only 11 percent of non-members. The regressions show the positive association between plan membership and working above contractual hours is robust to demographic and job controls in models 1 and 2 and to the addition of workplace fixed effects. Since most workers at ShareCo are not paid overtime[10], the long-hours of work for plan members cannot be attributed to an overtime premium.

[10] Eighty-six percent of employees receive no paid overtime in any given month (personal communication from the company).

The third and fourth measures of workplace behavior in the table come from the question "how many days have you been absent from work in the last six months (excluding vacation)?". Plan members took less absence than non-members: 43 percent had taken some absence compared with 57 percent of non-members. Among workers who had been absent at least once, members averaged 3.7 days absent compared to an average of 4.4 days for non-members. The dependent variable in regression 3 is a dichotomous variable for any absences. The dependent variable in regression 4 is days absent. Both measures show a statistically significant negative association between plan membership and absence behavior across all model specifications.[11]

The fifth and sixth measures of work-related behaviour relate to turnover. The dependent variable in the fifth regression comes from a question whether the worker expected to leave the firm voluntarily within 12 months. Two percent of plan members compared to 9 percent of non-members said they intended to leave. This association holds up in all specifications. The magnitude and significance of the coefficient on plan membership declines in model 2 compared to model 1 because loyalty to the firm and perceptions of fairness at the firm are significantly associated with lower expected quit behavior and positively correlated with joining the ESPP. The dependent variable in the sixth regression comes from the question: "how likely is it that you will actively look for a job with another organization in the next 12 months?" The regressions show that plan members were significantly less likely than non-members to anticipate actively seeking work elsewhere in the coming 12 months, a result that holds up in all specifications.

If the motivation for staying with the firm stems from maximizing financial returns from share plan participation, the link between membership and lower quit and job search probabilities would likely be strongest as workers approach five years in the share plan since that is when sale of shares are most tax-advantaged. We tested this proposition by replacing the membership dummy with a variable identifying the time employees had been in the share plan and found that the effect of plan membership on the likely quit behaviour and searching for another job do not differ significantly between members with under five years in the plan and members with at least five years in the plan.[12]

The last two variables in table 1 reflect worker responses to seeing another employee not working as they should. We took the question from the NBER shared capitalism questionnaire (Blasi, Freeman, Kruse, 2010) : "If you were to see a fellow employee not working as hard or as well as he or she should, how likely would you be to...discuss this with the employee; speak to your supervisor or manager; talk about it in a work group or team; do nothing", with possible responses from "not at all likely" through to "very likely". We constructed two measures from these questions. The first took the “do nothing” response and coded it as 0 for employees "very likely" to do nothing 1 for employees who gave other responses. The second sums responses to the first three questions with "not very likely" scoring 0, through to "very likely" scoring 3 to construct an additive scale.

Because workers are more likely to take action the easier it is for them to observe how hard co-workers are working and are less to likely to intervene when they are closely supervised (Freeman. Kruse, Blasi, 2010) we include these variables as additional independent variables in this equation,

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[11] These results are robust to the use of negative binomial regression analysis of number of days absent treated as a continuous variable.

[12] Dropping non-members from these models confirms no significant difference in the quit and job search probabilities of members below and above the five year threshold. These results are available from the authors on request.

Regressions seven and eight in the table show little differences between plan membership and greater co-worker monitoring. The plan member coefficients tend to be negatively signed. These results differ from those in Freeman, Kruse, and Blasi (2010), which found that workers paid through group incentive systems were far more likely to monitor fellow workers and intervene when they find other workers performing poorly. The likely reason for this is the division within an ESPP between workers who have joined the plan and those who have not. In a company where all workers are covered by the same group incentive system, workers can press fellow employees to do their best in the interest of all. By contrast, in a company where only some workers have aligned their income with firm performance, the division of workers into members and non-members may make it more difficult for some to press others. This suggests that members would engage in more co-monitoring when they are in a workplace with relatively more members. We tested this explanation by estimating the co-monitoring equation separately for members and non-members. The coefficient on PCMEMB was significantly positive for members but not for non-members, consistent with the view that employees engage in more co-worker monitoring when they think are more workers are in the plan and should therefore reciprocate on the gift than when they think that more co-workers have rejected the gift/incentive exchange.

