## ESG Assurance and Cash Holdings: Evidence from 18 Countries in Africa

## Abstract

**Purpose:** This study investigates how environmental, social, and governance (ESG) assurance impacts a firm's cash holdings within the unique African context.

**Design/methodology/approach:** Using a staggered difference-in-differences (DiD) model, this study uses a panel data set based on a sample of 9,646 listed firms in 18 countries in Africa. The period of the sample covers 15 years, from 2009 to 2023. This study also mitigates potential endogeneity problems using a battery of tests.

**Findings:** Based on the stakeholder-agency and resource dependence theories, we find that ESG assurance reduces cash holdings. Specifically, this impact is more evident among firms with greater information asymmetry. Furthermore, our results suggest that following ESG assurance, firms reduce cash holdings and reallocate their resource toward the improvement of green investment and ESG performance.

**Originality:** This study differs from prior research in three ways. First, we uncover the role of ESG assurance in addressing the complexity of cash holding determination, particularly regarding the trade-off between agency problems and the risk of investment opportunity loss. Second, amid the scarce discussion of sustainability governance and cash holdings, we offer incremental knowledge of proactive sustainability governance to shape the cash holdings strategy. Third, we establish an overarching framework to incorporate a big picture of how firms leverage ESG assurance as a reflection of sustainability governance to address the challenges regarding external stakeholder relationships and critical resource access.

**Research implications:** This study assists managers, capital providers, and policymakers in leveraging ESG assurance as a mechanism to manage different interests among stakeholders and a consideration of resource allocation.

Keywords: Environmental, Social and Governance (ESG), ESG Assurance, Cash Holdings, Africa

Paper type: Research paper.

## 1. Introduction

Rising sustainability issues confront firms with challenging resource access (Teotónio et al., 2020) and intensifying conflicts between stakeholders' economic interests and sustainability goals (Mazziotta et al., 2023). Sustainability challenges have been associated with inefficient resource allocation due to the increase in production costs and a reduced output quality (BSR, 2018).<sup>1</sup> At the same time, businesses are under intense pressure to satisfy the different or conflicting interests of multiple stakeholders (Dias et al., 2024).<sup>2</sup> In light of this complex intricacy between economic goals and environmental, social, and governance (ESG) impact, resource dependence theory highlights that firms need to adopt a strategic approach to secure essential resources through managing inter-organisational relationships (Taylor et al., 2018). While external parties are relatively less controllable, this study focuses on internal mechanisms to pursue this strategic move. Specifically, we highlight the role of cash holdings (Dittmar et al., 2003; Harford et al., 2008), which presents both an inherent agency problem and a resourceful potential to capture new business opportunities (Li et al., 2020; Ma et al., 2020). While the sustainability pressure is getting more intense, we address whether and how ESG assurance<sup>3</sup> as a signal of sustainability governance helps firms to manage cash holdings efficiently while maintaining their access to resources from external stakeholders.

Cash holdings have been a critical part of corporate finance strategy, with a focus on whether there is an optimal level of liquid assets (Opler *et al.*, 1999) and the justification and trade-offs for cash balances (Farooq and De Villiers, 2018; Farooq and de Villiers, 2019; Bradbury *et al.*, 2022). Beyond its critical role as the liquidity reserve (Li *et al.*, 2020; Ma *et al.*, 2020), the logic of stakeholder-agency theory can expose a dynamic tension in the determination of cash holdings. On the one hand, excessive cash holdings might introduce firms with agency concerns due to low returns and discretionary spending (Dittmar *et al.*, 2003;

<sup>&</sup>lt;sup>1</sup> For instance, Woetzel *et al.* (2020) predict that more frequent hurricanes could disrupt supply chains up to four times more severely by 2040. Further, Eurozone banks need to allocate  $\in$ 1.3 trillion to fund businesses that are exposed to severe droughts (Financial Times, 2025). These examples point to inefficiencies in resource allocation, which in turn hampers productivity.

<sup>&</sup>lt;sup>2</sup> Despite the public interest in environmental sustainability, the world's renowned companies, such as BP, ExxonMobil, Total, Shell, and Chevron, spend approximately US\$ 200 million annually on lobbying efforts aimed at controlling, delaying, or blocking climate-related policies (Transparency International, 2021). Further, while their core interest remains for profit maximisation, big investors such as Blackrock, Vanguard, and State Street have a direct engagement with firms to support shareholders' proposals on climate-related actions (Diaz-Rainey *et al.*, 2023).

<sup>&</sup>lt;sup>3</sup> "The objective of an assurance, whether reasonable or limited, is to obtain evidence to support a conclusion (The International Auditing and Assurance Standards Board, 2024). Assurance is defined as formal statements issued by independent professional assurance providers as a result of evidence-based process that that supports conclusions (KPMG, 2008)

Jensen, 1986). On the other hand, a lower cash reserve may be detrimental to stakeholders who prioritise economic value creation through capitalisation on new investment opportunities (Li *et al.*, 2020; Ma *et al.*, 2020). Previous studies have explored cash-holding strategies as tools for satisfying the different interests of various stakeholders. For instance, firms adjust their cash holdings to address the interests of good corporate governance (Gupta and Krishnamurti, 2023), social responsibility (Chang *et al.*, 2019), employee well-being (Ghaly *et al.*, 2015), transfer pricing agreements (Alghamdi *et al.*, 2024), and adapting to regulatory shocks (Chang *et al.*, 2024). Further, stakeholders with stronger sustainability concerns may encourage firms to accumulate more cash reserves as a buffer against ESG-related risks (Zhang *et al.*, 2023). However, the latter motive may conflict with the efforts to address the agency problem and could potentially lead to suboptimal economic returns. A cash-holding strategy that synchronously considers differing stakeholders' interests in sustainability, agency concern, and economic return remains largely unexplored. Following the logic of resource dependence theory, this agenda is crucial as firms are dependent on diverse external parties to provide their necessities for critical resources (Pfeffer and Salancik, 1978).

In taking up corporate cash holdings, we address a factor that is highly relevant to the current business challenge: sustainability governance. With the heightening pressures on sustainability concerns, transparency and accountability on the corporate impact on sustainability have become a critical interest among different stakeholders (Bepari and Mollik, 2016). Grounded in stakeholder-agency theory, we investigate ESG assurance as a form of sustainability governance that helps to reduce information asymmetry between firms and external stakeholders (Steinmeier and Stich, 2017). ESG assurance serves as a governance mechanism that enables firms to signal good sustainability practices to stakeholders (Free et al., 2024). This independent verification plays as a governance mechanism to manage different stakeholder expectations and reinforce trust across different interest groups (Ruhnke and Gabriel, 2013; Kolk and Perego, 2010). Accordingly, ESG assurance contributes to shaping firms' position as agents in their contractual relationships with multiple principals (Zaman et al., 2021). In this regard, we argue that ESG assurance helps firms to make a win-win decision, including in determining cash holdings. We posit that firms with ESG assurance can maintain low cash holdings and good stakeholder relationships. In turn, when new opportunities arise, firms can leverage their stakeholder relationships to secure necessary resources and seize new investment opportunities. Accordingly, we hypothesise that ESG assurance reduces cash holdings.

This study focuses on 18 countries in Africa, with their large population for a huge opportunity for a youthful labour force and a large consumer market (AfDB/OECD/UNDP, 2015), but at the same time, significant risks and concerns exist regarding whether the demographic dividend matches resource use sustainability (Weny et al., 2017; Canning et al., 2015). Based on a staggered difference-in-differences (DiD) model, our investigation is constructed on a sample of 18 countries in Africa from 2009 to 2023, consisting of 9,646 firmyear observations. Our result shows that ESG assurance reduces corporate cash holdings, which is consistent with our hypothesis. Our result remains consistent after addressing endogeneity concerns using a battery of tests. First, we ascertain the validity of our DiD model using parallel trend tests by examining the pre-treatment trends between the treatment and control groups (Beck et al., 2010). Second, we address the potential endogeneity problem of self-selection bias due to non-random mutual selection and other functional misspecification. We follow previous studies to match the sample based on the propensity scoring mechanism and entropybalancing (Fenizia and Saggio, 2024; Cao et al., 2025b). Third, we also address a concern that the estimates may be biased by firms that never adopt ESG assurance; this study re-estimates the model by excluding firms that never have ESG assurance from the sample. Fourth, we examine the robustness of our results by testing alternative model specifications with different fixed effects. Fifth, we re-estimate our models by controlling for more country-level and firm board variables. Sixth, this study mitigates the endogeneity concerns due to omitted variable bias using a bound estimate approach (Oster, 2019a; Cao et al., 2025a). Seventh, we also address potential bias in staggered DiD due to heterogeneous treatment effects and time-variant treatment (Baker et al., 2022). Specifically, we adopt alternative estimators based on Sun and Abraham (2021) and a stacked regression estimator based on Cengiz et al. (2019). Our baseline result remains robust and consistent across all endogeneity tests. Furthermore, our heterogeneity analysis indicates that the role of ESG assurance in reducing cash holdings is more evident among firms with greater information asymmetry. Moreover, firms that reduce cash holdings following the adoption of ESG assurance allocate more resources to pursue green innovation and ESG performance.

