

Cheap Promises : Why Corporate Climate Commitments Fail, and Whether Green Bonds Can Help

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Abstract

Firms frequently announce public commitments to reduce carbon emissions but often fail to follow through on them. This paper studies why these commitments break down and whether financial instruments can make them more credible. I develop an incomplete-information model in which firms differ in their ability to reduce emissions and complete third-party verification. Because firms can withdraw from a commitment by accepting a reputational or financial penalty, even firms with low abatement ability may choose to commit initially when the cost of failure is limited. The model shows that the equilibrium removal rate equals $c/(R+P)$, where c represents the strictness of the verification standard, while R and P represent the reputational and financial penalties associated with withdrawal. This implies that stricter verification requirements raise the removal rate, while stronger penalties for failure lower it. I test this prediction using data from the Science Based Targets initiative (SBTi), which covers 15,304 firms, focusing on the 6,613 firms whose commitment status has been resolved. Using a linear probability model, I find that publicly listed firms are 13.7 percentage points less likely than unlisted firms to have their commitments removed. This difference is substantial relative to the overall removal rate of 21.1 percent. Although this estimate should not be interpreted as causal, it is consistent with the model's prediction that stronger consequences for failure increase the credibility of corporate climate commitments.

Keywords

Corporate Climate Commitments; Cheap Talk; Sustainability-Linked Bonds; Commitment Removal; Sbti

1. Introduction

As climate change has become a larger concern for governments, investors, and the public, many companies have started making public commitments to reduce their greenhouse gas emissions. The Science Based Targets initiative (SBTi) is an

international organization that helps companies set greenhouse gas reduction targets. It allows companies to commit to emissions-reduction targets that are later reviewed and verified (Gieseke et al., 2021; Bjørn et al., 2022; Schüder and Zülch, 2026). Committing can bring financial benefits and increase the reputation for firms and may also make them more attractive to investors who care about environmental performance. However, making a commitment does not necessarily mean that a company will successfully complete it (Dahlmann et al., 2019). Since 2021, SBTi has removed more than 1,400 firms whose commitments were not completed, and a large number of firms are removed from the list each year. This raises an important question: why would firms make public climate commitments if they may later fail to complete the commitments?

To study this question, this paper develops a simple economic model to explain this behavior. Different firms have different abatement capabilities, which means completing a climate target may be easy for some companies but much more expensive for others. For these firms, making a commitment can bring benefits before the full costs of the commitment are paid. If the penalty for failing is limited, some lower-capability firms may still think it is worth making the commitment and later walk away if verification becomes too expensive. In this situation, the commitment may become a form of cheap talk, since making the promise itself does not guarantee that the firm will follow it later. The model predicts that firms will be less likely to abandon their commitments when the penalty for failure is larger. It also considers whether sustainability-linked bonds (SLBs) can strengthen these commitments (Feldhütter et al., 2024). Since the SLBs can cause financial penalties when sustainability targets fail, it increases the cost of walking away for firms. That will lead companies to be more likely to complete the commitment.

The paper then uses some actual firm data from the SBTi Companies Taking Action database to check whether actual firm behavior is consistent with this prediction. Listed firms are usually more visible to investors and the public, so failing to meet a public climate commitment may create a larger cost of reputation for them. Also, they may have more possible access to sustainability-linked financing. By controlling for region and organization type, the results show that Listed firms are 13.7 percentage points less likely to have their commitment removed. This finding is consistent with the model's prediction that firms are less likely to abandon their climate commitments when the penalty for failure is larger. However, the result only shows an association, not a causal effect, because listed firms may also differ from unlisted firms in other ways that are not directly observed in the data.

The argument connects to three literatures. In information economics a claim is credible when it is costly to fake, which is the logic of Spence (1973), and empty when it is not, the cheap talk of Crawford and Sobel (1982). Work on greenwashing applies that distinction to environmental claims (Lyon and Maxwell, 2011). Green finance research establishes that investors do pay for environmental credentials, in

the form of a small green bond premium (Zerbib, 2019). What is missing is a simple account of why so many firms make commitments they do not keep, and that is the gap this paper fills.

