

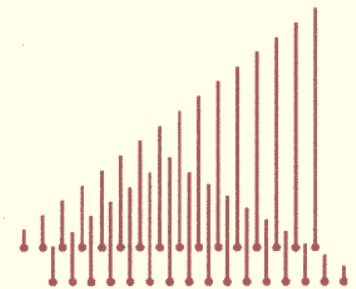
# Employee Stock Purchase Plans: Gift or Incentive?

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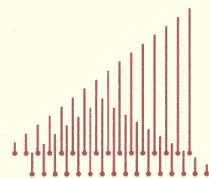
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National Institute  
of Economic and  
Social Research

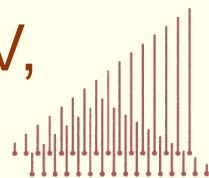
# What is an ESPP?

- Employees may purchase company shares at a discount
- Must hold shares for specified period before they can sell
- Key parameters in determining their value:
  - discount (15% normal in US; 50% in UK)
  - tax treatment of shares
  - expected trend in share price
  - volatility of shares
- Often portrayed as a group incentive pay scheme but really a hybrid of incentive and gift exchange
  - unlike incentives such as options, ESPP requires worker to put up own cash
  - unlike gift exchange, workers can and do reject it even when it seems to be a good investment



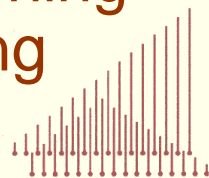
# This study

- Determines if ESPP membership is associated with pro-productive behaviour compared to observationally identical non-members in multinational firm ShareCo where ESPP is central to compensation
- Highlights the distinct place of subsidized ESPP's in the spectrum of group incentive schemes and gift exchanges
- Uses survey we designed with the firm that gives information on workplace behaviour, plan participation and participation by peers
- Attempts to tackle factors that may confound causal inferences regarding plan effects (risk preferences, IV, work unit fixed effects, direct employee responses)



# ShareCo's ESPP

- Employees purchase shares in company and receive matching shares (1-for-1) free from employer
- Employees can contribute between £10 and £125 per month or 10 per cent of their monthly pre-tax earnings; whichever is the lower amount. This sum is tax-exempt and taken from gross salary.
- ShareCo matches each share purchased up to £125 per month. Shares held in trust. Company pays admin fees.
- All shares exempt from tax if held for 5 years. If sold earlier subject to tax. If sold within first 2 years, matching shares are forfeited. Some tax advantages to retaining shares for 3 years but max at 5 years



# ESPP: gift or Incentive?

- Discounted rate creates gift exchange. Firm hopes workers who accept gift reciprocate with effort
- But not standard gift exchange as employees must put up own money. Value varies with stock price. Any employee who buys discounted share can gain irrespective of effort and gain more if group effort rises
- Employees can refuse it; about 50% do not buy shares under ESPP (Bryson and Freeman, 2010)
- ESPP is also a group incentive pay scheme since compensation depends on company performance **BUT** only for those who join



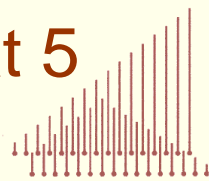
# Comparison with Other Incentives

- Incentive-based compensation. Piece rate earnings vary with individual effort (output); group incentive earnings vary with group effort. But ESPP: individuals choose to join or not, thus *within-firm sorting*
- Members gain from group effort via higher share price and from discounts/matching; tax breaks, with gains realised after a period, so akin to deferred compensation
- Greater impact on plan joiners than with group incentive? Line of sight & 1/n problem similar BUT ESPP involves commitment by joining and money upfront. And ESPP gift may engender group identity.



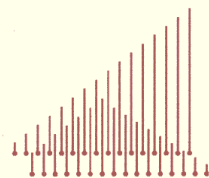
# Theory: Shares -> Effort?