We contribute to the literature in three aspects. First, we expand the extant studies on the consequences of ESG assurance. Previous studies document that ESG assurance affects the credibility of sustainability reporting (Baier *et al.*, 2022; Xiao and Shailer, 2022; Du and Wu, 2019; Farooq and de Villiers, 2019), firms' legitimacy (O'Dwyer *et al.*, 2011), investors' evaluation (Cheng *et al.*, 2015; Hoang and Trotman, 2021; Reimsbach *et al.*, 2017; Khaireddine

*et al.*, 2023; Clarkson *et al.*, 2019), and firm valuation (Opler *et al.*, 1999; Dittmar *et al.*, 2003; Opler *et al.*, 2001). We contribute to this discussion by uncovering the role of ESG assurance in shaping firms' financial strategy, particularly in addressing the complexity of cash holdings determination. While existing studies largely focus on the reputational and valuation effects, we unveil the unaddressed impact of ESG assurance on internal strategy. Specifically, from the perspective of stakeholder-agency and resource dependence theories, our study suggests that ESG assurance enables firms to optimise liquidity through leveraging stakeholder relations.

Second, this study bridges the gap between sustainability governance and financial strategy by emphasising the significant role of a proactive governance strategy. The plethora of literature discusses the good corporate governance impact on cash holdings, such as ownership structure (Nikolov and Whited, 2014), governance efficiency (Gao et al., 2013), and audit quality (Kim et al., 2014). However, despite the growing pressures from sustainability issues, research focusing on sustainability governance and cash holdings remains scarce. Specific discussions on sustainability governance highlight that firms adjust their cash holdings as a response to external pressures from regulation and the market. Jadiyappa et al. (2021) find that a formal mechanism from regulatory shock might lead to inefficient cash holdings. In contrast, firms reduce their cash holdings in response to implicit governance from less formal mechanisms, namely, sustainability-based discipline from the market (Liu et al., 2023) and country-level sustainability performance (Aljughaiman et al., 2024). We provide empirical evidence that ESG assurance plays a role as a voluntary internal mechanism influencing corporate cash holdings. Our finding offers incremental knowledge that proactive sustainability governance choices can lead to efficient cash holdings. Moreover, our study offers an insight that proactive sustainability governance can be aligned with greater interests to manage stakeholder relationships, resource access, and financial strategy.

Third, based on the stakeholder-agency and resource dependence theories, we establish a theoretical framework to show how ESG assurance works as an initiative to manage efficient cash holdings. Amid the growing sustainability awareness, ESG assurance emerges as an initiative to maintain trust from a range of stakeholders through reducing information asymmetry on sustainability impact (Casey and Grenier, 2015). This effort to build a trustworthy relationship implies firms' commitment to address different stakeholders' interests (Chen *et al.*, 2023). Accordingly, a trustworthy relationship would further help firms to access external resources. With regard to cash holdings strategy, acknowledging that reserving excessive cash balances might expose firms to agency concerns, firms can leverage the strong

stakeholder relationships to rationalise low cash holdings. Specifically, harmonious stakeholder relationships can serve as a resource buffer when firms need additional cash. In addition, in response to the increasing pressures from sustainability concerns, firms reduce cash to be reallocated to pursue green innovation and ESG performance improvement. Overall, our framework implies that sustainability governance plays a central role in managing stakeholder relationships and securing resource access in today's business landscape. We present our theoretical framework in Figure 1.

## [Figure 1]

## 2. Theoretical foundation and hypothesis

#### 2.1 Institutional setting

The variation of ESG activities is prevalent within the African market. Africa is a diverse continent comprising 55 countries and is clustered into five geographical regions: Central, Eastern, Northern, Southern, and Western (The African Union, 2024a). Each country is independent and pursues its constitutional, policy, legal, institutional and regulatory agenda. According to The African Union (2024b), peer review mechanism reflects the corporate governance initiatives covering the company's relations with stakeholders in line with the framework of sound governance and the common good issued by NEPAD<sup>4</sup> in 2003. At the national level, countries that have issued corporate governance codes include Kenya, Egypt, Morocco, South Africa, and Nigeria. In Egypt, the 2005 code, as updated by various sectorspecific codes for listed companies, the private sector, and the public sector, provides governance for stakeholder engagement (Egyptian Institute of Directors, 2024). In Kenya, the 2002 Corporate Governance Guidelines apply as supplemented by supplementary regulations to guide listed companies in corporate governance (Government of Kenya, 2022). In Nigeria, the 2018 governance code and the 2011 code for public companies are the principal sources of corporate governance requirements (Chambers and Partners, 2024). In Morocco, the Moroccan Code of Good Corporate Governance Practices 2008 provides guidelines to companies to improve their performance, competitiveness, and stakeholder engagement (Carrots & Sticks, 2024). In South Africa, corporate governance is founded on the "King Code" (currently King IV of 2016), which provides for consideration of all stakeholders and applies to any organisation rather than companies only (Bowmans, 2016).

<sup>&</sup>lt;sup>4</sup> New Partnership for Africa's Development (NEPAD) is an African Union initiative to champion sustainability, integration of Africa with the world economy, eradicate poverty, and gender empowerment.

A notable initiative was South Africa, which was guided using an integrated reporting framework in 1994 and has become a role model for other African countries and globally. Out of the track record in implementing integrated reporting, companies have taken a step further to have the reports voluntarily verified by an independent third party. Companies that have demonstrated consistency in sustainability reports also have their ESG reports rated by ESG rating firms, thus, to some extent, resulting in the standardisation of their sustainability reporting. Thus, institutions differ significantly across countries, and the diversity of institutions is reflected in ESG assurance practices across the African market.

#### 2.2 Theoretical foundation

This study employs resource dependence and stakeholder-agency theories as a standpoint to comprehend ESG assurance and cash holding in the context of growing sustainability pressures. Resource dependence theory explains that firms fulfil their need for critical resources by acquiring them from external parties (Pfeffer and Salancik, 1978). A wide range of external stakeholders contribute to firms, such government that delivers protection, input factors from suppliers and labour markets, and revenues from consumers (Hendriks *et al.*, 2017). In the current business landscape, with the more intense risks and uncertainty, firms need to actively manage inter-organisational arrangements to maintain control over scarce resources (Davis and Cobb, 2010). Specifically, under the surging sustainability pressures, resource providers consider the social responsibility image in making decisions on resource allocation (Drees and Heugens, 2013). In this inter-organisational dependency, our study views ESG assurance as one of the firms' strategies to build their reputation (Simnett *et al.*, 2009). Further, when firms can secure access to external resources, they would not consider holding more cash on hand as a safety buffer (Li *et al.*, 2020).

We also discuss ESG assurance and cash-holding decisions from the perspective of stakeholder-agency theory. Standing on the traditional agency theory, Hill and Jones (1992) introduce the stakeholder-agency theory to capture the implicit and explicit contractual relationship between firms and a broad range of stakeholders. These stakeholders can include suppliers, employees, consumers, communities, and the public (Nadeem, 2021). Beyond the investment from shareholders, these stakeholders also contribute to the firm with various valuable resources in exchange for the fulfilment of their interests (Chen *et al.*, 2023). Managers occupy a central position in the contractual relationship, playing a critical role in strategically allocating resources to align with the interests of all stakeholders (Hill and Jones, 1992).

With a broadened concept of "principal" in traditional agency theory, stakeholder-agency theory views managers as agents accountable to a range of stakeholders (Hill and Jones, 1992; Chen *et al.*, 2023). Therefore, the inherent problem in stakeholder-agent relations is rooted in the conflicting interests and asymmetric information between managers and the other stakeholders (Zolotoy *et al.*, 2021). Specifically, there is a notable risk of managers' opportunism to influence resource allocation among varied stakeholders (Yin *et al.*, 2023). Furthermore, stakeholder-agency theory highlights the differential power among stakeholders due to varied degrees of resource dependency, which is particularly applicable amid the shortrun market disruptions (Whitehead and Belghitar, 2022; Hill and Jones, 1992). In this disequilibrium, a new balance can be initiated through governance mechanisms (Whitehead and Belghitar, 2022). However, the asymmetric information between agents and stakeholders is not easy to address using governance mechanisms, due to the absence of board representation for non-shareholders (Zolotoy *et al.*, 2021).

