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**“Exploring Liquidity and Profitability as a Joint
Accounting-Based Condition for Workforce ESG Scores”**

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CHAPTER I: INTRODUCTION AND CONCEPTUAL FRAMEWORK

I.I Introduction

ESG (Environmental, Social, and Governance) scores are increasingly becoming a measurable quantitative metric that can influence the long-term destiny of companies and directly impact their valuation. Building on Carroll's (1979) foundational CSR framework, ESG evolved into a more structured extension of that thinking, replacing broad moral obligations with concrete, reportable criteria for assessing non-financial corporate performance (LSEG, 2024). ESG has grown substantially in both institutional adoption and regulatory relevance, with major bodies such as the European Union (EU) introducing mandatory ESG disclosure requirements and global assets under management linked to ESG-oriented strategies surpassing USD 30 trillion by the early 2020s (Global Sustainable Investment Alliance, 2022).

While attention has been predominantly directed towards the environmental aspect, the social dimension is essential for effective risk and opportunity management. It is relevant to distinguish between social sustainability as a broad concept and the social pillar of ESG as its operationalised, measurable expression. Broadly, social sustainability can be understood as the way organisations manage their relationships with stakeholders, including consumers, employees, suppliers, and communities, in a manner that allows them to thrive while addressing issues such as human rights, community impact, diversity, and well-being (Deloitte, 2023). The social pillar of ESG, by contrast, represents the translation into concrete, reportable indicators that investors among others use for today's decision-making. In the LSEG methodology, one of the most widely cited in academic research, the social pillar is divided into four sub-categories: workforce, human rights, community, and product responsibility (LSEG, 2024). Each of these sub-scores contributes to the overall social pillar score, which is in turn weighted as part of the total ESG score and produced for disclosure by various data providers including LSEG, MSCI, and Sustainalytics, each using its own methodology to aggregate firm-level disclosures.

The importance of social performance is increasingly recognised not only in academic literature, but also by major global advisory firms such as Deloitte. This recognition extends into finance, where investor interest has grown significantly over the last decade: Morningstar data shows that assets under management in U.S. sustainable funds increased from USD 30 billion in 2010 to USD 240 billion in 2020 (Weibel & Iwata, 2026). Palas et al. (2025) argue that the social pillar is particularly reflective of "everyday organisational behaviour", making it especially relevant for understanding operational outcomes such as working capital management and liquidity. This argument supports the rationale for treating the social score as a distinct variable of interest rather than simply relying on the composite ESG score.

Nevertheless, a persistent gap can still be found in corporate social performance (CSP) across firms, even within the same industry, as reflected in the diverse ESG scores available in DataStream. While the broader relationship between Corporate Social Responsibility and financial performance (CFP) has been widely explored, existing research has predominantly merged employee relations with broader social aspects. The workforce dimension, defined as the firm's measurable performance on employee relations (Blair, 2024), has been less frequently examined as a distinct outcome variable. This is a meaningful omission that represents the primary gap aimed to be addressed in this study, treating employee relations scores as the primary dependent variable.

Identifying what drives workforce ESG performance, however, is a complex and widely recognised causality problem. The relationship between CFP and CSP has long been debated due to what is described as a “chicken-and-egg” dilemma: does financial strength drive high investments in the workforce, or were there prior investments in CSR that enabled subsequent CFP? Empirical findings remain mixed: some studies show that improved CFP is possible through CSR investments, particularly when time is considered as a moderator (Charlo et al., 2017). Others defend the relationship through a resource-based perspective, arguing that social investment not only generates resources and capabilities internally, but also a reputation that jointly drives CFP (Branco & Rodrigues, 2006).

Conversely, some evidence suggests a different direction. Specifically, Abid (2022) finds that while financial performance positively influences CSR towards employees, the reverse relationship was not only weak but even became negative when time was not considered. Rather than seeing these findings as contradictory evidence, they reinforce literature findings that state a dynamic, bi-directional nature of the relationship between CFP and CSP (Hichri & Ltifi, 2021). Profitability may be necessary for firms to score high in social aspects, while the financial benefits of these may only emerge later. Thus, we highlight the importance of our research, which contributes to the discussion by examining the supported causality from the financial condition, as one of the independent variables, to workforce ESG performance as the dependent variable. We address endogeneity concerns by using one-year-lagged independent variables.

Yet, our research goes beyond the CFP-CSP relationship and explores another extensively supported relationship: financial liquidity, understood here as financial slack, and its effect on CSP. This distinction is important. In conventional financial analysis, a high proportion of cash relative to total assets is often interpreted with caution, as it can signal inefficient capital allocation, idle assets, or underused resources, all of which can negatively affect financial efficiency and shareholder returns. However, in social investment, this interpretation may not hold. The literature review will show how the slack resources literature supports that cash holdings may enable discretionary, non-core investment, of which workforce ESG is one example. Critically, however, not all cash a firm holds represents actual

slack, which is the relevant concept here and may more intuitively explain score differences. Some cash is necessary for operational survival.

This study therefore distinguishes between cash holdings and financial slack, understanding the latter as the portion of cash that is not explained by a firm's profitability and observable characteristics, namely the resources held beyond what the firm's financial profile would predict. This conceptual boundary is the motivation for a methodological choice that is detailed in the methodology chapter.

While each of these financial conditions has been explored in relation to CSR, the literature remains fragmented. Studies have often explored each relationship in isolation or treated financial slack as a moderator instead of a joint condition enabling high social scores alongside strong profitability.

This raises the following research objective: To examine whether corporate profitability and financial slack jointly determine workforce ESG performance among listed firms, treating both as independent and complementary financial enablers, and operationalising liquidity as financial slack to capture the discretionary portion of cash holdings.

Through an extensive review of the existing literature, we aim to identify the theoretical and empirical foundations that support this joint condition argument and to highlight the gaps that remain, aiming to answer the following central research question:

Does the simultaneous presence of high profitability and high financial slack produce systematically stronger workforce ESG performance among listed firms than either condition alone?

The analysis is structured around three hypotheses that build sequentially on each other:

H1: Higher profitability is positively associated with workforce ESG performance.

H2: Higher liquidity is positively associated with workforce ESG performance.

H3: Firms that simultaneously exhibit high profitability and high liquidity achieve disproportionately higher workforce ESG performance than firms that are high on only one or neither condition.

H1 and H2 are tested independently as informative steps to understand whether each condition individually predicts workforce ESG performance, before examining the joint effect proposed in H3. If both conditions matter by themselves, their combination likely reflects a complementary enabling effect. If only one does, H3 may still hold, but through a moderating mechanism where one condition amplifies the other. Without first establishing the individual effects, the joint condition in H3 becomes more difficult to interpret. The research objective is therefore operationalised through all three hypotheses together, with H1 and H2 informing the nature of the relationship that H3 tests.

The chapters of this paper are structured as follows. The literature review establishes a global theoretical and empirical foundation for each hypothesis, synthesising the evidence on the CFP-CSP relationship and the role of liquidity in enabling social investment. The methodology chapter then translates these foundations into a concrete empirical design, detailing data collection, variable construction, and the regression sequence used to test each hypothesis. Empirically, this study focuses on European Union listed firms, a deliberate scope decision that ensures workforce ESG scores are produced under comparable institutional conditions. As this paper focuses on reporting results rather than interpreting them, this scope decision helps ensure that any subsequent interpretation is less likely to be confounded by dramatic differences in ESG regulations across regions.

I.II Conceptual Scope of the Research

Before diving into the literature review, it is necessary to establish the conceptual boundaries of the financial conditions examined in this research. Financial performance is a broad construct that, in an accounting-based context, can jointly include profitability, liquidity, and solvency measures. The absence of clarification may lead to overlapping constructs that complicate both theoretical framing and empirical interpretation.

