Interactive effects of brand reputation and ESG on green bond issues:

A sustainable development perspective

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Abstract

This paper shows that brand reputation alone may not be sufficient to help firms successfully issue green bonds and that they may need superior corporate social responsibility performance in the form of high ESG (Environmental, Social and Governance) scores to unlock the full potential of their brand reputation. Using a sample of 338 international green bond issues across 108 unique firms, we found significant positive effects of ESG disclosure score and its interaction brand reputation on the issuance of green bonds, while controlling for other variables, such as fixed effects of industry, region and time. We also show that it is the S (Social) component of ESG and the interactions of its E (Environmental) and G (Governance) components with brand reputation, which drive successful green bond issuance. Besides extending the current research on the impact of brand reputation and ESG on green bonds, these results also have important managerial implications for analysts, fund managers and firms planning to raise green capital.

Keywords: brand reputation; ESG; green bonds; sustainability; sustainable development

1. INTRODUCTION

Sustainable finance and green bonds are crucial for addressing the serious sustainability challenges currently faced by economic systems and business actors. In the last 140 years, the average global surface temperature has already increased by more than 1°C. The sharp increase in global warming since 1950 can no longer be explained by natural climate fluctuations. Greenhouse gases such as carbon dioxide (CO_2) (through the burning of fossil fuels such as coal, crude oil and natural gas) are responsible for climate issue. The largest impact of climate change is that it could wipe off up to 18% of GDP off the worldwide economy by 2050 if global temperatures rise by 3.2°C, the Swiss Re Institute warns (Marchant, 2021). Green bond is an important financial instrument used by corporations and governments to combat this environmental issue. Through encouraging green bond issues, a market-based financing and monitoring mechanism is in place to tackle global warming and make our societies more sustainable.

In general, green bond is defined as debt financing issued by companies and organizations (including governments and agencies) to support climate and environmental capital projects. In most cases, a second-party verification or third-party certification are used to monitor the usage of proceeds to make sure that the money is actually used on improving the environmental aspects of the investments. Recent research on business ethics highlights the impact of environmental concerns (e.g., global warming and pollution) on the evaluation of firms by stock analysts and investors (e.g., Choi et al., 2019; Drempetic et al., 2019; Dong et al., 2019; Huang et al., 2020). This trend is also reflected in the growing popularity of green finance as an effective tool to combat global warming and to support sustainability.

Past research also shows that social returns (e.g., achieving sustainable development goals) may explain the corporate preference towards green bonds by helping them improve their CSR (corporate social responsibility) and ESG (Environmental, Social and Governance) performance (e.g., Escrig-Olmedo et al., 2019; Lagoarde-Segot, 2020; Tolliver et al., 2019). From a marketing perspective, green marketing has received some research attention. For instance, Rizomyliotis, et al. (2021) show a significant green consumption value to build brand loyalty in the wearable technologies industry. Using Dutch data, Gelderman et al. (2021) find that salesperson expertise is the most significant factor to build success to gain satisfaction and loyalty in a B2B setting.

Cumulatively, these studies highlight the growing popularity of green bonds as a viable and potentially beneficial financing mechanism. However, despite these clear indications about the importance of green bonds and corporate interest in issuing these bonds, coupled with the positive impact of brand reputation on a firm's CSR/ESG performance (e.g., Alcaide et al., 2019) and the positive effect of investors' pro-environmental preferences on the bond price premium (Zerbib, 2019), to the best of our knowledge, there is little research on the impact of firm-level indicators (e.g., brand reputation and ESG disclosure scores) on successful green bonds issuance (Bachelet, Becchetti, & Manfredonia, 2019).

We address this important research gap in this paper by arguing that having a good brand reputation (BRAND) alone may not be enough for firms to successfully issue green bonds. In the finance world, issuing a green bond follows an IPO process. After the investment bankers issued the IPO prospectus, the underwriting department or the sponsor then go around by roadshows and secure potential investors to subscribe to the green bond. There is a chance that there are not enough subscribers, leading to a failure of the green bond issue. The higher probability, the higher chance to issue a green bond. Therefore, in this paper, we define a green bond issue as "more successful" through achieving a higher probability of issuing a

green bond (versus not able to issuing a green bond). We compare firm level data of green bond issuers with non-green bond issuers to evaluate the probability of getting a green bond issue.

We hypothesize that firms would also need high ESG disclosure scores because of the positive direct effect of ESG on green bond issuance as well as a positive moderating effect on the impact of BRAND in this regard. We test these hypotheses with an international sample of 1,358 corporate bond issues across 651 unique firms, including 338 green bond issues from 106 unique firms. Our sample has 138 firms with a strong global brand reputation and 31 of these are green bond issuers. We find that brand reputation has no significant direct impact on the issuance of green bonds and only ESG and its interaction with BRAND (BRAND*ESG) have positive effects on green bonds issuance. We also show that these effects are mainly driven by the S (Social) component of ESG and the interactions of its E (Environmental) and G (Governance) components with brand reputation.

We argue that it is important to document the relationship between brand reputation and the probability of able to issue a green bond. With a growing emphasis on environmental contribution to the society, the ability to issue green bond is indeed an achievement in today's business. In fact, many firms and countries are under pressure due to various internal and external stakeholders' expectation to issue green bonds to signal their commitments to a more sustainable business. Therefore, it is important to document what are the conditions and factors leading to the fact that a firm can successfully issue green bonds (relative to not able to issue a green bond). We discuss the conceptual contribution and managerial implications of these results along with the limitations of our study and some useful directions for future research.

2. THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

In this section, we combine several streams of literature as the theoretical background for our study. We begin with a review of the CSR and ESG literature, focusing on the firms' efforts to promote transparency in governance structures, social engagement activities and disclose the environmental impacts of their business operations, followed by the green finance and green bonds literature. Finally, we review the literature on the development of brand reputation and its impact on various dimensions of firm performance. We then link these three literatures to develop our conceptual model and specific hypotheses about the direct and interactive effects of BRAND and ESG on green brand issuance.

2.1. From CSR to ESG: A journey to achieve sustainable investment through ESG integration

Corporate social responsibility (CSR) comprises of environmental, social, and governance activities undertaken by companies on a voluntary basis by going beyond what is expected of them as per the legal requirements (Jackson et al., 2020). CSR has a significant impact on the firms' market value and their ability to raise capital to manage and expand their businesses; hence, it is not surprising to see that CSR has become an increasingly important and highly institutionalized component of corporate activity (Jackson et al., 2020). Early research on CSR aimed to identify its specific elements, measure the relative importance of these elements, assess the impact of CSR on organizational effectiveness (Zahra & LaTour, 1987) and financial performance (Pava & Krausz, 1996), and its role as a source of reputational, competitive, and financial Advantage and business strategy (Dentchev, 2004). Subsequent studies examined the various pragmatic and ethical barriers to CSR disclosure and the role of the investor relations function in communicating CSR to investors (Hockerts & Moir, 2004) with the growing role of finance as a driver of CSR (Scholtens, 2006). Kleine and Von Hauff (2009) use the 'Integrative Sustainability Triangle' to relate CSR activity to

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the triple bottom line of a firm with a balanced focus on people, profit and the planet.