Assessing causality

We begin with employee reports on their assessment of how the share plan impacts their quit behavior and work motivation. We asked workers if the ShareCo share plan "reduces the chance that you will leave the firm". Sixty-six percent of plan members answered “to some extent” or “to a great extent” while by contrast, just 24 percent of non-members so reported. One interpretation of the 24% number is that even non-member workers view the plan as an indicator that ShareCo is a good employer, and are more likely to stay. Another interpretation is that the 24% reflects some baseline fraction of workers who intend to stay with the firm and latch onto the reason for staying that the question poses. The key statistic is the 42 percentage point difference between plan members and non-members who cite the plan as a factor that reduces the chance of exiting the firm. To probe this interpretation we regressed the dichotomous variable of whether or not workers cited the plan as reducing their chances of leaving by a lot or to a great extent on plan membership in multivariate regression models 1 and 2. The regression estimate of the effect of plan membership on citing the plan as reducing the chance of leaving in the future was XXX, smaller than the difference in means but still large and statistically significant.

We also asked workers if the ShareCo share plan "increases your motivation". Sixty percent of members said "to some extent" or "to a great extent", compared to 21 percent of non-members, which gives a 39 percentage point difference. This difference also remains large and significant in regression analyses based on the models in equations 1 and 2. Workers at least believe that their joining the plan affects their work behavior.

Our second mode of assessing the possible causal impact of share plan participation on employee behaviour is to instrument plan membership in 2010 on a variable that arguably affects membership but does not affect 2010 behavior. Using ShareCo administrative data we obtained the number of employees eligible for and participating in the share plan by office and business unit for each year from 2007-2010. We instrumented employees' share plan membership in 2010 on membership in their office/business unit in 2009. The assumption is that membership in their office a year ago will be associated with membership

in 2010[13] but, having conditioned on employees' perceptions of plan membership in their work unit in 2010, not with workplace behaviors. Table 2 compares OLS estimates of plan membership on worker effort with estimates of plan membership instrumented by the lagged membership measure. Columns 1 and 2 show that the membership coefficient on working harder rises when we instrument for membership but that the coefficient is less precisely estimated than in the OLS case. Columns 3 and 4 indicate that instrumenting membership also increases the coefficient on membership for working long hours, but also increases its precision. In columns 5 and 6 plan membership is not significantly associated with worker co-monitoring in the OLS or IV estimates. The plan membership coefficient for absence is negative and significant in column 7. Again the size of the coefficient grows in column 8 when instrumented but it is also less precisely estimated. The story is much the same in columns 9 and 10 for the probability of quitting voluntarily. The perception that the share plan reduces the likelihood of quitting is positively and significantly associated with being in the plan (column 11), and remains so when membership is instrumented (column 12). Finally the negative association between plan membership and job search in column 13 is more pronounced in the IV estimates and remains on the margins of statistical significance.

These results suggest that treating plan membership as exogenous may understate the causal impact of plan membership, but a more plausible interpretation of the increased coefficient is that the parameter recovered with the IV estimates is the local average treatment effect (LATE) and is thus not directly comparable with the average treatment-on-the-treated effect recovered through the OLS (Blundell et al., 2005). Plan effects may be larger for high ability workers than for low ability workers because high ability workers are better able to repay the gift (Englmaier and Leider, 2008).

