Do Financial Market Developments Benefit Employees? Evidence from the Derivatives Markets*

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Abstract

Do innovations in financial markets affect the welfare of employees? Analyzing trading of equity options and credit default swaps (CDSs), we find that underlying firms' employees benefit from such financial market development. The findings are consistent whether employee welfare is measured by ESG rating, employee satisfaction, workplace safety, or compensation. Firms spend more to improve the value of human capital when options or CDSs are traded on their securities. Further analysis suggests that derivatives trading affects employee welfare by reducing managerial short-termism, as information efficiency is enhanced by derivatives trading. Our findings reveal that derivatives trading is beneficial to workers.

Keywords: Derivatives, options, CDS, employee welfare, managerial short-termism

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Financial market developments can be "socially useful" without being obviously social: "It is in the nature of markets that there are some things which are indirectly socially useful but which in the short term will look to the external world like pure speculation."

– Adair Turner (2009), former chairmen of the UK Financial Services Authority (FSA)

1. Introduction

Financial development is often hailed as an important driver of economic growth. However, there is an ongoing debate whether financial innovations can benefit the society (Zingales, 2015). In particular, Warren Buffett referred financial derivatives, which are indicators of financial innovation, as "financial weapons of mass destruction". Nevertheless, derivatives have been widely used by market participants. The derivative usage has provided markets with information about the fundamental values of investments and expanded U.S. real GDP by about $149.5 billion (1.1%) between 2003 and 2012 (Milken Institute, 2014). In this paper, we add to the debate by taking a new perspective and investigating the impact of financial derivatives trading on rank-and-file workers.

Labor is one of the essential elements in production. In the current economic environment, which emphasizes quality and innovation, employees play an increasingly important role for corporate competitive success (Zingales, 2000). Indeed, corporate theories view employees as the key asset (e.g., Rajan and Zingales, 1998; Carlin and Gervais, 2009; Berk, Stanton, and Zechner, 2010). Recent years have seen the growing interest of the market and investors in employee welfare, as a major factor in companies' long-term prospects (e.g., see Mirchandani, 2021).[1] Pan, Pikulina, Siegel, and Wang (2022) provide evidence that equity markets care about employee welfare, such as pay inequality. And, in response to numerous investor requests, in 2021, the SEC decides to lay the foundation for more comprehensive human

[1]Edmans (2011) provides empirical support that employee satisfaction is positively correlated with shareholder long-term returns.

capital disclosure, which may shift the regulatory philosophy and policies.[2] From the social perspective, employee welfare is an important aspect of corporate social responsibility (CSR) or environmental, social, and governance (ESG) performance. Therefore, the investigation of the effect of derivatives trading on employee welfare has important policy implications regarding the role of derivatives in promoting social welfare.[3]

Previous literature has documented that human capital is a costly long-term asset. Firms under short-term pressure are likely to sacrifice long-term value to meet earning targets (e.g., Stein, 1989; Graham, Harvey, and Rajgopal, 2005). However, improved information environment causes prices to reflect fundamental value rather than short-term earnings which encourages managers to invest more in long-term value enhancing investment (Edmans, 2009). This is particularly valuable for investment into employee welfare which is vulnerable to cuts because its payoffs accrue slowly overtime and are difficult to evaluate (Cohn and Wardlaw, 2016). Active financial derivatives markets, such as options or credit default swaps (CDSs), provide valuable information about the underlying reference firms. There is ample evidence of the impact of derivatives trading on information efficiency and price informativeness for both options (e.g., Cao, Goyal, Ke, and Zhan, 2023; Hu, 2018, 2014) and CDSs (e.g., Kim, Wiedman, and Zhu, 2023; Lee, Naranjo, and Velioglu, 2018; Batta, Qiu, and Yu, 2016). Thus, we expect that derivatives trading increases corporate investment in employee welfare by improving corporate information environment and decreasing short-termism.

The equity referenced options and debt referenced CDSs are direct and most widespread

[2]Several petitions were submitted for the SEC's consideration on human capital disclosure in 2022-2023: including workforce turnover, skills and development training, compensation, benefits, workforce demographics including diversity, and health and safety.

[3]Firms' ESG decisions may vary with the issue and stakeholders involved (Liang, Qi, Zhang, and Zhu, 2023). What is good for E is not necessarily good for S, and vice versa. Environmentally responsible companies do not necessarily treat their employees well. For example, on October 4, 2021, Tesla, the electric vehicle and clean energy company, was ordered to pay $137 million to ex-worker over hostile work environment. While firms with high employee satisfaction may have poor overall ESG score (See Appendix B). The complexity of analysing firms' ESG performance suggests the importance to study E and S separately. We focus on employee welfare given employees' role as the key non-financial stakeholders and its link to long-term returns.

derivatives in the market and refer both types of firms' financial securities.[4] In our analysis, we focus on trading volume of derivatives given that the informational benefit of derivatives depends on their trading activity, beyond the presence of derivatives markets on the firm's financial securities per se (e.g., Roll, Schwartz, and Subrahmanyam, 2009). We construct option volume measure using data from OptionMetrics for the period of 1996 to 2018. We measure CDS volume using CDS net notional amount based on the Depository Trust & Clearing Corporation (DTCC) reports data from October 2008 to September 2015. Our baseline employee welfare measure is based on employee relations strength scores from MSCI KLD ESG STATS database which reflects firms' focus on employee welfare, and engagement in proactive programs and policies to improve it.

We find that employee welfare improves with options and CDSs trading activity. The positive effect of derivatives trading is both statistically and economically significant. A one standard deviation increase in options (CDSs) trading volume causes an average increase in an aggregated employee welfare score of 0.022 (0.017) point which is corresponding to an extra spending of \$5.2 (3.9) million in selling, general, and administrative expenses (SG&A) or 2.1% (1.6%) of net income. To further compare the options and CDSs trading effects, we incorporate trading volumes of both derivatives in the employee welfare analysis and find significant positive coefficients for both options and CDSs tradings. The results suggest that both options and CDSs tradings provide valuable information to the market and improve employee welfare.

However, derivatives trading can be endogenous. Firms associated with options or CDSs trading might be different from those without derivatives trading in ways that are systematically related to firms' employee-related decisions. To address endogeneity concerns, we use the instrumental variable (IV) approach. Specifically, following Roll et al. (2009), we use open interest and absolute moneyness as IVs for option trading volume. For CDSs trading,

[4]Equity options, which are the most common type of equity derivatives, are widely used by investors. The credit derivative, CDS, was one of the blockbuster innovations in recent decades and heavily implicated in the financial crisis. The examination of both options and CDSs enables us to provide the welfare implications of the direct and most widespread equity and debt derivatives.

we follow Saretto and Tookes (2013) and use lenders' foreign exchange hedging activities as an instrument.[5] The use of the instrumented derivatives trading volumes in the welfare analysis supports our baseline result of the improvement of employee welfare due to active derivatives trading.

To substantiate the baseline finding based on KLD welfare ratings, we explore the impact of derivatives trading on specific dimensions of and investment into employee welfare. Employee welfare is based not only on financial well-being, but also psychological, physical, and social well-being. We find that financial derivatives trading increases the reference firm's median worker pay (i.e., financial well-being), the probability of being in the list of best firms to work for (i.e., psychological well-being), while it decreases the workplace incidence rates and pay inequality within firms (i.e., physical and social well-being). These results provide specific evidence for the positive yet likely unintended multi-dimensional effect of derivatives on employee welfare in underlying firms. To measure investments associated with improvement of employee welfare, in addition to firm's total labor expenses from Compustat as a direct measure of investment in maintaining employees, we also use firms' SG&A expenses, which incorporate employee payments and benefits. Consistent with the finding that derivatives trading improves employee welfare, we find that firms associated with active trading of derivatives increase the relevant investments.

Having established the relationship between derivatives trading and employee welfare, we next provide evidence for the channel that drives these results. The short-termism channel predicts that derivatives trading improves corporate information environment which reduces short-termism activities resulting improved employee welfare. We thus directly examine changes in corporate short-termism activities when there is active derivatives trading on a firm. We find evidence that derivatives trading decreases the likelihood of corporate engaging in myopic activities, such as earning smoothing and "meeting or beating" analysts' earning forecasts by a small margin. We further conduct two-step decomposition and path analysis

[5]Section 4.2 discusses the construction of IVs in detail.

to confirm that active derivatives trading improves employee welfare by reducing managerial myopia and encouraging firms to invest more in long-term assets.[6]

Next, we conduct cross-sectional tests based on firm and employee characteristics to provide additional evidence for the short-termism channel. Specifically, if derivatives improve employee welfare through the reduced short-termism channel, the effect should be more pronounced for firms under greater market short-term pressure. Firms in highly competitive industry, technology intensive industry, and those with high financial analyst coverage are likely to face greater pressure to meet short-term earning targets. Indeed, we find that the positive impact of derivatives tradings on employee welfare is more pronounced in these firms. Moreover, the derivatives trading impact may vary within employee characteristics. Employees with greater welfare concerns or those in a firm that relies more on their skills are more likely to demand better treatment. The better information environment and greater managers' incentives to invest in long-term assets can make firms with active derivatives trading more receptive to employees' needs. Consistent with the prediction, we find that the derivatives trading effects increases with employee welfare concerns and corporate reliance on employees.

Our paper contributes to the growing literature on the drivers of corporate CSR policies, particularly employee welfare. Employee welfare such as workplace safety improves with corporate financial resources (e.g., Cohn and Wardlaw, 2016), monitoring (e.g., Cohn, Nestoriak, and Wardlaw, 2021; Bradley, Mao, and Zhang, 2022), corporate information exposure (Liu and Lu, 2023), etc. Different from the previous literature, we provide the first and comprehensive evidence that financial derivatives trading, such as options and CDSs, positively affects employee welfare.

Furthermore, our paper contributes to the literature on the solutions to managerial short-termism. Recent literature documents the role of blockholders' informed trading (Edmans,

[6]Although our findings are consistent with the reduced short-termism channel, the observed positive effect can be also driven by other mechanisms. We discuss and design tests to exclude alternative channels in sections 2 and 5.2, respectively.

2009) and tax-based policy tool (He, Jacob, Vashishtha, and Venkatachalam, 2022). We instead document a solution provided by financial innovations. We show that, due to its information production, an active traded financial derivatives market can reduce managerial myopia and encourage corporate investment in employee welfare.

Our paper also sheds new light on the real effects of financial derivatives on corporate policies (e.g., Bernile, Hu, Li, and Michaely, 2023; Norden, Yin, and Zhao, 2023; Bartram, Conrad, Lee, and Subrahmanyam, 2022).[7] While previous literature documents the positive impact of derivatives on innovation (Blanco and Wehrheim, 2017; Chang, Chen, Wang, Zhang, and Zhang, 2019), little is known whether derivatives trading affects corporate investment into another important long-term assets – employees. We contribute to provide first comprehensive assessment of the effect of derivatives trading, including both options and CDSs, on general employees, who are key stakeholders of a firm. The focus on both equity and debt referenced derivatives enables us to provide more general implication of the impact of derivatives trading on underlying reference firms.

Finally, our finding of the positive yet likely unintended effect of financial derivative markets on employees has important implications for policy makers. Whether financial market developments can be "socially useful" has been one of the fundamental issue faced by regulator. Our paper contributes to a better understanding of both the welfare effects of derivatives on behalf of society and factors affecting employee welfare by providing direct evidence that derivatives tradings can improve employees welfare.

The remainder of the paper is organized as follows. Section 2 discusses the relevant literature and hypotheses. Section 3 describes the data and samples used in the empirical analysis. Section 4 presents the baseline empirical results, addresses potential endogeneity concerns, explores derivatives impact on specific dimensions of and investment into employee welfare. Section 5 establishes channels through which derivatives trading affects employee welfare. Section 6 concludes the paper.

[7] Augustin, Subrahmanyam, Tang, and Wang (2016) provide a survey of the CDS literature.

2. Literature and hypothesis development

Despite the importance of labor, employee welfare is a costly long-term asset that can benefit firm value only in the long run by increasing employee productivity and decreasing litigation and other relevant costs (e.g., insurance and absenteeism costs). Short-termism pressure can distort corporate investment decisions, particularly investment into intangible assets such as employee welfare (Caskey and Ozel, 2017; Kang and Kim, 2020). However, an improved information environment can mitigate short-termism pressure and induce managers invest more in long-term value enhancing investment. Indeed, Edmans (2009) shows theoretically that informed trading by blockholders can cause prices to reflect fundamental value and induce managers to undertake long-term value enhancing investment.[8] Similarly, there is ample literature showing that option or CDS trading improves corporate information environment. For example, Cao et al. (2023) find that options trading can increase underlying stock price informativeness and information acquisition by both option and stock investors. Acharya and Johnson (2007) find evidence of information flow from CDSs to stock markets because of informed trading by bank lenders. Lee et al. (2018) confirm that CDSs contribute to financial market price discovery when firm-specific credit information matters the most.[9] Batta et al. (2016) document that CDSs trading improved forecast accuracy by financial analysts. Moreover, managers can learn new information incorporated into stock prices after CDS trading that is relevant to their investment and forecasting decisions (Kim et al., 2023). Thus, given the improved information environment after derivatives trading, we expect that derivatives trading can mitigate short-termism and improve employee welfare

[8]Managerial short-termism or myopia is considered the first-order problem faced by modern firms. Graham et al. (2005) find that 78% of executives responded to the survey admit sacrificing long-term value to meet short-term earnings targets. Prior studies have explored the sources of myopia and documented the distortion effect of short-termism pressure on investment decisions (e.g., Gigler, Kanodia, Sapra, and Venugopalan, 2014; Asker, Farre-Mensa, and Ljungqvist, 2015; Edmans, Fang, and Lewellen, 2017; Edmans, Fang, and Huang, 2022). However, relatively less attention has been paid to solutions to managerial short-termism. He et al. (2022) find that the imposition of higher taxes on short-term capital gains relative to long-term capital gains can mitigate corporate myopia.

[9]The information flow from CDSs to related market is especially significant for firm-specific negative information (e.g., Lee, Naranjo, and Sirmans, 2021a,b; Liu, Ng, Tang, and Zhong, 2023).

of reference firms.

Hypothesis 1: *A firm's employee welfare is improved when there is active equity options or debt CDSs trading on it.*

To provide additional evidence for the reduced short-termism channel, in addition to the improved employee welfare, we directly examine changes in corporate short-termism activities when there is active derivatives trading on a firm. The short-termism channel predicts that derivatives trading improves corporate information environment which mitigates managerial myopia and encourages firms to focus more on long-term value enhancing investment. Thus, in addition to the increased long-term investment, we expect reduced short-termism activities when there is active derivatives trading on the firm. We follow previous literature and proxy corporate short-termism activities by the likelihood of earning smoothing and "meeting or beating" analysts' earning forecast by a small margin.

