Mandatory ESG Disclosure, Information Asymmetry, and Litigation Risk: Evidence from Initial Public Offerings[☆]

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Abstract: I use the staggered adoption of mandatory ESG disclosure regulations around the world to explore the impact of ESG disclosure on initial public offering (IPO) underpricing. Studying over 15,000 IPOs issued in three dozen countries over two decades, I find robust evidence that underpricing is substantially lower in countries with an ESG disclosure mandate. High-quality disclosure environments moderate and tougher IPO liability standards amplify the negative association between ESG disclosure mandates and underpricing, which suggests that ESG disclosure mandates reduce information asymmetry and litigation risk for IPO issuers. The effect of ESG disclosure mandates on underpricing is stronger in countries with greater environmental, social, and governance concerns and following events that substantially increase investor attention to ESG issues.

JEL classifications*:* G12, G15, G18, M14

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1. Introduction

According to a recent survey of institutional investors, 28% of respondents believe that climate risk disclosure is "more important" or "much more important" than financial disclosure (Ilhan et al., 2021). Despite substantial increases in ESG-related disclosure in recent years,[1] the majority of respondents agree that the qualitative and quantitative information firms provide is not sufficiently precise, that standardized and mandatory reporting is necessary and currently insufficient, and that investors should demand more disclosure from firms. The appetite for greater ESG disclosure corresponds with increased investor attention to ESG-related issues.[2] For instance, the U.S. SIF Foundation reports that investments influenced by ESG considerations grew at a 14% compound annual rate from 1995 to 2020, reaching approximately $17 trillion at the beginning of 2020.[3]

Due in large part to investor demand for more and higher-quality ESG disclosure from firms, many countries have introduced ESG disclosure mandates in recent years. For example, Krueger et al. (2023) identify 35 countries that mandate environmental, social, and governance disclosure between 2001 and 2019. In addition, many other countries mandate disclosure in one or two, but not all three, areas.[4] Christensen et al. (2021) note that ESG disclosure differs from traditional financial reporting in many important ways, making it difficult to predict the economic consequences of an ESG disclosure mandate. Despite this, evidence indicates that firms increase the amount and quality of ESG disclosure after mandates are introduced (Ioannou and Serafeim, 2019). ESG disclosure mandates also appear to improve firms' information environments, as

[1] See, for example https://www.whitecase.com/sites/default/files/2022-06/esg-disclosure-trends-in-sec-filings-2022-annual-survey-web.pdf (Accessed: March 1, 2023).
[2] ESG disclosure is alternatively referred to as sustainability or corporate social responsibility (CSR) disclosure in related literature. For consistency, I use "ESG disclosure."
[3] U.S. SIF Foundation "Report on US Sustainable and Impact Investing Trends 2020", available at https://www.ussif.org/files/Trends%20Report%202020%20Executive%20Summary.pdf (Accessed: March 1, 2023)
[4] I follow Kreuger et al. (2023) and use the terms "ESG disclosure mandate" and "ESG mandate" to refer to countries that require disclosures in all three areas.

Krueger et al. (2023) find that firm-level stock liquidity increases in countries that introduce disclosure mandates.[5]

Krueger et al.'s (2023) contention that "Firms with weaker information environments benefit the most from ESG disclosure mandates" (Abstract) motivates my empirical setting. I leverage the staggered adoption of mandatory ESG disclosure around the world to explore the effect of ESG disclosure mandates on initial public offerings (IPOs), which typically involve young, small, private firms with challenging information environments. To the extent that ESG disclosure mandates improve firms' information environments, the effect should be unmistakable for IPO firms. Specifically, I study the relation between ESG disclosure mandates and underpricing, which refers to the large positive returns experienced by many IPO firms on their first day of trading.

I propose two channels with the potential to link ESG disclosure mandates and underpricing. Prominent theories that suggest that uncertainty and information asymmetry are primary determinants of underpricing motivate the first channel. For example, Rock (1986) posits that underpricing helps persuade less-informed investors to bid for IPO shares when other investors are better informed. Greater uncertainty increases the incentive to gather information, widens the information gap between investors, and compels larger first-day returns (Beatty and Ritter, 1986; Ritter, 1984). Potential sources of uncertainty and information asymmetry include firms' ESG practices, which are increasingly important to IPO investors.[6] If ESG disclosure reduces uncertainty and information asymmetry for IPO participants, IPOs should be underpriced less in countries that require ESG disclosure.[7]

[5] Related studies by Dhaliwal et al. (2011) and Dhaliwal et al. (2012) document lower analyst forecast errors and forecast dispersion after firms voluntarily initiate ESG disclosure.
[6] https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topics/ipo/ey-2021-global-ipo-trends-report-v2.pdf (Accessed: March 1, 2023).
[7] Alternatively, Arnold et al. (2010) suggest that soft information, which would characterize much of the information typically included in ESG disclosures, increases ambiguity and underpricing.

Litigation risk also has the potential to connect mandatory ESG disclosure to underpricing. Several studies propose that issuers deliberately underprice their shares to decrease the probability and prospective costs of IPO-related litigation, which can be substantial (Hughes and Thakor, 1992; Lowry and Shu, 2002; Tiniç, 1988).[8] According to a recent survey, corporate counsels worried about class action lawsuits rank ESG-related class action lawsuits behind only employment and labor and cybersecurity, data protection, and data privacy as areas of future concern.[9] Mandatory ESG disclosure can reduce the risk of litigation and other ESG-related penalties by incentivizing firms to behave in a more ESG-responsible manner (Christensen et al., 2021).[10] Mandatory ESG disclosure could also prevent the accumulation of firm-specific bad news and pre-emptively discourage lawsuits (Skinner, 1994; Jin and Myers, 2006; Kim et al., 2014). Kim et al. (2012) find evidence consistent with this line of reasoning, as ESG-friendly firms are less likely to be the target of an SEC investigation. Mandatory ESG disclosure could also help firms counterbalance adverse operating environments associated with litigation. For instance, Grougiou et al. (2016) find that companies in the alcohol, tobacco, gambling, nuclear energy, and firearm industries use ESG disclosure to offset the direct and indirect effects of litigation. To the extent that mandatory ESG disclosure reduces IPO-related litigation risk and decreases the cost when litigation does occur, IPO underpricing should be lower when ESG disclosure is mandatory.

I test the information asymmetry and litigation risk hypotheses in a sample of 15,456 IPOs issued in 36 countries between 1998 and 2018. My international setting allows me to exploit the staggered adoption of ESG disclosure mandates through time, capturing both within and between

[8] For instance, Lowry and Shu (2002) note that the average monetary settlement – which ignores reputational consequences, legal fees, and opportunity costs associated with litigation – amounts to 11% of total IPO proceeds.
[9] https://www.nortonrosefulbright.com/-/media/files/nrf/nrfweb/knowledge-pdfs/2023-litigation-trends-survey.pdf?revision=4c17816f-a4fb-401f-8960-b00efe391f22&revision=5249784330027387904 (Accessed: January 27, 2023).
[10] Aghamolla and An's (2021) model suggests that firms will overinvest in ESG-friendly technologies when they are subject to ESG disclosure mandates.

country effects. Consistent with both channels, I find that IPOs are underpriced less in countries that mandate ESG disclosure. From an economic perspective, my baseline result indicates that first-day returns are 15.9 percentage points lower for IPOs issued in countries with an ESG disclosure mandate. Gross proceeds for the typical sample IPO is approximately 105.93 million (inflation adjusted USD). Thus, an ESG disclosure mandate is associated with an additional 16.8 million in proceeds. When I consider mandates that cover the individual pillars of ESG, I find that all three associate with lower first-day returns. Namely, underpricing is 10.3, 20.6, and 15.5 percentage points lower for IPOs issued in countries with environmental, social, and governance mandates, respectively. The effect is of similar magnitude in matched sample analysis that helps disentangle the influence of a disclosure mandate from other confounding effects and is robust to different initial return measures, various estimation techniques, and the exclusion of countries with large numbers of IPOs and extreme underpricing.

Krueger et al. (2023) note that the implementation of ESG disclosure mandates is not homogeneous across countries. Two prominent ways in which they often differ is (1) who issues the mandate (i.e., government vs. stock exchange) and (2) whether or not firms can provide an explanation and opt out of complying with the mandate. When I examine the first issue, I find that ESG mandates associate with lower underpricing regardless of who issues the mandate; although surprisingly, the magnitude of the effect is stronger for mandates issued by a non-government authority. With respect to the latter issue, the negative effect of ESG disclosure mandates on underpricing appears limited to countries that require full compliance.

The information asymmetry explanation predicts that mandatory ESG disclosure should be more (less) impactful in countries with low-quality (high-quality) information environments. When I consider the quality and enforcement of accounting standards, which affects the information environment of IPO firms (Boulton et al., 2011 and 2017), I find evidence consistent

with the information asymmetry hypothesis. Specifically, the influence of mandatory ESG disclosure on underpricing is weaker for IPOs issued in countries with more comprehensive accounting disclosures, following the adoption of IFRS, and with higher-quality auditing environments and enforcement of accounting standards. This is consistent with Dhaliwal et al. (2012), which finds that stand-alone ESG-related disclosures are more impactful in countries with more opaque financial disclosures.

I use La Porta et al.'s (2006) liability standards indexes, which capture "the difficulty of recovering losses … in a civil liability case for losses due to misleading statements in the prospectus" (p. 7), to test the litigation risk hypothesis. Consistent with prior research that posits that firms underprice to decrease the probability and prospective cost of litigation, I find that underpricing tends to be higher in countries with stronger liability standards for IPO issuers, directors, distributors, and accountants. However, ESG disclosure mandates moderate the effect of liability standards on underpricing, which is consistent with the notion that mandatory ESG disclosure reduces the risk of litigation and other ESG-related penalties.

I also provide evidence that the negative association between mandatory ESG disclosure and underpricing is stronger when environmental, social, and governance concerns are greater. I use a measure of climate vulnerability and readiness reported by the Notre Dame Global Adaptation Initiative to examine the influence of environmental concerns and find that the negative impact of ESG disclosure mandates on underpricing is weaker for IPOs issued in countries better positioned to adapt to the challenges posed by climate change. Barrett et al.'s (2022) Reported Social Unrest Index identifies countries experiencing social issues, which exacerbate the negative relation between ESG disclosure mandates and underpricing. When I use the World Bank's Governance Indicators to compare countries' governance environments, I find that strong governance institutions moderate the negative relation between ESG disclosure mandates and underpricing.

Additional evidence suggests that greater attention to ESG issues magnify the impact of ESG disclosure mandates on underpricing. For instance, the negative association between ESG disclosure mandates and underpricing is stronger following the release of Nicholas Stern's "Stern Review on the Economics of Climate Change," which Painter (2020) shows substantially increased attention to climate change risk. When I examine reporting mandates for the individual pillars of ESG, I find that the negative relation between social and governance mandates and underpricing is stronger following the report's release; however, the relation between environmental mandates and underpricing is only significant after the report's release. This is perhaps not surprising given Stern's focus on the environment.

To my knowledge, this is the first study on the impact of ESG disclosure mandates on IPOs. Examining ESG disclosure mandates overcomes issues related to the comparability, quality, and reliability of discretionary ESG disclosures considered in related studies. For example, Fenili and Raimondo (2021) measure ESG disclosure using textual analysis of IPO firms' registration statements. Consistent with my results, they report that underpricing is lower for firms that report more ESG information in their registration statements.[11] Reber et al. (2021) identify firms that disclose ESG information at the time of their IPO and, consistent with the notion that ESG disclosure improves firms' information environments, find that greater ESG disclosure is associated with lower post-IPO idiosyncratic volatility. However, without clear disclosure requirements, firms may make unsubstantiated claims about their ESG performance and ambitions (i.e., "greenwashing"). Additionally, as Christensen et al. (2021) note, discretionary ESG reporting is often endogenous because it depends on (i) firms' voluntary ESG activities and (ii) their decision whether or not to report about these activities. Of course, my approach is not completely without

[11] Economidou et al. (2023) find that underpricing is higher for companies included in the RepRisk database, which constructs ESG ratings for a large sample of public and private firms.

flaws, as it does not capture the quantity and quality of ESG disclosure provided by IPO firms. However, the ESG disclosures of public firms can provide valuable information about other firms, even if ESG disclosure mandates do not directly affect ESG disclosure for IPO firms (Foster, 1980). Additionally, firms bond themselves to stringent ESG disclosure standards when they go public in a country with an ESG disclosure mandate (Lu, 2023).

