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

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## Abstract

Do financial derivatives influence firms' fulfillment of their ethical responsibilities toward employees? Drawing on stakeholder theory and corporate moral responsibility, we examine whether trading in equity options and credit default swaps (CDSs) influences employee welfare in underlying firms. We find that active derivatives trading is associated with significant improvements in employee welfare, including higher ESG employee scores, greater employee satisfaction, safer workplaces, and better compensation. Firms also increase investments in human capital when options or CDSs are actively traded on their equity or debt instruments. Further analysis suggests that derivatives trading improves employee welfare by mitigating managerial short-termism and encouraging stakeholder oriented decision making. Overall, our findings suggest that financial derivatives can strengthen firms' ethical accountability to employees.

**Keywords** Financial derivatives · Employee welfare · Stakeholder theory · Corporate moral responsibility · 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)

## Introduction

Employee welfare is a core dimension of firms' ethical responsibilities toward employees and a key element of the Social pillar of ESG performance. Drawing on stakeholder theory (Freeman, 1984; Gibson, 2000) and the concept of corporate moral responsibility (French, 1979), firms have a duty to respect and protect employees as ends in themselves, rather than merely as means to profit. Organizational justice (Colquitt et al., 2001; Greenberg, 1987) and care ethics theories (Carmeli et al., 2017; Wicks et al., 1994) further emphasize fairness, empathy, and attentiveness as moral expectations within employment relationships. Neglecting workplace safety or equitable compensation thus constitutes

not only poor management, but also a violation of the ethical norms of justice and care.

In addition to the ethical importance, in the current economic environment, which emphasizes quality and innovation, employees play an increasingly important role in corporate competitive success (Zingales, 2000). Reflecting this shift, investors and policymakers have become more attentive to corporate human capital. For example, Pan et al. (2022) provide evidence that equity markets value employee welfare, such as pay inequality. Since August 2020, the SEC has expanded human capital disclosure requirements, emphasizing that investors seek greater transparency regarding corporate workforces. Because employee welfare reflects both firms' moral commitments and their long term economic performance, financial market mechanisms that shape managerial incentives may influence not only financial outcomes but also the extent to which firms fulfill their ethical responsibilities toward employees. Financial innovation, including the development of derivatives markets, represents one such financial market mechanism. Whether these markets reinforce or undermine firms' stakeholder obligations therefore raises an important ethical question.

In particular, the tension between short-term financial performance and long-term social performance presents a central challenge to corporate sustainability (Hahn et al., 2015). Corporate social performance, including employee welfare, is especially vulnerable to managerial short-termism because its payoffs accrue over a long horizon and are difficult to measure (Cohn & Wardlaw, 2016). The feedback-effect models of financial markets offer a theoretical framework for mitigating managerial short-termism. Under this framework, information generated in financial markets influences real-side corporate decisions, which in turn determine the future cash flows of the firms whose securities are traded.<sup>1</sup> Improved information efficiency enables prices to more accurately reflect firm fundamentals and managerial actions, thereby encouraging managers to undertake long-term, value-enhancing investments (e.g., Edmans, 2009). This greater informational efficiency can also enhance trust in organization–stakeholder relationships and enable managers to uphold moral commitments to stakeholders, including employees (Greenwood & Van Buren, 2010; Schnackenberg & Tomlinson, 2016). Active financial derivatives markets, such as options and CDSs, provide valuable information about the underlying reference firms that is not in the stock market (e.g., Batta et al., 2016; Cao et al., 2024; Hu, 2018; 2014; Lee et al., 2018). Therefore, we expect derivatives trading to increase firms' investment in employee welfare by improving informational efficiency, reducing managerial

short-termism, and strengthening managerial accountability to employees as stakeholders.

The equity-referenced options and debt-referenced CDSs are direct and widely used derivatives in financial markets, corresponding to both types of firms' financial securities.<sup>2</sup> In our analysis, we focus on trading volume 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 et al., 2009). We construct an 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 measure of employee welfare is derived from employee relations strength scores in the MSCI KLD ESG STATS database, which reflect a firm's emphasis on employee welfare and its engagement in proactive programs and policies to enhance it.

We find that employee welfare improves with derivatives 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 of 0.022 (0.017) points in the aggregated employee welfare score, corresponding to additional \$5.1 (3.9) million in selling, general, and administrative expenses (SG&A) or 2.0% (1.6%) of net income. Moreover, when we simultaneously incorporate options and CDS trading into the employee welfare analysis, we find significant positive coefficients for both options and CDS tradings. These findings suggest that both options and CDS trading convey valuable information to the market and contribute to improvements in employee welfare.

However, derivatives trading can be endogenous. Firms associated with derivatives 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 employ the instrumental variable (IV) approach. Following Roll et al. (2009), we use option open interest and absolute moneyness as IVs for option trading volume. For CDS trading, we follow Saretto and Tookes (2013) and use lenders' foreign exchange hedging activity as an instrument.<sup>3</sup> Using instrumented derivatives trading volumes in the welfare analysis reinforces our baseline finding that active derivatives trading improves employee welfare.

<sup>1</sup> Bond et al. (2012) and Goldstein (2023) review the growing feedback-effect literature.

<sup>2</sup> Equity options, which are the most common type of equity derivatives, are widely used by investors. The credit derivative CDS was one of the major financial innovations in recent decades and was 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.

<sup>3</sup> Section “Endogeneity” discusses the construction of IVs in detail.

To substantiate our baseline finding based on KLD employee welfare ratings, we explore the impact of derivatives trading on specific dimensions of employee welfare. Employee welfare encompasses not only financial well-being but also psychological, physical, and social well-being. We find that financial derivatives trading increases the median worker pay at the reference firm (i.e., financial well-being) and the likelihood of being listed among the best firms to work for (i.e., employee satisfaction or psychological well-being), while reducing workplace incident rates and intra-firm pay inequality (i.e., physical and social well-being).

After establishing the relationship between derivatives trading and employee welfare, we next examine the underlying mechanism driving these results. The short-termism channel predicts that derivatives trading improves information efficiency, which reduces short-termist activities and results in more employee oriented decision making. We thus directly examine changes in corporate short-termist activities when there is active derivatives trading on a firm. We find evidence that derivatives trading decreases the likelihood of corporate engagement in myopic activities, such as earnings smoothing and narrowly “meeting or beating” analysts’ forecasts. Two-step decomposition and path analysis further confirm that active derivatives trading improves employee welfare by reducing managerial myopia.<sup>4</sup>

Next, we conduct cross-sectional tests to provide additional evidence supporting the short-termism channel. Specifically, firms in highly competitive industries, and those with high analyst coverage are more likely to face pressure to meet short-term earnings targets. If derivatives improve employee welfare through the reduction of managerial short-termism, the effect should be more pronounced in these firms. Moreover, stakeholder theory suggests that decision makers are more likely to incorporate employee preferences when the firm is highly dependent on its workforce for survival and success (Clarkson, 1995). Thus, we expect that the impact of derivatives trading on employee welfare will be amplified in human capital intensive firms, which rely more on employees’ knowledge and skills. We find evidence consistent with these predictions. Further analysis shows that financial derivatives increase firm value, particularly in firms that rely on knowledge-based human capital.

Finally, we explore corporate investments in employee welfare. To measure investments in employee welfare, we use firms’ total labor expenses from Compustat as a direct proxy for investment in employee retention, and also include firms’ SG&A expenses, which incorporate employee payments and benefits. We find that firms with active derivatives trading increase their investments in employee welfare.

<sup>4</sup> We discuss and design tests to exclude alternative channels in sections “Literature and Hypothesis Development” and “Alternative Channels”.

Our study contributes to the ethics and finance literature on the determinants of corporate ESG policies, particularly employee welfare, a core component of firms’ social performance. Employee welfare, such as workplace safety, can be influenced by ethical climates and CEO characteristics (e.g., Haga et al., 2022; Parboteeah & Kapp, 2008; Wu et al., 2023). Moreover, workplace safety improves with financial resources (e.g., Cohn & Wardlaw, 2016) and monitoring (e.g., Bradley et al., 2022; Cohn et al., 2021). In addition, Liang et al. (2023) show that stock market listing improves workplace safety primarily through increased public scrutiny. Different from the previous focus on internal factors or external stock market, we contribute to the literature by providing the first comprehensive evidence that derivatives trading positively affects employee welfare.<sup>5</sup>

Furthermore, we add to the literature on the feedback effects of information in financial markets. While prior studies focus mostly on managers’ learning from stocks (Goldstein, 2023), we instead examine derivatives markets, which contain additional information beyond that embedded in equity markets and represent significant financial innovations in recent decades.

Finally, our paper sheds new light on the real effects of financial derivatives. Existing evidence suggests that financial derivatives are not a sideshow but can have real effects on the reference firms (e.g., Bartram et al., 2022; Bernile et al., 2025; Lee et al., 2017, 2018). While Blanco and Wehrheim (2017) and Chang et al. (2019) document the positive impact of derivatives on innovation, it remains unclear whether derivatives trading influences investment in another key long-term asset—employees. We contribute by providing the first comprehensive assessment of the effect of derivatives trading on rank-and-file employees.

## Literature and Hypothesis Development

### Employee Welfare

Employee welfare is a central aspect of the Social (“S”) pillar in ESG performance, carrying important economic and ethical implications (e.g., Haga et al., 2022; Wu et al., 2023). Poor employee welfare, such as a high workplace

<sup>5</sup> Firms’ ESG decisions may vary by issue and stakeholder group (Liang et al., 2023). What is good for environmental (E) performance is not necessarily good for social (S) performance, and vice versa. Environmentally responsible firms do not always treat employees well, despite employee welfare being a core component of the S dimension. For example, on October 4, 2021, Tesla, a leading electric vehicle and clean energy company, was ordered to pay \$137 million to a former employee over a hostile work environment. Similarly, firms with high employee satisfaction may still receive poor overall ESG scores. The complexity of evaluating firms’ ESG performance underscores the importance of studying E and S separately.

injury rate, exposes workers to significant physical and psychological risks and imposes substantial economic costs on employees, firms, and society. According to the U.S. National Safety Council, work-related injuries and fatalities in 2022 incurred total costs of approximately \$167 billion, comprising \$50.7 billion in lost wages and productivity, \$37.6 billion in medical expenses, and \$54.4 billion in administrative costs (Bureau of Labor Statistics, 2023). In addition, corporate social performance, including employee welfare practices, can damage a firm's reputation and reduce its ability to attract and retain employees (Bode et al., 2015; Caskey and Ozel, 2017). Accordingly, poor employee welfare may adversely affect firm performance and valuation (e.g., Cohn and Wardlaw, 2016; Danna and Griffin, 1999).

Moreover, employee welfare extends beyond its instrumental role in organizational performance and is widely recognized as a fundamental ethical obligation of firms. According to stakeholder theory (e.g., Freeman, 1984), firms have a responsibility to protect and promote stakeholder interests. Employees represent a core stakeholder group for firms. Employee welfare policies, such as those related to workplace safety or compensation, are not solely operational or financial decisions, but also ethical in nature.<sup>6</sup> Gibson (2000) further provides a moral justification for stakeholder theory. From the perspective of corporate moral responsibility, firms are viewed not merely as collections of individuals but as moral agents (French, 1979). Thus, corporate obligations derive from a moral duty to treat stakeholders as ends in themselves rather than as means to organizational objectives.

Beyond stakeholder theory and corporate moral responsibility, several complementary frameworks further underscore the ethical relevance of employee welfare. For example, organizational justice emphasizes perceptions of fairness in outcomes, decision-making procedures, and interpersonal treatment within organizations (e.g., Colquitt et al., 2001; Greenberg, 1987). From an ethic of care perspective, the employment relationship is a relational and moral commitment, and caring organizations attend to employees' needs and sustain their well-being over time (e.g., Carmeli et al., 2017; Wicks et al., 1994). Neglecting employee welfare is therefore inconsistent with these ethical norms, as it undermines both fair treatment and the moral duty of care owed to employees.

Collectively, these ethical theories suggest that decisions regarding employee welfare reflect corporate obligations, not merely means to instrumental outcomes such as firm performance or shareholder value. In line with these ethical frameworks, Kaptein (2008) identifies violations of workplace health and safety standards, as well as noncompliance

with rules regarding wages, overtime, and employee benefits, as forms of unethical behavior toward employees. Similarly, Haga et al. (2022) and Wu et al. (2023) frame workplace safety—an essential dimension of employee welfare—as an ethical concern.

Given its ethical and strategic importance, a growing body of research has investigated the determinants of employee welfare. Prior research suggests that employee welfare, particularly workplace safety, is influenced by both internal and external factors. Internally, ethical and safety climates contribute to the development of safer work environments (Hofmann et al., 2017; Parboteeah and Kapp, 2008), while the availability of resource and managerial characteristics also play important roles. For instance, the presence of operational slack has been shown to enhance workplace safety (Wiengarten et al., 2017), whereas abusive supervision exacerbates safety risks (Yuan et al., 2020).

Externally, prior research has documented how stock market forces shape employee welfare, including financial constraints (Cohn and Wardlaw, 2016), private equity ownership (Cohn et al., 2021), and the influence of financial analysts (Bradley et al., 2022; Caskey and Ozel, 2017). In particular, Liang et al. (2023) show that stock market listing enhances workplace safety primarily by increasing media and regulatory scrutiny, which make firms more accountable for employee welfare. In contrast, our paper focuses on financial derivatives trading and finds that such trading enhances employee welfare by improving information efficiency in secondary financial markets. The increased price informativeness associated with derivative trading helps mitigate managerial short-termism and promotes stakeholder-oriented decision-making, including increased investment in employees.

## Real Effects of Financial Derivatives

Financial derivatives can have real effects on the underlying reference firms. Theoretically, financial derivatives can contribute to market completeness and enhance informational efficiency. For example, Ross (1976) shows that options enhance efficiency by expanding the set of contingencies that markets can accommodate. In addition, Cao and Henry (1999) finds that the introduction of derivative assets increases incentives to acquire information about asset payoffs, thereby improving the informativeness of underlying prices. An enhanced corporate information environment also facilitates more effective market-based monitoring by investors and other stakeholders (e.g., Holmström and Tirole, 1993).