Hypothesis 2: *Options or CDSs trading on a firm decreases corporate short-termism activities, such as the likelihood of earning smoothing and "meeting or beating" analysts' earning forecast by a small margin.*

The effect of derivatives trading on employee welfare can vary with firm characteristics. If derivatives improve employee welfare through the reduced short-termism channel, the effect should be more pronounced for firms under greater market short-term pressure. Firms in highly competitive industry, technology intensive industry, and those with high financial analyst coverage are likely to face greater pressure to meet short-term earning targets (Aghion, Bloom, Blundell, Griffith, and Howitt, 2005; Graham et al., 2005; He and Tian, 2013; Caskey and Ozel, 2017). We thus expect greater financial derivatives impact on employee welfare in such firms.

Hypothesis 3: *The positive relationship between options or CDSs trading and employee welfare is stronger when firms face greater short-term pressure.*

Furthermore, the effect of derivatives on employee welfare can also change with employee characteristics. Employees with greater welfare concerns are more likely to demand better

treatment and trigger improvement in employee welfare. The better information environment and greater managers' incentives to invest in long-term assets can make firms with active derivatives trading more receptive to employees' needs and concerns. That also allows firms to alleviate conflicts and controversies with labor, that might lead to lawsuits or regulatory penalties (e.g., due to unfair treatment, unsafe working place). Furthermore, firms may have greater incentive to maintain and treat their employees well when they rely more on employees' skills and expertise. Thus, we have the following hypothesis:

Hypothesis 4: *The positive relationship between options or CDSs trading and employee welfare is stronger when employees have greater welfare concerns and when firms rely more on employee skills.*

In addition to the reduced short-termism channel, active derivatives trading may affect employee welfare through alternative channels. On the one hand, a positive association between derivatives trading and employee welfare can be explained by relaxation of corporate financing constraints due to active equity options or debt CDSs trading on a firm (Bernile et al., 2023; Saretto and Tookes, 2013). Firms have more financial resources to invest into long-term value enhancing investment such as employee welfare. On the other hand, firms with active derivatives market might be more attractive to informed traders including institutional investors who can positively affect corporate investment into CSR (Chen, Dong, and Lin, 2020). In contrast, active derivatives trading may negatively affect employee welfare in a firm. Instead of giving firms more incentive to invest into long-term assets, active derivatives trading may instead introduce additional pressure to meet market expectations.[10] In the CDS setting, CDS-protected creditors are tougher in debt renegotiations (Bolton and Oehmke, 2011). That may force firms to engage more in myopic activities to maintain or improve credit ratings and avoid debt negotiation with tough CDS-protected creditors. We discuss and design tests to distinguish relevant channels in section 5.

[10]Firms have pressure to deliver quarterly earnings results which can affect their stock prices (Bhojraj, Hribar, Picconi, and McInnis, 2009). With active derivatives market, underlying reference firms might be under extra pressure of maintaining sound earnings results which can affect not only stock market, but also derivatives market performance (Callen, Livnat, and Segal, 2009).

3. Data and summary statistics

To investigate the effect of financial derivatives trading on employee welfare, we obtain data on trading volume of equity options and credit derivatives associated with the U.S. public companies. Our options trading volume data is obtained from OptionMetrics LLC from 1996 to 2018, which provides daily information on each individual put and call option traded on U.S. listed equities. Following Roll et al. (2009), for each stock, we measure the annual dollar options volume by aggregating daily dollar trading volume for all listed options across all trading days in a fiscal year.[11] The daily dollar trading volume is calculated as the midpoint of the daily closing bid and ask price (used as a proxy for the trading price) multiplied by the trading volume for that day. The instrumental variables for options trading volume, open interest and moneyness, are also based on OptionMetrics.

In terms of data on credit derivatives, we focus on its most common type, single name CDSs, with volume data from the DTCC. The DTCC is a centralized infrastructure for reporting and asset servicing on credit derivative transactions, which captures around 98% of the entire global market for credit derivatives. The DTCC provides weekly information on aggregate gross and net notional CDS volume on a particular reference entity for the top one thousand reference firms since October 31, 2008.[12] That results in a shorter sample of firms from October 31, 2008 to September 15, 2015 than our options trading sample. We measure CDS trading volume for a reference firm by CDS net notional amount at the latest week of a firm's fiscal year.[13] The term "notional" determines the par amount of credit protection that is bought or sold. We focus particularly on the net notional because it is a more reliable

[11] In our analysis, we focus on aggregated options volume with no breakdown into call and put options with different times to maturity. As pointed by Roll et al. (2009), there are no clear hypotheses for an analysis of volume disaggregated by type of options and its maturity. For instance, it is possible that managerial investment decisions might be linked more to "good news" rather than "bad news". However, since calls and puts can be bought and sold freely, and OptionMetrics LLC has data on unsigned volume with no information on the signed order imbalance, the sum of call and put volumes cannot be linked to bullish or bearish sentiment.

[12] The total net notional CDS protection written on the top 1,000 single-name entities represents the largest fraction of the overall single-name CDS market, around 90% (Oehmke and Zawadowski, 2017).

[13] Our conclusions remain unchanged if we measure CDS trading volume for a reference firm as an average weekly CDS net notional amount in a fiscal year.

measure of the amount of credit risk transferred in the CDS market due to the adjustment of the gross notional amount for offsetting positions (Oehmke and Zawadowski, 2017). The instrumental variable for CDS trading volume, hedging activities on foreign exchange of firms' lenders, is based on data from Federal Reserve call reports, the DealScan syndicated loan database and the Mergent Fixed Income Securities Database (FISD).

Our baseline measure of employee welfare is based on the MSCI ESG STATS database from 1996 to 2018, which have been widely used to evaluate firms' strengths and concerns in employee relations (e.g., Bae, Kang, and Wang, 2011; DiGiuli and Kostovetsky, 2014).[14] To measure employee welfare, we follow Bae et al. (2011) and use five positive performance indicators of employee relations: 1) union relations, i.e., the company has high union density and has taken exceptional steps to treat its unionized workforce fairly; 2) cash profit sharing, i.e., the company has a cash profit-sharing program through which it has recently made distributions to a majority of its employees; 3) employee involvement, i.e., the company strongly encourages worker involvement and/or ownership through stock option plans, gain sharing, sharing of financial information, or participation in management decision making; 4) retirement benefits strength, i.e., the company has a notably strong retirement benefits program; and 5) health and safety strength, i.e., the company has a strong health and safety program. MSCI ESG STATS changes the rating methodology over time, which results in a variation in the number of employee relation indicators during our sample period. To ensure comparability, we follow the previous literature (e.g., Albuquerque, Koskinen, and Zhang, 2019) and construct a normalized employee welfare score. Specifically, we sum the ratings of the above five categories of strengths, with each rated 0 or 1, and scale the measure by the maximum possible number of employee relation strengths in each year. As a result, our aggregated employee welfare score is bounded between zero and one.

We obtain firm financial information from the CRSP-Compustat merged database, pro-

[14]MSCI ESG STATS was previously known as KLD STATS. The database covers the 3000 largest publicly traded US companies (Russell 3000) by market capitalization since 2003. Prior to 2003, it covered S&P 500 companies since 1991.

viding information on firms' daily stock returns and annual accounting data. We use annual data since employee welfare data are not reported quarterly. We exclude firms with missing or negative values for total assets. Since our data sets do not overlap perfectly, our baseline analysis is based on a period of 1996-2018 for options trading, and a period of October 2008 – September 2015 for CDS trading, unless otherwise specified. All dependent and control variables in our analysis are winsorized at 1% at both tails of their distributions. All dollar amounts are adjusted for inflation using the annual average CPI index for urban consumers as of 1996 from the Bureau of Labor Statistics (BLS).

In addition to our baseline aggregated measure of employee welfare, we construct measures of specific dimensions of employee well-being by collecting data on a firm's inclusion in Fortune magazine's list of the "100 Best Companies to Work For" over 1996 – 2018, workplace accidents and injuries over 1996 – 2011 from OSHA, CEO-Worker pay ratio over December 2017 – March 2021 from Equilar.[15] To calculate variables used for exploring the underlying mechanism, we collect data on CEO characteristics from ExecuComp, analyst coverage and forecasts from the Institutional Brokers' Estimate System (I/B/E/S), high hazard industries from OSHA website's archives, mass layoff statistics across industries from the US BLS "Mass Layoff Statistics", total industry employment from the US Bureau of Economic Analysis (BEA), and patent data from Noah Stoffman's website with the raw patent data based on the US Patent and Trademark Office. To test alternative channels, we use data on institutional ownership based on 13-F filings, and a financial constraint measure based on firm disclosures in 10-K from the website of Gerard Hoberg and Vojislav Maksimovic over 1997-2015.

The summary statistics of the variables used in the empirical analysis are provided in Table 1. Appendix provides detailed definitions of all variables. In total, our analysis is based on two samples. The first sample of 30,979 firm-year observations is used to examine the effect of options trading on employee welfare. That includes 3,537 firms with positive options

[15]To conduct tests based on data from Equilar, we expand our derivatives trading volume data for both options and CDSs over December 2017 – March 2021.

trading volume. The second sample of 12,610 firm-year observations is used to examine the effect of CDS trading on employee welfare. That includes 289 firms with positive CDS trading volume.[16] Although our sample of CDS-referenced firms is much smaller than the sample of firms with listed options, on average, the annual CDS trading volume exceeds significantly the annual option trading volume: $595.3 million versus $1.4 million. Since financial derivatives trading volume is highly skewed, we use the natural logarithm of one plus total dollar trading volume as a measure of derivatives trading activity.

Our samples are comparable to those of previous studies. On average, firms with traded options and CDSs are larger and more profitable, have higher firm leverage, and lower book-to-market ratio than firms without derivatives trading. In addition, based on average employee welfare scores, firms with traded financial derivatives treat their employees better than firms with no derivatives trading: 0.07 of option firms versus 0.02 of non-option firms, and 0.14 of CDS firms versus 0.04 of non-CDS firms. Furthermore, firms with traded derivatives outperform firms without derivatives in each of the five positive performance indicators of employee relations based on MSCI ESG STATS database. However, on average, a median worker's pay is lower in firms associated with derivatives trading than those in firms with no derivatives trading.

Finally, firms with positive derivatives volume appear more frequently in the list of the "100 Best Companies to Work For", i.e., 2% of option firms versus 0.1% of non-option firms, and 3% of CDS firms versus 0.4% of non-CDS firms. In the subsample of firms with positive derivatives trading volume, we further sort firms into quartiles by derivatives trading volume in each year and plot the average percentage of firms in the list of "100 Best Companies to Work For" for each quartile across all years. As shown in Figure 1, the percentage of firms included in the list of best firms increases monotonically with derivatives trading volume. The percentage of best firms for the highest derivatives trading volume quartile is more than

[16]After dropping sovereigns, states, municipalities and non-U.S. companies, matching CDS data with CRSP-Compustat merged database left us with 417 CDS-traded U.S. public firms. That is consistent with prior studies in CDS (e.g., see Danis and Gamba, 2018). However, combining this resulting CDS sample with MSCI ESG STATS reduces the number of CDS-traded firms to 289.

six times higher than that for the lowest quartile.

4. Financial derivatives and employee welfare

In this section, we examine the impact of financial derivatives trading, including both equity referenced options and debt referenced CDSs, on corporate employee welfare. We address the endogeneity concern by using IV approach. In addition to the baseline employee welfare ratings from KLD, we extend our analysis and measure real outcomes of specific dimensions of employee welfare, including employee satisfaction, workplace safety, pay inequality, and median employee pay. Finally, we examine whether an improvement of employee welfare performance is supported by firms' investments in employee well-being programs.

4.1. Baseline results

To investigate the relationship between financial derivatives trading and employee welfare, we estimate the following regression

$$\begin{aligned} Employee\,Welfare_{i,t} = \beta_0 + \beta_1 Derivative\,Volume_{i,t} + \beta_2\, X_{i,t} \\ + \beta_3\, Industry_i + \beta_4\, Year_t + \epsilon_{i,t}, \end{aligned} \tag{1}$$

where i and t indicate firm and fiscal year, respectively. The dependent variable, *Employee Welfare*, is a normalized employee welfare score. The key independent variable, *Derivative Volume*, is a measure of financial derivatives trading activity, which is presented by either trading volume of equity options, $ln(1 + OptVol)$, or credit derivatives, $ln(1 + CDSVol)$. *OptVol* is the trading volume of options. *CDSVol* is CDS net notional amount. Volume for firms with no financial derivatives trading data is assumed to be zero. We include year fixed effects ($Year_t$) to account for time-specific variation in employee treatment, while industry

fixed effects ($Industry_i$) control the heterogeneity in corporate employee treatment across industries. The standard errors are robust to heteroskedasticity and clustered by firm level.

To ensure that the effect of financial derivatives trading is not driven by other firm characteristics, we include a variety of control variables ($X_{i,t}$) that have been identified as important determinants of corporate CSR policies (e.g., DiGiuli and Kostovetsky, 2014; Cronqvist and Yu, 2017). In particular, we incorporate *Leverage* (total debt to the book value of assets), *Firm Size* (the natural logarithm of market capitalization), *Dividends* (cash dividends to the book value of assets), *Cash* (cash balances to the book value of assets) to account for the effects of capital structure, financial constraints and cash holdings. In addition, we include *Book-to-Market* and *ROA* (return on assets) to account for corporate growth opportunities and profitability. Overall, the chosen control variables partially alleviate concerns about potential spurious correlations, that some firm characteristics can affect both corporate employee welfare and financial derivatives trading activity on a firm's debt or equity at the same time. For instance, larger firms and firms with good financial performance may afford to maintain high employee welfare standards, and, at the same time, have high financial derivatives trading activity.

The baseline results are presented in Table 2, with standard errors reported in parentheses. In columns (1) and (2), we estimate the baseline regression based on an ordinary least squares (OLS) model for options and CDSs volume, respectively. We find positive and statistically significant coefficients at the 1% level for the trading volume of both derivatives, indicating that higher derivatives trading volume is associated with better employee welfare.[17] The magnitude of the coefficients implies that a one standard deviation increase in financial derivatives trading volume is associated with an increase of the employee welfare score by 0.022 point for options trading and 0.017 point for CDSs trading. Given the mean value 0.06 for employee welfare score, these increases are economically meaningful.[18] Fur-

[17]Our findings are consistent with Li, Lin, Lin, and Shen (2023) that also finds a positive impact of options trading on corporate CSR policies.

[18]In a log-level regression model, the effect of the change in the financial derivative volume variable by one standard deviation on the change in employee welfare measure is calculated as $0.036 \times 0.61 = 0.022$ for

thermore, simultaneous inclusion of both options and CDSs trading in the baseline regression in column (3) leaves the coefficients for both $Ln(1+OptVol)$ and $Ln(1+CDSVol)$ positive and significant at the 1% level. Although, the magnitude of coefficients is slightly reduced. Thus, both options and CDSs tradings provide valuable information to the market and positively affect employee welfare. In columns (4) - (6), we repeat the analysis by estimating the baseline OLS regression model for lagged trading volume of derivatives, and obtain similar results. The coefficients of the control variables in Table 2 are generally consistent with those reported in prior literature. Larger firms, firms with high book-to-market ratio and dividend payments treat their employees better.