- Heterogeneous agents: maximisers and reciprocators
- Free-rider problem
  - Short-term maximisation
  - 1/n problem facing residual claimant
- Reciprocation for gift
  - Employer signals reciprocity=norm
  - Peer pressures from Plan members
  - Potential spillovers to non-members
  - Group identity lowers costs of effort (Akerlof)
- Does size of gift matter? Power of symbolic gifts
- Deferral
  - Benefits accrue at end of 3 years but max at 5
  - Long-term pay off affects extensive margin



# Empirical strategy

- Multinational firm, business services circa 12k employees
- Web-based survey of UK employees 2007 and 2010
- Multiple behavioural outcomes:
  - long-hours working; working harder than colleagues; absence; co-worker monitoring; quits; job search.
- We net out other aspects of employment relation to get at ESPP – wage; organizational loyalty
- Spillovers: co-worker membership in non-member models
- Worker selection
  - ESPP joining = function of disutility of effort/ability
  - Group identity enters utility function
  - IV to isolate causal impact on effort (LATE)
  - Use of lagged admin data on Plan membership at business unit/office level





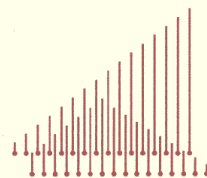
# Model

$$E_i = \beta_1 Plan_i + \beta_2 Wage_i + \beta_3 Loyal_i + \beta'_x X_i + \varepsilon_{if}$$

X controls: age, age squared, male, white, degree, married, risk attitude, occupation, supervisor, hours worked, tenure, log annual wage, organizational loyalty. (Co-worker monitoring models also include how closely supervised and how easy to monitor others).

Also work unit fixed effects equivalents to identify within unit plan participation effects ( $E_{ip}$ )

IV: 2SLS equivalent of equation (1) using lagged membership in work unit as exclusion restriction



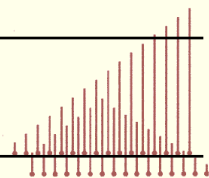
# Results

- Employees who accept subsidized shares have superior performance to those reject gift
  - Work extra hours; lower absences; work hard; lower quits and job search; robust to model
- Co-worker monitoring rises with % member
  - ESPP divides workers into members and non-members. Members do more co-worker monitoring where more members
- Treating participation as exogenous understates effects.
  - LATE impact on compliers: bigger effect on high ability who are better able to repay the gift (Englmaier and Leider, 2008)
- Interpretation supported by subjective responses to questions about effects



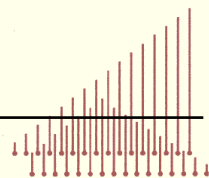
# Membership Coefficients from OLS and Fixed Effect models

	OLS Coefficient	Fixed Effects Coefficients
1) How hard workers work (relative to how hard other employees work)		
	0.21 (1.97)**	0.31 (2.57)***
2) Hours worked relative to standard hours		
	0.10 (2.65)***	0.11 (2.59)***
3) Any absence		
	-0.06(1.66)	-0.06 (1.53)
4) Days absent		
	-0.37 (2.93)***	-0.36 (2.63)***



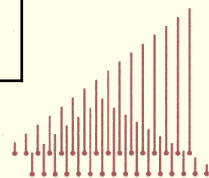
# Coefficients on Members from OLS from Fixed Effect models with work unit dummies

	OLS Coefficient	Fixed Effects Coefficients
(5) Voluntary quits		
	-0.04 (2.77)***	-0.03 (2.21)**
6) Job search		
	-0.25 (4.15)***	-0.23 (3.60)***
7) Do-Nothing if see another worker not doing good job (categorical)		
	0.02 (0.75)	0.01 (0.38)
8) Additive Measure of Intervening if see another worker not doing good job		
	-0.09 (0.68)	-0.04 (0.29)



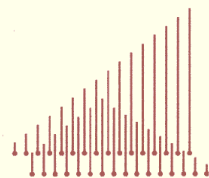
## Member coefficients in OLS and IV models

