Footsie, Yeah! Share Prices and Worker Wellbeing

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Abstract

A small literature finds individual wellbeing varies with the price of company stock, but it is unclear whether this is due to wealth effects among those holding stock, or more general effects on sentiment, with individuals taking rising stock prices as an indicator of improvements in the economy. We contribute to this literature by using two data sets to establish the relationship between share prices on the one hand and worker wellbeing on the other. First, using British panel data for over 20 years we demonstrate that job satisfaction declines as share prices rise for those whose pay is not linked to firm performance; this is however not the case for those whose pay is linked to firm performance. This pattern of results persists after accounting for fixed unobserved difference across workers. We then examine share price movements and employee stock-holding in a single corporation, and provide suggestive evidence that a rise in the firm's stock price increases the wellbeing of those who belong to its employee share purchase plan (ESPP). These effects are the greatest among those making the largest monthly contributions to the program who have the most to gain (or lose) from stock price fluctuations. There is also tentative evidence that the wellbeing effects of a higher share price are larger for those who hold the most shares. Taken together these results suggest that, whilst job satisfaction among those in the working population at large whose pay is not linked to firm performance tends to decline as stock prices rise, the job satisfaction of those whose pay is linked to firm performance is either independent of or rises with share prices. Furthermore, among those holding stock in their own company job satisfaction rises when the price of that stock is higher, suggesting the effects of share prices work at least partly via changes in wealth.

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1. Introduction

A large body of research has underlined the impact of business conditions, and in particular economic downturns, on individuals' mental health and wellbeing. Part of this impact reflects individual unemployment, as in Clark and Oswald (1994), and lower pay. At the more aggregate level, and conditional on own outcomes, wellbeing has been shown to be positively correlated with indicators of national economic performance, such as the unemployment rate in Di Tella *et al*. (2001) and GDP in Kaiser and Vendrik (2019) and Stevenson and Wolfers (2008).

One barometer of business conditions is the stock market. This has the advantage, over GDP or unemployment, of varying at a high frequency. Deaton (2011) reports that the Great Recession (GR) resulted in both large declines in self-reported wellbeing and greater stress. Moreover, subjective measures of wellbeing tracked the stock market very closely between 2008 and 2010, when the GR was at its most acute. This relationship was most apparent amongst low-income households who had little or no financial interest, either directly or indirectly, in the share market. The implication drawn is that the GR share-price shock must have affected individuals' expectations about future economic prospects, rather than having had any effect via wealth. However, subsequent work has challenged this proposition. Using UK data over the 20 years ending in 2008, Ratcliffe and Taylor (2015) show that higher stock prices are associated with greater individual wellbeing, while greater volatility in stock prices reduces wellbeing. Their results are robust to the introduction of controls for macro-economic conditions, a finding which, they suggest, is consistent with the effect of stock prices coming via direct wealth effects. Further indirect support for a direct wealth effect is found in McInerney *et al*. (2013), where increases in depression and the use of anti-depressant drugs following the GR were concentrated amongst those with large shareholdings.

As well as acting as a barometer for future economic conditions or changing the value of an individual's stock portfolio, share prices can affect individual wellbeing via the link between workers' compensation and firm performance. Relating worker compensation directly to

business conditions via share ownership and profit-sharing has long been viewed as a way of smoothing labour-demand fluctuations over the business cycle (Weitzman, 1984). This arrangement reduces the probability of job loss during economic downturns, as the automatic adjustment of the price of labour, earnings, reduces the need for changes in quantity (employment).

At the same time, previous research has demonstrated how group-based payments, such as profit sharing, are linked to higher job satisfaction in a way that is not necessarily found for individual-based performance pay (Green and Heywood, 2008; Bryson *et al*. 2016; Bryson and Freeman, 2019). Green and Heywood (2016) argue these payments are often made on top of base pay (what they term 'gravy'), particularly for high-income workers, although there is partial substitution between base pay and bonuses. This suggests that some of the wellbeing effect of share-price changes may be linked to wealth effects. However, to the best of our knowledge, there is no work that has investigated the variance in these links between wellbeing and group-based performance pay over the business cycle.

We contribute to this literature by using two data sets to establish the relationship between share prices on the one hand and worker wellbeing on the other. First, we use over 20 years of British panel data to show that employee happiness and job satisfaction moves with share prices among those whose pay is partly determined by company fortunes. We then examine share price movements and employee stock holding in a single corporation and provide suggestive evidence that an increase in the firm's stock price increases the wellbeing of those who belong to its employee share purchase plan (ESPP). These effects are greatest among those making the largest monthly contributions to the program who have the most to gain (or lose) from stock price fluctuations. There is also tentative evidence that the wellbeing effects of a higher share price are larger for those who hold more shares. Taken together these results suggest that, although stock price movements have little effect on well-being in the population at large, the well-being of those holding stock in their own company rises when the price of that stock is higher, suggesting the effects of share prices work at least partly via changes in wealth.

The remainder of this paper is structured as follows. Section Two presents our data, and Section Three outlines our empirical approach. The results then appear in Section Four. Last, Section Five concludes.

