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Redefining the boundaries of firms: Insights from the corporate social responsibility of the digital platform-based firms and stock returns

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REDEFINING THE BOUNDARIES OF FIRMS: INSIGHTS FROM THE CORPORATE SOCIAL RESPONSIBILITY OF DIGITAL PLATFORM-BASED FIRMS AND STOCK RETURNS

KIM MOO KUNG

SINGAPORE MANAGEMENT UNIVERSITY

2023

Redefining the Boundaries of Firms: Insights From the Corporate Social Responsibility of the digital Platform-Based Firms and Stock Returns

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Submitted to Lee Kong Chian School of Business
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(General Management)

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2023

I hereby declare that this Ph.D. dissertation is my original work

and it has been written by me in its entirety.

I have duly acknowledged all the sources of information

which have been used in this dissertation.

This Ph.D. dissertation has also not been submitted for any degree in any university
previously.

Kim Moo Kung

12 January 2023

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ABSTRACT

By using a novel dataset, platform firms (those that operate on apps and the internet as their main vector of operations), this study explores the boundaries of the firm through the lens of corporate social responsibility. By examining the CSR scandals of platform-based firms, the paper aims to answer: 'How do digital platform firms affect the society and capital market and understand the welfare of stakeholders?'. To disentangle the debates in the literature, the study articulates the new framework of the boundaries and scope of firms by proposing broader stakeholders of firms.

This research attempts to elucidate the boundaries of the newly formed platform-based firms by revisiting their stakeholders using an event study method with CSR scandals and its reactions from the stock market. The findings of the study suggest that consistent with market efficient hypothesis, the stock market accurately captures unanticipated corporate events. Nevertheless, the results show the significant negative effects of CSR scandals of the platform firms on market reactions, while the ESG ratings of the firms with scandals do not change significantly after the events nor have an effect on market reactions.

Furthermore, the results with controlling variables show the changes of ESG ratings have no effect on abnormal returns after several robustness tests of the samples were used in this study. This study provides ample evidence that the stakeholders of platform firms are not well

recognized nor incorporated in CSR performance (the ESG ratings) of the firm; hence, it is not conveyed to the investors.

Finally, the main contribution of the study is in providing a framework of stakeholder theory by bringing together the discussions for the need for revisiting and refining of the boundaries and scope of the tech-driven digital platform firms through clarifying the doubts about its stakeholders.

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INTRODUCTION

Rise of Platform-based Firms

In recent years, the emergence of platform-based firms such as Google, Facebook, Uber and Alibaba have gained attention among industry practitioners and scholars for their significant influence on the economy and society (Gerwe & Silva, 2020). These digital platforms not only disrupted traditional business models but also transformed the way of doing business in various industry sectors around the world. For example, 'Grab' in the Southeast Asia region has come to dominate and in many ways usher out the traditional taxi transportation system, while Alibaba has largely substituted physical purchasing in shopping malls and department stores. Not only the newly established platform firms (i.e., Uber, Amazon, Tencent) but also the traditional incumbent firms such as large scale retailers are shifting their channels from offline stores to online marketplaces (Fenwick & Vermeuln, n.d.). Although there is no consensus on the definition of a digital platform, often it is defined as "a digital service that facilitates interactions between users online" (ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, 2019).

The platform-based firms experienced rapid growth by organically digitalizing their operations internationally and are flourishing in many industries around the world. For instance, the total market capitalization of the top 15 platform companies was 4.3 trillion dollars in 2016, fifteenfold more than 1995 (Evans & Gawer, 2016; Parker et al., 2016). As shown in Figure 1, in 2021, the largest seven companies in the world in terms of market valuation were digital platform firms showing that they have indeed transformed and dominated the economy around the world.

[insert Figure 1 here]

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For instance, Uber, the technology-based innovative ride sharing service began its service in the United States and now it has spread to more than 70 countries and 10,000 cities around the world. Uber provides a convenient transportation service to the consumers in real time by matching with nearby drivers. Despite some challenges—needing to beat out traditional taxi companies—Uber is now dominating the ride sharing industry in the U.S. with more than 70% of market share. Uber has successfully strategized an effective pricing strategy and contributed to an efficient and transparent market by allowing both suppliers (drivers) and buyers (users) to freely interact with each other to reduce the search costs of the services (Liu et al., 2021; Rogers, 2015). The remarkable benefit of the Uber business model is that it has brought about value to both the supply and demand sides (Parker et al., 2016).

Nevertheless, Uber is not free from controversies and criticism from the public. Despite its benefits to both consumers and businesses, the platform firms face a number of significant challenges. For instance, Uber has produced controversial social issues which still remain unresolved such as employment issues (Uber is a mainstay of the so-called 'gig economy'), consumer safety, and regulatory issues and it is getting more scrutiny from both the public and investors. A previous study found that in the U.S., Germany and Sweden, Uber's entry into the transportation industry intensified the debates on market efficiency and regulations (Thelen, 2018). Uber also sparked a conflict between taxi drivers who are authorized and permitted by government and individual Uber drivers without such licensing, thus creating a socio-political problem by not complying with existing regulations (Garud et al., 2020). Despite its controversies, after its successful IPO in 2019, Uber remains the dominant ride hailing company with a steady market share in many countries. Ironically, regardless of the controversies, the environmental, social and governance (ESG) rating of Uber in 2019 was upgraded and has been improving since.

Another example is Airbnb, an accommodation sharing platform company founded in the U.S. The company was accused of being complicit in a series of severe violent crimes such as shootings, sex crimes, and theft in multiple countries just before filing for an initial public offering in 2020; it did not interfere the IPO, however. The debut of Airbnb was a huge success and was remarkable as one of the most significant rallies on record in IPO. The company did not disclose any reports of accidents nor legal settlements occurring during the underwriting and offering period. Similarly, when Uber reported more than 6,000 sexual assaults incidents in 2018, the stock market reacted quicky to absorb the shocks but the negative effect on the stock market did not last long implying the market accurately captures the CSR information of the firm.

Given its importance, it is crucial to explore the boundaries and social responsibilities of platform-based firms to better understand the who the stakeholders are—thus where the boundary lies—for the digital platform firms and whether existing measures accurately capture the impact of how their actions on the welfare of their shareholders and stakeholders.

In addition, after the United Nations Global Impact Initiative, multi-trillion dollars are being invested in socially responsible firms and the numbers are expected to grow in future (Renneboog et al., 2008a). Investment professionals such as analysts and fund managers consider ESG when making an investment decision and the role of ESG in the investment process is increasing (Amel-Zadeh & Serafeim, 2018; Glück et al., 2021). Furthermore, more than 50% of the total assets are under-managed in socially responsible funds as of 2019 and institutional investors are managing more than $86 trillion dollars. In particular, the U.S. alone has more than 18 trillion dollars managed under UN-backed Principle Responsible Investment (PRI) (UN PRI, 2018).

[insert Figure 2 here]

Interestingly, the ESG funds including the PRI signatory funds are heavily invested in technology-based platform firms such as Microsoft, Alphabet, Alibaba among others. Figure 2 presents the rapid increase of PRI assets under management from 2006 to 2020. The possible explanation of the increase of inflow of sustainable investment for technology-focused firms is that the investors believe that tech companies employ ethical methods of doing business. One of the notable aspects of platform firms is that during the growth and expansion process, they were funded by rounds of series fundings from venture capital or private equity funds. After the initial fundings, the platform firms made a debut in the capital market through an IPO. Throughout the process, platforms gained strong experience and knowledge of management as they were the top players in the market. Nevertheless, as the platform-based firms rose recently, both retail and institutional investors were backing the platform firms with a gigantic volume of capital in the stock market.

The background of this swift change in paradigm can be explained in several ways. The advance of digitalization and information technology has enabled platform firms to dominate industry (Alcácer et al., 2016). Based on innovation and technology, platform firms create value through a new business model. Platform-based firms act by mediating social and economic interactions in online marketplaces (Kenney & Zysman, 2016). Further, the platform firms promote a sharing economy and workforce changes in business transactions.

However, the nature of the platform-based businesses is distinctive compare to the traditional forms of the business mainly because of the technological design of the organizations (Boudreau, 2017) and their business model (Täuscher & Laudien, 2018). The business model of digital platforms is to facilitate the interactions of the various buyers and sellers and enable transactions between independent participants. It also provides economic incentives to participants of the platform (Eisenmann et al., 2006; Parker et al., 2016). Unlike traditional

industry business models, the platform firms provide a marketplace which promotes a voluntary exchange of the services from multi-sided participants.

Boundaries of the Platform-based firm

There has been much debate on the growing influence of platform firms. These digital platform businesses are raising a range of controversial concerns such as employment relationships, gender gap problems, social protection of workers such as the underpaid and underinsured and other socio-political problems around the world (Frenken et al., 2020). As technology-driven new platform industries are leading the economy with a strong degree of power, the corporate social responsibility (CSR) issues of platform businesses have become of concern to both the platform firms and their stakeholders. This new form of business model may lack socio-political legitimacy as they do not fit into the definition of the traditional business model (Aldrich & Fiol, 1994). Compared to existing business models, the digital platform firms are engaging with more stakeholders as the scope and boundaries of platform firms keep expanding.

Thus, the platforms' environmental, social, and governance issue is the center of attention for investors, regulators, government, and workers. For instance, ongoing debates on greenwashing problems of the digital platform firms, legal and regulatory issues, and asymmetry of information in sustainability reports in the digital industry are controversial topics in both practice and academic research. Furthermore, the platform firms benefit more from engaging more stakeholders with a networking effect, implying that the more platform firms expand the greater impact this will have on stakeholders. Platform firms also provide more opportunities for both workers and society to not only increase income but also to help access cheaper goods and services (Schor, 2016). Platform firms not only directly employ

millions of employees but also indirectly collaborate with more people by allowing employees to freely work utilizing their free time. Further, the platform firms engage with more stakeholders such as suppliers, buyers, intermediary agents, regulators, freelance workers, and many more. Therefore, the platform firms are facing challenges to effectively engage with their stakeholders and take care of those stakeholders' interests.

Platform-based Firms and CSR (ESG)

Considering the new phenomenon of a business landscape disrupted by platform firms, the study of identifying the stakeholders of the firms and its impact on corporate social responsibility (CSR) and the financial performance of platform-based firms would provide an understanding of the link between corporate social responsibility and financial performance in the new platform business model.

Furthermore, this study attempts to elucidate the boundaries of the newly formed platform-based firm by revisiting their CSR activities and the reactions from the capital market. Built on the stakeholder theory perspective, the aim of this study is to investigate what are the boundaries of digital platform firms and the scope of social responsibility in the new business ecosystem. It is apparent that providing a new framework for defining the boundaries of platform is vital in management research topics as platform firms continue to evolve and be prominent in the business world (Gerwe & Silva, 2020). In particular, this study argues that both platform firms and their stakeholders are struggling with the vague boundaries of firms and the CSR activities of the firms are still unclear. Yet, studies of platform firms and its social responsibilities are not well explored in the literature.

Although the identification and definition of the stakeholders of firms has been addressed in a few research articles, the main focuses of the studies were 'proximity' and 'power' of the

stakeholders to the firms (Mitchell et al., 1997; Pajunen, 2006; Phillips et al., 2003). Thus, the objective of this study is to revisit the boundaries of platform-based firms through the lens of the stakeholders of the firm based on its CSR commitment. This would allow researchers and practitioners to improve their understanding in identification of the diverse range of stakeholders of the firms. Surprisingly, there is a dearth of the research on platform-based firms and their CSR performance despite their significant impact on both stakeholders and the capital market. The underlying assumption of this research is that the new platform-based firms should not be regarded as conventional types of 'companies' as the scope and boundaries of the stakeholders of these platform firms are distinctly different.

The contributions of the research are manifold. First, this research focuses on the scope and the boundaries of the platform firms which are not well explored in academic research (Cusumano et al., 2020; Gawer, 2021). Further, the study intersects the topic of corporate social responsibilities and market reactions of digital platform-based firms by exploring the issues related to CSR activities and their relationships with stakeholders of the firm by examining the corporate CSR scandals which are unexploited in the literature. By focusing on stakeholders of the platform firm, this study aims to provide new aspects of the boundaries of the firm in a new business environment for both proponents and critics of stakeholder theory.

Nevertheless, there is a growing consensus among scholars that the efficacy of CSR is greater than its negative effects (Baron, 2001; Liang & Renneboog, 2017a). Indeed, extant literature has examined the relationship between CSR activities of the firm and its performance. However, the current studies of CSR in finance suggest that the results are inconclusive and conflicting. This study contributes to the existing literature of the effects of CSR on market reactions.

Second, the study explores and identifies the social responsibility of the sample, the platform-based firms, newly formed but with a distinctive business model, and its impact on financial performance to provide in-depth understanding of the link between CSR and newly formed

digital platform firms. In doing so, this study argues that this controversial yet essential topic—recognizing and analyzing the new stakeholders which influence the firms—must be emphasized to balance the expectations of the stakeholders and the interests of the firms.

Third, essential but divergent ESG measurements and metrics are widely used to capture the firms' ESG performance in both industry and academia. But this study argues that the ESG ratings do not fully capture the outcomes of CSR activities of the firms and the impacts on the capital market. More importantly, there is growing demand from business managers, investors, and asset managers to develop clearer assessment criteria in measuring the ESG and the intricate information about the ratings. It is worth noting that the firms are managing with divergent standards and disclosure reporting regulations to accommodate the escalating demands from various stakeholders of the firm. Specifically, this study uses a disagreement in ESG ratings, an improved measurement to precisely measure the ratings variable without measurement errors since the divergence scores produced by different rating agencies create noise (Berg et al., 2019; Chatterji et al., 2016).

Taken together, the aim of this research is to effectively shed light on redefining the boundaries of the platform businesses by revisiting the stakeholders of the firms. To investigate whether the ESG considerations of the platform businesses are appropriately factored into a firm's public disclosure and capital market, the study employs ESG performance measurements to evaluate the hypothesis. It is crucial to understand the distinctive nature of the business model of the platform firms to further investigate its social responsibilities and its impact as the platform firms have a broader range of stakeholders. Consequently, this research addresses the gaps in the literature by connecting the stakeholder theory concept and the scope of stakeholders of the platform firms. Thus, the study proposes the following research questions.

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RQ1: How should the boundaries of the stakeholders and social responsibilities of the platform-based firms be defined?

RQ2: Are the corporate social responsibilities of the platform-based firms accurately reflecting the welfare of their stakeholders?