For the purpose of this study, we focus on accounting-based terms. CFP is narrowly defined as profitability, understood as a firm's ability to generate earnings and remain viable in the long run. This definition aligns with empirical research linking CFP to CSR outcomes, in which profitability ratios serve as the primary proxies for financial performance (Waddock & Graves, 1997; Orlitzky et al., 2003; Abid, 2022). In CFP research, accounting-based profitability measures have become standard. A major meta-analysis spanning 50 years of CSR-CFP studies shows that Corporate Social Performance aligns more strongly with accounting-based indicators than with market-based ones (Orlitzky et al., 2003). This study operationalises profitability through Return on Assets (ROA), which captures how efficiently a firm converts its asset base into earnings, with Return on Equity (ROE) included as a robustness measure. Both measures are standard in the empirical literature and therefore enable direct comparison with prior CFP-CSP studies.

Liquidity, by contrast, is treated as a conceptually distinct variable, capturing short-term financial flexibility and available resources rather than earnings capacity. It is for this reason that CFP and profitability are used as interchangeable terms throughout this review, and liquidity is isolated as a separate construct. Importantly, the concept of focus here is not liquidity as a general measure of cash availability, but rather financial slack: the portion of a firm's cash holdings that is discretionary and held beyond operational and financial requirements. This is precisely the construct that Slack Resources Theory (Bourgeois, 1981) describes as enabling discretionary social investment and not as the absence of debt, but the presence of unallocated resources. The literature reviewed in the following section

operationalises this through measures such as the raw cash-to-assets ratio, defined as cash and cash equivalents divided by total assets, and free cash flow, defined as operating cash flow minus capital expenditure, which this study uses as its theoretical foundation. However, not all cash captured by these measures is truly idle, and this limitation will be acknowledged and addressed further in the report.

CHAPTER II: CRITICAL SYNTHESIS OF THE LITERATURE

While most of the existing literature examines how ESG outcomes influence a firm's financial position, an equally important yet less explored perspective considers how financial conditions themselves jointly determine a firm's capacity to invest in discretionary social practices. The following literature synthesis is structured around the two variables of focus: financial performance and liquidity, following three stages. First, we examine the relationship between corporate financial performance and social ESG outcomes, critically acknowledging the theoretical role that liquidity implicitly plays within the empirical findings. Second, we isolate the relationship between liquidity and social ESG performance independently. Given its importance in the influential slack resources hypothesis, it has received great independent empirical attention. Finally, we bring both relationships together in a conclusion that builds the hypothesis for the joint condition argument that motivates our study.

II.I Financial Performance and Social Performance: The Empirical Evidence

The idea that Corporate Financial Performance (CFP) can drive a firm's engagement in social responsibility has long been recognised in the CSR literature. An early and influential contribution comes from Waddock and Graves (1997), who state that firms that achieve strong financial outcomes have the necessary "slack resources" to support social initiatives, including those that relate to employee relations, community, and product responsibility. The Slack Resources hypothesis has since become the dominant theoretical lens through which the CFP to CSP relationship is explained, and its causal logic is strong: profitability generates additional resources, and it is that surplus capital that provides the flexibility to direct attention and resource allocation towards social investment. Importantly, this means that profitability does not drive social performance directly; rather, it does so through a mediating effect, through the accumulation of slack. Thus, through an extensive review of literature, a strong realisation emerges. Profitability is the antecedent, but liquidity is the transmission mechanism. Still, profitability metrics alone are used to study this relationship in most empirical work, which represents the first critical gap this study addresses.

An important body of empirical literature supports a positive relationship between CFP and CSP. Lin et al. (2019) investigated the bidirectional relationship between CSR and CSP by using a panel data set of 100 of the Fortune Most Admired Companies over the course of 10 years. They found that firms with stronger financial performances result in more CSR efforts, drawing conclusions from the Slack Resources hypothesis. Similarly, a large-scale study by Carreira et al. (2025) further reinforces this relationship with a sample of over 28,000 firm-year observations from the Refinitiv database. The authors find that Net Income and ROA are significant positive predictors of social ESG scores. They interpret these results through the theoretical lenses of Legitimacy Theory, which argues that profitable companies increase social-related disclosure to maintain social legitimacy, as well as through the Resource-Based View, which sees social initiatives as a source of competitive advantage requiring

financial strength. Regarding the Stakeholder Theory, it is important to note that although mentioned, in this context, it explains the motivation to invest socially, not the capacity to do so. Firms of all financial conditions recognise stakeholder demands and seek to respond to them. However, what differentiates firms that score highest on social ESG, we believe might not be motivation but financial capacity, the availability of resources to act on that motivation, which once again implicitly relates to the slack resource hypothesis. Following on this notion, complementary evidence is provided by Hategan et al. (2018), who find that profit-reporting companies are 8-9 times more likely to participate in CSR activities compared to loss-reporting ones. According to Hategan et al., successful companies have both the ability and motivation to participate in social activities that benefit their stakeholders, further confirming that profitability enables social engagement, including in the workforce dimension.

Nonetheless, upon critical reflection, we acknowledge a limitation in this body of literature and its empirical approach. While slack is mentioned to support the theoretical mechanism in explaining the relationship, measurements have predominantly operationalised financial performance solely through profitability ratios. Importantly, studies are measuring the output of profitability, how efficiently a firm converts assets or equity into earnings, but they seldom measure whether those earnings have accumulated into useable slack for “discretionary” initiatives. A firm can have a high ROA, and even a high ROIC, and still have low liquidity if its earnings are tied up in CAPEX, working capital, or dividends, among other things. In this case, the slack resources mechanism would predict no social investment, and yet profitability measurements would show high values. So, when studies find a positive relationship between ROA and CSP and attribute it to the slack resources, they assume both variables move together, while the assumption is never explicitly tested. This limitation is further highlighted by scholars like Duque-Grisales and Aguilera-Caracuel (2021), who in fact operationalise slack within their model. However, they do so in the context of proving how social ESG performance negatively influences CFP. Importantly, this brings two points. Firstly, it highlights the importance of explicitly measuring liquidity rather than assuming its presence through profitability ratios, as its moderation effect was proven significant. Second, the negative direction of their results, where social investment does not improve and may even reduce CFP, suggests that the reverse causality explored in this research is a credible empirical argument.

This gap motivates the need for examining liquidity not as a moderating variable that has been assumed to amplify the effect of the CFP - CSP relationship, and explicitly in the opposite direction, but as an independent and necessary financial condition alongside profitability. However, prior to examining this joint enabling condition, it is necessary to first review the already established literature on the isolated relationship between liquidity and social ESG performance, which forms the empirical foundation for H2.

II.II Liquidity and Social Performance: The Empirical Evidence

The most influential empirical paper supporting the direction of financial resources to social ESG performance is written by authors Hong, Kubik, and Scheinkman (2012), whose paper challenges the popular notion that doing good and doing well are mutually reinforcing in an upward direction. Their main finding is the inverse: firms engage in social behaviour primarily when they have the financial slack to do so. Using a quasi-experiment based on the temporary relaxation of financial constraints during the late 1990s technology bubble, they demonstrate a causal relationship in which previously constrained firms that gained financial slack subsequently increased their social responsibility scores relative to their peers. This provides rare causal evidence that liquidity and financial flexibility are a primary determinant of how much a firm invests in socially oriented activities, rather than social performance being a precondition for financial strength (Hong et al., 2012).

This causal relationship is further supported by a later study by Niu et al. (2022), who develop a dynamic model of CSR decision-making for financially constrained firms. Their model demonstrates that cash reserves generally predict corporate virtue: higher cash holdings increase the likelihood that firms will invest in CSR, while more constrained firms are forced to prioritise short-term operational survival. This is consistent with the Resource-Based View (Barney, 1991), which frames liquid assets as strategic internal resources that enable firms to build the organisational capabilities required for sustained social ESG investment. This provides a microeconomic basis for the expectation that accounting-based liquidity ratios will be positively associated with social ESG performance (Niu et al., 2022).