Contractual relationships from the perspective of stakeholder-agency theory are broader than those discussed in the traditional agency theory. The firms' relations with nonshareholders are different from those with capital providers. Non-shareholders do not have a direct vested interest in claiming financial benefits from firms, which further implies that their pressures on environmental initiatives are not conflicting with profit-generating interests (Tauringana and Chithambo, 2015). However, their interest in sustainability initiatives matters for firms to maintain access to the resources (Tauringana and Chithambo, 2015). In this regard, agents have the motivation to preserve the firm's reputation as the strategic pathway to pursue economic goals (Yin et al., 2023). With the voluntary nature of ESG assurance, this study considers an independent audit on sustainability reporting as a governance strategy to manage different interests among stakeholders, and at the same time, addressing agency problems between managers and stakeholders. ESG assurance builds trust amid the firms' efforts to engage with different stakeholders (Kogi et al., 2025), including the strategy to balance conflicting interests of economic goals and long-term sustainability. Further, the accountability value in ESG assurance is considered a signal of sustainability governance and commitment to managing the increase of ESG risks and the associated agency costs (Hay et al., 2023).

### 2.3 ESG assurance

ESG assurance is a mechanism for ensuring the credibility and verifiability of sustainability reporting (World Economic Forum, 2023; PWC, 2024; EY, 2022). Concerns about the integrity and credibility of ESG reports have increased the need for independent

assurance of such reports (Carey *et al.*, 2021; Cohen and Simnett, 2014; Bui *et al.*, 2021). In the absence of mandatory assurance, firms' size, membership in environmentally sensitive industries, and stakeholder-oriented environment play a role that motivates firms to voluntarily assure their sustainability reports (Simnett *et al.*, 2009; Mock *et al.*, 2007). Further, firms consider sustainability assurance to match their peers, with the goal of gaining credibility (Sethi *et al.*, 2017; Gipper *et al.*, 2024a). Furthermore, firms may obtain ESG assurance either from financial or non-financial service providers, with most firms leaning toward financial assurance firms (Gipper *et al.*, 2024a). In this regard, the accounting profession is central to ESG assurance and contributes to its value by testing and evaluating processes, systems, and controls (The Center for Audit Quality, 2020). Moreover, there is an argument that voluntary ESG assurance reflects a weak legal and regulatory environment (Sethi *et al.*, 2017). However, there is also evidence that demand for voluntary assurance is present even in strong and developed legal and regulatory environments (Kolk and Perego, 2010).

Taking the perspective of stakeholder-agency theory, ESG assurance is considered a strategy to build trust in firms' relationships with various stakeholders (Kogi et al., 2025). Assurance of ESG reporting is meant to progress internal reporting and improve engagements with external stakeholders (O'Dwyer and Owen, 2005). Stakeholders consider ESG assurance to distinguish firms with substantive ESG actions from those with mere claims (Gipper et al., 2024a). However, new dimensions have arisen regarding agency issues where executive compensation is tied to ESG assurance. Brown-Liburd and Zamora (2015) find that the faithful representation of authentic ESG activities by managers is received with scepticism by investors, where executive pay is tied to sustainability. Thus, there is a need for independent assurance of such reports. Sustainability assurance reduces the information asymmetry by providing externally verified disclosures from independent auditors (Casey and Grenier, 2015). Furthermore, the role of ESG assurance within the firm-stakeholder relationship can also be viewed from the perspective of resource-dependence theory. With a more sustainable image, firms are more likely to access external resources (Tan et al., 2025). For instance, voluntary assurance of sustainability information reduces the cost of equity capital, attracting committed institutional investors and raising larger fund flows (Dhaliwal et al., 2011). The benefits of voluntary sustainability assurance include improving access to capital providers and, thus, no need to hold cash (Carey et al., 2021).

2.4 Cash holdings

Cash is an outcome and medium within which capital is deployed to the business, and integrated thinking requires a holistic approach to cash, given its significance in the company value creation process (IFRS Foundation, 2022). Companies hold cash for various reasons and motives, such as precaution for unseen events, transaction purposes, or speculative reasons (Keynes, 1937). The past few decades have witnessed companies around the world considerably raise their levels of cash holdings in reaction to erratic and uncertain cash flow requirements to finance operations and make investments (Opler *et al.*, 1999). There are benefits and costs of holding cash. The main benefits of holding cash are avoiding the transaction-related costs associated with raising capital or selling assets and the flexibility of using internal funds to finance business operations and investments (Opler *et al.*, 1999). However, despite the benefits, holding cash has a cost because large levels of cash may lead to a low return on investments (Dittmar *et al.*, 2003). The main costs of holding cash are the lower rate of return, tax disadvantages on interest and dividends, and potential agency costs (Opler *et al.*, 2001). Furthermore, there is a risk that managers may intentionally hold more cash levels to escape the discipline and transparency that come with external funding (Jensen, 1986).

From the perspective of resource-dependence theory, the degree to which firms can secure access to critical resources influences the firms' cash holdings (Li *et al.*, 2020). Resource-constrained firms tend to hold more cash to mitigate the costs associated with future financing needs, and vice versa (Habib and Hasan, 2017). In this condition, firms use cash on hand as a buffer against potential risks and reserve to seize new opportunities (Li *et al.*, 2020; Ma *et al.*, 2020). Further, cash holdings are another perspective of corporate governance<sup>5</sup> issues arising from agency problems (Dittmar *et al.*, 2003; Harford *et al.*, 2008). An agency problem emerges when the earnings on cash holdings may be lower than the cost of capital, and at the same time, managers might hold more cash to benefit themselves (Jensen, 1986; Li *et al.*, 2020). This agency problem highlights that the managers' opportunism regarding cash might result in taking self-interest at the expense of stakeholders' interests (Chowdhury *et al.*, 2021).

## 2.5 ESG assurance and cash holdings

From the perspective of stakeholder-agency theory, firms need to maintain trustful relationships that demonstrate their commitment to the different interests of external parties (Chen *et al.*, 2023). In this regard, ESG assurance sends a specific signal that firms put efforts

<sup>&</sup>lt;sup>5</sup> The term "corporate governance" concerns the relationships between insiders (corporate managers, directors and shareholders) and outsiders (stakeholders and society). Policies, legal and regulatory frameworks and practices that enable the company to meet its mandate (Gregory and Simms, 1999).

into addressing stakeholders' needs on sustainability through ESG governance and risk management (Hay et al., 2023). While ESG assurance is voluntary, it reflects two important messages within the firm-stakeholder relationships. Firstly, obtaining external assurance is a particularly informative signal to the market on the long-term sustainability of the business (Du and Wu, 2019). Secondly, assurance communicates to the stakeholders that the sustainability report is credible and reliable, thus representing faithfulness (Martinez-Ferrero and Garcia-Sanchez, 2017). The involvement of independent assurers also addresses asymmetric information between external stakeholders and the agent (Casey and Grenier, 2015). Based on the perspective of resource dependence theory, sufficient and credible sustainability reporting helps to convince external stakeholders who hold critical resources (Herremans et al., 2016). In this regard, sustainability governance contributes to framing the firms as "good citizens", which further helps them access scarce resources (Wolf, 2013). Overall, ESG assurance supports the development of trustworthy stakeholder relationships, which further facilitates them to secure economic resources from external parties. In contrast, the absence of ESG assurance may signal weaker commitment to sustainability, thereby undermining stakeholder confidence and limiting access to essential resources, including those that are environmentally sensitive.

Cash is an important medium of value creation (IFRS Foundation, 2022), however, the determination of cash holdings may consider the associated risks and opportunities (Li et al., 2020; Ma et al., 2020). Holding more cash may give rise to agency problems, but it provides firms with available resources to seize opportunities (Chowdhury et al., 2021; Ma et al., 2020). In contrast, maintaining low cash reserves can reduce the risk of managerial opportunism, but hinder firms from responding to unforeseen investment opportunities. However, this trade-off can be alleviated if firms have reliable access to external funding sources (Li et al., 2020). In this regard, a strong relationship with external stakeholders plays an important role in facilitating access to resources (Davis and Cobb, 2010), including timely and cost-effective funding. In light of the rising eco-consciousness, fund providers increasingly consider sustainability factors in their capital allocation (Asimakopoulos et al., 2023). Beyond traditional financial metrics, the contemporary business landscape puts pressure on the capital providers to incorporate sustainability aspects in their credit analysis (Malone et al., 2025). Businesses omitting sustainability aspects would risk losing their social license to operate, which also threatens their continuity (Issa and Zaid, 2023). In this sense, firms with a strong sustainability image are more likely to access funding resources (Li et al., 2024). Accordingly,

we argue that firms with a more sustainable image may have more opportunities to access cash from external parties. Considering that ESG assurance is a signal of ESG initiatives and credible sustainability reporting, they would have more opportunities to access cash. *Ceteris paribus*, firms with ESG assurance would hold lower cash than those without ESG assurance.