To better understand the economic significance, we follow the literature on CSR ratings (e.g., see DiGiuli and Kostovetsky, 2014; Chen et al., 2020) and calculate how much it would cost a firm to achieve such improvements in welfare score. A firm's SG&A incorporates spending on CSR programs. Therefore, we expect firms with higher Employee Welfare score to have higher SG&A expenses, all else equal. In column (1) of Table A.1, we regress the natural log of SG&A expenses on Employee Welfare score in the same year. We find a positive and statistically significant at the 1% level correlation between Employee Welfare score and SG&A. A one-standard deviation increase in Employee Welfare score (0.14) is associated with a 5.1% increase in SG&A. Given the mean SG&A of our sample firms is \$639 million, this percentage increase converts to an extra spending of \$32.6 million (5.1% $\times$ \$639 million) for the mean firm. Whereas a one-standard deviation increase in options trading volume causes an increase in employee welfare score of 0.022 points, or 0.16 (0.022/0.14) standard deviation increase, which can be translated into an extra spending of \$5.2 million in SG&A expenses. Given that mean net income is 251 million for sample firms, this cost represents 2.1% of the net income. Similarly, for CDS trading, a one-standard deviation increase in CDS trading volume causes an increase in employee welfare score of 0.017 points, or (0.17/0.14) standard

the options effect and $0.008 \times 2.10 = 0.017$ for the CDS effect, where 0.036 and 0.008 are the estimated coefficients of $ln(1+OptVol)$ and $ln(1+CDSVol)$ in Table 2 (columns 1 and 2), respectively. The standard deviation values are based on Table 1.

deviation increase, which can be translated into an extra spending of $3.9 million in SG&A expenses or 1.6% of the net income. Taken together, the effect of financial derivatives trading comprises 1.6% – 2.1% of the net income.[19]

In Internet Appendix Table A.2, we conduct additional tests based on alternative estimation models. Since the employee welfare measure is bounded between zero and one, as robustness checks, we estimate the baseline model for employee welfare using a fractional probit model and a generalized linear model (GLM) with a logistic link function and binomial distribution in columns (1) - (2) for options and (4) - (5) for CDSs (e.g., see Papke and Wooldridge, 1996, and Core, Guay, and Larcker, 2008). In columns (3) and (6), we repeat our baseline OLS regression model for a different specification of financial derivatives trading activity, measured in the dollar volume. We obtain similar results using these alternative estimation models. Overall, our baseline results in this section provide preliminary evidence that active trading of financial derivatives improves employee welfare in underlying reference firms. The effect is not only statistically significant but also economically large.

4.2. Endogeneity

The baseline results suggest a strong positive relationship between financial derivatives trading activity and corporate employee welfare. Although we have controlled for a standard set of variables in Eq. (1), that previous studies have shown to affect both corporate employee welfare and financial derivatives trading activity, the assignment of financial derivative contracts to firms can be endogenous and might be related to unobservable factors that also determine corporate employee treatment policies. In addition, firms with more generous employee treatment policies might have more active financial derivatives trading referencing

[19]To put these numbers in context, DiGiuli and Kostovetsky (2014) find that Democratic-leaning firms spend an extra $18 million per year or 10% of firm's net income on CSR compared with Republican-leaning firms. Chen et al. (2020) document that a one standard deviation increase in institutional ownership increases a firm's CSR rating which costs an extra $32 million in SG&A or 15% net income. Employee welfare is one of the important components of CSR policies. The estimated extra spending of $3.9 – $5.2 million in SG&A or 1.6% – 2.1% of firm's net income due to financial derivatives trading activity fit well into the previous literature.

their equity or debt. In this section, to mitigate endogeneity concerns and support causal inferences, we employ an IV approach based on a two-stage least squares (2SLS) model.

The choice of instruments is guided by prior studies on options (e.g., Roll et al., 2009; Blanco and Wehrheim, 2017) and CDSs (e.g., Saretto and Tookes, 2013; Subrahmanyam, Tang, and Wang, 2014, 2017). Based on the current literature, the proposed instruments are likely to meet both required conditions of relevance and exclusion. The relevance condition requires no zero partial correlation between the instrument and the endogenous variable. Along with the first condition, the exclusion restriction implies that the instrument is uncorrelated with the outcome variable (i.e., corporate employee welfare), except through the variables for which we control (Larcker and Rusticus, 2010).

Specifically, we follow Roll et al. (2009) and use open interest and absolute moneyness of listed options as IVs for options trading volume. Open interest, which is the average open interest across all options on a stock throughout the year, is positively related to options trading volume. In addition, absolute moneyness is the average absolute difference between the stock's market price and the option's strike price. Moneyness is related to options trading volume, although the direction of the relation is an empirical question and depends on investors' moneyness preferences. For instance, informed traders are more likely to prefer out-of-the-money options due to the maximum leverage associated with them, while uninformed traders are more likely to prefer in-the-money options to avoid risky positions. In contrast, agents speculating on volatility are more likely to prefer at-the-money options, and avoid deep out-of-the-money and in-the-money options because their vega is close to zero. Thus, the proposed instruments are likely to meet the relevance condition. For the exclusion condition, since open interest contains both call and put options, it is unlikely that the sum of interest on these options has direct association with corporate employee treatment policy. As the exchanges periodically list new options that are at-the-money, there is no reason to believe that average unsigned moneyness is directly related to corporate employee treatment

policy.[20]

In addition, we use hedging activities on foreign exchange (FX) of firms' lenders as an instrument for CDS trading volume. Minton, Stulz, and Williamson (2009) document that lenders with larger foreign exchange hedging positions are more likely to hedge their credit risk using CDSs. Given the observed positive correlation between lenders' FX hedging activities and their hedging demand for CDS contracts on their borrowers, the proposed instrument meets the relevance condition. Furthermore, the instrument is also likely to meet the exclusion condition given the main purpose of FX derivatives to hedge foreign exchange risks of firms' lenders, with relation to macro risks rather than to firm-level risks. Consequently, we expect that a borrowing firm's employee treatment policy should not be directly affected by their lenders' hedging positions in FX derivatives.

The results of the estimation of the IV approach are presented in Table 3, with standard errors reported in parentheses. Columns (1) and (2) report the results of the first stage for $ln(1 + OptVol)$ and $ln(1 + CDSVol)$, respectively. In column (1), the instruments are *Open interest* (the natural logarithm of the average open interest across all options on a stock throughout the year), and *Moneyness* (the natural logarithm of the average absolute difference between the stock's market price and the option's strike price). In column (2), we use $ln(1 + FX)$ as an instrument, where FX is the average notional amount of foreign exchange derivatives used for hedging purposes relative to the bank's total assets across all bank lenders and bond underwriters that a firm has borrowed from over the past five years. In addition to control variables used in the baseline model, we also control for a firm's credit rating which can affect derivatives trading as documented in the previous literature. We find that the chosen firm characteristics predict derivatives trading volume reasonably well, with R^2 of 40% – 56%. Whereas positive and statistically significant at the 1% level coefficients for our instruments give an additional support for the fulfillment of the relevance condition.

[20]It is possible that option moneyness might be related to stock return volatility because exchanges might tend to list options on stocks with more dispersed exercise prices due to their higher volatility (Roll et al., 2009). Our results are robust if we additionally control for stock return volatility, measured by the annual standard deviation of daily returns, in the 2SLS regression.

Finally, we find that the first-stage Sargan F-test statistic for the "weak instrument rule of thumb" is strongly significant (p-value of 0.00, F is well above 10), which suggests that we can reject the hypothesis of weak instruments.

The results of the second stage estimation of the IV approach are reported in columns (3) and (4) with the instrumented $ln(1+OptVol)$ and $ln(1+CDSVol)$, respectively. Consistent with the findings from the baseline OLS specification, we find positive and statistically significant coefficients at the 1% level for the trading volume of both derivatives. Thus, the above tests indicate a positive and causal relation between trading activity of financial derivatives and corporate employee welfare.

4.3. Specific dimensions of employee well-being

Our analysis thus far relies on the aggregated measure of employee welfare based on employee relations performance ratings of MSCI KLD. In this section, we further explore specific dimensions of employee well-being outcome measures. Although employee well-being is quite often associated with only one of its dimensions such as job satisfaction, we define it more broadly as the overall quality of an employee's experience and functioning at work (Warr, 1987). Specifically, we follow Grant, Christianson, and Price (2007) and examine the three core dimensions of employee welfare, i.e., psychological, physical, and social.[21] For a more comprehensive approach, we follow industry experts and also consider the fourth dimension, i.e., financial.[22]

4.3.1. Psychological well-being: employee satisfaction

Psychological well-being is based on the subjective experiences of individuals, and associated with their satisfaction and happiness. If financial derivatives trading increases firms'

[21]For instance, the World Heath Organization (WHO) defines well-being as "a state of complete physical, mental and social well-being, not merely absence of disease or infirmity" (WHO, 1946).

[22]See World Economic Forum Annual Meeting, 2019, https://www.weforum.org/agenda/2019/01/ensure-employee-well-being-in-company

focus on employee welfare, one natural outcome of employee well-being initiatives might be an increase of employee satisfaction.

To measure employee satisfaction, we follow Edmans (2011) and use a firm's inclusion in the list of the "100 Best Companies to Work for in America" by Fortune magazine over 1996 to 2018. This list is based on annual survey organized by the Great Place to Work® Institute with no involvement of *Fortune* in the evaluation process of companies. Two-thirds of the company score is based on anonymous responses of randomly chosen employees. The remaining part of the company score is based on the Institute's evaluation of quality and consistency of the employee experience across demographic groups and roles within each organization. Overall, the company score is supposed to cover five components of employee satisfaction: credibility (management's communication practices, competence and integrity), respect (support, collaboration and involvement in decisions), fairness (compensation, diversity), camaraderie (strong community) and pride (pride in the company and individual impact). According to the Great Place to Work® Institute, companies included in the Best 100 prioritize employee well-being, inclusion, purpose, listening and care, that increase job satisfaction.

In Table 4, columns (1)-(2), we repeat the baseline employee welfare regression analysis by replacing the dependent variable with a dummy variable that equals one if the firm appears in Fortune magazine's list of the "100 Best Companies to Work for" in a given year. The results demonstrate that firms are more likely to be included in the list of 100 best firms when there are active financial derivatives trading on them. The coefficients for both options and CDSs trading volumes are positive and statistically significant at 1% and 5% level. The results suggest that financial derivatives trading affects psychological component of employee well-being by improving employees' satisfaction in underlying reference firms.

4.3.2. Physical well-being: workplace safety

Physical well-being determines employee health, and is based on opportunities and resources needed to sustainably maintain bodily health. An improvement of workplace safety in firms can be another potential output of employee well-being initiatives. A firm, that pays more attention to the well-being of employees, is likely to spend more on employee safety training and supervision, maintaining and acquiring equipment with better safety features, replacing old parts and machines, and other related costs.

To measure an improvement of workplace safety in firms, we follow Cohn and Wardlaw (2016) and Bradley et al. (2022) and construct an establishment-level measure of total incidence rates based on OSHA data over 1996 to 2011. *Total Incidence Rate* is the sum of deaths, all injuries and illnesses that result in days away from work, or with job restriction, transfer, and other registered cases scaled by the number of hours worked by all employees.[23] The better the workplace safety, the lower the injury risk, and therefore the better physical well-being of employees. In Table 4, columns (3) and (4), we repeat the baseline employee welfare regression analysis by replacing the dependent variable with *Total Incidence Rate*. In addition to control variables used in the baseline model, we also include several establishment-level variables available in OSHA to control for factors that may affect the number of cases, including *Strike* (an indicator of any strike/lockout), *Seasonal* (an indicator of the presence of seasonal workers), *Shutdown* (an indicator of shutdown/layoff), and *Disaster* (an indicator of adverse weather conditions/natural disaster). Standard errors reported in parentheses are clustered at establishment level. We find highly significant negative coefficients for both options and CDSs volumes on workplace incidence rates. The results suggest that financial derivatives trading improves physical well-being of employees by decreasing a risk of injuries at work through potential greater firms' investment in improvement of workplace safety.

[23]Following the recommendation of the US BLS, we multiply our constructed variable by 200,000 hours, i.e., the equivalent of 100 employees working 40 hours per week, 50 weeks per year, which provides the standard base for the incidence rates.

4.3.3. Social well-being: pay inequality

Social well-being is based on interpersonal relationships, levels of social support and perceived trust and fairness of treatment (Guest, 2017). Although there are many factors affecting social well-being of employees, fairness of treatment is one of the most important aspects. Perceived fairness of employee rewards, often associated with high basic pay rather than incentive schemes, is an important determinant of employee retention and motivation.

There is a growing debate about inequality in society, especially in relation to wages. Large income dispersion exists not only between the middle-class and high-paid workers, but also within firms (Song, Price, Guvenen, Bloom, and Von Wachter, 2019). Recent literature documents general aversion of income inequality in society, including in financial markets. For example, Pan et al. (2022) find that investors are concerned about within-firm pay dispersion and income inequality. Equity market reacts negatively to high pay disparity between CEO and worker pay, and more inequality-averse institutional investors tend to reduce their allocations to such stocks relative to other investors.

To assess whether financial derivatives trading has any effect on pay inequality within firms, we construct proxy of the dispersion in pay between a firm's top executives and rank-and-file employees based on Equilar data from December 2017 to March 2021. The pay dispersion data is available only for fiscal years beginning on or after January 1, 2017 in compliance with its mandatory disclosure to SEC. Based on the data, we define *CEO-Worker Pay Ratio* as the natural logarithm of the ratio of the CEO's pay to the median worker pay. Then we regress the *CEO-Worker Pay Ratio* on derivatives trading and control variables. In addition to control variables used in the baseline model, we also control for Employee and CEO characteristics, including the number of employees, employee productivity, CEO tenure and age. As we can see from Table 5 columns (1) and (2), the coefficients for derivatives trading are negative and statistically significant at 1% and 5% level. The results suggest that financial derivatives trading can influence social well-being of employees by reducing pay inequality within firms.

4.3.4. Financial well-being: pay level

Financial well-being refers to financial security of individuals and their confidence in meeting current and ongoing financial obligations. The income level of individuals can be used as an objective measure of financial well-being. To assess a potential effect of derivatives trading on employee financial well-being, we use the median employee's total compensation reported as part of the pay ratio disclosure during December 2017 and March 2021 from Equilar data. The pay ratio disclosure rule requires companies to identify their median employee at any date within the last three months of a fiscal year, and based on total annual compensation or any other compensation measure that is consistently applied to all employees. Companies are permitted to report on the same employee for up to three years, and only provide updates on his/her pay. Notably, the pay of the median employee is much more informative for our analysis than a firm's average pay because it cannot be influenced by changes in the composition of employees, while an average pay can be affected by hiring more expensive skilled workers.