Additional empirical support comes from a study in which a sample of Bangladeshi financial institutions were examined, and a significant and positive relationship was found between slack resources and CSR expenditure, with free cash flow, a closely related measure of available financial resources, being positively associated with social spending (Islam et al., 2021). In the context of emerging markets, Joshi and Joshi (2024), studying Indian firms, find a positive association between cash holdings and overall ESG scores, with the effect broadly consistent across all three ESG dimensions. Consistent with the Stakeholder Theory (Freeman, 1984), these studies collectively suggest that firms with greater financial flexibility are better positioned to meet their obligations to employees, communities, and suppliers, the core stakeholder relationships. This geographically diverse body of evidence, spanning across Asia as well as Duque-Grisales and Aguilera-Caracuel's (2021) study on South American firms, confirms that the direction from financial resources to social ESG engagement holds for a wide range of institutional and economic contexts.

More recently, Heubeck and Ahrens (2025), studying Nasdaq-100 firms, find an overall positive effect of slack resources on ESG performance, confirming that resource-rich firms are indeed more likely to allocate those resources towards ESG initiatives. Importantly, they also uncover a nuance: the relationship follows an inverted U-shape, meaning that extreme levels of slack can become

counterproductive, potentially leading to inefficient or unfocused ESG spending. At moderate and typical levels of liquidity, however, the relationship is positive, supporting the expectation that firms with stronger current, quick, and cash ratios will exhibit higher social ESG scores (Heubeck & Ahrens, 2025). These findings are supported by Slack Resources Theory (Bourgeois, 1981), providing empirical grounding for the theoretical link between liquidity and social ESG performance.

Taken together, this body of evidence, spanning both corporate financial performance and liquidity as independent predictors of social ESG outcomes, consistently points in the same direction. Yet relatively few studies have directly tested balance-sheet liquidity ratios in isolation, leaving a gap that this study aims to address.

II.III Conclusion

The above critical synthesis comes together and leads to the conclusion of a consistent and theoretically grounded argument: profitability and liquidity are independently related to higher social ESG efforts. Profitable companies have the resources to fund social initiatives; however, only liquid firms have the flexibility to allocate them into these non-core activities without bringing pressure to their operations. Still, despite this evidence, two critical gaps remain. First, the joint study of both conditions as complementary drivers of social ESG performance remains relatively underexplored. Second, while the CFP literature invokes slack theory as the theoretical mechanism, it rarely explicitly measures slack alongside profitability, and the liquidity studies that do attempt to measure it rely either on broad ratio-based measures that capture bill-paying capacity rather than genuinely discretionary resources, or on free cash flow, which while moving in the right direction still falls short of isolating truly idle cash independent of a firm's financial profile. This study addresses both gaps simultaneously, and these two observations have guided the methodological choices detailed in the research methods chapter.

Furthermore, the studies reviewed the social dimension of ESG at an aggregate level, without isolation of the workforce sub-dimension. The Resource-Based View, consistently mentioned throughout this review, explains how financial resources allow for social investments by generating internal capabilities. If this holds, we argue that the expression of these capabilities is often reflected through the firm's workforce, and managers, aware that employees represent a competitive advantage, are likely to direct investment towards this sub-dimension as a strategic priority. Accordingly, we expect that the joint financial condition argument is meaningful at the workforce level.

It is important to clarify that the conclusions drawn from the literature do not make H1 and H2 redundant. The literature establishes these relationships at the aggregate social ESG level, not at the workforce sub-dimension level, which has received limited attention. Testing H1 and H2 at the workforce level is therefore not a repetition of what the literature has found, but a more precise test of whether the same relationships hold where they are most theoretically expected. H3 then extends this by testing whether their joint presence produces even stronger outcomes, a question few empirical

studies have directly addressed. Together, all three hypotheses form a sequential empirical argument that moves from the established findings to building towards the central contribution of this study.

Lastly, while the literature reviewed above presents a global view to build a strong and broadly supported theoretical foundation, this study focuses on European Union listed firms. This context allows for better interpretability of results and avoids potential misinterpretations arising from dramatic differences in regulations across regions.

CHAPTER III: RESEARCH METHODS

III.I Academic Research

To identify relevant academic work, searches were conducted across several scholarly databases and search engines, including Google Scholar (Labs), Scopus, and ScienceDirect. We used Boolean operators throughout the search process to refine our results. AND was used to combine concepts and narrow results to sources addressing multiple constructs simultaneously (e.g., “CSR AND CFP”, “social score AND current ratio”), while OR was used to capture synonymous or related terms within a single search (e.g., “CSR OR ESG OR social sustainability”, “liquidity OR working capital OR current ratio”). NOT was used selectively to exclude irrelevant domains, such as excluding environmental-only studies when specifically investigating the social pillar of ESG. Phrase searching was used by placing multi-word terms in quotation marks to ensure that only sources using those exact terms were returned, thereby filtering out results that contained the individual words in unrelated contexts (e.g., “social ESG score”, “quick ratio”, “stock liquidity”, “CSR disclosure”, and “stakeholder theory”).

To further expand and refine the body of our source, the snowball method was applied. Once we found a relevant article through database searching, we examined its reference list to trace back to earlier papers and articles cited within it. This was particularly useful for finding pioneering theories, such as Freeman’s (1984) Stakeholder Theory or Bourgeois’ (1981) Slack Resources Theory that predated the main search window but are foundational to the topic. Our sources were further screened by title and abstract to confirm direct relevance to at least one of the three core constructs, liquidity or financial performance or the social ESG pillar, before being included in the review.

The search string was altered to filter studies which assess if Corporate Financial Performance (CFP) influences Corporate Social Responsibility (CSR). Through including terms such as lagged, lead-lag and time-lag, the search targeted research that considers causal effects over time rather than simple correlations. This approach helped identify studies which would be bi-directional in nature.

III.II Data Collection

This section outlines the data collection strategy for testing H1, H2, and H3. All data has been extracted from LSEG Workspace, which provides both ESG subcategory scores and accounting-based financial variables within a single platform, ensuring internal consistency with the LSEG (2024) scoring methodology described in the literature review and avoiding cross-databased merging errors. The dependent variable is the workforce subcategory score of the LSEG social ESG pillar. Of the four social subcategories – workforce, human rights, community, and product responsibility – the workforce score is selected because the slack resources mechanism proposed in the study is most directly expressed through employee relations: managers who recognise the workforce as a source of competitive advantage are likely to direct available financial slack towards compensation, training, health and safety, and diversity initiatives.

The two main independent variables were retrieved from the Worldscope dataset within the same platform. ROA was computed as net income after tax divided by total assets, while the cash-to-asset ratio was computed as cash and cash equivalents divided by total assets. Both variables were extracted for the period 2013-2022, providing a 10-year window of consecutive annual observations per firm for the cross-sectional dataset used in the main regressions.

To assess the robustness of the main findings, the regressions were replicated using two alternative measures. First, the overall LSEG social pillar score replaced the workforce sub-score as the dependent variable, testing whether results generalise beyond the workforce dimension. Second, the asset-based independent variables were replaced with equity-based equivalents: Return on Equity (ROE), computed as net income after tax divided by total equity, and the cash-to-equity ratio, computed as cash and cash equivalents divided by total equity. Data for all robustness variables were collected from the same LSEG Workspace platform to ensure consistency with the main specification.

III.III Sample Construction

The sample is constructed through a sequential filtering procedure applied to the LSEG ESG universe to ensure comparability and measurement validity. First, the analysis focuses on EU-headquartered listed firms with non-missing workforce scores. The regional focus provides a relatively harmonised and increasingly stringent ESG disclosure framework, reducing cross-country institutional heterogeneity and allowing for more meaningful cross-firm comparisons. The sample is further restricted to large- and mid-cap firms, consistent with LSEG's methodology, to ensure that ESG scores are based on sufficiently complete and comparable disclosures rather than reflecting reporting gaps typical of small firms, a pattern well-documented in the disclosure literature (Buzby, 1975).

Second, the sample covers 2013–2022, a period in which ESG coverage is sufficiently dense and methodologically consistent for cross-firm analysis. Earlier years are excluded because limited coverage and sparse reporting would introduce selection bias and reduce the reliability of comparisons. The endpoint is set at 2022 to avoid the 2024 revision in LSEG's ESG scoring methodology, which would otherwise introduce structural breaks in the measurement of key variables. Restricting the sample to this period ensures that differences in ESG scores across firms primarily reflect underlying economic behaviour rather than changes in the data environment, supporting consistent cross-firm inference.