THEORETICAL BACKGROUND AND HYPOTHESIS DEVELOPMENT

In the literature review section of this paper, this study first reviews the transaction cost theory to provide an understanding of the platform business model followed by critically reviewing the two conflicting approaches to stakeholders of the firms: the neoclassical theory of the firm; shareholder theory; and stakeholder theory to provide the foundations in understanding the gaps in the literature and to develop the theoretical framework of the study. The two main theories seek to answer the question, 'What is the purpose of a firm?'. There has been much debate over the two mainstream views, but conflicting views of CSR for decades. However, the lack of studies on the theoretical definition of stakeholders of the firm remains unclear and ambiguous.

The stakeholders of the firms are the vital agents of social control (Aouadi & Marsat, 2018). While the existing CSR literatures has examined the effectiveness, determinants and factors that have impact on firms performances, Unfortunately, to date, no-one has examined the measure of stakeholders welfare in the digital business world. In this section of the paper, critical review of the prominent theories on social responsibilities of the firms and new perspective on new stakeholders of the firms are discussed.

Shareholder Perspective Theory by Friedman

As Friedman argued, "[t]here is one and only one social responsibility of business — to use its resources and engage in activities designed to increase its profits". The shareholder theory is a normative theory that asserts the role of the company is to only focus on maximizing the profit and returning it to shareholders (Friedman, 1962; Schwartz & Saiia, 2012; Smith, 2003). By doing so, the managers of the company should create value for shareholders in free

competition instead of using the resources to conduct social investments (Baumol & Blackman, 1991; Friedman, 1962; Husted & de Jesus Salazar, 2006).

The proponents of Friedmans' doctrine argue that the CSR initiatives raise the firm's costs and risks, thus ultimately reducing the returns to shareholders (Friedman, 1970; Jensen, 2002). The believers of the shareholder perspective on CSR is that a firm should focus on pursuing the value maximization of the firm instead of associating with stakeholders of the firm. The shareholder theory's view was indeed compelling to many business managers and companies as the shareholders and profits are the important part of business activities.

Although Friedman and other scholar acknowledge the roles of stakeholders, they argue that allocation of the resources to the stakeholders hampers the maximization of shareholders' value. The basis of this widely known argument is that society's welfare and other concerns are not the obligation of the firm nor the interests of shareholders (Bénabou & Tirole, 2010; Besley & Ghatak, 2005). Friedman and other scholars claim that it is a responsibility of the government to provide and improve the welfare of the society; thus, the business and government should effectively separate the social objectives and economic objectives as the goal of business is not to protect the stakeholders' interests but to increase profits within the legal framework (Friedman, 1962, 1970).

In his seminal paper, Friedman's argument is based on the position that the best interests of the firm benefits the interests of society. Friedman and others question the argument that satisfying the needs of multiple groups of stakeholders of the firm is inconsistent with the goals of the firm. Instead, Friedman's view on CSR and altruism was that decisions to make investments in social responsibility hamper the maximization of company value (Baumol & Blackman, 1991; Friedman, 1962; Husted & de Jesus Salazar, 2006).

However, Friedman's theory highlights the importance of doing conducting business in an ethical way by obeying the laws (Schwartz & Saiia, 2012). Therefore, the firm should

maximize the profit within the legal regulatory framework. For decades, scholars have criticized Friedman's neo-classical doctrine for its narrow definition of the goal of the business and its limitations.

Stakeholder Theory by Freeman

Following Friedman's argument, much of the expectation from firms has changed over time (Schwartz & Saiia, 2012). For example, the development of the concept of 'corporate citizenship' and 'triple bottom theory' has gained attention from stakeholders of the firm and voluminous research has been conducted in the past decades. Now, the crux of the debate in the literature is whether CSR positively affects a firm's financial performance. For decades, there has been an exponential growth of empirical research articles examining the relationship between CSR practice and financial performance of the firm, but the results are inconclusive.

An alternative view on CSR is the stakeholder perspective. The definition of a stakeholder as "any group or individual who can affect or is affected by the achievement of the organization's objectives" (1984, p.46) was first introduced in Freeman's seminal article and caused researchers to rethink management theory (Parmar et al., 2010). In contrast to the shareholder perspective theorist, stakeholder theory posits that enhancing the stakeholders' value benefits the wealth of shareholders. In contrast to the shareholder theory by Friedman, who argued for the separation of the roles of business and government, stakeholder theory advocates for stakeholders of the firm, not only the shareholders but also all groups and individuals affecting the business (Donaldson & Preston, 1995).

After Freeman's articulation of this concept and theory in the 1980s, other scholars started to apply the stakeholder perspective to various disciplines in business studies and it became a critical component in investigating the obligation of businesses in the research of the past five decades (Davis, 1973; Frederick, 1994; Sundaram & Inkpen, 2004). Stakeholder theory serves

a crucial part of business ethics research with a focus on the social aspects of businesses; thus, it is a suitable theoretical framework for this study (Parmar et al., 2010). Consistent with the primary concern of stakeholder theory, this study proposes to redefine the boundaries of platform firms due to the distinct nature of their business models.

As mentioned earlier, platform-based firms have several differences in business models compared with traditional business models. First, they operate with multiple business units across many countries; this means the stakeholders of the firm are broader and beyond the boundaries of domestic firms. Second, the platform involves engagement from not only the direct stakeholders, buyers (customers), and sellers (businesses), but also more stakeholders such as contract employees, vendors, intermediaries, and many more in a single marketplace; thus, the scope of the firm is much more complex. Therefore, it is a challenge for firms to define, maintain, and strengthen the relationship with the new stakeholders of the firm.

The network effect benefits the platform firms most as the role of the platform is to facilitate participants in business transactions (Boudreau & Jeppesen, 2015; Shapiro et al., 1999). For instance, when Uber first entered the ride hailing industry it quickly dominated the market with a rapid increase in the number of users, both suppliers (drivers) and buyers (customers). However, Uber received numerous controversial criticisms such as underpaying the drivers, sexual harassment allegations from the customers, gender gap pay issues, and many more. The Uber scandals not only damaged the reputation of the company but also cost a massive amount of money to settle the various allegations the company faced. This led to the question: 'Are the controversies of the drivers of the platform firm the responsibilities of the platform company?'. This study extended this basic question by addressing the fundamental but underexplored topics: 'How far should a firm go in CSR?'; and 'Who are the new stakeholders of the firm?'.

To date, it is not clear, how to define, identify and develop the measurements for broader stakeholders of the platform firm. In order to address this fundamental but unexplored question,

this study propose a new perspective on 'what' are the boundaries of stakeholders for platform-based firms and how to appropriately define the new stakeholders of the firm. However, the conventional theories in the management field such as transaction cost theory, agency theory, or resource-based theory do not fully describe the position of platform businesses.

However, the aforementioned theories may not be applied to the platform businesses, as unlike traditional (for example, manufacturing firm such as Toyota vs Uber and domestic retail firms Walmart vs Amazon), it is also possible that platform-based firms need not consider the country and industry effects when expanding their business overseas. As the platform firms rapidly expand their scope of businesses, the stakeholders surrounding platforms are not identical with the stakeholders of traditional firms.

More importantly, for decades, despite its depth evolving in the literature, the stakeholder theory did not expand nor define the new groups of stakeholders despite the emergence of new platform-based firms. An appropriate definition and understanding of the surrounding stakeholders of the firm must be addressed in the literature to apply to stakeholders and to help resolve the challenges that platform firms face. By doing so, establishing, and redefining the boundaries of the firm will help scholars improve our understanding not only of the nature of the platform firms but also their impact on the society and stock market.

Corporate Social Responsibility

Built on the stakeholder theory, a large body of literature has examined the benefits of CSR activities and it is well established in numerous studies. Many scholars supported that the CSR is appreciated by multiple stakeholders and the positive effects social performances of the firm add benefits to the firms (Aouadi & Marsat, 2018; Arouri & Pijourlet, 2017; Vanhamme & Grobben, 2009). Effective CSR brings significant benefits to firms such as lowering the costs of capital, reducing the firm's mitigated risks, making it easier to access finance, increasing the

firm's reputation and image, and providing better access to resources, leading to effective marketing of products and services (Brammer & Millington, 2008; Cheng et al., 2014; Fombrun & Van Riel, 1997; Friedman, 1970; Heinkel et al., 2001; Jo & Na, 2012; Waddock & Graves, 1997). Furthermore, prior literature in corporate finance found that CSR performances of firms bring capital market benefits (Godfrey, 2005), increase the earnings quality (Kim et al., 2012), lower the probability of financial distress and affect stock price premiums (Lee et al., 2009).

Despite some negative effects of CSR such as increases to the costs and risks (Friedman, 1962), negative stock prices and corporate investment (Aupperle et al., 1985), the considerable evidence from the previous literature suggested the benefits of CSR initiatives outweigh the costs (Malik, 2015). It is not surprising that corporate social responsibility became pivotal in both industry and academia. Businesses are getting more pressure from organizations and stakeholders to be more proactive and more committed to CSR activities. The perception that it should be a *good* company is more important than simply a company that makes good money.

Indeed, the topic of CSR is not new in management research nor is the matter of its importance. The surge of academic research articles on CSR also shows growing interest among scholars. There were more than 2,000 research papers published until 2015 and the literature is expected to grow in the future. CSR research has been extended to finance, strategy, operations, organizational behavior, marketing, and many other disciplines in management research.

Despite the long history of CSR in research, the definition of CSR is still embryonic. Due to the nascent nature of the numerous stakeholders of the firm, there is no consensus on the definition for CSR in research (Rodriguez et al., 2006). However, the term CSR is often used for different definitions such as CSR is a firm's behavior of acting beyond its compliance, regulation or legal concerns (Liang & Renneboog, 2017a; McWilliams & Siegel, 2001; Vogel, 2005). As there is no explicit scope or definition of CSR, many studies adopt a broad definition

of CSR. For example, meeting the expectations from the society and practicing the obligations to all stakeholders of firm (Gössling & Vocht, 2007), a way of self-regulation (Calveras et al., 2007), a "continuing commitment of firm by behaving ethically while contributing to the economic development" (Holme & Watts, 1999, p. 3). This research follows the general terms and definition of CSR used in previous literature. The term 'environmental, social, and governance (ESG) is often used together with CSR and sometime they are interchangeable (Gillan et al., 2021; Liang & Renneboog, 2020).

Transaction Cost Theory

Transaction cost theory by Williamson was built upon ideas from Ronald Coase that could be applied to not only management studies but also to all social science disciplines by providing the foundation to the fundamental question of firms — that of organization efficiency (Williamson, 1993). The transaction cost economics (TCE) theory seeks to explain one of the most important ideas for business, which is capturing opportunities without wasting resources. The paper describes that a firm's transaction costs including searching, monitoring, controlling, negotiating and managing transactions should be distinguished and excluded from production costs in order to ensure efficient transactions (Williamson, 1979). Thus, it is critical for buyers and sellers to find alternative modes of organizing transactions that minimize or mitigate transaction costs in exchanging goods or services. Furthermore, it benefits the decision makers or stakeholders of a firm to find optimum organizational structure to achieve economic benefits (Ketokivi & Mahoney, 2017; Rugman & Verbeke, 1992). The significant impact of this study in strategic management field is that it parameterized the critical attributes of transactions which enabled researchers to test empirical data (Barney, 2001).

Transaction cost theory suggests how the organizations should engage in transactions under incomplete and distinctive circumstances to posit optimum strategy. However, it is worth

noting that the firm-specific effects should be considered when applying transaction cost theory as firms are heterogeneous in nature and resources are limited (Barney, 1991; Wernerfelt, 1984). Consistent with the theory, this study argues that the boundaries of the platform firms are influenced by their strategy and power in the market (Leiblein & Miller, 2003; Williamson, 1991). As noted earlier, platform firms are rapidly growing with high efficiency by contracting with various stakeholders. Consequently, it is critical to investigate the scope of the stakeholders associated with the platform firms to explore the boundaries of the firm.

Hypothesis development

Prior literature suggest that stakeholder theory can be used to describe the nature of the firm (Brenner & Cochran, 1991). Further, the stakeholder theory provides managers with not only the normative approach of 'how' firms should manage their business activities in an 'ethical' way but also the suggests the legitimate groups of stakeholders of the firm (Clarkson, 1995; Donaldson & Preston, 1995; Hannan & Freeman, 1984)

Built on the stakeholder theory, although the academic research of stakeholder theory and CSR have been expanded greatly over the time, the main focus of the previous studies on corporate social responsibility were primarily addressing the ex-post effects of CSR on the financial performances of a firm (Ioannou & Serafeim, 2015a).

Furthermore, there are different views on CSR activities of firms among scholars and often these debatable issues can be problematic as the firm and its stakeholders' interests do not align (Liang & Renneboog, 2020). Therefore, drawing upon the literature, this study proposes that platform firms, which benefit greatly from the network effect from participants are more motivated to conduct CSR initiatives but face more challenges than traditional firms as they need to minimize the risks and negative impact of CSR issues (Wei et al., 2022).

Taken together, one single theory is too narrow to explain and determine the boundaries of the firm, thus it is necessary to apply broader instruments to platform firms (Boudreau, 2017; Brouthers & Hennart, 2007) and only a limited number of studies have examined the cross-country comparative samples to examine the stakeholders and CSR activities (Ioannou & Serafeim, 2012). As noted earlier, the main objective of stakeholder theory is to enhance the company's competitiveness by increasing the awareness of the great importance of stakeholders of the business. The theory gains more attention as businesses face challenges in global competition and the growing interests of corporate responsibilities in public (Mainardes et al., 2011). Stakeholder theory claims a successful business should effectively manage the wide array of surrounding stakeholders by focusing on the shared value perspective. Nevertheless, among the diverse groups of stakeholders of the firm, only a few studies categorized the stakeholders in two subgroups — the primary and the secondary based on the contractual relationships with the firm (Clarkson, 1995; Mainardes et al., 2011). However, as the newly emerging digital platforms dominate the industries and engage more stakeholders, this study argues that there is a need to revisit the inherent scope of the stakeholders.

Hence, this study posits that the scope of the stakeholders of the platform firms are not well defined both in the research and practice thus it is unclear 'what' defines the groups of stakeholders of the firm. To fill this gap in the literature, this study thus proposes the following hypotheses:

H1: Based on the efficient market hypothesis, a platform firm's boundary as defined by its stakeholders can be accurately captured by the stock market (stock market will accurately respond to the stakeholder-related news or scandals).

H2: The welfare of stakeholders of a platform firms is not accurately captured by existing ESG measures (the ESG ratings do not reflect the stakeholder-related news or scandals).