## 3.Conclusion

This study has found within the same firm, and even within the same work unit (a business unit grouping within a workplace) that employees who accept the gift of subsidized shares of stock via an ESPP have superior work performances along several dimensions – working hard, putting in extra hours, showing less likely turnover, having lower absences – than employees who reject the gift. These results resemble the findings in studies of gift exchanges/efficiency wages that find that workers respond to gifts or higher wages given up front by reciprocating with better performance in the future and to studies of group incentive systems that find that workers respond to group incentives with better performance as well. What is distinct about our analysis is that the findings are based on the responses of workers who accept/reject the treatment rather than on comparisons of workers across workplaces that give all workers the same treatment.

Employee stock purchase plans, gift exchanges, and group incentive systems have one overriding similarity. None of these schemes could succeed if all workers followed the logic of free-riding behavior. Free riders would accept higher wages in a gift exchange model and do nothing to improve the performance of the firm. Free riders would purchase subsidized shares and do nothing to improve performance and raise the share price. In both cases the firm would be out of pocket for its initial gift and would either stop granting the gifts in the future or lose market share to firms that paid fixed wages. The economics of a group

[13] This variable strongly predicts individual share plan membership in 2010 (the coefficient is significant at a 99.9% confidence level in the first stage membership equation).

incentive system is a bit different. Free riders would not respond to the group incentive so it would have no effect on output but, assuming the incentives were set correctly, this would cost the firm nothing. The firm could leave the system in place or not. It would not matter.

That these systems are found in labor markets throughout the world and are associated with better performance implies that all three overcome the free rider incentive in some fashion. The differences among them are subtle.

In a gift exchange/efficiency wage model, the firm bears the initial risk that employees will not reciprocate. The workers who reciprocate bear a risk that they may do too much in response to the gift and not get their full share of their extra effort. But ideally the system will equilibrate the level of gifts to produce benefits for both workers and the firm which balances the marginal costs and benefits to the worker and firm. In a group incentive system, the firm bears no initial risk. Workers who respond to the incentives get a share of the benefits. If the firm has set the incentives appropriately the system will produce benefits for workers and firms with each balancing their marginal benefits and costs.

Abstracting from the mechanisms by which firms/workers overcome free-riding and risk issues, an ideal gift exchange system and an ideal group incentive system will produce the same outcomes, with a size of the gift/parameter for group incentive pay that leaves no "extra output" on the table.

An employee share purchase system has attributes of both systems. It offers the gift of subsidized shares but it also offers group incentive pay since the value of shares will be higher the higher workers' effort. It also differs from gift and group incentives by requiring workers to put up some of their own money to take advantage of the gift. If all workers join the plan, the ideal ESPP would produce the same outcome as the ideal gift exchange and group incentive systems. Tax incentives aside, the firm would subsidize shares in such a way as to leave no extra output on the table.

The part of an ESPP that offers unique insight into behavior is its allowing workers to accept or reject the gift of matched shares. Again abstracting from the mechanisms that overcome free riding, workers who accept the plan presumably have lower disutility of work than those who reject the plan. By allowing workers to choose to reciprocate or not, the ESPP is presumptively socially more efficient than gift exchange or incentive systems that treat all workers the same.

References

Abeler, J., Altmann, S., Kube, S., and Wibral, M. (2010) "Gift Exchange and Workers' Fairness Concerns: When Equality is Unfair", Journal of European Economic Association, 8, 6: 1299-1324

Akerlof, G. (1982) 'Labour contracts as partial gift exchange', Quarterly Journal of Economics, 97: 543–569

Akerlof, G. (1984) 'Gift Exchange and Efficiency-Wage Theory: Four Views', American Economic Review 74: 79 – 83

Ariely, D., Gneezy, U., Loewenstein, G.and Mazar, N. (2009) 'Large Stakes and Big Mistakes', The Review of Economic Studies 76: 451-469

Babcock, P., Bedard, K., Charness, G., Hartman, J. and Royer, H. (2011) Letting Down the Team? Evidence of Social Effects of Team Incentives, NBER Working Paper # 16687, Cambridge, Mass.