In a closely related study, Baker et al. (2021) examine the relation between MSCI's ESG Government Ratings and underpricing.[12] The authors argue that ESG Government Ratings are a good proxy for firm-level ESG policies due to the influence of institutional investors on IPO firms and predict higher ratings are associated with lower information asymmetry and underpricing. Consistent with their prediction, they find that higher ESG Government Ratings are associated with lower underpricing. However, it is not clear how country-level ESG Government Ratings directly relate to the amount and quality of ESG information produced by firms. Additionally, as Berg et al. (2022) point out, because there is substantial disagreement across ESG ratings from different sources due to issues of scope, measurement, and weight, a study's results and conclusions may be sensitive to the choice of ESG ratings employed. ESG disclosure mandates do not suffer from these concerns because they objectively capture the implementation of mandatory ESG disclosure requirements that affect the quantity and quality of ESG information produced by firms. In addition to showing that ESG disclosure mandates negatively correlate with underpricing, I provide novel evidence on the importance of environmental, social, and governance concerns to the relation between ESG disclosure and underpricing. Namely, I show that ESG disclosure mandates are more impactful when concerns about and attention to ESG-related issues is greater.

[12] According to Baker et al. (2021), ESG Government Ratings "assess a country's exposure to and management of ESG risk factors that may affect the long-term sustainability of its economy" (p. 3).

Dhaliwal et al. (2011) find that voluntary ESG disclosure is associated with a lower cost of equity capital for public firms,[13] while Cheng et al. (2014) find that firms with better ESG disclosures face lower capital constraints. My results extend these findings to IPO firms. Ritter (1987) finds that the indirect cost of underpricing often exceeds the direct costs when firms go public. For instance, total cash expenses in his sample of U.S. IPOs, which include the underwriter discount and fees, legal fees, printing costs, auditing fees, and other out-of-pocket costs, average 14.03% of gross proceeds for firm commitment and 17.74% for best efforts IPOs. This compares to initial returns of 14.80% and 47.78% for firm commitment and best efforts IPOs, respectively. In my sample, the average indirect cost related to underpricing is 34.5%. My baseline results suggest that an ESG disclosure mandate reduces this by 15.9 percentage points, on average. Therefore, firms that go public in a country with an ESG disclosure mandate tend to raise IPO capital at a lower cost compared to those that do so in countries without a disclosure mandate.

2. Data description

2.1. Sample construction

To construct my IPO sample, I gather information on ordinary common offerings by non-financial firms located and listed in the same country between 1998 and 2018 from the Refinitiv SDC Platinum database. I match each IPO event with Datastream using the SEDOL company identifier. When SEDOL does not produce a match, I attempt to match manually using the company name, country, and Datastream entry date. In cases where this does not yield a match, I discard the IPO. For the remaining IPOs, I gather secondary market closing prices from Datastream and retain those that have a first valid closing price within the window [–3, +60] relative to the

[13] Related studies by El Ghoul et al. (2011) and Giese et al. (2019) find that higher firm-level ESG ratings are associated with a lower cost of capital.

IPO issue date reported by SDC. I use the first valid closing price and the IPO offer price to calculate underpricing as follows:[14]

$$Underpricing = (First\text{-}day\ closing\ price - IPO\ offer\ price) / IPO\ offer\ price \quad (1)$$

To eliminate extreme observations, I trim the top and bottom one percent of IPOs based on underpricing. Finally, I eliminate countries with fewer than five IPOs and countries with missing data required to calculate key country-level covariates. These steps result in a final sample of 15,456 IPOs issued in 36 countries. I identify my sample countries in Figure 1. The striped shaded countries are the 27 sample countries that implement an ESG reporting mandate during my sample period, while the solid shaded countries are the nine sample countries without an ESG reporting mandate.

[Place Figure 1 about here]

2.2. ESG disclosure mandates

Krueger et al. (2023) compile and report information on ESG disclosure mandates for 65 countries.[15] I use the information reported in their Table 1 to construct the variable *mandate*, which is an indicator variable set to 1 beginning with the year after a country has environmental, social, and governance mandates, and zero otherwise. I start with the year after a mandate is introduced because, as Krueger et al. (2023) note, firms are often given time to comply. To the extent that firms increase ESG disclosure prior to the ESG mandate effective date (Fiechter et al., 2022) or voluntarily disclose ESG information in the absence of a mandate, it would bias against finding a significant relation between ESG disclosure mandates and underpricing. In addition to *mandate*, I

[14] I follow Boulton et al. (2011) and use the tenth valid secondary market closing price to calculate underpricing for IPOs issued in France, Greece, and Thailand. In Table 9, I show that the results are robust to calculating initial returns this way for all IPOs.

[15] According to Krueger et al. (2023), their primary source of information on ESG disclosure mandates is the Carrots & Sticks project. They supplement the Carrots & Sticks data with information provided by the Global Reporting Initiative and the Sustainable Stock Exchanges.

use their Figure 1 to construct *environmental mandate*, *social mandate*, and *governance mandate*, which are indicators set to 1 beginning with the year after a country implements an environmental, social, and governance mandate, respectively, and zero otherwise.

Table 1 reports country-level descriptive statistics for my sample. For each country, I report the number of IPOs, average underpricing, the first year in which a country has an ESG mandate, and the percentage of a country's IPOs where *mandate*, *environmental mandate*, *social mandate*, and *governance mandate* are set equal to 1. China and the U.S. are the only countries with more than 2,000 IPOs during my sample period. At the other end of the spectrum are Argentina, Ireland, and Israel, which each have fewer than ten IPOs. Average underpricing ranges from -2.23% (Israel) to 61.74% (China). Twenty-seven sample countries introduce an ESG reporting mandate during my sample period. However, not all countries require environmental, social, and governance disclosures at the same time. For instance, the U.K. implemented an environmental disclosure mandate in 2008, a social disclosure mandate in 2010, and a governance disclosure mandate in 2013. Thus, *mandate* is set equal to 1 for IPOs issued in the U.K. after 2013 (15.39% of all UK IPOs). The percentage of U.K. IPOs subject to an *environmental mandate* (24.15%) or a *social mandate* (22.12%) is higher because the U.K. introduced these mandates before their governance mandate. Most countries without an ESG reporting mandate require disclosure in one or two areas of ESG. For example, I code the U.S. as not having an ESG mandate because it does not require environmental disclosure during the sample period. However, 60.26% of U.S. IPOs take place after the 2002 adoption of social and governance disclosure mandates.

[Place Table 1 about here]

Figure 2 provides preliminary evidence on the relation between ESG disclosure mandates and underpricing. When I compare average underpricing for IPOs issued in countries with and without an ESG disclosure mandate for each of the four mandate measures (*mandate*, *environmental*

mandate, *social mandate*, and *governance mandate*), I find that underpricing is substantially lower for IPOs issued in countries with a mandate. For example, average underpricing is 37.57% in countries that do not have all three mandates in place. This compares to average underpricing of 26.48% in countries that have environmental, social, and governance disclosure mandates. The results are similar for the individual environmental, social, and governance mandates. This evidence is consistent with the idea that ESG disclosure mandates reduce IPO information asymmetry and litigation risk; however, it fails to control for the myriad of other factors associated with first-day returns documented in the IPO literature. In the following section, I describe my multivariate setting and the covariates used to control for these factors.

[Place Figure 2 about here]

In Figure 3, I report the number of IPOs and average underpricing on an annual basis relative to the year an ESG disclosure mandate takes effect (year 0). I restrict this analysis to IPOs issued in the 27 countries that implement ESG disclosure mandates during my sample period. The dashed line reports the linear trend for average underpricing.[16] Consistent with both the information asymmetry and litigation risk hypotheses, the figure shows a discernible trend towards lower underpricing in the years after the adoption of an ESG disclosure mandate. Interestingly, there also appears to be a temporary spike in the number of IPOs following the passage of an ESG disclosure mandate. For example, the average annual number of IPOs increases from 421 in the three years prior to a mandate ([-3, -1]) to 655 in the three years after a mandate ([+1, +3]).

[Place Figure 3 about here]

[16] An exponential trend line yields a similar result.

2.3. Empirical strategy

Related international IPO underpricing studies note that country-level clustering necessitates the use of an econometric technique that takes clustering into account. I follow previous studies that consider the impact of country-level factors on firm-level IPO underpricing and use hierarchical linear modeling (HLM) to test the relation between ESG disclosure mandates and underpricing.[17] Eq. (2) expresses the baseline specification:

$$Underpricing_{ict} = \beta_0 + \beta_1 Mandate_{ct} + \beta \boldsymbol{X_{ict}} + \iota_i + \tau_t + \gamma_c + \varepsilon_{ict}, \quad (2)$$

where $Underpricing_{ict}$ is the first-day return for the IPO of firm *i* issued in country *c* in year *t*; $Mandate_{ct}$ is an indicator variable set equal to 1 if an ESG reporting mandate is in effect for country *c* in year *t*, and zero otherwise; X_{ict} is a vector of covariates measured for IPO *i* issued in country *c* in year *t*; ι_i and τ_t are industry and issue year fixed effects, respectively; γ_c is a random country effect that shifts the intercept between countries; and ε_{ict} is the error term.[18] If ESG disclosure mandates associate with lower underpricing, β_1 should be negative and significant in Eq. (2).

I report IPO-level descriptive statistics in Table 2. The Appendix defines all variables used in this study and identifies primary data sources. The average IPO is underpriced by 34.5%. A *mandate* is in effect at the time of the offering for 27.8% of sample IPOs. Due to the staggered implementation of ESG mandates in many countries and the fact that several sample countries introduce mandates in only one or two of the three areas of ESG, it is more likely that either an *environmental mandate*, *social mandate*, or *governance mandate* is in effect when an IPO is issued (40.2%, 42.1%, and 41.0%, respectively).

[Place Table 2 about here]

[17] Representative related studies that use HLM include Marcato et al. (2018) and Baker et al. (2021).
[18] In untabulated analysis, I confirm that the results are similar when I use a time trend or a quadratic time trend instead of issue year fixed effects.

I use the remaining variables in Table 2 as covariates in my multivariate analysis. I include several measures that control for aspects of country-level institutional quality that prior research finds associate with firm-level IPO underpricing. These variables include Djankov et al.'s (2008) *anti-self-dealing* index to control for the quality of investor protections, Burgstahler and Dichev's (1997) loss avoidance measure to control for *earnings management*, The Heritage Foundation's Index of Economic Freedom (*economic freedom*) to capture aspects of political and economic freedom,[19] and The KOF Swiss Economic Institute's *financial globalization* measure to control for financial market integration.[20] Inflation-adjusted *GDP per capita* controls for differences in economic development across sample countries.

Underwriters often engage in *stabilization* activities meant to prevent secondary market prices from dropping below the IPO offer price (Aggarwal, 2000). I follow Boulton et al. (2010) and construct a measure of price stabilization based on the frequency of small positive versus small negative first-day returns. Underpricing tends to be greater during hot IPO markets (Ritter, 1984). I construct two measures to capture this effect: *IPO activity*, which is the ratio of number of IPOs to the total number of listed equities for the country and IPO year, and *market return*, which is the total return on the IPO country's Datastream index over the three months before the IPO. Ellul and Pagano (2006) report that IPOs are underpriced less in more liquid stock markets. *Liquidity* is the ratio of shares traded to aggregate market capitalization for the country and IPO year.

Information asymmetry issues are often greater for smaller IPOs than for larger IPOs (Ritter, 1984). The average inflation-adjusted *offer size* is 105.9 million USD. Research finds mixed evidence on the impact of financial intermediaries on underpricing. Some argue their involvement can reduce underpricing by certifying an IPO (Carter and Manaster, 1990; Barry et al., 1990).

[19] https://www.heritage.org/index/ (Accessed: March 1, 2023).
[20] https://kof.ethz.ch/en/forecasts-and-indicators/indicators/kof-globalisation-index.html (Accessed: March 1, 2023).

Others find their presence is associated with larger first-day returns (Beatty and Welch, 1996; Loughran and Ritter, 2004). I include indicator variables to capture the presence or absence of two important intermediaries. *Top underwriter* identifies the 25.4% of sample IPOs underwritten by an investment bank in the top 25 of SDC's global league tables for the IPO year. *VC backed* indicates that 22.3% of firms receive a venture capital investment prior to their IPO.

Lockup length indicates that company insiders and early investors agree to retain their shares for 102.6 days, on average, after the IPO (Brav and Gompers, 2003). *Bookbuilt* indicates that two-thirds of sample IPOs use the book building method (Sherman, 2000), while a similar proportion are *firm commitment* offerings (Ritter, 1987). *Equity carve-outs*, which may be more familiar to investors due to their history as a subsidiary or division of a publicly traded company (Prezas et al., 2000), are 9.4% of the sample. Finally, 20.7% of IPO firms operate in a *high tech* field (Ljungqvist and Wilhelm, 2003).

3. Empirical results

3.1. ESG disclosure mandates and underpricing

The information asymmetry and litigation risk hypotheses both predict lower underpricing for IPOs issued in countries with ESG disclosure mandates. I report my baseline tests in Table 3. The first column examines the effect of ESG mandates that include environmental, social, and governance disclosure on underpricing. The coefficient for *mandate* suggests that underpricing is approximately 15.9 percentage points lower for IPOs issued in countries that have adopted an ESG disclosure mandate. This represents a 46% decrease compared to the average first-day return (34.5%). Given the average IPO raises the equivalent of 105.9 million USD, a 15.9 percentage point decrease in underpricing translates to an additional 16.8 million in capital raised.