Empirically, Roll et al. (2009) show that options trading enhances firm value by improving informational efficiency, thereby enabling managers to allocate resources more effectively. Further, Cao (2025) show that options trad-

<sup>6</sup> As discussed in Sparks and Hunt (1998), an ethical issue arises when a decision involves alternatives that conflict with established ethical norms.

ing enhances firm value by promoting a lower-cost debt structure that relies more on public debt and less on bank borrowing. Hao (2022) provide evidence that options trading intensifies market scrutiny of firms' financial reporting practices. Exploiting exogenous variation in options availability, Bernile et al. (2025) show that improved informational efficiency reduces the need for debt and payout, enhances investment efficiency, and leads to increased innovation activity. Regarding CDSs, Lee et al. (2018) find that CDS spreads contribute significantly to price discovery in financial markets, particularly when firm-specific credit information is prominent. Batta et al. (2016) document that CDS trading enhances the forecast accuracy by financial analysts. Moreover, managers may acquire value-relevant information reflected in stock prices as a result of CDS trading (Kim et al., 2023).

In CDS markets, the ability to hedge credit risk improves informational efficiency and reshapes debtor–creditor relations, thereby affecting firms' real decisions. Bolton and Oehmke (2011) show theoretically that CDSs can have both positive and negative effects: they may strengthen creditors' bargaining power and expand firms' debt capacity *ex ante*, but can also create “empty creditors” who push distressed firms into inefficient liquidation. Empirical evidence broadly supports these predictions.

Our paper contributes to the expanding literature on the real effects of financial derivatives on firms' long-term investment decisions. Existing studies have primarily examined tangible investments or those related to innovation. For example, Blanco and Wehrheim (2017) show that options trading stimulates corporate innovation by enhancing price discovery and improving resource allocation, while Bernile et al. (2025) find that the introduction of options trading increases both the level and efficiency of investment, including capital expenditures and innovation outputs, by improving market informativeness. Focusing on debt-referenced derivatives, Chang et al. (2019) find that CDS trading enhances corporate innovation because CDS-protected creditors are more tolerant of firm risk-taking, while Norden et al. (2025) show that CDS trading dampens firms' cyclical growth patterns, thereby fostering higher profitability and long-term value. More recently, trading in options and CDSs has been associated with improvements in firms' environmental and social performance (Li et al., 2024; Zhao, 2024).

Building on these insights, this study is the first to provide a comprehensive assessment of how financial derivatives trading affects employees—an underexplored yet ethically significant dimension of firms' long-term investment decisions. As derivatives markets grow in prominence, understanding their feedback effects on the real economy becomes increasingly important (Goldstein, 2023). By shifting the focus from traditional investments to human capital, and by examining both options and CDS markets, we show that

derivatives trading has meaningful consequences for firms' internal stakeholders.

## Hypothesis Development

Managerial short-termism has long been a concern in business ethics. As discussed in Hahn et al. (2015), the tension between short-term financial performance and long-term social performance represents a central challenge in corporate sustainability. Corporate decision makers make choices that are best for the short term but might have detrimental effects in the long term. While managerial short-termism can affect various firm outcomes, it is particularly likely to influence social performance, which typically involves long-term investments whose benefits materialize only in the long run. Consistent with this view, Smulowitz et al. (2023) find that managerial short-termism is negatively associated with corporate social performance, although stronger external monitoring can reduce its adverse effects.

The literature on the feedback effects of financial markets provides an alternative theoretical framework for mitigating managerial short-termism. Under this framework, managers tend to underinvest because investment choices are unobservable to market participants and share prices do not fully reflect expected cash flows. However, the more efficient the stock price, the more closely the price reflects the fundamental value of the firm and the manager's actions. This increases real efficiency by encouraging the manager to take value-maximizing actions and reducing underinvestment (Bond et al., 2012). Indeed, Edmans (2009) shows that informed trading by blockholders enhances financial market efficiency and motivates managers to pursue long-term, value-enhancing investments in intangible assets, including employee welfare.

From a stakeholder perspective, information quality is central to transparency, which in turn fosters trust in organization–stakeholder relationships (Schnackenberg and Tomlinson, 2016). Such trust underpins fair and ethical treatment of stakeholders, particularly those who are dependent or vulnerable (Greenwood and Van Buren, 2010). In this sense, improved information efficiency enables managers to act with accountability and uphold their moral obligations to stakeholders. We extend this logic to examine how financial derivatives markets influence employee welfare, a critical yet underexplored aspect of corporate social performance. As discussed in “[Real Effects of Financial Derivatives](#)” section, a substantial body of research shows that financial derivatives enhance informational efficiency. Thus, given the improved information environment after derivatives trading, we expect that:

**Hypothesis 1:** *A firm's employee welfare improves when there is active trading in equity options or CDSs referencing the firm.*

To provide additional evidence for the reduced short-termism channel, beyond the observed improvement in employee welfare, we directly examine changes in corporate short-termist behavior when there is active derivatives trading referencing a firm. The short-termism channel suggests that derivatives trading enhances information efficiency, which mitigates managerial myopia and encourages firms to focus on long-term stakeholder oriented investment. Accordingly, we expect that active derivatives trading referencing a firm is associated not only with increased long-term investment, but also with reduced indicators of short-termism. Following prior literature, we proxy corporate short-termism using the likelihood of earnings smoothing and narrowly meeting or beating analysts' earnings forecasts.

**Hypothesis 2:** *Options or CDS trading referencing a firm reduces corporate short-termist behavior, such as the likelihood of earnings smoothing or narrowly meeting or beating analysts' earnings forecasts.*

The effect of derivatives trading on employee welfare is likely to vary based on firm characteristics. If the welfare-enhancing effect of derivatives operates through the reduced short-termism channel, it should be more pronounced among firms facing greater short-term market pressure. Firms operating in highly competitive industries, as well as those with extensive analyst coverage, are more likely to experience pressure to meet short-term earnings expectations (Aghion et al., 2005; Caskey & Ozel 2017; Graham et al., 2005; He & Tian, 2013). We therefore expect the impact of financial derivatives on employee welfare to be stronger in such firms.

**Hypothesis 3:** *The positive relationship between equity options or CDS trading and employee welfare is stronger among firms subject to greater short-term performance pressure.*

Furthermore, the impact of derivatives trading on employee welfare may depend on the strategic importance of a firm's workforce. According to stakeholder theory, decision-makers are more likely to consider employee preferences when the firm is highly dependent on its workforce for survival and long-term success (Clarkson, 1995). This is particularly the case for human capital intensive firms, where value creation depends heavily on employees' specialized knowledge and skills (Gupta et al., 2017). Moreover, firms that depend more on skilled workers face stronger implicit contracting concerns because their employment relationships typically involve more implicit components such as training and quality of facilities (El Ghoul et al., 2019). To compete for these skilled workers, managers have stronger incentives to attract, retain, and treat them fairly.

When derivatives trading enhances transparency and managerial accountability, these effects are likely amplified in human capital intensive firms. Improved information environments allow managers to more effectively assess the long-term implications of their decisions, while firm reliance

on skilled employees elevates the moral and strategic imperative to invest in employee welfare. Accordingly, we expect the positive association between derivatives trading and employee welfare to be stronger in human capital intensive firms, where ethical and strategic considerations jointly reinforce managerial responsiveness to employee needs. Thus, we have the following hypothesis contingent on human capital intensity:

**Hypothesis 4:** *The positive relationship between options or CDSs trading and employee welfare is stronger in human capital intensive firms.*

Beyond the short-termism channel, derivatives trading may affect employee welfare through alternative mechanisms. On the one hand, derivatives trading referencing a firm can alleviate corporate financing constraints (Bernile et al., 2025; Saretto & Tookes, 2013). This provides firms with additional resources to invest in long-term value-enhancing investment such as employee welfare. On the other hand, firms with active derivatives markets may attract more institutional investors, who positively influence corporate investment in CSR (Chen et al., 2020). In contrast, derivatives trading may exert adverse effects on employee welfare by increasing managerial pressure to meet short-term market expectations.<sup>7</sup> In the CDS context, CDS-protected creditors are tougher in debt renegotiations (Bolton & Oehmke, 2011). To avoid contentious renegotiations, firms may engage in myopic activities, potentially harming employee welfare. We test these alternative channels in "[Mechanisms of the Derivatives Impact](#)" section.

## Data and Summary Statistics

To measure the impact of derivatives trading, we collect trading volume data for equity options and CDSs on U.S. public companies. Our options trading volume data is obtained from OptionMetrics LLC from 1996 to 2018. The database provides daily information on individual put and call options 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.<sup>8</sup> Daily dollar trading volume is calculated by multiplying the midpoint of

<sup>7</sup> Firms face pressure to deliver quarterly earnings results, which can significantly affect their stock price performance (Bhojraj et al., 2009). When derivatives markets are active, reference firms may face additional scrutiny, as earnings outcomes affect not only equity valuation but also derivatives pricing and trading dynamics (Callen et al., 2009).

<sup>8</sup> As noted by Roll et al. (2009), there are no clear hypotheses for disaggregating volume by option type or 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

the daily closing bid and ask prices (used as a proxy for the transaction price) by the number of contracts traded on that day. We obtain CDS trading volume data from the DTCC, which provides weekly information on aggregate gross and net notional CDS volumes for the top 1000 reference entities since October 31, 2008. We measure CDS trading volume for a reference firm using the net notional amount reported in the final week of its fiscal year.<sup>9</sup>

Our baseline measure of employee welfare draws on the MSCI ESG STATS database covering the period 1996–2018, which has been widely used to evaluate firms' strengths and concerns in employee relations (e.g., Bae et al., 2011; Di Giulio & Kostovetsky, 2014). Following Bae et al. (2011), we construct our measure using five positive indicators of employee relations, including union relations, cash profit sharing, employee involvement, retirement benefits, and health and safety. MSCI ESG STATS changed its rating methodology over time, resulting in variation in the number of employee relations indicators during our sample period. To ensure comparability, following Albuquerque et al. (2019), we sum the ratings across the five strength categories, each scored as 0 or 1, and scale the total by the maximum possible number of employee strengths in a given year. As a result, our aggregated employee welfare score is bounded between zero and one.

We obtain additional firm-level financial information from the CRSP-Compustat merged database. We use annual data, as employee welfare measures are not reported at the quarterly level. We exclude firms with missing or negative values for total assets. Due to imperfect overlap across data sources, our baseline analysis covers the period 1996–2018 for options trading, and October 2008 to September 2015 for CDS trading, unless otherwise noted. All continuous dependent and control variables are winsorized at the 1st and 99th percentiles. All dollar values are inflation-adjusted using the annual average Consumer Price Index (CPI) for urban consumers, with 1996 as the base year, from the Bureau of Labor Statistics (BLS).

Table 1 presents the summary statistics. The Appendix provides detailed definitions of all variables. In total, our analysis is based on two samples. The first sample consists of 30,979 firm-year observations and is used to examine the effect of options trading on employee welfare. It includes 3,537 firms with positive options trading volume. The second sample consists of 12,610 firm-year observations and is used to examine the effect of CDS trading on employee welfare. It includes 289 firms with positive CDS trading

volume.<sup>10</sup> 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 significantly exceeds the annual options trading volume: \$595.3 million versus \$1.4 million. Given the highly skewed distribution of trading volume, we use the natural logarithm of one plus total dollar trading volume as our measure of derivatives trading. As robustness checks, we also use the inverse hyperbolic sine transformation of derivatives trading volume.

Our samples are comparable to those of previous studies. On average, firms with traded options and CDSs are larger and more profitable, have higher leverage, and a lower book-to-market ratio than firms without derivatives trading. In addition, firms with traded derivatives outperform those without derivatives in both average employee welfare scores and each of the five employee relations categories. However, median worker pay is lower in firms with derivatives trading than in those without.

Finally, firms with positive derivatives trading volume appear more frequently on Fortune's list of the "100 Best Companies to Work For", i.e., 1.5% of option firms versus 0.1% of non-option firms, and 3.2% of CDS firms versus 0.4% of non-CDS firms. Among firms with positive derivatives trading volume, we sort firms into quartiles based on annual trading volume and compute the average percentage appearing on the list of best companies for each quartile across all years. As shown in Fig. 1, the percentage of firms included on the list increases monotonically with derivatives trading volume. The percentage of best firms in the top derivatives trading quartile is more than six times that of the bottom quartile.

## Financial Derivatives and Employee Welfare

In this section, we examine whether financial derivatives trading influences firms' fulfillment of their ethical responsibilities toward employees by analyzing its impact on employee welfare. We address endogeneity concerns using an IV approach. In addition to the baseline employee welfare ratings from KLD, we extend our analysis to include real outcomes related to specific dimensions of employee well-being and alternative employee relationship measure from Refinitiv ESG (now LSEG ESG) data. Finally, we conduct various robustness tests based on alternative estimation models.

volume with no information on the signed order imbalance, the sum of call and put volumes cannot be linked to bullish or bearish sentiment.

<sup>9</sup> We focus on the net notional amount, as it more accurately reflects the credit risk transferred in the CDS market after adjusting gross notional values for offsetting positions (Oehmke & Zawadowski, 2017).

<sup>10</sup> After dropping sovereigns, states, municipalities and non-U.S. companies, matching the CDS data with the CRSP-Compustat merged database left us with 417 CDS-traded U.S. public firms. This is consistent with prior studies in CDS. However, combining this resulting CDS sample with MSCI ESG STATS reduces the number of CDS-traded firms to 289.

**Table 1** Summary statistics

Panel A: Whole sample						
	<i>N</i>	Mean	sd	Min	p50	Max
<i>Firm characteristics</i>						
Firm size	30,979	7.159	1.561	4.124	6.988	11.553
Leverage	30,979	0.226	0.205	0.000	0.191	0.897
Book-to-Market	30,979	0.496	0.357	-0.175	0.429	1.862
ROA	30,979	0.026	0.117	-0.594	0.036	0.260
Cash	30,979	0.172	0.203	0.001	0.088	0.899
Dividends	30,979	0.014	0.024	0.000	0.003	0.148
Net Income (bln)	30,979	0.251	0.772	-0.442	0.039	5.658
SG&A expenses (bln)	25,694	0.639	1.683	0.006	0.138	11.932
<i>Employee treatment</i>						
Employee welfare	30,979	0.063	0.140	0.000	0.000	0.750
Union relations	20,166	0.037	0.188	0.000	0.000	1.000
Cash profit sharing	20,046	0.098	0.298	0.000	0.000	1.000
Employee involvement	23,928	0.106	0.307	0.000	0.000	1.000
Retirement benefits	14,237	0.059	0.235	0.000	0.000	1.000
Health and safety	25,446	0.038	0.191	0.000	0.000	1.000
Best firm	199,288	0.005	0.072	0.000	0.000	1.000
Total incidence rate	61,746	7.447	6.326	0.000	6.042	30.268
CEO-worker pay ratio	5494	181.716	252.708	2.900	99.305	1560.000
Worker pay (thous)	7748	82.810	60.307	6.271	65.994	333.249

## Baseline Results

To investigate whether financial derivatives trading influences firms' fulfillment of their ethical responsibilities toward employees, we examine its relationship with employee welfare using the following ordinary least squares (OLS) regression model:

$$\text{Employee Welfare}_{i,t} = \beta_0 + \beta_1 \text{Derivative Volume}_{i,t} + \beta_2 X_{i,t} + u_i + v_t + \epsilon_{i,t}, \quad (1)$$

where  $i$  and  $t$  indicate firm and fiscal year, respectively. The dependent variable, *Employee Welfare*, is a normalized employee welfare score. As discussed earlier, employee welfare captures a core dimension of firms' stakeholder obligations and reflects their ethical treatment of employees. The key independent variable, *Derivative Volume*, is a measure of financial derivatives trading activity, captured by either the trading volume of equity options,  $\ln(1 + \text{OptVol})$ , or credit derivatives,  $\ln(1 + \text{CDSVol})$ . *OptVol* denotes the trading volume of options, while *CDSVol* refers to CDS net notional amount. For firms with no financial derivatives trading data, trading volume is set to zero. We include year fixed effects ( $v_t$ ) to account for time-specific variation in employee treatment and industry fixed effects ( $u_i$ ) to con-

trol for cross-industry heterogeneity. The standard errors are robust to heteroskedasticity and clustered at firm level.