By this time, it was clearly evident that CSR was not merely a symbolic gesture. Previous studies have concluded that socially responsible activities (positive CSR) enhance firm financial performance (Kim, Kim, & Qian, 2018; Li, Zhou, & Shao, 2009; Margolis & Walsh, 2003). It did influence the ability of firms to raise finance to manage and expand their businesses, not only in the stock markets (Adam & Shavit, 2008) but also in the bond markets (Menz, 2010). However, doubts were being raised about the quality of CSR reporting resulting in calls for the governments to regulate the CSR activities of firms (Aras & Crowther, 2009), which has ultimately resulted in a complex system of CSR governance mechanisms. Nevertheless, using data from 24 OECD countries, Jackson et al. (2020) show that firms in countries that require non-financial disclosure adopt significantly more CSR activities, resulting in greater compliance over time. Specifically, a study of 24 OECD countries shows that firms in countries with non-financial disclosure regulations exhibit significantly higher levels of CSR activities but these regulations do not seem to reduce the levels of corporate irresponsibility (Jackson et al., 2020).

A major challenge in monitoring CSR performance and its impact on the firms' ability to raise finance is the identification of investment practices that combine the environmental, social and governance (ESG) issues (Eccles & Viviers, 2011). In fact, there exists a strong linkage between CSR and ESG. CSR impacts internal processes and company culture to achieve sustainability while ESG provide a measurable set of benchmarks that external partners and investors for their evaluation of sustainability performance of a company. These quantified and measurable KPIs provided by ESG are beneficial both for external stakeholders and internal business executives in making strategic decisions related to sustainability.

Busch et al. (2016) document an interesting phenomenon that on one hand, ESG

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integration appears to gain momentum among financial market participants. However, on the other hand, in terms of organizational reality, such an ESG integration seems to have little effect in pushing business in practicing more business sustainability. In fact, ESG integration among asset managers is not a smooth path. Zeidan (2022) examines the challenges of ESG investing and concludes that restriction of the strategy space, internal and external transaction costs, and data quality are overwhelming obstacles for integrating ESG into their portfolios. To look for some good practice of ESG integration, northern Europe is a good place to consider. Arvidsson & Dumay (2021) employ Swedish data for ESG practices and show that, while the quality of ESG information in Sweden has steadily improved, performance plateaued around 2015. They propose that companies must be asked to provide more timely, relevant, credible and comparable ESG data and demonstrate improved ESG performance.

Integrating ESG dimensions into investment decisions has been an important research topic since the announcement of the 2006 United Nation's Principles for Responsible Investment (PRI), which promotes ESG integration for investment. Since then, ESG measures are gradually employed by asset managers to build green or sustainable products for asset owners. These practices are generally described as sustainable or responsible investments and defined as "Investment practices that integrate a consideration of ESG issues with the primary purpose of delivering higher-risk-adjusted financial returns" (Eccles & Viviers, 2011; p. 389). They can also include pro-ESG performance investor activism (Semenova & Hassel, 2019). Galbreath (2013) recognizes ESG issues as a major risk management concern for all stakeholders, including investors, shareholders, and governments; and thus, an important component of the firms' competitive strategy. Interestingly, during the 2002–2009 period, firms' performance on the governance dimension improved to a greater extent than environmental or social performance, and these effects were

stronger for high impact industries compared to others (Galbreath, 2013).

Van Duuren et al. (2016) extend this growing body of research by showing that conventional fund managers use ESG factors in making their investment decisions, particularly to 'red flag' cases and to manage risk. Of course, the effect of better ESG disclosure is an important aspect in the ESG literature. Lokuwaduge & Heenetigala (2017) argue that providing more reliable ESG disclosure is important to improve integration of sustainability into strategic planning process. However, using EU regulation on Italian listed firms, Cordazzo et al. (2020) conclude that the non-financial, ESG data do not explain any incremental value-relevant information to investors required by the new regulation of non-financial mandatory disclosure. More recently, Baldini et al. (2018) use an international sample of 14,174 firm-year observations to show that both country-level and firm-level factors affect ESG disclosure. These factors include legal framework and corruption, labor protection and unemployment rate, social cohesion, equal opportunities (for country level), and analysts coverage, cross-listing, leverage, and size (for firm level).

Drempetic et al. (2019) use Thomson Reuters ASSET4 ESG ratings to show a positive impact of firm size, resources available to provide ESG data, and availability of ESG data, on sustainability performance. Thus, larger firms with more resources may have an advantage in the way the ESG scores represent corporate sustainability while not providing socially-responsible investors with all the information they need to make their decisions, which raises further concerns about what is measured by ESG scores and what exactly it should measure (Escrig-Olmedo et al., 2019; Przychodzen et al., 2016).

Naturally, the empirical question on the relationship between ESG and financial performance has been studied. Mervelskemper & Streit (2017) show that the ESG reporting on market valuation of ESG performance is stronger in a positive manner when firms publish an ESG report. Using Chinese data, Zhou, Liu, & Luo (2022) conclude that the improvement

of ESG performance of listed companies can improve the market value of firms. Broadstock et al. (2021) show high-ESG portfolios generally outperform low-ESG portfolios. Furthermore, they show that ESG performance mitigates financial risk during COVID-19, confirming the important role of ESG performance during crisis.

More recently, researchers have begun to explore the impact of ESG scores on firm performance outside North America and Europe with some divergent findings. For example, Chelawat and Trivedi (2016) find a positive impact of ESG scores on financial performance of Indian firms. On the other hand, using US and European listed firms, Kiesel and Lucke (2019) uncover "that ESG consideration is a significant determinant in the stock return and CDS spread around the rating announcement" of a firm; whereas Duque-Grisales and Aguilera-Caracuel (2019) find a negative association between ESG scores and financial performance of 104 multinationals in Latin America (Brazil, Chile, Colombia, Mexico and Peru) using data from Thomson Reuters Eikon™ database. They also find a moderating effect of financial slack and geographic international diversification on the relationship between ESG dimensions and firms' FP. Clementino and Perkins (2020) use Italian data to develop a typology of corporate responses to ESG ratings and show that factors, such as managers' beliefs about the material benefits of higher ESG ratings and their alignment with corporate strategy may affect these responses. Hence, it seems that firms may not react in the same manner to ESG ratings and these ratings may not always have a positive influence on the firms' sustainability performance.

Using Bloomberg ESG disclosure scores, Broadstock et al. (2019) attempt to resolve these mixed findings by showing a generally non-linear relation between ESG disclosure performance and dimensions of corporate performance to reflect the more nuanced view that a firm can obtain returns to improve ESG disclosure when its current performance levels are low. However, when ESG scores increase, the benefits may diminish up until the point where

ESG disclosure is already strong, and the corporate performance gains diminish to zero or become potentially even negative. In other words, pushing the advanced boundary of ESG disclosure performance is likely to be more costly than initial ESG efforts, as all the low hanging fruits may have already been picked.

2.2. Green finance and green bonds

Green finance is an encompassing term covering a wide variety of financial instruments, hence, it remains vaguely defined and is often conflated or confused with alternative notions of climate finance (Zhang et al., 2019). International Finance Corporation defines green finance as *"financing of investments that provide environmental benefits"* (IFC, 2017), which does not attribute it to any single approach to or instrument for investment, and covers a wide range of instruments that focus on projects that ultimately result in environmental benefits. Green bonds, introduced as a climate-related capital market product in 2007, to foster public awareness and reach new investors, fall within the scope of green finance. Since then, many firms have used green bonds to either re-brand their ongoing projects under an even greener 'tag' or to fund their new projects in the areas of renewable energy and energy efficiency.