Third, financial sector firms (GICS sector 40) are excluded because cash and liquid assets represent core operational inputs for these firms rather than discretionary reserves, meaning the cash-to-assets ratio would reflect their business model rather than financial slack, the construct underpinning H2.

III.IV Data Cleaning

Following data extraction from LSEG Workspace, the raw dataset required a structured sequence of cleaning and preparation steps prior to estimation. The raw data was delivered as separate Excel files, each containing one financial variable with firms as rows and fiscal years (2013–2022) as columns. A standardised cleaning function was applied to harmonise structure and assign consistent variable names. These files were combined into a long-format dataset with a consistent naming convention to ensure comparability across variables. Variables not required for the empirical specification, such as unused financial ratios or duplicate identifiers, were removed to maintain a focused dataset. Additional firm characteristics, including country, IPO date, and incorporation date, were merged using a unique firm identifier. Using LSEG Workspace as a single data source ensured consistency and avoided cross-database merging errors.

The dataset was reshaped from long format, where each row represented a single variable for one firm in one year, into a firm-year panel in which each row contains all variables for a given firm and year simultaneously, enabling regression estimation. Firm age was computed using IPO dates, which were available for all firms. Firm age was calculated using the difference (in years) between a fixed reference date (April 1, 2026) and each firm's IPO date. This reference age was then adjusted for each observation year to construct a time-varying firm age variable across the panel. Implausible values, defined as ages exceeding ± 200 years, were treated as missing to eliminate potential data errors. Given the IPO-based definition of firm age and the modern composition of listed firms in the dataset, such extreme values are highly unlikely to reflect true firm characteristics and instead indicate data errors in the underlying IPO date field. IPO date was preferred over incorporation date, as it more accurately captures the point at which firms become subject to investor scrutiny and disclosure requirements relevant to ESG behaviour.

A set of variable-specific rules was applied to remove implausible values while preserving the panel structure. Rather than deleting entire observations, problematic values were set to missing. Key adjustments included:

- Workforce ESG scores of zero were treated as non-disclosure and set to missing, as zeros in the LSEG methodology reflect lack of reporting rather than true outcomes.
- Cash-to-assets values were restricted to the $[0,1]$ range, as values outside this interval are not economically meaningful.
- For ROA a bound of $\pm 100\%$ was applied because net income cannot credibly exceed a firm's total asset base under normal operating conditions. The maximum value of 148.3 observed in the raw data is consistent with a scaling error rather than a genuine operating outcome.
- A bound of $\pm 500\%$ was applied because very large or very negative ROE values are unrealistic for a listed firm and most likely reflect data errors rather than genuine financial conditions. A

wider bound than ROA is necessary because equity can legitimately be close to zero, producing extreme ratios from modest net income without any underlying data error.

- A ceiling of 10 was applied for leverage because a debt-to-assets ratio above 1,000% has no plausible interpretation for a listed firm operating as a going concern and is most likely attributable to a data entry error in one of the underlying Worldscope items.
- For firm size values of zero or below were set to missing because the log transformation cannot be applied to non-positive numbers, and a listed firm will always have positive total assets.

These adjustments reflect data cleaning rather than sample deletion and are necessary to prevent distortion of regression estimates.

To ensure the lagged variable construction required by the empirical design was feasible, firms were required to have at least three consecutive years of complete data across all key variables. Since the one-year lag consumes the first observation per firm, this guarantees a minimum of two usable firm-year observations per firm in the estimation sample. Requiring at least two observations per firm is justified by the fixed effects structure of the regression: with industry and year fixed effects included, a firm contributing only a single observation provides no within-cell variation and offers limited leverage for identification. Retaining firms with at least two usable observations ensures that each firm contributes meaningful variation to the cross-sectional comparison across industry-year cells, improving the stability of the fixed effects estimates and reducing the risk that results are driven by single-observation firms whose values may reflect noise rather than genuine firm characteristics. The high attrition at this stage is primarily driven by missing ESG values, reflecting limited disclosure coverage in the LSEG dataset. All independent and control variables were lagged by one period to establish temporal ordering between financial conditions and workforce ESG outcomes, directly addressing the bi-directional CFP–CSP relationship documented in the literature (Abid, 2022; Hichri & Ltifi, 2021). Two interaction terms were additionally constructed at $t-1$, $ROA \times \text{cash-to-assets}$ and $ROE \times \text{cash-to-equity}$, to empirically test whether the simultaneous presence of both financial conditions produces stronger workforce ESG outcomes than either condition alone, as proposed in H3. A final completeness filter removed observations with missing core variables after lagging.

III.V Data Analysis

The empirical analysis followed a sequential structure designed to build towards the central hypothesis of this study, H3: Firms that simultaneously exhibit high profitability and high financial slack achieve disproportionately higher workforce ESG performance than firms that are high on only one or neither condition.

The regression sequence was structured from this main test backwards, with each preceding regression providing a necessary empirical foundation for its interpretation.

Constructing Residual Financial Slack

As established in the conceptual scope, this study does not focus on liquidity as the total amount of cash or cash equivalents held by a firm, but rather on the idle portion of it, that is, remaining cash after operational and financial obligations are accounted for. Several reflections guided the measurement decision for this construct.

Standard ratios such as the current or quick ratio capture bill-paying capacity rather than discretionary resource availability, making them unsuitable for the purposes of this research. As these measures divide by current liabilities rather than a stable balance sheet item, they tend to produce extreme values whenever a firm holds a small amount of short-term debt, regardless of how much cash it actually holds. This generates a skewed distribution with outliers that can distort regression estimates and complicate interpretation. As previously shown, some studies have addressed this limitation through the use of free cash flow, and while this moves in the right direction by excluding operational spending and capital expenditure, it still falls short. Free cash flow measures a periodic flow rather than a stock of available resources, fluctuates with investment cycles, and does not account for structural differences in cash needs across industries and firm sizes. Two firms with identical free cash flow can therefore hold very different levels of truly discretionary resources.

The cash-to-assets ratio was identified as a more appropriate base measure, bounded between zero and one, it produces a more normal distribution across firms and directly captures the construct of interest: the proportion of a firm's total resource base held in cash. However, as detailed below, including it directly in the regressions would still be insufficient without a further refinement to isolate the portion that is not explained by profitability. Profitable firms tend to accumulate cash over time, meaning raw cash-to-assets and ROA are inherently correlated. Including both directly in the same regression would raise multicollinearity concerns and, more importantly, would fail to isolate the portion of cash that is discretionary, which would have created problems in the regressions that followed.

The empirical approach therefore began with a first-stage regression of cash-to-assets on ROA and all control variables:

$$\begin{aligned} CashToAssets_{i,t-1} = & \beta_0 + \beta_1 ROA_{i,t-1} + \beta_2 Size_{i,t-1} + \beta_3 Leverage_{i,t-1} + \\ & \beta_4 Age_{i,t-1} + IndustryFE + YearFE + \varepsilon_{i,t-1} \end{aligned}$$

The residuals from this regression capture the portion of cash holdings that cannot be explained by profitability or observable firm characteristics, and serve as the financial slack variable throughout all main regressions. This step served two purposes: isolate idle resources and eliminate multicollinearity between the two main independent variables, allowing for cleaner future interpretation and avoiding misleading regression results.

Main Regressions – Testing H3

The central test of this study was conducted through the following regression:

$$\begin{aligned} WorkforceESG_{i,t} = & \beta_0 + \beta_1 ROA_{i,t-1} + \beta_2 \varepsilon_{i,t-1} + \beta_3 (ROA \times \varepsilon)_{i,t-1} + \beta_4 Size_{i,t-1} + \\ & \beta_5 Leverage_{i,t-1} + \beta_6 Age_{i,t-1} + IndustryFE + YearFE + \varepsilon_{i,t} \end{aligned}$$

The interaction term between ROA and residual slack captured whether the effect of profitability on workforce ESG strengthened as financial slack increased. Statistical significance and direction of β_3 were used to assess H3. Nevertheless, as the interaction term is statistically a test of moderation, and the joint condition cannot be formally defended through this coefficient alone, H3 was evaluated through the full pattern of results across the regression sequence conducted prior to this regression, as presented below.