To ensure that the effect of financial derivatives trading is not confounded by firm characteristics, we include a set of control variables ( $X_{i,t}$ ) identified in the literature as key determinants of corporate CSR policies (e.g., Cronqvist & Yu, 2017; Di Giuli & Kostovetsky, 2014). Specifically, we include *Leverage*, *Firm Size*, *Dividends* and *Cash* to capture capital structure, financial constraint, and liquidity effects. We also include *Book-to-Market* and *ROA* to control for growth opportunities and profitability. Detailed variable definitions are provided in the Appendix.

The baseline results are presented in Table 2. In columns (1) and (2), we estimate the baseline regression using options and CDS trading volume, respectively. We find positive and statistically significant coefficients at the 1% level for the trading volume of both derivatives, indicating that greater derivatives trading activity is associated with better employee welfare. These improvements are consistent with stronger stakeholder-oriented corporate conduct.<sup>11</sup> The magnitude of the coefficients implies that a one standard deviation increase in financial derivatives trading volume is associated with a 0.022-point increase in employee welfare for options trading

<sup>11</sup> Our findings are consistent with Li et al. (2024), who document a positive impact of options trading on corporate CSR policies.

**Table 1** continued*Panel A: Whole sample*

	<i>N</i>	Mean	sd	Min	p50	Max
<i>Financial derivatives</i>						
OptVol (mln), > 0	25,796	1.387	12.400	0.000	0.054	1176.183
ln(1+OptVol)	30,979	0.280	0.612	0.000	0.027	7.071
CDSVol (mln), > 0	1719	595.272	588.168	25.691	436.502	5612.499
ln(1+CDSVol)	12,610	0.824	2.097	0.000	0.000	8.633

*Panel B: Firms with and without financial derivatives trading*

	With options ( <i>N</i> = 3537) Mean	No options ( <i>N</i> = 674) Mean	With CDS ( <i>N</i> = 289) Mean	No CDS ( <i>N</i> = 2064) Mean
<i>Firm characteristics</i>				
Firm size	7.439	5.768	9.050	6.593
Leverage	0.233	0.196	0.312	0.203
Book-to-Market	0.478	0.590	0.550	0.580
ROA	0.027	0.019	0.044	0.018
Cash	0.177	0.147	0.097	0.188
Dividends	0.014	0.013	0.021	0.013
SG&A expenses (bln)	0.561	0.109	1.984	0.209
Labor expenses (bln)	1.178	0.264	3.741	0.407
Income smoothing measure	0.265	0.329	0.071	0.329
Meet & beat EPS forecasts	0.109	0.105	0.068	0.082
<i>Employee treatment</i>				
Employee welfare	0.072	0.021	0.142	0.040
Union relations	0.042	0.012	0.128	0.041
Cash profit sharing	0.116	0.027	0.137	0.061
Employee involvement	0.122	0.027	0.169	0.103
Retirement benefits	0.066	0.038	0.180	0.084
Health and safety	0.045	0.005	0.177	0.018
Best firm	0.015	0.001	0.032	0.004
Total incidence rate	7.362	7.747	5.783	5.650
CEO-worker pay ratio	179.786	183.260	272.536	162.360
Worker pay (thous)	79.713	85.184	77.180	83.680

This table reports summary statistics of firm and employee treatment characteristics. Panel A presents the descriptive statistics of the variables over the entire sample. Panel 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. Detailed definitions of variables can be found in Appendix

and a 0.017-point increase for CDS trading. Given the mean employee welfare score of 0.063, these effects correspond to economically meaningful changes in firms' treatment of employees relative to the sample average.<sup>12</sup>

In column (3), we include both options and CDS trading volumes in the baseline regression. We find that both options

and CDS trading provide valuable information to the market and positively affect employee welfare. In columns (4)–(6), we repeat the analysis using lagged values of derivatives trading volume and obtain similar results. The coefficients of the control variables in Table 2 are generally consistent with those reported in prior literature. Larger firms, those with higher book-to-market ratios, and firms that pay dividends tend to treat their employees better.

To better understand the economic significance, we follow the literature on CSR ratings and estimate the cost to a firm of achieving similar improvements in its employee wel-

<sup>12</sup> In a log-level regression model, the effect of a one standard deviation increase in financial derivatives trading volume on employee welfare is calculated as  $0.036 \times 0.612 = 0.022$  for options and  $0.008 \times 2.097 = 0.017$  for CDSs, where 0.036 and 0.008 are the estimated coefficients of  $\ln(1 + OptVol)$  and  $\ln(1 + CDSVol)$ , respectively, from Table 2 (columns 1 and 2). The standard deviation values are based on Table 1.

**Table 2** Effect of financial derivatives trading on employee treatment

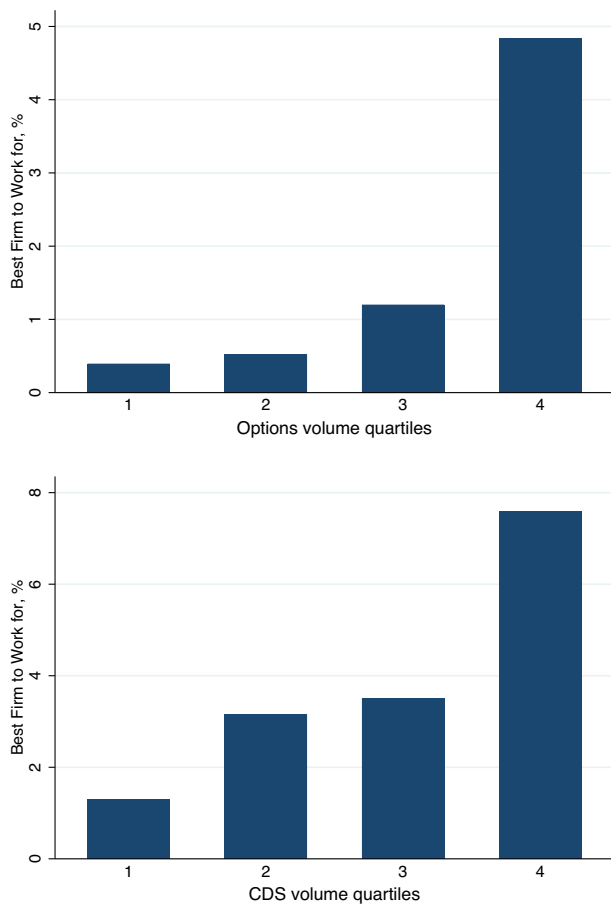
	<i>Dep. var.</i> = Employee welfare					
	(1) Options	(2) CDS	(3) Options & CDS	(4) Options	(5) CDS	(6) Options & CDS
Derivative volume	0.036*** (0.005)	0.008*** (0.001)				
Ln (1+OptVol)			0.033*** (0.006)			
Ln (1+CDSVol)			0.006*** (0.002)			
Derivative volume $t_{-1}$				0.038*** (0.004)	0.008*** (0.001)	
Ln (1+OptVol $t_{-1}$ )						0.033*** (0.006)
Ln (1+CDSVol $t_{-1}$ )						0.006*** (0.002)
Firm size	0.021*** (0.002)	0.025*** (0.002)	0.018*** (0.002)	0.021*** (0.001)	0.029*** (0.002)	0.021*** (0.002)
Leverage	-0.004 (0.006)	-0.005 (0.007)	-0.005 (0.007)	-0.005 (0.006)	0.000 (0.008)	-0.000 (0.008)
Book-to-Market	0.017*** (0.003)	0.014*** (0.003)	0.011*** (0.003)	0.016*** (0.003)	0.025*** (0.004)	0.020*** (0.004)
ROA	0.002 (0.004)	-0.007 (0.005)	-0.004 (0.004)	0.003 (0.004)	-0.002 (0.007)	0.001 (0.007)
Cash	0.006 (0.009)	0.031*** (0.011)	0.017 (0.010)	0.007 (0.009)	0.042*** (0.012)	0.029** (0.012)
Dividends	0.135*** (0.039)	0.117*** (0.044)	0.117*** (0.043)	0.133*** (0.038)	0.139*** (0.048)	0.138*** (0.047)
Constant	-0.081*** (0.016)	-0.121*** (0.013)	-0.077*** (0.012)	-0.077*** (0.016)	-0.158*** (0.015)	-0.110*** (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

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 repeat 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

fare score. Spending on CSR programs is typically included in a firm's SG&A expenses. Therefore, firms with higher employee welfare scores are expected to have higher SG&A expenses. Indeed, in Table A.1, column (1), we find that a one standard deviation increase in employee welfare score (0.140) is associated with a 5.1% increase in SG&A. Given that the mean SG&A of our sample firms is \$639.0 million,

this corresponds to an additional \$32.6 million in spending ( $5.1\% \times \$639.0$  million) for the average firm. A one standard deviation increase in options (CDS) trading volume corresponds to a 0.022 (0.017) point increase in the employee welfare score, or a 0.157 (0.121) standard deviation increase, which translates to an additional \$5.1 (\$3.9) million in SG&A expenses. Given that the mean net income for sample firms



**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)

is \$251.0 million, this cost represents 2.0% (1.6%) of net income.<sup>13</sup>

## Endogeneity

The baseline results suggest a strong positive relationship between financial derivatives trading and employee welfare, a core dimension of firms' stakeholder responsibilities

<sup>13</sup> To put these figures in context, Di Giuli and Kostovetsky (2014) find that Democratic-leaning firms spend an additional \$18 million per year or about 10% of net income on CSR relative to Republican-leaning firms. Chen et al. (2020) document that a one standard deviation increase in institutional ownership raises a firm's CSR rating, incurring an additional \$32 million in SG&A spending, or 15% of net income. As employee welfare is one component of CSR, our estimated effects are consistent with this literature.

toward employees. Although we control for observable firm characteristics identified in prior literature as affecting both employee welfare and derivatives trading, the assignment of financial derivative contracts to firms may be endogenous and correlated with unobserved factors that also influence corporate employee treatment. Moreover, firms with more generous employee treatment policies may be more likely to attract active derivatives trading on their equity or debt. To mitigate potential endogeneity concerns, we employ an instrumental variable (IV) approach using a two-stage least squares (2SLS) model.

Specifically, following Blanco and Wehrheim (2017) and Roll et al. (2009), we use open interest and absolute moneyness of listed options as IVs for options trading volume. Open interest, defined as the average open interest across all options on a stock throughout the year, is positively correlated with options trading volume. Absolute moneyness, measured as the average absolute difference between the stock's market price and the option's strike price, also serves as an instrument. While moneyness is empirically related to trading volume, the direction of this relationship depends on investor preferences regarding option moneyness (e.g., Roll et al., 2009). Thus, the proposed instruments likely meet the relevance condition. Regarding the exclusion restriction, since open interest includes both call and put options, it is unlikely that aggregate open interest is directly related to corporate employee treatment. Since exchanges periodically list new at-the-money options, there is no reason to expect that average unsigned moneyness is directly related to corporate employee treatment.<sup>14</sup>

For CDS trading volume, following Saretto and Tookes (2013) and Subrahmanyam et al. (2014), we use the foreign exchange (FX) hedging activities of firms' lenders as an instrument. Lenders with larger foreign exchange hedging positions are more likely to hedge their credit risk using CDSs (Minton et al., 2009). The observed positive correlation between lenders' FX hedging activities and their demand for CDS contracts on borrowers supports the instrument's relevance. Furthermore, the instrument is likely to satisfy the exclusion restriction, as the primary purpose of FX derivatives is to hedge the foreign exchange risk of lenders, which is driven by macroeconomic factors rather than firm-level characteristics. Accordingly, a borrowing firm's employee treatment policy is unlikely to be directly affected by its lenders' FX hedging positions.

Table 3 presents the results from the IV estimation. Columns (1) and (2) report the first-stage regressions for  $\ln(1 + OptVol)$  and  $\ln(1 + CDSVol)$ , respectively. The

<sup>14</sup> Option moneyness may be related to stock return volatility, as exchanges may list options on stocks with more dispersed strike prices due to higher volatility (Roll et al., 2009). Our results remain robust when we control for stock return volatility in the 2SLS regressions.

**Table 3** Endogeneity of financial derivatives trading

	OLS (first stage)		2SLS (second stage)	
	<i>Dep. var.</i> Ln (1+OptVol)	<i>Dep. var.</i> Ln (1+CDSVol)	<i>Dep. var.</i> Employee welfare	
	(1)	(2)	(3)	(4)
Instr. derivative volume			0.039*** (0.008)	0.020*** (0.006)
Firm size	0.210*** (0.012)	0.513*** (0.037)	0.021*** (0.003)	0.016*** (0.004)
Leverage	0.008 (0.045)	0.683*** (0.187)	-0.009 (0.008)	-0.015 (0.009)
Book-to-Market	0.096*** (0.018)	0.485*** (0.082)	0.017*** (0.004)	0.007 (0.005)
ROA	-0.126*** (0.047)	-0.536*** (0.173)	0.002 (0.005)	0.002 (0.006)
Cash	0.313*** (0.059)	0.168 (0.188)	0.014 (0.012)	0.034*** (0.011)
Dividends	0.027 (0.253)	0.173 (0.696)	0.124** (0.057)	0.113** (0.045)
Rated	-0.093*** (0.020)	0.375*** (0.100)		
Investment grade	-0.010*** (0.027)	0.751*** (0.164)		
Open interest	0.123*** (0.006)			
Moneyiness	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

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 *Moneyiness* as instruments. *Open Interest* is the natural logarithm of the average open interest across all options on a stock throughout the year. *Moneyiness* 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 5 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

instruments are *Open interest* and *Moneyness* for column (1), and  $\ln(1 + FX)$  for column (2). In addition to the control variables used in the baseline model, we include a firm's credit rating, which has been shown to influence derivatives trading in prior research. Detailed definitions of variables are provided in the Appendix. The selected firm characteristics explain a substantial portion of the variation in derivatives trading volume, with  $R^2$  values ranging from 40 to 56%. The instruments are also positively associated with derivatives trading volume, with coefficients significant at the 1% level, further supporting the relevance condition. Finally, the first-stage Sargan  $F$ -test statistic for the "weak instrument rule of thumb" is highly significant ( $p$ -value of 0.00,  $F$  is well above 10), allowing us to reject the null hypothesis of weak instruments. Columns (3) and (4) present the second stage results. We find positive and statistically significant coefficients for the instrumented  $\ln(1 + OptVol)$  and  $\ln(1 + CDSVol)$ , supporting a positive and causal relationship between derivatives trading and employee welfare. These results strengthen the inference that derivatives trading is associated with firms more fully upholding their stakeholder responsibilities toward employees.