Despite being a relatively new concept, there are emerging signs of the acceptance of green bonds in the mainstream financial markets. For instance, Fatica and Panzica (2021) confirm that firms exhibit a significant decrease in carbon intensity after green bond issues. Furthermore, firms participating in green bonds financing also increase their participation in the European Union carbon market (EU-ETS) (Leitao, et al., 2021). In fact, Baker et al. (2018) show that green bonds are issued at a premium and are more closely held than similar ordinary bonds, especially if these bonds are externally certified as being green. Hence, green bonds have become a popular means to raise private capital to fund climate change initiatives (Mathews & Kidney 2010) and to gain a 'green advantage' (Gianfrate & Peri, 2019).

In addition, researchers reveal systematic co-movements between green bond benchmarks against regular bond markets (Pham, 2016), equity markets, and wider financial markets (Reboredo, 2018). Broadstock & Cheng (2019) show that the market for green bonds is sensitive to macroeconomic conditions as well as underlying sentiment on the market for green bonds itself. Others also find determinants of green bond issuance, including projects characteristics related to eco-efficient products and technologies, pollution prevention and control, and sustainable water management and factors affecting the green bond issues' sizes (Russo et al., 2020; Barua & Chiesa, 2019).

Pricing is the main challenge for green bonds and their relative yield compared to regular bonds is a much-debated topic. For new issues (i.e., IPO market), green bonds introduce the risk of environmental default that could lead to an additional risk premium (Kase, 2015). However, no clear connection exists between the green bonds designation and favorable pricing. For instance, Larcker & Watts (2020) find that, when risk and payoffs are held constant, investors view green and non-green securities by the same issuer as almost the same, concluding that the green premium is essentially zero.

Nevertheless, DuPont et al. (2015) conclude that green bonds experience high demand, leading to an increased willingness to pay a price premium and therefore lower yield over time. A similar debate exists for the secondary green bond market with liquidity and loss of green credentials as main concerns, and yet, there is a strong continued interest in deploying green bonds as a mechanism to meeting global climate change objectives through innovative project financing (Baker et al., 2018; Tolliver et al., 2018). Overall, green bonds play a broader role in the process of financial innovation by allowing the use of structured finance to orient both private and institutional capital flows towards high-priority investment areas such as clean and renewable energy (Horsch & Richter, 2017).

2.3. Brand reputation and green bonds issuance

Corporate reputation is an intangible asset closely related to both marketing and financial performance as superior environmental performance leads to a positive corporate reputation, which in turn results in better financial performance. Some scholars have shown that brand reputation can 'convey unobservable quality credibility' and any misalignment between the signal and the outcome can hurt firm performance (Rao et al., 1999). Thus, firms have an incentive to develop and maintain their brand reputation. While brand reputation clearly plays a role in the successes of an established company, it is also important for firms trying to raise capital (Cabral, 2000). In this context, Bahadir et al. (2015) present brand reputation as an important pre-IPO characteristic due to all the intangible and immeasurable values it conveys to the investors, based on a variety of intrinsic and extrinsic cues.

Due to such importance of brand reputation, there is growing interest among marketing researchers on the link between branding and CSR activity. For example, Chen (2010) shows that green brand image, satisfaction, and trust have positive effects on green brand equity. Rizomyliotis, et al. (2021) conclude that there is a significant green consumption value to build brand loyalty in the wearable technologies industry. In addition, Gelderman et al. (2021) find that salesperson expertise is the most significant factor to build success to gain satisfaction and loyalty using Dutch data in the cleaning industry.

Zeng et al. (2012) shows that firms with better reputation are also more likely to disclose environmental information. Hence, it seems that having a strong brand reputation may enhance the ability of a firm to improve its green brand equity. Türkel et al. (2016) extend these findings to show that brand familiarity does not alter the attitude towards CSR-related messages but it moderates the consumer responses to CSR communication via the changes to their purchase intention.

We argue that good brand reputation can be a perquisite of green issue. It is commonly known that the financial life stage of a firm cycle begins with survival through expansion to capture market share. This is why most early stage firms before IPO require private equity funding as they are still in the stage of capturing clients while suffering from losses. At a later stage, enhancing net profit margin and stock valuation through cost reduction becomes the main objective. At this stage, the firm is able to charge a brand premium to their products. After that, the firm has become more mature, it is possible and logical to further contemplate stronger social and environmental commitments to strike a balance between business sustainability and financial performance. In short, based on this logic, branding precedes ESG concerns and therefore, green bond issues.

For instance, the Hong Kong Investor Relations Association (HKIRA) has begun to give ESG awards to qualified listed firms in Hong Kong in 2020.[1] Out of the 11 firms receiving ESG awards in 2020, about 82% (9 out of 11) had received a non-ESG IR Award in the previous two years. These figures are consistent with our argument that, after receiving some general brand recognition, a firm has a higher tendency to pursue green related recognition such as the ESG awards. Based on this discussion, we hypothesize as follows:

H1. Brand reputation has a positive effect on green bond issuance.

2.4. ESG and green bond issuance

Early research on green finance shows that during the 1987–2009 period, green mutual funds in the US had poorer performance than conventional funds with similar characteristics but by the 2001–2009 period, green funds achieved similar returns to other conventional mutual funds (Climent & Soriano, 2011). Similarly, others found no significant difference in the risk premium for socially responsible and non-socially responsible firms (Menz, 2010).

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[1] For more information of the HKIRA award, please see: http://hkira.com/awards/ehall2020.php

Muñoz et al. (2014) report similar results for a sample of US and European socially responsible mutual funds. In contrast, Tang et al. (2012) show a positive relationship between ESG and financial performance, while Jain et al. (2017) show that short sellers target firms with lower ESG scores as these may indicate poor firm performance. In trying to reconcile alternative outcomes, Vyvyan et al. (2007) posit that it is the "…observed lack of congruency between attitudes and choices in relation to environmental criteria [that] may have implications for the growth of SRI funds."

More recently, Bhandari and Javakhadze (2017) use an unbalanced panel of US firms covering the period 1992-2014 to show that CSR policies may have an adverse impact on the firms' allocation efficiencies, which in turn could negatively influence their accounting and stock-based performance. However, Tang and Zhang (2020) show that existing shareholders may benefit from green bonds, suggesting that CSR efforts have begun to be incorporated into the corporate bonds pricing. Russo et al. (2020) document some determinants of green bond issuance including projects characteristics related to eco-efficient products and technologies, pollution prevention and control, and sustainable water management. Despite their useful contributions, all these studies examine the effect of firms' CSR or ESG policies on firm performance and ignore their ability to create an attraction factor that may not only stimulate more positive attention from existing customers or stakeholders, but also gain the attention of a new class of pro-social (environmental) stakeholders. We posit that adoption of ESG policies would have a positive effect on a firm's ability to issue green bonds, as follows:

H2. ESG has a positive effect on green bond issuance.