Supporting Regressions – Testing H1 and H2

To establish the necessary empirical foundation for the main regression, H1 and H2 were first tested through two independent regressions:

$$\begin{aligned} WorkforceESG_{i,t} = & \beta_0 + \beta_1 ROA_{i,t-1} + \beta_2 Size_{i,t-1} + \beta_3 Leverage_{i,t-1} + \beta_4 Age_{i,t-1} \\ & + IndustryFE + YearFE + \varepsilon_{i,t} \\ WorkforceESG_{i,t} = & \beta_0 + \beta_1 \varepsilon_{i,t-1} + \beta_2 Size_{i,t-1} + \beta_3 Leverage_{i,t-1} + \beta_4 Age_{i,t-1} \\ & + IndustryFE + YearFE + \varepsilon_{i,t} \end{aligned}$$

These regressions established whether each financial condition independently predicted workforce ESG performance, forming the empirical and theoretical foundation for the joint condition proposed in H3.

A third regression was then conducted including both conditions simultaneously:

$$\begin{aligned} WorkforceESG_{i,t} = & \beta_0 + \beta_1 ROA_{i,t-1} + \beta_2 \varepsilon_{i,t-1} + \beta_3 Size_{i,t-1} + \beta_4 Leverage_{i,t-1} + \\ & \beta_5 Age_{i,t-1} + IndustryFE + YearFE + \varepsilon_{i,t} \end{aligned}$$

While the residual construction already ensured that ROA and slack were independent, eliminating any statistical overlap between them, this regression served as a distinct and necessary step. Constructed unrelatedness avoided variable moving together, but it did not establish whether both retained statistical significance when included simultaneously in predicting workforce ESG performance. This regression therefore tested whether each condition retained independent predictive power in a joint model, or whether one absorbed the explanatory contribution of the other due to influence of unobserved factors. This allowed to assess the power of each independent variable to capture a different dimension of a firm's financial capacity to invest socially.

It is this pattern of results that constitutes the empirical foundation for evaluating H3.

Robustness Checks

Following the main analysis, robustness checks were conducted to verify the stability and reliability of the findings.

Regressions were re-estimated replacing ROA with ROE and the residuals of Cash-to-assets with residuals of Cash-to-Equity, maintaining the internal consistency of the measurement framework. The results can be used to assess whether findings are dependent on the specific operationalisation of the variables, or whether they hold across different measures of the same underlying construct.

A note on regression specifications

The choice of including the size, leverage, and age as observable characteristics for control variables, rather than absorbing all firm level differences through a firm fixed effect specification in the regressions, has deliberately been made. As the study aims to focus not on within, but rather across firm score variations, adding a firm-fixed effect within the regression would output coefficients that would only reflect how changes in a firm's own financial conditions predict changes in its own workforce ESG score. While informative, this specification differs from the research objective. Therefore, the models control for observable firm characteristics while including only industry and year fixed effects. This allows to preserve cross-sectional variation and assess whether financially stronger firms score higher on workforce ESG than their peers within the same industry and year

CHAPTER IV: RESEARCH RESULTS

IV.I Sample Outcomes

The process began with 62,664 observations and resulted in a final analytical sample of 5,552 firm-year observations across 818 firms. The dataset was reshaped from long format into a firm-year panel, producing 44,760 observations across 4,476 firms. In total, 61 extreme observations across the financial variables were identified and set to missing. Following outlier treatment, the dataset was filtered to retain only firms with a minimum number of consecutive observations, ensuring that the lagged variable construction required for the empirical design was feasible and that each firm contributed meaningful panel depth to the cross-sectional analysis. This criterion produced the largest reduction in sample size, decreasing the dataset to 8,180 observations across 818 firms. Because lagging eliminates the first observation for each firm, the sample was further reduced to 5,552 firm-year observations. The number of firms remained unchanged at 818. The final dataset consists of 5,552 observations across 818 firms from 21 countries and 63 industries over the period 2013–2022.

Cleaning step	Observations removed	Firms remaining	Observations remaining
Starting file	0	4,476	62,664
Reshaping to firm * year panel	17,904	4,476	44,760
Workforce ESG zeros set to missing	37,897 missing cells	4,476	44,760
Outlier treatment	61 values set to missing	4,476	44,760
Minimum 3 consecutive years	36,580	818	8,180
Lagged variables and missing core regressors	2,628	818	5,552
Final sample	0	818	5,552

Table I: Sample construction and data cleaning outcomes.

Note: Workforce ESG unavailable and outlier treatment refers to missing values or values converted to missing, rather than direct row deletions.

To assess whether the final analytical sample is representative of the broader starting universe, retained and dropped firms were compared across key observable characteristics at the firm level. The results reveal meaningful systematic differences. T-tests confirm that all differences in means between retained and dropped firms are statistically significant, with firm size, ROA, cash-to-assets, firm age,

and workforce ESG scores significant at the 1% level and leverage significant at the 5% level. Retained firms are substantially larger, with a mean log total assets of 21.44 compared to 17.42 for dropped firms, reflecting the fact that ESG disclosure consistency is strongly correlated with firm size. Retained firms also exhibit higher profitability (mean ROA of 0.033 vs -0.102), greater firm age (21.5 vs 9.4 years), and higher mean workforce ESG scores (68.1 vs 50.6) where scores are available for dropped firms. These differences are consistent with the structure of LSEG's coverage universe, where larger and more established firms report more consistently across time. As a result, the final sample skews towards larger, more profitable, and more ESG-active firms. This implies that the estimated relationships may overstate effects relevant to larger, more transparent firms, and may not generalise to smaller or less frequently reporting firms.

	Dropped firms (n = 3,658)	Retained firms (n = 818)	Significance
	Mean (SD)	Mean (SD)	
Firm size (log total assets)	17.42 (2.11)	21.44 (1.89)	***
ROA	-0.102 (0.900)	0.033 (0.091)	***
Cash-to-assets	0.165 (0.173)	0.115 (0.111)	***
Leverage	0.240 (0.284)	0.258 (0.152)	**
Firm age (years)	9.40 (9.49)	21.54 (19.59)	***
Workforce ESG score	50.61 (25.42)	68.14 (22.96)	***

Table II: Survivorship bias analysis, retained vs. dropped firms.

Note: Significance denotes the result of a two-sided t-test on the difference in means between groups.

** $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.*

IV.II Regression Results

Following the research methods described above, the main regression results for the final estimation sample are presented in Table III. All four models include industry and year fixed effects with standard errors clustered at the firm level, and all independent variables are measured at $t-1$.

	(1) H1: Profitability (ROA)	(2) H2: Financial Slack (Residual Cash)	(3) Both Conditions	(4) Joint Condition (Interaction)
ROA (t-1)	8.212** (3.819)		8.164** (3.805)	9.079** (4.421)
Residual Cash- to-Assets (t-1)		10.790 (6.567)	10.732* (6.493)	10.852* (6.402)
ROA × Residual Cash-to-Assets (t-1)				23.664 (24.673)
Firm Size (t-1)	6.918*** (0.402)	6.987*** (0.403)	6.909*** (0.399)	6.904*** (0.400)
Leverage (t-1)	-6.275 (4.793)	-7.193 (4.814)	-6.292 (4.793)	-5.977 (4.785)
Firm Age (t-1)	0.025 (0.029)	0.024 (0.029)	0.024 (0.029)	0.024 (0.029)
Num. Obs.	5,552	5,552	5,552	5,552
R ²	0.357	0.357	0.358	0.359
R ² Adj.	0.348	0.348	0.349	0.349

Table III: Financial Conditions and Workforce ESG Performance

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Industry and year fixed effects included in all models. Standard errors clustered at firm level in parentheses. All independent variables measured at $t-1$. Residual cash-to-assets = residuals from first-stage regression of cash-to-assets on ROA, firm size, leverage, firm age, industry FE, and year FE.

