

# Building a safer future?

## The effect of regulation, stock market listing, and automation on workplace safety

**Professor Yaxuan Qi** of the Department of Economics and Finance champions an integrative approach to workplace safety in the light of heightened environmental regulation, concerns over the effects of stock market listing, and increased automation.

Workplace safety is not only a fundamental component of employee well-being but also a central issue affecting the global economy. The International Labour Organization alarmingly notes that work-related injuries and diseases result in approximately 2.3 million fatalities each year, with associated costs representing roughly 4% of the world's GDP. This grim statistic highlights the persistent tension between economic advancement and social welfare — a conflict that has become even more pronounced in our current times due to the influences of climate change, technological progression, and the dominant focus on maximising shareholder value.

A series of research studies undertaken by experts from the College of Business seeks to articulate a clear and comprehensive story about the consequences that these factors have on workplace safety.

### The unintended consequences of green policies

As the world confronts climate change, governments are implementing policies to mitigate its effects. However, the intersection of environmental reform with social and economic issues presents challenges in policy evaluation. Our research team has looked into the consequences of

climate regulations on workplace safety, recognising the need to balance environmental and societal objectives.

Our working paper, "The Unseen Cost of Green Policies: The Impact of Environmental Regulation on Workplace Safety," authored by Ebenezer Effah, Yaxuan Qi, and Rengong Zhang, reveals a paradox. While environmental policies are vital for planetary well-being, they may inadvertently introduce heightened risks to the workforce.

Our empirical analysis focuses on three environmental regulatory frameworks: the 2013 California Cap-and-Trade Program, the 1990 Clean Air Act Amendments, and the staggered nonattainment designations of counties under the National Ambient Air Quality Standards. Our findings consistently indicate that stringent environmental regulations correlate with an uptick in safety violations for regulated firms.

This correlation is attributed to the financial strain and operational changes required for environmental compliance. Firms are prompted by policy to integrate new technologies or revise processes to meet

environmental standards.<sup>1</sup> These adjustments, such as installing pollution-control equipment or adopting cleaner inputs, can inadvertently introduce new workplace hazards as employees adapt to unfamiliar procedures or machinery, potentially inflating safety violations.

Given that operational shifts necessitate significant investment, financially constrained firms are more prone to safety oversights during transitions to stricter environmental standards. In contrast, firms with ample resources can manage these changes without compromising worker safety, suggesting that financial support is vital for resource-limited entities and developing nations to adopt sustainable practices without undermining worker protection.

Another insight from our study is the influence of stakeholder priorities concerning environmental versus social issues on workplace safety. Using an index of environmental concern derived from surveys and Google search volume data on climate change as a barometer of stakeholder interest, we observe a more pronounced association between safety violations and environmental regulatory rigour when stakeholder focus on climate issues intensifies

Our research adds to the discourse on policy-making that aligns carbon reduction goals with social equity,

contributing to the broader debate on corporate Environmental, Social, and Governance (ESG) performance. Workplace safety is a critical component of the "social" dimension of corporate ESG performance. While the ESG debate frequently addresses the full spectrum of ESG concerns, there is limited discussion on how these components interrelate. Our study addresses this lacuna by shedding light on potential conflicts between the "Environmental" and "Social" facets of ESG.

### Stock market listing and its influence on safety

The dichotomy of capital and labour is a foundational tension within the fabric of modern capitalism, as highlighted in Thomas Piketty's bestselling book *Capital in the Twenty-First Century*. The stock market, a symbol of capitalist enterprise, is renowned for its role in capital accumulation and wealth generation. However, its impact on a facet as critical as employee safety remains underexplored.

Amid concerns over the stock market fostering a culture of short-termism — where managerial focus may skew towards immediate financial returns at the expense

<sup>1</sup> In fact, the Environmental Protection Agency (EPA) offers guidance to encourage companies to embrace innovative technologies for environmental protection. For illustrative information, please refer to the Clean Air Technology Center Products page: <https://www.epa.gov/catc/clean-air-technology-center-products#factsheets>



of long-term, socially beneficial initiatives — our research team has probed the relationship between a company's stock market listing and the safety of its workplace.