H1: ESG assurance results in lower cash holdings.

#### 3. Data, sample, and research design

#### 3.1 Data and sample construct

We get data on Africa-listed<sup>6</sup> firms from 2009 to 2023 from the LSEG Refinitiv database. The existing study relies on Refinitiv as a source of ESG assurance data (Gipper *et al.*, 2024a). The sample begins in 2009 because of the availability of data and ends in 2023 as the last period of available data at the time of collection. We also collect data on firms' cash holdings and other characteristics from the same database. Country control variables are collected from the World Bank. Table 1 Panel A presents the process of determining our sample. Our initial data comprises 16,350 firm-year observations. Following Gipper *et al.* (2024a), we limit our studies to listed firms because ESG reporting and assurance are concentrated on these firms. First, we eliminate 4,365 firm-year observations relating to financial services firms, because of their distinct reporting requirements and regulated regimes. Second, we remove 1,893 firm-year observations with missing data on cash holdings. Third, we remove 446 firm-year observations with missing data on control variables. Consequently, the final sample comprises 9,646 firm-year observations are consistent with recent ESG assurance-related studies.<sup>7</sup>

## [Table 1]

Table 1, Panel B shows the distribution of our sample. The numbers and frequencies of observations show a steady trend throughout the period. From 2009, the annual average values of cash holdings for ESG-assured firms are lower than the average values for non-ESG-assured firms, and conclude that firms will hold less cash after ESG assurance. However, the mean cash

<sup>&</sup>lt;sup>6</sup> African capital market ecosystems comprise 37 countries, 25 exchanges and 1,100 listed companies (African Securities Exchanges Association, 2024).

<sup>&</sup>lt;sup>7</sup> Data and the extent of ESG assurance are key issues in ESG assurance, both in developed and emerging markets. Gipper *et al.* (2024a) have 6,088 firm-year observations on the assessment of the US market, Carey *et al.* (2021) have 3,212 firm-year observations from 39 countries, Oware *et al.* (2024) have 800 firm-year observations from the Indian market, Liao *et al.* (2018) in their China market study have 2,054 firm-years observations, Simoni *et al.* (2020) have 1,596 firm-year observations from European countries, while Maroun (2022) have 200 firm-year observations in their South African study.

holdings are higher for ESG-assured firms than non-ESG-assured firms for the consecutive 3 years in the periods 2019, 2020, and 2021, and this may be attributable to the disruptions arising from the 2019 global pandemic. We winsorise continuous variables at the 1st and 99th percentiles to alleviate the effect of outlier observations.

As highlighted in the previous sections, ESG assurance is voluntary. We note that despite Africa having 55 countries, only 18 countries<sup>8</sup> have company data, and this is driven by the presence of securities markets in these countries. This is corroborated by previous studies (Chipeta *et al.*, 2021; Mnif and Slimi, 2023; Mnif and Slimi, 2024). Moreover, out of these 18 countries, South Africa takes the lead with 526 ESG-assured firm years, followed by Egypt with eleven, Kenya with four, Morocco with six, and Nigeria with one firm-year observation. Table 2 highlights the sample distribution by country across the African regions.

## [Table 2]

The large number of observations in South Africa may be attributed to the adoption of the Kings Code<sup>9</sup> in South Africa. Despite the diversity of African settings, past studies focusing on various issues in the African region have examined a few select countries. For example, Erin and Ackers (2024) examine sustainability reporting and its linkage with assurance and board attributes for 10 African countries. Further, Tilt *et al.* (2021) examine trends in sustainability disclosure covering 22 African countries. Therefore, although our study covers the entire African market, only select countries from the sample, consistent with these past studies that also covered select countries.

#### 3.2 Research design

#### 3.2.1 Model specification

We use a staggered DiD model to investigate the effect of voluntary ESG assurance on cash holdings as follows:

# $CASHHOLDINGS_{it} = \alpha_0 + \beta_1 ESG_assurance_{it} + Controls_{it} + FirmFE + YearFE + \varepsilon_{it}$

The subscripts *i* and *t* indicate the firms and year, respectively, and  $\varepsilon$  is the error term. The outcome variable *Cashholdings<sub>it</sub>* denotes cash holdings and is defined as cash and cash

<sup>&</sup>lt;sup>8</sup> Botswana, Burkina Faso, Egypt, Ghana, Ivory Coast, Kenya, Malawi, Mauritius, Morocco, Namibia, Nigeria, Senegal, South Africa, Tanzania, Tunisia, Uganda, Zambia, and Zimbabwe

<sup>&</sup>lt;sup>9</sup> Corporate Governance in Africa was pioneered in South Africa by the introduction of the Kings Code in 1994 (KingI), with four revisions made to date. King IV report of 2009 introduces a more pragmatic approach and widens the scope of organisation on an apply and explain basis (Bowmans, 2016).

equivalents to total assets. The variable of interest, *ESG\_assurance*<sub>it</sub>, denotes a company's voluntary decision to have ESG reports independently assured and is measured as either zero or one. The voluntary ESG assurance is implemented on a firm basis and, therefore, fits into a provides a strong background for our analysis.

*Controls*<sub>*it*</sub> represents control variables. We use several control variables, in line with previous research (Carey *et al.*, 2021; Bates *et al.*, 2009). In particular, controls include *Firm Size, ROA,* leverage ratio (*Leverage*), distribution of dividends (*Dividends*), *Working Capital,* firm market size in proportion to book (*Market-to-Book*), growth opportunities (*Revenue Growth*), a measure of maturity (*Lifecycle*), earnings (*EBIT*) and investments in capital expenditure (*CAPEX*). We include firm and year-fixed effects. Standard errors are clustered at the country level. Our key variable of interest is *ESGassurance*<sub>*it*</sub>. The coefficient  $\beta$ , denotes the effect of ESG assurance on firms' cash holdings. Appendix 1 provides a description of the variables.

#### 3.2.2 Measures of cash holdings

For our analysis, we view cash as a central aspect of the capital plan. Company capital requirements are important, and managers spend their time either raising capital, investing capital, optimising capital, or preserving capital (EY, 2024). Therefore, the main ratio we examine in our study is cash and cash equivalents scaled to total assets. We follow Chen *et al.* (2015) to measure firms' cash holdings by cash and cash equivalents scaled to total assets. We use cash and cash equivalents taken directly from the balance sheets.

#### 3.2.3 Measures of ESG assurance

An assurance report is defined as a formal statement issued by independent professional assurance providers as a result of an evidence-based process that supports conclusions (KPMG, 2008). Assurance further refers to the independent third-party confirmation of company-reported ESG metrics on a limited or reasonable basis (Gipper *et al.*, 2024b). One is if a firm has its ESG reports externally assured, and zero if not assured. ESG assurance denotes a company's voluntary decision to have ESG reports independently assured by audit firms and other service providers (Du and Wu, 2019; Al-Shaer and Zaman, 2018; Kilic *et al.*, 2021).

#### 4. Empirical results

#### 4.1 Descriptive statistics

Table 3 presents the descriptive statistics in our baseline model. Our primary dependent variable in the treatment group, cash holdings (*Cash Holdings*), has an average value of 0.084 and a standard deviation of 0.064, implying low variation in firms' cash holdings. ESG assurance comprises 551 of 9,646 firm-year observations, demonstrating that ESG assurance encompasses only 5.71% of the firm-year observations of the sample. As ESG assurance is not mandatory even in developed markets, a low average is expected for Africa as a developing market. However, an exception is drawn to South Africa, where Maroun (2022) documents a mean of 61.0% for companies with some ESG assurance and 39.0% for companies without ESG assurance using the South Africa sample. Consequently, listed companies in South Africa have had more time to implement sustainability reporting, corporate governance, and ESG assurance in a mature setting under the Kings Code than in other African countries.

## [Table 3]

Moreover, KPMG (2024) highlights that sustainability assurance is prevalent among European companies, with 59 per cent of companies obtaining some assurance. At the same time, in Africa, the practice is much less common, with just 34 per cent of companies obtaining assurance over their sustainability disclosures. ESG assurance is largely concentrated in South Africa, a pioneer country in integrated reporting since 1994. Therefore, a large portion of firm-year observations is from South Africa.