Model (1) tests H1 in isolation. ROA enters with a coefficient of 8.212, significant at the 5% level ($p < 0.05$), indicating a positive association between profitability and workforce ESG performance. This result is consistent with H1, which proposed that higher profitability is positively associated with workforce ESG performance, and provides a directional answer to the first part of the central research question by showing that profitability alone is associated with stronger workforce ESG outcomes.

Model (2) tests H2 in isolation, using residual cash-to-assets as the sole main independent variable. The coefficient is positive at 10.790 but does not reach conventional significance levels ($p > 0.10$). Taken alone, this result does not provide sufficient evidence to support H2 and therefore does not yet provide a directional answer to the second component of the research question. The result is revisited in Model (3).

Model (3) includes both ROA and residual cash simultaneously. ROA remains significant at the 5% level ($\beta = 8.164$) and residual cash attains marginal significance at the 10% level ($\beta = 10.732$). The retention of both coefficients when included jointly indicates that the two variables capture distinct dimensions of a firm's financial capacity. This result provides partial support for both H1 and H2 simultaneously and constitutes the first empirical step towards addressing whether both conditions

jointly predict workforce ESG performance, as proposed in H3. The model R^2 increases marginally to 0.358.

Model (4) introduces the interaction term between ROA and residual cash-to-assets to test H3. ROA ($\beta = 9.079$, $p < 0.05$) and residual cash ($\beta = 10.852$, $p < 0.1$) remain broadly constant with Model (3). The interaction coefficient is positive at 23.664 but does not reach statistical significance ($SE = 24.673$, $p > 0.10$) and is therefore not supported. As noted in the research methods chapter, H3 is evaluated through the full pattern of results across the regression sequence rather than through the interaction coefficient alone. The direction of the results across Models (1) through (4) is available for further interpretation in the discussion chapter.

Given the increase in the ROA coefficient after the introduction of the interaction term in Model (4), a Variance Inflation Factor (VIF) test was conducted to assess the possible concern for the presence of multicollinearity. All VIF values were below 1.2 which ruled out the concern for multicollinearity and confirmed that the coefficients were reliably estimated.

Across all four models, firm size is the strongest and most consistent predictor of workforce ESG performance ($\beta \approx 6.9$, $p < 0.01$ throughout). This pattern is consistent with several mechanisms: larger firms typically possess greater disclosure capacity, more sophisticated ESG reporting systems, and dedicated HR departments, and are subject to greater stakeholder scrutiny – all of which independently drive workforce ESG scores regardless of profitability or financial slack. Leverage and firm age remain insignificant across all specifications.

IV.III Robustness Checks

Table IV presents the robustness check replacing ROA and residual cash-to-assets with their equity-based equivalents: ROE and residual cash-to-equity.

	(1) H1: Profitability (ROE)	(2) H2: Financial Slack (Residual Cash)	(3) Both Conditions	(4) Joint Condition (Interaction)
ROE (t-1)	0.251*** (0.091)		0.227* (0.130)	0.364** (0.154)
Residual Cash- to-Equity (t-1)		0.286 (0.326)	0.235 (0.257)	0.629 (0.478)
ROE $\times$ Residual Cash-to-Equity (t-1)				0.012 (0.009)
Firm Size (t-1)	7.118*** (0.375)	7.133*** (0.376)	7.126*** (0.376)	7.134*** (0.376)
Leverage (t-1)	-7.169 (4.794)	-7.298 (4.802)	-7.321 (4.797)	-7.555 (4.799)
Firm Age (t-1)	0.023 (0.030)	0.023 (0.030)	0.023 (0.030)	0.022 (0.030)

Num. Obs.	5,550	5,550	5,550	5,550
R²	0.359	0.359	0.359	0.359
R² Adj.	0.350	0.350	0.350	0.350

Table IV: Robustness – ROE and Cash-to-Equity Specification

** $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Industry and year fixed effects included in all models. Standard errors clustered at firm level in parentheses. All independent variables measured at $t-1$. Residual cash-to-equity = residuals from first-stage regression of cash-to-equity on ROE, firm size, leverage, firm age, industry FE, and year FE.*

In the equity-based specification, ROE is significant at the 1% level in Model (1) ($\beta = 0.251$) and retains marginal significance in Model (3) ($\beta = 0.227$, $p < 0.1$) and the interaction model ($\beta = 0.364$, $p < 0.05$). Residual cash-to-equity is positive across all models but does not reach significance in any specification. The interaction term is positive ($\beta = 0.012$) but insignificant. Firm size remains highly significant throughout.

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APPENDIX

Residual Financial Slack Construction

First-Stage: Cash-to-Assets (t-1)	
ROA (t-1)	−0.044 (0.032)
Firm Size (t-1)	−0.013*** (0.002)
Leverage (t-1)	−0.101*** (0.020)
Firm Age (t-1)	−0.000** (0.000)
Num.Obs.	7936
R2	0.400
R2 Adj.	0.394

Table V: First-Stage Regression for Residual Financial Slack Construction

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Dependent variable: Cash-to-Assets (t-1). Industry and year fixed effects included. Standard errors clustered at firm level in parentheses. All independent variables measured at t-1 (one-year lag). Residuals from this regression are used as the financial slack variable in all main regressions and robustness checks.

Residual financial slack was constructed as the residual component from a first-stage regression of the cash-to-assets ratio on profitability and observable firm characteristics. Specifically, cash-to-assets was regressed on ROA, firm size, leverage, firm age, industry fixed effects, and year fixed effects.

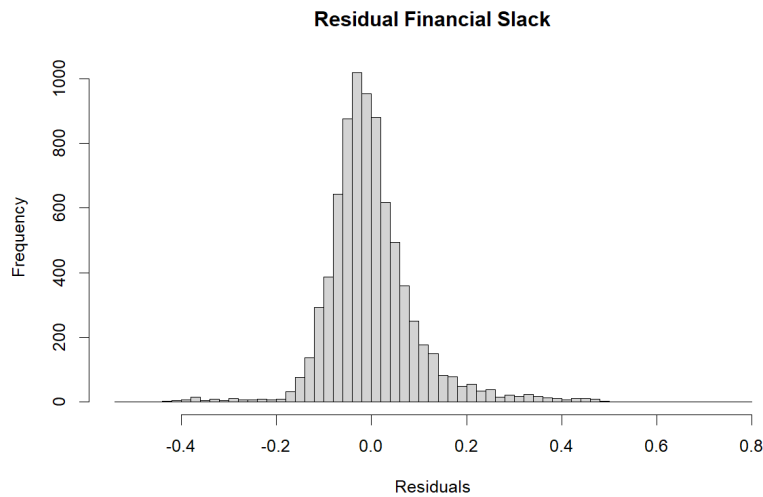


Figure I: Distribution of Residual Financial Slack

The residuals are centred around zero and display an approximately bell-shaped distribution, indicating that the residualisation procedure produces a reasonably well-behaved variable suitable for regression analysis. The figure therefore provides additional support for the use of residual cash holdings as a proxy for discretionary financial slack.

Variance Inflation Factor (VIF)

This test was conducted to assess the presence of multicollinearity, given the increase in the ROA coefficient after the introduction of the interaction term in Model (4).

```
> vif(vif_model)
      roa_lag cash_to_assets_lag roa_x_cash_assets firm_size_lag
1.059546    1.000866    1.026396    1.185575
leverage_lag    firm_age_lag
1.105167    1.114903
```

The VIF statistics range from 1.00 to 1.19, remaining substantially below conventional threshold values used to indicate problematic multicollinearity. These results suggest that multicollinearity is not a significant issue in the model.