2.5. ESG as a moderator

Companies have been using their CSR and sustainability efforts as a strategy to achieve brand differentiation (Epstein-Reeves, 2012). For example, Hur et al. (2014) show evidence

of direct positive effects of CSR on corporate brand credibility and corporate reputation as well as sequential mediating effects of corporate brand credibility and corporate reputation on the impact of CSR on corporate brand equity. Skard and Thorbjørnsen (2014) extend these ideas and show that corporate reputation may moderate the differences in the impact of corporate versus non-corporate sources of CSR communication, whereby firms with higher reputation generate more positive brand evaluations with their own communication instead of through an outside source/agent. These results suggest an interaction between brand reputation and the source of CSR messages. More recently, there is also a growing focus on sustainable and responsible investments (e.g., ESG) to drive the investment strategies of all the firms to gain and maintain organizational credibility and legitimacy (Drempetic et al., 2019). Therefore, we argue that as ESG involves a general global alignment of societal values and expectations, its dimensions are likely to complement the impact of corporate brand reputation. Accordingly, we hypothesize as follows:

H3. ESG positively moderates the positive effect of BRAND on green bond issuance, such that BRAND has a stronger effect on green bond issuance for firms with higher ESG disclosure scores.

Figure 1 summarizes all the three hypotheses.

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3. METHODOLOGY

3.1. Sample, data and measures

We use an international sample covering 1,358 corporate bond issuances from 651 unique firms to test all our hypotheses. Of the bonds issued, 338 are green bonds issued from 106 unique firms. 138 firms have a strong global brand reputation of which 31 have issued green bonds. We use a range of variables to capture company specific features covering financial

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performance and governance structures, industry and country controls, as follows:

"GREEN_BOND" is our dependent variable. It is a dummy variable taking the value 1 if the company is a green bond issuer and 0 if not. This value is intended to capture the timing that the firm switches to a 'greener capital structure'. Once a firm has issued a green bond it 'switches' value from 0 to 1 and can never reverse.

"BRAND" reflects whether a company enjoys a strong international brand reputation (BRAND=1) or does not (BRAND=0). To determine this, we refer to brand reputation data available from "brandirectory.com" and "interbrand.com" through which we are able to identify companies with strong brand reputation i.e. within the top 500 global brands. Using the same data sources, we add to this companies with strong regional brand reputation i.e. the leading brands in their country. Companies with recognized high-level international or regional brand reputation are classified as strong brand companies i.e. BRAND=1. There are alternative ways to define global brand value. For robustness, we also consider one popular alternative, which is to define a dummy variable, BRAND_b, which takes the value 1 for all firms whose market capitalization is in the top 20 firms listed on the country's main stock exchange and zero otherwise. It is well-established in the accounting literature that auditor's reputation (i.e., brand value) can be proxied by auditor's firm size (Lennox, 1999; Gul et al, 2011; Watts and Zimmerman, 1986; Gul and Tsui, 1998; DeFond et al., 2000). In fact, the logic is based on the fact that bigger auditors care about their reputation so they provide better service quality, leading to the usage of the size to measure reputation and brand. We follow this approach to create BRAND_b as robustness test for measuring brand/reputation. This results in a similar number of globally branded firms, albeit with slightly different membership.

"ESG" refers to the environmental, social and governance disclosure score reported by Bloomberg (2015) developed on the basis of firms' disclosure of ESG related information,

which provide consistent and comprehensive estimates of CSR practices, as discussed by

Husted and de Sousa-Filho (2018). A range of other standard firm level controls are used in

the analysis including: MCAP, the market capitalization of a firm; DvdYLD, the dividend

yield; CAGR, the cumulative average growth rate of sales over the preceding 12 months;

OPM, the operating profit margin; DE, the net debt to equity ratio; WACCD, the weighted

average cost of debt faced by a firm; PE, the price to Earnings ratio; IDOB, the percentage of

independent directors on the board; WOB, the percentage of women on board; and

CEOTENURE, the CEO tenure as a percentage of financial year earning. Appendix I shows

additional details on our data collection and final estimation sample.

3.2. Data matching process

To ensure our analysis is able to give a reliable, informative and fair overview of the

drivers of the decision to issue a green bond, we develop our analysis around a matched

sample of green and conventional bond issuers. Matched data samples of this type are widely

used across a variety of disciplines, as they provide a means to have comparable benchmark

(control) group within the analysis dataset. This helps to increase the integrity of the analysis

by providing a control for selectivity bias, and can offer a route towards a more formal notion

of causal estimation and analysis. A general discussion on score matching and its application

can be found in Caliento and Kopeinig (2008). Here we implement an n:1 propensity score

matching (PSM) design, with $n=3$, to construct the empirical dataset we use in the subsequent

analysis. We ensure that our estimation sample is comprised only of companies that issue

bonds so that our analysis is simplified by taking the decision to issue a corporate bond as

given. To facilitate this, we place the bond as the primary unit of interest within the matching

process. The steps to the matching process can be described as follows:

1. We obtain bond structure and pricing information from both Bloomberg and Datastream
    databases. In this process, we note that data on bond ratings are derived from multiple

rating agencies, and we therefore borrow the universal rating scheme outlined in Bhojraj and Sengupta (2003) to place all bonds into a common rating framework.

2. We extract the list of green bond issuers, and then ensure that we remove these issuers from the universe of conventional bond issuers. This again eases our empirical work by ensuring that we focus attention on the decision to be a green bond issuer or not, and thus, circumvents the complex question of whether any given firm decides to issue a green bond in any given year.

3. We implement an exact *n*:1 (with *n*=3) sampling scheme on propensity scores obtained on the following bond characteristics: the *coupon rate* of the bond; the *term* of the bond; whether a bond is *perpetual* or not; whether the bond is traded on the *international* markets or not; the main trading currency of the bond (e.g. in *Euro, USD, RMB or 'other')*; the *industry* of the bond issuer; and the issuer *country/region*.

4. This process identifies a matched sample conventional bond issuer, for which we then proceed to collect the remaining financial characteristics and brand value scores.

The matching process outlined above does not impose the requirement that green and conventional bond issuers are required to have similar underlying characteristics, rather that they are firms approaching the market with similar financial products. Table 1 provides descriptive statistics for the green and conventional bond issuers respectively, from which it can be seen that the firms also match quite closely in many of the firm-specific attributes.

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4. DATA ANALYSIS AND RESULTS

4.1. Main analysis – hypotheses testing

The empirical strategy is developed around a discrete choice model of the decision to issue a green bond. Our primary focus, given the discussion above, is to establish (i) if ESG

increases the probability of issuing a green bond and (ii) whether global brand status reinforces the role of ESG. We test the following empirical model to test these two aspects:

$$Pr.(Green\ Bond_{it} = 1) = f(\beta_0 + \beta_1 BRAND_{it} + \beta_2 ESG_{it} + \beta_3(BRAND_{it} * ESG_{it}) +$$

$$\beta_k X_{kit} + \epsilon_{it}) \tag{1}$$

Where X_{kit} is a vector of control variables, as described in the data section, covering core firm specific attributes including financial characteristics and governance structures. The main estimation work is done using standard logit models. In estimation we allow for year, industry sector, and main global region fixed effects, which play a crucial role in providing additional resilience to the omission of unobservable effects. Using this framework, we can test our hypotheses as follows:

H1: $\beta_1 > 0$, which means that firms with a global brand reputation are likely to be more willing than other firms to pursue business decisions that may offer value in enhancing, or at least sustaining, its public image. Well-implemented green financing offers direct benefits to external stakeholders and should therefore be expected to work in the same direction as an improved corporate image. H2: $\beta_2 > 0$, indicating that ESG has a positive effect on green bond issuance because higher ESG disclosure scores reflect (i) greater public exposure in relation to environmental management by the firm (a stakeholder pressure effect) and/or (ii) a disposition by the firm towards strong environmental management strategies. Both of these possible channels of effect should reinforce the decision to issue a green bond. H3: $\beta_3 > 0$, which argues that the incentives to issue green bonds are further reinforced when both the ESG and BRAND effects co-exist (i.e., ESG > 0 and BRAND = 1).