#### 4.2 Baseline results

Table 4 shows the impact of ESG assurance on cash holdings. We calculate cash holdings as cash and cash equivalents scaled to total assets (Chen *et al.*, 2015). In column (1), we exclude all control variables to mitigate the effects of including other covariates (Gormley and Matsa, 2014). In columns (2) and (3), we incorporate control variables. Findings show that the effect of ESG assurance on firms' cash holdings is statistically significant. Columns (1) to (3) show that the coefficients on *ESG Assurance* (-0.005, -0.008, and -0.008) are all negative and significant at the 1% and 5% levels. This shows that ESG-assured firms significantly decrease their cash holdings in reaction to ESG assurance. These results support *H1*.

#### [Table 4]

The agency view holds that a high ESG result is associated with managerial positions, which harms cash holdings (Dittmar *et al.*, 2003). Managers use high ESG to respond to the different interests of stakeholders through a signal of ESG governance (Hay *et al.*, 2023) and long-term sustainability (Du and Wu, 2019). This results in better decision-making because

ESG policies and activities reduce potential lawsuits, negative media coverage, and consumer actions. (Arouri and Pijourlet, 2017). The engagement to ESG assurance shapes the trustworthy stakeholder relationships, which in turn, enhance firms' opportunities to access external funds (Li *et al.*, 2024). Therefore, our hypothesis is supported, that firms with ESG assurance hold lower cash.

## 4.3 Robustness check

#### 4.3.1 Parallel trend analysis

The DiD model assumes a parallel trend between two groups of variables prior to obtaining ESG assurance. Without ESG assurance, the cash holdings of ESG-assured firms and non-ESG-assured firms will not differ systematically over time. We, thus, conduct the dynamic impact of ESG assurance on corporate cash holdings. The results are shown in Table 5. The indicator variables *ESG Assurance Pre\_X* (X=1, 2, and 3) capture whether a firm-year observation occurs three, two, or one year prior to obtaining ESG assurance in year *t*, and zero otherwise. The indicator variables *ESG Assurance Current* equals one when firms have ESG assurance in year *t*, and zero otherwise. The indicator variables *ESG Assurance Post\_X* (X=1, 2, and 3) capture whether a firm-year observation occurs three, two, or one year after obtaining ESG assurance, respectively. Across all columns, we find that the coefficients on *ESG Assurance Pre\_X* (X=1, 2, and 3) are all statistically insignificant. However, the coefficients on *ESG Assurance Current* and *ESG Assurance Post\_X* (X=1, 2, and 3) are negative and statistically significant. These results confirm that the observed decrease in corporate cash holdings is driven by the acquisition of ESG assurance, offering robust and convincing support for the validity of our DiD model.

## [Table 5]

### 4.3.2 Using the matched sample

We address concerns that changes in corporate cash holdings may result from firm-specific characteristics between ESG-assured firms and non-ESG-assured firms instead of the adoption of ESG assurance. PSM estimates the treatment model and then pairs treatment observations to control observations on the resulting propensity score, giving a weight of either one (matched) or zero (unmatched) to each control observation (McMullin and Schonberger, 2020). Using the matched observations, we approximate the difference in cash holdings between the treated and propensity-matched control samples. Table 6 column (1) documents the results of

PSM, and the coefficient of *ESG Assurance* (-0.019) remains negative. The result shows that the baseline results in Table 4 are consistent after employing the PSM approach.

We employ an entropy-balancing approach to moderate sample-selection bias due to nonrandom selection following previous studies (Basu *et al.*, 2022; Bonsall and Miller, 2017). Table 6 column (2) documents show that the baseline results in Table 4 are consistent after employing the entropy balancing approach. The coefficients on *ESG Assurance* (-0.008) are negative and significant at the 1% level. These findings in Table 6 are consistent with those in Table 4, confirming the robustness of our baseline results. Thus, the sample selection bias does not influence our baseline results.

## [Table 6]

#### 4.3.3 Excluding firms without ESG assurance throughout the sample period

We observe that, on average, firms' ESG assurance currently stands at a modest fraction of the full sample. A plausible reasoning is that the inherent constraints and unobserved heterogeneity between firms have ESG assurance and firms never have ESG assurance throughout the sample period. This may hinder their capabilities to gather ESG assurance. To address this concern, we exclude firms that never have ESG assurance throughout the sample period and rerun the baseline analysis.

In Table 7, we apply the PSM approach and entropy balancing tests. In column (1), we employ the PSM approach, and the results show that the coefficient of *ESG Assurance* (-0.021) is negative and consistent with baseline results. In column (2), we employ entropy balancing, and the results show that the coefficient of *ESG Assurance* (-0.010) is also negative and consistent with baseline results. In both tests, the results are robust and confirm that our sample is not influenced by sample selection bias.

[Table 7]

#### 4.3.4 Control for other fixed effects

In this section, we test whether our estimates are sensitive to different specifications of fixed effects. We incorporate the industry-fixed effects to control for unobserved time-invariant heterogeneity in industries. We include industry-year-fixed effects to control for unobserved time-variant heterogeneity in industries. We also incorporate country-year-fixed effects to account for unobserved time-variant heterogeneity in countries. Table 8 shows that the coefficients on *ESG Assurance* (-0.020 and -0.020) remain negative and significant at the 1%

level. These results confirm the robustness of baseline results after controlling for other fixed effects.

## [Table 8]

## 4.3.5 Control for country level and firm board variables

Relying on the extant literature (Chipeta *et al.*, 2021; Nnadi and Soobaroyen, 2015; Chen *et al.*, 2020), we introduce country-level control variables (*GDP\_Current, GDP\_Growth, GDP\_Capital, Regulatory Quality, Rule Law, FDI GDP, and Inflation*). Column (1) of Table 9 shows the results incorporating the country-level variables, and the results are consistent with the baseline. Additionally, we introduce firm board-level variables. These firm board variables are (*Board Diversity, Board Size, Board Independence, Board Skills, CEO-Chairman Duality, and ESG Committee*). Column (2) of Table 9 shows the results incorporating firm board variables, and the results are still consistent with the baseline. We find that our results are still consistent and robust after incorporating these additional variables.

## [Table 9]

#### 4.3.6 Placebo tests

To alleviate the concern that our findings may be attributable to confounding events, we conduct a placebo test using pseudo-ESG assurance (Chen *et al.*, 2020). We conduct placebo tests by randomly allocating fictitious adoption of ESG assurance. We re-run the regression for these placebo tests and repeat the simulation 1,000 times. Figure 2 shows that the pseudo-estimated coefficients are concentrated around zero, which is plotted as a normal distribution. The actual coefficient, however, stands as outliers, which is significantly deviated from the distribution. These results uphold that baseline findings are strong and not driven by confounding events.

## [Figure 2]

## 4.3.7 Omitted variable bias test

Omitted variable bias is a regular issue with empirical examination. We resolve the possible endogeneity concerns arising from omitted variable bias by using the approach proposed by (Oster, 2019b; Amin *et al.*, 2024). This procedure involves evaluating the sensitivity of coefficient estimates by examining the changes in R<sup>2</sup> between regressions with and without control variables. The estimation of  $\beta^*$  (-0.010) falls between the 95.0% confidence

interval (-0.013 until -0.003), which confirms the baseline results. Table 10 shows the key statistics.

## [Table 10]

#### 4.3.8 Using alternative estimators

Prior research (e.g., Sun and Abraham, 2021; Cengiz *et al.*, 2019; Baker *et al.*, 2022) has highlighted potential biases in a staggered DiD model with two-way fixed effects, particularly when treatment occurs at multiple time points. These biases stem from treatment effect heterogeneity and variation in treatment timing. To address this concern, we re-estimate our results using alternative identification strategies. Specifically, we implement the estimation approaches proposed by Sun and Abraham (2021) and use a stacked regression estimator (Cengiz *et al.*, 2019). Column (1) of Table 11 shows the results of using Sun and Abraham (2021) estimator. Column (1) shows that the coefficient on *ESG Assurance* (-0.006) is negative and significant at the 1% level. Column (2) reports the results of using a stacked regression estimator. We find that the coefficient on *ESG Assurance* (-0.008) remains negative and significant at the 1% level. These results are consistent with our baseline results, confirming that our results are robust to alternative estimation methods.

## [Table 11]

#### 5. Cross-sectional results of the information asymmetry environment

This section explores whether ESG assurance results in the reduction of information asymmetry from cash holdings. Previous studies indicate the value of sustainability reporting on information asymmetry (Cuadrado-Ballesteros *et al.*, 2017; Steinmeier and Stich, 2019; Grassmann *et al.*, 2022). Riding on existing research (Chowdhury *et al.*, 2018), we use bid-ask spread as a proxy for information asymmetry. In Table 12, we partition the sample into subsamples with high and low bid-ask spreads using the sample median. Column (1) shows that the coefficient of ESG assurance (-0.011) is negative and significant for high bid-ask spread. In column (2), the coefficient of ESG assurance is insignificant for low bid-ask spread. This implies that ESG assurance lowers information asymmetry. From an ESG assurance perspective, the discretion of disclosure and assurance worsens the information asymmetries associated with ESG reports (La Porta *et al.*, 2007). ESG serves a positive role as a mechanism that mediates the conflict between motives for holding cash by reducing information asymmetry and agency problems (Lai *et al.*, 2024).