In Table 5, columns (3)-(4), we repeat the baseline employee welfare regression analysis by replacing the dependent variable with the natural logarithm of the median worker pay. In addition to control variables used in the baseline model, we also control for number of employees and employee productivity. We find highly significant positive coefficients for both options and CDSs volumes on worker pay. The pay increase suggests that derivatives trading improves employee financial well-being by providing them with greater financial security.

Overall, the additional analyses in this section reveal the multi-dimensional effect of financial derivative trading activity on employee well-being. These results confirm our baseline finding of the positive yet likely unintended effect of derivatives on employees in underlying firms.

4.4. Corporate expenditure on employee welfare

To strengthen our analysis, in this section, we examine whether an increase in employee welfare score is supported by firms' investments in employee well-being programs. The higher employee welfare score reflects the greater firms' focus on employee welfare, and more engagement in proactive programs and policies aimed at its improvement. These improvements in employee welfare require extra spending in any kind of employee benefits. Therefore, we expect firms with a higher employee welfare score to invest more in employee well-being.[24]

Given the multi-dimensional effect of derivatives trading on employee well-being as discussed in Section 4.3, we focus on aggregated measures of employee welfare costs. Our first measure is firms' SG&A expenses. While SG&A expenses incorporate all day-to-day operating costs of running a business, they also typically include employee payments and benefits such as some salaries (except salaries of labor directly involved in manufacturing of goods, which are the part of cost of goods sold), cash profit and performance bonuses, health/life/disability insurance, paid sick and parental leaves, office perks (team-building activities), work and life benefit programs (e.g., childcare, free meals, event tickets, housing, cars), wellness programs (e.g., gym memberships, heath screenings), employee training, hiring safety consultants, safety performance auditing, and others. As an alternative measure of welfare expenditures, we use firms' total labor expenses reported in Compustat. We do not rely solely on this measure because it is a supplementary income statement item with about 20% of firms recorded in Compustat having valid information. Whereas SG&A expenses is a typical income statement item.

In Table 6, we estimate the impact of financial derivatives trading on corporate employee welfare spending. If financial derivatives improve employee welfare, we expect to see an increase in corporate employee welfare expenditures with the volume of financial derivatives

[24]In Table A.1, columns (2)-(3), we check the relationship between corporate expenditures on employee welfare and firms' employee welfare scores constructed based on MSCI ESG STATS database. Consistent with our expectation, we find that higher expenditures are associated with better employee welfare scores.

trading. The results confirm that trading volume of both derivatives is associated with an increase in corporate SG&A and total labor expenses.[25] The results are not only highly statistically significant, but also economically large. For every 1% increase in the volume of options trading, corporate employee welfare expenses increase by 0.30% – 0.33%. Whereas, for every 1% increase in the volume of CDS trading, corporate employee welfare expenses increase by 0.13% – 0.15%. These findings provide evidence of an increase in corporate investment in employee welfare due to active trading of financial derivatives.

5. Mechanisms of the derivatives impact

Our results in the previous section suggest a positive and casual relation between financial derivatives trading and employee welfare. In this section, we design more tests to provide evidence for the channel that drives these results. The documented positive effect of derivatives trading can exclude the dominate impact of market pressure and empty creditor channels discussed in Section 2. Consistent with the reduced short-termism channel, we first examine directly whether the enhanced information efficiency induced by financial derivatives decreases corporate likelihood of engaging in myopic activities. We next conduct two-step decomposition and path analysis to confirm that this effect might translate positively into employee welfare. To provide additional evidence for this channel, we also perform cross-sectional tests based on firm and employee characteristics. Finally, we design tests to exclude alternative channels.

[25]This is also consistent with our increased median worker pay results based on the data from Equilar in Section 4.3.

5.1. Reduced short-termism channel

5.1.1. Financial derivatives and short-termism actions

If financial derivatives trading improves employee welfare by mitigating short-termism as a result of an enhanced corporate information environment, firms associated with active trading of derivatives should engage less in myopic activities. In this section, we directly test the effect of derivatives trading on firms' likelihood towards short-termism actions, such as managers' involvement in income smoothing and hitting a particular target.

Specifically, we first proxy corporate myopic actions by managers' involvement in income smoothing. Focusing on short-term objectives, myopic managers are more likely to engage in income smoothing since smooth earnings can facilitate predictions by market participants and are perceived by investors to be less risky. For example, Graham et al. (2005) find that 97% of CFOs responded to the survey prefer a smooth earnings path and believe that it results in lower cost of equity and debt because investors demand a smaller risk premium for smooth earnings. To measure income smoothing, we follow Tucker and Zarowin (2006) and calculate a correlation between changes in discretionary accruals and pre-discretionary income, using the current year's and past four years' observations. Where the discretionary accruals represent abnormal accruals from the cross-sectional estimation of modified Jones (1991) model by 2-digit SIC industry and year.[26] The stronger negative correlation, the greater firm's involvement in income smoothing. For ease of interpretation, we multiply correlation coefficients by -1, so that higher values of *Income Smoothing Measure* represent greater income smoothing.

In addition, we construct an alternative proxy for myopic actions based on *Meet & Beat EPS forecasts*. Managers may be concerned to miss the earnings expectations of analysts and investors. Inability of firms to find few cents to meet the earnings expectations can introduce uncertainty about a firm's future prospects and cause the severe stock market reactions.

[26] Our results are robust to an alternative measure of income smoothing, calculated following Leuz, Nanda, and Wysocki (2003) as a a correlation between changes in accounting total accruals and operating cash flows, using the current year's and past four years' observations.

Therefore, to avoid market reaction for under-delivering earnings, managers might make small or moderate sacrifices in economic value. To capture this myopic action, we define *Meet & Beat EPS forecasts* as an indicator variable that equals one if a firm meets or beats the average analyst forecast for EPS by one cent or less. Following Bhojraj et al. (2009), we measure average analyst forecast over the last two months of the fiscal year, that gives managers sufficient time for myopic actions, such as decisions on discretionary expenditures prior to the fiscal year-end and on accrual adjustments after the fiscal year-end but prior to the earnings announcement.

In Table 7, we estimate the impact of financial derivatives trading on corporate myopic actions as proxied by *Income Smoothing Measure* or *Meet & Beat EPS forecasts*. In addition to the baseline controls, we add additional control variables for CEO characteristics, including CEO equity compensation intensity, age, and tenure. We find negative coefficients for derivatives trading volume, which are statistically significant at the 1% and 5% level. The results suggest that firms with greater derivatives trading activity are less involved in myopic actions such as smoothing earnings and meeting/beating analysts' forecasts by a small margin. We interpret these findings as evidence that the stimulation of informed trades due to derivatives reduces managerial myopia.

5.1.2. Two-step decomposition and path analysis

In Internet Appendix, we conduct additional tests to confirm that the effect of financial derivatives trading on corporate short-termism might translate into employee welfare. Specifically, we follow Di Giuli and Laux (2022) and use two different techniques. First, we adapt standard two-step instrumental variables econometrics to decompose the baseline estimate of the effect of financial derivatives trading on employee welfare into two parts: the effect of derivatives trading on likelihood of firms' involvement in myopic actions, and the effect of myopic actions affected by derivatives on employee welfare.[27] We report our

[27]Mechanically, we use financial derivatives trading volume as an instrument for corporate myopic actions.

results in Table A.3 (Panel A). The product of the two link coefficients in the two-step chain (Subpanel A2) allows to get the exact positive estimate of the baseline effect of financial derivatives trading on employee welfare (Subpanel A1).

Second, we adapt another statistical method, path analysis, that is specifically designed to measure the total magnitude of mediated (indirect) path: when an independent variable (derivatives trading volume) influences a dependent variable (employee welfare) indirectly via a mediator (corporate myopic actions). In contrast to the previous technique, which provides a formal test statistic only for each single step of the two-step chain, this statistical method provides a test statistic for the whole mediated path through corporate short-termism. We estimate the path analysis based on a structural equation model (SEM) with a short-termism measure used as a mediating variable. We report our results in Table A.3 (Panel B). Overall, both robustness tests in Table A.3 are most supportive of the positive effect of derivatives trading on employee welfare through reduction of short-termism.

Additionally, to confirm our interpretation of the positive effect of derivatives on employee welfare due to greater managers' incentives to invest in long-term value enhancing investment, we repeat both two-step and path analysis by replacing short-termism measure with corporate investment in long-term assets, which are frequently sacrificed to meet short-term goals. Specifically, we focus on R&D expenditures and aggregated measures of employee welfare costs used in Section 4.4.[28] We report our results in Table A.4. We find that derivatives trading is significantly positively related to firm's likelihood to invest in long-term assets, while investment in long-term assets is significantly positively related to employee welfare. Furthermore, the magnitude of total mediated path thorough corporate incentive to invest in long-term assets is also statistically significant.

Overall, the findings in this section are consistent with the prediction that active deriva-

[28]To meet earnings benchmarks, in addition to accounting accrual-based manipulation (which we capture by *Income Smoothing Measure*), managers might take real economic actions. Graham et al. (2005) find that 80% of CFOs responded to the survey report that they would decrease discretionary spending (e.g., R&D and SG&A expenditures) to deliver earnings. Mittelstaedt, Nichols, and Regier (1995) find that 89% of firms cut employee health care benefits following mandated accounting changes which require an accounting charge of health care costs to reported income.

tives trading improves employee welfare by reducing managerial myopia and encouraging firms to invest more in long-term assets.

5.1.3. Market short-term pressure

We next construct proxies for firms under greater short-term pressure, in which managers might care more about boosting short-term performance and have higher career concerns. If the reduction of managerial short-termism is the main channel through which financial derivatives affect employee welfare, the effect of derivatives should be more pronounced in firms under greater short-term pressure.

In Table 8, we interact *Derivative Volume* with proxies for firms under market short-term pressure, and repeat the baseline employee welfare regression analysis. Our first proxy, *High Competition*, is an indicator variable that equals one if a company operates in a highly competitive industry with the firm's product market competition above the annual sample median. Competition increases the reputational risk for managers and the pressure to deliver high performance in the short run. We follow Aghion et al. (2005) and measure firms' product market competition by the inverse Lerner index, calculated as one minus the average gross margin across all firms in the Compustat database with the same three-digit industry SIC in year $t-1$. The higher the inverse Lerner index, the lower gross margins and the greater competition.

Our second proxy, *Tech Intensive*, is an indicator variable that equals one if a company operates in a technology intensive industry, i.e., pharmaceuticals, industrial and commercial machinery and computer equipment, electronics and communications, transportation equipment, instruments and related products. Managers in technology-intensive industries are more prone to avoid taking projects that would cause them to miss earnings targets, due to their personal wealth, career concerns and firm reputation with stakeholders (Graham et al., 2005).

Our last proxy, *High Analyst*, is an indicator variable that equals one if the number of

analysts following the firm is above the annual sample median. Number of analysts actively following the firm is measured by the average number of earnings per share (EPS) estimates over a fiscal year. Through earnings forecasts financial analysts might create too much pressure on managers to hit particular targets and thereby exacerbating managerial myopia. Consistent with this view, He and Tian (2013) document lower long-term innovative projects in firms covered by a larger number of analysts. While Caskey and Ozel (2017) provide evidence that managers seeking to meet or beat analyst forecasts compromise workplace safety by cutting safety related expenditures.

The results show positive coefficients for the interaction terms, which are statistically significant at the 1% and 5% level. That suggests the greater improvement of employee welfare due to financial derivatives trading in firms under higher market short-term pressure. We interpret these findings as evidence that the enhanced information efficiency induced by financial derivatives improves real efficiency by "shielding" managers against short-term market pressures and giving them more incentive to invest in long-term assets that boost fundamental value. Although our proxies for managers under short-term pressure are relatively broad and may capture other firm characteristics, we find consistent evidence that the positive derivatives trading impact on employee welfare is more pronounced in firms under shot-term pressure, which is consistent with the managerial short-termism hypothesis.

5.2. Alternative channels

In this section, we examine alternative channels through which active financial derivatives trading might positively influence employee welfare. In addition to the reduced short-termism channel, derivatives trading may affect employee welfare by influencing corporate financial resources (i.e., financing channel). Derivatives trading can be used as a hedging tool by investors, and relax corporate financing constraints. Firms can have more financial resources to invest in long-term value enhancing investments. Furthermore, the positive effect of active derivatives trading on employee welfare can be due to institutional investors, who

are the main participants of derivatives markets (i.e., institutional investor channel). Prior studies suggest that institutional investors play an important role in improving firms' CSR performance through CSR-related shareholder proposals. Therefore, firms associated with active trading of derivatives can attract more institutional investors, who promote employee welfare.

We design several tests to examine the implications of these alternative channels by interacting *Derivative Volume* with a variable of interest, and repeating the baseline employee welfare regression analysis. For the financing channel, we conduct tests based on a proxy for overall financial constraints. As a proxy for financial constraints, we use a comprehensive annual measure *Delaycon* by Hoberg and Maksimovic (2015), which shows firm's inability to obtain financing for planned investments based on analysis of the Management's Discussion and Analysis section of mandated disclosures regarding firm liquidity in 10-K statements. Firms with higher values of *Delaycon* are at greater risk of delaying their investments due to issues with liquidity. For the institutional investor channel, we conduct tests based on institutional investor ownership concentration, which is calculated as the Herfindahl Index based on the percentages of institutional holdings by all 13-f institutions. We focus on the concentration measure because institutional investors should have greater influence when they are larger shareholders (e.g., Shleifer and Vishny, 1986), and when they are supported by other shareholders (e.g., Black, 1991). We report our results in Table A.5. We find that neither interaction term is statistically significant. That suggests that these alternative channels do not play a significant role in the positive effect of derivatives on employee welfare.

5.3. The role of employee characteristics in the derivatives impact

To investigate how our results vary across firms, we next examine the role of employee characteristics in the derivatives impact on employee welfare performance.

5.3.1. Employee welfare concerns

We first examine the relationship between financial derivatives trading and employee welfare conditional on the level of employee welfare concerns. Employees with greater welfare concerns are more in need of improvement and more likely to speak up demanding better treatment. While firms with more concerned employees are more likely to encounter conflicts and controversies with labor, that might lead to lawsuits or regulatory penalties (e.g., due to unfair treatment, unsafe working place). Firms associated with active trading of derivatives should be more receptive to employees' needs and concerns because they have more incentive to invest in long-terms assets, such as corporate employee welfare. Thus, we expect a stronger effect of derivatives trading on employee welfare when labor has higher well-being concerns.