Babenko, Ilana and (2010) Do Non-executives have information: evidence from employee stock purchase plans

Bhagat, Sanjai James A. BRICKLEY and Ronald C. Lease, «Incentive Effects of Stock Purchase Plans, Journal of Financial Economics 14 (1985) 195-215. North-Holland

Bishop, J. (1987) `The Recognition and Reward of Employee Performance', Journal of Labour Economics, Vol. 5, No. 4, s36-s56.

Blasi, J.R. , Freeman, R. B., Machin, C. and Kruse, D. L. (2010) 'Creating a Bigger Pie? The Effects of Employee Ownership, Profit Sharing and Stock Options on Workplace Performance', Chapter 4 in D. Kruse, R. Freeman and J. Blasi (eds.) Shared Capitalism at Work: Employee Ownership, Profit and Gain Sharing, and Broad-based Stock Options, pp. 139-166, University of Chicago Press

Blinder, A. S. (1990) Paying for Productivity: A Look at the Evidence, Washington D.C: Brookings Institution

Blundell, R., Dearden, L. and Sianesi, B. (2005) 'Evaluating the effect of education on earnings: models, methods and results from the National Child Development Survey' Journal of the Royal Statistical Society Series A, 168, 3: 473-512

Brown, S., Fakhfakh, F. and Sessions, J. G. (1999) 'Absenteeism and Employee Sharing: An Empirical Analysis Based on French Panel Data, 1981-1991', Industrial and Labour Relations Review, 52, 2: 234-251

Bryson, A. and Freeman, R. B. (2010) 'To join or not to join? Factors influencing employee share plan membership in a multinational corporation', in T. Kato (ed.) Advances in the

Economic Analysis of Participatory & Labour-Managed Firms, Volume 11, pp.1-22, Emerald Group Publishing Limited

Coles, M., Lanfranchi, J., Skalli, A. and Treble, J. (2007) 'Pay, technology, and the cost of worker absence', Economic Inquiry, 45, 2: 268-285

Duflo, E. and Saez, E. (2002) 'Participation and investment decisions in a retirement plan: the influence of colleagues' choices', Journal of Public Economics, 85: 121-148

Englmaier, F. and Leider, S. (2008) 'Gift Exchange in the Lab – It is not (only) how much you give', mimeo

Engelhardt, Gary V.and Brigitte C. Madrian Employee Stock Purchase Plan NBER Working Paper No. 10421 April 2004

Fehr, E. and Gächter, S. (2000), 'Cooperation and Punishment in Public Goods Experiments', American Economic Review, 90: 980-994

Fehr, E., Gächter, S. and Kirchsteiger, G. (1997), "Reciprocity as a contract enforcement device: experimental evidence," Econometrica, 65: 833 – 860.

Fehr, E. and F. Götte (2008), "Do Workers Work More if Wages are High? Evidence From a Randomized Field Experiment", American Economics Review, 97, 298 – 317

Fehr, E., E. Kirchler, A. Weichbold, and S. Gächter (1998), "When Social Norms Overpower Competition. Gift Exchange in Experimental Markets," Journal of Labor Economics, 16, 312–354.

Fehr, E., Kirchsteiger, G. and Riedl, A. (1993) 'Does Fairness Prevent Market Clearing? An Experimental Investigation' Quarterly Journal of Economics, 108, 437–460

Freeman, R. B., Kruse, D. L. and Blasi, J. R. (2010) 'Worker Responses to Shirking Under Shared Capitalism', Chapter 2 in D. Kruse, R. Freeman and J. Blasi (eds.) Shared Capitalism at Work: Employee Ownership, Profit and Gain Sharing, and Broad-based Stock Options, pp. 77-104, University of Chicago Press

Frey, B. S. and Oberholzer-Gee, F. (1997) 'The Cost of Price Incentives: An Empirical Analysis of Motivation Crowding-out', American Economic Review, LXXXVII

Gibbons, R. and Katz, L. (1992) 'Does Unmeasured Ability Explain Inter-Industry Wage Differentials?', Review of Economic Studies, 59, 3: 515-35