2. Data

Our data come from two sources. The first data source combines the British Household Panel Survey (BHPS; 1991-2008) with the Understanding Society (USoc) data set (2009-2018) (University of Essex, 2020). The BHPS is a random sample of approximately 10,000 individuals in 5,500 households, which was increased to 16,000 individuals in 9,000 households in 1999. USoc is the follow-on to the BHPS, starting in 2009 and covering approximately 100,000 individuals in 40,000 households. The BHPS households comprise a subset of the USoc sample and can be followed in the latter, except for the first USoc wave where the BHPS households were not interviewed. We initially use the full sample of respondents from the BHPS and USoc datasets. However, some of the key variables we analyse are only available in certain waves of the BHPS/USoc. In particular, the questions on performance and bonus pay are only available from 1998 on, and in every second USoc wave. As such, some analyses cover different periods in the data, as we will highlight in the text. Reflecting our focus on workers, we exclude those not in employment, and retain individuals aged from 18 to 65. The survey interview data from BHPS/USoc is matched to financial data drawn from the FTSE 100 over the corresponding survey period.[2]

While the structure of the BHPS/USoc has changed over time, one permanent theme has been a battery of questions on individual wellbeing and job satisfaction. As a result, these datasets have often been used to examine subjective wellbeing (see, for example, Bryson *et al*., 2016; Clark *et al*., 2018; Gray *et al*., 2021; and Liberini *et al*., 2019). We focus on three standard measures of wellbeing that have consistently been asked across all data waves: the 36-point scale from the validated General Health Questionnaire (GHQ); a four-point happiness scale with responses that range from much less happy than usual through to more (happy) than

[2] The values of the FTSE 100 over this period appear in Appendix Figure A2. In unreported estimates we also used data from the FTSE350. While often less precise, the resulting estimates are essentially unchanged in nature.

usual (this is one of the 12 GHQ questions); and a seven-point job satisfaction measure. The scales are inverted when necessary to ensure that higher scores always reflect higher wellbeing.

The BHPS /USoc contains information on performance-related pay (see for instance Green and Heywood 2008, and Bryson *et al*. 2016), although the format of the questions has changed over time. Initially in 1991-1997 there was one catch-all performance-pay question. We drop all observations for this earlier period. From 1998-2008, respondents were asked two separate questions: "Does your pay include performance-related pay?"; and "In the last 12 months have you received any bonuses such as a Christmas or quarterly bonus, profit-related pay or profit-sharing bonus, or an occasional commission? [excludes overtime payments]". These questions only appear in every second wave of USoc. However, each wave of USoc takes 24 months in total to conduct and the waves overlap with each other such that some individuals are, for example, being surveyed for wave 3 at the same time as other individuals are being interviewed for wave 4. We thus observe both performance-pay receipt and the FTSE for all years from 2009 to 2018 inclusive. We use these questions to produce binary indicators of the receipt of performance-related pay (PRP) and bonus/profit-share receipt respectively. The former indicator, PRP, could potentially capture some elements of group payment, as it only asks whether your pay includes a performance related component, and not whether this performance is at the individual, group/team or even organisational level. However, the latter question and resultant indicator clearly captures two prominent forms of group-based payment, profit-related pay and profit shares, that fit with our main interest and are tied to workplace or organisational performance.[3] In addition to the control variables listed in Table A1, all BHPS/USoc regressions include a set of dummy variables for industry (9), occupation (9), region of residence (12), year of interview (21), day of week (7), and month (12).

[3] As a result, the existing literature has often interpreted this question as capturing group and profit-share payments (see for instance Gielen, 2011, and Green and Heywood, 2010 and 2011).

The second data source is a single company that we call ShareCo (a pseudonym). This is a multinational business services corporation employing roughly 12,000 full-time equivalent employees globally. The data come from a dedicated web-based survey, designed by Alex Bryson and Richard Freeman in conjunction with the firm. We analyse pooled data from this firm in the UK that was collected in 2007 and 2010. The company operates an employee share purchase plan (ESPP) that is central to its remuneration strategy. Employees can choose to join this tax-privileged plan, and if they do so they can decide how much to contribute to the plan each month, up to a maximum limit set by the tax authorities.[4] Our data identify whether an employee had chosen to join the plan, the monthly contribution the employee paid into the plan, and the number of shares the employee owned.

The ShareCo data provide an opportunity to assess the effects of share-price movements in an employee's own company stock, and how this effect varies according to the employee's financial interest in the plan, as indicated by plan membership, contributions to the plan and the number of shares held. By linking the survey data to ShareCo's stock price on the day that the respondent completed the survey we can assess how employees' job satisfaction varies with the share price for both ESPP members and non-members. The survey fieldwork period was roughly three weeks in both 2007 and 2010. There were substantial share-price movements in both of these years, of nearly AU$2 in 2007 and AU$1 in 2010 (see Appendix Figure A2).

We relate the company's share price to worker job satisfaction, using the respondent's responses to the question "*How satisfied are you in your job?*", with answers on a 5-point Likert scale from 1 = Very Dissatisfied to 5 = Very Satisfied.[5] Summary statistics for the ShareCo variables in our estimation sample (N=1,890) are presented in Appendix Table A2.