To measure employee welfare concerns, we first use layoff propensity, which reflects workers' concerns about their financial well-being, and define *High Layoff Propensity* as a dummy variable that equals one (zero) if a company operates in industry with a layoff separation rate above (below) the sample median. The long-run propensity for layoffs based on systematic differences across industries can influence workers' concerns about job loss and their financial stability due to nontrivial costs associated with unemployment.[29] Following Agrawal and Matsa (2013), we measure layoff separation rates as the ratio of workers affected by mass layoffs to total industry employment for three-digit NAICS industries based on US BLS "Mass Layoff Statistics" and the US Bureau of Economic Analysis.[30]

In addition, we proxy employee welfare concerns based on workplace injury rate, which reflects workers' concerns about their physical well-being based on workplace safety. We define *High Injury Rate* as an indicator variable that equals one if a company operates in

[29]That is also consistent with stakeholder theory, which argues that employees might demand better treatment ex ante to compensate for an increased human capital risk associated with greater likelihood of unemployment (e.g., Titman, 1984; Berk et al., 2010).

[30]The layoff separation rates show significant variations across industries with the average value of 1.5% and the median of 0.8%. The lowest layoff rates (below 0.1%) are in industries such as real estate, educational services, various health care and social assistance, gasoline stations and auto parts dealers. The highest layoff rates are in agriculture and forestry support activities (18.4%), passenger ground transportation (5.9%), and heavy and civil engineering construction (5.7%).

industry classified as high-hazard according to OSHA for the purpose of its ODI surveys. Employees working in firms with high overall exposure to workplace injury risk are more likely to have greater concerns about their physical well-being.

We then interact *Derivative Volume* with proxies for high employee well-being concerns and conduct the baseline determinants of employee welfare regression analysis. The results are presented in Table 9. As we can see from columns (1)-(4), the coefficients for the interaction terms are positive and significant at the 1% and 5% level. The results suggest that the positive impact of financial derivatives trading on employee welfare is more pronounced in firms where employees have greater concerns about their well-being. This finding confirms our conjecture of greater receptivity of firms to employees' needs and concerns due to derivatives trading. Thus, workers in such firms are more likely being heard by their employer and being successful in demanding better treatment.

5.3.2. Firms' reliance on employees

We next examine the relationship between financial derivatives trading and employee welfare conditional on the level of firms' dependence on employees' skills and expertise. Firms relying more on employees have greater incentives to treat employee well and are more likely to be receptive to employees' needs and concerns. In particular, Bae et al. (2011) find that the employees in R&D-intensive firms are more concerned about their firms' financial status, that induces employee-friendly firms to limit the use of debt more than in non-intensive R&D firms. Thus, we expect a stronger effect of derivatives trading on employee welfare in firms with greater dependence on labor because they have higher incentives to retain and motivate their workers.

To test this hypothesis, we construct two proxies of firms' dependence on employees' skills and expertise, including R&D expenditures and number of patents applied in a given year, which represents the main attributes of innovative firms. Following the previous literature, we treat missing information on R&D expenditures and number of patents as zero. We

then interact *Derivative Volume* with proxies for firms' reliance on labor, and conduct the regression analysis of the determinants of employee welfare. The results are presented in Table 10. As we can see from columns (1)-(4), we find positive and significant coefficients for the interaction terms *Derivative Volume* × *R&D* and *Derivative Volume* × *Patents*. The results suggest that the positive effect of derivatives trading on employee welfare increases with the importance of employees for firms' business.

6. Conclusion

Do financial market developments matter for rank-and-file workers? The financial market is constantly evolving and introducing new financial instruments every decade. Financial derivatives are an example of financial innovations that are widely used by participants of the global financial market. Although ordinary workers may not interact directly with financial derivatives, it can still affect their well-being by working in a firm associated with an active derivatives trading. This paper provides a comprehensive assessment of the effect of financial derivatives, both equity and debt referenced, on employee well-being in underlying firms. Using a large sample of US firms, we find an improvement in employee welfare due to active options and CDSs trading on these firms. These results persist even after the endogeneity of derivatives trading is addressed using IV estimations. In addition to an aggregated employee welfare score based on MSCI KLD data, we explore derivatives impact on various aspects of employee welfare, including psychological, physical, social, and financial well-being. We find that derivatives trading increases employee satisfaction as measured by the likelihood of firms' inclusion in the list of "100 Best Companies to Work For in America" and decreases workplace injury rate which is a measure of employees' physical welfare. Derivatives trading also decreases pay inequality which is an important aspect of social welfare and increases median employee pay. The increase of employee welfare performance is also supported by an increase in corporate SG&A and total labor expenses. Overall, we find consistent evidence

that derivatives trading improves employee welfare and increases relevant investments.

Additional analysis reveals that derivatives trading improves employee welfare in underlying firms by increasing firms' incentives to invest in long-term assets and mitigating managerial short-termism as a result of enhanced information efficiency. That is supported by the lower likelihood of firms to engage in myopic activities when there is active derivatives trading on them, and a more pronounced positive impact of derivatives trading on employee welfare in firms with stronger short-term market pressures. Furthermore, the positive effect of derivatives on employee welfare is stronger in firms with higher employee well-being concerns, and those relying more on employees. Overall, our results suggest that financial derivatives encourage firms' investment in employee welfare by reducing short-termism incentives. That makes firms with active trading of financial derivatives more receptive to employees' needs and concerns, allowing them to be heard and acted upon.

Previous literature has documented both the positive and negative effects of financial derivatives on reference firms and other financial stakeholders such as creditors and suppliers. We are among the first to focus on general employees and investigate the impact of financial derivatives on employee welfare. While we draw no conclusion about the overall welfare effect of financial derivatives on behalf of society, we contribute to the discussion by documenting the positive impact of both options and CDSs on employee treatment. We add to the literature on the determinants of corporate CSR performance. We are the first to emphasize the role of financial derivatives in affecting corporate employee relationships. Finally, our paper emphasizes the information production role of financial derivatives, providing a potential solution to corporate myopia and encouraging long-term investment. Although the main focus in this paper is on the employee welfare, future study may further investigate the impact of financial derivatives on composition of employees. The change in the composition of employees after financial derivatives introduction might have an interesting implication on corporate operating strategies.

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Appendix A. Variable definitions

Variable	Description
Financial Derivatives	
Derivative Volume	Trading volume of financial derivatives: *Ln (1+CDSVol)* for CDS and *Ln (1+OptVol)* for options.
OptVol	The sum of the daily dollar trading volume for all listed options for each stock across all trading days in the fiscal year. The daily dollar trading volume is the midpoint of the daily closing bid and ask price (used as a proxy for the trading price) multiplied by the trading volume for that day. Option volume for firms with no option volume data is assumed to be zero. *Source: OptionMetrics*
CDSVol	CDS net notional amount in millions of dollars at the end of the fiscal year. CDS volume for firms with no CDS volume data is assumed to be zero. *Source: DTCC*
Open Interest	The natural logarithm of the average open interest across all options on a stock throughout the year. *Source: OptionMetrics*
Moneyness	The natural logarithm of the average absolute difference between the stock's market price and the option's strike price. *Source: OptionMetrics*
FX	The average notional amount of foreign exchange derivatives used for hedging (not trading) purposes to the bank's total assets across all banks, lenders and bond underwrites, a firm has borrowed from over the past five years. *Source: DealScan, FISD, Federal Reserve Call Reports*
Employee treatment	
Employee Welfare	The sum of five positive performance 0/1 indicators of employee relations (union relations + cash profit sharing + employee involvement + retirement benefits strength + health and safety) normalized by the maximum possible number of employee relation positive indicators for each year. Better employee welfare manifests in a higher score, which is bounded between zero and one. *Source: MSCI ESG STATS database*
Best Firm to Work for	A dummy variable that equals one if the firm appears in Fortune magazine's list of the "100 best companies to work for" in a given year. *Source: Fortune*
Total Incidence Rate	The sum of deaths and all injuries and illnesses that result in days away from work, or with job restriction, or transfer, and other recordable cases scaled by the number of hours worked by all employees and multiplied by 200,000 hours (i.e., the equivalent of 100 employees working 40 hours per week, 50 weeks per year). The multiplication by 200,000 hours provides the standard base for the incidence rates according to US Bureau of Labor Statistics. *Source: OSHA*
CEO-Worker Pay Ratio	The natural log of the disclosed ratio of CEO pay to the median worker pay. *Source: Equilar*
Worker Pay	The natural log of the total compensation of the median employee reported in the pay ratio disclosure. *Source: Equilar*
Firm characteristics	
Firm Size	Log (market capitalization). Market capitalization is calculated as stock price multiplied by number of shares outstanding at the end of a fiscal year, $ln(prcc_f \times csho)$. *Source: Compustat*
Leverage	Total debt over book assets, $(dltt + dlc)/at$. *Source: Compustat*
Book-to-Market	Book value of equity over the market value of equity, $ceq/(prcc_f \times csho)$. *Source: Compustat*

Variable	Description
ROA	Return on assets: income before extraordinary items to book assets, ib/at. *Source: Compustat*
Cash	Cash balances over book assets, che/at. *Source: Compustat*
Dividends	Cash dividends over book assets, $(dvc + dvp)/at$. *Source: Compustat*
Emp. number	The natural log of total number of employees in a firm, $ln(emp)$. *Source: Compustat*
Emp. productivity	Total amount of sales scaled by number of employees, $sale/emp$. *Source: Compustat*
SG&A expenses	The natural log of selling, general, and administrative expenses, $ln(xsga)$. *Source: Compustat*
Labor expenses	The natural log of total labor expenses, $ln(xlr)$. *Source: Compustat*
Rated	A dummy variable that equals one if the firm has a Standard and Poor's (S&P) rating. *Source: Compustat*
Investment Grade	A dummy variable that equals one if the firm has an Investment Grade rating, BBB or higher. *Source: Compustat*
Delaycon	A firm's degree of overall financial constraints calculated annually following methodology of Hoberg and Maksimovic (2015) based on the Management's Discussion and Analysis section of the 10-K. *Source: Edgar*
IO Concentration	Herfindahl Index based on the percentages of institutional holdings by all 13-f institutions.
CEO equity intensity	A fraction of CEO equity compensation in total compensation. Equity compensation is measured as the sum of options granted and restricted stock grant. Total compensation is measured as the sum of salary, bonus, restricted stock grants, long-term incentive plans, value of option granted and all other payments. *Source: ExecuComp*
CEO age	Age of the CEO. *Source: ExecuComp*
CEO tenure	Number of years in CEO position in a particular firm. *Source: ExecuComp*
Strike	An indicator variable that equals one if an establishment has strike/lockout over the year. *Source: OSHA*
Seasonal	An indicator variable that equals one if an establishment employs seasonal workers. *Source: OSHA*
Shutdown	An indicator variable that equals one if an establishment is affected by shutdown/layoff over the year. *Source: OSHA*
Disaster	An indicator variable that equals one if an establishment is affected by adverse weather conditions/natural disasters over the year. *Source: OSHA*
Managerial short-termism	
Income Smoothing Measure	(-1) multiplied by a correlation between annual changes in discretionary accruals and pre-discretionary income, using the current year's and past four years' observations. The discretionary accruals represent abnormal accruals from the cross-sectional estimation of modified Jones (1991) model by 2-digit SIC industry and year. The pre-discretionary income is calculated as net income reduced by the discretionary accruals. *Source: Compustat*
Meet & Beat EPS forecasts	An indicator variable that equals one if a firm meets or beats the average analyst forecast for EPS by one cent or less. The average analyst forecast is measured over the last two months of the fiscal year.*Source: I/B/E/S database*

Variable	Description
Market short-term pressure	
High Competition	An indicator variable that equals one if a company operates in a highly competitive industry with the firm's product market competition above the annual sample median. The firm's product market competition is defined as the inverse Lerner index, calculated as one minus the average gross margin, $oiadp/sale$, across all firms in the Compustat database with the same three-digit industry SIC in year $t-1$. *Source: Compustat*
Tech Intensive	An indicator variable that equals one if a company operates in a technology intensive industry: pharmaceuticals (SIC 283), industrial and commercial machinery and computer equipment (SIC 35), electronics and communications (SIC 36), transportation equipment (SIC 37), instruments and related products (SIC 38).
High Analyst	An indicator variable that equals one if the number of analysts following the firm is above the sample median. Number of analysts actively following the firm measured as the average number of earnings per share (EPS) estimates over a fiscal year. *Source: I/B/E/S database*
Employee welfare concerns	
High Layoff Propensity	An indicator variable that equals one (zero) if a company operates in industry with a layoff separation rate above (below) the sample median. The layoff separation rate is measured as a ratio of workers affected by mass layoffs to total industry employment. Calculated as the simple average of these ratios for three-digit NAICS industries during the period 1996-2008. BLS defines workers affected by mass layoffs when at least 50 initial claims are filed against an institution during a consecutive five-week period and at least 50 workers have been separated from their jobs for more than 30 days. *Source: US Bureau of Labor Statistics "Mass Layoff Statistics" and the US Bureau of Economic Analysis*
High Injury Rate	An indicator variable that equals one if a company operates in industry classified as high-hazard according to OSHA for the purpose of its ODI surveys. Companies with primary SIC designations: Horticultural specialities (018X), Agriculture production livestock and animal specialities (02XX), Lawn And Garden Services (0782), Ornamental Shrub & Tree Services (0783), Manufacturing (20XX-39XX), Motor Freight Transportation And Warehousing (42XX), United States Postal Service (43XX), Services Incidental To Water Transportation (449X), Air Transportation, Scheduled, And Air Courier (451X), Airports, Flying Fields, And Airport Terminal (4581), Packing & Crating (4783), Sanitary Services (495X), Motor Vehicles And Motor Vehicle Parts And Supplies (501X), Lumber And Other Construction Materials (503X), Metals And Minerals, Except Petroleum (505X), Scrap & Waste Materials (5093), Groceries And Related Products (514X), Beer, Wine, And Distilled Alcoholic Beverages (518X), Lumber And Other Building Materials Dealers (521X), Department Stores (531X), Grocery Stores (541X), Nursing And Personal Care Facilities (805X), Hospitals (806X). *Source: OSHA website's archives*
Firm's reliance on employees	
R&D	Research and development (R&D) expenses scaled by total assets, xrd/at. Missing information on R&D expenses are treated as zero. *Source: Compustat*
Patents	The natural logarithm of one plus the number of patents applied for in a given year. Missing information on number of patents are treated as zero. *Source: USPTO*

Appendix B. Employee treatment vs. ESG performance

This table provides a comparison of firms' employee treatment against their ESG performance. Employee treatment is measured based on Fortune magazine's list of the "100 best companies to work for" in 2023, focusing on companies ranked among the top 15 employers. ESG performance is based on S&P Global ESG Scores as of end of October 2023. A score of 70 or above is considered *"Excellent"* ESG performance. A score of between 60 and 69 is considered *"Good"* ESG performance. A score of between 50 and 59 is considered *"Average"* ESG performance. A score of less than 50 is considered *"Poor"* ESG performance. The sign "-" indicates companies with unavailable ESG scores.