Challenges of ESG measurements

In recent decades, as interest in CSR has risen, the ESG performance evaluation method has developed as well. In the early days, large rating agencies developed indexes and began to provide them to various investors for screening purposes (Berg et al., 2019). The objective of the rating agencies is to measure and provide the ESG performance information to relevant stakeholders (MSCI 2018; Thomson Reuters 2017). These rating agencies determine the scope of corporate CSR activities and classify evaluation factors to provide post-development figures. Using a self-developed arrays of metrics, these raters weigh the variables then aggregate them to calculate the performance scores. They collect and assess ESG performance of the companies by using a company's disclosures, reports, and surveys. However, the rating agencies are undergoing changes in collecting ESG information to provide more reliable data to the investors. For example, rating agencies are expanding the collection of data from interviews, social networks and artificial intelligence to consolidate and aggregate the relevant data for investors.

In research, it is crucial to use accurate measurements to capture the ESG efforts of the company as ESG factors are more frequently used in research. An ESG rating is an essential tool for not only managers and investors but also for researchers. For managers and investors, the rating guides them to make investment decisions whereas it helps researchers to conduct empirical studies by using the rating data. Despite the importance of the ESG rating data, the ESG providers adopt different raw data and methodologies to evaluate the ESG performance of the firms showing that the evaluation methods are not standardized and thus there is a disagreement in rating scores (Christensen et al., 2019). Furthermore, rating agencies are commercial service

providers of the data to investors implying that a potential conflict of the interest may exist. Based on the findings of research, there is a significant difference or 'disagreement' among providers (Berg et al., 2021). Some scholars point out that the 'divergence' or 'disagreement' in ratings leads to inaccuracy of the data and casts doubt on its usefulness (Chatterji et al., 2016; Liang & Renneboog, 2020; Yoon & Serafeim, 2020). Moreover, the ESG rating metrics and variables are expanding and changing as more investors and stakeholders are committed to using ESG rating data. Thus, the effectiveness and validity of the rating scores are some of the challenges that still remain in the ESG performance construct. In sum, this study predicts that the ESG ratings disagreements are not associated with market reactions of the platform firms.

Indeed, the firms and its stakeholders recognize that the disclosure of CSR information and commitment to CSR practice are the essentials in formulating successful business strategies. As alluded to earlier, despite its improvements in measurements and metrics over time, the ESG ratings are still debatable measures in research as the various rating agencies produce data based on their own metrics (Yoon & Serafeim, 2020).

Corporate CSR Scandals

Public media coverage is an effective channel where the investors utilize the announcements of corporate news in assessing the future return of a firm's stock by considering the potential risks of the firms (Barber & Odean, 2008; Naumer & Yurtoglu, 2020). In addition, a scandal or negative corporate news is a useful tool for analyzing the responses of the various stakeholders of a firm since different opinions from stakeholders' interests are often reflected in the news. For platform-based firms, if such scandals are announced through media channels, both the public and the stock market associate the scandal with negative perceptions of the company. For example, users of the platforms are concerned that working conditions or a private data breach might influence their jobs or other social consequences and investors might prefer platform firms

with fewer scandals as they would be free from regulators and other such groups (Luo et al., 2011; Maxwell et al., 2000).

Many studies found that information from the news on public media is related to stock price changes. For example, there are strong correlations between media coverage and earnings announcements (Engelberg & Parsons, 2011), media coverage affecting the stock price movement while 'no media premium' firms have lower volatility in stock a for longer period (Fang & Peress, 2009). The previous studies found some interesting evidence from the relationship between corporate scandals and their impact. For instance, corporate scandals lead to criticism and negative news tends to draw more attention from stakeholders (Du et al., 2010). Accordingly, CSR information from the news are related to the stock market and it is useful in predicting the future earnings and stock returns of the firm (Tetlock et al., 2008) and to generate and add noise to the volatility in the stock market as the CSR is not correlated to the firm's financial fundamentals (Orlitzky, 2013).

There is an increase in the use of media news content as a source of determinants of the CSR related variables in research recently. Table 1 summarizes the recent empirical studies examining the relationship between ESG-related news or scandals and market reactions. Existing studies generally found a negative impact of scandals on stock returns implying that the market efficiently captures the new information and affects the stock returns accordingly (MacKinlay, 1997).

[insert Table 1 here]

Unfortunately, previous studies only examined the relationship between the CSR (ESG) news and its impact on stock returns. However, even though the news is one of the sources that are used in evaluating the ESG scores of the firm, investors employ the ESG ratings in making

investment decisions, not the corporate news announcements. This study hypothesizes that there is an asymmetry of the ESG relevant news and ESG ratings of the firm. The underlying assumption is that if negative ESG news is incorporated to the ratings in a timely fashion, then it should be reflected in future ratings. Hence, the ESG ratings provide precise information to the investors. However, this study hypothesizes that the failure of capturing the stakeholders of the firm leads to asymmetry of information in stock market.

This study focuses on ESG scandals of platform-based firms, changes of ESG rating scores ex-post and their effect on the market reaction. Facebook was the focus of a data leak scandal in 2018 in the U.K. involving more than 50 million user profiles being leaked to the company Cambridge Analytica. The scandal was reported on in public media, and the shares of Facebook fell 24 percent the next day but quickly recovered in fewer than two months. Strikingly, all three dimensions of the ESG rating of Facebook were upgraded in 2019 despite the public debate and the rising expenses of legal settlements.

More recently, when more than one hundred Tencent Holdings employees were under investigation for graft and corruption in 2020 in China, the ESG rating of Tencent did not change after the news announcement and it remains above average in the industry. In line with the existing literature, i.e., a negative relationship between the unethical behavior of a multinational company and actual stock performance (Rao & Hamilton, 1996); a negative impact of bad ESG news on market value from S&P 500 companies (Capelle-Blancard & Petit, 2019a); a significant negative effect of backdating scandal on the stock price (Bernile et al., 2006), this study predicts that ESG scandals of platform-based firms have an immediate effect on market reaction.

The implications of the abovementioned observations is that investors tend to be optimistic despite the regulatory woes of the company and CSR scandals of the firms. Moreover, these market reactions reconfirm the theory that market price fully reflects publicly available

information after experiencing information asymmetry (Dierkens, 1991; Fama, 1998; Lambert et al., 2012). However, it is natural to assume for market participants that when negative news is announced, a downgrade of the future ESG ratings are expected. To examine if ESG ratings accurately assess the CSR risks of the firm, this study examines if CSR events affect the changes of ESG ratings of firms. Further, the effects of the changes of ESG ratings on market reactions are also evaluated.

METHODOLOGY

To test the proposed hypotheses, a two-stage analysis was used to measure the magnitude of market reaction by employing cumulative abnormal returns (CARs). The second stage applied a multi-variate regression with CARs and ESG ratings using an ordinary least squares (OLS) estimation approach.

Using secondary data sets, this study employed CARs and ESG ratings as the main variables. In addition, to explain the firm level effects, several firm characteristic variables and financial variables were included in a robustness test. Finally, to strengthen the argument, additional analysis using the control group was conducted subsequently.

Data and Sample Selection

To construct the samples of the study, two conditions were considered during the selection process. First, the samples were restricted to the 'platform' firms who identified themselves as a 'platform' in their business descriptions in the annual report or had business unit that provided two-sided market transactions. Second, they belonged to either technology, software or internet content and information sector in the industry classification on the New York Stock Exchange (NYSE) or the National Association of Securities Dealers Automated Quotations (NASDAQ) (excluding ADRs, closed-end funds).

Thus, the sample of this study was the digital platform-based firm publicly listed in two U.S. stock exchanges. Samples from the U.S. equity market are suitable for the sample collection of the study as most prominent platform-based firms are headquartered in the U.S. and their stocks are listed in two major stock exchanges. For instance, the top five platform firms in the world are based in the U.S. and more than 50% of the total market value of the platform firms are in

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the U.S. (Evans & Gawer, 2016). From the total of 152 platform firms listed in two U.S. stock exchanges, only 57 of them had all four ESG ratings data from rating agencies as of 2021.

Therefore, after matching the data for the ESG ratings and eliminating the missing data, and checking for the availability of all independent variables, the final sample of this study was 57 companies with a total observation of 121 events. The list of the names and industries of the sample firms used in the study is presented in Appendix 1.

ESG rating data

The ESG ratings are commonly used by investors to screen the ESG performances of the firm for better evaluation of an investment. It is a scoring framework which contains relevant non-financial performances of the firm from all three dimensions and serves as an benchmark in assessing the ESG performances of the firm (Pagano et al., 2018). The rating agencies collect data from annual reports, sustainability reports, files from the government, public news and online sources and then evaluate the ESG performances of the firm based on their self-developed measurement metrics. The ESG scores are frequently used in finance research to measure the impact of non-financial data on firms' performances (Liang & Renneboog, 2017b). This study collected ESG ratings data from the four largest ESG ratings providers, namely: (1) Refinitiv from Thomson Reuters (previously Asset 4), a database which has been used many times in research articles (Benlemlih et al., 2018; Drempetic et al., 2020; Qiu et al., 2016). The coverage of this ratings is an objective and extensive data calculated based on the three pillars of ESG. (2) Morgan Stanley Capital International (MSCI, formerly KLD dataset) (3) Sustainalytics by Morningstar (4) Bloomberg ESG. The MSCI offers comprehensive ESG ratings globally and the largest multidimensional ESG data provider to the investors (Christensen et al., 2022; Deckop et al., 2006). All four rating agencies are widely and frequently used in empirical academic research for their usefulness.

However, it is not surprising that the ESG raters offer different scores based on diverse dimensions of their own assessments criteria. The ratings are constantly changing and the scope of the evaluation is expanding as well. Thus, to examine the different effects from each rating agencies, four ESG ratings were applied. Among them, three data providers used a percental scale from 0 to 100 (Refinitiv, Sustainalytics and Bloomberg) indicating the 0 (negative) to 100 (positive) while one data provider (MSCI) differed in scale system using a letter ratings (leader AAA, AA, average A, BBB, BB, and laggard B, CCC). Thus, to compare the standard deviations across the datasets an additional step was needed to calculate the adjusted ESG scores. First, after sorting the ESG data from each rating agency manually, the data was transformed into the same scale measures to match the rating scores. The last ESG rating data before the event and the firms' fiscals a year post-event were obtained to minimize the differences among the rating agencies that may exist from time distance.

To ensure the validity and accountability of the ESG measures, this study employed the ESG disagreement variable, constructed by computing the standard deviation across the four ESG rating agencies accordingly in empirical models.

Scandal news data

As mentioned earlier, the public news serves as an important source of information to multiple groups of stakeholders of the firm (Krüger, 2015). This study employs scandals or negative news announcements published to test the hypothesis of the study. Some of the examples of the chosen categories are the scandals that related to 1) Lawsuits and legal issues 2) Regulatory authority problems 3) Labor-related or workforce controversy announcements 4) Community controversies. Specifically, the samples were focused on social dimensions of the CSR (ESG) of the platform-based firms. For example, human rights violations in the workplace, anti-competition controversies, diversity opportunity issues, wages or working

condition issues. However, the study does not include corporate governance related news data for two reasons. First, the corporate governance issues differs from the other two dimensions of E,S,G (Hong et al., 2012). Second, due to the distinct nature of the business model of platform firms, they attract more attention from the public in social related issues than other dimensions.

Negative news or announcement of scandals of the platform-based firms' data were collected manually, handpicked from four sources namely Bloomberg News, Yahoo News, Refinitiv ESG controversies and Capital IQ Key Developments database. These news agencies are commonly used by investors; all news or scandals were public announcements and available for all. After identifying the specific scandals related to ESG, the first step was to identify the exact date of the scandal. For example, if the "Google violated U.S. labor laws in clampdown on worker organizing, regulator says" scandal was published on December 3, 2020, the collection of stock returns data around the event date followed in the next step. Table 2 displays some examples of the scandals used in the study. When collecting the events data, accurate pinpointing of the time was critical; thus, when the scandals were announced during the public holiday or weekends, the closest trading day(s) were chosen.

[insert Table 2 here]

Cumulative Abnormal Return (CAR) Analysis

To examine the impact of the scandals of platform-based firms on market reactions, this study performed an event study analysis method. Event study serves a powerful purpose in market research as a way of testing market efficiency theory. In finance and accounting studies, event studies are widely used to capture the market reactions on particular events (Corrado, 2011; MacKinlay, 1997). For example, event studies gauge the effect of various types of firm-specific announcements such as earnings announcements, mergers, dividends, and entry or delisting

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from the stock market and macro level economic announcements (McWilliams et al., 1999; M. L. Mitchell & Netter, 1993). The usefulness of the event study arises from the fact that it focuses on changes either overreactions or underreactions of common equity of the firm. It also provides the magnitude of the impact of the particular events on stock prices.

The event study is frequently used in various disciplines, not only in management studies but also economics as well as CSR in research (Binder, 1998; McWilliams et al., 1999). An event study is a suitable research methodology in the context of CSR as there is a potential reverse causality concern (Krüger, 2015).

According to Mackinlay (1997), using daily data rather than monthly, quarterly, or annual data is more precise and accurate to explain the abnormal performance of the stock prices as the short window period of the event provides more precise measurements of abnormal returns and therefore it reflects the effect of unanticipated announcements of the company. For example, using a the daily or intraday stock return data is more prevalent in research (McWilliams et al., 1999). Hence, following the previous studies, with a shorter window of announcements, the daily returns are used to measure the abnormal performances of the stock prices. The first model specification used a three-day window [-1, 0], [+1, 0] denoting that 0 is the event date and -1 and +1 are the trading days before and after the events. In addition, expanding the event windows of cumulative abnormal returns (CAR) to fifteen trading days [-15,+15] before and after the event in order to reduce confounding events effects such as earnings announcements to separate the noise during the CSR news event periods was performed.

This study used Eventus, a tool provided from Wharton Research Data Services (WRDS) to collect cumulative abnormal returns (CARs) of the sample firms. Eventus automatically collects the aggregated stock market data from CRSP for research analysis (Cowan & Edition,

2007). After the input of the event announcement dates to the queries, stock return data from the estimation window of [-1, +1] and [-15, +15] were collected for the analysis. As noted earlier, the usefulness of stock return reaction data is that underlying the assumption that market is rational and efficient; thus. the stock price of the company will incorporate the major events almost immediately (Fama, 1971; Netter & Mitchell, 1989).

Control Variables

This study includes several control variables in the empirical models to further test the potential bias in the sample selection. Using firm level characteristic variables the effects of the unobserved factors are tested. By doing so, the results of this study minimized the endogeneity bias in examining the direct effects (Aouadi & Marsat, 2018). Here, to mitigate the concerns, the authors retrieved the data from Eikon and WorldScope databases to construct the stock return related variables and firm level specific variables.