[Place Table 3 about here]

The results reported in the next three columns indicate that mandates for each pillar of ESG are associated with lower underpricing. While the coefficients for *environmental mandate*, *social mandate*, and *governance mandate* are similar in magnitude, the results suggest that social mandates have a slightly larger effect (20.6 percentage points) than environmental (10.3 percentage points) and governance (15.4 percentage points) mandates.

The fifth column of Table 3 reports the results of a matched sample analysis that helps disentangle the influence of a disclosure mandate from other confounding effects. I restrict this analysis to IPOs issued in countries that implement a disclosure mandate in all three areas (i.e., environmental, social, and governance) during my sample period. I match each IPO subject to an ESG disclosure mandate with the IPO issued in the same country prior to the adoption of the mandate in the same industry with the closest offer size. I discard unmatched IPOs. The coefficient for *mandate* suggests that underpricing is 20.3 percentage points lower for offerings that take place after the implementation of an ESG mandate. In untabulated analysis, I find that the matched sample results are similar when I consider *environmental mandate*, *social mandate*, and *governance mandate*.

The final column of Table 3 reports country-year regressions. For this analysis, I begin by calculating the country-year average for each variable in Eq. (2). The dependent variable is the country-year average IPO underpricing. The control variables are averages across all IPOs in a given country and year. There are 566 unique country-year combinations in my IPO sample. The results continue to indicate a negative association between ESG disclosure mandates and underpricing. Specifically, the coefficient for *mandate* indicates that first-day returns are 12.3 percentage points lower when ESG disclosure is mandatory. In untabulated analysis, I find that the country-year results are similar when I replace *mandate* with *environmental mandate*, *social mandate*, and *governance mandate*.

Many of the control variables reported in Table 3 are significantly correlated with underpricing. Consistent with Boulton et al. (2011), I find that first-day returns are higher in countries the exhibit greater *earnings management*. Consistent with Marcato et al. (2018), greater *financial globalization* is associated with lower underpricing. Economic development (*GDP per capita*) and underpricing are negatively correlated. Stronger pre-IPO stock market performance (*market return*) tends to predict higher underpricing, while underpricing tends to be lower in more liquid markets (*liquidity*). The negative coefficients for *offer size* are consistent with the notion that information asymmetry issues are not as prevalent for large firms. IPOs backed by *top underwriters* and *VC backed* IPOs tend to exhibit larger first-day returns. Consistent with the notion that share lockups reduce adverse selection for IPO participants (Brav and Gompers, 2003), *lockup length* is negatively correlated with underpricing. As predicted by Sherman (2000), *bookbuilt* IPOs are underpriced less than other types. Finally, underpricing tends to be greater for both *equity carve-out* and *high tech* offerings.

3.2. Implementation of ESG disclosure mandates

The implementation of ESG disclosure mandates is not homogeneous across countries. For instance, government institutions in some countries and stock exchanges in others issue ESG disclosure mandates. According to Krueger et al. (2023), the type of issuer can affect the credibility, potential for regulatory capture, and resources available to implement and enforce a mandate. To consider the possibility that issuer type affects the relation between ESG disclosure mandates and underpricing, I create indicator variables set equal to 1 for IPOs issued in countries with mandates issued by a *government authority* or a *non-government authority*. Both variables are set equal to zero for IPOs issued in countries without an ESG disclosure mandate. For my sample, 6.0% (21.8%) of IPOs take place in a country with a mandate issued by a *government authority* (*non-government authority*). I report the results in Table 4.

[Place Table 4 about here]

The first two columns report the results of models that add *government authority* and *non-government authority* to Eq. (2) individually. In both instances, the coefficients are negative and significant, indicating that ESG disclosure mandates associate with lower underpricing regardless of who issues the mandate. The results are similar when I include both variables in the same model (column 3). Surprisingly, the results suggest that the effect of an ESG disclosure mandate on underpricing is stronger in countries where a non-government authority issues the mandate. For instance, the third column suggests that underpricing is 9.04 (24.5) percentage points lower in countries where a *government authority* (*non-government authority*) issues an ESG disclosure mandate.

Krueger et al. (2023) also report that some countries permit firms to file "comply-or-explain" disclosures that allow them provide an explanation for choosing to opt out of mandatory ESG disclosure (e.g., the cost of disclosing proprietary information). In other countries, firms are not given the opportunity to opt out and ESG disclosure is binding. To the extent that binding ESG disclosure has a greater impact on firms' information environments, the impact of ESG disclosure mandates on underpricing should be stronger in countries without a comply-or-explain option. To tests this possibility, I create the indicator variables *comply-or-explain* and *no comply-or-explain* that identify countries with ESG disclosure mandates with and without an opt out option, respectively. Both variables are set to zero for countries without an ESG disclosure mandate. The option to comply-or-explain is rare in my sample; only 8.8% of IPOs issued in a country with an ESG disclosure mandate permit firms to comply-or-explain. ESG disclosure is binding for the other 91.2%.

I consider the impact of comply-or-explain options in the last three columns of Table 4. I report the results of models that add the indicator variables to Eq. (2) both individually and together. In

each instance, the negative effect of an ESG disclosure mandate on underpricing appears limited to countries with a binding mandate. Specifically, the coefficients for *no comply-or-explain* are negative and significant in both models in which it is included, while *comply-or-explain* is not significant in either model in which it is included.

Tables 3 and 4 provide robust evidence that ESG disclosure mandates are associated with lower underpricing, which is consistent with both the information asymmetry and litigation risk hypotheses. In subsequent analysis, I leverage my international setting to examine these channels more directly. Specifically, I exploit differences in disclosure standards and liability standards across my sample countries to provide evidence specific to each channel. Additional tests consider the impact of environmental, social, and governance concerns on the association between ESG disclosure mandates and underpricing. I also demonstrate the robustness of the relation to alternative return measures, estimation techniques, and sampling techniques.

3.3. Information asymmetry

The previous sections report evidence of a negative association between ESG disclosure mandates and underpricing that is sensitive to the implementation of the mandate. One potential explanation for the negative relation is that ESG disclosure mandates improve the information environment of IPO firms. However, there is substantial heterogeneity in IPO firms' information environments, some of which is due to differences in the quality of a country's financial reporting infrastructure. Prior research finds that this affects underpricing. For example, Boulton et al. (2011) report that multiple measures of the quality of reported earnings associate negatively with underpricing, while Boulton et al. (2017) find that IPOs are underpriced less in countries that exhibit greater accounting conservatism. If, as these studies find, high-quality disclosure environments reduce information asymmetry, ESG disclosure mandates may have less impact on underpricing in countries where the quality and enforcement of accounting standards is greater.

I use several measures to proxy for the quality and enforcement of accounting standards in my sample countries. The first is La Porta et al.'s (1998) country-level accounting standards index, which considers the comprehensiveness of firms' annual reports.[21] Second, I consider the adoption of IFRS, which prior research finds is associated with more transparent and comparable accounting disclosures (George and Shivakumar, 2016). I create an indicator variable set equal to 1 for IPOs issued in countries following their adoption of IFRS. Third, I use the audit index and enforcement index reported by Brown et al. (2014), which capture the quality of auditors' working environment and the degree of enforcement activity.[22] I interact these variables with *mandate* to explore the impact that the disclosure environment has on the relation between ESG disclosure mandates and underpricing. To the extent that high-quality disclosure settings moderate the relation between ESG disclosure mandates and underpricing, I expect the negative relation between mandates and underpricing to be weaker in countries with higher accounting standard index scores, in countries that adopt IFRS, and in countries with higher audit index and enforcement index values.

The results reported in Table 5 are consistent with the information asymmetry channel linking ESG disclosure mandates with underpricing. In every column, the coefficient for *mandate* is negative and significant. However, the positive coefficients for the interaction terms indicate that comprehensive accounting disclosures, IFRS adoption, higher quality auditor working environments, and greater accounting enforcement activity moderate the effect. To illustrate, consider the results in the second column. Slightly more than 22% of IPOs are issued in countries that require IFRS. The coefficient for *mandate* implies that underpricing would be approximately 24 percentage points lower for an IPO issued in a non-IFRS country with an ESG disclosure

[21] I drop China, Indonesia, and Ireland from this analysis due to missing accounting standards index data.
[22] I match IPOs issued before 2005 with the 2002 audit and enforcement index values reported by Brown et al. (2012). I assign the 2005 values (2008 values) to IPOs issued between 2005 and 2007 (after 2007).

mandate compared to a similar IPO issued in a non-IFRS country without a disclosure mandate. The interaction term suggests that the adoption of IFRS substantially reduces the effect of an ESG disclosure mandate. Specifically, the sum of *mandate* and the interaction term reported at the bottom of the table suggests that the adoption of an ESG disclosure mandate would reduce underpricing in a country that uses IFRS by approximately 10.9 percentage points, on average. Similarly, the interaction terms reported in the last two columns suggest that a one standard deviation improvement in Brown et al.'s (2014) audit index and enforcement index reduce the impact of an ESG disclosure mandate on underpricing by 6.03 percentage points and 5.46 percentage points, respectively.

[Place Table 5 about here]

3.4. Litigation risk

Lowry and Shu (2002) report that IPO issuers are often the target of costly litigation due to misstatements or omissions during the IPO process. For instance, they note that the average monetary settlement – which ignores reputational consequences, legal fees, and opportunity costs associated with litigation – amounts to 11% of total IPO proceeds. For some IPOs, the costs of litigation are much greater. Some studies suggest that IPO issuers deliberately underprice to decrease the probability and prospective costs of litigation (Hughes and Thakor, 1992; Lowry and Shu, 2002; Tiniç, 1988). Mandatory ESG disclosure might incentivize firms to act more responsibly in the areas covered by ESG (Christensen et al., 2021) or prevent the accumulation of firm-specific bad news (Skinner, 1994; Jin and Myers, 2006; Kim et al., 2014), both of which could reduce litigation risk and ESG-related penalties. Because IPO-related litigation risk differs across countries (La Porta et al., 2006), I expect the negative effect of ESG disclosure mandates on underpricing to be stronger in countries where litigation risk is greater.

I use La Porta et al.'s (2006) indexes of liability standards to test the litigation risk hypothesis.[23] The authors construct indexes of liability standards for IPO issuers, directors, distributors, and accountants that capture "the difficulty of recovering losses … in a civil liability case for losses due to misleading statements in the prospectus." (p. 7) Higher index values indicate a lower burden of proof for plaintiffs (i.e., IPO investors). To test this conjecture, I add La Porta et al.'s (2006) liability standards indexes and their interaction with *mandate* to the models reported in Table 6. The column headers identify the liability standards index considered in each model.

[Place Table 6 about here]

The results are consistent with the notion that mandatory ESG disclosure reduces litigation risk. Specifically, in each column, *mandate* is not statistically significant. However, all interaction terms are negative and most are statistically significant, which suggests that the marginal impact of an ESG disclosure mandate on underpricing is greater in countries where litigation risk is higher. The sum of the coefficients for *mandate* and its interaction with the liability standards measures reported at the bottom of Table 6 are negative and highly significant in every case, which indicates that ESG disclosure mandates are associated with lower underpricing in countries with strong liability standards. Thus, ESG disclosure mandates appear to substitute for higher underpricing in countries with greater litigation risk.

3.5. Environmental concerns

I predict a stronger association between mandatory ESG disclosure and underpricing in countries that suffer from greater environmental, social, and governance concerns. In this section, I consider the possibility that environmental concerns exacerbate the relation between ESG disclosure and underpricing. I use the Notre Dame Global Adaptation Initiative's country index

[23] I drop China from this analysis due to missing liability standards index data.

(*climate risk*), which is a summary measure that considers both a country's vulnerability and ability to adapt to climate change, to compare the level of environmental concern across my sample countries.[24] Higher values of *climate risk* indicate that a country is better prepared to deal with the effects of climate change. Across my IPO sample, IPOs issued in countries that have implemented an ESG reporting mandate exhibit slightly greater vulnerability to climate change. For example, the average *climate risk* scores are 61.3 and 63.2, respectively, for IPOs issued in countries with and without a mandate. I interact *climate risk* with *mandate* to consider the marginal impact of climate vulnerability on the association between ESG disclosure mandates and underpricing. If greater environmental concerns magnify the relation between ESG disclosure mandates and underpricing, I expect a positive coefficient for this interaction term. I report the results in the first column of Table 7.

[Place Table 7 about here]

The negative coefficient for *mandate* provides additional support for the notion that ESG disclosure mandates are associated with lower underpricing. The positive coefficient on the interaction of *mandate* and *climate risk* indicates that the negative impact of ESG disclosure mandates on underpricing is weaker in countries better positioned to deal with climate change. From an economic perspective, the coefficient for *mandate* and the interaction term suggest that an ESG disclosure mandate would reduce underpricing by approximately 20.5 percentage points for an IPO issued in a country with a *climate risk* score that is one standard deviation (7.56) below the sample average (62.7). This compares to a reduction of approximately 17.7 percentage points for an IPO issued in a country with the sample average *climate risk* score. Thus, ESG disclosure

[24] https://gain.nd.edu/our-work/country-index/ (Accessed: March 1, 2023). I drop Hong Kong from this analysis due to missing *climate risk* scores.

mandates are more impactful in countries that are more vulnerable and less prepared to adapt to the risks posed by climate change.