Our paper, "Does Sunlight Kill Germs? Stock Market Listing and Workplace Safety," by Claire Liang, Yaxuan Qi, Rengong Zhang, and Haoran Zhu published in the *Journal of Quantitative Financial Studies* in June 2023, leverages a unique dataset encompassing injury and safety records from both publicly traded and privately held firms. We evaluate the impact of a stock market listing on workplace safety by comparing injury rates across similar private and public entities. Through various methodologies designed to mitigate endogeneity issues, we present an unexpected discovery: public companies, on average, exhibit lower injury rates than their private counterparts.

This surprising trend is attributed to the heightened scrutiny and regulatory oversight faced by public companies, which compels them to foster safer working environments. Public firms are subject to intensified examination due to their increased visibility and susceptibility to media coverage. Media outlets play a critical role in disclosing work-related accidents, thereby informing current and potential employees of risks. As a result, public scrutiny appears to give public firms an edge over private firms in terms of workplace safety.

This study underscores the pivotal role of media attention in enhancing safety. This implies that public exposure serves as a regulatory mechanism, steering firms towards improved safety measures and compliance with regulations. Our findings paint a picture of public attention as a double-edged sword: while market pressures for short-term performance may induce myopic behavior in public companies, the balancing force of media and regulatory oversight can contribute to the betterment of employee welfare.

#### Automation: a double-edged sword

Automation has profoundly transformed workers' roles within the production process and has significantly restructured labour markets, sparking debates on the potential of technology to obliterate jobs. Scholars

have invested substantial efforts in deciphering and forecasting the disruptions technology might pose on labour markets. Yet, research focusing on how technological advancements may influence workplace safety is surprisingly sparse.

With automation reshaping production processes and redefining the interaction between workers and machines, its impact on safety becomes an area of inevitable concern. Workers with lower skill levels are particularly susceptible to the incursion of technology, making safety a vital component of employee welfare. As the technological landscape evolves, it is imperative for regulators to advance their expertise and tools to ensure compliance.

The GRF-funded study "Does Automation Make Workplaces Safer?" by Xiaoli Hu, Yaxuan Qi, and

Rengong Zhang, delves into the nuanced interplay between human labour and machinery, aiming to inform policymakers and the public about the critical intersection of employee welfare and automation.

The burgeoning integration of robots and AI in the workplace presents a dual-edged effect. Initial impressions might suggest that automation leads to safer working conditions, as robots can undertake tasks that are physically demanding and perilous, potentially sparing humans from such risks. However, the introduction of robots may also jeopardise safety. Automation reduces the significance of human labour in the production chain, tipping the balance of bargaining power in favour of capital. Firms may become less inclined to allocate resources for safety measures if workers are readily replaceable by machines. Moreover, the shift towards automation necessitates that workers



acquire new competencies and adjust to increasingly complex job environments, which could lead to a rise in injuries, particularly severe ones. Additionally, the looming threat of being supplanted by machines may induce mental stress among workers, contributing to a higher incidence of accidents.

This intricate dynamic indicates that the repercussions of automation on workplace safety are not unidirectional and deserve thorough empirical scrutiny. The investigation offers invaluable perspectives for policymakers and the broader populace, underscoring the urgency for modernised regulatory mechanisms to confront the challenges posed by evolving technologies in the labour market.

#### Toward a balanced regulatory framework and public oversight

The collective insights from these studies point to the necessity of an inclusive path to progress, one that does not neglect the fundamental aspects of workplace safety amid the pursuit of technological and environmental advancements. These findings together make a compelling case for an integrative regulatory approach that champions environmental sustainability, technological advancement, and worker protection. This harmonised strategy is crucial for fostering a future where economic growth and social welfare are not conflicting aims but complementary forces. The role of media visibility and public oversight is also critical. These elements are fundamental in holding corporations accountable and maintaining rigorous safety standards in the workplace.

Navigating the path to sustainable development is a multifaceted endeavour, but the research emerging from CityU-CB provides clear guidance: adopting a holistic and proactive approach is essential.



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