[4] For further detail on the nature of the ESPP and its role in eliciting productivity-enhancing behaviours from members see Bryson and Freeman (2019). For an analysis of the reasons why employees choose (not) to join the plan see Bryson and Freeman (2010).

[5] In earlier work, we established that ESPP members were more satisfied with their jobs than were non-members, *ceteris paribus* (Bryson *et al*., 2016).

3. Empirical Approach

Our objective is to establish the relationship between share price variations and measures of worker wellbeing. In particular, we wish to establish how this relationship is influenced by forms of performance pay that are linked to firm performance (namely share ownership, profit sharing, and bonuses).

Our initial step with the BHPS/USoc is to extend existing research over a longer time-period. We estimate the following equation:

$$W_{it} = \delta_i + \beta' \boldsymbol{X}_{it} + \alpha PerfPay_{it} + \vartheta Bonus/Profit_{it} + \gamma FT_{it} + \theta FT_{it} * PerfPay_{it} + \omega FT_{it} * Bonus/Profit + \varepsilon_{it} \quad (1)$$

We will first estimate Equation (1) without the interactions between the FT index, on the one hand, and Performance Pay or Bonus/Profit schemes on the other. The results can be compared to existing work on share prices and well-being in the general population of workers. The estimation of the full version of Equation (1) provides the association (conditional on observables) between individual well-being W_{it} and the FT index at the day of the interview, and shows how this varies according to both individual performance pay and bonus/profit-share receipt. We include controls for age, gender, marital status, educational level, occupation, industry, region of residence, as well as day of the week and year effects.

In Equation (2) we extend Equation (1) by including individual fixed effects (μ_i), so that our parameters of interest are identified by the within-individual changes in FT and PRP receipt.

$$W_{it} = \delta_i + \beta' \boldsymbol{X}_{it} + \alpha PerfPay_{it} + \vartheta Bonus/Profit_{it} + \gamma FT_{it} + \theta FT_{it} * PerfPay_{it} + \omega FT_{it} * Bonus/Profit + \mu_i + \varepsilon_{it} \quad (2)$$

The individual fixed-effect models are our preferred estimates, as they avoid any potential biases in the correlation that come from sorting into various compensation schemes, on the

one hand, and individuals' propensities for wellbeing, insofar as these are captured by fixed unobserved individual traits. This within-person estimator allows us to abstract from comparisons across individuals who may have different reference points when replying to wellbeing questions.[6]

For the analysis of ShareCo data, our estimation equations take the following form:

$$W_{it} = \delta_i + \beta' \boldsymbol{X}_{it} + \alpha Share_{it} + \gamma FT_{it} + \theta FT_{it} * Share_{it} + \varepsilon_{it} \quad (3)$$

Here W_{it} is the job satisfaction of individual i at time t, $\boldsymbol{X}_{it}$ a vector of individual-specific characteristics, and FT_{it} the opening stock-market price for ShareCo stock on the day of the interview. *Share* captures one of three measures of ESPP participation: membership, monthly contribution, and total number of shares held. We initially enter *Share* and *FT* separately, but our main focus is on the interaction term that reveals how the effect of the ShareCo stock price on the day of the interview affects job satisfaction differentially according to the employee's exposure to the ESPP.

For both the BHPS/USoc and ShareCo data, we estimate OLS equations with a robust estimator. We obtain similar results in ordered probit regressions which treat subjective well-being as an ordered variable (results available on request).

4. Results

4.1: BHPS/USoc Results

[INSERT TABLE 1]

As a first step, we estimate models in the spirit of Ratcliffe and Taylor (2015) over the longer time period that is now available in the BHPS/USoc data. As our interest is in types of worker

[6] While the FTSE is observed without measurement error, it should be noted that there is the potential for measurement error in payment type and hence attenuation bias in the individual fixed-effect models.

compensation we focus only on those who are in employment, whereas their estimates cover a much wider group including students, the unemployed, the self-employed and retirees.[7]

The first three columns in Table 1 present the estimated coefficients for the value of the FTSE 100 (in logs) on our three measures of wellbeing. The estimates for both (the inverted) GHQ and Happiness fit with the prior evidence: higher values of the FTSE 100 are associated with greater worker wellbeing. However, the estimated coefficient in the happiness equation in column (2) is not statistically significant. A one standard deviation increase in the log FTSE value (which corresponds to 0.2 from Appendix Table A2) is associated with an approximately 0.08 points higher GHQ score (corresponding to 0.2 of a standard deviation). These estimates show that the main effects highlighted in Ratcliffe and Taylor (2015), who considered data up to 2008, continue to hold over a longer period which covers more post-financial-crisis years. In contrast, the relationship between the FTSE 100 and job satisfaction is negative and statistically significant at the 10% level. There is, to our knowledge, no existing evidence on this point. This could, for example, reflect increased worker stress and effort during economic upturns. It could also reflect selection if, for instance, it is only more-satisfied workers who remain in employment during recessions. Our worker fixed effects results will seek to control for this selection.

The last three columns in Table 1 provide comparable estimates, now including individual fixed effects. This table hence reveals the correlation between within-individual changes in subjective well-being and changes in the FTSE index. While all of the estimates continue to be of the same sign as in the earlier pooled models, the estimated coefficients are about half as large and are no longer statistically significant. This could indicate that some of the effects of the FTSE on the wellbeing of employees that were apparent in the pooled models reflect sorting over the business cycle.