3.6. Social concerns

I use Barrett et al.'s (2022) Reported Social Unrest Index (*social unrest*) to test the prediction that social concerns strengthen the association between mandatory ESG disclosure and underpricing. Barrett et al. (2022) search articles in English-language newspapers for words indicating social unrest to construct their index on a monthly basis for 130 countries from 1985 through 2022.[25] Boulton et al. (2022) find that greater social unrest lowers investor sentiment, which negatively affects underpricing. I interact *social unrest* with *mandate* to explore the influence that social unrest has on the relation between ESG disclosure mandates and underpricing.[26] If social concerns amplify the impact of ESG disclosure mandates on underpricing, I expect to find a negative coefficient for this interaction term in my regression model.

I report the results in the second column of Table 7. Consistent with the notion that ESG disclosure mandates lower information asymmetry and litigation risk, the coefficient for *mandate* is negative. The negative coefficient for *social unrest* is consistent with Boulton et al.'s (2022) main finding; however, it is not significant at conventional levels in my model. The negative and significant coefficient for the interaction term suggests that social unrest strengthens the impact of ESG disclosure mandates on underpricing. Therefore, to the extent that Barrett et al.'s (2022) Reported Social Unrest Index proxies for social concerns, the results support the prediction that ESG disclosure mandates are more impactful when social issues are greater.

[25] For example, they search for variations of "protest," "riot," "revolution," and "unrest."
[26] I follow Boulton and Nixon (2022) and use the log transformation of *social unrest*.

3.7. Governance concerns

Prior research finds that the quality of a country's governance institutions is associated with underpricing (e.g., Boulton et al., 2010). I predict a stronger association between mandatory ESG disclosure and underpricing in countries that suffer from greater governance concerns. I use the World Bank Governance Indicators to test this conjecture.[27] These indicators, which capture six broad aspects of governance – control of corruption, government effectiveness, political stability, regulatory quality, rule of law, and voice and accountability – are constructed at the country level semiannually before 2002 and annually thereafter. Because the measures are highly correlated – pairwise correlations range from 0.69 to 0.96 – I use the average value across the six measures as my *governance indicator* where higher values indicate stronger governance institutions.[28] I interact this measure with *mandate* to explore the impact that governance concerns have on the relation between ESG disclosure mandates and underpricing.

I report the results in the last column of Table 7. The positive coefficient for *governance indicator* is consistent with Autore et al. (2014), which finds that underpricing tends to be higher in countries that score better in the areas of control of corruption, government effectiveness, political stability, regulatory quality, rule of law, and voice and accountability. The coefficient for *mandate* is negative and highly significant. The positive and significant coefficient for the interaction term indicates that strong governance institutions moderate the effect of ESG disclosure mandates on underpricing. Specifically, the coefficient for *mandate* and the interaction term suggest that an ESG disclosure mandate would reduce underpricing by approximately 29.0 percentage points for an IPO issued in a country with a *governance indicator* that is one standard deviation (0.79) below the sample average (0.89). This compares to a reduction of approximately

[27] https://info.worldbank.org/governance/wgi/ (Accessed: March 1, 2023).
[28] The results are similar when I examine each measure individually.

13.2 percentage points for an IPO issued in a country with a *governance indicator* score equal to the sample average. This suggests that, to the extent that governance issues are more likely in countries with weak institutions, ESG disclosure mandates are more impactful in countries that suffer from greater governance concerns.

3.8. The Stern Review

On October 30, 2006, the U.K. government released Nicholas Stern's "Stern Review on the Economics of Climate Change." The overarching goal of the study was to consider the economics of climate change, including the economic impact of climate change and the costs and benefits of reducing emissions. The report suggests, "climate change … is the greatest and widest-ranging market failure ever seen." (p. i) Painter (2020) argues that the Stern Review increased attention to the risks of climate change. Consistent with this idea, he shows that Google searches for "climate change" increased dramatically after the release of the report and remained higher than pre-report levels through 2007. I posit that ESG disclosure mandates are more impactful when attention to ESG-related issues is greater. To test this prediction, I construct the indicator variable *Post-Stern*, which is set equal to 1 for the 51.2% of sample IPOs issued after the October 30, 2006 release of Nicholas Stern's report. I interact *mandate* with *Post-Stern* to explore the marginal impact of Stern's report on the relation between ESG disclosure mandates and underpricing. I report the results in Table 8.

[Place Table 8 about here]

The addition of *Post-Stern* decreases the magnitude and significance of the mandate variables. Only two, *social mandate* (Column 3) and *governance mandate* (Column 4), remain significant at standard significance levels. However, the coefficient for the interaction of *Post-Stern* with the mandate variables is negative and highly significant in every case. Thus, social and governance mandates are associated with lower underpricing both before and after the release of Stern's report.

The *environmental mandate* results reported in the second column are intuitive given the focus of the report. Specifically, the coefficient for *environmental mandate*, which captures the effect of environmental mandates on underpricing prior to Stern's report, is not statistically significant. However, the interaction of *environmental mandate* and *Post-Stern* is negative and highly significant. This supports the prediction that attention to ESG-related issues – in this case environmental issues – amplifies the impact of ESG disclosure mandates.

3.9. Additional robustness

In the first two columns of Table 9, I test the robustness of the relation between ESG disclosure mandates and underpricing to alternative return measures. I measure underpricing using the 10th (two-week) and 22nd (one-month) secondary market closing price. Measuring returns over several days helps allay concerns about market efficiency and daily volatility limits. Of course, it also introduces the possibility that post-IPO events influence returns. Caveats aside, the negative and significant coefficients for *mandate* in these tests support the negative association between ESG disclosure mandates and initial returns. The larger magnitude of the coefficients compared to those reported in prior tables suggests that the full impact of ESG disclosure mandates on underpricing may not be realized on the first trading day.

[Place Table 9 about here]

In the remaining columns of Table 9, I confirm the robustness of the negative relation between ESG disclosure mandates and underpricing to alternative estimation techniques. The first column reports OLS with standard errors clustered at the country level. The second column reports a country fixed effects model.[29] The weighted least squares (WLS) model reported in the last column assigns equal weight to each of the 36 sample countries to address potential concerns that countries

[29] *Anti-self-dealing* and *stabilization* are measured at the country level and, therefore, are excluded from this model.

with large numbers of IPOs drive the relation between ESG disclosure mandates and underpricing (Dittmar et al., 2003). In each case, I find that ESG disclosure mandates correlate with lower underpricing.

In Table 10, I consider the possibility that countries with large numbers of IPOs or extreme underpricing drive the relation between ESG disclosure mandates and underpricing. In the first column, I restrict the sample to the 27 countries that impose an ESG reporting mandate during my sample period. This test confirms that the influence of ESG disclosure mandates on underpricing reported in prior tables does not originate from patterns in underpricing in countries that do not implement a mandate. In the remaining columns, I individually exclude Australia, China, Hong Kong, Japan, South Korea, U.K., and U.S. In each instance, I continue to find that ESG reporting mandates associate with lower first-day returns.

[Place Table 10 about here]

4. Conclusion

ESG-related disclosure has increased dramatically in recent years. Despite this, investors continue to appeal for more and higher quality ESG disclosure from firms. In an effort to meet this demand, many countries have implemented mandatory ESG disclosure requirements, which has increased the number of firms filing ESG reports, enhanced the quality of ESG disclosures, and improved firms' information environments (Ioannou and Serafeim, 2019; Krueger et al., 2023). In this study, I consider two channels with the potential to link ESG disclosure mandates to IPO underpricing – information asymmetry and litigation risk. If ESG disclosure improves the information environment or reduces litigation risk for IPO firms, IPOs should be underpriced less when ESG disclosure is mandatory.

I test this prediction in a sample of 15,456 IPOs issued in 36 countries between 1998 and 2018. Consistent with both the information asymmetry and litigation risk channels, I find that

underpricing is lower for IPOs issued in countries that mandate ESG disclosure. From an economic perspective, my baseline results indicate that first-day returns are 15.9 percentage points lower in the presence of an ESG disclosure mandate. The typical IPO firm raises approximately 105.93 million USD in their IPO. Thus, the implied impact of an ESG disclosure mandate is an additional 16.8 million in proceeds. The effect is robust to alternative sampling methods, different initial return measures, various estimation techniques, and the exclusion of countries with large numbers of IPOs and extreme underpricing.

In addition to allowing me to exploit the staggered adoption of disclosure mandates through time capturing both within and between country effects, my international setting lets me consider the role that other country characteristics play in the relation between ESG disclosure mandates and underpricing. Consistent with the prediction that ESG disclosure mandates reduce information asymmetry for IPO participants, I find that their impact on underpricing is stronger in countries with lower-quality disclosure environments. Consistent with the litigation risk hypothesis, the negative relation between ESG disclosure mandates and underpricing is stronger in countries with tougher liability standards for IPO issuers, directors, distributors, and accountants.

I also consider the role that environmental, social, and governance concerns have on the association between mandatory ESG disclosure and underpricing. Environmental, social, and governance concerns appear to amplify the relation, as I find that ESG disclosure mandates have a bigger impact on underpricing in countries that are more vulnerable and less prepared to adapt to the risks of climate change, in countries that experience social unrest, and in countries with weaker governance institutions. I also find that events that increase attention to ESG-related risks strengthen the negative association between ESG disclosure mandates and underpricing.

Consistent with Dhaliwal et al. (2011), my results indicate that greater ESG disclosure is associated with a lower cost of equity capital for public firms. My results extend this association

to a company's first public equity capital raise – the IPO. Therefore, a significant benefit of ESG disclosure mandates is that they lower the cost of capital for the young, high-growth firms that issue IPOs. This benefit provides additional ammunition for governments and exchanges currently debating the merits of mandatory ESG disclosure, including the U.S. Securities and Exchange Commission, which proposed rules for climate disclosure in firms' registration statements and periodic reports in early 2022.[30]

[30] https://www.sec.gov/news/press-release/2022-46 (Accessed: March 1, 2023).

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Appendix – Variable definitions and primary data sources

Dependent variable

Underpricing	The difference between the first-day secondary market closing price and the IPO offer price, divided by the IPO offer price. Sources: Datastream and SDC.

ESG mandate variables

Mandate	Indicator variable set equal to 1 for IPOs issued in a country that requires environmental, social, and governance disclosure. Source: Krueger et al. (2023).
Environmental mandate	Indicator variable set equal to 1 for IPOs issued in a country that requires environmental disclosure. Source: Krueger et al. (2023).
Social mandate	Indicator variable set equal to 1 for IPOs issued in a country that requires social disclosure. Source: Krueger et al. (2023).
Governance mandate	Indicator variable set equal to 1 for IPOs issued in a country that requires governance disclosure. Source: Krueger et al. (2023).
Government authority	Indicator variable set equal to 1 for IPOs issued in a country with an ESG mandate issued by a government institution. Source: Krueger et al. (2023).
Non-government authority	Indicator variable set equal to 1 for IPOs issued in a country with an ESG mandate issued by a stock exchange. Source: Krueger et al. (2023).
No comply-or-explain	Indicator variable set equal to 1 for IPOs issued in a country with an ESG mandate implemented on a full-compliance basis. Source: Krueger et al. (2023).
Comply-or-explain	Indicator variable set equal to 1 for IPOs issued in a country with an ESG mandate that firms can opt out of by providing an explanation. Source: Krueger et al. (2023).

Primary control variables

Anti-self-dealing	Index that captures the strength of a country's private enforcement mechanisms that protect minority shareholders from expropriation by insiders. Source: Djankov et al. (2008).
Earnings management	Loss avoidance measure calculated as the ratio of the number of firms reporting small profits to the sum of the number of firms reporting small profits and small losses. Source: Boulton et al. (2011).
Economic freedom	Index of economic freedom. Source: The Heritage Foundation.
Financial globalization	Financial globalization index. Source: KOF Swiss Economic Institute.
GDP per capita	GDP per capital in constant dollars. Source: World Bank.
Stabilization	The difference in the number of IPOs with initial returns between zero and one percent and the number of IPOs with initial returns between zero and negative one percent divided by the total number of IPOs in each country. Source: SDC.
IPO activity	Country-year ratio of the total number of IPOs divided by the number of publicly listed firms. Source: World Bank.
Market return	The return on the index for the listing country over the three months preceding the offering. Source: Datastream.
Liquidity	Country-level ratio of the total value of shares traded to aggregate market capitalization. Source: World Bank.
Offer size	The inflation-adjusted offer value in millions of USD. Source: SDC.
Top underwriter	Indicator variable set equal to 1 for IPOs underwritten by an investment bank in the top 25 of the league tables in the year of issuance. Source: SDC.
VC backed	Indicator variable set equal to 1 for IPOs that previously received venture capital funding. Source: SDC.
Lockup length	Days between the IPO issue date and the first lockup expiration date. Source: SDC.
Bookbuilt	Indicator variable set equal to 1 for bookbuilt IPOs. Source: SDC.
Firm commitment	Indicator variable set equal to 1 for firm commitment IPOs. Source: SDC.
Equity carve-out	Indicator variable set equal to 1 for equity carve-out IPOs. Source: SDC.
High tech	Indicator variable set equal to 1 for IPO firms in one of the high-tech SIC groupings identified by Ljungqvist and Wilhelm (2003). Source: SDC.