Gneezy, U. and J. A. List (2006) 'Putting behavioural economics to work: testing for gift exchange in labour markets using field experiements', Econometrica, Vol. 74, 5: 1365-1384

Gneezy, U. and Rustichini, A. (2000) 'Pay Enough or Don't Pay at All', Quarterly Journal of Economics 115(3): 791-810

Hammer, T. H., Landau, H. J. and Stern, R. N. (1981) 'Absenteeism when workers have a voice: the case of employee ownership', Journal of Applied Psychology, 66, 5: 561-73

Hennig-Schmidt, H., Rockenbach, B. and Sadrieh, A. (2010) "In Search of Workers' Real Effort Reciprocity - A Field and A Laboratory Experiment", Journal of the European Economic Association, 8 (4): 817-837

Krueger, A. B. (1991) 'Ownership, Agency and Wages: An Examination of Franchising in the Fast-Food Industry', Quarterly Journal of Economics, 106: 75-101

Kruse, D. L. (1993), 'Does profit sharing affect productivity?', NBER Working Paper No. 4542, Cambridge, Mass.: National Bureau of Economic Research

Kruse, D. and Blasi, J. (1995) Employee Ownership, Employee Attitudes and Firm Performance, National Bureau of Economic Research Working Paper 5277

Kruse, D., Blasi, J. and Freeman, R. (2011) "Does Shared Capitalism Help the Best Firms Do Even Better?", mimeo

Lazear, E. (2000) 'Performance pay and productivity', American Economic Review, 90, 1346-1361

Maximiano, S., Sloof, R. and Sonnemans, J. (2007) "Gift exchange in a multi-worker firm", The Economic Journal, 117: 1025-1050

Merriman, K. K. and Deckop, J. R. (2007) 'Loss aversion and variable pay: a motivational perspective', International Journal of Human Resource Management, 18, 6: 1026-1041

Mitchell, D.J.B., Lewin, D., and Lawler, E.E. III. (1990), 'Alternative pay systems, firm performance and productivity', in Blinder, A.S. (ed.), Paying for Productivity. A Look at the Evidence, Washington D.C.: Brookings Institute

Murphy, K. M. and Topel, R. H. (1990) 'Efficiency Wages Reconsidered: Theory and Evidence' in Y. Weiss and G. Fishelson (eds.) Advances in the Theory and Measurement of Unemployment, New York: Macmillan, pp. 204-240

Non, A. (2010) "Gift exchange, incentives and heterogeneous workers", Tinbergen Institute Discussion Paper 2010-008/1

Oyer, P. and Schaefer, S. (2005) "Why do some firms give stock options to all employees? An empirical examination of alternative theories", Journal of Financial Economics, 76, 99-133

Pendleton, A. and Robinson, A. (2010) "Employee Stock Ownership, Involvement, and Productivity: An Interaction-Based Approach", Industrial and Labor Relations Review, 64, 1: 3-29

Pendleton, A. and Robinson, A. (2011) "The Economic Effects of Multiple Incentives", mimeo

Prendergast, C. (2008) 'Work Incentives, Motivation and Identity', American Economic Review Papers and Proceedings, 98: 2, 201-205

Prendergast, C. (1999) ‘The provision of incentives in firms’ Journal of Economic Literature, 37, 1: 7 – 63

Raff, D. and Summers, L. (1987) ‘Did Henry Ford pay efficiency wages?’, Journal of Labour Economics, 5, 2: 557-86

Salop, S. (1979) ‘A Model of the Natural Rate of Unemployment’, American Economic Review, 69: 117-25

Salop, J. and Salop, S. (1976) ‘Self-selection and Turnover in the Labour Market’, Quarterly Journal of Economics, 90, 4: 619-27

Shapiro, C. and Stiglitz, J. (1984) ‘Equilibrium Unemployment as a Worker Discipline Device’, American Economic Review 74: 433 - 44