First, the firm size variable is the most commonly observed in corporate finance studies to check if the 'size effect' is sensitive to the main analysis of empirical studies (Dang et al., 2018; Waddock & Graves, 1997). Smaller firms not only have less resources to allocate for CSR but also do not benefit from the scale of operations; hence, they are less motivated to participate in CSR (Udayasankar, 2008a). Similarly, larger firm have more resources to invest in CSR initiatives. Furthermore, the larger firms exhibit more media attention and visibility from investors; hence, they receive more CSR related information from various stakeholders (Cowen et al., 1987; El Ghoul et al., 2011). The firm size '*Log(Market Cap)*' was included by calculating the natural logarithm of beginning-of-day market capitalization for a firm on the day the news article was published.

Institutional investors constitute the largest ownership in the stock market in the United States, and it is essential to examine their preferences toward CSR events of the firms. Institutional investors may choose to vote with ESG proposals. Portfolio and fund managers also have incentives to vote in favor of ESG friendly investments. Further, some green funds wish to use the investments for further social goals that are aligned with sustainability. The preferred choices of the institutional investors would help our understanding of the effects of CSR performance. A firm's institutional ownership is the percentage of the institutional investor ownership on the day of the event.

Financial leverage controls negative market perception of financial viability (Brealey & Myers, 2003). Leverage also affects investments and business risk because it influences the degree of investment irreversibility. Leverage is calculated as long-term debt plus current debt over the average of total assets of the current and previous year.

Liquidity is one of the risk factors for investors as it shows the uncertainty of the stock (Acharya & Pedersen, 2005). The lack of liquidity threatens the activities of buyers and sellers of the stock, thus affecting the stock price volatility. The current ratio measured by current assets over current liabilities was used.

Price to earnings ratio (P/E), calculated by market value price per share by earnings per share indicates the valuation of the stock. To test if the valuation information influenced the main analysis results, an over- or undervalued measurement is used.

Price to book value (P/BV) is measured by the beginning-of-day market value over the book value of equity. P/BV is widely used to measure the riskiness of a firm. For example, firms with higher market to book ratio tend to have a higher degree of risk, thus affecting the variability of the returns (Fama, 1971).

SG&A/Sales is selling, general, and administrative expenses over sales. SG&A is a useful indicator to capture firm performance as it is not only related to profitability but also is a

measure of the operating efficiency of the firm; thus, investors closely monitor the SG&A ratio (Anderson et al., 2007; Palepu et al., 2020).

Sales growth is related to the prospects of a company. The control of a firm's growth provides the relationship between the financial performance and stock market reaction for scandals.

Firm age is a proxy for the number of the years of operation of the firm since the incorporation year. The assumption is that the younger firms have a lack of experience of CSR practices and are likely to grow faster than older firms thus the study expects the negative effects of firm age.

The details of the variables including the names, measurements, and sources of the data used in this study are presented in Table 3.

[insert Table 3 here]

Procedures

To understand the impact of corporate scandals on stock returns of the platform-based firms, the event study was performed to collect the data, then abnormal returns of the firms were measured to estimate the changes of the firm value around the event period. First, estimating the ex-post returns of the firm to compare with expected returns to find abnormal returns (ARs) was calculated with the following model in equation (1).

$$R_{it} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{I,t}$$

$$AR_{it} = R_{i,t} - E(R_{i,t}) \tag{1}$$

$$CAR(t_1, t_2)_i = \Sigma AR_{i,t} \tag{2}$$

In the second step, using equation (2) the cumulative abnormal returns (CARs) are calculated for each event. CAR is the aggregated sum of all daily abnormal returns from the trading days event window. As most of the studies aggregate the multiple stock price reaction data, it is useful to use CAR to test the hypotheses. To estimate the abnormal returns of the sample firms,

the study uses two different sets of abnormal returns models specifications using a different benchmark as follows.

1) Market adjusted abnormal returns, equally weighted index

2) Fama-French momentum model abnormal returns, equally weighted index

A market adjusted model is the most commonly used to remove the effect of the whole market assuming that the specific event and the returns are independent (Strong, 1992). This benchmark based model creates more statistical power by employing smaller variances of the stock reactions (Beaver, 1981). Another version of estimation of abnormal returns model uses two additional factors which are based on the Fama and French 3-factor model shown in equation (3).

$$R_{i,t} - R_{f,t} = \alpha_i + \beta_i (R_{m,t} - R_{f,t})_t + \gamma_i \text{SMB}_t + \delta_i \text{HML}_t + \varepsilon_{i,t} \qquad (3)$$

Where, $R_{m,t}$ is the market return portfolio, a SMB denotes 'size premium' effects calculated by the difference between small-big firms, a HML, the difference between the high-minus book to market equity to include 'value premium' and a ε is a random error term (Davis et al., 2000; Fama & French, 1993).

Furthermore, to enhance the statistical robustness of the results, the Patell Z test—an estimation of standard errors for each event to test if abnormal returns were zero—results were also reported in the CARs tables (Patell, 1976). Typically, non-parametric tests are also used in an event study as they provide more statistical power. The generalized sign test controls for the possible asymmetry of positive and negative abnormal returns distributions in the estimation period (Cowan, 1992). The generalized sign test which was reported in column (7), compares with the period and adjusts for the fraction of positive abnormal returns in the estimation period instead of assuming 0.5.

To further investigate the effects of ESG ratings on market reactions, multivariate regressions were conducted. The empirical specifications for estimations are as follows.

$$CAR\,(t_1,\,t_2)_i = \alpha + \beta_1\text{ESG}_i + \boldsymbol{\delta Z}_i + \varepsilon_i \tag{4}$$

$$CAR\,(t_1,\,t_2)_i = \alpha + \beta_1\text{ESG AVR}_i + \boldsymbol{\delta Z}_i + \varepsilon_i \tag{5}$$

$$CAR\,(t_1,\,t_2)_i = \alpha + \beta_1\text{ESG\_Disagreement}_i + \boldsymbol{\delta Z}_i + \varepsilon_i \tag{6}$$

Where, $CAR_{i,t}$ denotes the cumulative abnormal return for firm i around the event dates t, $\boldsymbol{\delta Z}$ are the firm characteristics control variables, y measures the impact of the variables $\varepsilon_{i,t}$ with residual error terms. In model 3, the effects of aggregated ESG ratings on short-term market reaction were estimated. Subsequently, model 4 estimated average ratings of sample firms and model 5 tested the role of disagreement in the rating. Further, to examine the effects on the long-term market the annual stock returns variable was included in model 6. Model 7 tests the relationship between disagreements in ratings and their effect on annual stock returns.

The annualized stock return is calculated using equation (7) and is regressed with the ESG ratings and other firm characteristics variables with error terms.

$$Annual\ Return = \frac{end\ value\ of\ stock - initial\ value\ of\ stock}{initial\ value\ of\ stock} \text{X } 100 \tag{7}$$

$$\text{ESG\_AVR}_{i,t} = \text{annual stock returns} + \boldsymbol{\delta Z}_i + \varepsilon_i \tag{8}$$

$$\text{ESG\_Disagreement}_{i,t} = \text{annual stock returns} + \boldsymbol{\delta Z}_i + \varepsilon_i \tag{9}$$

RESULTS AND DISCUSSION

This research provides a new evidences for the effects of social responsibilities of the firms on financial performances by examining the changes of the ESG ratings of the firms ex-ante and ex-post CSR scandals. According to the results of the study, the stock market efficiently captures the unanticipated corporate scandals but the ESG ratings (which measures the social responsibilities of the firm) do not fully incorporates such scandals. The following sections discuss the results of the empirical findings of the study.

Table 4 displays the summary descriptive statistics of the samples used in the study. As reported in column A, a total of 121 observations of events with changed ESG ratings before and after the events were analyzed. The results show the mean scores of the total ESG ratings from four rating agencies were: 36.67 (MCSI), 22.85 (Sustainalytics), 32.17 (Bloomberg), 30.41 (Refinitiv) and the mean value of average ratings across four rating agencies was 29.84 ($SD = 9.04$) respectively for the sample firms. For disagreement, the standard deviation among the rating agency was 11.17 ($SD = 5.37$) showing that there were considerable variances in ratings. In section B, the cumulative abnormal returns dependent variable showed a mean value of -0.47 ($SD = 1.14$) for the period of three trading days around scandal news announcements of the sample firms and -4.14 ($SD = 42.00$) for annual returns. Lastly, section C presents a summary of the firm characteristics control variables. In column (2), there was an average of 77.68 for Institutional Holdings, 10.97 for Firm Size, 26.39 for Leverage, 15.14 for Price Earnings, 29.71 for Price to Book Value, 33.38 for SG&A, 41.59 for Sales Growth, 2.37 for Liquidity, and 20.28 for Firm Age were reported in the descriptive statistics.

[insert Table 4 here]

Table 5 depicted the Pearson correlations matrix of the variables used in this study. The result of correlations analysis showed that some of the variables were strongly correlated. The Disagreement and average of ESG ratings were highly correlated with 0.649(p <0.005), Annual returns and average of ESG rating 0.422 (p <0.005), Annual returns and Disagreement 0.433 (p <0.005). Some of the firm-level controlling variables also reported strong correlation such as the relationship between Institutional holdings and Annual return 0.324 (p <0.005), Firm size and Annual returns 0.443 (p <0.005), Liquidity and CAR -0.340 (p <0.005) implying some of the coefficients suggested the effects of firm level variables.

[insert Table 5 here]

To examine the impact of ESG scandals announcements on market response, first the study collected abnormal returns during the event period. Table 6 presents the results of market-adjusted abnormal returns from -15 to +15 trading day from equation 2. Column (2) and (3) reported mean abnormal returns and AR portfolio values for samples of this study, respectively. The results showed no significant stock price reactions before or after the scandals but there was a negative relationship between mean abnormal returns of the observed firms and the trading days around the announcements of the scandals. The negative abnormal return of the stock price was significant and stronger in a short window around the event dates [-1,+1] (one day before the event -2.642%, p <0.005 and on the event day -4.758%, p <0.001). This result was consistent with the previous studies' suggestions that in an effective event study, to reduce the 'noise' during the event period such as possible leakage of information and other factors affecting the stock market reaction, it was better to use a shorter window period (Salinger, 1992).

[insert Table 6 here]

As predicted, when using a narrow window period, the magnitude of the abnormal return was the largest and highly significant on the day of the event (-4.75%) than in other time windows. This result in Figure 3 was consistent with findings from prior research showing that there is an exogenous shock, a significant negative stock market reaction to negative CSR news (Capelle-Blancard & Petit, 2019a; Cui & Docherty, 2020).

Table 6 also reports the mean abnormal returns during the event windows of [-15,+15] using a Fama-French three-factor model. Column (6) and (7) contain the mean abnormal returns and time series portfolio for the sample firms. The results were similar to the market adjusted model specification showing that the negative effect of scandal remained the same after using a model with more factors. Nonetheless, the CAR results in table 11 showed the slightly stronger negative market reaction in the Fama-French model with -4.952%, p <0.001 than the market adjusted model result -4.758%, p <0.001.

[insert Figure 3]

However, the results also suggested the negative effects of the scandals quickly waned after the events. This may be explained by the behaviors of rational investors to take advantage of a price fall after being highly volatile (Daniel et al., 2001). Another possible explanation for this behavior was that investors were generally conservative and paid more attention to the fundamental values of the firms instead of other events.

The results allowed us to make inferences on the effects of CSR scandals on the stock market. It is evident that CSR scandal announcements exacerbate the abnormal returns of the firms in the short term and the market reacts efficiently with unanticipated events implying investors focused on firm specific events significantly. There was enough evidence from the bulk of studies showing the stock drift up and down during the public news such as earnings announcement periods (Ball & Brown, 1968; Bernard & Thomas, 1989).

This finding implies that investors underreacted to the CSR scandals of the firm. It was possible that the market underestimated the scandals and simply ignored the information. As the results showed, one trading day after the event, there was no significant effect of scandals. Hence, it shows the market response was quickly revised and expected future events.

However, this was against the nature of CSR scandals. First, the CSR scandals tended to persist for longer period than other corporate scandals mainly because of the complexity of the issues. It took a substantial amount of time to dissolve the ESG scandals as they often involved legal settlements and government policy interventions suggesting the negative effects would still remain for a certain period of time. Second, assuming that the investors were rational, and the market was efficient the stock price of the company incorporated the available information from public media. On the contrary, a quick diffusion of information was reflected in the abnormal return of the company. Finally, as investors can only pay limited attention to information, the complexity of ESG ratings may constrain the investors. For example, the scope of the 'social' dimension has expanded over the time but the assessment of environmental, social and governance factors is becoming more complex (Elkington, 2018).

To examine the aggregate effects of the market reactions, the CAR was calculated. Table 7 depicted the cumulative abnormal returns (CARs) of the firms for a trading day window [-15, +15] and [-1,+1], respectively. The findings show that market reactions were more significant and stronger in CAR with -5.23% on the event announcement day than the mean value of AR -4.75%. Again, this variability with a stronger magnitude of effects during the events show the stock market reaction was negative to the ESG scandals of the firm which reconfirmed the proposed hypothesis based on efficient market theory.

Further, these findings supported the numerous literature on CSR news and abnormal returns suggesting there was a negative relationship (Capelle-Blancard & Petit, 2019a; Chen & Yang,

2020; De Vincentiis, 2022; Ioannou & Serafeim, 2012; Sahut & Pasquini-Descomps, 2015; Utz, 2019; Yoon & Serafeim, 2020). Prior studies have shown the substantial amount of the evidence in examining the negative effects of negative media news on stock market overreactions. For example, the negative relationship between CSR and socially responsible investments (SRI) funds (Renneboog et al., 2008b), negative screening and stock returns (Lee et al., 2010), negative ESG news negatively affecting the CAR (Capelle-Blancard & Petit, 2019b).

The aforementioned finding suggests that platform-based firms were not indifferent to the effects of scandals. However, it is worth noting that the results provided the evidence that not only environmental and governance related news announcements were important but also the social related news had significant influence on investors.

[insert Table 7 here]

Table 8 reports the main results of this study. To examine the effect of CSR scandals, and ESG news announcements on market reaction, multivariate OLS regressions were performed. First, the effects of ratings from each rating agencies in separate columns showed the predictability of each rating on CAR. Overall, the effect of ratings on CAR were similar across all rating agencies. Surprisingly, the results from columns (1) to (5) showed that of all four ESG ratings from each agency, the average of ESG ratings and disagreement among the ratings did not have significant effect on CARs. The estimate coefficient was positive, but it showed the effect was marginal and non-significant. Thus, there was no evidence that ESG ratings affected the market reactions.