Disclosure measures

Accounting standard index	Measure of the comprehensiveness of firms' annual reports based on the inclusion / exclusion of 90 unique items. Source: La Porta et al. (1998).
IFRS	Indicator variable set equal to 1 for IPOs issued in a country that requires IFRS.

Audit index	Index of the quality of the public company auditors' working environment. Source: Brown et al. (2014).
Enforcement index	Index of the degree of accounting enforcement activity. Source: Brown et al. (2014).
Liability measures	
Issuer	Index that captures how difficult it is to recover losses from the issuer in a civil liability case for misleading statements in the IPO prospectus. Source: La Porta et al. (2006).
Directors	Index that captures how difficult it is to recover losses from directors of the issuer in a civil liability case for misleading statements in the IPO prospectus. Source: La Porta et al. (2006).
Distributor	Index that captures how difficult it is to recover losses from the distributor in a civil liability case for misleading statements in the IPO prospectus. Source: La Porta et al. (2006).
Accountants	Index that captures the difficulty of recovering losses from the accountant in a civil liability case for misleading statements in the IPO prospectus. Source: La Porta et al. (2006).
Liability index	Average of *Issuer and director*, *Distributor*, and *Accountant.* Source: La Porta et al. (2006).
Environmental, social, and governance concerns	
Climate risk	Index that captures a country's vulnerability and readiness to improve resilience to climate change (Source: Notre Dame Global Adaptation Initiative).
Social unrest	The Reported Social Unrest Index, which is measured as the (rebased) fraction of all articles considered that indicate social unrest in a particular country. Source: Barrett et al. (2022).
Governance indicator	Simple average of six dimensions of governance: control of corruption, government effectiveness, political stability, regulatory quality, rule of law, and voice and accountability. Source: World Bank
Stern review measure	
Post-Stern	Indicator variable set equal to 1 for IPOs issued after the October 30, 2006 publication of Nicholas Stern's "Economics of Climate Change."
Additional return measures	
Two-week return	The return measured from the IPO offer price to the 10^{th} secondary market closing price. Sources: Datastream and SDC.
One-month return	The return measured from the IPO offer price to the 22^{nd} secondary market closing price. Sources: Datastream and SDC.

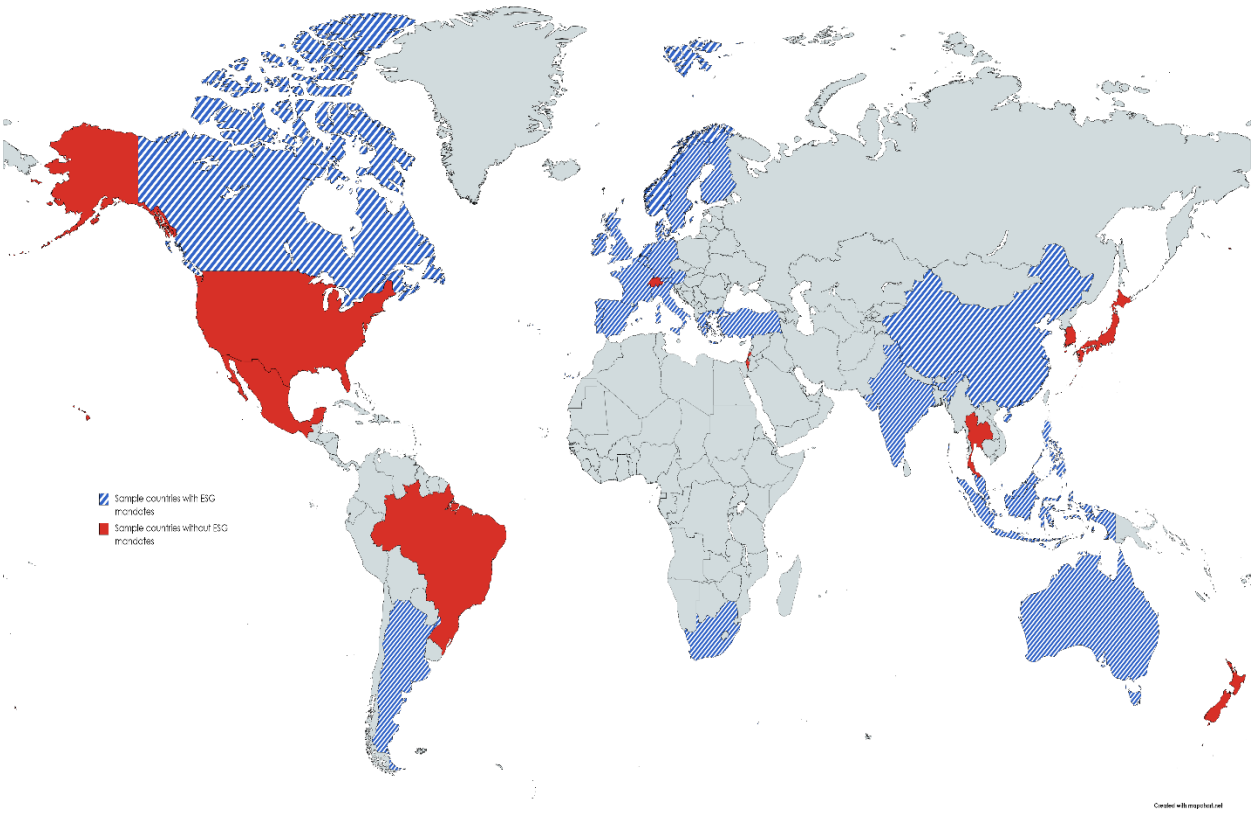

Figure 1: This figure identifies sample countries.

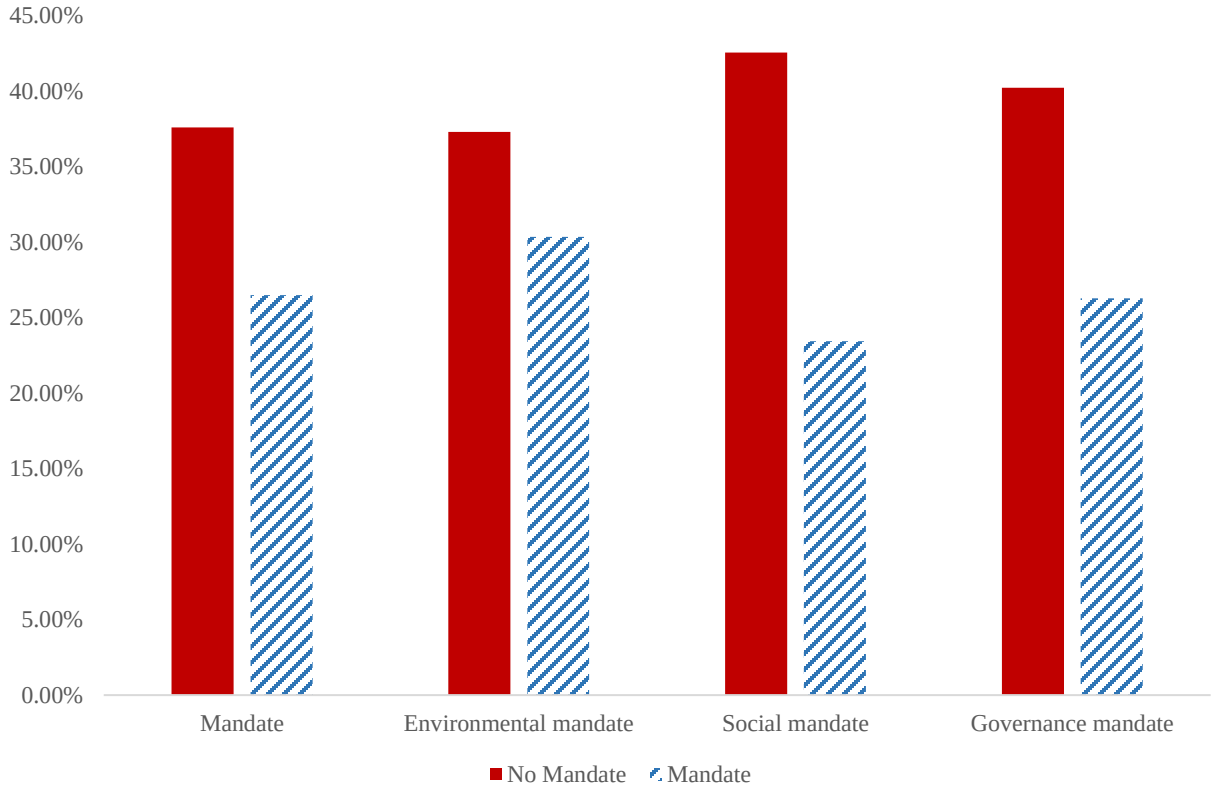

Figure 2: This figure reports average underpricing based on the presence or absence of an ESG mandate.

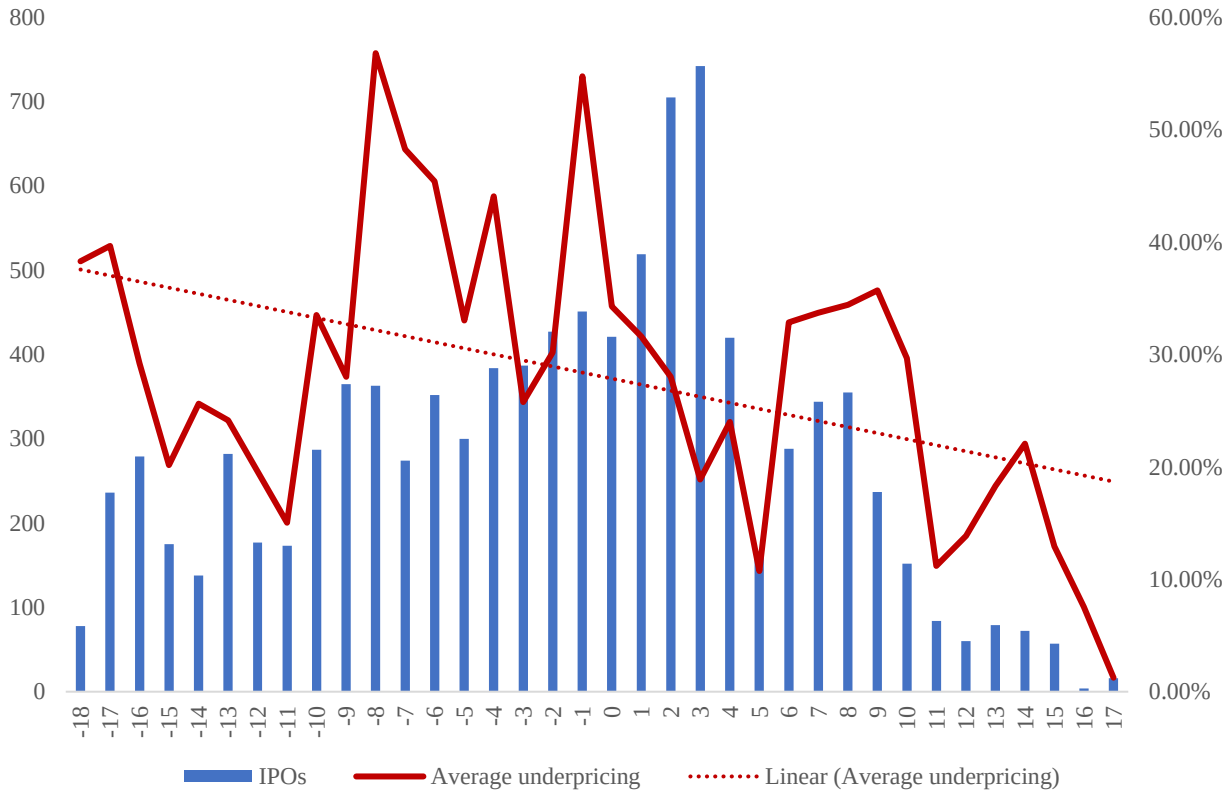

Figure 3: This figure reports the number of IPOs and average underpricing on an annual basis relative to the mandate year. Year 0 is the year the ESG disclosure mandate takes effect.