In addition to the IV approach, we include firm fixed effects in the OLS regressions to assess whether time-series variation in derivatives trading is associated with changes in employee welfare policies. As shown in Internet Appendix Table A.2 Panel A, when firm fixed effects are included in the baseline employee welfare model, we find positive coefficients for both options and CDS variables, but only the CDS volume is statistically significant at the 10% level. This is because firm fixed effects can reduce the model power when the key variables are highly persistent. We have a very strong persistence in the employee welfare measure over time as supported by a strong rejection of the null in the Wooldridge first-order autocorrelation test in Panel B. In such settings, within-firm year-to-year changes are extremely limited. By relying on within-firm variation, firm fixed effects estimators may not detect an effect even if one exists (Zhou 2001). Similar arguments are made in Di Giuli and Kostovetsky (2014), Edmans (2011) and Saretto and Tookes (2013).

In Internet Appendix Table A.2 Panel C, we implement the Mundlak-type within-between decomposition to formally diagnose the source of identifying variation in our analysis. This framework decomposes each regressor into within- and between-firm components, making explicit which component drives the estimated relationship. We find that the within-firm coefficients on derivatives exposure are small and statistically insignificant, whereas the between-firm coefficients are positive and highly significant. This implies that the relationship between derivatives trading and employee welfare is driven by persistent cross-sectional differences across firms, rather than within-firm dynamics. Because firm fixed effects rely exclusively on within-firm variation, and

our key regressor exhibits very little within-firm variation over time, firm fixed effects remove nearly all identifying signal. Accordingly, industry fixed effects constitute the most appropriate fixed-effects structure in our setting.

## Specific Dimensions of Employee Well-Being

Our analysis thus far has relied on an aggregate measure of employee welfare based on MSCI KLD ratings. Because employee welfare reflects a core dimension of firms' stakeholder responsibilities, it is important to examine whether the observed effects extend to concrete and ethically meaningful dimensions of employees' workplace experiences. According to the World Health Organization (WHO, 1946), well-being is defined as "a state of complete physical, mental and social well-being, not merely absence of disease or infirmity". In addition, compensation represents another important dimension that affects employee well-being. In this section, we examine specific dimensions of employee well-being outcomes, including psychological, physical, social, and financial.

### Psychological Well-Being: Employee Satisfaction

Psychological well-being is based on individuals' subjective experiences and is closely associated with their satisfaction and happiness. If financial derivatives trading increases firms' focus on employee welfare, a natural outcome of such initiatives may be an increase in employee satisfaction. To measure employee satisfaction, we follow Edmans (2011) and use a firm's inclusion in the "100 Best Companies to Work for in America" list, published annually by Fortune magazine and based on surveys conducted by the Great Place to Work® Institute from 1996 to 2018. Companies featured on this list are widely viewed as placing strong emphasis on employee well-being, inclusion, purpose, listening, and care—factors that contribute to higher job satisfaction.

In Table 4 Panel A, columns (1)–(2), we repeat the baseline employee welfare regression analysis by replacing the dependent variable with a dummy equal to one if the firm appears on the list of best firms in a given year. We find that firms are more likely to be included in the list when there is active financial derivatives trading on them. The coefficients for both options and CDS trading volumes are positive and statistically significant at 1% and 5% level. These findings suggest that financial derivatives trading positively affects the psychological dimension of employee well-being by improving employee satisfaction, consistent with stronger respect for employees as stakeholders rather than merely as inputs to production.

**Table 4** Financial derivatives and specific dimensions of employee well-being

	(1) Options	(2) CDS	(3) Options	(4) CDS
<i>Panel A: Psychological and physical well-being</i>				
	<i>Dep. var.</i> Best firm to work for		<i>Dep. var.</i> Total incidence rate	
Derivative volume	0.040*** (0.007)	0.004** (0.002)	-0.449*** (0.074)	-0.075*** (0.022)
Strike			2.970*** (0.680)	3.516** (1.736)
Seasonal			-0.428** (0.187)	1.025*** (0.389)
Shutdown			0.482*** (0.116)	0.178 (0.121)
Disaster			0.315 (0.325)	-1.111*** (0.335)
Observations	199,288	54,061	61,746	17,689
R-squared	0.05	0.03	0.20	0.26
<i>Panel B: Social and financial well-being</i>				
	<i>Dep. var.</i> CEO-worker pay ratio		<i>Dep. var.</i> Worker pay	
Derivative volume	-0.149*** (0.038)	-0.019** (0.009)	0.102*** (0.015)	0.042*** (0.006)
Emp. number	0.396*** (0.021)	0.399*** (0.023)	-0.236*** (0.014)	-0.250*** (0.015)
Emp. productivity	0.000* (0.000)	0.000 (0.000)	0.000*** (0.000)	0.000*** (0.000)
CEO tenure	-0.007** (0.003)	-0.007** (0.003)		
CEO age	0.004 (0.003)	0.005 (0.003)		
Observations	5494	5494	7748	7748
R-squared	0.59	0.58	0.66	0.66
Controls	YES	YES	YES	YES
Year and industry FE	YES	YES	YES	YES

This table extends the baseline employee welfare analysis by replacing the dependent variable with specific dimensions of employee well-being. Each specification includes the same set of control variables as in Table 2, supplemented with additional controls where appropriate. Only the coefficients on these additional control variables are reported. *Best Firm to Work for* is an indicator based on Fortune magazine's list of the "100 best companies to work for". *Total Incidence Rate* is constructed from injury and illness data reported to OSHA. *CEO-Worker Pay Ratio* is the natural logarithm of the ratio of CEO compensation to median worker pay, based on Equilar data. *Worker pay* is the natural logarithm of the total compensation of the median employee, based on data of Equilar. Detailed definitions of variables can be found in Appendix. All regressions include industry and year fixed effects. Standard errors in parentheses are heteroskedasticity-robust and clustered at the firm level, except in Panel A (columns 3–4), where they are clustered at the establishment level. The symbols \*\*\*, \*\*, and \* denote significance levels of 1%, 5%, and 10%, respectively.

### Physical Well-Being: Workplace Safety

Physical well-being is concerned with employee health and depends on access to opportunities and resources that support the sustainable maintenance of bodily health. Improved workplace safety can be a tangible outcome of employee well-being initiatives. A firm that prioritizes employee well-being is more likely to invest in safety training and supervision, acquire or maintain equipment with enhanced safety features, and replace outdated machinery or components.

To measure workplace safety improvements, we follow Bradley et al. (2022) and Cohn and Wardlaw (2016) and construct an establishment-level measure of total incidence rates based on OSHA data from 1996 to 2011. In Table 4 Panel A, 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 reported cases, including *Strike*, *Seasonal*, *Shutdown*, and *Disaster*. Appendix provides detailed definitions of the variables. We find highly significant negative coefficients on *Derivative Volume*, indicating that greater financial derivatives trading is associated with lower workplace incidence rates. These results suggest that financial derivatives trading improves employees' physical well-being, potentially through increased corporate investment in workplace safety. From an ethical perspective, reductions in workplace injuries reflect firms' fulfillment of their duty of care toward employees.

### Social Well-Being: Pay Inequality

Fairness of treatment is one of the most important aspects of social well-being (Guest, 2017). Perceived fairness in employee rewards, often associated with base pay rather than incentive schemes, is an important determinant of employee retention and motivation. There is a growing debate about inequality in society, particularly in relation to wages. Large income dispersion exists not only between middle-class and high-paid workers, but also within firms (Song et al., 2019). Recent literature documents a general aversion to income inequality in society, including among financial market participants. For example, Pan et al. (2022) find that investors are sensitive to within-firm pay dispersion and income inequality. Thus, it is important to understand whether financial derivatives trading affects pay inequality within firms.

Based on Equilar data from December 2017 to March 2021, we measure pay inequality as the dispersion in compensation between a firm's top executives and rank-and-file employees. The pay dispersion data is available only for fiscal years beginning on or after January 1, 2017, in compliance

with mandatory SEC disclosure requirements.<sup>15</sup> We define the *CEO-Worker Pay Ratio* as the natural logarithm of the ratio of the CEO's compensation to the median worker's pay. We then regress the *CEO-Worker Pay Ratio* on derivatives trading volume and control variables. In addition to the control variables used in the baseline model, we include employee- and CEO-specific characteristics, such as the number of employees, employee productivity, CEO tenure, and CEO age. As shown in Table 4, Panel B, columns (1) and (2), the coefficients on derivatives trading are negative and statistically significant at the 1% and 5% levels, respectively. These results suggest that financial derivatives trading can influence the social well-being of employees by reducing pay inequality within firms. By narrowing disparities between executives and rank-and-file workers, derivatives trading appears to be associated with compensation practices that are more consistent with principles of fairness and equitable stakeholder treatment.

### Financial Well-Being: Pay Level

Financial well-being refers to the 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 the 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 from December 2017 to March 2021, based on Equilar data. The pay ratio disclosure rule requires companies to identify their median employee at any point within the last 3 months of a fiscal year, based on total annual compensation or another consistently applied compensation measure. Companies are permitted to report on the same employee for up to three years, providing only updated pay information. Notably, the pay of the median employee is more informative for our analysis than a firm's average pay because it is not influenced by changes in the composition of the workforce, whereas average pay can be affected by the hiring of higher-paid skilled workers.

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

<sup>15</sup> To conduct tests using Equilar data, we expand our derivatives trading volume data for both options and CDSs over the period December 2017–March 2021.

financial security, thereby strengthening firms' commitment to supporting employees' economic stability.

Overall, consistent with the baseline results, the additional analyses in this section reveal the multidimensional effect of financial derivatives trading activity on employee well-being. Across psychological, physical, social, and financial dimensions, the evidence suggests that derivatives trading is associated with outcomes consistent with more robust stakeholder-oriented corporate conduct.

## Robustness Tests

In this section, we conduct various robustness tests of our baseline results to ensure that the observed relationship between derivatives trading and employee welfare, a core dimension of stakeholder responsibility, is not driven by model specification. In Table 5 Panel A, we conduct additional tests based on alternative estimation models. Since the employee welfare measure is bounded between zero and one, we estimate the baseline model for employee welfare using a fractional probit model in columns (1)–(2). In columns (3)–(4), we further augment the baseline model with a lagged dependent variable. Including a lagged dependent variable is the widely used approach in empirical corporate finance research when the dependent variable is slow-moving or highly autocorrelated. Instead of using log transformations, columns (5)–(6) transform the derivatives trading variables using the inverse hyperbolic sine (IHS) transformation. The IHS transformation offers advantages similar to the logarithmic transformation in reducing skewness and mitigating the influence of extreme values, but it also accommodates zero or negative observations without requiring a constant. This makes it particularly suitable for variables such as derivatives trading volume, which may take zero values for firms without derivatives activity.

Moreover, in our baseline analysis, we include industry fixed effects based on 2-digit SIC codes. To confirm that our results are not driven by coarse industry groupings, we include industry fixed effects with 3- or 4-digit SIC codes in Panel B. We find consistent results across these alternative model specifications in Panels A and B. These findings strengthen the inference that derivatives trading is systematically associated with improvements in employee treatment rather than being driven by a particular estimation approach.

Our baseline employee welfare measure relies on KLD data, which has been subject to recent methodological criticism. Panel C therefore presents robustness tests using an alternative employee welfare measure from Refinitiv ESG (now LSEG ESG) data. In particular, *Workforce Score* measures a firm's performance in promoting job satisfaction, a healthy and safe workplace, diversity and equal opportunities, and employee development. As shown in columns (1)–(2), we find positive and significant effects of deriva-

tives trading on *Workforce Score*. In columns (3)–(6), we further explore whether the effects of derivatives trading extend to other CSR dimensions. While employee treatment is a critical component of the Social pillar, the Refinitiv Social Pillar Score is a weighted aggregation of four category scores—Workforce, Human Rights, Community, and Product Responsibility. The results show that both options and CDSs trading volumes are positively and significantly associated with *Human Rights Score* and *Social Pillar Score* in general, indicating that derivatives trading is associated with broader improvements in socially oriented corporate conduct, including dimensions related to stakeholder protection and human rights.<sup>16</sup>

Derivatives trading may act as a substitute for weak internal governance mechanisms that affect employee welfare. To address this concern, in Panel D columns (1)–(2), we add proxies for corporate governance, including the *E-Index*, *Director Independence*, and institutional ownership concentration (*IO Concentration*). We continue to find significantly positive coefficients for *Derivative Volume*. The results confirm that our main findings are robust to governance-related factors. In Internet Appendix Table A.3, we conduct a conditional analysis with corporate governance to examine the impact of derivatives trading on employee welfare under different governance structures. We find that the coefficients on the interaction terms between derivatives trading and governance proxies are statistically insignificant, suggesting that the positive effect of derivatives trading on employee welfare does not vary systematically across governance structures.

In Table 5 Panel D columns (3)–(4), we include *CEO Overconfidence* and other CEO characteristics that may influence corporate employee policies. We follow previous studies (e.g., Malmendier and Tate 2008) and classify a CEO as overconfident if the CEO holds options that are at least 67% in-the-money on at least two occasions during the CEO's tenure. We define *CEO Overconfidence* as equal to 1 if such behavior is observed and 0 otherwise. Consistent with Chen et al. (2023), we find a significant negative coefficient for *CEO Overconfidence*, indicating that overconfident CEOs are associated with lower employee welfare and potentially riskier workplace environments. Moreover, among other CEO characteristics, we find that CEO tenure is negatively associated with employee welfare. This finding

<sup>16</sup> Among the four categories in *Social Pillar Score* we report results on *Workforce Score* and *Human Rights Score*, as they are more directly related to employees. In unreported results, we also find a positive impact of derivatives trading on *Community* and *Product Responsibility*. We acknowledge that these new results imply that the proposed mechanism operates broadly across CSR dimensions. However, we focus on employee welfare because it provides a conceptually clear and ethically significant channel through which improved information efficiency influences firms' treatment of internal stakeholders in a manner consistent with stakeholder theory.