Company Name	Industry	100 Best Companies to Work for	S&P Global ESG	
		Rank (1-100)	Score (0-100)	
		1 - highest, 100 - lowest	*0 - lowest, 100 - highest*	
Cisco	IT	1	78	Excellent
Hilton	Hospitality	2	63	Good
American Express	Financial Services	3	38	Poor
Wegmans Food Markets	Retail	4	-	-
Accenture	Professional Services	5	60	Good
NVIDIA	IT	6	60	Good
Atlassian	IT	7	36	Poor
Salesforce.com	IT	8	60	Good
Comcast NBCUniversal	Telecommunications	9	28	Poor
Marriott International	Hospitality	10	36	Poor
Rocket Companies	Real Estate	11	22	Poor
Slalom Consulting	Professional Services	12	-	-
Power Home Remodeling	Construction	13	-	-
Intuit Inc.	Financial Services	14	44	Poor
Capital One	Financial Services	15	36	Poor

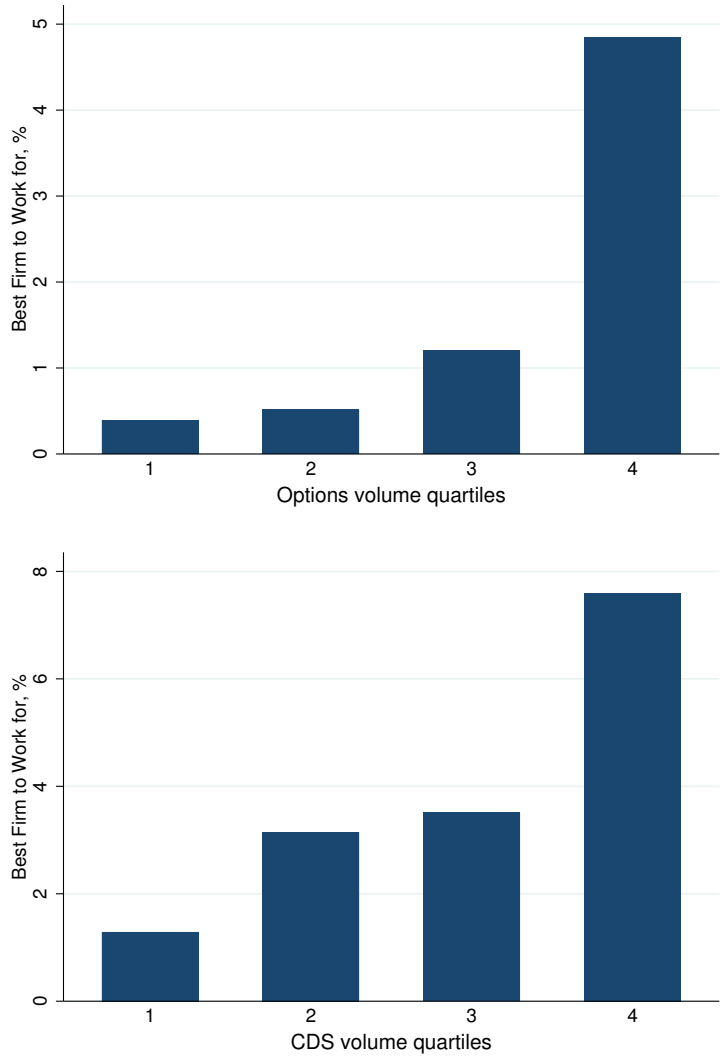

Fig. 1. **Average percent of firms inclusion in Fortune magazine's list of the "100 best companies to work for" across financial derivatives volume quartiles.** Financial derivatives volume quartiles are derived by sorting firms with positive financial derivatives (options or CDS) volume into quartiles by their trading volume of derivatives in each year. Option volume data are based on the trading volume of options from OptionMetrics (from 1996 to 2018). CDS volume data are based on CDS net notional amount from Depository Trust & Clearing Corporation reports (from October 2008 to September 2015).

Table 1: **Summary statistics.** This table reports summary statistics of firm and employee treatment characteristics. *Panel A* presents the descriptive statistics of the variables over the entire sample. *Panels B* compares firms with positive financial derivatives trading volume and firms with zero trading. All continuous dependent and control variables are winsorized at the 1th and 99th percentiles. Dollar amounts are adjusted to 1996 dollars using the CPI.

Panel A: Whole sample

	N	mean	sd	min	p50	max
Firm characteristics						
Firm Size	30,979	7.16	1.56	4.12	6.99	11.55
Leverage	30,979	0.23	0.21	0.00	0.19	0.90
Book-to-Market	30,979	0.50	0.36	-0.17	0.43	1.86
ROA	30,979	0.03	0.12	-0.59	0.04	0.26
Cash	30,979	0.17	0.20	0.00	0.09	0.90
Dividends	30,979	0.01	0.02	0.00	0.00	0.15
Employee treatment						
Employee welfare	30,979	0.06	0.15	0.00	0.00	0.75
Union relations	20,166	0.04	0.19	0.00	0.00	1.00
Cash profit sharing	20,046	0.09	0.30	0.00	0.00	1.00
Employee involvement	23,928	0.11	0.31	0.00	0.00	1.00
Retirement benefits	14,237	0.06	0.24	0.00	0.00	1.00
Health and safety	25,446	0.04	0.19	0.00	0.00	1.00
Best Firm	199,288	0.01	0.07	0.00	0.00	1.00
Total Incidence Rate	61,746	7.45	6.33	0.00	6.04	30.27
Financial derivatives						
OptVol (mln), > 0	25,976	1.39	12.40	0.00	0.05	1,176.18
ln (1+OptVol)	30,979	0.28	0.61	0.00	0.03	7.07
CDSVol (mln), > 0	1,719	595.27	588.17	25.69	436.50	5,612.50
ln (1+CDSVol)	12,610	0.82	2.10	0.00	0.00	8.63

Panel B: Firms with and without financial derivatives trading

	With Options (N =3,537)	No Options (N = 674)	With CDS (N = 289)	No CDS (N = 2,064)
	mean	mean	mean	mean
Firm characteristics				
Firm Size	7.44	5.77	9.05	6.59
Leverage	0.23	0.20	0.31	0.20
Book-to-Market	0.48	0.59	0.55	0.58
ROA	0.03	0.02	0.04	0.02
Cash	0.18	0.15	0.10	0.19
Dividends	0.01	0.01	0.02	0.01
Employee treatment				
Employee welfare	0.07	0.02	0.14	0.04
Union relations	0.04	0.01	0.13	0.04
Cash profit sharing	0.12	0.03	0.14	0.06
Employee involvement	0.12	0.03	0.17	0.10
Retirement benefits	0.07	0.04	0.18	0.08
Health and safety	0.05	0.01	0.18	0.02
Best Firm	0.02	0.00	0.03	0.00
Total Incidence Rate	7.35	7.72	5.80	5.52
CEO-Worker Pay Ratio	179.81	183.28	272.57	162.38
Worker Pay	79,682.17	85,149.45	77,180.06	83,641.74

Table 2: **Effect of financial derivatives trading on employee treatment.** This table reports the effect of financial derivatives trading on employee treatment based on the normalized measure of employee welfare score, which is constructed based on performance indicators of employee relations from MSCI ESG STATS database. *Derivative Volume* denotes *Ln (1+OptVol)* and *Ln (1+CDSVol)* in columns 1 and 2, respectively. Column 3 controls for both options and CDS trading. Columns 4-6 repeats the analysis by estimating the baseline model in Eq.(1) for lagged trading volume of financial derivatives. *OptVol* is the trading volume of options based on OptionMetrics from 1996 to 2018. *CDSVol* is CDS net notional amount based on Depository Trust & Clearing Corporation reports data from October 2008 to September 2015. Volume for firms with no financial derivatives volume data is assumed to be zero. Detailed definitions of variables can be found in Appendix. Industry and year fixed effect are controlled. Industry group is defined by the first two digits of the SIC code. The standard errors presented in parentheses are robust to heteroskedasticity and clustered by firm level. The symbols ***,**, and * denote significance levels of 1%, 5%, and 10%, respectively.

	Dep. var. = Employee Welfare					
	(1) Options	(2) CDS	(3) Options & CDS	(4) Options	(5) CDS	(6) Options & CDS
Derivative Volume	0.036***	0.008***				
	(0.005)	(0.001)				
Ln (1+OptVol)			0.033***			
			(0.006)			
Ln (1+CDSVol)			0.006***			
			(0.002)			
Derivative Volume $_{t-1}$				0.038***	0.008***	
				(0.004)	(0.001)	
Ln (1+OptVol $_{t-1}$)						0.033***
						(0.006)
Ln (1+CDSVol $_{t-1}$)						0.006***
						(0.002)
Firm Size	0.021***	0.025***	0.018***	0.021***	0.029***	0.021***
	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)
Leverage	-0.004	-0.005	-0.005	-0.005	0.000	-0.000
	(0.006)	(0.007)	(0.007)	(0.006)	(0.008)	(0.008)
Book-to-Market	0.017***	0.014***	0.011***	0.016***	0.025***	0.020***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)
ROA	0.002	-0.007	-0.004	0.003	-0.002	0.001
	(0.004)	(0.005)	(0.004)	(0.004)	(0.007)	(0.007)
Cash	0.006	0.031***	0.017	0.007	0.042***	0.029**
	(0.009)	(0.011)	(0.010)	(0.009)	(0.012)	(0.012)
Dividends	0.135***	0.117***	0.117***	0.133***	0.139***	0.138***
	(0.039)	(0.044)	(0.043)	(0.038)	(0.048)	(0.047)
Constant	-0.081***	-0.121***	-0.077***	-0.077***	-0.158***	-0.110***
	(0.016)	(0.013)	(0.012)	(0.016)	(0.015)	(0.014)
Observations	30,979	12,610	12,610	30,729	12,548	12,548
R-squared	0.17	0.17	0.18	0.17	0.18	0.19
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES

Table 3: **Endogeneity of financial derivatives trading.** This table addresses potential endogeneity concerns on financial derivatives trading based on an instrumental variable (IV) approach. Columns 1-2 report the first stage of the IV approach for *Ln (1+OptVol)* and *Ln (1+CDSVol)*, respectively. Columns 3-4 report the results of the second stage estimation of the IV approach. In column 3, *Instr. Derivative Volume* denotes instrumented *Ln (1+OptVol)*, the trading volume of options estimated based on a two-stage least squares (2SLS) IV model, which uses lagged *Open Interest* and *Moneyness* as instruments. *Open Interest* is the natural logarithm of the average open interest across all options on a stock throughout the year. *Moneyness* is the natural logarithm of the average absolute difference between the stock's market price and the option's strike price. In column 4, *Instr. Derivative Volume* denotes instrumented *Ln (1+CDSVol)*, the trading volume of CDS estimated based on a two-stage least squares (2SLS) IV model, which uses lagged *Ln (1+FX)* as an instrument. *FX* is a measure of the foreign exchange derivative activities aimed at hedging purposes of the firm's lenders and bond underwriters over the past five years. Detailed definitions of variables can be found in Appendix. Industry and year fixed effect are controlled. Industry group is defined by the first two digits of the SIC code. The standard errors presented in parentheses are robust to heteroskedasticity and clustered by firm level. The symbols ***,**, and * denote significance levels of 1%, 5%, and 10%, respectively.

	OLS (first stage)		2SLS (second stage)	
	Dep. var.	*Dep. var.*	*Dep. var.*	
	Ln (1+OptVol)	Ln (1+CDSVol)	Employee Welfare	
	(1)	(2)	(3)	(4)
Instr. Derivative Volume			0.039***	0.020***
			(0.008)	(0.006)
Firm Size	0.210***	0.513***	0.021***	0.016***
	(0.012)	(0.037)	(0.003)	(0.004)
Leverage	0.008	0.683***	-0.009	-0.015
	(0.045)	(0.187)	(0.008)	(0.009)
Book-to-Market	0.096***	0.485***	0.017***	0.007
	(0.018)	(0.082)	(0.004)	(0.005)
ROA	-0.126***	-0.536***	0.002	0.002
	(0.047)	(0.173)	(0.005)	(0.006)
Cash	0.313***	0.168	0.014	0.034***
	(0.059)	(0.188)	(0.012)	(0.011)
Dividends	0.027	0.173	0.124**	0.113**
	(0.253)	(0.696)	(0.057)	(0.045)
Rated	-0.093***	0.375***		
	(0.020)	(0.100)		
Investment Grade	-0.010***	0.751***		
	(0.027)	(0.164)		
Open Interest	0.123***			
	(0.006)			
Moneyness	0.178***			
	(0.017)			
Ln (1+FX)		8.253***		
		(3.167)		
Observations	18,663	12,173	18,663	12,173
R-squared	0.56	0.40	0.19	0.15
Year and Industry FE	YES	YES	YES	YES

Table 4: **Financial derivatives and specific dimensions of employee well-being: employee satisfaction and workplace safety.** This table examines the effect of financial derivatives on psychological and physical well-being of employees in reference firms. Columns 1-2 are based on the firm's inclusion in Fortune magazine's list of the "100 best companies to work for" (1996-2018) in a given year estimated from a linear probability model. Column 3-4 are based on injury and illness data from Occupational Safety and Health Administration (1996-2011). *Total Incidence Rate* is based on all cases of deaths, injuries and illnesses on establishment-level. *Derivative Volume* denotes *Ln (1+OptVol)* in odd columns, and *Ln (1+CDSVol)* in even columns. Detailed definitions of variables can be found in Appendix. Industry and year fixed effect are controlled. Industry group is defined by the first two digits of the SIC code. The standard errors presented in parentheses are robust to heteroskedasticity, and clustered by firm level (columns 1-2) and establishment level (columns 3-4). The symbols ***,**, and * denote significance levels of 1%, 5%, and 10%, respectively.