Table 1 – Country summary

Country	N	Underpricing	Mandate Year	Mandate	Environmental mandate	Social mandate	Governance mandate
Argentina	8	1.17%	2008	37.50%	37.50%	37.50%	37.50%
Australia	1,396	20.75%	2003	75.50%	83.09%	83.09%	75.50%
Austria	25	5.93%	2016	0.00%	0.00%	0.00%	48.00%
Belgium	62	9.62%	2009	11.29%	100.00%	12.90%	11.29%
Brazil	77	4.66%		0.00%	0.00%	20.78%	20.78%
Canada	518	39.35%	2004	62.55%	62.55%	62.55%	62.55%
China	2,386	61.74%	2008	71.46%	71.46%	71.46%	71.46%
Denmark	44	7.42%	2016	15.91%	15.91%	15.91%	15.91%
Finland	66	17.69%	2016	10.61%	10.61%	10.61%	10.61%
France	630	13.38%	2001	52.54%	52.54%	52.54%	52.54%
Germany	413	31.31%	2016	3.39%	3.39%	3.39%	3.39%
Greece	119	55.77%	2006	4.20%	4.20%	4.20%	4.20%
Hong Kong	701	24.32%	2015	19.69%	19.69%	19.69%	19.69%
India	524	20.70%	2015	35.69%	35.69%	35.69%	35.69%
Indonesia	219	30.20%	2012	41.55%	77.17%	77.17%	41.55%
Ireland	6	5.60%	2016	0.00%	0.00%	0.00%	0.00%
Israel	7	-2.23%		0.00%	0.00%	0.00%	0.00%
Italy	219	11.51%	2016	8.68%	8.68%	8.68%	8.68%
Japan	1,683	59.93%		0.00%	42.66%	0.00%	15.51%
Malaysia	422	30.16%	2007	29.62%	100.00%	100.00%	29.62%
Mexico	24	4.64%		0.00%	37.50%	0.00%	0.00%
Netherlands	51	25.59%	2016	5.88%	100.00%	5.88%	5.88%
New Zealand	58	8.21%		0.00%	0.00%	0.00%	0.00%
Norway	118	1.51%	2013	14.41%	98.31%	98.31%	14.41%
Philippines	50	10.07%	2011	38.00%	38.00%	38.00%	38.00%
Portugal	12	13.14%	2010	16.67%	16.67%	50.00%	50.00%
Singapore	429	26.90%	2016	2.56%	13.99%	2.56%	2.56%
South Africa	23	7.34%	2010	47.83%	47.83%	47.83%	47.83%
South Korea	971	39.99%		0.00%	26.78%	0.00%	22.97%
Spain	68	10.73%	2012	26.47%	67.65%	26.47%	26.47%
Sweden	169	8.87%	2016	15.98%	15.98%	15.98%	15.98%
Switzerland	61	12.10%		0.00%	0.00%	9.84%	9.84%
Thailand	310	37.86%		0.00%	0.00%	0.00%	19.68%
Turkey	86	11.57%	2014	9.30%	83.72%	90.70%	9.30%
United Kingdom	1,085	17.54%	2013	15.39%	24.15%	22.12%	15.39%
United States	2,416	27.79%		0.00%	0.00%	60.26%	60.26%

This table reports country-level descriptive statistics for the sample of 15,456 IPOs issued from 1998-2018. N identifies the number of IPOs for each country. Underpricing is the difference between the first-day secondary market closing price and the IPO offer price, divided by the IPO offer price. Mandate year is the first year in which all three reporting mandates were in effect as reported in Krueger et al. (2023). Mandate identifies the percentage of IPOs covered by all three mandates (Environmental, Social, and Governance). Environmental mandate, social mandate, and governance mandate identify the percentage of IPOs covered by each type of mandate.

Table 2 – Descriptive statistics

	N	Mean	SD	P25	P75
Dependent variable:					
Underpricing	15,456	0.345	0.559	0.007	0.440
Mandate variables:					
Mandate	15,456	0.278	0.448	0.000	1.000
Environmental mandate	15,456	0.402	0.490	0.000	1.000
Social mandate	15,456	0.421	0.494	0.000	1.000
Governance mandate	15,456	0.410	0.492	0.000	1.000
No comply-or-explain	15,456	0.060	0.238	0.000	0.000
Comply-or-explain	15,456	0.218	0.413	0.000	0.000
Government authority	15,456	0.254	0.435	0.000	1.000
Non-government authority	15,456	0.025	0.155	0.000	0.000
Regression covariates:					
Anti-self-dealing	15,456	0.660	0.199	0.499	0.763
Earnings management	15,456	0.732	0.119	0.652	0.792
Economic freedom	15,456	70.097	10.915	61.600	78.500
Financial globalization	15,456	69.444	16.057	55.479	80.992
GDP per capita	15,456	30,939.120	18,224.130	8,516.514	45,707.490
Stabilization	15,456	0.012	0.021	0.002	0.013
IPO activity	15,456	0.052	0.038	0.026	0.070
Market return	15,456	0.026	0.094	-0.030	0.075
Liquidity	15,456	1.134	0.747	0.623	1.480
Offer size	15,456	105.925	231.403	8.604	96.465
Top underwriter	15,456	0.254	0.435	0.000	1.000
VC backed	14,322	0.223	0.416	0.000	0.000
Lockup length	15,456	102.555	144.764	0.000	180.000
Bookbuilt	14,931	0.667	0.471	0.000	1.000
Firm commitment	15,386	0.670	0.470	0.000	1.000
Equity carve-out	15,311	0.094	0.292	0.000	0.000
High tech	15,456	0.207	0.405	0.000	0.000

This table reports IPO-level descriptive statistics for the sample of 15,456 IPOs issued from 1998-2018. All variables are defined in the Appendix.

Table 3 – ESG mandates and IPO underpricing

	Underpricing	Underpricing	Underpricing	Underpricing	Matched sample	Country-year average
Mandate	-0.1592***				-0.2027***	-0.1232***
	(-8.85)				(-9.12)	(-3.84)
Environmental mandate		-0.1026***				
		(-6.18)				
Social mandate			-0.2057***			
			(-11.71)			
Governance mandate				-0.1535***		
				(-9.74)		
Anti-self-dealing	-0.0638	-0.0740	0.0048	-0.1105	0.3709	0.0698
	(-0.25)	(-0.26)	(0.02)	(-0.37)	(1.37)	(0.61)
Earnings management	0.1825**	0.1144	0.0500	0.0645	-0.0397	0.1241
	(2.40)	(1.52)	(0.67)	(0.86)	(-0.30)	(1.38)
Economic freedom	0.0057***	0.0036*	0.0006	0.0059***	-0.0106***	0.0008
	(2.59)	(1.66)	(0.29)	(2.68)	(-3.49)	(0.24)
Financial globalization	-0.0070***	-0.0039**	-0.0066***	-0.0030*	-0.0045	-0.0046**
	(-4.36)	(-2.47)	(-4.11)	(-1.88)	(-1.47)	(-2.14)
GDP per capita (log)	-0.3098***	-0.3651***	-0.3514***	-0.4066***	-0.1476***	-0.0263
	(-9.19)	(-10.86)	(-10.42)	(-12.18)	(-3.05)	(-0.71)
Stabilization	-2.2621	-2.4375	-2.6040	-2.4592	-2.5580	-0.0506
	(-1.04)	(-1.01)	(-1.01)	(-0.96)	(-1.18)	(-0.06)
IPO activity	-0.0353	-0.2652	0.1302	0.0136	-0.9009***	0.5110
	(-0.20)	(-1.56)	(0.75)	(0.08)	(-3.21)	(1.28)
Market return	0.7513***	0.7427***	0.7396***	0.7476***	0.1297***	0.6057***
	(16.02)	(15.76)	(15.81)	(15.96)	(2.63)	(3.51)
Liquidity	-0.0448***	-0.0494***	-0.0297***	-0.0471***	-0.0468***	-0.0157
	(-4.38)	(-4.83)	(-2.87)	(-4.65)	(-3.08)	(-0.77)
Offer size (log)	-0.0454***	-0.0465***	-0.0441***	-0.0444***	-0.0497***	-0.0108
	(-13.25)	(-13.52)	(-12.86)	(-12.92)	(-10.78)	(-0.99)
Top underwriter	0.0441***	0.0426***	0.0428***	0.0440***	-0.0188	-0.0446
	(3.54)	(3.41)	(3.44)	(3.53)	(-1.03)	(-0.93)
VC backed	0.0374***	0.0397***	0.0328***	0.0310***	-0.0325*	0.0251
	(3.15)	(3.32)	(2.76)	(2.60)	(-1.79)	(0.49)
Lockup length (log)	-0.0209***	-0.0211***	-0.0207***	-0.0211***	-0.0223***	-0.0150**
	(-9.45)	(-9.52)	(-9.40)	(-9.58)	(-7.61)	(-2.26)
Bookbuilt	-0.0333**	-0.0258*	-0.0365***	-0.0213	-0.0958***	-0.0612*
	(-2.53)	(-1.95)	(-2.76)	(-1.61)	(-5.46)	(-1.83)
Firm commitment	0.0049	0.0054	-0.0054	-0.0034	0.0493***	0.0424
	(0.37)	(0.41)	(-0.41)	(-0.26)	(3.04)	(1.30)
Equity carve-out	0.0390***	0.0342**	0.0346**	0.0331**	0.0519***	0.0526
	(2.61)	(2.29)	(2.33)	(2.22)	(2.71)	(1.09)
High tech	0.1112***	0.1084***	0.1021***	0.1080***	0.0678*	0.0232
	(3.29)	(3.20)	(3.03)	(3.20)	(1.67)	(0.17)
Constant	3.4512***	3.9956***	4.1803***	4.1623***	3.1168***	0.7409**
	(9.86)	(11.12)	(11.49)	(11.48)	(7.52)	(2.54)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	13,656	13,656	13,656	13,656	8,100	566
Number of groups	36	36	36	36	24	36

This table reports the results of HLM models that examine the relation between ESG mandates and IPO underpricing. All variables are defined in the Appendix. The numbers between parentheses below each coefficient are the *z*-statistics. Respectively, ***, **, and * denote significance of the coefficient at the 1, 5, and 10 percent level.

Table 4 – Implementation of disclosure mandates

	Underpricing	Underpricing	Underpricing	Underpricing	Underpricing	Underpricing
Government authority	-0.0583**		-0.0904***			
	(-2.54)		(-3.91)			
Non-government authority		-0.2299***	-0.2450***			
		(-9.67)	(-10.19)			
No comply-or-explain				-0.2012***		-0.2049***
				(-10.44)		(-10.43)
Comply-or-explain					0.0267	-0.0306
					(0.88)	(-0.99)
Anti-self-dealing	-0.0872	0.0336	0.0031	-0.0510	-0.0621	-0.0524
	(-0.27)	(0.16)	(0.02)	(-0.23)	(-0.19)	(-0.24)
Earnings management	0.1224	0.0612	0.1261*	0.2353***	0.0821	0.2344***
	(1.58)	(0.82)	(1.65)	(3.09)	(1.09)	(3.07)
Economic freedom	0.0036	0.0048**	0.0057***	0.0046**	0.0029	0.0049**
	(1.63)	(2.22)	(2.62)	(2.12)	(1.30)	(2.24)
Financial globalization	-0.0057***	-0.0052***	-0.0063***	-0.0061***	-0.0047***	-0.0064***
	(-3.48)	(-3.32)	(-3.96)	(-3.88)	(-2.92)	(-3.99)
GDP per capita (log)	-0.4230***	-0.2390***	-0.2356***	-0.2618***	-0.4137***	-0.2618***
	(-12.46)	(-7.10)	(-7.02)	(-7.88)	(-12.22)	(-7.88)
Stabilization	-2.8955	-1.6354	-1.7087	-2.0862	-2.7762	-2.0778
	(-1.02)	(-0.90)	(-0.95)	(-1.10)	(-1.00)	(-1.10)
IPO activity	-0.3513**	-0.0522	0.0398	-0.0038	-0.4067**	0.0131
	(-2.07)	(-0.30)	(0.23)	(-0.02)	(-2.41)	(0.08)
Market return	0.7622***	0.7689***	0.7590***	0.7462***	0.7688***	0.7458***
	(16.21)	(16.42)	(16.19)	(15.92)	(16.37)	(15.91)
Liquidity	-0.0559***	-0.0469***	-0.0431***	-0.0421***	-0.0582***	-0.0417***
	(-5.51)	(-4.62)	(-4.22)	(-4.13)	(-5.76)	(-4.08)
Offer size (log)	-0.0464***	-0.0455***	-0.0452***	-0.0446***	-0.0464***	-0.0447***
	(-13.47)	(-13.29)	(-13.21)	(-13.03)	(-13.48)	(-13.04)
Top underwriter	0.0435***	0.0442***	0.0443***	0.0461***	0.0436***	0.0459***
	(3.48)	(3.54)	(3.56)	(3.70)	(3.48)	(3.68)
VC backed	0.0352***	0.0388***	0.0389***	0.0390***	0.0354***	0.0389***
	(2.95)	(3.26)	(3.27)	(3.28)	(2.97)	(3.27)
Lockup length (log)	-0.0215***	-0.0212***	-0.0209***	-0.0209***	-0.0217***	-0.0209***
	(-9.69)	(-9.61)	(-9.48)	(-9.48)	(-9.79)	(-9.45)
Bookbuilt	-0.0248*	-0.0168	-0.0258*	-0.0393***	-0.0196	-0.0393***
	(-1.84)	(-1.28)	(-1.94)	(-3.01)	(-1.47)	(-3.01)
Firm commitment	0.0062	-0.0015	0.0006	0.0030	0.0042	0.0033
	(0.48)	(-0.12)	(0.05)	(0.23)	(0.32)	(0.25)
Equity carve-out	0.0318**	0.0400***	0.0416***	0.0314**	0.0299**	0.0329**
	(2.13)	(2.68)	(2.78)	(2.11)	(1.99)	(2.20)
High tech	0.1097***	0.1092***	0.1104***	0.1116***	0.1089***	0.1117***
	(3.24)	(3.23)	(3.27)	(3.30)	(3.21)	(3.30)
Constant	4.6687***	2.7239***	2.6749***	2.9460***	4.5752***	2.9439***
	(12.34)	(8.15)	(8.05)	(8.84)	(12.22)	(8.83)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	13,656	13,656	13,656	13,656	13,656	13,656
Number of groups	36	36	36	36	36	36

This table reports the results of HLM models that examine the relation between ESG mandates and IPO underpricing. All variables are defined in the Appendix. The numbers between parentheses below each coefficient are the *z*-statistics. Respectively, ***, **, and * denote significance of the coefficient at the 1, 5, and 10 percent level.