Jacob et al. (2010) found that the market does not react to the ESG news—especially environmental news announcements—but selectively incorporate the news. One possible

explanation for this result could be the nature of the qualitative information from ESG ratings agencies (Tetlock et al., 2008). On the one hand, despite having a common goal, to invest in socially responsible companies, as the retail and institutional investors do not hold enough power to make social changes, investors instead use passive approaches in making investment decisions to effectively allocate the investments in a sustainable way (Lewis & Mackenzie, 2000).

Contrary to most previous literature, this study found that the short-term effects of scandals of the firms were not associated with market reactions. Again, the results support the aforementioned hypotheses. The ESG ratings did not have effects in the relationship between CSR scandals and abnormal returns of the stocks of the firms as the ratings neglected the broader stakeholders of the firm. Thus, it did not predict the CSR performances of the firm.

Table 8 also reports the results of replicated regressions using CAR with Fama-French three factors in columns (8) – (14). The results suggest only ESG ratings from one provider, Refinitiv positively affected the CAR (0.013, $p < 0.1$) but the coefficient was marginal. Further, although the effect was small, one of the firm level control variable, the institutional holdings showed a significant relationship between ESG ratings and CARs across all rating agencies. The results from the Fama-French model were similar to other models because the variances of the returns were not significantly reduced even though a different model was used in the event study (Brown & Warner, 1980).

Additionally, to examine the possible leakage of information to the public before the event, a test with a longer window period was conducted with replications from the same estimation models (Flammer, 2013). Columns (1) to (5) in Table 9 present the regression results of ESG ratings and expanded windows of CARs for [-15, +15] trading days. As evidenced in the table, all ESG ratings did not have significant effects on CAR except Sustainalytics ESG ratings

(0.025, p < 0.1). The results indicate divergence of ratings exists suggesting that the ratings were not consistent although the effect of disagreement was insignificant.

[insert Table 9 here]

To examine whether the ESG ratings have an effect on market reactions for a longer period, another regression using annual returns was conducted. The Table 9 columns (8) – (14) display the regression results with annual returns. In contrast, when annual returns were replaced with CARs the results were the opposite from the previous findings. The coefficients are higher than with CARs and Bloomberg ESG ratings which showed a strong positive significant relationship (0.984, $p < 0.001$), and average ESG ratings from all four rating agencies were also significantly affecting the annual returns of all samples (0.726, $p < 0.001$). These results showed the predictive power of ESG ratings on the financial performance of firms. The finding supports the evidence from previous literature that firms with high ESG ratings lower the risk but exhibit less volatility and higher returns, so there is a positive relationship between ESG rating and stock performance (Ashwin Kumar et al., 2016; Gibson Brandon et al., 2021; Harjoto et al., 2017; Kim et al., 2014).

Furthermore, this study concentrated on firm level variables, CSR scandals of the firms and their effects on the stock market, using several controlling variables to test the firm-specific characteristics effects to provide explanations for exogenous factors. Several studies used firm level and country level characteristics to further extend the effects of the CSR (Gillan et al., 2021).When a shorter window period [-1,+1] was applied in the model the liquidity variable showed the highly significant effects with 1%. For the longer window [-15, +15], firm age showed a statistically significant effect at 1% for all specifications.

The institutional holdings are positively associated with all four ratings as presented in column (1) to (4) and the average ESG ratings are in column (5). According to the results, it is

possible that the firms with more institutional ownership were pressured by the public with ESG policies and are therefore more actively engaged with CSR initiatives (Ilhan et al., 2021). Moreover, institutional investors tend to be selective by focusing only on weaknesses from the CSR activities for economic incentives (Nofsinger et al., 2019). Institutional investors not only hold large investments but also have more access to corporate managers with more incentives to be engaged in the ESG initiatives of the company.

Next, the firm size, P/BV, SG&A, Firm age also showed significant effects. The plausible explanation for the significant effect of firm size is that large firms exhibit more pressures from the stakeholders (Udayasankar, 2008b); therefore, they disclose more CSR reporting to communicate with stakeholders including the public (Hutton et al., 2001). In addition, the older firms may enjoy not only the experience-based learning and economies of skill but also a greater amount of resources to allocate for CSR initiatives to prevent possible CSR scandals; thus, the firm age leads to a positive significant effect (Jiao, 2010).

ROBUSTNESS TEST

As with all other corporate finance studies, there are potential endogeneity concerns and selection bias in this study. To alleviate some endogeneity concerns and to strengthen the robustness of the results, the researcher performed several additional analysis to reconfirm the findings from the main analysis in subsections.

First, adding a control group in the robustness testing alleviated the identification problem in the estimations and it provided more rigorous causal effects of the samples used in this study (Borusyak et al., 2021). The following procedures were conducted for control group testing. To construct the comparing group, first identification of the matching samples was conducted. The closest peer in the same industry group category was matched (For example, software & IT services for Alibaba and Meta; hotels & entertainment services for booking holdings); another category was the market capitalization of the sample in the control group. Second, the control group was non-platform firms which did not exhibit the same situation in this research design but had similar firm characteristics in same industry classification. The data was collected from Refinitiv industry classification database and the names, industries and market capitalizations of the treatment group and control group samples are displayed in Appendix A.

After matching the control group one to one, the replicated multivariate regressions were repeated using empirical models from the main analysis. The table 10 presents the results of the replication of the empirical analysis.

Second, the CSR variable itself is an endogenous variable (Ioannou & Serafeim, 2015b). For example, "doing well by doing good" or "doing good by doing well" rationales address the reserve causality problems arguing that firms with better financial performances may invest more in ESG practices or vice-versa (Liang & Renneboog, 2020). Thus, additional tests with

the separation of each E, S,G dimension to reconfirm the main results were conducted. Table 10 reports the effects of each dimension on CAR for [-1, +1] and [-15,+15] for the treatment group and control group.

[insert Table 10 here]

Third, weighted least square (WLS) regressions were demonstrated to reduce the heteroscedasticity errors in the regression models. In addition to the ordinary least square analysis used in the empirical model in the study, this approach helped to increase the goodness of the fit in the linear regression by minimizing the sum of squared residuals (Willett & Singer, 1988). Table 11 displays the results from the OLS method and WLS methods, respectively. None of the variables showed significant effects in the two methods except the liquidity control variable suggesting that the samples observed in the study showed the nearly same patterns.

[insert Table 11 here]

In addition, following the previous studies, this study evaluated whether the main effects remained the same after assessing the geographical location factor of the firm was applied. For example, the China-based platform firm Alibaba and Baidu are currently listed in U.S stock exchanges. The results show that the country attribute was not an important factor affecting the relationship in ESG ratings and stock reactions in the sample. This evidence is consistent with prior findings from Cai, Pan, and Statman (2016) documenting the multinational firms operating across multiple countries exhibiting fewer effects from country-level factors.

Finally, the study classified the samples into two categories namely 'Full' and 'Hybrid' types of platform firms to show if the results remain as robust in subsamples. The 'Full' exclusive platform firms refer to firms started their business solely in the digital marketplace while 'Hybrid' platform firms refer to the traditional firms are actively expanding their businesses

beyond a traditional business model, to platform focused businesses. For example, Apple is classified as 'computers, phones & household electronics' in industry group but more revenues were generated via platform business units such as the Appstore than by hardware sales. In this case, Apple is considered as hybrid type of platform firm whereas eBay, providing a fully online marketplace for multiple users is defined as a full platform firm. However, the results show insignificant differences between the two groups showing that the results remain the same.

Collectively, this study hypothesized that ESG ratings changes do not incorporate the scandals of the firms and the shocks in the market, but the abnormal returns of the firms precisely reflect the unanticipated events. The underlying assumption of this study is that stakeholders of the platform-based firms should be measured by CSR scandals, but ESG ratings failed to accurately capture the stakeholders.

However, careful interpretations should be made from these conclusions. One might argue that the changes of ESG ratings do not accurately capture the scandals due to the difficulties of real time reporting and incorporating of events. As there is some distance between the time of measurement of ESG ratings and CSR scandals, it is possible that the ratings at the time of event were not updated. To encounter the time lag issue, an additional test using a change of ESG ratings to examine the effects of ESG ratings on market reactions is necessary.

The changes of ESG ratings were computed using ESG rating data before the scandal and after the new release. In addition, to further investigate the interactions of each dimension of ESG rating, subsamples of E, S, G were measured. Table 10 reports the regression results with changes of each E, S, G rating, average ratings, and its effects on CAR. Again, the results remain qualitatively similar, and this study did not observe any significant evidence. The results suggest that the ESG rating of the firm is not correctly valuing the scandals of the firms; thus, the change of the ratings is not accurately predicting market reactions. One might argue that it is possible other ESG performances may have improved during the event time which

may offset the negative effects of the scandals. However, as mentioned earlier, as the platform firms typically do not own their production facilities, inventories, nor tangible products they have higher average environmental scores compared to traditional industry. Another interpretation is that CSR scandals tend to be more prolonged than other corporate scandals for its impact on society, but little can be done within a short period from the company as the ESG ratings are updated regularly.

On the contrary, when the control group (non-platform) was compared with the treatment group, a change of governance rating showed significant effect on CAR with -0.002. Furthermore, the disagreement variable became negatively significant in the control group (-0.010, p <0.01). The columns (5) to (8) in Table 10 present the results of the replicated regressions with changes of each E, S, G and change of disagreement in control group. The differences of platform and non-platform firms is reported in the last column (9).

[insert Table 12 here]

Table 12 presents the results of quintile regressions. To examine the magnitude of each different threshold in the subsamples, additional regressions using quartile (Low (25%), Mid (50%) and High (75%)) groups by ESG ratings were performed. Although the effects of some of the controlling variables changed after dividing the subsamples into quartiles, as expected, the results remain robust as quintiles analysis found no evidence when regressed with CAR but a significant positive effect on annual returns from all samples and the mid (50%) group.

However, when quantiles are employed in annual return regression, the disagreement shows positive significant effects in all groups (Low 25% group: 1.228, $p < 0.001$, Mid 50% group: 1.295, $p < 0.001$, High 75% group: 0.677, $p < 0.001$). The latter results suggest that the ESG

disagreement influences stock market participants thus affecting the volatility of the stock returns (Christensen et al., 2022; Yoon & Serafeim, 2020).

Institutional holdings and firm size are positively associated with both CAR and annual returns at statistically significant levels. This finding is aligned with prior studies suggesting that firm size and institutional holdings are related with each other (Nofsinger et al., 2019; Udayasankar, 2008b). Considering the range of the samples used in the study, it is reasonable to interpret that firm size effects exist.

CONCLUSION

This paper revisited the boundaries of the firms by examining the "new stakeholders" of the platform firms. The diverse stakeholders of the firms are creating a new value in business ecosystem thus the boundaries of the firm are blurred as the firms are expanding and converging the business sectors. Furthermore, the digital platforms will continue to be a key source of changes in the business world. Therefore, identifying the "new stakeholders" of the firm and accurately measuring the welfares of the stakeholders are crucial in research to redefine the boundaries of the firms.

According to the findings from the study, the results point out that the stock market efficiently incorporates the unanticipated events of firms almost immediately. This is not surprising as the result is consistent with existing market efficiency theory literature suggesting that negative news financially threatens the company with harsh penalties.

However, contrary to prior empirical studies, the main findings of this study suggest that the ESG ratings do not fully capture the effects of firm scandals; hence, it does not accurately reflect in the ratings ex-post events implying that the stakeholders of the platform firms are not carefully incorporated in the assessments of the CSR performance of the firm. To examine this controversy, the study presents meaningful evidence to illuminate the path to unexplored areas of research. The results of the study show that the ESG ratings do not effectively reflect the CSR scandals of the firm. Thus, they are not fully capturing the boundaries of the firm.

The crucial but challenging social dimension in CSR performance for platform firms is essential not only to avoid risks in the capital market, but also to grasp opportunities to improve their CSR performances to meet demands and expectations from the various stakeholders of the firm. However, investors are advised to systematically assess and evaluate the social

dimension of platform firms not only to improve their portfolios but also to mitigate potential excessive losses by recognizing the ESG ratings.

This study contributed to the literature in several ways. First, the study attempted to refine the understanding of how capital markets consider ESG ratings when making investment decisions. Considering the substantial impact of CSR in the financial sector, the findings of this study contribute to the existing debates on the effects of CSR on companies. Indeed, the evidences from the study show the social responsibility of the firm has a significant impact on stock returns.

Second, the findings suggest the CSR scandals of the firm significantly and negatively affected the stock price changes. Based on the results, this study shows that the effects tended to persist longer in platform-based firms compared with traditional firms. This market response has critical implications; investors are more concerned about the company's financial fundamentals rather than the CSR performances or scandals. Digital platform firms get more attention not only from the public but also from the capital market.

Finally, this study suggests that the stakeholders of the firm should be redefined in a new business model—a platform model—as they are rapidly expanding its scope and scale in industry. Traditional industries are transforming themselves into platform-focused businesses as well. Furthermore, the effects of platform firms' stakeholders are more complex and broader to analyze and investigate compared to traditional firms. Thus, identifying and evaluating the accurate stakeholders and their influence on firms is a pivotal topic for both researchers and practitioners to meet the demands from these groups of stakeholders.

Overall, the existing literature primarily focused on empirical studies examining the effects of CSR on firm performance, investigation of the determinants, outcomes of the CSR and its impact on financial products. Moving beyond the fundamental empirical studies, the goal of this study was to revisit the boundaries of the firm through the lenses of CSR and contribute to

the literature on the diverse views on identification of stakeholders of the firm. Moreover, the findings of the study contribute to the growing interest in identifying and analyzing the 'accurate stakeholders' of contemporary organizations (Clarke, 2005; Freeman & Liedtka, 1997; Freeman et al., 2007).

Nevertheless, this study argues that the existing theories needs to be revisited as the old boundaries of the firm do not reflect the welfares of the new stakeholders of the firm. Thus, there is a need for providing a new theoretical framework to resolve the addressed CSR controversies of platform firms, to emphasize the needs for redefining the scope and boundaries of the firm.

However, despite the insightful findings from this study, it is not without its limitations and shortcomings. First, due to the lack of availability of the panel data from the samples, the study was not able to perform cross sectional panel regressions. For future research, it would be interesting to investigate the long-term effects of the changes of ESG ratings of scandals of the firms on market reactions to further examine if the results persist over time. Second, this study employs stakeholders as a measurement to examine the effect of CSR on only one stakeholder of the firm, the shareholders. Although it is challenging to find alternative measures to replace the shareholders, a new framework measuring the multiple stakeholders of the firm would pave the way for future studies to accurately capture the stakeholders of the firm. Finally, as both practitioners and researchers rely on ESG ratings in evaluating the CSR performances of firms, a closer look at the usefulness of ESG measurements and the assessment of more stakeholders in evaluating the CSR performance of firms would provide fruitful discussions.