[INSERT TABLE 2]

[7] Notably, the largest effects of share prices they found were for groups of individuals who were not employees (the unemployed, students, the long-term sick, and retirees).

We now turn specifically to the role of performance-pay receipt in moderating the effect of stock-market prices on wellbeing. The first three columns of Table 2 present pooled estimates of Equation (1), where we distinguish between the different types of performance-pay receipt and allow the effect of the FTSE 100 to vary by this receipt.[8] The interaction between Bonus/Profit Share receipt and the FTSE100 attracts a positive and statistically-significant estimate in both the happiness and job satisfaction regressions. There is no evidence of an effect of payment method on the relationship between share prices and GHQ.

Understanding the overall effect of payment methods on happiness and job satisfaction as share prices change requires some care. As an example, focus initially on happiness. There is no statistically-significant effect of share prices for those workers who are not in receipt of Bonuses/Profit Shares, and the estimated Bonus/Profit coefficient is negative and significant. The estimated Bonus*Ln(FTSE) coefficient is positive and significant, meaning that the Bonus-happiness relationship depends on the level of the FTSE. Taking the minimum recorded value of the FTSE over our sample period, as reported in Appendix Table A1, we can calculate the effect of Bonus/Share receipt on wellbeing as 0.045: this is not statistically different from zero at standard levels. However, at the mean sample value of the FTSE, the effect of bonus/profit share receipt rises to 0.22, and is statistically different from zero at the 1% level.This suggests that in downturns there is no difference in worker wellbeing according to payment receipt, but as share prices increase those in receipt of bonuses or profit shares report increased happiness.

The patterns for job satisfaction are different in a number of important ways. First, there remains a negative relationship between share prices and job satisfaction for those workers who are not in receipt of PRP or bonus/profit shares. Higher share prices reduce job satisfaction for these workers. This negative effect is not found for those whose pay varies with economic performance, as revealed by the positive and significant coefficients on the two FTSE interaction terms. Economic upturns may lead to lower job satisfaction in the

[8] An alternative approach where we estimate the effect of *changes* in FTSE, and its interaction with payment type, on the level of wellbeing is reported in Appendix Table A3. The pattern of results largely follows that reported in Table 2 and, if anything, demonstrate more marked effects of either PRP or bonus/profit share receipt in counteracting the negative effect of share prices on job satisfaction.

aggregate, as in Table 1, for reasons of worker effort or selection, but performance-pay or bonuses can mitigate this relationship or even reverse it. Our estimated coefficients indicate that performance-pay receipt does indeed reverse this relationship: the estimated FTSE*PRP coefficient in column 3 is sufficient to make the total effect of the FTSE for those with performance pay (-0.179 + 0.218) significantly positive at the 1% level. The analogous difference for bonus/profit shares is somewhat more muted. The FTSE is negatively correlated with job satisfaction for those without bonuses or performance pay, but becomes less negative (-0.179 + 0.124), and not significantly different from zero, for workers who receive bonuses.

One important difference appears between PRP and bonus/profit shares when calculating the effects of payment method relative to non-receipt. This comes from taking the coefficient on each payment method and adding this to the minimum observed FTSE value (from Table A1) multiplied by the coefficient on the relevant interaction term. For bonus/profit share receipt this produces a similar story to that described above for happiness. At our lowest observed FTSE value, those in receipt of bonus/profit shares are as satisfied with their work as are those in non-receipt. As share prices increase the former become more satisfied relative to those who do not receive bonuses. The pattern for PRP is different. At the lowest FTSE value, workers with PRP are less satisfied than non-performance pay workers. This gap then becomes zero and positive as share prices increase. This suggests that, relative to non-receipt, both bonuses and performance pay induce larger variations in job satisfaction across the business cycle, with the effect of the latter potentially being larger.

Overall, these moderation results show that the effects of stock-market prices highlighted in Table 1 and previous research hide substantial heterogeneity according to the type of compensation that workers receive, and specifically whether this is linked to firm performance.

The results above come from cross-section analyses, and one concern is that they do not account for selection into both employment and performance-pay contracts, on the basis of time-invariant observables. The last three columns of Table 2 thus present the results from

estimating Equation (2) including worker fixed effects. This is a demanding specification, and our main estimates of interest are identified by changes in the FTSE for the same individual over the years in which they are interviewed and/or by changes in the individual's PRP or bonus/profit share status.[9] Notably, the estimate of the interaction between FTSE and PRP in the job satisfaction regression is much smaller and no longer statistically significant. In contrast, while the interaction between bonus/profit shares and FTSE in the happiness models becomes statistically insignificant at standard levels, the point estimate is similar in magnitude to that in the pooled estimates, and in part reflects the rise in the standard errors. However, the bonus/profit share and FTSE interaction retains its positive and statistically-significant estimated coefficient for job satisfaction. In general, the fact that the estimated coefficients for the bonus/profit share interaction terms in the panel regressions are not drastically different from those reported in the first three columns for all three outcomes provides some supporting evidence that these effects do not (solely) reflect the sorting of individuals with specific traits into employment and bonus/profit-share receipt. Nor, are they suggestive of attenuation bias due to measurement error. More generally, these results suggest that bonus/profit-share receipt fundamentally changes the relationship between stock-market performance and worker wellbeing.

4.2. ShareCo

Tables 3-5 show the estimates from job satisfaction equations for ShareCo employees using our three alternative metrics of ESPP participation, namely plan membership, number of shares held, and monthly contributions.

[INSERT TABLE 3]

Table 3 focuses on share-plan membership. There is a positive correlation between being an ESPP member and job satisfaction (column 1). Job satisfaction is then estimated to rise with

[9] To highlight the extent of the latter source of variability, Table A4 reports within worker transitions between different payment types in the BHPS/USoc

the ShareCo share price, but only for scheme members (column 2).

[INSERT TABLE 4]

In Table 4 we replace ESPP membership by the number of shares the employee currently holds, where the reference category is none. Job satisfaction rises with the number of shares held (column 1). When the number of shares held is interacted with the share price on the day of the interview, there is some suggestive evidence that job satisfaction is higher among those with large shareholdings on days when the ShareCo price is higher. The coefficients on the interactions between share price and holding at least 500 shares are positive and statistically significant (column 2). However, closer inspection of the interaction coefficients indicates that the differences in job satisfaction, as a function of the share price, between those holding fewer than 100 shares and those holding at least 500 are not statistically significant.[10]

[INSERT TABLE 5]

Last, Table 5 replaces the number of shares held by the amount of monthly contributions that the employee makes to the share plan. Those making larger contributions are more satisfied with their jobs (column 1). In column 2, when contributions are interacted with the share price, it is only those making the maximum contribution under the UK tax rules whose job satisfaction rises with the ShareCo share price. Although the number of shares held and the monthly contributions are fairly highly correlated (with a coefficient of 0.84), the comparison of the results in Tables 4 and 5 suggests that it is the workers who are currently contributing the most to the share plan who are the most engaged with the firm, as opposed to the workers whose shareholdings may be more historical.

[10] 28 respondents did not know how many shares they held. Their job satisfaction appears to be lower on days when the share price is higher. Our basic results continue to hold when these 28 cases are dropped from the estimations.

5. Conclusion

A small literature has found that individual wellbeing varies with share prices, but it is unclear whether this is due to wealth effects on those holding stock, or to more general effects on sentiment, with individuals taking rising stock prices as an indicator of a healthier economy. We contribute to this literature by using two data sets to establish the relationship between share prices on the one hand and worker wellbeing on the other.

Using two very different data sets, we have found some evidence that employees' wellbeing rises with stock prices when their compensation is tied to the fortunes of the firm. This relationship is sensitive to the nature of the subjective wellbeing measure used and is strongest for job satisfaction. The job satisfaction of employees whose compensation is not linked to company profits actually falls as the FTSE share price index rises. The receipt of bonuses or performance-related pay either offsets this negative correlation or turns it positive. Our second set of analyses focus on employees in a single corporation where there is an Employee Share Purchase Plan (ESPP). This analysis therefore tracks the changes in job satisfaction following movements in the share price of the worker's own company. We here find that the job satisfaction of ESPP participants rises with the company's share price, with some evidence that this effect is more apparent for employees who hold a large number of shares or make the maximum contribution to the share plan. Taken together, the two sets of analyses suggest that employees' job satisfaction is higher where their income is linked to their organisation's performance, while the ShareCo evidence indicates this effect is larger among those who have most to gain from their company's performance.

Overall, these results suggest the effects of share plans and bonuses on worker well-being may be due, at least in part, to a wealth effect. Future research might fruitfully examine the mechanisms at play, and whether the effects identified here are linked to differences in employee motivation and effort over the business cycle.

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Table 1. FTSE 100 and Individual Wellbeing: BHPS/USoc 1998-2018

	(Pooled Estimates)			(Worker Fixed Effects)		
	GHQ	Happiness	Job Satisfaction	GHQ	Happiness	Job Satisfaction
Ln(FTSE)	0.370**	0.0171	-0.0877*	0.220	0.0170	-0.0629
	(0.182)	(0.0208)	(0.0485)	(0.175)	(0.0223)	(0.0481)
Constant	26.35***	3.364***	6.853***	25.59***	3.181***	6.298***
	(1.332)	(0.151)	(0.354)	(1.677)	(0.213)	(0.461)
Observations	237,444	238,518	248,189	237,444	238,518	248,189
R-squared	0.019	0.010	0.019	0.590	0.459	0.530
Number of Workers				49,380	49,499	50,625

Notes: (1) The dependent variables are the inverted GHQ score (0-36), happiness compared to last year (1-4), and job satisfaction (1-7). (2) Standard errors in parentheses. (3) *** p<0.01, ** p<0.05, * p<0.1. (4) The controls are day of week, month and year effects, region dummies, age, gender, married, education, industry dummies and occupation dummies.

Table 2. FTSE 100, Worker Compensation Schemes and Individual Wellbeing: BHPS/USoc 1998-2018

	(Pooled Estimates)			(Worker Fixed Effects)		
	GHQ	Happiness	Job Satisfaction	GHQ	Happiness	Job Satisfaction
Ln(FTSE)	-0.140	-0.0125	-0.179***	0.00739	0.0164	-0.136**
	(0.266)	(0.0294)	(0.0688)	(0.246)	(0.0312)	(0.0642)
PRP	-0.438	-0.153	-1.725***	-0.303	-0.0644	-0.435
	(1.584)	(0.175)	(0.417)	(1.586)	(0.202)	(0.424)
Bonus/Profit	-1.657	-0.285**	-0.923***	-1.641	-0.223	-0.775**
	(1.264)	(0.140)	(0.332)	(1.270)	(0.161)	(0.340)
PRP*Ln(FTSE)	0.0612	0.0210	**0.218*** **	0.0372	0.00835	0.0602
	(0.199)	(0.0220)	**(0.0522)**	(0.199)	(0.0253)	(0.0533)
Bonus* Ln(FTSE)	0.225	**0.0361** **	**0.124*** **	0.214	0.0292	**0.101** **
	(0.159)	**(0.0176)**	**(0.0417)**	(0.160)	(0.0203)	**(0.0429)**
Constant	25.34***	3.117***	5.441***	20.69***	2.699***	6.816***
	(0.505)	(0.0558)	(0.118)	(2.586)	(0.328)	(0.676)
Observations	130,172	130,856	137,095	130,173	130,856	138,135
R-squared	0.016	0.008	0.017	0.597	0.456	0.561
Number of Workers				38,365	38,457	39,968

Notes: (1) The dependent variables are the inverted GHQ score (0-36), happiness compared to last year (1-4), and job satisfaction (1-7). (2) Standard errors in parentheses. (3) *** p<0.01, ** p<0.05, * p<0.1. (4) The controls are day of week, month and year effects, region dummies, age, gender, married, education, industry dummies and occupation dummies.

Table 3. Job Satisfaction and ESPP Membership: ShareCo

	(I)	(II)
Share-plan member	0.291***	-1.135
	(0.049)	(0.817)
Share price	0.102	0.029
	(0.064)	(0.078)
Member*price	-	0.150*
		(0.085)
Constant	18.521	22.336
	(42.912)	(42.903)
Adjusted R-squared	0.067	0.069
Unweighted Sample	1849	1849

Notes: Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. The controls are year, age (5 dummies), male, white, qualifications (3 dummies), family status (4 dummies), occupation (8 dummies), supervisor, hours (4 dummies), tenure (5 dummies), paid hourly, paid commission, and the log wage.

Table 4. Job Satisfaction and Number of Shares Held: ShareCo

	(I)	(II)
Share price	0.113*	0.020
	(0.063)	(0.078)
No. shares held (ref: none)		
<100	0.235***	-1.862
	(0.075)	(1.315)
100-499	0.160**	-1.087
	(0.068)	(1.406)
500-1999	0.421***	-1.601
	(0.067)	(1.185)
2000+	0.454***	-1.695
	(0.074)	(1.061)
Don't know	0.446**	9.009**
	(0.191)	(3.872)
<100*share price	-	0.219
		(0.136)
100-499*share price	-	0.131
		(0.148)
500-1999*share price	-	0.213
		(0.124)*
2000+*share price	-	0.226
		(0.111)**
DK*share price	-	-0.923
		(0.423)**
Constant	23.505	23.907
	(42.767)	(42.597)
Adjusted R-squared	0.074	0.076
Unweighted Sample	1849	1849

Notes: Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Controls: See Table 3.

Table 5. Job Satisfaction and Monthly Contributions to ESPP: ShareCo

	(I)	(II)
Share price	0.098	0.035
	(0.064)	(0.077)
£10-124	0.217***	-0.767
	(0.053)	(0.950)
£125 (max)	0.415***	-1.279
	(0.060)	(1.003)
£10-124*Share price	-	0.103
		(0.100)
£125*share price	-	0.177*
		(0.104)
Constant	26.742	29.644
	(43.016)	(43.062)
Adjusted R-squared	0.071	0.072
Unweighted Sample	1849	1849

Notes: Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Controls: See Table 3.

Appendix

Figure A1. FTSE 100 Values 1998-2018

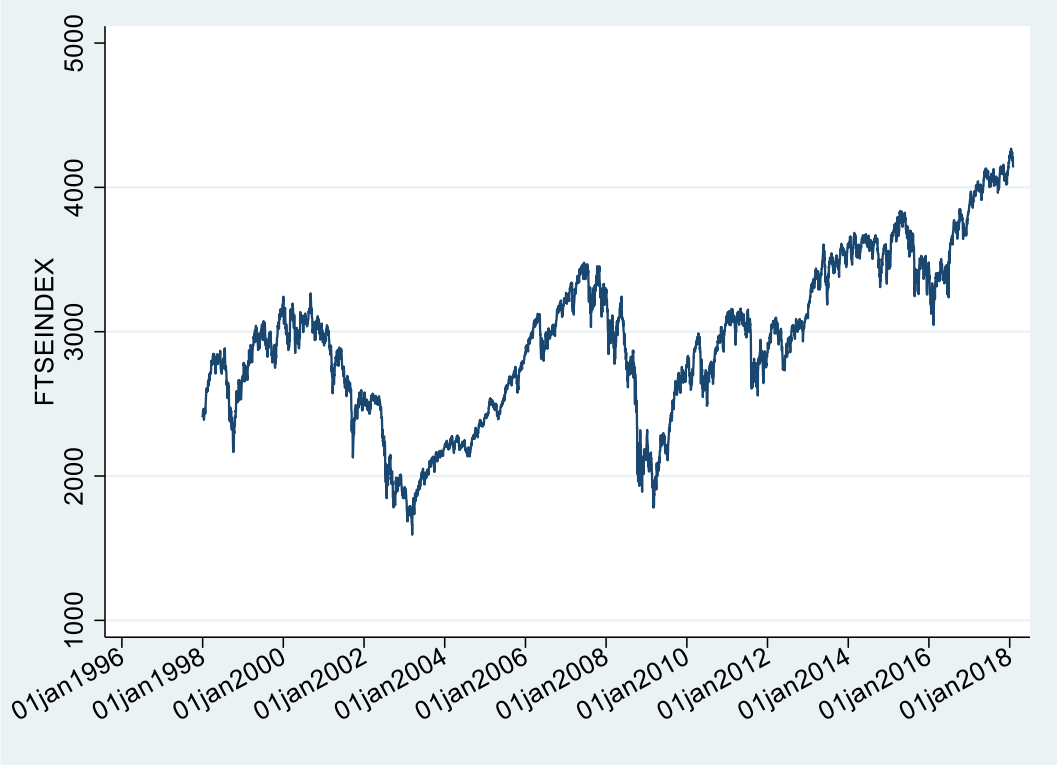

Figure A2. Movements in ShareCo's Share Price During the Survey Periods in 2007 and 2010

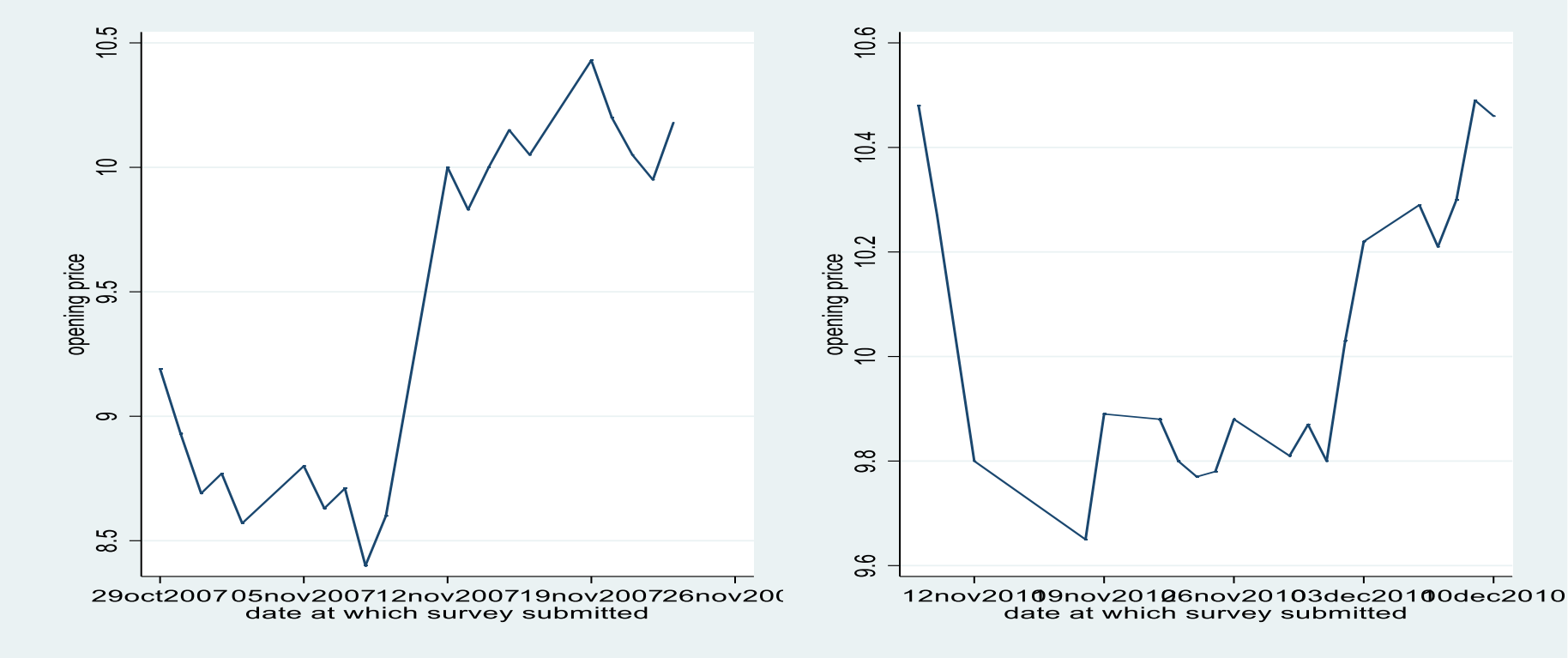

Table A1. Selected Summary Statistics: BHPS/USoc 1998-2018

	Mean	Std. Dev	Min	Max
GHQ	25.27	5.00	0	36
Happiness	2.99	0.55	1	4
Job Satisfaction	5.32	1.33	1	7
Ln(FTSE)	7.97	0.20	7.37	8.36
Performance Pay	0.154	0.361	0	1
Bonus/Profit Share	0.282	0.450	0	1
Age	41.16	11.292	21	65
Male	0.465	0.499	0	1
A-Level	0.230	0.421	0	1
Degree or Higher	0.385	0.487	0	1
Married	0.288	0.453	0	1
Observations	138191			

Table A2. Summary Statistics: ShareCo

	Mean	Std. dev	Min	Max
Job satisfaction				
Very dissatisfied	0.03	0.17	0	1
Fairly dissatisfied	0.09	0.28	0	1
Neither	0.19	0.39	0	1
Fairly satisfied	0.53	0.50	0	1
Very satisfied	0.16	0.37	0	1
ESPP member	0.56	0.50	0	1
Current weekly contribution (£ UK)				
Nothing	0.45	0.50	0	1
£10-124	0.33	0.47	0	1
£125 (max)	0.23	0.42	0	1
Current No. ShareCo Shares:				
None	0.43	0.50	0	1
>0, <100	0.11	0.31	0	1
100-499	0.15	0.36	0	1
500-1999	0.14	0.35	0	1
2000+	0.16	0.36	0	1
Missing	0.01	0.12	0	1
Share price (AUS dollars)	9.52	0.50	8.4	10.49
Age				
<25 years	0.14	0.35	0	1
25-34 years	0.38	0.49	0	1
35-44 years	0.26	0.44	0	1
45-54 years	0.15	0.36	0	1
55+ years	0.06	0.23	0	1
Male	0.51	0.50	0	1
White	0.93	0.25	0	1
Degree	0.30	0.46	0	1
Professional qualification	0.18	0.38	0	1
Family status				
Not married, no children	0.35	0.48	0	1
Married, no children	0.31	0.46	0	1
Not married, with child	0.06	0.24	0	1
Married with child	0.28	0.45	0	1
Missing	0.00	0.05	0	1
Occupation				
Senior Manager	0.04	0.20	0	1
Middle Manager	0.07	0.25	0	1
Lower Manager	0.09	0.28	0	1
Operational/delivery	0.43	0.50	0	1
Support	0.13	0.34	0	1
Technical	0.14	0.34	0	1
Sales	0.11	0.31	0	1
No. employees directly supervised				

None	0.70	0.46	0	1
1-2	0.08	0.27	0	1
3-9	0.14	0.35	0	1
10-19	0.06	0.24	0	1
20+	0.02	0.16	0	1
Contractual hours				
<35	0.16	0.36	0	1
35	0.56	0.50	0	1
>35, <40	0.22	0.41	0	1
40+	0.06	0.24	0	1
Years working at ShareCo				
< 1 year	0.21	0.41	0	1
1, <2 years	0.07	0.25	0	1
2, <5 years	0.27	0.44	0	1
5, <10 years	0.26	0.44	0	1
10+ years	0.19	0.39	0	1
Missing	0.00	0.02	0	1
Hourly paid	0.08	0.27	0	1
Paid commission	0.17	0.37	0	1
Log annual earnings	9.87	1.10	0	12.39

Table A3. Quarterly Changes in FTSE 100 and Individual Wellbeing: BHPS/USoc 1998-2018

VARIABLES	(1) GHQ	(2) Happiness	(3) Job Satisfaction
Change Ln(FTSE)	0.0887	0.0190	-0.123
	(0.298)	(0.0330)	(0.0774)
PRP	0.0406	0.0142***	0.0107
	(0.0405)	(0.00448)	(0.0105)
Bonus/Profit	0.120***	0.00100	0.0679***
	(0.0341)	(0.00378)	(0.00888)
PRP*Ln(FTSE)	0.769	**0.146****	**0.272****
	(0.522)	**(0.0578)**	**(0.137)**
Bonus* Ln(FTSE)	0.0706	-0.00621	**0.209***
	(0.410)	(0.0453)	**(0.107)**
Constant	24.76***	3.074***	5.300***
	(0.276)	(0.0306)	(0.105)
Observations	130,172	130,856	137,095
R-squared	0.016	0.008	0.017

Notes: (1) The dependent variables are the inverted GHQ score (0-36), happiness compared to last year (1-4), and job satisfaction (1-7). (2) Standard errors in parentheses. (3) *** p<0.01, ** p<0.05, * p<0.1. (4) The controls are day of week, month and year effects, region dummies, age, gender, married, education, industry dummies and occupation dummies.

Table A4. Transition Matrix Between Payment Types: BHPS/USoc 1998-2018

		Last Year		
Current Year		No Performance Pay	PRP	Bonus/Profit Share
	No Performance Pay	53,607 (0.83)	2,569 (0.40)	8,045 (0.28)
	PRP	2,634 (0.04)	2,223 (0.35)	1,500 (0.05)
	Bonus/Profit	8,078 (0.13)	1,623 (0.25)	18,958 (0.57)

Note: Column percentages in ()