**Table 5** Robustness: alternative estimation models

	(1) Options	(2) CDS	(3) Options	(4) CDS	(5) Options	(6) CDS
<i>Panel A: Alternative estimation models</i>						
	<i>Dep. var. = Employee welfare</i>					
Derivative volume	0.095*** (0.020)	0.030*** (0.008)	0.013*** (0.002)	0.003*** (0.001)		
Employee welfare <sub>t-1</sub>			0.647*** (0.011)	0.619*** (0.015)		
Arcsinh (derivative volume)					0.029*** (0.004)	0.007*** (0.001)
Observations	30,979	12,610	25,802	11,223	30,979	12,610
R-squared	0.12	0.14	0.47	0.48	0.17	0.17
Model	FracProbit	FracProbit	OLS	OLS	OLS	OLS
<i>Panel B: Granularity of industry classification</i>						
	<i>Dep. var. = Employee welfare</i>					
Derivative volume	0.036*** (0.005)	0.008*** (0.001)	0.036*** (0.004)	0.008*** (0.001)	0.035*** (0.004)	0.009*** (0.001)
Observations	30,979	12,610	30,979	12,610	30,979	12,610
R-squared	0.17	0.17	0.19	0.21	0.21	0.23
Industry classification	2dgt SIC	2dgt SIC	3dgt SIC	3dgt SIC	4dgt SIC	4dgt SIC
<i>Panel C: Refinitiv data. Alternative welfare measures</i>						
	<i>Dep. var. Workforce score</i>		<i>Dep. var. Human rights score</i>		<i>Dep. var. Social pillar score</i>	
Derivative volume	0.027*** (0.007)	0.016*** (0.003)	0.035*** (0.007)	0.014*** (0.003)	0.022*** (0.006)	0.014*** (0.002)
Observations	21,891	6,775	21,891	6,775	21,891	6,775
R-squared	0.31	0.34	0.33	0.37	0.38	0.40
Controls	YES	YES	YES	YES	YES	YES
Year and industry FE	YES	YES	YES	YES	YES	YES
<i>Panel D: Additional control variables</i>						
	<i>Dep. var. = Employee welfare</i>					
Derivative volume	0.030*** (0.007)	0.006*** (0.002)	0.035*** (0.006)	0.006*** (0.002)	0.036*** (0.005)	0.008*** (0.002)
E-Index	0.002 (0.002)	0.002 (0.003)				
Director independence	0.040** (0.017)	0.030 (0.019)				
IO concentration	0.286** (0.114)	0.312** (0.127)				
CEO overconfidence			-0.013*** (0.003)	-0.013*** (0.005)		
CEO equity intensity			0.002 (0.007)	-0.021* (0.011)		

**Table 5** continued

Panel D: Additional control variables

			Dep. var. = Employee welfare			
CEO age			0.000 (0.000)	0.000 (0.000)		
CEO tenure			− 0.001*** (0.000)	− 0.001** (0.000)		
Corporate culture					− 0.000 (0.000)	0.001* (0.000)
Observations	8527	6780	15,866	8245	24,233	10,736
R-squared	0.19	0.19	0.19	0.19	0.17	0.18
Controls	YES	YES	YES	YES	YES	YES
Year and industry FE	YES	YES	YES	YES	YES	YES

Panel A reports the effect of financial derivatives trading on employee treatment using several alternative estimation approaches: a fractional probit model (columns 1–2), the baseline specification augmented with a lagged dependent variable (columns 3–4), and the baseline model estimated using the inverse hyperbolic sine transformation of derivatives trading volume (columns 5–6). Panel B evaluates sensitivity to the granularity of the industry classification by estimating models with 2-digit (columns 1–2), 3-digit (columns 3–4), and 4-digit (columns 5–6) SIC industry fixed effects. Panel C provides robustness checks using alternative employee-welfare measures from the Refinitiv ESG dataset as the dependent variable. Panel D incorporates additional controls beyond the baseline specification, including corporate governance variables (E-Index, director independence, institutional ownership concentration; columns 1–2), CEO characteristics (overconfidence measure, equity compensation intensity, age, tenure; columns 3–4), and corporate culture measure (columns 5–6). Only the coefficients on these additional control variables are reported. Detailed definitions of variables can be found in Appendix. Industry and year fixed effects are controlled. The symbols \*\*\*, \*\*, and \* denote significance levels of 1%, 5%, and 10%, respectively.

aligns with Chowdhury et al. (2025), who present suggestive evidence of a negative relationship between CEO tenure and workplace safety. Importantly, the coefficients for *Derivative Volume* remain significantly positive after including this control, suggesting that the positive effect of derivatives trading on employee welfare persists and is not driven by CEO overconfidence and other CEO characteristics.

In the last two columns of Panel D, we incorporate proxies for *Corporate Culture*. The corporate culture data are based on Li et al. (2021). We follow Haga et al. (2024) and construct a *Corporate Culture* measure as the sum of the five culture dimensions: Innovation, Integrity, Quality, Respect, and Teamwork. We find a significant positive coefficient for *Corporate Culture* in the analysis of CDS Volume on employee welfare, which is consistent with Haga et al. (2024), who show that a strong corporate culture positively affects employees. However, the coefficient is not significant in the Option Volume analysis. Importantly, the coefficients for *Derivative Volume* remain significantly positive after including this control. Overall, the robustness analyses in this section reinforce the baseline finding that active trading of financial derivatives is consistently associated with improvements in employee welfare, supporting the view that derivatives trading may enhance firms' fulfillment of their responsibilities toward employees.

## Mechanisms of the Derivatives Impact

After establishing the positive relationship between financial derivatives trading and employee welfare, we conduct a series of additional tests to explore the mechanisms through which derivatives trading may influence firms' fulfillment of their stakeholder responsibilities toward employees. Specifically, we directly examine corporate short-termism activities, perform a two-step decomposition and path analysis, and carry out cross-sectional tests based on firm- and employee-level characteristics. We also design tests to distinguish between alternative channels. Finally, we assess whether improvements in employee welfare are supported by corresponding increases in corporate investment in employee well-being.

### Reduced Short-Termism Channel

#### Financial Derivatives and Short-Termism Actions

If financial derivatives trading improves employee welfare by mitigating short-termism as a result of enhanced information efficiency, then firms with active derivatives trading should engage less in myopic activities. In this section, we directly test whether derivatives trading affects the likelihood of firms engaging in short-termist actions, such as managerial involvement in income smoothing and meeting or beating specific performance targets.

Specifically, we first proxy corporate myopic actions by managerial involvement in income smoothing. Focusing on short-term objectives, myopic managers are more likely to engage in income smoothing, as smooth earnings can facilitate market predictions and are perceived by investors as less risky.<sup>17</sup> We follow Tucker and Zarowin (2006) and measure income smoothing by the correlation between changes in discretionary accruals and pre-discretionary income, using the current year's and past 4 years' observations. Discretionary accruals are defined as abnormal accruals obtained from a cross-sectional estimation of the modified Jones model by 2-digit SIC industry and year. A stronger negative correlation indicates greater firm involvement in income smoothing. For ease of interpretation, we multiply correlation coefficients by  $-1$ , so that higher values of the *Income Smoothing Measure* indicate greater income smoothing.

In addition, we construct an alternative proxy for myopic actions based on *Meet & Beat EPS Forecasts*. Managers may be particularly concerned about missing the earnings expectations of analysts and investors. The inability of a firm to find a few cents to meet expectations can create uncertainty about its future prospects and trigger severe stock market reactions. Therefore, to avoid negative market responses to earnings shortfalls, managers might make small or moderate sacrifices in long-term economic value. To capture this myopic behavior, 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 the average analyst forecast over the last 2 months of the fiscal year, which gives managers sufficient time for short-termist actions, such as decisions on discretionary expenditures prior to the fiscal year-end and accrual adjustments after the fiscal year-end but before the earnings announcement.

In Table 6, we estimate the impact of financial derivatives trading on corporate myopic actions, as proxied by the *Income Smoothing Measure* and *Meet & Beat EPS Forecasts*. In addition to the baseline controls, we include additional control variables for CEO characteristics, including CEO equity compensation intensity, age, and tenure. We find negative coefficients on derivatives trading volume, which are statistically significant at the 1% and 5% levels. These results suggest that firms with greater derivatives trading activity are less engaged in myopic actions, such as smoothing earnings and narrowly meeting or beating analysts' forecasts. We interpret these findings as evidence that the stimulation of informed trading due to derivatives improves information efficiency and reduces managerial myopia.

<sup>17</sup> For example, Graham et al. (2005) find that 97% of CFOs surveyed prefer a smooth earnings path and believe that it results in a lower cost of equity and debt because investors demand a smaller risk premium for smooth earnings.

## Two-Step Decomposition and Path Analysis

In this section, we follow Di Giuli and Laux (2022) and conduct two-step decomposition and path analysis. In Panel A of Internet Appendix Table A.4, we adapt the standard two-step instrumental variables approach to decompose the baseline estimate of the effect of financial derivatives trading on employee welfare into two parts: the effect of derivatives trading on the likelihood of firms' involvement in myopic actions, and the effect of myopic actions—affected by derivatives—on employee welfare.<sup>18</sup> The product of the two link coefficients in the two-step chain (Subpanel A2) yields an exact estimate of the baseline effect of financial derivatives trading on employee welfare (Subpanel A1). In Panel B of Table A.4, we implement a path analysis framework specifically designed to quantify the total magnitude of the mediated (indirect) path: when an independent variable (derivatives trading volume) influences a dependent variable (employee welfare) indirectly through a mediator (corporate myopic actions).<sup>19</sup> Overall, both robustness tests in Table A.4 support the interpretation that financial derivatives trading improves employee welfare by reducing corporate short-termism.

In Internet Appendix Table A.5, we replace the short-termism measure with corporate investment in long-term assets and repeat the two-step and path analysis. Managers are likely to sacrifice long-term assets to meet short-term goals. If the impact of derivatives trading on employee welfare operates through the short-termism channel, we would expect an increase in long-term asset investment. We focus on R&D expenditures and the aggregated measures of employee welfare costs used in “[Corporate Expenditure on Employee Welfare](#)” section. We find that derivatives trading is significantly and positively related to a firm's likelihood of investing in long-term assets, while investment in long-term assets is significantly and positively related to employee welfare. The magnitude of the total mediated path through the firm's incentive to invest in long-term assets is also statistically significant. Overall, we find evidence consistent with the short-termism channel. The increased investment in long-term assets, including employee-related expenditures, suggests that derivatives trading may facilitate decision making that prioritizes sustained stakeholder value over short-term earnings management.

<sup>18</sup> Mechanically, we use financial derivatives trading volume as an instrument for corporate myopic actions.

<sup>19</sup> In contrast to the two-step IV technique, which provides formal test statistics only for each step in the chain, this statistical method provides a joint test statistic for the entire mediated path through corporate short-termism.

**Table 6** Financial derivatives and managerial short-termism likelihood

	<i>Dep. var.</i> Income smoothing measure		<i>Dep. var.</i> Meet & Beat EPS forecasts	
	(1)	(2)	(3)	(4)
	Options	CDS	Options	CDS
Derivative volume	−0.045 <sup>***</sup> (0.013)	−0.015 <sup>***</sup> (0.005)	−0.022 <sup>***</sup> (0.004)	−0.003 <sup>**</sup> (0.001)
Firm size	−0.050 <sup>***</sup> (0.005)	−0.063 <sup>***</sup> (0.006)	0.012 <sup>***</sup> (0.002)	0.008 <sup>***</sup> (0.002)
Leverage	−0.075 <sup>**</sup> (0.036)	−0.080 <sup>*</sup> (0.046)	−0.035 <sup>***</sup> (0.013)	−0.029 <sup>**</sup> (0.015)
Book-to-Market	−0.005 (0.006)	−0.022 <sup>***</sup> (0.008)	−0.015 <sup>***</sup> (0.003)	−0.009 <sup>***</sup> (0.002)
ROA	0.089 <sup>**</sup> (0.038)	0.115 <sup>*</sup> (0.060)	0.061 <sup>***</sup> (0.014)	0.015 (0.022)
Cash	0.026 (0.039)	0.028 (0.053)	−0.003 (0.017)	−0.006 (0.022)
Dividends	0.537 <sup>***</sup> (0.197)	0.467 <sup>*</sup> (0.249)	0.066 (0.077)	0.044 (0.085)
CEO equity intensity	−0.050 <sup>**</sup> (0.021)	−0.006 (0.032)	0.008 (0.009)	−0.014 (0.013)
CEO age	−0.003 <sup>***</sup> (0.001)	−0.000 (0.001)	−0.001 <sup>**</sup> (0.000)	0.000 (0.000)
CEO tenure	0.004 <sup>***</sup> (0.001)	0.004 <sup>***</sup> (0.001)	0.001 <sup>*</sup> (0.000)	0.000 (0.000)
Constant	0.582 <sup>***</sup> (0.066)	0.768 <sup>***</sup> (0.077)	0.085 <sup>***</sup> (0.024)	0.012 (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

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 4 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 <sup>\*\*\*</sup>, <sup>\*\*</sup>, and <sup>\*</sup> denote significance levels of 1%, 5%, and 10%, respectively.

### Market Short-Term Pressure

We next construct proxies for firms under greater short-term pressure, where managers may be more focused on boosting short-term performance and have stronger career concerns. If the impact of derivatives trading on employee welfare operates through the short-termism channel, the effect should be more pronounced in firms facing greater short-term pressure. In Table 7, we interact *Derivative Volume* with proxies for firms under market short-term pressure and repeat the base-

line employee welfare regression analysis. Our first proxy, *High Competition*, is an indicator variable equal to one if a company operates in a highly competitive industry, defined as having product market competition above the annual sample median. Competition increases reputational risk for managers and heightens the pressure to deliver strong short-term performance. We follow Aghion et al. (2005) and measure product market competition using the inverse Lerner index. A higher inverse Lerner index indicates lower gross margins and greater competition.