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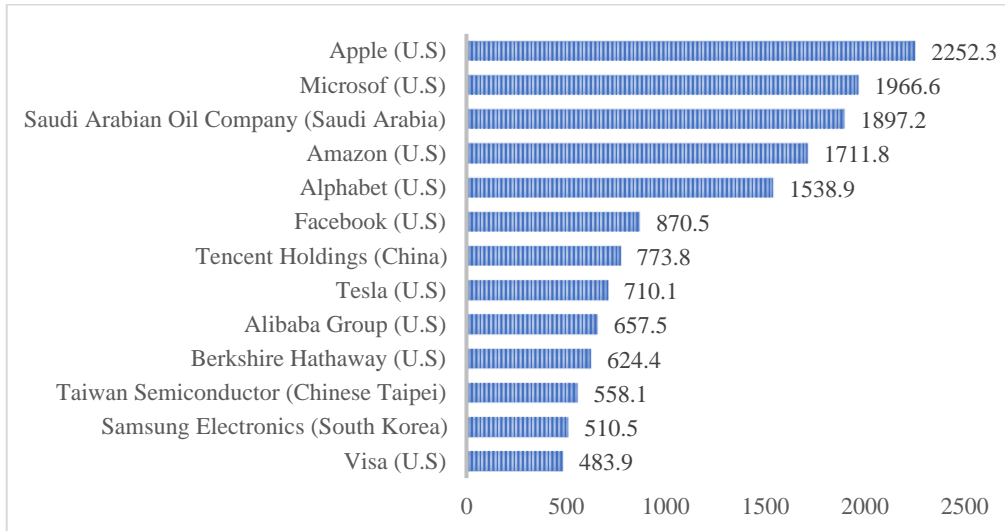
Figure 1. The 100 largest companies in the world by market capitalization in 2021

Source: NYSE, Nasdaq.com and corporate reports from 2021. All figures are in billions of U.S, dollars
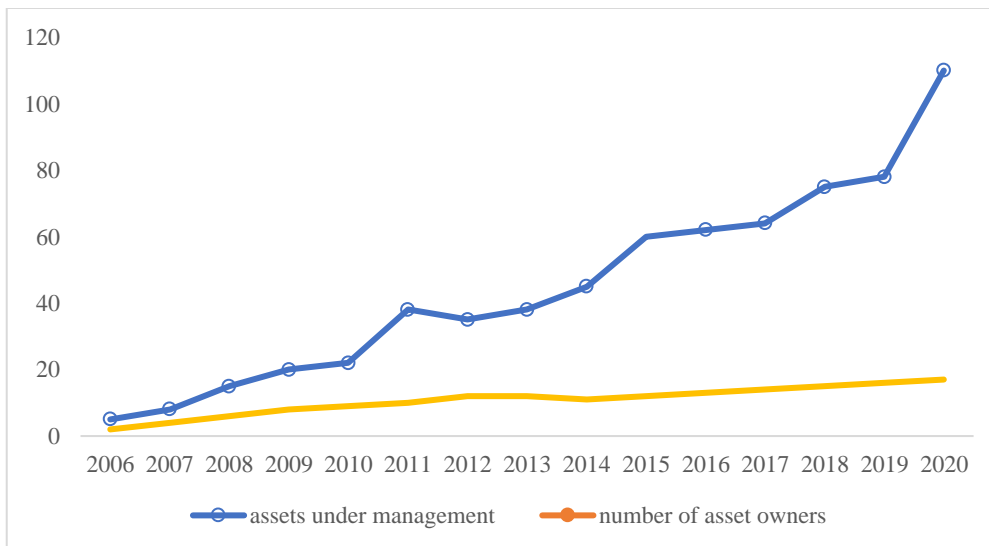
Figure 2. ESG global assets under management by PRI

Source: Global Sustainable Investment Alliance, Principles for Responsible Investment 2020. All figures are in trillions of U.S. dollars

Figure 3. Abnormal returns from day -15 to day +15 event window

This figure plots the mean abnormal returns during the [-15, +15] trading day period of treatment group(platform) and control group(non-platform). The vertical axis refers to the abnormal returns and the horizontal axis is the trading day.

Table 1. Literature Review of CSR(ESG) News and Stock Returns Studies

Authors	Samples	Variables	Results
Grewal et al. (2019)	E.U.	Mandatory nonfinancial disclosure	Negative
Naughton et al. (2019)	U.S.	Announcements of CSR activities	Positive
Flammer (2013)	U.S.	Announcements of eco-friendly initiatives	Positive
Capelle-Blancard & Petit (2019)	International	Positive and negative ESG news	Negative (Yes), Positive (No)
Cui & Docherty (2020)	U.S.	Positive and negative ESG news	Negative (Yes), Positive (No)
Ender & Brinckmann (2019)	Austria	Positive and negative ESG news	Negative (No), Positive (Yes)
Utz (2019)	International	Press release of corporate scandals	Negative (No), Positive (Yes)
Janney & Gove (2011)	U.S.	CSR initiatives and scandals	Negative
Adrian (2011)	U.S.	CSR inclusions and exclusions	No Significance
Jory et al. (2015)	International	CEO scandals and CAR	Negative
Naumer & Yurtoglu (2019)	International	Corporate news and cost of financing	Negative
De Vincentiis (2022)	International	Positive and negative ESG news	Negative (Yes), Positive (Yes)
Derrien et al. (2021)	International	Negative ESG news and future profits	Negative
Sahut & Pasquini-Descomps (2015)	Switzerland, U.S,. U.K.	Positive and negative ESG news	Negative (Yes), Positive (Yes)
Wong & Zhang (2022)	U.S.	ESG media coverage	Negative

Table 2. Examples of Scandals of the Platform Firms

Company	Date	Category	News
eBay	2021-07-22	Business ethics controversies	Massachusetts couple sues eBay over 'unrelenting' harassment campaign
JD.com Inc	2021-02-07	Wages working condition controversies	Rare overtime protest by China tech workers goes viral
Lyft	2020-06-25	Diversity and opportunity controversies	California wants judge to classify Uber, Lyft drivers as employees
Facebook	2021-01-05	Intellectual property controversies	Italy court orders Facebook to pay $5m in damages for copying app
Uber	2020-08-05	Wages working condition controversies	California labor commissioner sues Uber and Lyft alleging wage theft
Weibo	2021-12-14	Controversies privacy	Weibo fined by Chinese regulator for publishing illegal information
Booking.com	2021-06-10	Tax fraud controversies	Italian police target Booking.com for alleged tax evasion
Expedia Group	2021-04-09	Responsible marketing controversies	Expedia settles false advertising class action with hotels

Table 3. Descriptions of the Variables

Category	Variables	Measures	Sources
ESG	E, S, G rating scores	Aggregate ESG ratings and Each separate Environmental, Social, Governance ratings	Thomson Refinitiv MSCI Sustainalytics Bloomberg ESG
Disagreement	ESG rating disagreement	Standard deviation of ratings	Thomson Refinitiv MSCI Sustainalytics Bloomberg ESG
ESG Scandals	ESG Scandal News	Scandal news announcements	Refinitiv Scandal Data Bloomberg News Yahoo Finance News S&P Capital IQ Key Developments
Market Reactions	Cumulative Abnormal Returns	Sum of (actual return – expected return)	Eventus (CRSP)
	Annualized returns of the stocks	End of year price – beginning of year price / beginning of year price × 100	
Firm-level Controls	Firm Size	Ln(book value of total assets)	WorldScope Compustat
	Financial Leverage	Book value of debt / book value of assets	
	Liquidity	Current assets-inventories / current liabilities	
	Institutional Ownership	Percentage of shares by institutions	
	Sales Growth	Sales in year (t) / Sales in year (t-1)	
	Price to Earning	Share price / earnings per share	
	Price to Book Value	Share price / book value per share	
	Selling, general, and administrative ratio (SG&A)	SG&A / total revenue	
	Firm Age	Number of years operation since incorporation	
Additional	Geographical distance	if the firm is located in U.S 1 otherwise 0	Dummy variable
	Platform type	if the firm is full platform 1 otherwise 0	

Table 4. Summary of Descriptive Statistics

The table reports the summary statistics of the samples. The sample consists of 121 events from 57 platform firms listed in New York Stock Exchange(NYSE) and National Association of Securities Dealers Automated Quotations (NASDAQ). The results of observations (1), mean (2), standard deviation (3) of the independent variables from rating agencies in each columns with min, max value and 25%, 75% groups, respectively. CAR is measured by equation $CAR_{(T1,\,T2)} = \Sigma\, AR_{i,t}$, annual return is calculated $AR = \dfrac{end\ value\ of\ stock - initial\ value\ of\ stock}{initial\ value\ of\ stock}$ X 100 . Firm level characteristic variables were collected from at the end of the day of events. Institutional holdings is the percentage of the shares by institutions. Firm size is the log of market capitalization. Leverage is the book value of debt to book value of assets. P/E is share price to earnings per share. P/BV is share price to book value per share. SG&A is the ratio of SG&A to total revenue. Sales Growth is the change in sales. Liquidity is the ratio calculated by current assets to current liabilities. Firm Age is the number of years since the incorporation of the company.

Variable	(1) Obs	(2) Mean	(3) Std. Dev.	(4) Min	(5) Max	(6) 25%	(7) 75%
Independent							
MSCI	121	36.6743	14.2893	9.5	66.5	28.50	47.50
Sustainalytics	121	22.8505	6.2039	12.6	33.1	16.71	28.35
Bloomberg	121	32.1752	14.2961	11.6	59.1	18.20	40.90
Refinitiv	121	30.4138	12.5700	9.8	71.2	21.11	34.93
AVR_ESG	121	29.8441	9.0458	7.0	47.0	22.94	36.94
Disagreement	121	11.1724	5.3709	4.2	24.6	7.21	14.39
Dependent							
CAR[-1, +1]	121	-.47909	1.1428	-4.2	2.5	-0.97	0.30
Annual Return	121	-4.1489	42.0021	-81.9	86.5	-39.27	27.89
Firm level control							
INS_Holdings	121	77.6872	24.2286	20.8	128.4	64.51	96.39
Firm Size	121	10.9789	.8697	9.2	12.4	1.68	7.74
Leverage	121	26.3958	18.6970	.4	82.7	8.8	38.90
P/E	121	15.1486	126.1111	-282.3	496.3	-0.36	35.01
P/BV	121	29.7174	168.2291	-148.4	1304.4	2.84	14.23
SG & A	121	33.3807	20.9459	6	88.0	18.93	39.86
Sales Growth	121	41.5928	30.1275	9.2	143.9	21.69	54.63
Liquidity	121	2.3700	2.4199	.4	12.2	1.01	2.85
Firm Age	121	20.2892	10.3806	5	46	12	24

Table 5. Correlations Matrix

Note: The table displays the Pearson correlations matrix for key variables used in this study ($N = 121$). The symbols *,** and *** denote statistical significance at the 0.05 (2-tailed), 0.01 (2-tailed) and 0.001(2-tailed) levels, respectively.

	ESG_AVR	Disagreement	CAR	Annual Return	INS_Holdings	Firm Size	Leverage	P/E	P/BV	SG&A	Sales Growth	Liquidity	Firm Age
ESG_AVR	1												
Disagreement	0.649**	1											
CAR	0.122	0.104	1										
Annual Return	0.422**	0.433**	0.147	1									
INS_Holdings	-0.013	0.080	0.028	0.324**	1								
Firm Size	0.153	0.253**	-0.119	0.443**	0.327**	1							
Leverage	-0.109	0.107	0.221*	0.196*	0.374**	0.098	1						
P/E	0.077	0.215*	-0.053	-0.053	0.107	0.170	0.319	1					
P/BV	-0.070	-0.103	-0.103	0.178	0.191*	0.271**	-0.068	-0.028	1				
SG&A	-0.198*	0.017	-0.118	-0.091	0.252**	0.156	-0.015	-0.048	0.520**	1			
Sales Growth	-0.154	-0.198*	-0.169	0.265**	0.024	-0.039	-0.120	-0.105	0.190	0.142	1		
Liquidity	-0.058	-0.146	-0.340**	0.004	0.098	0.228*	-0.332**	-0.003	-0.105	0.120	0.142	1	
Firm Age	0.526**	0.533**	0.232*	0.574**	-0.062	0.145	0.186	0.109	-0.094	-0.310**	-0.157	0.240**	1

Table 6. Abnormal Returns on Announcements of Scandals

This table reports abnormal returns for trading days of scandal news announcements during the window of [-15,15] in column (2) (Market adjusted equally weighted model) and (6) (Fama-French 3 factor model). The column (4) and (5) is the results from uncorrected Patell Z and generalized sign Z test, similar test standard cross-section and generalized sign Z for Fama-French model is reported. The symbols *,** and *** denote statistical significance at the 0.05, 0.01 and 0.001 levels, respectively, using a generic one-tail test.