Table 5 – Information asymmetry

	Accounting standards index	IFRS	Audit index	Enforcement index
Mandate	-0.6030***	-0.2434***	-0.3030***	-0.3831***
	(-3.85)	(-11.15)	(-6.31)	(-7.75)
Mandate × Disclosure measure	-0.0046	0.0447**	0.0079***	0.0084***
	(-1.22)	(2.33)	(3.24)	(4.58)
Disclosure measure	0.0079***	0.1349***	0.0055***	0.0124***
	(3.58)	(5.13)	(2.89)	(4.65)
Anti-self-dealing	0.1638	0.0429	-0.0706	-0.0976
	(1.37)	(0.24)	(-0.42)	(-0.55)
Earnings management	0.0717	0.1407*	0.1979***	0.2590***
	(0.96)	(1.86)	(2.62)	(3.40)
Economic freedom	0.0015	0.0022	0.0048**	0.0058***
	(0.65)	(0.99)	(2.18)	(2.69)
Financial globalization	-0.0044***	-0.0061***	-0.0076***	-0.0062***
	(-2.64)	(-3.89)	(-4.83)	(-3.89)
GDP per capita (log)	0.0188	-0.1736***	-0.2042***	-0.2286***
	(0.59)	(-5.24)	(-6.44)	(-7.16)
Stabilization	-0.4418	-1.3229	-1.3821	-1.2043
	(-0.47)	(-0.87)	(-0.95)	(-0.79)
IPO activity	0.3167	0.0418	-0.0538	0.1292
	(1.56)	(0.24)	(-0.31)	(0.74)
Market return	1.0267***	0.7615***	0.7564***	0.7514***
	(17.70)	(16.25)	(16.14)	(16.05)
Liquidity	0.0357**	-0.0423***	-0.0507***	-0.0465***
	(2.32)	(-4.15)	(-5.00)	(-4.54)
Offer size (log)	-0.0443***	-0.0453***	-0.0452***	-0.0458***
	(-12.32)	(-13.26)	(-13.19)	(-13.36)
Top underwriter	0.0723***	0.0464***	0.0454***	0.0442***
	(5.00)	(3.72)	(3.64)	(3.55)
VC backed	0.0908***	0.0377***	0.0356***	0.0358***
	(6.62)	(3.17)	(2.99)	(3.01)
Lockup length (log)	-0.0130***	-0.0203***	-0.0215***	-0.0220***
	(-5.44)	(-9.19)	(-9.73)	(-9.93)
Bookbuilt	0.0265*	-0.0344***	-0.0379***	-0.0376***
	(1.90)	(-2.66)	(-2.93)	(-2.90)
Firm commitment	-0.0115	-0.0043	0.0052	0.0007
	(-0.87)	(-0.33)	(0.40)	(0.05)
Equity carve-out	0.0373**	0.0357**	0.0391***	0.0366**
	(2.20)	(2.39)	(2.62)	(2.45)
High tech	0.1435***	0.1107***	0.1113***	0.1135***
	(3.59)	(3.28)	(3.29)	(3.36)
Constant	0.4271	2.2563***	2.4477***	2.4669***
	(1.44)	(7.35)	(8.31)	(8.17)
Mandate + Interaction	-0.5951***	-0.1085***	-0.2975***	-0.3707***
	(-3.86)	(-4.80)	(-6.43)	(-7.89)
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	11,082	13,656	13,656	13,656
Number of groups	33	36	36	36

This table reports the results of HLM regressions that examine the relation between ESG mandates and IPO underpricing. The column headings identify the *disclosure measure* considered in each model. All variables are defined in the Appendix. The numbers between parentheses below each coefficient are the *z*-statistics. Respectively, ***, **, and * denote significance of the coefficient at the 1, 5, and 10 percent level.

Table 6 – Litigation risk

	Issuer	Directors	Distributor	Accountants	Liability index
Mandate	0.0215	0.0394	0.0259	0.0332	0.0452
	(0.45)	(0.72)	(0.74)	(0.57)	(0.94)
Mandate × Liability index	-0.1295*	-0.1565*	-0.1513***	-0.1409	-0.1727**
	(-1.70)	(-1.74)	(-2.62)	(-1.52)	(-2.19)
Liability index	0.1960**	0.1090	0.1415**	0.0139	0.1516
	(2.48)	(1.03)	(1.97)	(0.15)	(1.55)
Anti-self-dealing	0.0194	0.0428	0.0691	0.0768	0.0532
	(0.19)	(0.39)	(0.68)	(0.73)	(0.51)
Earnings management	0.0694	0.0567	0.0463	0.0542	0.0514
	(0.94)	(0.76)	(0.62)	(0.73)	(0.69)
Economic freedom	0.0023	0.0028	0.0023	0.0030	0.0024
	(1.04)	(1.21)	(1.00)	(1.31)	(1.07)
Financial globalization	-0.0041***	-0.0039**	-0.0040***	-0.0038**	-0.0040***
	(-2.69)	(-2.53)	(-2.63)	(-2.48)	(-2.60)
GDP per capita (log)	-0.0040	-0.0148	-0.0041	-0.0176	-0.0096
	(-0.14)	(-0.51)	(-0.14)	(-0.61)	(-0.33)
Stabilization	-0.4927	-0.4481	-0.3414	-0.4241	-0.3617
	(-0.63)	(-0.53)	(-0.41)	(-0.49)	(-0.43)
IPO activity	0.4086**	0.3970**	0.3980**	0.3754*	0.4056**
	(2.06)	(1.99)	(2.01)	(1.88)	(2.04)
Market return	0.9996***	1.0010***	1.0042***	1.0016***	1.0028***
	(17.60)	(17.61)	(17.67)	(17.61)	(17.64)
Liquidity	0.0420***	0.0415***	0.0401***	0.0404***	0.0409***
	(2.78)	(2.73)	(2.64)	(2.66)	(2.69)
Offer size (log)	-0.0437***	-0.0438***	-0.0437***	-0.0438***	-0.0438***
	(-12.48)	(-12.49)	(-12.48)	(-12.51)	(-12.50)
Top underwriter	0.0694***	0.0697***	0.0698***	0.0698***	0.0697***
	(4.87)	(4.88)	(4.89)	(4.89)	(4.89)
VC backed	0.0897***	0.0889***	0.0879***	0.0892***	0.0884***
	(6.59)	(6.51)	(6.44)	(6.54)	(6.48)
Lockup length (log)	-0.0133***	-0.0132***	-0.0132***	-0.0131***	-0.0132***
	(-5.67)	(-5.63)	(-5.64)	(-5.59)	(-5.64)
Bookbuilt	0.0261*	0.0264**	0.0255*	0.0261*	0.0261*
	(1.94)	(1.96)	(1.90)	(1.94)	(1.94)
Firm commitment	-0.0093	-0.0088	-0.0077	-0.0080	-0.0083
	(-0.71)	(-0.67)	(-0.59)	(-0.61)	(-0.64)
Equity carve-out	0.0342**	0.0340**	0.0343**	0.0341**	0.0341**
	(2.07)	(2.06)	(2.08)	(2.06)	(2.07)
High tech	0.1315***	0.1323***	0.1335***	0.1328***	0.1328***
	(3.44)	(3.46)	(3.49)	(3.47)	(3.47)
Constant	0.2447	0.3615	0.2837	0.4012*	0.3137
	(1.06)	(1.51)	(1.19)	(1.67)	(1.30)
Mandate + Interaction	-0.1080***	-0.1171***	-0.1254***	-0.1077***	-0.1276***
	(-2.83)	(-2.72)	(-3.63)	(-2.50)	(-3.17)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	11,300	11,300	11,300	11,300	11,300
Number of groups	35	35	35	35	35

This table reports the results of HLM regressions that examine the relation between ESG mandates and IPO underpricing. The column headings identify the *liability index* considered in each model. All variables are defined in the Appendix. The numbers between parentheses below each coefficient are the *z*-statistics. Respectively, ***, **, and * denote significance of the coefficient at the 1, 5, and 10 percent level.

Table 7 – Environmental, social, and governance concerns

	Environmental (*Climate risk*)	Social (*Social unrest*)	Governance (*Governance indicator*)
Mandate	-0.4092***	-0.0871***	-0.3101***
	(-3.70)	(-2.76)	(-13.98)
Mandate × ESG area	0.0037**	-0.0191***	0.2002***
	(2.12)	(-2.66)	(10.71)
ESG area	0.0116***	-0.0054	0.3790***
	(3.60)	(-1.12)	(8.48)
Anti-self-dealing	-0.0915	-0.0609	0.0973
	(-0.57)	(-0.25)	(0.62)
Earnings management	0.3335***	0.1787**	0.1038
	(4.24)	(2.35)	(1.39)
Economic freedom	0.0081***	0.0048**	-0.0019
	(3.77)	(2.16)	(-0.87)
Financial globalization	-0.0063***	-0.0070***	-0.0088***
	(-3.86)	(-4.40)	(-5.69)
GDP per capita (log)	-0.2654***	-0.2944***	-0.2344***
	(-7.55)	(-8.64)	(-6.28)
Stabilization	-0.9090	-2.0644	-0.1570
	(-0.68)	(-0.98)	(-0.12)
IPO activity	-0.1306	-0.0335	0.4776***
	(-0.74)	(-0.19)	(2.73)
Market return	0.7971***	0.7463***	0.7104***
	(16.74)	(15.90)	(15.25)
Liquidity	-0.0227**	-0.0422***	-0.0208**
	(-2.23)	(-4.12)	(-2.04)
Offer size (log)	-0.0408***	-0.0450***	-0.0457***
	(-11.78)	(-13.12)	(-13.47)
Top underwriter	0.0445***	0.0436***	0.0502***
	(3.57)	(3.49)	(4.05)
VC backed	0.0389***	0.0389***	0.0396***
	(3.31)	(3.27)	(3.35)
Lockup length (log)	-0.0229***	-0.0204***	-0.0193***
	(-10.18)	(-9.22)	(-8.79)
Bookbuilt	-0.0601***	-0.0364***	-0.0091
	(-4.43)	(-2.76)	(-0.70)
Firm commitment	-0.0092	0.0042	-0.0155
	(-0.70)	(0.32)	(-1.19)
Equity carve-out	0.0214	0.0395***	0.0294**
	(1.39)	(2.64)	(1.98)
High tech	0.1152***	0.1089***	0.1065***
	(3.41)	(3.22)	(3.18)
Constant	2.0425***	3.3765***	2.8771***
	(7.00)	(9.63)	(8.41)
Mandate + Interaction	-0.4055***	-0.1061***	-0.1099***
	(-3.73)	(-4.08)	(-5.99)
Industry fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Observations	12,958	13,656	13,656
Number of groups	35	36	36

This table reports the results of HLM regressions that examine the relation between ESG mandates and IPO underpricing. The column headings identify the *ESG area* considered in each model and the measure used (e.g., *climate risk*, *social unrest*, and *governance indicator*). All variables are defined in the Appendix. The numbers between parentheses below each coefficient are the *z*-statistics. Respectively, ***, **, and * denote significance of the coefficient at the 1, 5, and 10 percent level.