We take two approaches towards evaluating H1-H3. In the first instance we estimate Eq. (1) for the full sample of data, from which we obtain direct estimates of β_1, β_2 and β_3. We then complement this by estimating models for sub-samples varied along the cross-sections

of BRAND and ESG values, from which we garnish some additional insights. Specifically, these cross-sections are the sub-sample with BRAND = 0 and another with BRAND = 1, then for ESG we consider the cases where ESG = 0 i.e. no official rating is given by Bloomberg, ESG > 0. We then take the median of all non-zero ESG scores, τ and run additional regressions for cases with weak and strong ESG performance respectively i.e. where 0 <ESG ≤ τ and τ <ESG ≤ 100, recalling that 100 is the maximum attainable score for ESG. We report estimates from both general ('full') specifications and also from 'stepwise' estimation of the preferred models, where information criterion comparisons help to identify the 'optimal' set of control variables. Next, we present and discuss our results for the three hypotheses. We also conduct several robustness checks on our main results to verify their insensitivity to key model choices or sample considerations.

< Insert table 2 about here >

Table 2 presents the first and main set of results. Columns (1)-(4) of Table 2 record regression results using our preferred BRAND measures, while results using the alternative brand measure (BRAND_b) are presented in columns (5)-(7). For brevity, we focus discussion on the key ESG and BRAND variables, along with their interaction. Broadly speaking, in Table 2 and all subsequent tables, the control variables take plausible signs. One noteworthy exception is that of MCAP, which is either non-significant or negative. This is an artifact of the data construction process, and simply reflects that the sample of green bond issuers are on average smaller in market cap than the sample of conventional bond issuers. We found mixed evidence for H1 about the impact of brand reputation on green bond issuance with no statistical significance for the coefficient on BRAND columns (2)-(4) in Table 2. However, the coefficients for all three specifications (5)-(7) are positive for the alternative BRAND_b measure. For column (6), the positive coefficient is statistically non-significant whereas Column (7) shows a positive and significant result. In the absence of a

conclusive evidence of a positive relationship, H1 is not supported.

Next, we test H2, which asserts that ESG performance has a positive effect on green bond issuance. We find that except for the models in columns (2) and (5)—which exclude ESG, for each of the alternative BRAND specifications—the coefficient for ESG is always positive and always significant. It is worth noting that for the stepwise regression in (4) and (7), the ESG variables do not 'drop out'. Thus, ESG disclosure performance and higher ESG have an influence over a firm's choice and ability to issue a green bond. The scale of the coefficients is generally stable across our main specifications ranging between 0.014-0.016, not including (1) which forcibly excludes BRAND variables. The stability of the coefficients across the alternative model specifications may be taken as an indicator of the robustness of the relation between ESG performance and green bond issuance, which is not seen for other variables, which take a wider range of coefficient values. Therefore, we find conclusive support for H2.

Finally, we test H3, about the positive moderating effect of ESG on the effect of BRAND to green bond issuance, such that BRAND has a stronger positive impact on green bond issuance for firms with higher ESG disclosure scores, captured by the interaction BRAND*ESG, included in model specifications (3) and (6), and subject to stepwise model reduction, may also appear in (4) and (7). For our BRAND measure, we observe from both columns (3) and (4) that there is a positive and significant coefficient for the BRAND*ESG interaction, which indicates a positive reinforcing effect of ESG, wherein the positive impact of BRAND on green bond issuance is significantly stronger for companies with high ESG disclosure scores.

< Insert table 3 about here >

Table 3 shows the next set of results about how the main variables of interest vary along sub-samples of the data. In Panel (A) we consider sub-samples based on BRAND, causing

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this variable to drop out of the estimated models. We observe that the effect of ESG is stronger, reflected by a larger coefficient which incidentally has a tighter confidence interval also, for observations with BRAND = 1 versus observations with BRAND = 0. This finding is stable to the definition of brand, with the same result holding when using the alternative BRAND_b measure, in columns (3) and (4). Panel (B) of Table 3 provides an alternative cut of the data and reveals how the role of BRAND varies along with sub-samples defined by ESG performance level. Taking our preferred BRAND specification, column (1) considers the case of firms with no disclosed ESG score, which may be compared against firms with a positive score, shown in column (2). The coefficient in (1) is negative, and not statistically significant. In column (2) this reverses, and firms with positive ESG scores see a positive, albeit fairly weakly significant influence of BRAND to the probability of bond issuance.

In columns (3) and (4) the sub-sample of observations with positive ESG scores is further decomposed into those with below median ESG performance, versus those with above median performance. In column (3) it is observed that for low-ESG firms BRAND carries no significant contribution to the probability of green bond issuance, while for high-ESG firms there is a large, positive and significant effect. The results are qualitatively invariant to the use of the alternative BRAND_b measure, though we acknowledge some quantitative differences in the size and significance of the BRAND_b coefficient in (5) versus its counterpart in (1). Thus, whichever way we opt to 'slice' the data, the evidence from the sub-sample estimations conclusively show that not only does BRAND reinforce the probability of issuing a green bond, but this effect is relatively stronger for firms with higher ESG disclosure scores. In other words, we also conclude that ESG has a positive effect on green bond issuance as expected and plays a key role in enhancing the effect of BRAND on green bond issuance.

< Insert table 4 about here >

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4.2. Post-hoc analysis - ESG components

Although we found evidence in support of our main hypotheses, we further examined the role of individual E, S and G characteristics by deconstructing the combined ESG score, to seek additional insights. Table 4 reports results from regressions including separate E, S and G scores, rather than a single ESG score. Through these, we are able to provide a more nuanced appraisal of the moderating role of individual E, S and G components through their interaction with BRAND and subsequent influence to green bond issuance. We argue that since a company can be benefitted indirectly through reputation gains from issuing a green bond to fund pro-environmental projects, it follows that a company with a strong brand and high E score may have a stronger tendency to issue green bonds. In contrast, a company with a strong S score places a high importance on non-environmental sustainability factors, which may help rationalize our conclusion that the S score may affect green bond issuance but has little moderating effect on the effect of BRAND. Finally, the G score reflects general corporate governance. Since the G score reflects the quality and external image of firm governance, a firm with a high G score has an added incentive to showcase their achievements through various media channels and award recognition. Therefore, we believe that there is a high chance of moderating effect of G score on the impact of BRAND. In summary, and looking across the columns of Table 4, we do observe that E and G moderate the effect of BRAND, but not S. We suggest that these results leave room for more complete theories of the BRAND/ESG nexus to be conceptualized, and point towards an important incongruence in the S dimension of ESG.