	OLS	IV
How hard	0.30 (2.55)***	0.20 (0.41)
Hours relative to standard	0.09 (2.07)**	0.48 (2.51)***
Absence	-0.05 (1.33)	-0.18 (1.21)
N days absent	-0.36 (2.54)***	-0.68 (1.12)
Quit	-0.04 (2.55)***	-0.11 (1.58)
Job search	-0.31 (4.79)**	-0.96 (3.43)****
Does nothing	0.01 (0.53)	0.08 (0.80)
Intervenes	0.05 (0.34)	0.57 (0.98)



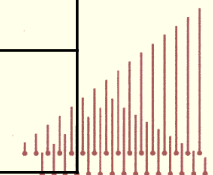
## Coefficients for % co-workers who are ESPP members

	Members	Non-members
How hard	-0.19 (3.38)***	-0.24 (2.96)***
Hours relative to standard	-0.01 (0.60)	-0.02 (0.78)
Any absence	0.03 (1.39)	-0.02 (0.67)
N days absent	0.10 (1.46)	0.01 (0.15)
Voluntary quits	-0.00 (0.75)	-0.01 (1.34)
Job search	-0.01 (0.39)	-0.15 (3.34)***
Does nothing	-0.02 (1.73)*	0.01 (0.35)
Intervenens	0.17 (2.19)**	0.03 (0.40)



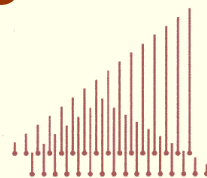
## Member coefficients in OLS and FE where socialise with work colleagues outside work versus do not

	Socialises		Does not socialise	
	OLS	FE	OLS	FE
How hard	.30 (2.56)**	.31 (2.32)**	.13 (1.03)	.23 (1.65)
Hours relative to standard	.07 (1.69)	.11 (2.31)**	.05 (1.15)	.03 (0.63)
Any absence	-.04 (1.08)	-.02 (0.47)	-.01 (0.29)	-.01 (0.02)
N days absent	-.28 (2.08)**	-.19 (1.33)	-.11 (0.78)	-.13 (0.86)
Voluntary quits	-.05 (2.81)**	-.05 (2.40)**	-.06 (3.33)**	-.07 (3.39)**
Job search	-.40 (5.28)**	-.37 (4.45)**	-.37 (4.70)**	-.33 (3.95)**
Does nothing	-.02 (0.90)	-.02 (0.88)	.00 (0.05)	-.01 (0.38)
Intervenes	.09 (0.69)	.13 (0.90)	.02 (0.10)	.08 (0.51)



# Conclusion

- Findings resemble gift exchange/efficiency wage studies where workers reciprocate and studies that show workers respond to group incentives
- But our contrast group are workers who accept/reject gift in **same work unit within same firm** rather than workplaces that give workers different treatment.
- Key distinction of ESPP is that it requires up front payment to take advantage of gift. If those who accept Plan have lower disutility of effort than those who reject, ESPP is socially more efficient than gift or incentive systems which treat all workers the same





# Appendix: Other Evidence

- Efficiency wages increase effort (lab experiments)
- Consistent with gifts leading to reciprocity and fair wage hypothesis (Akerlof, Fehr) but:
  - Gift increases amount of labour but not effort per hour (Fehr and Gächter, lab)
  - gift effect disappears over time (Gneezy/List - field)
  - No link (Henning-Schmidt – field); needs stake knowledge (lab)
  - Large productivity effects of awards with no pecuniary value due to symbolic value (Kosfeld and Neckerman, field)
- Recent studies indicate positive associations between exposure to/participation in share plans and worker effort
  - Kruse et al 2010, 2011 ground-breaking suggesting broadly positive effects using 'insider econometrics' and GSS
    - Anomalous absence effect (or like unionization in reducing presenteeism)