		Market adjusted - equally weighted index model				Fama-French 3 factor model			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Day	N	Mean Abnormal Return	Portfolio Time-Series (CDA) t	Uncorrected Patell Z	Generalized Sign Z	Mean Abnormal Return	Portfolio Time-Series t	Std Csect Z	Generalized Sign Z
-15	121	0.11%	0.370	0.238	-0.348	0.22%	0.937	0.722	0.179
-14	121	0.15%	0.522	0.622	1.653*	0.23%	0.940	1.375	2.727**
-13	121	-0.60%	-2.080*	-2.040*	0.016	-0.48%	-2.004*	-0.971	-0.003
-12	121	-0.01%	-0.077	0.189	1.471	-0.13%	-0.555	-0.582	-0.003
-11	121	-0.17%	-0.583	-0.524	-0.530	0.09%	0.362	-0.676	0.725
-10	121	-0.06%	-0.212	-0.195	-1.257	0.01%	0.055	-0.031	0.543
-9	121	0.67%	2.351**	2.336**	0.925	0.76%	3.191***	2.638**	1.999*
-8	121	-0.50%	-1.761	-1.482	-1.803	-0.43%	-1.808*	-1.693*	-1.095
-7	121	-0.29%	-1.014	-1.026	-1.439	-0.36%	-1.490*	-1.485	-1.641*
-6	121	-0.09%	-0.309	-0.202	-1.257	-0.02%	-0.072	0.452	-0.185
-5	121	-0.30%	-1.060	-1.484	-1.803*	-0.23%	-0.975	-1.339*	-0.913
-4	121	-0.77%	-2.685**	-2.578**	-2.167*	-0.50%	-2.082*	-2.162*	-1.823*
-3	121	-0.14%	-0.481	-0.227	0.561	-0.28%	-1.157	-0.757	-0.549
-2	121	-0.35%	-1.211	-1.075	-2.167*	-0.21%	-0.868	-0.677	-1.823*
-1	121	-0.76%	-2.642**	-2.611**	-1.621	-0.49%	-2.058*	-1.579*	-0.185
0	121	-1.36%	-4.758***	-4.707***	-2.531**	-1.19%	-4.952***	-3.580***	-2.732**
+1	121	-0.14%	-0.499	0.461	0.379	0.04%	0.169	1.023	1.271
+2	121	-0.26%	-0.900	-1.161	-0.723	-0.12%	-0.501	-0.515	-0.194
+3	121	0.07%	0.248	0.029	-1.089	0.10%	0.410	0.109	0.173
+4	121	-0.09%	-0.325	0.068	0.745	-0.01%	-0.038	0.283	0.540
+5	121	-0.01%	-0.047	0.024	0.469	-0.16%	-0.653	-0.439	-0.659
+6	121	-0.33%	-1.152	-1.096	-1.473	-0.20%	-0.855	-0.819	0.537
+7	121	-0.10%	-0.334	-0.223	-0.646	0.10%	0.409	0.325	0.257
+8	121	0.15%	0.538	0.413	-0.461	0.17%	0.699	0.743	-0.115
+9	121	-0.26%	-0.901	-0.818	-0.558	-0.32%	-1.330*	-1.226	-0.773
+10	121	0.12%	0.404	1.056	1.030	0.27%	1.119	1.862*	1.939*
+11	121	0.05%	0.170	0.276	0.093	0.01%	0.023	-0.020	0.124
+12	121	-0.39%	-1.373	-1.442	-1.032	-0.27%	-1.128	-1.279	-1.623*
+13	121	-0.04%	-0.156	-0.012	-0.469	0.05%	0.202	0.858	1.001
+14	121	0.11%	0.391	0.314	0.467	0.06%	0.271	0.523	0.064
+15	121	0.03%	0.098	0.447	1.126	-0.04%	-0.153	0.673	0.908

Table 7a. Cumulative Abnormal Returns on Announcements of Scandals (equally weighted index)

	(1)	(2)	(3)	(4)	(5)	(6)
Days	N	Mean CAR	Precision Weighted CAAR	Portfolio Time-Series t	Uncorrected Patell Z	Generalized Sign Z
(-15, -2)	121	-2.35%	-1.79%	-2.200[*]	-1.990[*]	-0.712
(-1, 0)	121	-2.12%	-1.76%	-5.232[***]	-5.175[***]	-3.258[***]
(+1, +15)	121	-1.06%	-0.39%	-0.960	-0.347	0.016

This table represents the cumulative abnormal returns on each portfolio on different time window periods. The symbols [*],[**] and [***] denote statistical significance at the 0.05, 0.01 and 0.001 levels, respectively, using a generic one-tail test.

Table 7b. Cumulative Abnormal Returns on Announcements of Scandals (Fama-French momentum model)

	(1)	(2)	(3)	(4)	(5)	(6)
Days	N	Mean CAR	Precision Weighted CAAR	Portfolio Time-Series t	Std Csect Z	Generalized Sign Z
(-15, -2)	121	-1.32%	-0.62%	-1.447[*]	-0.906	0.361
(-1, 0)	121	-1.68%	-1.34%	-4.957[***]	-3.768[***]	-2.368[***]
(+1, +15)	121	-0.31%	0.53%	-0.337	0.911	0.907

This table represents the cumulative abnormal returns on each portfolio on different time window periods. The symbols [*],[**] and [***] denote statistical significance at the 0.05, 0.01 and 0.001 levels, respectively, using a generic one-tail test.

Table 8. Empirical Results for Regressions with CAR 3 trading day

The results of the regressions using cumulative abnormal returns (CAR) and ESG ratings for three trading days were reported in the table. The columns (1) – (4) report each ESG ratings regression specifications. The average of the ESG ratings and disagreements (standard deviations) among the ratings are displayed in column (5) and (6), respectively. Results with additional control variables platform type and geographical distance is shown in (7). All estimated coefficients are shown in the table with *t-statistics* reported in parentheses. *,** and ***denote statistical significance at 1%, 5%, and 10% confidence levels, respectively.

	Market-Adjusted CAR[-1,+1]							Fama-French CAR [-1,+1]						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
MSCI	0.002 (0.29)							0.008 (1.46)						
Sustainalytics		0.001 (0.05)							-0.014 (-1.07)					
Refinitiv			0.003 (0.27)							0.013* (1.91)				
Bloomberg				0.006 (0.55)							0.003 (0.35)			
AVG ESG Ratings					0.007 (0.49)	0.0148 (0.91)	0.1840 (1.10)					0.011 (1.19)	0.007 (0.57)	0.006 (0.47)
Disagreement						-0.0261 (-0.91)	-0.0256 (-0.88)						0.013 (0.66)	0.011 (0.56)
INS_Holdings	0.005 (0.90)	0.005 (0.91)	0.005 (0.85)	0.004 (0.72)	0.004 (0.83)	0.0042 (0.81)	0.0065 (1.10)	0.008** (2.26)	0.007** (2.11)	0.007** (1.99)	0.008** (2.19)	0.008** (2.13)	0.008** (2.16)	0.005 (1.28)
Firm Size	-0.015 (-0.47)	-0.012 (-0.38)	-0.012 (-0.40)	-0.012 (-0.38)	-0.015 (-0.48)	-0.0117 (-0.38)	0.0071 (0.20)	0.075 (0.55)	0.139 (1.01)	0.051 (0.37)	0.101 (0.72)	0.065 (0.46)	0.089 (0.61)	0.041 (0.25)
Leverage	0.003 (0.47)	0.003 (0.42)	0.003 (0.46)	0.004 (0.57)	0.004 (0.56)	0.0046 (0.64)	0.0036 (0.49)	-0.005 (-1.13)	-0.006 (-1.16)	-0.005 (-.115)	-0.006 (-1.14)	-0.005 (-0.99)	-0.005 (-1.02)	-0.005 (-1.08)
P/E	-0.002 (-1.63)	-0.002 (-1.64)	-0.002 (-1.63)	-0.002 (-1.63)	-0.001 (-1.57)	-0.0013 (-1.47)	-0.0013 (-1.47)	0.000 (0.39)	0.000 (0.29)	0.000 (0.58)	0.000 (0.42)	0.000 (0.55)	0.000 (0.42)	0.000 (0.38)
P/BV	-0.001 (-1.44)	-0.001 (-1.51)	-0.001 (-1.53)	-0.001 (-1.47)	-0.001 (-1.43)	-0.0010 (-1.47)	-0.0012 (-1.63)	-0.001 (-1.63)	-0.001 (-1.67)	-0.001 (-1.77)	-0.001 (-1.71)	-0.001 (-1.64)	-0.001 (-1.63)	-0.001 (-1.71)
SG & A	0.001 (0.13)	0.001 (0.17)	0.001 (0.08)	0.001 (0.15)	0.001 (0.18)	0.0031 (0.48)	0.0058 (0.83)	-0.002 (-0.42)	-0.001 (-0.28)	-0.003 (-0.70)	-0.001 (-0.19)	-0.001 (-0.16)	-0.002 (-0.40)	-0.003 (-0.69)
Sales Growth	-0.006 (-0.15)	-0.006 (-1.55)	-0.006 (-1.38)	-0.007 (-1.61)	-0.006 (-1.49)	-0.0070** (-1.68)	-0.0063 (-1.48)	0.001 (0.27)	0.000 (0.11)	0.002 (0.66)	0.000 (-0.03)	0.001 (0.19)	0.001 (0.32)	0.001 (0.20)
Liquidity	-0.115*** (-2.24)	-0.116*** (-2.26)	-0.117*** (-2.28)	-0.114*** (-2.23)	-0.114*** (-2.21)	-0.1166*** (-2.27)	-0.1365** (-2.53)	0.010 (0.30)	0.010 (0.31)	0.008 (0.26)	0.012 (0.37)	0.013 (0.39)	0.013 (0.41)	0.019 (0.58)
Firm Age	0.012 (0.95)	0.013 (1.14)	0.011 (0.89)	0.006 (0.38)	0.010 (0.79)	0.1368 (1.03)	0.0190 (1.36)	0.004 (0.36)	0.002 (0.20)	0.003 (0.30)	0.005 (0.41)	0.005 (0.45)	0.002 (0.15)	0.001 (0.06)
Platform Type							0.2001 (0.66)							-0.071 (-0.36)
Geographical Distance							-0.3000 (-0.90)							0.238 (1.00)
Constant	-0.629 (-1.27)	-0.608 (-0.78)	-0.606 (-1.29)	-0.594 (-1.30)	-0.722 (-1.32)	-0.7856 (-1.43)	-1.2202** (-1.74)	-1.830 (-1.34)	-1.854 (-1.34)	-1.576 (-1.15)	-1.938 (-1.38)	-1.808 (-1.31)	-2.000 (-1.42)	-1.295 (-0.83)
Observations	121	121	121	121	121	121	121	121	121	121	121	121	121	121
R Square	0.171	0.171	0.171	0.173	0.173	0.179	0.190	0.151	0.143	0.162	0.135	0.145	0.149	0.161
Adjusted R-squared	0.096	0.096	0.096	0.098	0.098	0.096	0.092	0.073	0.065	0.086	0.056	0.067	0.063	0.059

Table 9. Empirical Results for Regressions with CAR 31 Trading Day and Annual Returns

The results of the regressions using cumulative abnormal returns (CAR) and ESG ratings for 31 trading days and annualized returns were reported in the table. The column (1) – (4) reports the each ESG ratings regression specifications. The average of the ESG ratings and disagreements (standard deviations) among the ratings are displayed in column (5) and (6) respectively. Results with additional control variables platform type and geographical distance is shown in (7) and (14). All estimated coefficients are shown in the table with *t-statistics* reported in parentheses. *,** and ***denote statistical significance at 1%, 5%, and 10% confidence levels, respectively.

	Market-Adjusted CAR[-15,+15]							Annual returns						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
MSCI	0.006 (-0.87)							0.067 (0.34)						
Sustainalytics		0.025* (1.67)							0.438 (0.96)					
Refinitiv			0.003 (0.36)							0.243 (1.08)				
Bloomberg				-0.005 (-0.63)							0.984*** (4.07)			
AVG ESG Ratings					0.005 (0.46)	-0.011 (-0.92)	-0.008 (-0.66)					0.726*** (2.33)	1.047*** (2.85)	1.043*** (2.85)
Disagreement						0.021 (0.97)	0.024 (1.07)						-1.040 (-1.62)	-0.739 (-1.15)
INS_Holdings	0.004 (0.95)	0.005 (1.27)	0.003 (0.79)	0.004 (1.03)	0.004 (0.95)	0.004 (0.98)	0.005 (1.09)	0.411*** (3.44)	0.443 (0.96)	0.389*** (3.22)	0.275** (2.37)	0.368*** (3.12)	0.363*** (3.10)	0.231** (1.76)
Firm Size	-0.038 (-1.60)	-0.031 (-1.31)	-0.043** (-1.89)	-0.045** (-1.94)	-0.042** (-1.82)	-0.045** (-1.91)	-0.027* (-1.04)	2.695*** (3.72)	2.979*** (4.06)	2.788*** (4.00)	2.925*** (4.47)	2.527*** (3.65)	2.649*** (3.84)	2.795*** (3.65)
Leverage	-0.008 (1.51)	-0.008 (-1.51)	-0.007 (-1.2)	-0.008 (-1.48)	-0.008 (-1.43)	-0.008 (-1.51)	-0.010 (-1.71)	-0.088 (-0.54)	-0.112 (-0.70)	-0.075 (-0.46)	0.090 (0.58)	0.025 (0.15)	0.049 (0.30)	0.014 (0.08)
P/E	0.000 (-0.57)	0.000 (-0.57)	0.000 (-0.52)	0.000 (-0.55)	0.000 (-0.59)	0.000 (-0.69)	0.000 (-0.66)	-0.010 (-0.45)	-0.010 (-0.47)	-0.009 (-0.41)	-0.008 (-0.41)	-0.004 (-0.18)	0.000 (-0.01)	0.003 (0.16)
P/BV	0.001 (1.13)	0.001 (0.98)	0.001 (1.34)	0.001 (1.27)	0.001 (1.24)	0.001 (1.28)	0.001 (1.06)	-0.035*** (-2.02)	-0.040*** (-2.29)	-0.036*** (-2.14)	-0.031** (-1.90)	-0.030** (-1.78)	-0.031** (-1.86)	-0.033*** (-1.97)
SG & A	0.007 (1.56)	0.007 (1.49)	0.006 (1.31)	0.007 (1.49)	0.007 (1.45)	0.005 (1.04)	0.008 (1.47)	0.665*** (4.59)	0.671*** (4.68)	0.625*** (4.19)	0.650*** (4.84)	0.682*** (4.84)	0.762*** (5.14)	0.813*** (5.22)
Sales Growth	-0.002 (-0.79)	-0.003 (0.87)	-0.002 (-0.52)	-0.002 (-0.59)	-0.002 (-0.72)	-0.001 (-0.45)	-0.001 (-0.32)	0.088 (0.93)	0.073 (0.77)	0.117 (1.19)	0.041 (0.46)	0.105 (1.15)	0.068 (0.72)	0.038 (0.40)
Liquidity	-0.032 (-2.24)	-0.036 (-0.94)	-0.030 (-0.78)	-0.31 (-0.81)	-0.31 (0.81)	-0.029 (-0.74)	-0.045 (-1.10)	0.011 (0.00)	-0.136 (-0.11)	-0.086 (-0.07)	0.290 (0.26)	0.243 (0.21)	0.119 (0.10)	0.259 (0.21)
Firm Age	0.023*** (2.45)	0.024*** (2.74)	0.017** (1.79)	0.025*** (2.00)	0.021*** (2.22)	0.018** (1.83)	0.023*** (2.13)	2.631*** (9.28)	2.758*** (10.25)	2.511*** (8.51)	1.577*** (4.39)	2.339*** (8.13)	2.482*** (8.31)	2.419*** (7.85)
Platform Type							0.257 (1.13)							11.994** (1.81)
Geographical Distance							-0.154 (-0.61)							14.406*** (1.97)
Constant	-0.251 (-0.67)	-1.155*** (-2.00)	-0.403 (-1.13)	-0.357 (-1.03)	-0.268 (-0.65)	-0.217 (-0.523)	-0.662 (-1.25)	-127.913*** (-11.25)	-140.384*** (-7.88)	-129.152*** (-11.98)	-129.422*** (-13.13)	-142.098*** (-11.57)	-144.636*** (-11.77)	-155.028*** (-10.07)
Observations	121	121	121	121	121	121	121	121	121	121	121	121	121	121
R Square	0.116	0.132	0.111	0.113	0.111	0.119	0.135	0.672	0.675	0.676	0.715	0.688	0.695	0.711
Adjusted R-squared	0.035	0.053	0.030	0.032	0.031	0.030	0.030	0.643	0.645	0.646	0.689	0.659	0.664	0.676

Table 10. Robustness Test with Control Group

The table displays the results of regressions from both the treatment group and the control group. The effects of changes of each E,S,G on cumulative abnormal returns (CAR) are reported in column (1) – (3) and the effects of ESG average ratings (4) on CAR are presented. The difference between platform firm (4) and non-platform (8) is shown in column (9). The estimated coefficients are shown in the table with *t-statistics* reported in parentheses. *,** and ***denote statistical significance at 1%, 5%, and 10% confidence levels, respectively.