Furthermore, an interactive dashboard was developed to present the study's methodology, results, and visualisations in an accessible format. The dashboard is available at: <https://omgupta.nl/WorkforceESG>

**ROTTERDAM SCHOOL OF MANAGEMENT,
ERASMUS UNIVERSITY**

ASSIGNMENT 2: DISCUSSION CHAPTER

**“Exploring Liquidity and Profitability as a Joint
Accounting-Based Condition for Workforce ESG Scores.”**

Course Information

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Workshop Group: 1

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CHAPTER V: DISCUSSION

V.I Conclusion

Workforce ESG performance explains the degree to which a firm supports and invests in its employees. The score consists of dimensions important to human capital such as training & development, compensation, health & safety and diversity. Research suggests that a firm's financial position may alter its capacity to allocate funds towards discretionary social initiatives. In the light of this, the study investigates whether firms with both high profitability and high financial slack achieve stronger workforce ESG performance amongst EU-listed firms than either condition alone. To answer this, we ran panel regressions using 5,552 firm-year observations from 818 EU-listed firms. The models used included industry and year fixed effects and lagged all independent variables by one year to help mitigate concerns about reverse causality. We defined financial slack as the residual from a first stage regression of cash to assets on profitability and firm characteristics, which helps represent the part of cash holdings not explained by the firm's financial profile. The central research question is answered in the negative: the simultaneous presence of high profitability and high financial slack does not produce disproportionately stronger workforce ESG performance than either condition alone.

Profitability, however, is positively and significantly associated with workforce ESG performance across all model specifications. This is consistent with the Slack Resources hypothesis which argues that financially strong firms accumulate the surplus resources necessary to fund discretionary social initiatives (Bourgeois, 1981). Financial slack exhibits a positive association with workforce ESG performance, although this relationship does not consistently achieve statistical significance. The interaction term between the two conditions is positive but does not reach statistical significance. This indicates that the relationship between financial conditions and workforce ESG performance is more consistent with independent effects than with a multiplicative interaction.

The key finding is concerned with the distinction between profitability and financial slack as constructs. Several CFP-CSP studies previously assumed that profitable firms also have more resources available to invest in activities such as CSR (Waddock & Graves, 1997; Abid, 2022). The results of this study suggest that this assumption may not be true. A company can be profitable without holding large cash reserves, and a company can have substantial spare cash even if profitability is not exceptionally high. This study provides empirical support for this distinction. When both variables are included simultaneously, profitability remains statistically significant whilst financial slack retains a positive coefficient, suggesting that they may capture different dimensions of financial capacity. Because profitability and financial slack may capture different aspects of a firm's finances, researchers should measure them separately. Otherwise, they may overlook the possibility that different dimensions of financial capacity contribute differently to workforce ESG performance.

An additional finding concerns firm size. Across all model specifications, firm size emerged as the strongest and most consistent predictor of workforce ESG performance. One possible explanation is that larger firms possess greater disclosure capacity, dedicated human resource functions, and more sophisticated ESG reporting systems. They are also subject to greater scrutiny from investors, regulators, and other stakeholders. Whilst firm size was included as a control variable rather than a primary variable of interest, its persistent significance suggests that organisational scale may play an important role in shaping workforce ESG outcomes.

These findings help us better understand the financial conditions that support strong workforce ESG performance. The sections that follow discuss what these results mean for theory, business practice, and future research.

V.II Contributions to Theory

This section details the contributions made to the theoretical understanding of the financial conditions that steer workforce ESG performance.

First, this study contributes to the literature through examining financial slack independently from profitability when explaining workforce ESG performance. Whilst prior research often treated profitability as a proxy for the resources available for social investment, this study explicitly separates earnings generation from discretionary financial resources. Financial slack did not emerge as a consistently significant independent predictor of workforce ESG performance, but the analysis does highlight the importance of distinguishing between different dimensions of financial capacity when investigating employee-related ESG outcomes.

Second, the research highlights that profitability and financial slack should not be treated as interchangeable constructs. Whilst profitability reflects a firm's ability to generate earnings, financial slack represents resources that are not explained by profitability and other firm characteristics and may therefore reflect discretionary financial capacity. By separating these concepts through the residualisation procedure, the study suggests that they may represent different dimensions of financial capacity. Therefore, they should be measured independently in future ESG research. This challenges the use of profitability as a sole proxy for resources available for workforce ESG investment.

Third, this study refines how we apply Slack Resources Theory within the ESG literature. Existing research generally argues that strong financial conditions allow firms to invest in social responsibility, yet it rarely distinguishes between different types of financial capacity. Our findings demonstrate the importance of profitability, whilst also highlighting the theoretical relevance of financial slack as a distinct dimension of financial capacity. Interestingly, the lack of a significant interaction effect suggests that profitability and financial slack do not combine to produce a reinforcing effect on

workforce ESG performance. This adds to a more nuanced understanding of how specific financial resources shape employee-related ESG outcomes.

Finally, by isolating the workforce sub-score rather than using aggregate social measures, this study extends the Slack Resources hypothesis to a dimension of social performance that has received limited independent attention. This is theoretically significant because the workforce dimension represents the most direct expression of a firm's investment in human capital. From the perspective of the Resource-Based View (Barney, 1991), one would expect firms with strong financial capacity to prioritise such investments as a source of competitive advantage. Our results are broadly consistent with this prediction, as profitability is positively associated with workforce ESG performance.

Taken together, these findings suggest that the Slack Resources hypothesis operates through a more nuanced mechanism than the literature has typically assumed, where profitability and residual financial slack act as distinct enablers rather than interchangeable proxies. This has implications for how the hypothesis is tested empirically and for how it is theorised and specified in future research.

V.III Contributions to Practice

These findings offer practical insights for CFOs, corporate managers, and ESG decision-makers. Largely, the results suggest that workforce ESG initiatives should not be viewed only as a cost, but rather as an investment tied to a firm's underlying financial capacity.

For ESG decision-makers and corporate managers, the main takeaway is that profitability and financial slack represent separate facets of financial strength that should be considered separately when evaluating workforce ESG investments. A firm with robust profitability may be well-positioned to support workforce initiatives despite limited discretionary cash, whilst a firm with lower profitability may still possess discretionary resources that enable such investment. Consequently, the findings highlight the value of considering both profitability and financial slack when evaluating the financial conditions that support workforce ESG investment.

Figure V.I presents a conceptual framework illustrating how varying combinations of profitability and financial slack may shape a firm's workforce ESG positioning. This framework is intended as a managerial interpretation of the findings rather than an empirically validated classification of firms. It highlights that companies may face distinct opportunities and constraints depending on whether their financial capacity is driven primarily by profitability, discretionary resources, or a combination of both.

Managerial Implications of Profitability and Financial Slack

Conceptual framework illustrating potential workforce ESG positioning.

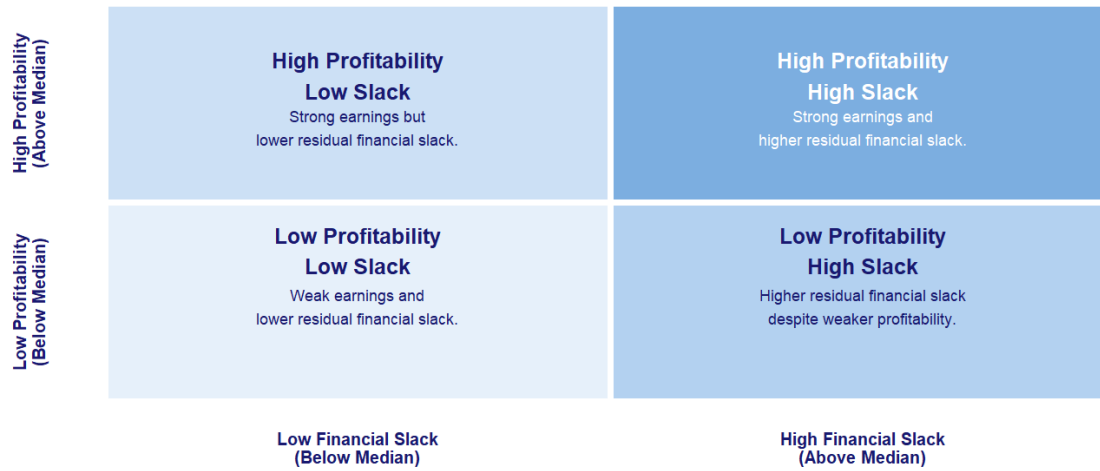


Figure V.I: Managerial implications matrix

*It should **not** be interpreted as evidence that firms can be categorised into these groups empirically.*

For CFOs, the main contribution lies in how financial capacity is evaluated and positioned. Our study suggests that profitability metrics may not fully capture a firm's financial conditions associated with workforce ESG investment and it sheds light on the potential value of considering discretionary financial resources alongside profitability-based measures. More broadly, our findings highlight an important difference between total cash holdings and the resources that may be available for long-term investment. A high cash-to-assets ratio does not automatically imply that funds are surplus to requirements, as a significant portion may be committed to existing operational or financial obligations.

V.IV Limitations

Whilst this study does provide empirical evidence for separating profitability from financial slack, several limitations must be acknowledged.

First, the analysis is subject to survivorship bias. As noted in the sample construction, the data does skew significantly towards larger, more profitable, and more ESG-active firms. Because ESG disclosure is rather strongly correlated with firm size, these findings may overstate the effects relevant to larger, transparent firms and might not generalise to smaller or less frequently reporting entities.

Second, whilst the residualisation procedure is methodologically stronger than using raw cash-to-assets ratios, it does remain an imperfect proxy for discretionary slack. The measure captures cash that is statistically unexplained by observable characteristics, but it cannot confirm that these funds are truly available for discretionary allocation. Debt covenants, contracts, or prudential considerations may

restrict cash that appears idle under this statistical measure, thereby limiting its usefulness for managerial decision-making.

Third, a critical gap exists between financial capacity and managerial intent. The study measures a firm's capacity to invest in social initiatives, but this does not guarantee the intent to do so. The presence of financial slack does not compel managers to allocate resources toward workforce ESG; they may instead prioritise dividends, share buybacks, or R&D.

Finally, the focus on EU-listed firms, whilst providing a harmonised regulatory environment, limits the generalisability of the findings. The specific institutional context of the EU, characterised by strong labour laws and mandatory ESG disclosures, may not be reflective of markets with weaker institutional frameworks or different corporate governance traditions.

V.V Future Research

The findings and limitations of this study suggest several directions for future research.

First, researchers should investigate the factors that determine whether managers actually deploy discretionary cash towards workforce ESG. Future studies could expand upon the findings by testing potential moderators such as debt covenants which may constrain cash use, CEO tenure which affects time horizons for human capital investment, board composition which influences strategic priorities, or human capital intensity, which may explain why some resource-rich firms invest in their workforce whilst others do not.

Second, given the institutional focus of this study, future research should explicitly examine the role of trade union strength across different EU countries. Highly unionised labour markets may demand higher workforce ESG investment even when financial slack is low, potentially moderating the relationship observed in this study. This would help clarify whether trade unions act as a substitute for internal financial slack.

Third, future research could examine the specific sub-components of workforce ESG investment rather than treating the composite score as a single outcome. Decomposing workforce ESG into dimensions such as employee compensation, health & safety investment, training expenditure, and other human capital initiatives would allow for a more granular understanding of how firms allocate resources across employees. This approach may help identify which components are most responsive to firms' financial conditions and if these relationships vary across institutional contexts, including emerging economies.

Fourth, further investigation is warranted to examine if the relationships observed in this study vary according to firm size and ESG reporting frequency. This would help assess the broader generalisability of the findings.

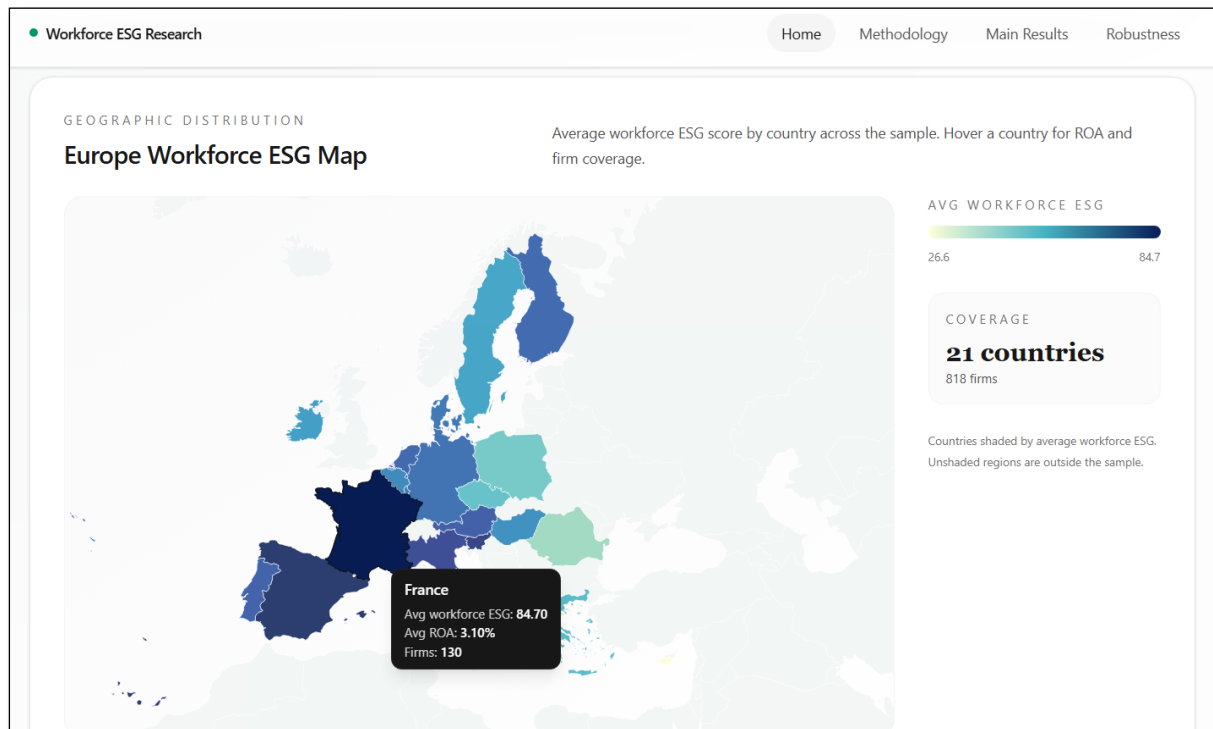
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APPENDIX

As mentioned previously, an interactive dashboard was developed to present the study's methodology, results, and visualisations in an accessible format.

The dashboard is available at: <https://omgupta.nl/WorkforceESG>



To further support managerial exploration of the findings, an interactive dashboard was developed that allows practitioners to examine the positioning of individual firms across the profitability and financial slack dimensions.

The dashboard enables users to select specific firms or industries and compare their residual financial slack, profitability, and workforce ESG scores against relevant industry averages. In addition, firms are classified into managerial quadrants based on their position relative to the overall sample medians for profitability and financial slack.

This tool enables users to identify and explore cases where firms with relatively low profitability, but high financial slack nevertheless exhibit above-average workforce ESG performance, thereby illustrating the heterogeneous relationships observed in the empirical analysis.

The dashboard is available at <https://omgupta.nl/WorkforceESG-PowerBI>



Consider the case of Innate Pharma SA in 2014. Against the full sample, the firm falls into the Low Profitability / High Slack quadrant: its ROA of $(-)$ 5.18% lies below the sample median of 4%, while its residual financial slack of 0.197 exceeds the sample median of $(-)$ 0.01. Based on profitability alone, the firm would appear to have limited resources available for discretionary investments.

The industry comparison tells a different story. Within the Biotechnology industry, where the average ROA was $(-)$ 15.09% and average residual financial slack was $(-)$ 0.039, Innate Pharma SA outperformed its peers on both financial dimensions. Its workforce ESG score of 99.44 also substantially exceeded the industry average of 62.97.

This example demonstrates why distinguishing residual financial slack from profitability may provide additional managerial insight. Although Innate Pharma SA appears unprofitable relative to the broader sample, it exhibits substantially higher residual financial slack than its industry peers and simultaneously exhibits exceptionally strong workforce ESG performance.

Classifying firms based on profitability alone would place Innate Pharma SA amongst firms with relatively weaker financial performance. However, the residual financial slack measure captures information that profitability alone does not: the firm held financial resources beyond those expected given its underlying characteristics and performance.

As a result, the example highlights how profitability and resource availability may convey different signals regarding a firm's potential capacity to support social initiatives.