**Table 7** Effect of financial derivatives trading on employee treatment: market short-term pressure

	<i>Dep. var. = Employee welfare</i>			
	(1) Options	(2) CDS	(3) Options	(4) CDS
Derivative volume × high competition	0.017*** (0.005)	0.006** (0.003)		
High competition	− 0.003 (0.003)	− 0.003 (0.006)		
Derivative volume × high analyst			0.056*** (0.015)	0.015*** (0.003)
High analyst			− 0.011*** (0.003)	− 0.015*** (0.004)
Derivative volume	0.027*** (0.005)	0.006*** (0.002)	− 0.020 (0.015)	− 0.006** (0.003)
Firm size	0.021*** (0.002)	0.025*** (0.002)	0.023*** (0.002)	0.027*** (0.002)
Leverage	− 0.005 (0.006)	− 0.004 (0.007)	− 0.003 (0.006)	− 0.001 (0.007)
Book-to-Market	0.017*** (0.003)	0.015*** (0.003)	0.017*** (0.003)	0.015*** (0.003)
ROA	0.000 (0.004)	− 0.007 (0.005)	− 0.000 (0.004)	− 0.008 (0.005)
Cash	0.006 (0.009)	0.033*** (0.011)	0.010 (0.009)	0.033*** (0.011)
Dividends	0.137*** (0.038)	0.115*** (0.043)	0.122*** (0.039)	0.102** (0.043)
Observations	30,775	12,610	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

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. *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

Our second proxy, *High Analyst*, is an indicator variable equal to one if the number of analysts following the firm is above the annual sample median. The number of analysts actively following the firm is measured by the average number of EPS estimates over a fiscal year. Through earnings forecasts, financial analysts may create excessive pressure on managers to hit specific targets, thereby exacerbating managerial myopia. Consistent with this view, He and Tian (2013) document fewer long-term innovative projects in firms covered by a larger number of analysts, while Caskey and Bugra Ozel (2017) find that managers seeking to meet or beat ana-

lyst forecasts compromise workplace safety by cutting safety expenditures.

The results show positive coefficients for the interaction terms, which are statistically significant at the 1% and 5% levels. This suggests a greater improvement in employee welfare due to financial derivatives trading in firms facing 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 from short-term market pressures and allowing them to uphold longer-term commitments to employees and

other stakeholders. Despite the broad nature of our short-term pressure proxies, we find that the positive effect of derivatives trading on employee welfare is stronger in firms facing greater short-term pressure, consistent with the managerial short-termism hypothesis.

## Alternative Channels

As discussed in “[Literature and Hypothesis Development](#)” section, derivatives may affect employee welfare through alternative channels. While the overall positive impact of derivatives on employee welfare helps rule out the market expectation and tougher creditor channels, we design additional tests to examine other potential mechanisms through which derivatives positively influence employee welfare.

Specifically, derivatives trading can serve as a hedging tool for investors and alleviate corporate financing constraints. This may provide firms with greater financial flexibility to invest in long-term, value-enhancing initiatives, including employee welfare (i.e., the financing channel). Under this channel, improvements in employee welfare stem primarily from enhanced financial capacity rather than changes in managerial incentives or stakeholder-oriented decision making. Furthermore, firms with active derivatives trading may attract more institutional investors, who are major participants in derivatives markets and can improve CSR performance (i.e., the institutional investor channel). In this case, improvements in employee welfare would reflect stronger institutional monitoring rather than shifts in managerial time horizons. If derivatives trading affects employee welfare through these alternative channels, financially constrained firms or those with lower institutional ownership should benefit more from derivatives trading and exhibit larger improvements in employee welfare.

To test these implications, we add interaction terms between *Derivative Volume* and proxies for financial constraints (*Delaycon*, *WW Index*, *Unrated*) or institutional investor ownership (*Dedicated Investors*, *Quasi-indexer Investors*) in the employee welfare regression analysis. The variable definitions are provided in Appendix A. As shown in Internet Appendix Table A.6, none of the interaction terms are statistically significant. Thus, these alternative channels do not play a significant role in explaining the positive effect of derivatives trading on employee welfare.

## Human Capital Intensity

We next examine whether the effect of derivatives trading on employee welfare varies with firms’ human capital intensity (HCI) as reliance on skilled labor may strengthen both the strategic and ethical importance of employee treatment. We proxy human capital intensity using R&D intensity,

patent activity, and technology intensity.<sup>20</sup> These proxy capture firms’ reliance on employees’ knowledge and skills as core productive assets. Because employment relationships in such firms involve substantial implicit components, such as training and workplace quality, they face greater implicit contracting concerns (El Ghouli et al., 2019). Consequently, investments in employee welfare are strategically valuable and economically consequential, as employees represent a key stakeholder group.

Consistent with Hypothesis 4, Table 8 shows that the positive effect of derivatives trading on employee welfare is significantly stronger among firms with higher R&D intensity, greater patenting activity, and those operating in tech-intensive industries. The interaction terms *Derivative Volume*  $\times$  *R&D*, *Derivative Volume*  $\times$  *Patents*, and *Derivative Volume*  $\times$  *Tech Intensive* are positive and statistically significant for both derivatives markets. These findings suggest that derivative-induced improvements in the information environment and managerial accountability translate more strongly into better employee treatment precisely where skilled labor is most critical to firm operations and stakeholder value creation.

We next examine whether these stronger employee-welfare effects in human-capital-intensive firms translate into tangible economic value. If derivatives trading supports a shift toward long-term investment in employees, it should also have stronger implications for firm value in firms where human capital plays a central role in value creation. Table 9 presents the results from a two-equation structural equation model (SEM) in which derivatives trading affects firm value indirectly through its effect on employee welfare.<sup>21</sup> Panel A of Table 9 confirms a strong baseline mediated effect: derivatives trading significantly increases both *Tobin’s Q* and the *Market-to-Book* ratio through its positive impact on employee welfare. Panels B–D of Table 9 show that this mediated effect is significantly amplified in human-capital-intensive firms. Specifically, the total indirect effect of derivatives on firm value through employee welfare is approximately 2–3 times larger in high-HCI firms than in low-HCI firms.<sup>22</sup> The difference in indirect effects between

<sup>20</sup> Our intensive Tech measure follows Blanco and Wehrheim (2017) and uses broader two-digit SIC classifications based on technology-intensive manufacturing sectors. As a robustness check, we follow Dupuis and Zheng (2024) and employ a narrower three-digit SIC classification that focuses primarily on information and communication technology and scientific service-oriented industries, which yields similar results (Table A.7).

<sup>21</sup> In the SEM analysis reported in Table 9, we include the same set of control variables as in our baseline employee welfare regressions. Because firm value is measured using *Tobin’s Q* and the *Market-to-Book* ratio in this specification, we redefine firm size as the natural logarithm of total assets rather than market capitalization.

<sup>22</sup> For instance, Panel B of Table 9 shows that the indirect effect of options trading on the *Market-to-Book* ratio increases from 0.002 in

**Table 8** Effect of financial derivatives trading on employee treatment: human capital intensity

	Dep. var. = Employee welfare					
	(1) Options	(2) CDS	(3) Options	(4) CDS	(5) Options	(6) CDS
Derivative volume × R&D	0.118** (0.049)	0.274*** (0.088)				
R&D	0.000 (0.020)	0.013 (0.021)				
Derivative volume × patents			0.007*** (0.002)	0.002** (0.001)		
Patents			0.007*** (0.002)	0.012*** (0.002)		
Derivative volume × Tech Intensive					0.035*** (0.009)	0.010** (0.005)
Tech intensive					−0.036** (0.015)	−0.015 (0.015)
Derivative volume	0.030*** (0.004)	0.005*** (0.002)	0.009 (0.006)	0.004*** (0.002)	0.024*** (0.005)	0.006*** (0.001)
Firm size	0.021*** (0.002)	0.025*** (0.002)	0.020*** (0.001)	0.020*** (0.002)	0.021*** (0.002)	0.025*** (0.002)
Leverage	−0.004 (0.006)	−0.004 (0.007)	−0.002 (0.006)	−0.002 (0.007)	−0.005 (0.006)	−0.005 (0.007)
Book-to-Market	0.017*** (0.003)	0.016*** (0.003)	0.017*** (0.003)	0.014*** (0.003)	0.017*** (0.003)	0.015*** (0.003)
ROA	0.005 (0.005)	−0.005 (0.005)	0.000 (0.004)	−0.005 (0.004)	−0.002 (0.004)	−0.008 (0.005)
Cash	0.003 (0.009)	0.032*** (0.011)	0.006 (0.009)	0.019* (0.010)	0.015* (0.009)	0.036*** (0.012)
Dividends	0.138*** (0.039)	0.103** (0.043)	0.127*** (0.038)	0.118*** (0.043)	0.125*** (0.038)	0.111** (0.043)
Observations	30,979	12,610	30,949	12,603	30,979	12,610
R-squared	0.17	0.18	0.18	0.19	0.17	0.17
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES

This table demonstrates the financial derivatives—employee treatment relation estimated from the baseline regression conditional on proxies for firms' reliance on specialized human capital. *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. *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). 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

high- and low-HCI firms is positive and highly statistically significant across all specifications.

In addition to proxies for knowledge-intensive human capital, we construct additional labor-focused measures,

low-R&D firms to 0.004 in high-R&D firms, while the indirect effect of CDS trading increases from 0.001 to 0.003.

including a *High Wage-to-Capital* ratio indicator following Dupuis and Zheng (2024) and a *High Labor-to-Capital* ratio indicator consistent with commonly used labor intensity measures in the literature. We find that the positive effect of derivatives trading on employee welfare, as well as the translation of these improvements into firm value, is significantly weaker in firms with high labor-to-capital and

**Table 9** Effect of financial derivatives on firm value: human capital intensity

	Tobin's $Q$		Market-to-Book	
	(1) Options	(2) CDS	(3) Options	(4) CDS
<i>Panel A: Baseline (No moderator)</i>				
DV $\rightarrow$ EW: $\alpha_1$	0.035*** (0.002)	0.006*** (0.001)	0.035*** (0.002)	0.006*** (0.001)
EW $\rightarrow$ FV: $\beta_1$	0.049*** (0.017)	0.127*** (0.026)	0.077*** (0.020)	0.192*** (0.033)
Total mediated path: $\alpha_1\beta_1$	0.002*** (0.001)	0.001*** (0.000)	0.003*** (0.001)	0.001*** (0.000)
Observations	30,955	12,605	30,955	12,605
<i>Panel B: High vs. Low R&amp;D</i>				
Total mediated path (Low R&D): $\alpha_1\beta_1$	0.001*** (0.000)	0.001*** (0.000)	0.002*** (0.000)	0.001*** (0.000)
Total mediated path (High R&D): $(\alpha_1 + \alpha_3)\beta_1$	0.002*** (0.001)	0.002*** (0.000)	0.004*** (0.001)	0.003*** (0.001)
Difference (High–Low): $\alpha_3\beta_1$	0.001*** (0.000)	0.001*** (0.000)	0.002*** (0.001)	0.002*** (0.001)
Observations	30,955	12,605	30,955	12,605
<i>Panel C: High vs. Low Patents</i>				
Total mediated path (Low Patents): $\alpha_1\beta_1$	0.001** (0.000)	0.000*** (0.000)	0.001*** (0.000)	0.001*** (0.000)
Total mediated path (High Patents): $(\alpha_1 + \alpha_3)\beta_1$	0.002*** (0.001)	0.001*** (0.000)	0.003*** (0.001)	0.002*** (0.000)
Difference (High–Low): $\alpha_3\beta_1$	0.001*** (0.000)	0.001*** (0.000)	0.002*** (0.001)	0.001*** (0.000)
Observations	30,955	12,605	30,955	12,605
<i>Panel D: High vs. Low Tech Intensity</i>				
Total mediated path (Low Tech Intensity): $\alpha_1\beta_1$	0.001*** (0.000)	0.001*** (0.000)	0.002*** (0.001)	0.001*** (0.000)
Total mediated path (High Tech Intensity): $(\alpha_1 + \alpha_3)\beta_1$	0.003*** (0.001)	0.002*** (0.000)	0.004*** (0.001)	0.003*** (0.001)
Difference (High–Low): $\alpha_3\beta_1$	0.002*** (0.001)	0.001** (0.000)	0.003*** (0.001)	0.002*** (0.001)

wage-to-capital ratios (Internet Appendix Tables A.8 and A.9). These measures primarily capture the scale of labor used in production rather than the knowledge intensity of the workforce. Thus, the evidence suggests that the positive effect of derivatives trading is strongest in firms that rely heavily on knowledge-based, innovation-driven human capital and weaker in firms with greater reliance on labor in a quantitative sense, which is more typical of routine production processes. This evidence highlights that the benefits of derivative-induced long-term orientation are most pronounced in contexts where employees represent a cen-

tral stakeholder group, reinforcing the alignment between employee welfare and long-term firm performance.<sup>23</sup>

<sup>23</sup> Internet Appendix Table A.10 explores the role of employee welfare concerns. Employees with greater welfare concerns are more in need of improvement and more likely to voice demands for better treatment. Firms associated with active derivatives trading should be more responsive to employee needs and concerns because they have stronger incentives to invest in long-term assets. Consistent with this prediction, we find a stronger effect of derivatives trading on employee welfare when labor has higher well-being concerns.

**Table 9** continued

	Tobin's <i>Q</i>		Market-to-Book	
	(1) Options	(2) CDS	(3) Options	(4) CDS
Observations	30,955	12,605	30,955	12,605
Controls	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES

We estimate a two-equation structural equation model (SEM) in which (i) derivatives trading (DV) affects employee welfare (EW), and (ii) EW affects firm value (FV), controlling for standard firm covariates and fixed effects. Firm value is proxied by Tobin's *Q* and the Market-to-Book ratio. Panel A reports the baseline mediation estimates for the full sample, in which DV affects FV solely through EW. In Panels B–C, we allow the DV → EW path to be moderated by human capital intensity (HCI), consistent with the view that derivatives trading facilitate investment in human capital particularly where such capital is strategic:  $Employee\ Welfare = \alpha_0 + \alpha_1 Derivative\ Volume + \alpha_2 High\ HCI + \alpha_3 Derivative\ Volume \times High\ HCI + \alpha_4 X + \epsilon$ ;  $Firm\ Value_{t+1} = \beta_0 + \beta_1 Employee\ Welfare + \beta_2 Derivative\ Volume + \beta_3 X + \epsilon$ . Total mediated path is the path from derivatives trading to firm value mediated through employee welfare and conditional on human capital intensity. Sobel (1982) test statistics are used to evaluate the significance of the mediated effects and the difference between High- and Low-HCI firms. In Panels B and C, High- and Low-HCI are determined using industry median R&D and patents intensity, with firms above (below) the median classified as high (low) HCI. In Panel D, High- and Low-HCI are defined based on whether firms operate in technology-intensive or non-technology intensive industries, respectively. 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. The symbols \*\*\*, \*\*, and \* denote significance levels of 1%, 5%, and 10%, respectively.