4.3. Additional robustness checks

We now turn attention to briefly evaluating the robustness of our results to key modeling concerns/choices. Our data again limit the scope and range of tests we can feasibly employ, nonetheless we are able to consider the following three issues:

[1] Self-selection into global brand status: Developing and maintaining a global brand requires serious effort, and it is possible that a company's decision to issue a green bond might be conditional upon it having already 'selected' itself (committed itself) to becoming a company with a global brand. To therefore alleviate any concerns that our results are sensitive to the presence of such selectivity, and the statistical 'biases' it might induce, we re-estimate the main model within a Heckman selection framework, with the first stage being the self-selection into a global branded status, with this first stage equation being a function of a range of firm-level characteristics, and sector and year fixed effects.

[2] Lagged effects and path dependence: There is a legitimate case to be made for the possibility that the decision to issue a green bond in any given year might be connected to the previous year's brand status. Our data does not provide many spare observations to explore dynamics to their full extent, though we are able to lag brand effects by one year and establish whether there exist any sensitivities among our main conclusions.

[3] Reverse causality concerns: Supplemental to self-selection or lagged endogenous effects considered in [1] and [2], there is the potential for reverse causality to exist. We therefore test for this by regressing (i) BRAND on lagged green bond issuance (GREEN_BOND_LAG) using a Probit model and (ii) ESG score on lagged green bond issuance, with both regressions including the same control variables as in previous regressions, and each implemented over the full set of variables with stepwise estimation.

[4] Small sample size concerns: Our sample is of modest dimensions, as a final check we pass the main model, i.e. column (3) from Table 2, through a standard bootstrap estimation and inference procedure using b=1,000,000 replications. We then visually inspect the main parameters of interest to verify the stability of the coefficient distributions.

< Insert tables 5 & 6 about here >

We briefly outline the results for robustness checks [1] and [2] in Table 5. We see that adding lags seems to result in a 5-7% improvement in Pseudo-R^2, however we must be cautious in interpreting this, as we also need around one third of the observations in order to be able to estimate the models containing the lag. Other than this, we generally observed that our results are not materially sensitive either to the presence of endogeneity, or to the timing of BRAND effects. Even if BRAND is lagged, its interaction with ESG remains significant.

The results for robustness test [3] in Table 6 complement these results by illustrating that reverse causality is not a statistically significant concern. To be precise, current period BRAND status is not significantly affected by the issuance of a green bond in the previous period, with the effect insignificant in the full regression, and the variable dropping out during the stepwise selection process. Similarly, we find that ESG disclosure is not significantly impacted by green bond issuance in the previous period. In this regard it is implied that initial green bond issuance is (and intuitively so) not expect to redefine brand status or ESG disclosure ratings. This is unsurprising given that green bond issuance is among a suite of indicators feeding into the definitions for BRAND and ESG.

< Insert figure 2 about here >

Finally, we consider the bootstrap distributions for the BRAND and ESG variables along with their interaction, i.e. robustness check [3], as shown in figure 2. The concern was that the results may be subject to (relatively) small sample sensitivities. From the histograms, we get a clear understanding of the roles of ESG and BRAND to green bond issuance. ESG has a positive effect, BRAND a negative but non-significant effect, and ESG moderates the effect of BRAND, which is captured by the BRAND*ESG interaction. The estimated empirical coefficient distributions are generally skewed (non-normal) but smooth and continuous, pointing towards stable (robust) distributions.

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5. DISCUSSION AND IMPLICATIONS

In this paper, we provide an initial assessment of the relation between brand reputation, and the corporate decision to engage in green financing activities via green bond issuances. We position our arguments around the idea that brand recognition plays an important role in firms' decisions, and that the central importance of brand reputation hinges on the presence of a well-performing CSR reflecting in the presence of 'good' ESG disclosure scores. We verify this using an international sample of firms developed around the available 'universe' of green bond issuers for which we are able to find data, matched against a sample of non-green bond issuers to strengthen our empirics. Brand reputation alone carries no significant influence on the decision to issue a green bond, but when interacted with ESG (BR*ESG), some significant and positive effects emerge. Moreover, we demonstrate that the effects are more pronounced for firms with larger ESG disclosure scores, and that they vary along with board structure.

Traditionally, business ethics is strongly embedded in CSR. In finance, asset owners practice ethical principles through exclusion of investments and stocks called the SRI approach. Such a negative screening only exclude unethical investments but does not provide positive support to listed firms, which do well in environmental and social engagement at corporate level. However, ESG integration by asset owners and buy-side managers employ positive screening to enhance their investment portfolio by ethical and sustainable factors.

Extending our empirical finding, we conjecture that, when a firm successfully issues green bond, the ESG disclosure scores will be enhanced. It is because more green financing and sustainable investment are important parts of ESG disclosure and performance examined by commercial rating agencies. In other words, green bond issue can be an effective strategy to enhance a firm's ESG disclosure rating through sustainable products as an outcome of this green financing. In short, ESG approach and green bond issue can be an effective channel to

deliver sustainable investments.

Firms aiming to use green bonds as a channel to raise green financing could enhance their ESG disclosure ratings by focusing on their sub-score on E dimension of ESG. Investors and analysts who believe in a positive relationship between ESG disclosure and stock price valuation are likely to invest more in this firm. Thus ESG investors stimulate overall demand for the firm, and financial performance measures (including liquidity, shareholder-base diversification, holdings from sustainable investors, such as large pension funds and non-profit institutions, which prefer ESG performance) will subsequently improve. Such financial benefits may induce firms to embrace green finance more widely (e.g., issue green bonds).

6. LIMITATIONS AND FUTURE RESEARCH

We present plausible and empirically valid results in this paper, which can help reconcile the interaction between marketing and social responsibility functions of a firm. However, we do have some limitations that future research may address. First, we have a relatively poor representation of Chinese firms in our data. While Chinese issuers and investors have been a large feature of the market for green bonds in recent years (Wang et al., 2019), they largely dropped out of the estimation dataset mostly based on the lack of availability of detailed bond pricing information from the Datastream database. Hence, we need more research on the interactive impact of ESG and brand reputation on green bond issuance, particularly in the emerging markets in other parts of the world, such as Asia-Pacific (Samuwai & Hills, 2018) and Latin America (Mejia-Escobar, González-Ruiz, & Duque-Grisales, 2020). We also note that our unit of observation is the bond issuer, and not the specific bonds. We do not contain information on individual bonds for this reason, and also for the fact that a single issuer may issue more than one bond, even within the same year. Accounting for such bond-level data will likely increase the complexity of the analysis, but future research might address this by working directly with individual bond-level data.