2. Theoretical Model

2.1. Setup

A firm's abatement capability is θ , known only to itself; a higher θ makes it cheaper to deliver and verify emission reductions. Assume $\theta \sim U[0,1]$. The firm moves twice: first it decides whether to commit publicly, then whether to complete verification. Committing yields a financing benefit B . Verification costs c/θ , where c measures how strict the standard is. Failing to verify means removal from the list and a reputational loss R ; a firm that has issued an SLB additionally pays a coupon step-up penalty P , which is zero for everyone else.

2.2. Derivation

Second stage. The firm compares the cost of finishing the job with the cost of walking away, c/θ against $R + P$, and verifies when verification is cheaper, which happens once its capability clears a threshold. First stage. What the firm expects to pay in the second stage is therefore not c/θ but $\min\{c/\theta, R + P\}$, because defaulting is always available. This never exceeds $R + P$. So if $B > R + P$, committing is profitable for every type, and all firms commit. Result. Firms below that threshold default. Since θ is uniform on $[0,1]$, the share of committed firms that are eventually removed is

$$\boxed{q = \frac{c}{R + P}} \quad \text{so} \quad \frac{\partial q}{\partial c} > 0, \quad \frac{\partial q}{\partial R} < 0, \quad \frac{\partial q}{\partial P} < 0$$

2.3. Implications

The key step is that for any firm below the threshold, the second-stage cost is exactly $R + P$, a constant that does not depend on θ at all. A firm with almost no abatement capability faces the same downside as a firm just below the threshold. If committing is worth it for one, it is worth it for all. That is what makes the commitment cheap talk, and it means the wave of broken promises is equilibrium behavior rather than fraud.

Two implications follow. First, tightening the standard backfires: a higher c raises the default rate. Second, a green bond works through P , not through the label or the disclosure. Whether the penalty bites in practice is an open question: Kölbel and Lambillon (2022) report that for many sustainability-linked bonds the financing saving exceeds the contractual penalty, which would blunt precisely this mechanism.

The derivation holds the parameters fixed, so it delivers a single number. Firms

differ, though, in what a broken promise costs them: a more visible firm loses more reputation, and a firm bound by an SLB owes a contractual penalty on top. A firm facing a larger penalty is therefore less likely to be removed, and that is what the regression in Section 3 estimates. The model yields one testable prediction:

Hypothesis. Firms facing a larger penalty for breaking their climate promise, whether a larger R or a binding P , are less likely to have their commitment removed.

3. Empirical Model

3.1. Specification

The model is a linear probability model estimated by OLS on firm-level cross-sectional data:

$$\text{Removed}_i = \alpha + \beta \text{Listed}_i + \delta_{r(i)} + \delta_{o(i)} + u_i$$

where δ_r are region fixed effects, δ_o are organization-type fixed effects, and β is the coefficient of interest. Controls are added one block at a time so the reader can see how the estimate moves. The advantage of OLS here is that β can be read directly: a coefficient of -0.137 means listed firms are 13.7 percentage points less likely to be removed. No odds ratios or marginal effects are needed. Standard errors are the conventional OLS ones; robust errors give 0.0097 on the key coefficient against 0.0102, so nothing turns on the choice. The usual worry about a linear probability model, that fitted probabilities can leave the unit interval, does not arise here: all 6,613 fitted values lie between 0.089 and 0.518.

3.2. Variables

Removed_i equals one if the firm's commitment was removed and zero if its target was validated. Listed_i equals one if the firm has an ISIN. Listing status proxies for the size of the penalty in two ways at once. A listed firm is more visible, so breaking a public promise costs it more reputationally, a larger R . And only a listed firm can realistically issue a sustainability-linked bond and take on a contractual penalty P . The model therefore predicts $\beta < 0$. Region and organization type enter as fixed effects. They are necessary rather than decorative: removal rates range from 18% in Europe to 45% in Africa, and listed firms are not evenly spread across regions (Figure 1).

3.3. Data

All data are free and public, so the analysis can be reproduced by anyone. The source is the SBTi Companies Taking Action database at <https://sciencebasedtargets.org/target-dashboard>: 15,304 firms with 22 fields. The estimation sample contains 6,613 firms whose commitment was resolved, excluding SMEs as described above. Listed firms are removed 13.4 percent of the time against

26.1 percent for unlisted firms, the direction the model predicts before any controls are applied.