**Table 10** Financial derivatives and employee welfare expenditures

	<i>Dep. var.</i> SG&A expenses		<i>Dep. var.</i> Labor expenses	
	(1) Options	(2) CDS	(3) Options	(4) CDS
Derivative volume	0.333*** (0.020)	0.128*** (0.008)	0.301*** (0.054)	0.148*** (0.019)
Firm size	0.676*** (0.004)	0.685*** (0.005)	0.822*** (0.008)	0.803*** (0.010)
Leverage	-0.010 (0.011)	-0.032* (0.016)	0.162*** (0.033)	0.115** (0.045)
Book-to-Market	-0.037*** (0.005)	-0.033*** (0.009)	0.044** (0.018)	0.063*** (0.021)
ROA	0.039*** (0.004)	0.048*** (0.006)	0.100*** (0.011)	0.091*** (0.016)
Cash	-0.939*** (0.026)	-0.765*** (0.042)	-1.320*** (0.077)	-1.155*** (0.108)
Dividends	-1.964*** (0.187)	-2.663*** (0.236)	-2.232*** (0.454)	-2.737*** (0.518)
Constant	-0.120*** (0.020)	0.470*** (0.032)	-1.179*** (0.051)	-0.633*** (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

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.

## Corporate Expenditure on Employee Welfare

To strengthen our analysis, we examine whether the increase in employee welfare scores is supported by corporate investment in employee well-being programs. A higher employee welfare score reflects a greater managerial focus on employee welfare and increased engagement in proactive programs and policies aimed at its enhancement. Such improvements typically require additional expenditures on various employee benefits. Therefore, we expect firms with higher employee welfare scores to invest more in employee well-being.<sup>24</sup>

Given the multi-dimensional effect of derivatives trading on employee well-being, as discussed in “[Specific Dimensions of Employee Well-Being](#)” section, we focus on aggregated measures of employee welfare costs. Our primary measure is firms’ SG&A expenses. While SG&A expenses reflect all day-to-day operating costs of running a business, they also include employee-related payments and benefits.<sup>25</sup> As an alternative measure of welfare expenditures, we also use firms’ total labor expenses reported in Compustat. However, we do not rely solely on this measure, as it is a supplementary income statement item with valid data available for only about 20% of firms in Compustat. By contrast, SG&A expenses are standard line items reported by most firms.

In Table 10, we estimate the impact of financial derivatives trading on corporate spending related to employee welfare. The results confirm that derivatives trading is associated with increases in corporate SG&A expenses and total labor costs. These effects are not only statistically significant, but also economically substantial. A 1% increase in options trading volume is associated with a 0.30–0.33% increase in employee welfare expenses. Similarly, a 1% increase in CDS trading volume corresponds to a 0.13–0.15% increase in such expenses. The alignment between improved employee welfare outcomes and higher employee-related expenditures reinforces the interpretation that derivatives trading is associated with more substantive stakeholder-oriented corporate conduct.

<sup>24</sup> In Internet Appendix Table A.1, columns (2)–(3), we examine the relationship between corporate expenditures on employee welfare and employee welfare scores based on the MSCI ESG STATS database. Consistent with our expectations, we find that higher expenditures are associated with better employee welfare scores.

<sup>25</sup> For example, SG&A includes salaries (not part of cost of goods sold), cash profit and performance bonuses, health/life/disability insurance, paid sick and parental leave, office perks, work-life benefit programs, wellness initiatives, employee training, safety performance audits, and other related costs.

## Conclusion

This study examines whether financial derivatives affect firms’ ethical responsibilities toward employees. Using a large sample of U.S. firms, we find that active trading in options and CDSs is associated with improvements in employee welfare. These results remain robust even after addressing the potential endogeneity of derivatives trading using IV estimations. In addition to the aggregated employee welfare score, derivatives trading is linked to higher employee satisfaction and worker pay, and to lower workplace injury rates and pay inequality.

Additional analysis reveals that derivatives trading improves employee welfare by mitigating managerial short-termism through enhanced information efficiency. Firms are less likely to engage in myopic activities when there is active derivatives trading on them. The positive effect of derivatives on employee welfare is more pronounced in firms facing stronger short-term market pressures. Furthermore, the impact of derivatives is significantly stronger in firms with greater human capital intensity. These improvements in employee welfare are also supported by increases in SG&A and total labor expenses. Overall, our results suggest that financial derivatives can strengthen managerial accountability toward employees, as greater transparency makes the long-term consequences of managerial decisions more visible. This reinforces managers’ ethical responsibility to treat employees fairly and consider their well-being, consistent with stakeholder theory and corporate moral responsibility.

Previous literature has documented the real effects of financial derivatives on reference firms and other financial stakeholders. We are among the first to investigate the impact of financial derivatives on employee welfare—a core component of the Social dimension of corporate ESG performance with critical ethical implications. Although ordinary workers may not interact directly with financial derivatives, their well-being can still be affected by working in a firm that is actively traded in derivatives markets. In addition, we contribute to the ethics and finance literature by identifying financial derivatives as a novel mechanism influencing firms’ ethical accountability toward employees. Finally, our paper emphasizes the information production role of financial derivatives, offering a potential governance mechanism that mitigates corporate myopia and supports sustained stakeholder-oriented decision making. While this paper focuses on employee welfare, future research could explore how financial derivatives affect the composition of the workforce—an area with meaningful implications for firms’ operating strategies.

## Appendix A. Variable Definitions

Variable	Description
<i>Financial derivatives</i>	
Derivative volume	Trading volume of financial derivatives: $\ln(1+OptVol)$ for options and $\ln(1+CDSVol)$ for CDS.
Arcsinh (Derivative volume)	Inverse hyperbolic sine transformation of derivatives trading volume: $Arcsinh(OptVol)$ for options and $Arcsinh(CDSVol)$ for CDS.
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. <i>Source: OptionMetrics</i>
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. <i>Source: DTCC</i>
Open Interest	The natural log of the average open interest across all options on a stock throughout the year. <i>Source: OptionMetrics</i>
Moneyness	The natural log of the average absolute difference between the stock's market price and the option's strike price. <i>Source: OptionMetrics</i>
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. <i>Source: DealScan, FISD, Federal Reserve Call Reports</i>
<i>Employee treatment and other CSR dimensions</i>	
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. <i>Source: MSCI ESG STATS database</i>

Variable	Description
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 over 1996–2018. <i>Source: Fortune</i>
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 h/week, 50 weeks/year) over 1996–2011. <i>Source: OSHA</i>
CEO-worker pay ratio	The natural log of the disclosed ratio of CEO pay to the median worker pay over 2017–March 2021. <i>Source: Equilar</i>
Worker pay	The natural log of the total compensation of the median employee reported in the pay ratio disclosure over 2017–March 2021. <i>Source: Equilar</i>
Workforce score	A score between 0 and 1 measuring a company's effectiveness towards job satisfaction, healthy and safe workplace, maintaining diversity and equal opportunities, and employee development. <i>Source: Refinitiv ESG</i>
Human rights score	A score between 0 and 1 measuring a company's effectiveness towards respecting the fundamental human rights conventions. <i>Source: Refinitiv ESG</i>
Social pillar score	A weighted average of 4 category scores between 0 and 1: Workforce, Human Rights, Community, and Product Responsibility. <i>Source: Refinitiv ESG</i>
<i>Firm characteristics</i>	
Firm size	The natural log of market capitalization, $\ln(prccf \times csho)$ . <i>Source: Compustat</i>
Leverage	Total debt over book assets, $(dltt + dlc)/at$ . <i>Source: Compustat</i>
Book-to-Market	Book value of equity over the market value of equity, $ceq/(prccf \times csho)$ . <i>Source: Compustat</i>
ROA	Return on assets: income before extraordinary items to book assets, $ib/at$ . <i>Source: Compustat</i>
Cash	Cash balances over book assets, $che/at$ . <i>Source: Compustat</i>
Dividends	Cash dividends over book assets, $(dvc + dvp)/at$ . <i>Source: Compustat</i>
SG&A expenses	The natural log of selling, general, and administrative expenses, $\ln(xsga)$ . <i>Source: Compustat</i>
Labor expenses	The natural log of total labor expenses, $\ln(xlr)$ . <i>Source: Compustat</i>
Rated (Unrated)	A dummy variable that equals one if the firm has (does not have) a Standard and Poor's rating. <i>Source: Compustat</i>

Variable	Description	Variable	Description
Investment Grade	A dummy variable that equals one if the firm has an Investment Grade rating, BBB or higher. <i>Source: Compustat</i>	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 4 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. <i>Source: Compustat</i>
Emp. number	The natural log of total number of employees in a firm, $\ln(emp)$ . <i>Source: Compustat</i>	Meet & Beat EPS forecasts	An indicator equal 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 2 months of the fiscal year. <i>Source: I/B/E/S database</i>
Emp. productivity	Total amount of sales scaled by number of employees, $sale/emp$ . <i>Source: Compustat</i>	High competition	An indicator equal 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 $t - 1$ . <i>Source: Compustat</i>
Strike	An indicator variable that equals one if an establishment has strike/lockout over the year, 1996–2011. <i>Source: OSHA</i>	High analyst	An indicator equal 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. <i>Source: I/B/E/S database</i>
Seasonal	An indicator variable that equals one if an establishment employs seasonal workers, 1996–2011. <i>Source: OSHA</i>	R&D	Research and development (R&D) expenses scaled by total assets, $xrd/at$ . Missing information on R&D expenses are treated as zero. <i>Source: Compustat</i>
Shutdown	An indicator variable that equals one if an establishment is affected by shutdown/layoff over the year, 1996–2011. <i>Source: OSHA</i>	Patents	The natural log of one plus the number of patents applied for in a given year. Missing information on number of patents are treated as zero. <i>Source: Noah Stoffman's website, USPTO</i>
Disaster	An indicator variable that equals one if an establishment is affected by adverse weather conditions/natural disasters over the year, 1996–2011. <i>Source: OSHA</i>	Tech Intensive	An indicator equal one if a company operates in a technology intensive industry: pharmaceuticals (SIC 283); industrial, commercial machinery and computer equipment (SIC 35); electronics and communications (SIC 36); transportation equipment (SIC 37); instruments and related products (SIC 38).
CEO age	Age of the CEO. <i>Source: ExecuComp</i>	Tobin's Q	The natural log of Tobin's Q, $\ln((prccf * csho + at - ceq - txdb)/at)$ . <i>Source: Compustat</i>
CEO tenure	Number of years in CEO position in a particular firm. <i>Source: ExecuComp</i>		
CEO overconfidence	An indicator variable that equals one if the CEO holds options that are at least 67% in-the-money on at least two occasions during the CEO's tenure. <i>Source: ExecuComp</i>		
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. <i>Source: ExecuComp</i>		
IO concentration	Herfindahl Index based on the percentages of institutional holdings by all 13-f institutions over 1996–2015. <i>Source: Thomson Reuters Institutional (13F) Holdings</i>		
E-Index	A sum of indicators across six anti-takeover provisions over 2007–2015 following the methodology of Bebchuk et al. (2009). <i>Source: ISS Governance</i>		
Director independence	Proportion of independent directors on the board over 2007–2015. <i>Source: ISS Directors</i>		
Corporate culture	The sum of the five culture dimensions of Innovation, Integrity, Quality, Respect, and Teamwork based on Li et al. (2021). <i>Source: Earnings call transcripts from Thomson Reuters' StreetEvents</i>		

**Supplementary Information** The online version contains supplementary material available at <https://doi.org/10.1007/s10551-026-06309-5>.

Variable	Description
Market-to-Book	The natural log of market-to-book ratio, $\ln((prccf * csho + dlc + dltt)/at)$ . 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 over 1997–2015. Source: Edgar
WW index	Financial constraint index based on Whited and Guojun (2006): $-0.091 \times (ib + dp)/at - 0.062 \times \text{dividend payer indicator} + 0.021 \times dltt/at - 0.044 \times \ln(at) + 0.102 \times \text{annual average industry sales growth} - 0.035 \times \text{sales growth}$ . Source: Compustat
Dedicated investors	The proportion of shares owned by dedicated institutional investors over 1996–2015, who are characterized by concentrated holdings with low turnover and long-term investment horizon. Source: Thomson Reuters Institutional (13F) Holdings
Quasi-indexers investors	The proportion of shares owned by quasi-indexers over 1996–2015, who are characterized by low turnover, high diversification and a long-term investment horizon. Source: Thomson Reuters Institutional (13F) Holdings
High layoff propensity	An indicator equal to one if a firm operates in an industry with a layoff separation rate above the sample median. Industry layoff rates are measured as the average for three-digit NAICS industries over 1996–2008 following Agrawal and Matsa (2013).
High injury rate	An indicator equal one if a company operates in industry classified as high-hazard according to OSHA for the purpose of its ODI surveys. Source: OSHA
Wage to capital	Extended total labor costs over physical capital, $xlr'/ppeg$ . Where extended $xlr'$ is constructed following Hartman-Glaser et al. (2019) to account for missing values of $xlr$ in Compustat. Source: Compustat
Labor to capital	Total number of employees over physical capital, $emp/ppeg$ . Source: Compustat

**Data Availability** The datasets used and/or analyzed during the current study are not publicly available due to proprietary restrictions.

## Declarations

**Conflict of interest** Anastasia Richmond: I am a co-applicant and a recipient of the British Academy/ Leverhulme Small Research Grant (SRG20/201139) in the amount of £9,992. I have no other potential conflict of interest to disclose. Our research does not involve human participants or animals. Dragon Yongjun Tang: I have no potential conflict of interest to disclose. Our research does not involve human participants or animals. Sarah Qian Wang: I am an applicant and a receiver of the British Academy/Leverhulme Small Research Grant (SRG20/201139) in the amount of £9,992. I have no other potential conflict of interest to disclose. Our research does not involve human participants or animals.