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Table 1: Summary statistics for firms by green bond issue status

Variable	N	Mean	St. Dev.	Min	Max	Freq=0	Freq=1
Panel A: Green bond issuers							
BRAND	315	0.15	0.36	0	1	267	46
ESG	315	20.05	24.12	0	78.07	-	-
BRAND_b	315	0.19	0.40	0	1	254	61
log(MCAP)	315	5.03	5.33	0	16.17	-	-
DvdYLD	315	1.61	2.43	0	13.79	-	-
CAGR	315	2.47	13.11	-100.00	98.31	-	-
OPM	315	24.82	35.93	-162.10	361.66	-	-
DE	315	218.37	1,012.44	-118.42	16,584.80	-	-
WACCD	315	1.66	3.41	0	25.15	-	-
PE	315	10.06	55.57	0	962.50	-	-
IDOB	315	29.30	35.69	0	100.00	-	-
WOB	315	11.87	16.40	0	75.00	-	-
CEOTENURE	315	1.69	3.71	0	26.00	-	-
US	315	0.15	0.36	0	1	270	45
EUROPE	315	0.48	0.50	0	1	165	150
Panel B: Conventional bond issuers							
BRAND	1,619	0.11	0.32	0	1	1438	181
ESG	1,619	17.30	21.54	0	80.70	-	-
BRAND_b	1,619	0.10	0.30	0	1	1461	158
log(MCAP)	1,619	5.37	5.23	-4.61	16.95	-	-
DvdYLD	1,619	1.51	2.95	0	34.01	-	-
CAGR	1,619	3.41	13.11	-53.17	228.01	-	-
OPM	1,619	5.60	338.35	-13,462.78	300.55	-	-
DE	1,619	166.95	533.12	-1,324.04	12,380.92	-	-
WACCD	1,619	1.42	2.05	-0.16	25.94	-	-
PE	1,619	27.61	560.95	0	22,476.19	-	-
IDOB	1,619	30.98	37.59	0	100.00	-	-
WOB	1,619	9.70	13.48	0	53.85	-	-
CEOTENURE	1,619	2.53	4.86	0	40.00	-	-
US	1,619	0.38	0.49	0	1	1006	613
EUROPE	1,619	0.38	0.48	0	1	1010	609

Table 2: Main results

	(1) – (4) Original brand measure				(5)– (7) Alternative brand measure		
	Dependent Variable: GREEN_BOND (=1)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	No Brand	*No ESG*	*Full*	*Stepwise*	*No ESG*	*Full*	*Stepwise*
ESG	0.020***		0.015**	0.014**		0.016**	0.016**
	(0.007)		(0.007)	(0.007)		(0.007)	(0.007)
BRAND		0.256	-0.533	-0.442			
		(0.208)	(0.412)	(0.403)			
BRAND_b					0.640***	0.242	0.549***
					(0.191)	(0.343)	(0.190)
log(MCAP)	-0.068*	-0.057	-0.082**	-0.088**	-0.059	-0.079**	-0.084**
	(0.039)	(0.038)	(0.040)	(0.039)	(0.038)	(0.040)	(0.039)
DvdYLD	0.035	0.026	0.041		0.029	0.033	
	(0.029)	(0.029)	(0.030)		(0.029)	(0.030)	
CAGR	0.001	-0.001	0.002		-0.001	0.001	
	(0.006)	(0.005)	(0.006)		(0.006)	(0.006)	
OPM	0.009***	0.008***	0.009***	0.008***	0.009***	0.009***	0.009***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
DE	-0.00000	0.00000	0.00000		-0.00001	-0.00001	
	(0.0001)	(0.0001)	(0.0001)		(0.0001)	(0.0001)	
WACCD	0.046*	0.060**	0.046*	0.049*	0.064**	0.053**	0.056**
	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)
PE	-0.0001	-0.0001	-0.0001		-0.0001	-0.0001	
	(0.0003)	(0.0004)	(0.0003)		(0.0003)	(0.0003)	
IDOB	0.003	0.002	0.001		0.004	0.004	
	(0.005)	(0.005)	(0.005)		(0.005)	(0.005)	
WOB	0.024**	0.028***	0.024**	0.022***	0.024**	0.019**	0.019**
	(0.009)	(0.009)	(0.009)	(0.008)	(0.009)	(0.010)	(0.008)
CEOTENURE	-0.035	-0.037*	-0.033	-0.049**	-0.037	-0.034	-0.049**
	(0.023)	(0.023)	(0.023)	(0.021)	(0.023)	(0.023)	(0.021)
BRAND*ESG			0.019**	0.017*			
			(0.009)	(0.009)			
BRAND_b*ESG						0.010	
						(0.008)	
Constant	-2.149***	-1.481**	-1.811**	-1.219**	-1.704**	-2.151***	-1.444***
	(0.734)	(0.693)	(0.756)	(0.523)	(0.705)	(0.752)	(0.512)
Observations	1,934	1,934	1,934	1,934	1,934	1,934	1,934
Log Likelihood	-766.572	-770.110	-764.192	-766.756	-765.393	-761.353	-764.873
Akaike Inf. Crit.	1,583.143	1,590.219	1,582.385	1,565.512	1,580.786	1,576.706	1,559.746
Chi-square test	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Pseudo R^2	0.108	0.104	0.111	0.107	0.109	0.114	0.110

$^{*}p < 0.10;\ ^{**}p < 0.05;\ ^{***}p < 0.01$

Table 3: Sub-samples by global brand status (Panel A) and brand reputation (Panel B)

Panel A

	Dependent variable:			
	GREEN_BOND (=1)			
	(1)	(2)	(3)	(4)
	BRAND=0	*BRAND=1*	*BRAND_b=0*	*BRAND_b=1*
ESG	0.021^{**}	0.107^{***}	0.014^{*}	0.071^{***}
	(0.008)	(0.036)	(0.008)	(0.025)
Observations	1,705	229	1,715	219
Log Likelihood	-652.903	-76.707	-632.438	-109.226
Akaike Inf. Crit.	1,357.806	201.413	1,316.876	270.451
Chi-square test	Pass	Pass	Pass	Pass
Pseudo R^2	0.122	0.332	0.110	0.185

Panel B

	Dependent variable:							
	GREEN_BOND (=1)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ESG=0	*ESG>0*	*0<ESG<τ*	*τ <ESG<100*	*ESG=0*	*ESG>0*	*0<ESG<τ*	*τ <ESG<100*
BRAND	-0.352	0.495^{*}	0.343	0.738^{**}				
	(0.444)	(0.264)	(0.514)	(0.367)				
BRAND_b					0.681^{*}	0.793^{***}	-0.007	1.227^{***}
					(0.370)	(0.248)	(0.436)	(0.345)
Observations	1,048	886	446	440	1,048	886	446	440
Log Likelihood	-425.015	-318.578	-141.755	-158.225	-423.743	-315.220	-141.974	-153.728
Akaike Inf. Crit.	900.029	687.156	333.510	364.449	897.487	680.439	333.948	355.456
Chi-square test	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Pseudo R^2	0.079	0.200	0.242	0.247	0.081	0.208	0.241	0.268

Note: Control variables are not reported for brevity. All models include year, industry and region fixed effects. $^{*}p < 0.10;$ $^{**}p < 0.05;$ $^{***}p < 0.01$