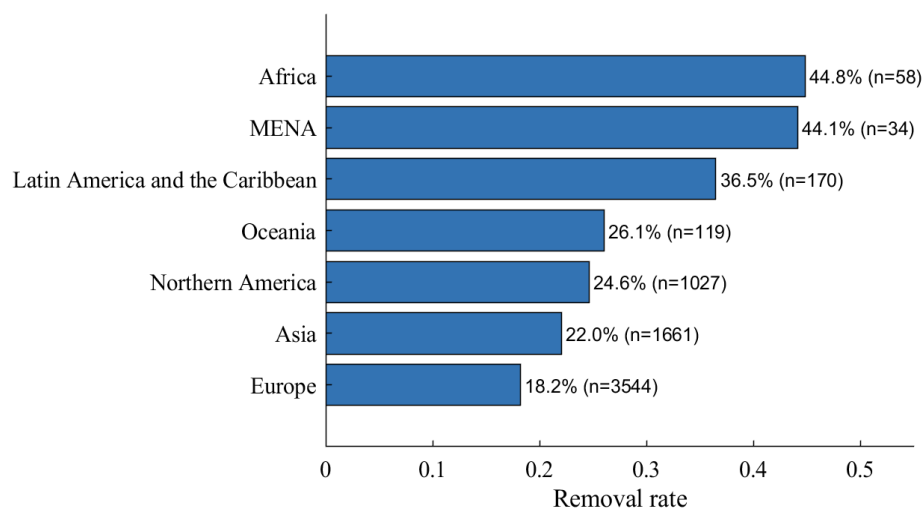


Figure 1. Commitment removal rate by region

Note: Removal rate is the share of resolved commitments (target validated or commitment removed) that were removed, among non-SME firms in the estimation sample of 6,613 firms. Region names follow the SBTi database.

4. Empirical Results and Analysis

Table 1. Determinants of commitment removal

Dependent variable: Removed	(1)	(2)	(3)
Listed	-0.127***	-0.137***	-0.137***
	(0.010)	(0.010)	(0.010)
Region fixed effects	No	Yes	Yes
Organization-type fixed effects	No	No	Yes
Observations	6,613	6,613	6,613
R ²	0.023	0.039	0.039

Note: Linear probability model estimated by OLS. Standard errors in parentheses. *** $p < 0.01$. The full version with every control coefficient is produced by the code. The dependent variable Removed equals one if a firm's SBTi commitment was removed and zero if its target was validated. Columns (1) to (3) add region and organization-type fixed effects in steps; column (3) is the preferred specification. Table 1 reports the main results from estimating the linear probability model described in Section 3.1. The dependent variable, Removed, is equal to one if a firm's SBTi commitment was removed and zero otherwise. The main explanatory variable is Listed, which indicates whether the firm is publicly listed. The regressions are estimated by using a linear probability model (LPM) with OLS. The three columns gradually add fixed effects. By controlling for other differences for firms, these added effects can show whether the relationship between listed status and commitment removal changes. Column (1) presents the simplest specification

without region and organization-type effects. The coefficient on Listed is -0.127, which means listed firms are estimated to be 12.7 percentage points less likely to have their SBTi commitment removed than unlisted firms. In the sample, the average commitment removal rate is about 21.1 percent, so a 12.7 percentage-point difference represents a large reduction relative to the sample mean. Thus, the result shows that it is more possible for listed firms to continue their commitment rather than be removed before adding other additional controls. Column (2) adds region fixed effects. This allows the regression to compare listed and unlisted firms while controlling for cross-region differences. These regional differences may affect firms' climate commitments, since firms in different regions may face different environmental regulations, investor pressure, and climate policies. Those differences may affect decisions of firms that choose to engage with SBTi and whether to complete the commitments. After controlling for region, the coefficient on Listed becomes -0.137. Therefore, listed firms are estimated to be 13.7 percentage points less likely to have their commitments removed. The fact shows that the coefficient changes only slightly after adding region effects, so the regional differences are not driving the main relationship between listed status and commitment removal.