#### 6. The outcome of cash holdings after ESG assurance

## 6.1 Corporate green innovation

Peng and Kong (2024) highlight that corporate green innovation plays a key role in driving economic growth and enhancing competitiveness. Corporate green innovation is defined as the firm capacity to reduce the environmental costs and burdens for its customers, thereby creating new market opportunities through new environmental technologies (Albitar *et al.*, 2023). Corporate green innovation ranges are expressed in percentage and range from 0%-100%. Environmental innovation score is an alternative measure of corporate green innovation measure from D- to A+. In line with resource dependency theory, we find that ESG-assured firms result in low cash holdings, and the outcome is increased corporate green innovation.

## 6.2 ESG performance

This section explores the implications of ESG assurance and firms' cash holdings on their ESG performance. Hill and Jones (1992) introduce the stakeholder-agency theory to capture the implicit and explicit contractual relationship between firms and a broad range of stakeholders. These stakeholders contribute to the firm with various valuable resources in exchange for the fulfilment of their interests (Chen *et al.*, 2023). This broader view and expectation give rise to ESG performance obligations and the ESG score is considered one of the best parameters to measure sustainable practices and their impact on the environment, society, and business (Nollet *et al.*, 2016). We find that ESG-assured firms experience a significant increase in their ESG performance in the short term.

## [Table 13]

#### 7. Conclusion, limitations, and further research

This study focuses on the impact of ESG assurance on cash holdings within the African market context. We employ a staggered DiD model on a sample of 18 countries in Africa from 2009 to 2023, with a total of 9,646 firm-year observations. This study finds that firms with ESG assurance hold lower cash on hand. Further evidence shows that this impact is more pronounced among firms with intense information asymmetry. Aligned with the stakeholder-agency theory, this finding reflects that ESG assurance plays a governance mechanism in addressing information asymmetry. Furthermore, we also shed light on the central role of ESG assurance in the current business landscape, characterised by intensive pressures from sustainability issues. ESG assurance remains crucial in building harmonious stakeholder relationships, particularly among those who pay attention to sustainability. As a consequence,

the improved stakeholder relationships can be leveraged as a buffer toward resource access, and therefore, firms reallocate their cash to improve green innovation and ESG performance.

This study offers three implications for examining ESG assurance on business financial policies. First, our study highlights the effectiveness of stakeholder-agency and resourcedependence theories in highlighting the significance of ESG assurance. Despite its voluntary nature, ESG assurance helps firms maintain trustworthy relationships with external stakeholders (Kogi et al., 2025), which further improves their access to critical resources (Wolf, 2013). Accordingly, our study offers a managerial implication to consider ESG assurance as an effective governance initiative in managing stakeholder relationships and access to scarce resources. Second, our findings also reflect that firms with ESG assurance reallocate their cash to pursue improvement in green innovation and ESG performance. Accordingly, stakeholders with sustainability concerns might view ESG assurance as an important initiative for further impactful actions. In this study, we employ the stakeholder-agent theory to highlight firms' dependency on a range of external stakeholders, including fund providers and policymakers. Fund providers with attention to sustainability issues should consider ESG assurance as an incentive for favourable financing terms. This finding also implies that policymakers should encourage ESG assurance as a term for sustainability-linked policies, such as tax incentives, grants, and subsidies. Third, we acknowledge that our study might be limited by the early stage of ESG assurance practices in Africa, characterised by limited disclosure and standardisation of the assurance process. This situation hinders us from capturing a more detailed picture of the variations in scope and quality of the ESG assurance, which may limit our insight into the underlying mechanisms and the generalisability issue. Accordingly, we propose future studies to incorporate a range of proxies for ESG assurance quality through a content analysis of assurance reports and the adoption of assurance quality measures from financial audits.

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Panel A: Sample selection	
Total firm-year observations from 2009–2023	16,350
Less: Firm-year observations with financial firms	(4,365)
Less: Firm-year observations with missing data on cash holdings	(1,893)
Less: Firm-year observations with missing data on control variables	(446)
# Final firm-year observations	9,646
# Firms	752
# Countries	18

# Table 1. Sample selection and distribution

#### Panel B: Sample distribution by years

			Cash holdings		Cash hold	lings
			(ESG-assured firms)		(Non-ESG-assu	ured firms)
Year	# Firm-years	% Frequency	# Firm-years	Mean	# Firm-years	Mean
2009	473	4.9	5	0.039	468	0.089
2010	485	5.03	13	0.097	472	0.086
2011	534	5.54	22	0.063	512	0.082
2012	594	6.16	35	0.077	559	0.074
2013	622	6.45	42	0.077	580	0.077
2014	655	6.79	39	0.072	616	0.077
2015	668	6.93	36	0.072	632	0.083
2016	674	6.99	41	0.080	633	0.083
2017	692	7.17	39	0.078	653	0.082
2018	701	7.27	45	0.075	656	0.077
2019	711	7.37	45	0.102	666	0.075
2020	710	7.36	47	0.106	663	0.080
2021	720	7.46	52	0.100	668	0.086
2022	718	7.44	57	0.087	661	0.087
2023	689	7.14	33	0.087	656	0.087
Total	9,646	100	551	0.084	9,095	0.082

**Note(s): Panel A**: The table shows our sample selection process, covering the identification of the total firm-year observations and eliminations of financial firms, missing data of cash holdings and control variables. **Panel B**: This table shows the sample distribution on a year-on-year basis. **Source(s):** Table by authors.

Panel A: Countries with ESG-assured firms between 2009 and 2023						
Country	# Firms	# Firm-years	# ESG-assured firm-years			
Egypt	171	2,298	11			
Kenya	37	522	7			
Morocco	54	738	6			
Nigeria	88	1,041	1			
South Africa	174	2,288	526			
Total	524	6,887	551			
Panel B: Countries without	ESG-assured firms between 2	2009 and 2023				
Country		# Firms	# Firm-years			
Botswana		17	210			
Burkina Faso		1	8			
Ghana		9	128			
Ivory Coast		25	357			
Malawi		7	83			
Mauritius		51	566			
Namibia		5	44			
Senegal		2	16			
Tanzania		8	106			
Tunisia		49	634			
Uganda		7	78			
Zambia		14	156			
Zimbabwe		33	373			
Total		228	2,759			

# Table 2. Distribution by country

**Note(s):** Panel A shows African countries with ESG-assured firms. Panel B shows countries without ESG-assured firms.

Variables Trea			Treatment Group				Co	ontrol Gro	oup	
(ESG		(ESG	Assuranc	e = 1			(ESG	Assuranc	e = 0	
	N	Mean	SD	P25	P75	Ν	Mean	SD	P25	P75
Cash Holdings	551	0.084	0.064	0.036	0.118	9,095	0.082	0.101	0.015	0.107
Firm Size	551	7.605	1.005	6.854	8.414	9,095	4.685	1.696	3.513	5.830
ROA	551	0.055	0.092	0.012	0.084	9,095	0.048	0.108	0.006	0.095
Leverage	551	0.524	0.180	0.393	0.649	9,095	0.526	0.306	0.331	0.666
Dividends	551	0.092	0.124	0.007	0.113	9,095	0.062	0.105	0.000	0.077
Working Capital	551	0.101	0.146	0.012	0.191	9,095	0.120	0.283	-0.021	0.289
Market-to-Book	551	2.511	2.854	0.815	2.843	9,095	1.898	2.887	0.519	2.253
Revenue Growth	551	0.017	0.230	-0.114	0.124	9,095	0.090	0.639	-0.113	0.151
Lifecycle	551	0.267	0.261	0.139	0.413	9,095	0.128	0.430	0.035	0.334
EBIT	551	0.104	0.097	0.046	0.137	9,095	0.072	0.116	0.017	0.125
CAPEX	551	0.063	0.045	0.028	0.086	9.095	0.046	0.056	0.006	0.063

Table 3. Descriptive statistics

**Note(s):** The table shows the summary statistics of the sample split between the treatment and the control group. Appendix 1 provides the description of variables. **Source(s):** Table by authors.