Table 4: Impact of separate E/S/G components on the green bonds issuance

				Dependent variable:				
				GREEN_BOND (=1)				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ESG	E	S	G	ESG	E	S	G
BRAND	-0.533	-0.525	-0.159	-0.598				
	(0.412)	(0.386)	(0.354)	(0.443)				
BRAND_b					0.242	0.046	0.446	0.499
					(0.343)	(0.332)	(0.319)	(0.348)
ESG	0.015**				0.016**			
	(0.007)				(0.007)			
E		0.011				0.011		
		(0.007)				(0.007)		
S			0.013**				0.013**	
			(0.006)				(0.006)	
G				0.005				0.009
				(0.010)				(0.009)
BRAND*ESG	0.019**							
	(0.009)							
BRAND*E		0.021**						
		(0.010)						
BRAND*S			0.010					
			(0.008)					
BRAND*G				0.018**				
				(0.008)				
BRAND_b*ESG					0.010			
					(0.008)			
BRAND_b*E						0.018**		
						(0.009)		
BRAND_b*S							0.004	
							(0.007)	
BRAND_b*G								0.003
								(0.007)
Observations	1,934	1,934	1,934	1,934	1,934	1,934	1,934	1,934
Log Likelihood	-764.19	-762.70	-765.82	-766.75	-761.35	-759.07	-762.18	-764.71
Akaike Inf. Crit.	1,582.385	1,585.407	1,585.642	1,587.497	1,576.706	1,578.148	1,578.366	1,583.427
Chi-square test	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Pseudo R^2	0.111	0.113	0.109	0.108	0.114	0.117	0.113	0.110

$^{*}p < 0.10;$ $^{**}p < 0.05;$ $^{***}p < 0.01$

Table 5: Additional robustness checks - Endogeneity and lagged effects

	Dependent variable:			
	GREEN_BOND (=1)			
	Endogenous brand choice		Lagged brand effects	
	(1)	(2)	(3)	(4)
	Full	Stepwise	Full	Stepwise
BRAND	-0.539	-0.442		
	(0.412)	(0.403)		
BRAND_LAG			-0.510	-0.443
			(0.500)	(0.491)
ESG	0.010	0.014**	0.012	0.011
	(0.012)	(0.007)	(0.009)	(0.009)
BRAND:ESG	0.019**	0.017*		
	(0.009)	(0.009)		
BRAND_LAG:ESG			0.023**	0.021*
			(0.011)	(0.011)
Observations	1,934	1,934	1,289	1,289
Log Likelihood	-764.065	-766.756	-506.520	-508.138
Akaike Inf. Crit.	1,584.131	1,565.512	1,065.040	1,048.277
Chi-square test	Pass	Pass	Pass	Pass
Pseudo R^2	0.111	0.101	0.116	0.113

Note: Control variables are not reported for brevity.
All models include year, industry and region fixed effects.
$^{*}p < 0.10;$ $^{**}p < 0.05;$ $^{***}p < 0.01$

Table 6: Additional robustness checks - Reverse causality

	BRAND (=1) (Probit)		ESG (OLS)	
	(1) Full	**(2)** Stepwise	**(3)** Full	**(4)** Stepwise
GREEN_BOND_LAG	0.013	-	1.214	1.242
	(0.146)	-	(0.769)	(0.767)
Observations	1,289	1,289	1,289	1,289
Log Likelihood	-355.225	-358.170	-4755.157	-4755.691
Pseudo R^2	0.240	0.234		
Adjusted R^2			0.802	0.802

Note: Control variables are not reported for brevity.
All models include year, industry and region fixed effects.
$^*p < 0.10;$ $^{**}p < 0.05;$ $^{***}p < 0.01$

Appendix I: Additional details on data collection and final estimation sample

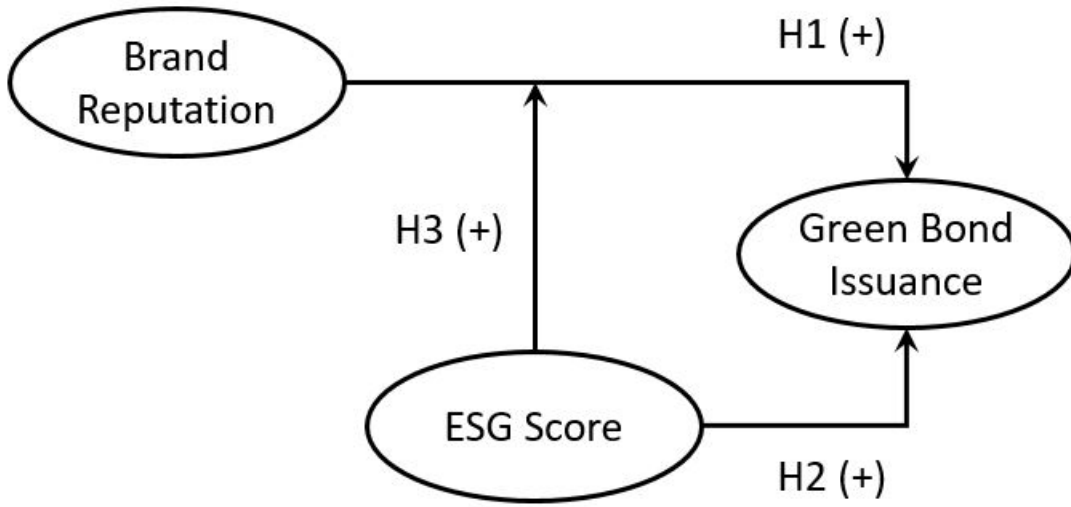| Data processing step	Sample information
Phase 1: Bond sample construction	
Generate a list of green bonds based on the Bloomberg database list of green bonds, cross verified against the Climate Bonds Initiative (CBI) certified bond list	Circa. **1000** green bonds up until the 2016 sample cutoff date.
Of which we then isolate the corporate issuances. Most green bonds up until the end of our sample period were by non-corporate issuers, thereby eliminating many observations from the sample.	Giving a sample of **338** corporate green bonds in total, issued across a sample of 108 unique firms from across the globe
Create a matched sample of conventional bonds from the universe of international corporate bonds issuances over the sample period, taken from Datastream.	Circa **250,000** corporate conventional bonds identified over the sample period
Implement a 3:1 propensity score based matching of conventional bonds against the green bonds on a range of bond-level characteristics including coupon, term, whether bond type is perpetual or fixed, currency of issue, industry of issue, and country of issuer. *The matching process is constrained to identify conventional bonds only from companies that have no history of issuing a green bond, such that we do not compare green and conventional bonds from the same company.*	**1,358** corporate bond issuances are identified, from **651** unique firms. *GB mean coupon rate = 3.221* *BB mean coupon rate = 3.316* *GB ST.Dev. of coupon rate = 2.288* *BB ST.Dev. of coupon rate = 2.647* *Note: BB = 'conventional bond'*
Phase 2: Construction of firm level indicators	
Obtain a range of firm level accounting and corporate governance variables. Data are hand collected from the Bloomberg database, availability of consistently measured international data, Bloomberg's proprietary disclosure measures, and corporate governance variables are the main factors reducing sample size	From the **651** unique firms we potentially have **1,953** firm-year observations available for estimation.
Global brand ranking classifications were identified using information from https://brandirectory.com/ and http://interbrand.com. This website provides access to comprehensive global and regional brand ranking data. We hand collect all global and country specific ranking reports over the sample period, then carefully match brand names against corporate names. *(Where necessary, brand information was allocated to the parent company, if the brand belongs to a subsidiary of the parent company)*	**138** of the firms in the sample are identified as having a strong global brand, of which **31** are green bond issuers *(i.e. roughly 22.5% of firms with brand reputation issued a green bond in our sample)*

Figure 1: Conceptual model

Figure 2: Bootstrap coefficient distributions for main coefficients of interest

ESG

97.82% of distribution greater than zero.

BRAND

10.07% of distribution greater than zero.

BRAND*ESG

97.56% of distribution greater than zero.