Table 8 – Attention to ESG issues (The Stern Review)

	Mandate	Environmental mandate	Social mandate	Governance mandate
Mandate measure	-0.0421	0.0117	-0.0950***	-0.0659***
	(-1.39)	(0.47)	(-4.17)	(-2.83)
Mandate measure × Post-Stern	-0.1412***	-0.1497***	-0.1732***	-0.1259***
	(-4.83)	(-6.11)	(-7.59)	(-5.09)
Post-Stern	0.0457	0.0716*	0.0834**	0.0637*
	(1.26)	(1.93)	(2.27)	(1.73)
Anti-self-dealing	-0.0721	-0.1251	0.0081	-0.0881
	(-0.29)	(-0.47)	(0.02)	(-0.28)
Earnings management	0.2055***	0.1553**	0.0715	0.0657
	(2.70)	(2.05)	(0.95)	(0.88)
Economic freedom	0.0068***	0.0071***	0.0006	0.0049**
	(3.11)	(3.18)	(0.26)	(2.24)
Financial globalization	-0.0076***	-0.0041**	-0.0088***	-0.0032**
	(-4.74)	(-2.56)	(-5.40)	(-2.02)
GDP per capita (log)	-0.3005***	-0.3647***	-0.3661***	-0.4243***
	(-8.95)	(-10.94)	(-10.77)	(-12.61)
Stabilization	-2.2074	-2.2668	-2.7308	-2.6351
	(-1.04)	(-0.99)	(-0.97)	(-0.98)
IPO activity	-0.0093	-0.2294	0.3518**	0.1217
	(-0.05)	(-1.35)	(2.00)	(0.70)
Market return	0.7457***	0.7439***	0.7393***	0.7393***
	(15.83)	(15.73)	(15.76)	(15.71)
Liquidity	-0.0451***	-0.0512***	-0.0229**	-0.0443***
	(-4.41)	(-5.01)	(-2.21)	(-4.36)
Offer size (log)	-0.0452***	-0.0459***	-0.0438***	-0.0446***
	(-13.19)	(-13.35)	(-12.77)	(-12.98)
Top underwriter	0.0437***	0.0413***	0.0430***	0.0449***
	(3.51)	(3.31)	(3.46)	(3.60)
VC backed	0.0381***	0.0393***	0.0363***	0.0341***
	(3.20)	(3.30)	(3.07)	(2.87)
Lockup length (log)	-0.0210***	-0.0212***	-0.0216***	-0.0216***
	(-9.50)	(-9.61)	(-9.82)	(-9.81)
Bookbuilt	-0.0340***	-0.0283**	-0.0385***	-0.0182
	(-2.59)	(-2.15)	(-2.89)	(-1.38)
Firm commitment	0.0056	0.0078	-0.0050	-0.0053
	(0.43)	(0.60)	(-0.39)	(-0.41)
Equity carve-out	0.0403***	0.0348**	0.0386***	0.0359**
	(2.70)	(2.33)	(2.60)	(2.41)
High tech	0.1107***	0.1104***	0.1049***	0.1082***
	(3.28)	(3.27)	(3.12)	(3.21)
Constant	3.3172***	3.7501***	4.4469***	4.3978***
	(9.56)	(10.64)	(11.81)	(11.83)
Mandate measure + Interaction	-0.1833***	-0.1379***	-0.2681***	-0.1919***
	(-9.85)	(-7.89)	(-13.83)	(-10.98)
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	13,656	13,656	13,656	13,656
Number of groups	36	36	36	36

This table reports the results of HLM regressions that examine the relation between ESG mandates and IPO underpricing. The column headings identify the type of ESG disclosure mandate considered in each model. All variables are defined in the Appendix. The numbers between parentheses below each coefficient are the *z*-statistics. Respectively, ***, **, and * denote significance of the coefficient at the 1, 5, and 10 percent level.

Table 9 – Alternative return measures and estimation techniques

	Two-week return	One-month return	OLS	Country FE	WLS
Mandate	-0.2574***	-0.3953***	-0.2339***	-0.1442***	-0.0647***
	(-8.72)	(-14.41)	(-2.93)	(-7.91)	(-5.83)
Anti-self-dealing	0.0470	0.0171	0.2577**		0.0363*
	(0.16)	(0.03)	(2.05)		(1.87)
Earnings management	0.1167	0.2341**	0.8978***	0.1832**	0.3967***
	(0.94)	(2.02)	(3.30)	(2.39)	(15.30)
Economic freedom	0.0261***	0.0416***	-0.0001	0.0038*	0.0063***
	(7.36)	(12.34)	(-0.02)	(1.69)	(8.43)
Financial globalization	-0.0281***	-0.0316***	-0.0139***	-0.0083***	-0.0084***
	(-10.85)	(-12.76)	(-5.09)	(-5.03)	(-16.12)
GDP per capita (log)	0.3306***	0.7877***	0.0892*	-0.4050***	-0.0001
	(6.36)	(14.49)	(1.69)	(-10.85)	(-0.01)
Stabilization	0.3659	3.7189	-0.6839		-0.2717**
	(0.14)	(0.66)	(-0.57)		(-1.99)
IPO activity	-0.6724**	-1.0166***	0.4727	-0.0265	0.7444***
	(-2.35)	(-3.87)	(1.07)	(-0.15)	(6.57)
Market return	0.9639***	1.0553***	0.7592***	0.7401***	0.8921***
	(12.42)	(14.79)	(3.97)	(15.77)	(21.67)
Liquidity	0.1737***	0.3049***	-0.0288	-0.0376***	0.0266***
	(10.34)	(19.04)	(-0.82)	(-3.65)	(3.85)
Offer size (log)	-0.0744***	-0.0750***	-0.0326**	-0.0475***	-0.0358***
	(-13.15)	(-14.38)	(-2.35)	(-13.76)	(-13.70)
Top underwriter	0.0861***	0.0928***	0.0678**	0.0462***	-0.0023
	(4.17)	(4.90)	(2.39)	(3.70)	(-0.22)
VC backed	0.0882***	0.1366***	0.0809*	0.0402***	0.0909***
	(4.48)	(7.54)	(1.72)	(3.37)	(8.10)
Lockup length (log)	-0.0207***	-0.0126***	-0.0181***	-0.0204***	-0.0079***
	(-5.67)	(-3.75)	(-3.43)	(-9.22)	(-4.65)
Bookbuilt	0.0013	0.0119	-0.0522	-0.0143	0.0123
	(0.06)	(0.59)	(-0.92)	(-1.05)	(1.35)
Firm commitment	0.0018	-0.0343*	0.0039	0.0081	0.0542***
	(0.08)	(-1.74)	(0.17)	(0.62)	(5.76)
Equity carve-out	0.1000***	0.0064	0.0272	0.0383**	0.0409***
	(4.05)	(0.28)	(1.04)	(2.56)	(3.44)
High tech	0.0731	0.0532	0.0996**	0.1126***	0.0898***
	(1.31)	(1.04)	(2.28)	(3.33)	(3.25)
Constant	-2.6521***	-8.0069***	-0.2364	4.6370***	0.2778***
	(-5.32)	(-12.16)	(-0.80)	(12.70)	(4.73)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	13,655	13,468	13,656	13,656	13,656
Number of groups	36	36		36	
R-squared			0.206	0.150	0.171

This table reports the results of regressions that examine the relation between ESG mandates and IPO underpricing. The first two columns report HLM models using alternative initial return measures. The remaining columns use alternative estimation techniques (ordinary least squares with country clustered standard errors, country fixed effects, and weighted least squares). All variables are defined in the Appendix. The numbers between parentheses below each coefficient are the *z*-statistics. Respectively, ***, **, and * denote significance of the coefficient at the 1, 5, and 10 percent level.

Table 10 – Exclude influential countries

	Exclude countries without ESG mandates	Exclude Australia	Exclude China	Exclude Hong Kong	Exclude Japan	Exclude South Korea	Exclude UK	Exclude US
Mandate	-0.1521***	-0.1793***	-0.0501**	-0.1682***	-0.1497***	-0.1501***	-0.1773***	-0.1852***
	(-8.00)	(-9.21)	(-2.55)	(-9.11)	(-8.70)	(-8.17)	(-9.12)	(-9.79)
Anti-self-dealing	0.0712	-0.0841	0.0710	-0.1284	0.0089	-0.0476	-0.1157	-0.0610
	(0.19)	(-0.32)	(0.70)	(-0.54)	(0.04)	(-0.17)	(-0.48)	(-0.18)
Earnings management	0.0656	0.2634***	0.0783	0.3419***	0.1685**	0.1244	0.1670**	0.0987
	(0.84)	(3.28)	(1.07)	(4.30)	(2.32)	(1.58)	(2.14)	(1.26)
Economic freedom	-0.0016	0.0055**	0.0031	0.0080***	0.0044**	0.0051**	0.0065***	-0.0000
	(-0.64)	(2.43)	(1.39)	(3.68)	(2.07)	(2.20)	(2.86)	(-0.00)
Financial globalization	-0.0108***	-0.0078***	-0.0037**	-0.0039**	-0.0120***	-0.0066***	-0.0070***	-0.0079***
	(-4.54)	(-4.74)	(-2.44)	(-2.39)	(-6.37)	(-3.83)	(-4.24)	(-4.76)
GDP per capita (log)	-0.3109***	-0.3061***	-0.0207	-0.3268***	-0.2171***	-0.3366***	-0.2751***	-0.3712***
	(-7.63)	(-8.78)	(-0.73)	(-9.79)	(-6.28)	(-9.64)	(-7.98)	(-10.30)
Stabilization	-4.1859	-2.2782	-0.4210	-2.2337	-1.8679	-2.4582	-2.0287	-3.3025
	(-1.37)	(-1.02)	(-0.51)	(-1.12)	(-0.93)	(-1.04)	(-1.02)	(-1.13)
IPO activity	0.0451	-0.0968	0.3518*	-0.0654	0.0345	-0.1962	-0.0139	0.2907
	(0.26)	(-0.53)	(1.78)	(-0.37)	(0.21)	(-1.12)	(-0.08)	(1.61)
Market return	0.6641***	0.7278***	0.9965***	0.7891***	0.6847***	0.7567***	0.7539***	0.7730***
	(13.26)	(15.06)	(17.55)	(16.56)	(14.92)	(15.41)	(15.52)	(15.95)
Liquidity	-0.0643***	-0.0454***	0.0408***	-0.0265***	-0.0561***	-0.0362***	-0.0486***	-0.0584***
	(-5.45)	(-4.33)	(2.69)	(-2.61)	(-5.67)	(-3.38)	(-4.54)	(-5.16)
Offer size (log)	-0.0393***	-0.0462***	-0.0437***	-0.0394***	-0.0389***	-0.0430***	-0.0462***	-0.0508***
	(-10.29)	(-12.75)	(-12.49)	(-11.42)	(-11.55)	(-12.08)	(-12.27)	(-13.95)
Top underwriter	-0.0211	0.0464***	0.0694***	0.0439***	0.0341***	0.0396***	0.0424***	0.0057
	(-1.37)	(3.63)	(4.87)	(3.52)	(2.73)	(3.14)	(3.22)	(0.39)
VC backed	-0.0404***	0.0396***	0.0903***	0.0402***	0.0300***	0.0404***	0.0400***	-0.0252*
	(-2.62)	(3.24)	(6.63)	(3.41)	(2.60)	(3.27)	(3.20)	(-1.69)
Lockup length (log)	-0.0140***	-0.0220***	-0.0132***	-0.0230***	-0.0219***	-0.0209***	-0.0224***	-0.0176***
	(-5.52)	(-9.39)	(-5.61)	(-10.21)	(-10.09)	(-9.12)	(-9.34)	(-7.46)
Bookbuilt	-0.0192	-0.0316**	0.0260*	-0.0507***	-0.0374***	-0.0417***	-0.0331**	-0.0021
	(-1.40)	(-2.32)	(1.93)	(-3.70)	(-2.97)	(-2.99)	(-2.23)	(-0.16)
Firm commitment	0.0323**	0.0065	-0.0085	-0.0025	-0.0005	0.0024	0.0029	0.0244*
	(2.17)	(0.43)	(-0.65)	(-0.19)	(-0.04)	(0.18)	(0.20)	(1.71)
Equity carve-out	0.0450***	0.0433***	0.0341**	0.0214	0.0483***	0.0381**	0.0414***	0.0412**
	(2.70)	(2.75)	(2.07)	(1.39)	(3.34)	(2.50)	(2.61)	(2.50)
High tech	0.0380	0.1108***	0.1320***	0.1155***	0.0860***	0.1065***	0.1158***	0.0822**

	(1.11)	(3.02)	(3.45)	(3.42)	(2.65)	(3.09)	(3.24)	(2.35)
Constant	4.3381***	3.4324***	0.4070*	3.1511***	2.9351***	3.7685***	3.0900***	4.6096***
	(10.31)	(9.51)	(1.75)	(9.18)	(8.79)	(10.30)	(8.74)	(11.30)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	9,190	12,468	11,300	12,958	13,048	12,690	12,577	11,245
Number of groups	27	35	35	35	35	35	35	35

This table reports the results of HLM regressions that examine the relation between ESG mandates and IPO underpricing. The column headings identify the country or countries excluded in each model. All variables are defined in the Appendix. The numbers between parentheses below each coefficient are the *z*-statistics. Respectively, ***, **, and * denote significance of the coefficient at the 1, 5, and 10 percent level.