Variables	Cash Holdings			
	(1)	(2)	(3)	
ESG Assurance	-0.005**	-0.008***	-0.008***	
	(0.002)	(0.002)	(0.002)	
Firm Size		-0.010**	-0.008**	
		(0.004)	(0.004)	
ROA		0.059**	0.052**	
		(0.021)	(0.022)	
Leverage		0.041***	0.024*	
		(0.011)	(0.013)	
Dividends		0.055	0.059*	
		(0.033)	(0.032)	
Working Capital		0.142***	0.141***	
		(0.022)	(0.022)	
Market-to-Book			-0.001**	
			(0.000)	
Revenue Growth			-0.000	
			(0.001)	
Lifecycle			-0.021**	
			(0.007)	
EBIT			0.027*	
			(0.015)	
CAPEX			-0.064***	
			(0.017)	
Firm Fixed Effect	Yes	Yes	Yes	
Country Fixed Effect	No	No	Yes	
Year Fixed Effect	Yes	Yes	Yes	
Observations	9,646	9,646	9,646	
Adjusted R-squared	0.531	0.580	0.581	

**Table 4. Baseline results** 

**Note(s):** This table shows the baseline results of ESG assurance on cash holdings. In column (1), we exclude all control variables from the regression model. In columns (2) and (3), stepwise, we include all control variables. The results show that firms significantly lower (declining) cash holdings after ESG assurance at the 1% level. The parentheses include the t-statistics. \*, \*\*, and \*\*\* refer to statistical significance at 10%, 5%, and 1% levels, respectively.

Variables		Cash Holdings	
—	(1)	(2)	(3)
ESG Assurance Pre 3	-0.001	0.003	0.003
	(0.001)	(0.003)	(0.003)
ESG Assurance Pre_2	-0.008	-0.004	-0.004
	(0.005)	(0.006)	(0.006)
ESG Assurance Pre_1	0.002	0.006	0.006
	(0.006)	(0.007)	(0.007)
ESG Assurance Current	-0.021***	-0.018***	-0.017***
	(0.003)	(0.004)	(0.004)
ESG Assurance Post_1	-0.013***	-0.010***	-0.010***
	(0.002)	(0.003)	(0.003)
ESG Assurance Post_2	-0.017***	-0.015***	-0.015***
	(0.002)	(0.004)	(0.003)
ESG Assurance Post_3	-0.010***	-0.009***	-0.009***
	(0.001)	(0.002)	(0.002)
Firm Size	-0.009**	-0.010**	-0.008**
	(0.004)	(0.004)	(0.004)
ROA	0.054**	0.059**	0.052**
	(0.023)	(0.021)	(0.022)
Leverage	0.048***	0.041***	0.024*
	(0.011)	(0.011)	(0.013)
Dividends	0.051	0.056	0.060*
	(0.033)	(0.033)	(0.032)
Working Capital	0.144***	0.142***	0.141***
	(0.021)	(0.022)	(0.022)
Market-to-Book			-0.001**
			(0.000)
Revenue Growth			-0.000
			(0.001)
Lifecycle			-0.021**
0			(0.007)
EBIT			0.027*
			(0.015)
CAPEX			-0.065***
			(0.017)
Firm Fixed Effect	Yes	Yes	Yes
Country Fixed Effect	No	No	Yes
Year Fixed Effect	No	Yes	Yes
Observations	9,646	9,646	9,646
Adjusted R-squared	0.578	0.580	0.581

#### Table 5. Parallel trend tests

**Note(s):** This table shows the results of parallel trend analysis. In column (1), the coefficient of *ESG assurance* (-0.001, -0.008, and 0.002) before ESG assurance adoption is not significant, indicating no significant difference between the control and the treatment groups in cash holdings of firms. After the adoption of ESG assurance, cash holdings firms declined, as shown by the coefficient of ESG assurance (-0.021, -0.013, -0.017, and -0.010), indicating that the adoption of ESG assurance was effective. In columns (2) and (3), the coefficient of ESG assurance is insignificant before the adoption of ESG assurance but negative and significant after treatment, confirming that the adoption of ESG assurance was effective. The parentheses include the t-statistics. \*, \*\*, and \*\*\* refer to statistical significance at 10%, 5%, and 1% levels, respectively.

Variables	Cash Holdings			
	(1)	(2)		
ESG Assurance	-0.019***	-0.008***		
	(0.005)	(0.002)		
Firm Size	0.010***	-0.004		
	(0.002)	(0.004)		
ROA	0.166***	0.072***		
	(0.011)	(0.016)		
Leverage	0.053***	0.040**		
	(0.007)	(0.019)		
Dividends	0.092***	-0.006		
	(0.030)	(0.007)		
Working Capital	0.185***	0.207***		
	(0.009)	(0.015)		
Market-to-Book	-0.002	-0.000		
	(0.002)	(0.001)		
Revenue Growth	-0.001	-0.011**		
	(0.005)	(0.004)		
Lifecycle	0.063***	-0.005		
	(0.009)	(0.007)		
EBIT	0.113**	0.091**		
	(0.047)	(0.037)		
CAPEX	-0.245***	-0.113***		
	(0.020)	(0.011)		
Firm Fixed Effect	Yes	Yes		
Country Fixed Effect	Yes	Yes		
Year Fixed Effect	Yes	Yes		
Propensity-Score-Matched Sample	Yes	No		
Entropy-Balanced Sample	No	Yes		
Observations	1,762	9,646		
Adjusted R-squared	0.878	0.638		

## Table 6. Using matched sample

**Note(s):** This table shows the results of the propensity score matching (PSM) approach and entropy balancing. In column (1), we employ the PSM approach, and the coefficient of  $ESG\_assurance$  (-0.019) is negative and consistent with baseline results. In column (2), we employ entropy balancing, and the coefficient of  $ESG\_assurance$  (-0.008) is negative and consistent with baseline results. In both tests, the results are robust and not driven by sample selection bias. The parentheses include the t-statistics. \*, \*\*, and \*\*\* refer to statistical significance at 10%, 5%, and 1% levels, respectively.

Variables	Cash H	oldings
	(1)	(2)
ESG Assurance	-0.021**	-0.010**
	(0.007)	(0.003)
Firm Size	0.012***	0.001
	(0.002)	(0.004)
ROA	0.178***	0.067***
	(0.007)	(0.010)
Leverage	0.050***	0.026***
	(0.004)	(0.005)
Dividends	0.103**	0.000
	(0.025)	(0.004)
Working Capital	0.189***	0.207***
	(0.010)	(0.007)
Market-to-Book	-0.002	0.001**
	(0.001)	(0.000)
Revenue Growth	-0.002	-0.016**
	(0.008)	(0.004)
Lifecycle	0.059***	-0.015***
	(0.007)	(0.003)
EBIT	0.099	0.117***
	(0.061)	(0.018)
CAPEX	-0.255***	-0.110**
	(0.011)	(0.035)
Firm Fixed Effect	Yes	Yes
Country Fixed Effect	Yes	Yes
Year Fixed Effect	Yes	Yes
Propensity-Score-Matched Sample	Yes	No
Entropy-Balanced Sample	No	Yes
Observations	855	1,056
Adjusted R-squared	0.899	0.616

Table 7. Excluding firms without ESG assurance	throughout the sample period
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**Note(s):** This table shows the results of excluding firms that never had ESG assurance throughout the sample period and applying the propensity score matching (PSM) approach and entropy balancing tests. In column (1), we employ the PSM approach, and the coefficient of  $ESG\_assurance$  (-0.021) is negative and consistent with baseline results. In column (2), we employ entropy balancing and the coefficient of  $ESG\_assurance$  (-0.010) is also negative and consistent with baseline results. In column with baseline results. In both tests, the results are robust and confirm that our sample is not influenced by sample selection bias. The parentheses include the t-statistics. \*, \*\*, and \*\*\* refer to statistical significance at 10%, 5%, and 1% levels, respectively.

Variables	Cash H	oldings
	(1)	(2)
ESG Assurance	-0.020***	-0.020***
	(0.004)	(0.007)
Firm Size	-0.003**	-0.004*
	(0.001)	(0.002)
ROA	0.124**	0.168**
	(0.049)	(0.075)
Leverage	0.051***	0.056***
5	(0.012)	(0.017)
Dividends	0.105***	0.128***
	(0.032)	(0.038)
Working Capital	0.140***	0.144***
	(0.013)	(0.012)
Market-to-Book	0.000	0.000
	(0.001)	(0.001)
Revenue Growth	-0.001	-0.000
	(0.001)	(0.002)
Lifecycle	-0.009	-0.009
	(0.007)	(0.010)
EBIT	-0.031	-0.055
	(0.044)	(0.075)
CAPEX	-0.038	-0.033
	(0.022)	(0.030)
Industry Fixed Effect	Yes	No
Country Fixed Effect	Yes	No
Year Fixed Effect	Yes	Yes
Industry-Year Fixed Effect	No	Yes
Country-Year Fixed Effect	No	Yes
Observations	9,646	9,646
Adjusted R-squared	0.370	0.261

## Table 8. Controlling other fixed effects

**Note(s):** This table shows the results of controlling other fixed effects. In column (1), we incorporate industry, country and year-fixed effects. In column (2), we incorporate the interaction between industry and year-fixed effects and country and year-fixed effects. The results align with those in Table 4, confirming the robustness of our baseline results. The parentheses include the t-statistics. \*, \*\*, and \*\*\* refer to statistical significance at 10%, 5%, and 1% levels, respectively.

Variables	Cash Holdings		
	(1)	(2)	
ESG Assurance	-0.007***	-0.003**	
	(0.002)	(0.000)	
GDP Current	0.030***	0.786**	
	(0.010)	(0.144)	
GDP_Growth	-0.000	0.003**	
	(0.000)	(0.000)	
GDP_Capital	-0.029***	-0.705**	
	(0.007)	(0.144)	
Regulatory Quality	0.004	0.017**	
	(0.010)	(0.002)	
Rule Law	0.003	-0.019	
	(0.015)	(0.009)	
FDI GDP	0.000	0.004*	
	(0.001)	(0.001)	
Inflation	-0.000	0.011*	
	(0.002)	(0.003)	
Board Diversity		-0.000*	
		(0.000)	
Board Size		0.003***	
		(0.000)	
Board Independence		0.001**	
		(0.000)	
Board Skills		-0.000	
		(0.000)	
CEO-Chairman Duality		-0.023***	
		(0.001)	
ESG Committee		-0.002	
		(0.001)	
Controls	Yes	Yes	
Firm Fixed Effect	Yes	Yes	
Country Fixed Effect	Yes	Yes	
Year Fixed Effect	Yes	Yes	
Observations	9,538	625	
Adjusted R-squared	0.582	0.751	

# Table 9. Controlling country-level and firm board variables

**Note(s):** This table shows the results of introducing country-level (column 1) and firm board (column 2) variables. The results are consistent with the baseline. The parentheses include the t-statistics. \*, \*\*, and \*\*\* refer to statistical significance at 10%, 5%, and 1% levels, respectively. **Source(s):** Table by authors.

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# Table 10. Omitted variable bias tests

Omitted variable test		
	(1)	(2)
Standard	Estimated value	Omitted variables bias
$\beta^*(R_{max}, \delta) \in [-0.013, -0.003]$	$\beta^* (R_{max}, \delta) = -0.010$	Unlikely
$\delta > 1$ or $\delta < -1$	$\delta = -6.271$	Unlikely

**Note(s):** This table shows the results of tests devised to measure the likelihood of omitted variable bias, using Oster (2019b) bound estimate technique to check how sensitive the coefficient estimates and changes in R2 occur between models by varying control variables.

Variables	Cash Ho	Cash Holdings		
	(1)	(2)		
	Sun & Abraham (2021) Estimator	Stacked Regression Estimator		
ESG Assurance	-0.006***	-0.008*		
	(0.002)	(0.005)		
Controls	Yes	Yes		
Firm Fixed Effect	Yes	No		
Country Fixed Effect	Yes	Yes		
Year Fixed Effect	Yes	No		
Firm × Stack Fixed Effect	No	Yes		
Year × Stack Fixed Effect	No	Yes		
Observations	9,644	121,288		
Adjusted R-squared	0.581	0.579		

# Table 11. Alternative estimators

**Note(s):** This table shows the results based on alternative estimation approaches proposed by Sun and Abraham (2021) (column 1) and stacked regression estimator (Cengiz *et al.*, 2019) (column 2).

Variables	Cash Holdings	
	(1)	(2)
	High Bid-Ask Spread	Low Bid-Ask Spread
ESG Assurance	-0.011***	-0.003
	(0.003)	(0.002)
Controls	Yes	Yes
Firm Fixed Effect	Yes	Yes
Country Fixed Effect	Yes	Yes
Year Fixed Effect	Yes	Yes
Observations	3,496	5,176
Adjusted R-squared	0.598	0.584

## Table 12. Information asymmetry environment

**Note(s):** This table shows the tests of whether ESG assurance results in a reduction of information asymmetry. We partition the sample into subsamples with high and low bid-ask spreads using the sample median. The parentheses include the t-statistics. \*, \*\*, and \*\*\* refer to statistical significance at 10%, 5%, and 1% levels, respectively.

Variables	Green	Green	ESG
	Innovation $I_{t+1}$	Innovation2 <sub>t+1</sub>	$Performance_{t+1}$
	(1)	(2)	(3)
ESG Assurance × Decreased Cash Holdings	3.648***	0.423***	2.898***
, i i i i i i i i i i i i i i i i i i i	(1.035)	(0.122)	(0.319)
Decreased Cash Holdings	-1.082	-0.123	-1.188***
C C	(0.928)	(0.106)	(0.159)
Controls	Yes	Yes	Yes
Firm Fixed Effect	Yes	Yes	Yes
Country Fixed Effect	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes
Observations	1,348	1,348	1,260
Adjusted R-squared	0.644	0.634	0.817

## Table 13. The outcome analysis of green innovation and ESG performance

**Note(s):** This table shows the outcome of ESG assurance and cash holdings on green innovation (column 1 and 2) and ESG performance (column 3). These results indicate that ESG assurance results in an increase in green innovations and ESG performance. The parentheses include the t-statistics. \*, \*\*, and \*\*\* refer to statistical significance at 10%, 5%, and 1% levels, respectively.



**Figure 1. Theoretical framework** 

Source(s): Figure by authors.



Figure 2. Placebo test

**Note (s):** The chart visualises the outcomes of the Placebo tests of the impact of ESG assurance on cash holdings. We run 1,000 placebo tests by randomly allocating random ESG assurance, revealing the estimator group near zero. The actual coefficient on ESG assurance (-0.008) falls on the left tail of the normal distributions. This confirms that our findings are consistent and not influenced by confounding causes.

**Source(s):** Figure by authors

Variable	Definition		
Outcome and treatment variables			
Cash holdings	Cash and cash equivalents scaled to total assets.		
ESG assurance	The existence of independent assurance by a third party of the company ESG		
	reports. This is binary (1 or 0), where one is if a firm has its ESG reports externally		
	assured and zero if not assured		
<b>Control variables</b>			
Firm Size	This is a proxy of size and is a natural log of assets		
ROA	Return on assets		
Leverage	Amount of or level of indebtedness		
Dividends	This is payout defined as a dividend by net assets		
Working Capital	The difference between current assets and current liabilities		
Market-to-Book	This is market capitalisation to the book value of the company		
Revenue Growth	Year-on-year change in a firm's revenues		
Lifecycle	Proxy for lifecycle calculated as retained earnings divided by total assets		
EBIT	Earnings before interest and taxes		
CAPEX	Capital expenditure and intangible assets that have useful life of more than 1 year		
<b>Country effects variables</b>			
GDP_Current	Current GDP size in monetary terms		
GDP_Growth	Annual economic performance		
GDP_Capital	Economic growth is measured as GDP divided by population		
Regulatory Quality	Perception of the country's ability to formulate and implement policies		
Rule Law	Confidence in the country's rules and regulations		
FDI GDP	Economic growth caused by FDI capital is measured as FDI divided by GDP		
Inflation	Annual country consumer price index (CPI)		
Firm board variables			
Board Diversity	The presence of diverse genders on the board, i.e., the percentage of females on the		
	board		
Board Size	The total number of directors on the board		
Board Independence	Percentage of independent members of the board as reported by the company		
Board Skills	Presence of diverse industry skills on the board, mainly of an accounting and		
	finance nature		
CEO-Chairman Duality	A categorical variable where the CEO simultaneously doubles as the chair of the		
	board		
ESG Committee	Presence of ESG committee or team board level or senior management in the firm		
Additional variables	that formulates ESG strategy		
Rid Ask Spread	The difference between the highest price a buyer is willing to new and the lowest		
Blu-Ask spreau	price a seller is willing to accept for a security		
Green Innovation1	Firm canacity to reduce the environmental costs and burdens for its customers		
Green innovationi	thereby creating new market opportunities through new environmental		
	technologies, processes and products measured by corporate environmental		
	innovation rating in percentage		
Green Innovation2	Firm capacity to reduce the environmental costs and burdens for its customers,		
	thereby creating new market opportunities through new environmental		
	technologies, products and processes measured by corporate environmental		
	innovation score grade and ranges from D- to A+		
ESG Performance	Measured using environmental, social, and governance performance pillars		

# Appendix 1. Definition of variables