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## References

- Aghion, P., Bloom, N., Blundell, R., Griffith, R., & Howitt, P. (2005). Competition and innovation: An inverted-U relationship. *Quarterly Journal of Economics*, 120(2), 701–728.
- Agrawal, A. K., & Matsa, D. A. (2013). Labor unemployment risk and corporate financing decisions. *Journal of Financial Economics*, 108(2), 449–470.
- Albuquerque, R., Koskinen, Y., & Zhang, C. (2019). Corporate social responsibility and firm risk: Theory and empirical evidence. *Management Science*, 65(10), 4451–4469.
- Bae, K., Kang, J., & Wang, J. (2011). Employee treatment and firm leverage: A test of the stakeholder theory of capital structure. *Journal of Financial Economics*, 100(1), 130–153.
- Bartram, S. M., Conrad, J., Lee, J., & Subrahmanyam, M. G. (2022). Credit default swaps around the world. *Review of Financial Studies*, 35(5), 2464–2524.
- Batta, G. E., Qiu, J., & Fan, Y. (2016). Credit derivatives and analyst behavior. *Accounting Review*, 91(5), 1315–1343.
- Bebchuk, L., Cohen, A., & Ferrell, A. (2009). What matters in corporate governance? *Review of Financial Studies*, 22(2), 783–827.
- Bernile, G., Jianfeng, H., Li, G., & Michaely, R. (2025). Information spillover and corporate policies: The case of listed options. *Journal of Financial and Quantitative Analysis*, 60(1), 447–481.
- Bhojraj, S., Hribar, P., Picconi, M., & McInnis, J. (2009). Making sense of cents: An examination of firms that marginally miss or beat analyst forecasts. *Journal of Finance*, 64(5), 2361–2388.
- Blanco, I., & Wehrheim, D. (2017). The bright side of financial derivatives: Option trading and firm innovation. *Journal of Financial Economics*, 125(1), 99–119.
- Bode, C., Singh, J., & Rogan, M. (2015). Corporate social initiatives and employee retention. *Organization Science*, 26, 1553–1804.
- Bolton, P., & Oehmke, M. (2011). Credit default swaps and the empty creditor problem. *Review of Financial Studies*, 24(8), 2617–2655.
- Bond, P., Edmans, A., & Goldstein, I. (2012). The real effects of financial markets. *Annual Review of Financial Economics*, 4(1), 339–360.
- Bradley, D., Mao, C. X., & Zhang, C. (2022). Does analyst coverage affect workplace safety? *Management Science*, 68(5), 3464–3487.
- Bureau of Labor Statistics. (2023). Employer-reported workplace injuries and illnesses—2021–2022. *News Release USDL-23-2359 (Bureau of Labor Statistics, Washington, DC)*.
- Bushee, B. J. (2001). Do institutional investors prefer near-term earnings over long-run value? *Contemporary Accounting Research*, 18(2), 207–246.
- Callen, J. L., Livnat, J., & Segal, D. (2009). The impact of earnings on the pricing of credit default swaps. *Accounting Review*, 84(5), 1363–1394.
- Cao, H. H. (1999). The effect of derivative assets on information acquisition and price behavior in a rational expectations equilibrium. *Review of Financial Studies*, 12(1), 131–163.
- Cao, J., Goyal, A., Ke, S., & Zhan, X. (2024). Options trading and stock price informativeness. *Journal of Financial and Quantitative Analysis*, 59(4), 1516–1540.

- Cao, J. J., Hertz, M., Xu, J. J., & Zhan, X. E. (2025). Options trading and corporate debt structure. *Journal of Accounting and Public Policy*, 49, 107274.
- Carmeli, A., Brammer, S., Gomes, E., & Tarba, S. Y. (2017). An organizational ethic of care and employee involvement in sustainability-related behaviours: A social identity perspective. *Journal of Business Ethics*, 145(2), 285–299.
- Caskey, J., & Bugra Ozel, N. (2017). Earnings expectations and employee safety. *Journal of Accounting and Economics*, 63(1), 121–141.
- Chang, X., Chen, Y., Wang, S. Q., Zhang, K., & Zhang, W. (2019). Credit default swaps and corporate innovation. *Journal of Financial Economics*, 134(2), 474–500.
- Chen, T., Dong, H., & Lin, C. (2020). Institutional shareholders and corporate social responsibility. *Journal of Financial Economics*, 135(2), 483–504.
- Chen, Y., Ofosu, E., Veeraraghavan, M., & Zolotoy, L. (2023). Does CEO overconfidence affect workplace safety? *Journal of Corporate Finance*, 82, 102430.
- Chowdhury, H., Han, H. D., & Krishnamurti, C. (2025). Does a CEO's network capital affect workplace safety? *Financial Review (forthcoming)*.
- Clarkson, M. B. E. (1995). A stakeholder framework for analyzing and evaluating corporate social performance. *Academy of Management Review*, 20(1), 92–117.
- Cohn, J., Nestoriak, N., & Wardlaw, M. (2021). Private equity buyouts and workplace safety. *Review of Financial Studies*, 34(10), 4832–4875.
- Cohn, J. B., & Wardlaw, M. I. (2016). Financing constraints and workplace safety. *Journal of Finance*, 71(5), 2017–2058.
- Colquitt, J. A., Conlon, D. E., Wesson, M. J., Porter, C. O. L. H., & Yee Ng, K. (2001). Justice at the millennium: A meta-analytic review of 25 years of organizational justice research. *Journal of Applied Psychology*, 86(3), 425–445.
- Cronqvist, H., & Frank, Y. (2017). Shaped by their daughters: Executives, female socialization, and corporate social responsibility. *Journal of Financial Economics*, 126(3), 543–562.
- Danna, K., & Griffin, R. W. (1999). Health and well-being in the workplace: A review and synthesis of the literature. *Journal of Management*, 25, 357–384.
- Di Giuli, A., & Kostovetsky, L. (2014). Are red or blue companies more likely to go green? Politics and corporate social responsibility. *Journal of Financial Economics*, 111(1), 158–180.
- Di Giuli, A., & Laux, P. A. (2022). The effect of media-linked directors on financing and external governance. *Journal of Financial Economics*, 145(2), 103–131.
- Dupuis, C., & Zheng, Y. (2024). Import penetration and corporate misconduct: A natural experiment. *Journal of Business Ethics*, 195, 475–506.
- Edmans, A. (2009). Blockholder trading, market efficiency, and managerial myopia. *Journal of Finance*, 64(6), 2481–2513.
- Edmans, A. (2011). Does the stock market fully value intangibles? Employee satisfaction and equity prices. *Journal of Financial Economics*, 101(3), 621–640.
- Ghoul, E., Sadok, O. G., Kwok, C. C. Y., & Zheng, Y. (2019). Collectivism and the costs of high leverage. *Journal of Banking and Finance*, 106, 227–245.
- Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Pitman.
- French, P. A. (1979). The corporation as a moral person. *American Philosophical Quarterly*, 16(3), 207–215.
- Gibson, K. (2000). The moral basis of stakeholder theory. *Journal of Business Ethics*, 26(3), 245–257.
- Goldstein, I. (2023). Information in financial markets and its real effects. *Review of Finance*, 27(1), 1–32.
- Graham, J. R., Harvey, C. R., & Rajgopal, S. (2005). The economic implications of corporate financial reporting. *Journal of Accounting and Economics*, 40(1–3), 3–73.
- Greenberg, J. (1987). A taxonomy of organizational justice theories. *Academy of Management Review*, 12(1), 9–22.
- Greenwood, M., & Van Buren, H. J. (2010). Trust and stakeholder theory: Trustworthiness in the organisation–stakeholder relationship. *Journal of Business Ethics*, 95(3), 425–438.
- Guest, D. E. (2017). Human resource management and employee well-being: Towards a new analytic framework. *Human Resource Management Journal*, 27(1), 22–38.
- Gupta, A., Briscoe, F., & Hambrick, D. C. (2017). Red, blue, and purple firms: Organizational political ideology and corporate social responsibility. *Strategic Management Journal*, 38(5), 1018–1040.
- Haga, J., Huhtamäki, F., & Sundvik, D. (2022). Ruthless exploiters or ethical guardians of the workforce? Powerful CEOs and their impact on workplace safety and health. *Journal of Business Ethics*, 177, 641–663.
- Haga, J., Huhtamäki, F., Sundvik, D., & Thor, T. (2024). Nothing to fear: Strong corporate culture and workplace safety. *Review of Quantitative Finance and Accounting*, 63, 519–550.
- Hahn, T., Pinkse, J., Preuss, L., & Figge, F. (2015). Tensions in corporate sustainability: Towards an integrative framework. *Journal of Business Ethics*, 127(2), 297–316.
- Hao, Q., & Li, K. (2022). Options trading and earnings management: Evidence from the penny pilot program. *Journal of Corporate Finance*, 77, 102290.
- Hartman-Glaser, B., Lustig, H., & Xiaolan, M. Z. (2019). Capital share dynamics when firms insure workers. *Journal of Finance*, 74(4), 1707–1751.
- He, J. J., & Tian, X. (2013). The dark side of analyst coverage: The case of innovation. *Journal of Financial Economics*, 109(3), 856–878.
- Hoberg, G., & Maksimovic, V. (2015). Redefining financial constraints: A text-based analysis. *Review of Financial Studies*, 28(5), 1312–1352.
- Hofmann, D. A., Burke, M. J., & Zohar, D. (2017). 100 years of occupational safety research: From basic protections and work analysis to a multilevel view of workplace safety and risk. *Journal of Applied Psychology*, 102(3), 1–14.
- Holmström, B., & Tirole, J. (1993). Market liquidity and performance monitoring. *Journal of Political Economy*, 101(4), 678–709.
- Hu, J. (2014). Does option trading convey stock price information? *Journal of Financial Economics*, 111(3), 625–645.
- Hu, J. (2018). Option listing and information asymmetry. *Review of Finance*, 22(3), 1153–1194.
- Kaptein, M. (2008). Developing a measure of unethical behavior in the workplace: A stakeholder perspective. *Journal of Management*, 34(5), 978–1008.
- Kim, J.-B., Wiedman, C., & Zhu, C. (2023). Does credit default swap trading improve managerial learning from outsiders? *Contemporary Accounting Research*, 40(3), 2032–2070.
- Lee, J., Naranjo, A., & Velioglu, G. (2018). When do CDS spreads lead? Rating events, private entities, and firm-specific information flows. *Journal of Financial Economics*, 130(3), 556–578.
- Lee, J., Oh, J., & Yermack, D. (2017). Credit default swaps, agency problems, and management incentives. *Working paper*.
- Li, F., Lin, C., Lin, T.-C., & Shen, S. (2024). Walk the talk: The role of options markets in corporate social responsibility. *Journal of Financial Markets*, 70, 100910.
- Li, K., Mai, F., Shen, R., & Yan, X. (2021). Measuring corporate culture using machine learning. *Review of Financial Studies*, 34(7), 3265–3315.
- Liang, C. Y., Qi, Y., Zhang, R. A., & Zhu, H. (2023). Does sunlight kill germs? Stock market listing and workplace safety. *Journal of Financial and Quantitative Analysis*, 58(4), 1645–1674.

- Malmendier, U., & Tate, G. (2008). Who makes acquisitions? CEO overconfidence and the market's reaction. *Journal of Financial Economics*, 89(1), 20–43.
- Minton, B. A., Stulz, R., & Williamson, R. (2009). How much do banks use credit derivatives to hedge loans? *Journal of Financial Services Research*, 35(1), 1–31.
- Norden, L., Yin, C., & Zhao, L. (2025). Credit default swaps and firm cyclicity. *Journal of Financial and Quantitative Analysis*, 60(2), 1014–1041.
- Oehmke, M., & Zawadowski, A. (2017). The anatomy of the CDS market. *Review of Financial Studies*, 30(1), 80–119.
- Pan, Y., Pikulina, E. S., Siegel, S., & Wang, T. Y. (2022). Do equity markets care about income inequality? Evidence from pay ratio disclosure. *Journal of Finance*, 77(2), 1371–1411.
- Parboteeah, K. P., & Kapp, E. A. (2008). Ethical climates and workplace safety behaviors: An empirical investigation. *Journal of Business Ethics*, 80, 515–529.
- Roll, R., Schwartz, E., & Subrahmanyam, A. (2009). Option trading activity and firm valuation. *Journal of Financial Economics*, 94(3), 345–360.
- Ross, S. A. (1976). Options and efficiency. *Quarterly Journal of Economics*, 90, 75–89.
- Saretto, A., & Tookes, H. E. (2013). Corporate leverage, debt maturity, and credit supply: The role of credit default swaps. *Review of Financial Studies*, 26(5), 1190–1247.
- Schnackenberg, A. K., & Tomlinson, E. C. (2016). Organizational transparency: A new perspective on managing trust in organization–stakeholder relationships. *Journal of Management*, 42(7), 1784–1810.
- Smulowitz, S. J., Cossin, D., & Hongze, L. (2023). Managerial short-termism and corporate social performance: The moderating role of external monitoring. *Journal of Business Ethics*, 188(4), 759–778.
- Song, J., Price, D. J., Guvenen, F., Bloom, N., & von Wachter, T. (2019). Firming up inequality. *Quarterly Journal of Economics*, 134(1), 1–50.
- Sobel, Michael, E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. *Sociological methodology*, 13, 290–312.
- Sparks, J. R., & Hunt, S. D. (1998). Marketing researcher ethical sensitivity: Conceptualization, measurement, and exploratory investigation. *Journal of Marketing*, 62(2), 92–109.
- Subrahmanyam, M. G., Tang, D. Y., & Wang, S. Q. (2014). Does the tail wag the dog?: The effect of credit default swaps on credit risk. *Review of Financial Studies*, 27(10), 2926–2960.
- Tucker, J. W., & Zarowin, P. A. (2006). Does income smoothing improve earnings informativeness? *Accounting Review*, 81(1), 251–270.
- World Health Organization (1946) Constitution of the World Health Organization.
- Whited, T. M., & Guojun, W. (2006). Financial constraints risk. *Review of Financial Studies*, 19(2), 531–559.
- Wicks, A. C., Gilbert, D. R., & Edward Freeman, R. (1994). A feminist reinterpretation of the stakeholder concept. *Business Ethics Quarterly*, 4(4), 475–497.
- Wiengarten, F., Fan, D., Lo, C. K. Y., & Pagell, M. (2017). The differing impacts of operational and financial slack on occupational safety in varying market conditions. *Journal of Operations Management*, 52, 30–45.
- Wu, X., Li, Y., & Yangxin, Yu. (2023). CEO inside debt and employee workplace safety. *Journal of Business Ethics*, 182, 159–175.
- Yuan, X., Yaoshan, X., & Li, Y. (2020). Resource depletion perspective on the link between abusive supervision and safety behaviors. *Journal of Business Ethics*, 162, 213–238.
- Zhao, R., & Zhu, L. (2024). Credit default swaps and corporate ESG performance. *Journal of Banking and Finance*, 159, Article 107079.
- Zhou, X. (2001). Understanding the determinants of managerial ownership and the link between ownership and performance: Comment. *Journal of Financial Economics*, 62(3), 559–571.
- Zingales, L. (2000). In search of new foundations. *Journal of Finance*, 55(4), 1623–1653.

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