	CAR Platform firms(treatment group)				CAR Non-platform firms(control group)				Difference (4)-(8)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Δ in E rating	0.005 (0.98)				-0.001 (-1.15)				0.006
Δ in S rating		0.007 (0.92)				0.001 (0.52)			0.006
Δ in G rating			0.001 (0.24)				-0.002** (-2.16)		0.003
Δ in ESG average rating				-0.003 (-0.55)				-0.001 (-0.53)	0.004
Δ in Disagreement	-0.015 (-0.61)	-0.016 (-0.65)	-0.012 (-0.49)	-0.015 (-0.56)	-0.010*** (-0.51)	-0.010*** (0.52)	-0.012*** (-5.79)	-0.010*** (-5.19)	-0.025
INS_Holdings	0.004 (0.82)	0.003 (0.53)	0.004 (0.72)	0.004 (0.68)	-0.001 (-0.58)	0.000 (-0.30)	-0.001 (-0.81)	-0.001 (-0.51)	0.005
Firm Size	-0.003 (-0.08)	-0.008 (-0.26)	-0.008 (-0.25)	-0.003 (-0.10)	-0.007 (-0.31)	-0.014 (-0.59)	-0.006 (-0.26)	-0.007 (-0.29)	0.004
Leverage	0.004 (0.55)	0.005 (0.62)	0.003 (0.37)	0.005 (0.70)	0.000** (2.01)	0.000** (1.99)	0.000* (1.88)	0.000** (2.05)	0.005
P/E	-0.001 (-1.46)	-0.001 (-1.47)	-0.001 (-1.45)	-0.001 (-1.48)	0.001** (2.32)	0.001** (2.13)	0.001** (2.16)	0.001** (2.33)	-0.002
P/BV	-0.001 (-1.33)	-0.001 (-0.96)	-0.001 (-1.48)	-0.001 (-0.94)	-0.002 (-1.13)	-0.002 (-1.08)	-0.002 (-1.20)	-0.002 (-1.11)	0.001
SG & A	0.002 (0.23)	0.002 (0.36)	0.002 (0.35)	0.001 (0.16)	-0.001 (-1.13)	-0.001 (-1.33)	-0.001 (-1.10)	-0.001 (-1.06)	0.002
Sales Growth	-0.007 (-1.58)	-0.006 (-1.54)	-0.007 (-1.60)	-0.006 (-1.52)	0.002 (2.42)	0.003*** (3.12)	0.002** (2.52)	0.002*** (2.86)	-0.008
Liquidity	-0.098** (-1.83)	-0.106** (-2.05)	-0.114** (-2.21)	-0.091 (-1.67)	-0.001 (-0.48)	0.006 (0.32)	-0.020 (-0.91)	-0.002 (-0.07)	-0.089
Firm Age	0.012 (0.89)	0.014 (1.02)	0.016 (1.21)	0.011 (0.80)	-0.003 (-0.04)	0.000 (-0.30)	-0.004 (-0.05)	0.000 (-0.16)	0.011
Constant	-0.715 (-1.35)	-0.826 (-1.38)	-0.531 (-1.05)	-0.908 (-1.48)	0.408 (0.70)	0.473 (0.80)	0.573 (1.00)	0.406 (0.69)	
Observations	121	121	121	121	109	109	109	109	
R²	0.179	0.178	0.172	0.185	0.367	0.367	0.628	0.367	
Adjusted R²	0.093	0.092	0.085	0.082	0.295	0.295	0.394	0.295	

Table 11. Robustness Tests Results OLS and WLS

The results of the regressions using OLS and WLS approaches for repeated model specification used earlier. Cumulative abnormal returns (CAR) for 3 trading days were reported in the table. The column (1) reports the results of average ESG ratings regression specifications and disagreements (standard deviations) among the ratings with the OLS method where column (2) presents the result of WLS method. The results with all variables and additional control variables platform type and geographical distance is also shown, respectively. All estimated coefficients are shown in the table with *t-statistics* reported in parentheses. *,** and ***denote statistical significance at 1%, 5%, and 10% confidence levels, respectively.

	Model (2) Market-Adjusted CAR[-1,+1] OLS	Model (2) Market-Adjusted CAR[-1,+1] WLS
	(1)	(2)
AVG ESG Ratings	0.0148	-0.029
	(0.91)	(-1.19)
Disagreement	-0.0261	0.042
	(-0.91)	(1.40)
INS_Holdings	0.0042	-0.002
	(0.81)	(-0.44)
Firm Size	-0.0117	0.059
	(-0.38)	(1.54)
Leverage	0.0046	0.006
	(0.64)	(1.64)
P/E	-0.0013	0.001
	(-1.47)	(0.74)
P/BV	-0.0010	-0.001
	(-1.47)	(-0.26)
SG & A	0.0031	-0.004
	(0.48)	(-0.51)
Sales Growth	-0.0070**	0.001
	(-1.68)	(0.13)
Liquidity	-0.1166***	-0.345***
	(-2.27)	(-6.40)
Firm Age	0.1368	0.009
	(1.03)	(0.50)
Platform Type		
Geographical Distance		
Constant	-0.7856	0.218
	(-1.43)	(0.33)
Observations	121	121
R Square	0.179	0.603
Adjusted R-squared	0.096	0.563

Table 12. Empirical Results for Quantile Regressions

This table reports the results of quantile regressions using two models. The dependent variables are CARs and annual returns. The independent variable as an average of ESG ratings is shown in column (1) is the result from all samples, Low (25%), Mid (50%), High (75%) quintiles results are also presented in order. All control variables were used, and all estimated coefficients are shown in the table with *t-statistics* reported in parentheses. *,** and ***denote statistical significance at 1%, 5%, and 10% confidence levels, respectively.

	Model (1) Market-Adjusted CAR[-1,+1]				Model (2) Annual Returns			
	(1)	(2)	(3)	(4)	(9)	(10)	(11)	(12)
Average ESG								
All	0.014 (0.91)				1.047*** (2.85)			
Low (25%)		0.043 (0.01)				-0.003 (-0.22)		
Mid (50%)			3.642E-14 (0.00)				0.060*** (19.58)	
High (75%)				8.328E-15 (0.00)				0.014 (1.00)
Disagreement	-0.026 (-0.91)	1.241*** (22.41)	1.326*** (11.98)	0.712*** (10.44)	-1.040 (-1.62)	1.228*** (19.87)	1.295*** (75.91)	0.677*** (8.65)
INS_Holdings	0.004 (0.81)	0.077*** (6.29)	0.077** (3.12)	0.083*** (5.46)	0.363*** (3.10)	0.080*** (5.49)	0.028*** (7.01)	0.086*** (4.68)
Firm Size	-0.011 (-0.38)	3.017*** (6.455)	4.612*** (4.94)	5.072*** (8.81)	2.649*** (3.84)	2.902*** (5.01)	2.165*** (13.55)	5.076*** (6.92)
Leverage	0.004 (0.64)	-0.044* (-2.62)	-0.031 (-0.92)	0.030 (1.45)	0.049 (0.30)	-0.050* (-2.63)	-0.040*** (-7.62)	0.012 (0.50)
P/E	-0.001 (-1.47)	-0.012*** (-5.63)	-0.006 (-1.42)	-0.007** (-2.82)	0.000 (-0.01)	-0.012*** (-5.05)	-0.008*** (-12.50)	-0.008** (-2.71)
P/BV	-0.001 (-1.47)	-0.001 (-0.54)	0.000 (0.08)	-0.004 (-1.79)	-0.031** (-1.86)	-0.001 (-0.62)	-0.004 (-0.10)	-0.004 (-1.95)
SG & A	0.003 (0.48)	-0.083*** (-5.58)	-0.066** (-2.24)	-0.018 (-0.97)	0.762*** (5.14)	-0.082*** (-4.42)	-0.065*** (-12.71)	-0.039 (-1.67)
Sales Growth	-0.007** (-1.68)	0.021** (2.10)	0.030 (1.55)	-0.015 (-1.27)	0.068 (0.72)	0.018* (1.68)	0.030*** (9.84)	-0.015 (-1.09)
Liquidity	-0.116*** (-2.27)	0.099 (0.90)	0.163 (0.74)	0.193 (1.43)	0.119 (0.10)	0.083 (0.67)	0.005 (0.14)	0.075 (0.47)
Firm Age	0.136 (1.03)	-0.060 (-1.36)	-0.226** (-2.58)	0.088 (1.64)	2.482*** (8.31)	-0.041 (-0.81)	-0.228 (-16.2)	0.031 (0.47)
Constant	-0.785 (-1.43)	-20.742*** (-4.30)	-35.911*** (-3.73)	-37.830*** (-6.37)	-144.636*** (-11.77)	-19.704** (-2.96)	-3.442* (-1.87)	-35.017*** (-4.15)
Observations	121	121	121	121	121	121	121	121
R Square	0.179	0.494	0.540	0.505	0.695	0.494	0.564	0.508

Appendix 1. List of Treatment Group and Control Group

The table displays the descriptions of the treatment groups (platform firms) and the control group (non-platform) firm samples used in this study. The number of samples is 52 firms for each category. The industry classifications from Refinitiv Business Classifications database and market capitalization of the day of the event were reports. *Market capitalization is in millions of USD.*

Digital platform firms (treatment group)			Non-digital platform firms (control group)		
Company name	Industry	Market capitalization	Company name	Industry	Market capitalization
Alibaba	Software & IT services	228,827	Mastercard	Software & IT services	304,534
Amazon	Diversified retail	1,258,469	Costco	Diversified retail	223,315
Apple	Computers, phones & household electronics	2,421,862	Samsung	Computers, phones & household electronics	270,221
Booking Holdings	Hotels & Entertainment services	74,507	Marriott	Hotels & Entertainment services	50,279
Carvana	Specialty retailers	6,212	JD Sports Fashion	Specialty retailers	7,409
Alphabet	Software & IT services	1,346,038	Visa	Software & IT services	399,905
Baidu	Software & IT services	43,051	Autodesk	Software & IT services	42,086
Cerdian HCM	Software & IT services	6,021	Globant SA	Software & IT services	8,757
Chewy Inc	Specialty retailers	14,867	Bestbuy	Specialty retailers	16,351
DocuSign	Software & IT services	11,360	Dynatrace Inc	Software & IT services	10,726
Dropbox	Software & IT services	8,003	Trend Micro	Software & IT services	7,858
eBay	Software & IT services	23,073	CDW Corp	Software & IT services	23,104
Etsy	Diversified retail	13,678	Dollarama Inc	Diversified retail	16,722
Expedia	Hotels & Entertainment services	16,054	Evolution AB	Hotels & Entertainment services	17,179
Meta	Software & IT services	393,161	Tencent Holdings	Software & IT services	359,292
Microsoft	Software & IT services	1,825,244	SAP SE	Software & IT services	102,779
JD.com	Diversified retail	89,460	Target Corp	Diversified retail	75,524
Lyft	Software & IT services	5,739	Five9 Inc	Software & IT services	5,733
Matchgroup	Software & IT services	15,669	Palantir Tech	Software & IT services	16,051
MongoDB	Software & IT services	15,155	Tyler Tech	Software & IT services	15,010
Netflix	Software & IT services	106,787	Automatic Data Processing	Software & IT services	97,081
Okta	Software & IT services	9,375	NEC Corp	Software & IT services	9,249
Paycom Inc	Software & IT services	20,985	Ansys	Software & IT services	20,961
Paypal	Software & IT services	108,709	IBM	Software & IT services	114,948
Pinduoduo	Software & IT services	83,032	Infosys	Software & IT services	72,347
Pinterest	Software & IT services	16,783	Snap Inc	Software & IT services	18,633
Roku	Media & publishing	9,841	News Corp	Media & publishing	9,685
Salesforce	Software & IT services	151,510	Oracle	Software & IT services	185,542
Servicenow	Software & IT services	86,012	SAP SE	Software & IT services	102,779
Shopify	Software & IT services	40,071	Rople Tech	Software & IT services	40,506
Snap	Software & IT services	18,633	NTT Data	Software & IT services	18,919
Teladoc	Healthcare provider & services	4,929	Encompass Health	Healthcare provider & services	5,080
Tradedesk	Software & IT services	30,218	Verisk Analytics	Software & IT services	28,948
Tradeweb	Investment banking & investment services	15,085	Huatai Securities	Investment banking & investment services	15,207
Twillio	Software & IT services	13,535	Obic Co Ltd	Software & IT services	13,762
Twitter	Software & IT services	31,719	Electronic Arts	Software & IT services	33,849
Uber	Software & IT services	63,219	Snowflake	Software & IT services	59,094
VMW	Software & IT services	47,565	Synopsys	Software & IT services	48,046
Weibo	Media & publishing	4,309	China Literature	Media & publishing	3,643
Workday	Software & IT services	38,986	Crowdstrike	Software & IT services	39,910
Zendesk	Software & IT services	9,457	Larsa and Toubro	Software & IT services	9,375
Zillow group	Real estate operation	8,371	New World Development	Real estate operation	8,465
Zoom video	Software & IT services	23,419	Gartner	Software & IT services	23,734
Zscaler	Software & IT services	24,044	Sea Ltd	Software & IT services	26,867
Hubspot	Software & IT services	14,001	Trimble	Software & IT services	14,533