Column (3) is the preferred specification, which includes both region and organization-type fixed effects. Organization type may also affect the probability of commitment removal, because different types of organizations can have different resources, management structures. After holding on those controls, the coefficient on Listed is still -0.137, and the standard error is 0.010, which is small relative to the estimated coefficient. The coefficient is almost unchanged across Column (2) and (3). Therefore, adding organization type effects does not reduce the estimated relationship between listed status and removal.

Those three coefficients provide some support for the robustness of the main result. The estimated coefficient changes from -0.127 in Column (1) to -0.137 in Column (2), and then remains at -0.137 in Column (3). If the coefficient changes largely after adding fixed effects, it shows the relationship can be explained by region or organization type. However, the estimated value remains almost the same, it shows that the negative relationship is not explained by the two groups of controls included in the regression. Also, the magnitude of the coefficient is also important. Compared with the sample mean removal rate of 21.1 percent, the 13.7 percentage-point estimate in Column (3) is approximately two-thirds of the baseline of removal rate. Therefore, listed status is associated with a substantially lower probability of commitment removal rather than only a small change that happens to be statistically significant because of the large sample size.

This result is consistent with the prediction of the theoretical model. In the model, firms are less likely to abandon a climate commitment when the penalty of failure is larger. First, listed firms may face a larger penalty, since their actions are generally

visible to investors, ESG rating agencies, and the public. If a listed firm makes a public climate commitment and later fails to complete it, the firm may face reputational costs or negative effects for investors. Therefore, the negative coefficient on Listed is consistent with the model's prediction that a higher penalty for failure reduces the probability of commitment removal. Second, listed firms may have greater access to financial markets and may be more likely to use instruments such as sustainability-linked bonds (SLBs). If missing a sustainability target leads to a financial penalty, the firm has a stronger financial motivation to complete its commitment. However, the current regression does not directly observe whether each firm has issued an SLB. Thus, the result should be only interpreted as being consistent with the proposed mechanism.

The R-squared also increases from 0.023 in Column (1) to 0.039 after adding region fixed effects in Column (2), and it remains at 0.039 in Column (3). This means that the additional fixed effects explain some of the variation in commitment removal. However, a large amount of variation remains unexplained by the model, a firm's decision to continue or abandon a climate commitment can depend on many factors that are not included in the current data, such as size of firms, financial condition, and the firm's actual cost of reducing emissions. Differences among firms in those factors could also affect whether a commitment is complete.

Overall, the empirical results provide evidence that is consistent with the main prediction of the model. Across all three specifications, listed firms have a significantly lower probability of removing their commitments, and the estimated effect remains stable by controlling for fixed effects for region and organization-type. In the preferred specification, listed firms are 13.7 percentage points less likely to remove their commitments. The result supports the idea that firms are more likely to complete their public climate commitments when they are facing a higher potential cost of failure.

5. Conclusion

This paper asked why so many firms make public climate commitments they later fail to keep, and whether green financial instruments can strengthen them. The model shows that this behavior does not require fraud: because walking away is always available, a firm's downside is capped at the penalty for breaking the promise, and that cap is the same whether the firm could have delivered or not. Every type therefore commits, and the share that fails is $c/(R+P)$, set by how strict the standard is relative to how much a broken promise costs. The waves of removals since 2021 are what the model predicts rather than evidence of widespread deception.

The data are consistent with the model's main prediction. Listed firms, which are more visible and are the only firms able to bond themselves through sustainability-linked bonds, are 13.7 percentage points less likely to have their

commitment removed, against a base rate of 21.1 percent. The estimate is stable across specifications and holds once region and organization type are controlled for. Two policy implications follow. Tightening a voluntary standard without strengthening the penalty for failure raises the failure rate rather than lowering it, because a stricter standard raises the verification threshold. And a green bond does its work through the coupon step-up, not through the label: what matters is that someone has to pay if the target is missed.

Two limitations deserve emphasis. First, the coefficient on Listed is an association, not a causal effect: listing status is not randomly assigned, and listed firms may differ from unlisted firms in ways the data do not observe. Second, the paper never observes a sustainability-linked bond directly, so the contractual-penalty channel is inferred from the model rather than measured. Whether the penalty bites in practice remains an open question (Kölbel and Lambillon, 2022).

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