	Dep. var. Best Firm to Work for		*Dep. var.* Total Incidence Rate	
	(1)	(2)	(3)	(4)
	Options	CDS	Options	CDS
Derivative Volume	0.040***	0.004**	-0.449***	-0.075***
	(0.007)	(0.002)	(0.074)	(0.022)
Firm Size	0.002***	0.003***	-0.194***	-0.222***
	(0.000)	(0.000)	(0.029)	(0.037)
Leverage	-0.000*	0.000	1.604***	0.200
	(0.000)	(0.000)	(0.252)	(0.288)
Book-to-Market	-0.000***	-0.000***	0.172***	0.125***
	(0.000)	(0.000)	(0.028)	(0.039)
ROA	-0.000***	-0.000***	0.920***	0.490
	(0.000)	(0.000)	(0.277)	(0.299)
Cash	-0.002*	0.004**	-1.005**	-2.145***
	(0.001)	(0.002)	(0.460)	(0.501)
Dividends	0.005	0.011	-13.304***	-13.006***
	(0.006)	(0.011)	(1.569)	(1.955)
Strike			2.970***	3.516**
			(0.680)	(1.736)
Seasonal			-0.428**	1.025***
			(0.187)	(0.389)
Shutdown			0.482***	0.178
			(0.116)	(0.121)
Disaster			0.315	-1.111***
			(0.325)	(0.335)
Constant	-0.008***	-0.011***	11.223***	8.370***
	(0.001)	(0.002)	(0.259)	(0.321)
Observations	199,288	54,061	61,746	17,689
R-squared	0.05	0.03	0.20	0.26
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES

Table 5: **Financial derivatives and specific dimensions of employee well-being: pay inequality and pay level.** This table examines the effect of financial derivatives on social and financial well-being of employees in reference firms. *CEO-Worker Pay Ratio* is the natural log of the disclosed ratio of CEO pay to the median worker pay, which measures the pay gap between the CEO and the median employee. *Worker pay* is the natural log of the total compensation of the median employee reported in the pay ratio disclosure. The above variables are constructed based on data of Equilar (from December 2017 to March 2021). *Derivative Volume* denotes *Ln (1+OptVol)* in odd columns, and *Ln (1+CDSVol)* in even columns. Detailed definitions of variables can be found in Appendix. Industry and year fixed effect are controlled. Industry group is defined by the first two digits of the SIC code. The standard errors presented in parentheses are robust to heteroskedasticity and clustered by firm level. The symbols ***,**, and * denote significance levels of 1%, 5%, and 10%, respectively.

	Dep. var. CEO-Worker Pay Ratio		*Dep. var.* Worker Pay	
	(1)	(2)	(3)	(4)
	Options	CDS	Options	CDS
Derivative Volume	-0.149***	-0.019**	0.102***	0.042***
	(0.038)	(0.009)	(0.015)	(0.006)
Firm Size	0.068***	0.054**	0.208***	0.211***
	(0.022)	(0.022)	(0.014)	(0.014)
Leverage	0.347***	0.352***	0.006	-0.007
	(0.078)	(0.081)	(0.043)	(0.043)
Book-to-Market	-0.004	-0.006	0.022	0.023
	(0.025)	(0.025)	(0.024)	(0.023)
ROA	0.280**	0.273**	-0.483***	-0.450***
	(0.130)	(0.130)	(0.076)	(0.075)
Cash	-0.301**	-0.365**	0.443***	0.459***
	(0.138)	(0.147)	(0.065)	(0.066)
Dividends	-0.094	-0.026	-1.481***	-1.563***
	(0.639)	(0.645)	(0.311)	(0.314)
Emp. number	0.396***	0.399***	-0.236***	-0.250***
	(0.021)	(0.023)	(0.014)	(0.015)
Emp. productivity	0.000*	0.000	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
CEO tenure	-0.007**	-0.007**		
	(0.003)	(0.003)		
CEO age	0.004	0.005		
	(0.003)	(0.003)		
Constant	3.204***	3.234***	9.706***	9.660***
	(0.211)	(0.212)	(0.113)	(0.111)
Observations	5,494	5,494	7,748	7,748
R-squared	0.59	0.58	0.66	0.66
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES

Table 6: **Financial derivatives and employee welfare expenditures.** The table examines the effect of financial derivatives on firms' expenditures on employee well-being programs. We measure this type of costs by the natural log of selling, general, and administrative (SG&A) expenses and total labor expenses, adjusted to 1996 dollars using the consumer price index. *Derivative Volume* denotes *Ln (1+OptVol)* in odd columns, and *Ln (1+CDSVol)* in even columns. Detailed definitions of variables can be found in Appendix. Industry and year fixed effect are controlled. Industry group is defined by the first two digits of the SIC code. The standard errors presented in parentheses are robust to heteroskedasticity and clustered by firm level. The symbols ***,**, and * denote significance levels of 1%, 5%, and 10%, respectively.

	Dep. var. SG&A expenses		*Dep. var.* Labor expenses	
	(1)	(2)	(3)	(4)
	Options	CDS	Options	CDS
Derivative Volume	0.333***	0.128***	0.301***	0.148***
	(0.020)	(0.008)	(0.054)	(0.019)
Firm Size	0.676***	0.685***	0.822***	0.803***
	(0.004)	(0.005)	(0.008)	(0.010)
Leverage	-0.010	-0.032*	0.162***	0.115**
	(0.011)	(0.016)	(0.033)	(0.045)
Book-to-Market	-0.037***	-0.033***	0.044**	0.063***
	(0.005)	(0.009)	(0.018)	(0.021)
ROA	0.039***	0.048***	0.100***	0.091***
	(0.004)	(0.006)	(0.011)	(0.016)
Cash	-0.939***	-0.765***	-1.320***	-1.155***
	(0.026)	(0.042)	(0.077)	(0.108)
Dividends	-1.964***	-2.663***	-2.232***	-2.737***
	(0.187)	(0.236)	(0.454)	(0.518)
Constant	-0.120***	0.470***	-1.179***	-0.633***
	(0.020)	(0.032)	(0.051)	(0.072)
Observations	165,281	45,758	45,908	14,191
R-squared	0.79	0.81	0.84	0.84
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES

Table 7: **Financial derivatives and managerial short-termism likelihood.** This table explores the effect of financial derivatives trading on firms' likelihood towards short-termism actions. *Derivative Volume* denotes *Ln (1+OptVol)* in odd columns, and *Ln (1+CDSVol)* in even columns. *Income Smoothing Measure* is (-1) multiplied by a correlation between changes in discretionary accruals and pre-discretionary income, using the current year's and past four years' observations. The higher the value of income smoothing measure, the greater firm's involvement in income smoothing. *Meet & Beat EPS forecasts* is an indicator variable that equals one if a firm meets or beats the average analyst forecast for EPS by one cent or less. In addition to control variables used in Table 2, all regressions include additional control variables for CEO characteristics. Detailed definitions of variables can be found in Appendix. Industry and year fixed effect are controlled. Industry group is defined by the first two digits of the SIC code. The standard errors presented in parentheses are robust to heteroskedasticity and clustered by firm level. The symbols ***,**, and * denote significance levels of 1%, 5%, and 10%, respectively.

	Dep. var. Income Smoothing Measure		*Dep. var.* Meet & Beat EPS forecasts	
	(1) Options	(2) CDS	(3) Options	(4) CDS
Derivative Volume	-0.045***	-0.015***	-0.022***	-0.003**
	(0.013)	(0.005)	(0.004)	(0.001)
Firm Size	-0.050***	-0.063***	0.012***	0.008***
	(0.005)	(0.006)	(0.002)	(0.002)
Leverage	-0.075**	-0.080*	-0.035***	-0.029**
	(0.036)	(0.046)	(0.013)	(0.015)
Book-to-Market	-0.005	-0.022***	-0.015***	-0.009***
	(0.006)	(0.008)	(0.003)	(0.002)
ROA	0.089**	0.115*	0.061***	0.015
	(0.038)	(0.060)	(0.014)	(0.022)
Cash	0.026	0.028	-0.003	-0.006
	(0.039)	(0.053)	(0.017)	(0.022)
Dividends	0.537***	0.467*	0.066	0.044
	(0.197)	(0.249)	(0.077)	(0.085)
CEO equity intensity	-0.050**	-0.006	0.008	-0.014
	(0.021)	(0.032)	(0.009)	(0.013)
CEO age	-0.003***	-0.000	-0.001**	0.000
	(0.001)	(0.001)	(0.000)	(0.000)
CEO tenure	0.004***	0.004***	0.001*	0.000
	(0.001)	(0.001)	(0.000)	(0.000)
Constant	0.582***	0.768***	0.085***	0.012
	(0.066)	(0.077)	(0.024)	(0.028)
Observations	26,289	11,878	27,706	11,296
R-squared	0.15	0.24	0.03	0.02
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES

Table 8: **Effect of financial derivatives trading on employee treatment: Market short-term pressure.** This table explores the sensitivity of the relation between financial derivatives and employee treatment with respect to proxies for short-term market pressure on managers. *Derivative Volume* denotes *Ln (1+OptVol)* in odd columns, and *Ln (1+CDSVol)* in even columns. *High Competition* is an indicator variable that equals one if a company operates in a highly competitive industry with the firm's product market competition, defined as the inverse Lerner index, above the annual sample median. *Tech Intensive* is an indicator variable that equals one if a company operates in a technology intensive industry (i.e., pharmaceuticals, industrial and commercial machinery and computer equipment, electronics and communications, transportation equipment, instruments and related products). *High Analyst* is an indicator variable that equals one if a company has high analyst coverage, which is if the number of analysts following the firm is above the sample median. Detailed definitions of variables can be found in Appendix. Industry and year fixed effect are controlled. Industry group is defined by the first two digits of the SIC code. The standard errors presented in parentheses are robust to heteroskedasticity and clustered by firm level. The symbols ***,**, and * denote significance levels of 1%, 5%, and 10%, respectively.

	Dep. var. = Employee Welfare					
	(1)	(2)	(3)	(4)	(5)	(6)
	Options	CDS	Options	CDS	Options	CDS
Derivative Volume × High Competition	0.017***	0.006**				
	(0.005)	(0.003)				
High Competition	-0.003	-0.003				
	(0.003)	(0.006)				
Derivative Volume × Tech Intensive			0.035***	0.010**		
			(0.009)	(0.005)		
Tech Intensive			-0.036**	-0.015		
			(0.015)	(0.015)		
Derivative Volume × High Analyst					0.056***	0.015***
					(0.015)	(0.003)
High Analyst					-0.011***	-0.015***
					(0.003)	(0.004)
Derivative Volume	0.027***	0.006***	0.024***	0.006***	-0.020	-0.006**
	(0.005)	(0.002)	(0.005)	(0.001)	(0.015)	(0.003)
Firm Size	0.021***	0.025***	0.021***	0.025***	0.023***	0.027***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Leverage	-0.005	-0.004	-0.005	-0.005	-0.003	-0.001
	(0.006)	(0.007)	(0.006)	(0.007)	(0.006)	(0.007)
Book-to-Market	0.017***	0.015***	0.017***	0.015***	0.017***	0.015***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
ROA	0.000	-0.007	-0.002	-0.008	-0.000	-0.008
	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)
Cash	0.006	0.033***	0.015*	0.036***	0.010	0.033***
	(0.009)	(0.011)	(0.009)	(0.012)	(0.009)	(0.011)
Dividends	0.137***	0.115***	0.125***	0.111**	0.122***	0.102**
	(0.038)	(0.043)	(0.038)	(0.043)	(0.039)	(0.043)
Observations	30,775	12,610	30,979	12,610	30,979	12,610
R-squared	0.17	0.17	0.17	0.17	0.17	0.18
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES

Table 9: **Effect of financial derivatives trading on employee treatment: Employee well-being concerns.** This table demonstrates the financial derivatives - employee treatment relation estimated from the baseline regression conditional on proxies for employees with high well-being concerns. *Derivative Volume* denotes *Ln (1+OptVol)* in odd columns, and *Ln (1+CDSVol)* in even columns. *High Layoff Propensity* is a proxy for employees with high financial well-being concerns, which is determined as a dummy variable that equals one (zero) if a company operates in industry with a layoff separation rate above (below) the sample median. The layoff separation rate is measured as a ratio of workers affected by mass layoffs to total industry employment based on US Bureau of Labor Statistics "Mass Layoff Statistics" and the US Bureau of Economic Analysis. *High Injury Rate* is a proxy for employees with high physical well-being concerns, which is determined as an indicator variable that equals one if a company operates in industry classified as high-hazard according to OSHA for the purpose of its ODI surveys. Detailed definitions of variables can be found in Appendix. Industry and year fixed effect are controlled. Industry group is defined by the first two digits of the SIC code. The standard errors presented in parentheses are robust to heteroskedasticity and clustered by firm level. The symbols ***,**, and * denote significance levels of 1%, 5%, and 10%, respectively.

	Dep. var. = Employee Welfare			
	(1)	(2)	(3)	(4)
	Options	CDS	Options	CDS
Derivative Volume × High Layoff Propensity	0.024***	0.006**		
	(0.009)	(0.003)		
High Layoff Propensity	-0.015**	-0.005		
	(0.007)	(0.008)		
Derivative Volume × High Injury Rate			0.035***	0.009***
			(0.008)	(0.003)
High Injury Rate			-0.015	-0.019
			(0.011)	(0.015)
Derivative Volume	0.019***	0.004**	0.019***	0.004**
	(0.007)	(0.002)	(0.005)	(0.002)
Firm Size	0.021***	0.026***	0.021***	0.026***
	(0.002)	(0.002)	(0.002)	(0.002)
Leverage	-0.002	-0.005	-0.004	-0.004
	(0.008)	(0.008)	(0.006)	(0.007)
Book-to-Market	0.017***	0.014***	0.017***	0.016***
	(0.003)	(0.004)	(0.003)	(0.003)
ROA	0.000	-0.009	0.001	-0.007
	(0.004)	(0.006)	(0.004)	(0.005)
Cash	0.022**	0.039***	0.009	0.035***
	(0.011)	(0.014)	(0.009)	(0.011)
Dividends	0.120***	0.147***	0.122***	0.108**
	(0.042)	(0.051)	(0.038)	(0.043)
Observations	23,751	9,813	30,979	12,610
R-squared	0.17	0.17	0.17	0.18
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES

Table 10: **Effect of financial derivatives trading on employee treatment: Firms' reliance on employees.** This table demonstrates the financial derivatives - employee treatment relation estimated from the baseline regression conditional on proxies for firms' reliance on employees' skills and expertise. *Derivative Volume* denotes *Ln (1+OptVol)* in odd columns, and *Ln (1+CDSVol)* in even columns. *R&D* is research and development (R&D) expenses scaled by total assets. *Patents* is the natural logarithm of one plus the number of patents applied for in a given year. Missing information on R&D expenses and number of patents are treated as zero. Detailed definitions of variables can be found in Appendix. Industry and year fixed effect are controlled. Industry group is defined by the first two digits of the SIC code. The standard errors presented in parentheses are robust to heteroskedasticity and clustered by firm level. The symbols ***,**, and * denote significance levels of 1%, 5%, and 10%, respectively.