Weiss, A. (1980) ‘Job Queues and Layoffs in Labour Markets with Flexible Wages’, Journal of Political Economy, 88: 526-8

Weitzman, M.L. and Kruse, D.L. (1990), ‘Profit sharing and productivity’, in Blinder, A.S. (ed.), Paying for Productivity. A Look at the Evidence, Washington D. C.: Brookings Institute

Table 1: Estimated Differences in Behavior of Workers Who Join the ShareCo ESPP and Observationally Equivalent Workers Who Do Not Join the Plan

| | OLS regression Models | | Fixed Effects Models, with Work Unit Dummy variables | |
|---|---|---|---|---|
| | Model (1) | Model (2) | Model (1F) | Model (2F) |
| 1) How hard workers work relative to how hard other employees work | | | | |
| Member | 0.256 (2.27)** | 0.315 (2.78)*** | 0.288 (2.36)** | 0.336 (2.77)*** |
| Adj R-sq | 0.07 | 0.07 | 0.08 | 0.10 |
| | | | | |
| 2) Hours worked relative to standard hours | | | | |
| Member | .113 (2.72)*** | .095 (2.27)** | .112 (2.58)*** | .093 (2.13)** |
| Adj R-sq | 0.44 | 0.45 | 0.46 | 0.46 |
| | | | | |
| 3) Any absence | | | | |
| Member | -.072 (2.04)** | -.059 (1.69)* | -.077 (2.05)** | -.061 (1.61) |
| Adj R-sq | 0.10 | 0.10 | 0.10 | 0.11 |
| | | | | |
| 4) Days absent | | | | |
| Member | -.459 (3.54)*** | -.438 (3.32)*** | -.433 (3.16)*** | -.395 (2.84)*** |
| Adj R-sq | 0.10 | 0.10 | 0.10 | 0.11 |
| | | | | |
| 5) Voluntary Quits | | | | |
| Member | -.042 (2.76)*** | -.033 (2.32)** | -.043 (2.57)** | -.031 (2.01)** |
| Adj R-sq | 0.06 | 0.13 | 0.03 | 0.11 |
| | | | | |
| 6) Job search | | | | |
| Member | -.314 (4.28)*** | -.198 (3.24)*** | -.319 (4.15)*** | -.196 (3.03)*** |
| Adj R-sq | 0.16 | 0.40 | 0.18 | 0.41 |
| | | | | |
| 7) Do-Nothing in response to seeing another worker not doing good job (categorical) | | | | |
| Member | .021 (0.89) | .029 (1.20) | .023 (0.94) | .032 (1.28) |
| Adj R-sq | 0.05 | 0.06 | 0.08 | 0.08 |
| | | | | |
| 8) Additive Measure of Intervening with another worker who is not doing good job | | | | |
| Member | -.203 (1.43) | -.259 (1.82)* | -.164 (1.09) | -.242 (1.64) |
| Adj R-sq | 0.17 | 0.20 | 0.18 | 0.22 |

Notes:
(1) How hard workers work
The working harder scale runs from (-10,10). It is the difference between workers assessment of how hard they work relative to their perception of how hard co-workers work, as described in the text. Model 1 is the estimate of equation 1 with the following controls: age (6 dummies); male; black; degree; professional qualification; household status (3 dummies); sociability scale; risk scale; majority of household income is ShareCo earnings; occupation (7 dummies); supervisory status; hours worked (4 dummies); tenure (5 dummies); contract type (3 dummies); employee perceptions of the percentage of employees belonging to share plan

in the business unit. Model 2 is the estimates of equation 2, ie. as per Model 1 but also includes wages, scale for organizational loyalty and scale for perceptions of fair pay (see text for details). Model 1F and 2F are as per Models 1 and 2 but incorporate office/business unit fixed effects.N=1,064 in all models. Fixed effects models absorb 39 office/business unit categories. Coefficients are from OLS; t-statistics in parentheses. **=statistically significant at a 95% confidence level; ***=statistically significant at a 99% confidence level

2) Hours worked relative to standard hours
Respondents are asked "How many hours do you work for ShareCo each week?" and to distinguish "standard hours, excluding additional time worked" and "typical hours, including overtime, working at home and weekend work". We subtract standard hours from typical hours to identify hours worked above contract. The model estimates a (1,3) ordered variable where 1=no additional hours 2=>0 but <10 hours 3=10+ hours per week. See note 1 for model specifications, sample sizes and notation.

3) and 4) Any absence and days absent
Respondents are asked "how many days have you been absent from work in the last six months (excluding vacation)?" The dependent variable in 3) is any absence. In 4) we use a categorical absence variable which splits the continuous days measure into six categories: none, >0<=1, >1<=2, >2<=3, >3<=4, >4<=5, >5. See note 1 for model specifications, sample sizes and notation.

5) Voluntary quits
Estimates models for a quit dummy where 1=expects to work at ShareCo for less than a year and says not very/not at all likely to be laid off. See note 1 for model specifications, sample sizes and notation.

6) Job search
Estimates the likelihood of looking for a job with another organization in next 12 months using an ordinal scale where 1="not at all likely" to 5="very likely". See note 1 for model specifications, sample sizes and notation.

7) and 8) Co-worker monitoring
The two dependent variables are derived from the following question: " If you were to see a fellow employee not working as hard or as well as he or she should, how likely would you be to...discuss this with the employee; speak to your supervisor or manager; talk about it in a work group or team; do nothing?". Responses to the four questions were coded from "not at all likely" through to "very likely". The "do nothing" scale used in 7) run from 1 to 4 simply coding the fourth "do nothing" question so that those who say they are "not at all likely" to do nothing score 1 and those who say they are "very likely" to do nothing score 4. The co-monitoring scale used in 8) is an additive scale which sums responses to the first three questions with "not very likely" scoring 1, through to "very likely" scoring 3. We subtract 3 from the scale so that it runs from zero to nine. See note 1 for model specifications but note these models also include controls for how easy it is to see how hard your co-workers are working and how closely supervised you are in your job, both of which are coded on a (1,10) scale. See note 1 for sample size and notation.

Table 2: OLS and IV estimates of association between plan membership and worker behavior

| | Work harder | | Long hours | | Monitor | | Absence | | Quit (1) | | Quit (2) | | Job search | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | OLS | IV | OLS | IV | OLS | IV | OLS | IV | OLS | IV | OLS | IV | OLS | IV |
| coef | .315 | 1.220 | .095 | .684 | -.259 | -.031 | -.438 | -1.172 | -.033 | -.090 | 0.661 | 1.169 | -.198 | -.883 |
| t-stat | 2.78 | 1.52 | 2.27 | 2.05 | 1.89 | 0.03 | 3.32 | 1.19 | 2.32 | 0.79 | 10.06 | 2.51 | 3.24 | 1.90 |
| R-sq | 0.12 | 0.10 | 0.47 | 0.36 | 0.23 | 0.25 | 0.13 | 0.13 | 0.15 | 0.17 | 0.30 | 0.28 | 0.42 | 0.37 |

Notes:

(1) Coefficient is for share plan membership. IV estimates instrument for membership with membership rate in employee's office*business unit one year earlier. All models contain controls as per Model (2) in Table 1. OLS N=1064; IV N=856.

(2) Work harder is gap between own score on hard work scale and perception of co-workers' hard work (-10, 10 where more positive score is belief working harder). Long hours working is number of hours typically worked above contractual hours (1=none 2=<10 hours 3=10+ hours). Monitor is (0,9) scale on co-worker monitoring. Absence is categorical variable for days absent in last 6 months. Quit 1 is dummy for likely to quit voluntarily in coming year. Quit 2 is extent to which agree with statement that plan reduces probability of leaving in coming year (1="not at all"; 4="great extent"). Job search is likelihood of looking for a job with another organization in next 12 months (1="not at all likely" 5="very likely").