	Dep. var. = Employee Welfare			
	(1)	(2)	(3)	(4)
	Options	CDS	Options	CDS
Derivative Volume × R&D	0.118**	0.274***		
	(0.049)	(0.088)		
R&D	0.000	0.013		
	(0.020)	(0.021)		
Derivative Volume × Patents			0.007***	0.002**
			(0.002)	(0.001)
Patents			0.007***	0.012***
			(0.002)	(0.002)
Derivative Volume	0.030***	0.005***	0.009	0.004***
	(0.004)	(0.002)	(0.006)	(0.002)
Firm Size	0.021***	0.025***	0.020***	0.020***
	(0.002)	(0.002)	(0.001)	(0.002)
Leverage	-0.004	-0.004	-0.002	-0.002
	(0.006)	(0.007)	(0.006)	(0.007)
Book-to-Market	0.017***	0.016***	0.017***	0.014***
	(0.003)	(0.003)	(0.003)	(0.003)
ROA	0.005	-0.005	0.000	-0.005
	(0.005)	(0.005)	(0.004)	(0.004)
Cash	0.003	0.032***	0.006	0.019*
	(0.009)	(0.011)	(0.009)	(0.010)
Dividends	0.138***	0.103**	0.127***	0.118***
	(0.039)	(0.043)	(0.038)	(0.043)
Observations	30,979	12,610	30,949	12,603
R-squared	0.17	0.18	0.18	0.19
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES

Internet Appendix

Table A.1: **Economic significance: employee welfare score and employee welfare expenditures.** The table examines the relation between a normalized measure of employee welfare score, which is constructed based on performance indicators of employee relations from MSCI ESG STATS database, and firms' expenditures on employee well-being programs. We measure this type of costs by the natural log of selling, general, and administrative (SG&A) expenses and total labor expenses, adjusted to 1996 dollars using the consumer price index. Industry and year fixed effect are controlled. Industry group is defined by the first two digits of the SIC code. The standard errors presented in parentheses are robust to heteroskedasticity and clustered by firm level. The symbols ***,**, and * denote significance levels of 1%, 5%, and 10%, respectively.

	Dep. var. SG&A expenses	*Dep. var.* Employee Welfare	*Dep. var.* Employee Welfare
	(1)	(2)	(3)
Employee Welfare	0.352***		
	(0.062)		
SG&A expenses		0.014***	
		(0.002)	
Labor expenses			0.010**
			(0.005)
Firm Size	0.818***	0.021***	0.018***
	(0.011)	(0.002)	(0.005)
Leverage	0.633***	-0.011	0.009
	(0.069)	(0.007)	(0.020)
Book-to-Market	0.415***	0.016***	0.020***
	(0.053)	(0.004)	(0.007)
ROA	-0.659***	0.001	0.068**
	(0.204)	(0.006)	(0.034)
Cash	-0.492***	0.037***	-0.010
	(0.081)	(0.010)	(0.031)
Dividends	-1.509***	0.155***	0.099
	(0.334)	(0.046)	(0.087)
Constant	-0.705***	-0.141***	-0.162***
	(0.106)	(0.018)	(0.033)
Observations	25,681	25,681	5,618
R-squared	0.80	0.16	0.29
Year FE	YES	YES	YES
Industry FE	YES	YES	YES

Table A.2: **Effect of financial derivatives trading on employee treatment: Alternative estimation models.** This table reports the effect of financial derivatives trading on employee treatment based on alternative estimation models. *Derivative Volume* denotes *Ln (1+OptVol)* in columns 1-2, and *Ln (1+CDSVol)* in columns 4-5. *Derivative Volume ($)* denotes *OptVol* and *CDSVol*, measured in millions of dollars, in columns 3 and 6, respectively. Columns 1 and 4 are estimated based on a fractional probit model. Columns 2 and 5 are estimated based on a generalized linear model (GLM) with a logistic link function and binomial distribution. Columns 3 and 6 are estimated based on an ordinary least squares (OLS) model. Industry and year fixed effects are controlled. Industry group is defined by the first two digits of the SIC code. The standard errors presented in parentheses are robust to heteroskedasticity and clustered by firm level. The symbols ***,**, and * denote significance levels of 1%, 5%, and 10%, respectively.

	Dep. var. = Employee Welfare					
	(1)	(2)	(3)	(4)	(5)	(6)
	Options	Options	Options	CDS	CDS	CDS
Derivative Volume	0.095***	0.132***		0.030***	0.052***	
	(0.020)	(0.036)		(0.008)	(0.016)	
Derivative Volume ($)			0.017***			0.0001***
			(0.003)			(0.000)
Firm Size	0.214***	0.451***	0.023***	0.257***	0.538***	0.026***
	(0.013)	(0.026)	(0.001)	(0.015)	(0.031)	(0.002)
Leverage	-0.028	-0.055	-0.003	-0.061	-0.117	-0.004
	(0.070)	(0.152)	(0.007)	(0.096)	(0.204)	(0.007)
Book-to-Market	0.172***	0.368***	0.017***	0.167***	0.371***	0.015***
	(0.031)	(0.063)	(0.003)	(0.038)	(0.081)	(0.003)
ROA	0.012	0.052	0.001	-0.073	-0.146	-0.007
	(0.077)	(0.171)	(0.004)	(0.052)	(0.106)	(0.005)
Cash	0.148*	0.332**	0.009	0.342***	0.776***	0.030***
	(0.080)	(0.167)	(0.009)	(0.110)	(0.229)	(0.011)
Dividends	0.983***	1.905***	0.130***	0.866**	1.709**	0.120***
	(0.319)	(0.642)	(0.039)	(0.423)	(0.868)	(0.044)
Constant	-3.111***	-6.136***	-0.094***	-3.642***	-7.259***	-0.126***
	(0.406)	(0.930)	(0.016)	(0.385)	(0.941)	(0.014)
Observations	30,979	30,979	30,979	12,610	12,610	12,610
R-squared	0.12	0.18	0.16	0.14	0.21	0.17
Model	FracProbit	GLM	OLS	FracProbit	GLM	OLS
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES

Table A.3: **Managerial short-termism channel: Robustness tests based on short-termism activities.** This table provides robustness tests on the role of short-termism channel in the effect of financial derivatives trading on employee welfare by adapting two-step and path analysis based on measures of corporate short-termism activity. Panel A reports the results of the two-step analysis based on standard two-equation instrumental variables (IV) econometrics. Intuitively, the IV approach (Panel A2) decomposes the baseline estimate (Panel A1) of the effect of derivatives trading on employee welfare based on Eq. (1) into two factors. The first stage of the IV approach estimates the statistical effect of derivatives trading on a short-termism measure, and the final stage estimates the effect of a short-termism measure instrumented by derivatives trading volume on employee welfare. Panel B reports the results of the path analysis based on estimatiom of the following structual equation model (SEM) with a short-termism measure used as a mediating variable:

$$\text{Short-Termism Activity} = \alpha_0 + \alpha_1 \text{Derivative Volume} + \alpha_2 X + \epsilon$$
$$\text{Employee Welfare} = \beta_0 + \beta_1 \text{Short-Termism Activity} + \beta_2 \text{Derivative Volume} + \beta_3 X + \epsilon$$

Total mediated path is the path from derivatives trading to employee welfare mediated through managerial short-termism. The significance of the mediated effect is estimated using the Sobel (1982) test statistics. In addition to control variables used in Table 2, all regressions include additional control variables for CEO characteristics. The coefficients of control variables are not tabulated. Industry and year fixed effects are controlled. Industry group is defined by the first two digits of the SIC code. The standard errors presented in parentheses are robust to heteroskedasticity. The symbols ***,**, and * denote significance levels of 1%, 5%, and 10%, respectively.

	ST Activity = Income Smoothing		*ST Activity* = Meet & Beat	
	(1)	(2)	(3)	(4)
	Options	CDS	Options	CDS
Panel A: Two-step analysis				
	Panel A1: Baseline model			
DV $\longrightarrow$ EW	0.033***	0.006***	0.033***	0.006***
	(0.006)	(0.002)	(0.006)	(0.002)
	Panel A2: IV approach			
First Stage:				
DV $\longrightarrow$ ST Activity (α_1)	-0.028***	-0.009***	-0.025***	-0.002
	(0.010)	(0.003)	(0.005)	(0.002)
Final Stage:				
Instr. ST Activity $\longrightarrow$ EW (β_1)	-1.205***	-0.644***	-1.294***	-2.811
	(0.433)	(0.248)	(0.261)	(2.078)
Product of effects				
$\alpha_1 \times \beta_1$	0.033	0.006	0.033	0.006
Observations	13,975	7,452	13,975	7,452
Controls	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES

Continued - Table A.3

	ST Activity = Income Smoothing		*ST Activity* = Meet & Beat	
	(1)	(2)	(3)	(4)
	Options	CDS	Options	CDS
Panel B: Path analysis				
DV $\longrightarrow$ ST Activity (α_1)	-0.045***	-0.015***	-0.141***	-0.003**
	(0.007)	(0.003)	(0.022)	(0.001)
ST Activity $\longrightarrow$ EW (β_1)	-0.007***	-0.009***	-0.022***	-0.011*
	(0.002)	(0.003)	(0.003)	(0.006)
Total mediated path ($\alpha_1 \times \beta_1$)	0.0003***	0.0001**	0.0002***	0.00003
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	13,975	7,452	13,975	7,452
Controls	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES

Table A.4: **Managerial short-termism channel: Robustness tests based on long-term costs.** This table provides robustness tests on the role of short-termism channel in the effect of financial derivatives trading on employee welfare by adapting two-step and path analysis based on measures of corporate long-term costs. Panel A reports the results of the two-step analysis based on standard two-equation instrumental variables (IV) econometrics. Intuitively, the IV approach (Panel A2) decomposes the baseline estimate (Panel A1) of the effect of derivatives trading on employee welfare based on Eq. (1) into two factors. The first stage of the IV approach estimates the statistical effect of derivatives trading on long-term costs, and the final stage estimates the effect of long-term costs instrumented by derivatives trading volume on employee welfare. Panel B reports the results of the path analysis based on estimatiom of the following structual equation model (SEM) with long-term costs used as a mediating variable:

$$\text{Long-Term Costs} = \alpha_0 + \alpha_1 \text{Derivative Volume} + \alpha_2 X + \epsilon$$
$$\text{Employee Welfare} = \beta_0 + \beta_1 \text{Long-Term Costs} + \beta_2 \text{Derivative Volume} + \beta_3 X + \epsilon$$

Total mediated path is the path from derivatives trading to employee welfare mediated through corporate long-term costs. The significance of the mediated effect is estimated using the Sobel (1982) test statistics. All regressions include the same control variables as those used in Table 2, but their coefficients are not tabulated. Industry and year fixed effects are controlled. Industry group is defined by the first two digits of the SIC code. The standard errors presented in parentheses are robust to heteroskedasticity. The symbols ***,**, and * denote significance levels of 1%, 5%, and 10%, respectively.

	LT Costs = R&D		*LT Costs* = SGA		*LT Costs* = Labor	
	(1)	(2)	(3)	(4)	(5)	(6)
	Options	CDS	Options	CDS	Options	CDS
Panel A: Two-step analysis						
			Panel A.1: Baseline model			
DV $\longrightarrow$ EW	0.036***	0.008***	0.038***	0.009***	0.014*	0.009**
	(0.005)	(0.001)	(0.005)	(0.002)	(0.008)	(0.004)
			Panel A.2: IV approach			
First Stage:						
DV $\longrightarrow$ LT Costs (α_1)	0.440***	0.025***	0.165***	0.085***	0.225***	0.118***
	(0.022)	(0.008)	(0.011)	(0.004)	(0.037)	(0.011)
Final Stage:						
Instr. LT Costs $\longrightarrow$ EW (β_1)	0.082***	0.310***	0.232***	0.106***	0.062**	0.073***
	(0.006)	(0.101)	(0.019)	(0.013)	(0.026)	(0.022)
Product of effects						
$\alpha_1 \times \beta_1$	0.036	0.008	0.038	0.009	0.014	0.009
Observations	30,979	12,610	25,681	10,649	5,618	2,259
Controls	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES

Continued - Table A.4

	LT Costs = R&D		*LT Costs* = SGA		*LT Costs* = Labor	
	(1)	(2)	(3)	(4)	(5)	(6)
	Options	CDS	Options	CDS	Options	CDS
Panel B: Path analysis						
DV $\longrightarrow$ LT Costs (α_1)	0.617^{***}	0.046^{***}	0.333^{***}	0.128^{***}	0.340^{***}	0.161^{***}
	(0.016)	(0.007)	(0.008)	(0.003)	(0.022)	(0.009)
LT Costs $\longrightarrow$ EW (β_1)	0.008^{***}	0.011^{***}	0.011^{***}	0.012^{***}	0.010^{***}	0.007^{*}
	(0.001)	(0.001)	(0.001)	(0.002)	(0.003)	(0.004)
Total mediated path ($\alpha_1 \times \beta_1$)	0.005^{***}	0.001^{***}	0.004^{***}	0.002^{***}	0.003^{***}	0.001^{*}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
Observations	30,979	12,610	25,681	10,549	5,618	2,259
Controls	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES

Table A.5: **Effect of financial derivatives trading on employee treatment: Alternative channels.** This table examines the role of alternative channels in the effect of financial derivatives trading on employee treatment. *Derivative Volume* denotes *Ln (1+OptVol)* in odd columns, and *Ln (1+CDSVol)* in even columns. *Delaycon* measures each firm's annual degree of overall financial constraints based on the Management's Discussion and Analysis section of the 10-K following the methodology of Hoberg and Maksimovic (2015). *IO Concentration* is a measure of institutional investor ownership concentration, which is calculated as the Herfindahl Index based on the percentages of institutional holdings by all 13-f institutions. Detailed definitions of variables can be found in Appendix. Industry and year fixed effects are controlled. Industry group is defined by the first two digits of the SIC code. The standard errors presented in parentheses are robust to heteroskedasticity and clustered by firm level. The symbols ***,**, and * denote significance levels of 1%, 5%, and 10%, respectively.

	Dep. var. = Employee Welfare			
	(1)	(2)	(3)	(4)
	Options	CDS	Options	CDS
Derivative Volume × Delaycon	-0.031	-0.004		
	(0.049)	(0.021)		
Delaycon	0.001	0.009		
	(0.019)	(0.027)		
Derivative Volume × IO Concentration			-0.168	-0.015
			(0.136)	(0.019)
IO Concentration			0.045**	0.049**
			(0.018)	(0.021)
Derivative Volume	0.039***	0.009***	0.043***	0.009***
	(0.006)	(0.002)	(0.008)	(0.002)
Firm Size	0.019***	0.026***	0.020***	0.026***
	(0.002)	(0.003)	(0.002)	(0.002)
Leverage	-0.000	0.004	-0.003	-0.008
	(0.007)	(0.009)	(0.007)	(0.007)
Book-to-Market	0.017***	0.015***	0.015***	0.01***
	(0.004)	(0.005)	(0.003)	(0.003)
ROA	-0.005	-0.007	-0.001	-0.005
	(0.005)	(0.005)	(0.005)	(0.004)
Cash	0.011	0.038***	0.011	0.029***
	(0.010)	(0.013)	(0.009)	(0.011)
Dividends	0.090*	0.102*	0.115***	0.117***
	(0.046)	(0.055)	(0.038)	(0.044)
Constant	-0.055***	-0.122***	-0.074***	-0.128***
	(0.021)	(0.018)	(0.016)	(0.015)
Observations	15,033	7,423	25,212	12,396
R-squared	0.18	0.18	0.18	0.17
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES