

Moro, Alessandro; Zaghini, Andrea

Working Paper

Green is the new black

CFS Working Paper Series, No. 741

Provided in Cooperation with:

Center for Financial Studies (CFS), Goethe University Frankfurt

Suggested Citation: Moro, Alessandro; Zaghini, Andrea (2026) : Green is the new black, CFS Working Paper Series, No. 741, Goethe University Frankfurt, Center for Financial Studies (CFS), Frankfurt a. M.,
<https://doi.org/10.2139/ssrn.6247059>

This Version is available at:

<https://hdl.handle.net/10419/336812>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

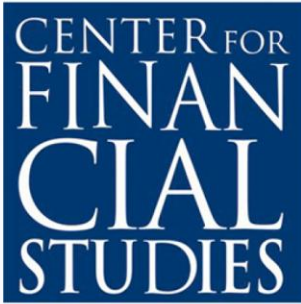
Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



CFS Working Papers Series

No. 741

Alessandro Moro, Andrea Zaghini

GREEN IS THE NEW BLACK

The CFS Working Paper Series

presents ongoing research on selected topics in the fields of money, banking and finance. The papers are circulated to encourage discussion and comment. Any opinions expressed in CFS Working Papers are those of the author(s) and not of the CFS.

The Center for Financial Studies, located in Goethe University Frankfurt's House of Finance, conducts independent and internationally oriented research in important areas of Finance. It serves as a forum for dialogue between academia, policy-making institutions and the financial industry. It offers a platform for top-level fundamental research as well as applied research relevant for the financial sector in Europe. CFS is funded by the non-profit-organization Gesellschaft für Kapitalmarktforschung e.V. (GfK). Established in 1967 and closely affiliated with the University of Frankfurt, it provides a strong link between the financial community and academia. GfK members comprise major players in Germany's financial industry. The funding institutions do not give prior review to CFS publications, nor do they necessarily share the views expressed therein.

GREEN IS THE NEW BLACK*

Alessandro Moro[†] Andrea Zaghini[‡]

Abstract

Donald Trump's re-election and renewed exit from the Paris Agreement marked a deterioration in the US green bond market. Using a difference-in-differences approach, we estimate a 4.4-6.0 percentage point drop in issuance probability and a USD 20-28 million decline in monthly green-issuance volume per issuer. As a result, the share of green bonds in the US market dropped from 1.7 per cent in the pre-Trump period to just 0.6 per cent thereafter. At the same time, the greenium - the typically negative yield spread between green and traditional bonds with similar characteristics - turned from negative to positive. This change in the greenium, coupled with reduced issuance, signals weakened investors' demand for green assets, likely driven by both reduced environmental concerns and less optimistic outlook for environmentally-conscious firms. The impact of Trump's re-election and policies on green bonds was stronger in the US than in other markets, highlighting diverging trajectories in sustainable finance at the international level.

Keywords: Sustainable finance; Green bonds; Greenium; Political shock; Trump's presidency.

JEL Codes: G11, G12, G24, Q51, Q56

*The views expressed in the paper are those of the authors and do not involve the responsibility of the Bank of Italy. We thank Massimiliano Affinito, Lorenzo Braccini, Matilde Faralli, Fabrizio Ferriani, Raffaella Giordano, Angela Gattulli and Marco Taboga for their insightful comments and suggestions.

[†]Statistical Analysis Directorate, Bank of Italy, Rome, Italy.

[‡]International Relations and Economics Directorate, Bank of Italy, Rome, Italy. Center for Financial Studies, Goethe University Frankfurt, House of Finance, Frankfurt am Main, Germany.

1 Introduction

In line with expectations following his re-election on November 5, 2024, and consistent with his campaign slogan "Drill, baby, drill", the US President Donald Trump signed out of the Paris Agreement on his first day in office (January 20, 2025). The withdrawal marks a significant shift in US climate policy. As the second-largest emitter of greenhouse gases after China (EDGAR, 2024), the US plays a pivotal role in global climate governance. A renewed emphasis on fossil fuel production is therefore likely to hinder international efforts to mitigate climate change. Moreover, the altered stance on environmental sustainability affects investors' sentiment about the valuation of firms outlook and green financial assets.

This study focuses on the effects of the re-election of President Trump on the market of green bonds, the debt instrument specifically designed to finance environmentally beneficial projects. While, in the months following the November 2024 election, the US primary bond market continued the expansion started in the second half of 2023, the green bond segment instead began witnessing a sharp reduction of placement volumes. While the latter development is a common global phenomenon, it appears to be stronger for the US market.

By employing a difference-in-differences (DID) approach, we find that the probability of issuing a green bond in the US market declined after Trump's election by about 5 per cent. In addition, the value of the green placements shrank by USD 20 to 28 million per issuer-month, causing more than a halving of the already low green share of the US bond market, from 1.7 per cent to 0.6 per cent.

At the same time, the yield on green bonds increased. We estimate that the greenium (the spread between the yield on a green bond and the yield on an otherwise similar traditional bond, that is typically negative) deteriorated in the US market relatively more than in other markets, by an overall 69-78 basis points range. Following Trump's re-election, this increase

was large enough to push the greenium into positive territory.

Since both issuance volumes and bond prices declined, our evidence supports the view that US green bonds faced a demand shock. Trump’s re-election led to a reduction in investors’ demand for green assets, by weakening their pro-environmental concerns and/or reducing the expected growth prospects of more environmentally friendly companies.

Our paper contributes to the empirical literature on the pricing of green bonds and the geoeconomics of green financial markets. Several studies estimate the cost advantage of issuing green bonds to finance climate-related projects, either through regression-based approaches (Ehlers and Packer, 2017; Baker et al., 2022; Zaghini, 2024; Moro and Zaghini, 2025) or a statistical matching method (Zerbib, 2019; Fatica and Panzica, 2021; Flammer, 2021; Caramichael and Rapp, 2024, Fricke and Meinerding, 2025). They usually report a negative premium in favour of green bonds, thus suggesting that investors have environmentally-oriented non-pecuniary motives that make them renounce to part of the return when financing a green project. Within this strand of research, Moro and Zaghini (2025) show that the greenium tends to be larger (more negative) in advanced economies than in emerging markets. Their findings further suggest that the financial advantage of issuing green bonds in advanced economies is associated with open capital accounts and stronger adherence to the rule of law. According to our results, the political reversal under the President Trump administration has eroded, at least partially, this comparative advantage for the US market.

We also add to the literature examining how political shocks affect financial markets, with a particular focus on the implications of Trump’s presidency and policy agenda. Wagner et al. (2018) finds that the stock market’s response to Trump’s 2016 election aligned with expectations of substantial corporate tax cuts,¹ while Neger et al. (2021) shows that

¹Specifically, firms facing high tax burdens and those with large deferred tax liabilities saw gains, while companies with deferred tax assets from net operating losses experienced losses. Firms oriented toward the

the weakening of environmental regulation enforcement led to significant positive abnormal returns in the coal sector. Interestingly, despite elevated political uncertainty following the election, market volatility remained subdued, breaking a pattern observed over the previous decade and surprising many analysts. Pastor and Veronesi (2017), building on their theoretical model (Pastor and Veronesi, 2012, 2013), argue that this muted response was due to the conflicting and ambiguous nature of the new administration's communications, which made it difficult for investors to form clear expectations. Focusing on the 2024 electoral campaign, Albori et al. (2024) find that a higher probability of Trump's election increases volatility in the US bond market, while it reduces equity market volatility and oil prices, and boosts stock prices. This suggests that financial markets anticipate a Trump administration to be more market-oriented than Biden's, with less emphasis on environmental issues and public debt sustainability. Using a novel firm-level textual measure, Ferriani et al. (2025) document significant positive abnormal returns for companies aligned with Trump's policy agenda following his second victory in 2024.

Focusing more specifically on the effects of Trump's first election on green markets, Ramelli et al. (2021) investigate the cross-section of stock returns. They show that carbon-intensive firms benefited from Trump's election, but they also report that companies displaying a high level of climate responsibility benefited as well, because investors expected more stringent climate policies from the future administrations. Instead, Cosma et al. (2025) document just quick shift in US stock market valuations following the 2024 election, as investors reallocated capital toward firms perceived as less environmentally conscious, anticipating policies favoring "brown" sectors. In line with their findings, the evidence presented in this paper suggests that Trump's re-election in 2024 also affected the bond segment of green domestic market outperformed those with a global focus.

finance, triggering a substantial decline in investor demand for green bonds.

The rest of the paper is organised as follows. Section 2 analyses the impact of Trump’s re-election on green bond issuance in the US. Section 3 quantifies the effect on the pricing of US green bonds. Section 4 performs some robustness checks. Finally, Section 5 concludes.

2 Effects on green bond issuance

In order to evaluate the impact of the President Trump’s re-election on green bond issuance, we rely on data from January 2021 to May 2025, thus comparing the developments induced by Trump with the Biden’s presidency period. Data are collected from three different providers: Dealogic DCM Analytics, LSEG Data & Analytics and Bloomberg. For each bond placed we have the following information from Dealogic DCM Analytics: the ISIN code, the pricing date, a green label that identifies green bonds, the rating, the maturity, the amount issued, the currency in which the bond is denominated, the issuer, the issuer’s business sector description at the 2-digit SIC code level. The annualized yield to maturity at issuance is instead sourced from LSEG Data & Analytics and Bloomberg. From the bond ISIN code we retrieve the market where the bond has been issued. Data are collapsed at the issuer x month x market of issuance level.

The US green bond segment experienced a pronounced decline in placement volumes following President Trump’s re-election in November 2024, whereas the broader US primary bond market continued the expansion that began in the second half of 2023, before stabilizing in April and May 2025 (Figure 1, upper panel). Although the slowdown in green bond issuance reflects a global trend, its magnitude is notably greater in the US. As shown in Figure 1, lower panel, the US recorded a steeper contraction compared to Europe and the

rest of the world (excluding the US), with the green bond issuance index falling by 40 percent in May 2025 relative to the October 2024 baseline.

Via a difference-in-differences (DID) approach, we compare placements in the US market to two distinct control groups: (i) the global market; (ii) the European market.² We focus on the probability that a company issues green bonds and on the volume of the green bond issuance, two indicators of issuer engagement and market development frequently used in the sustainable finance literature. In particular, the following Probit model is estimated for the probability that issuer i , operating in sector s , issues a green bond in market m , at time t ($GB_{i,s,m,t} = 1$):

$$\Pr(GB_{i,s,m,t} = 1) = \Phi(\beta_0 + \beta_1 US_m + \beta_2 Post_t + \beta_3(US_m \times Post_t) + \gamma_s + \delta_m + \lambda_t + \varepsilon_{i,s,m,t}) \quad (1)$$

where $\Phi(\cdot)$ is the cumulative distribution function of the standard normal distribution, US_m is a dummy tracking the issuers in the US market, $Post_t$ is a dummy for the post-Trump election period (from November 2024 to May 2025), γ_s , δ_m , and λ_t are sector, market, and time fixed effects, respectively.

Regarding the total value of green bond issuance by issuer i , in sector s , issuing in market m , at time t ($Issuance_{i,s,m,t}$), we estimate the following OLS model using the same sample:

$$Issuance_{i,s,m,t} = \beta_0 + \beta_1 US_m + \beta_2 Post_t + \beta_3(US_m \times Post_t) + \gamma_s + \delta_m + \lambda_t + \varepsilon_{i,s,m,t} \quad (2)$$

Table 1 presents in the upper panel the results obtained when the global (non-US) market is used as the control group. The interaction term between the dummy for the US market and

²The European market used in the regressions is constructed by adding to the international European market all the domestic markets of 27 EU members and the markets of Great Britain, Norway and Switzerland.

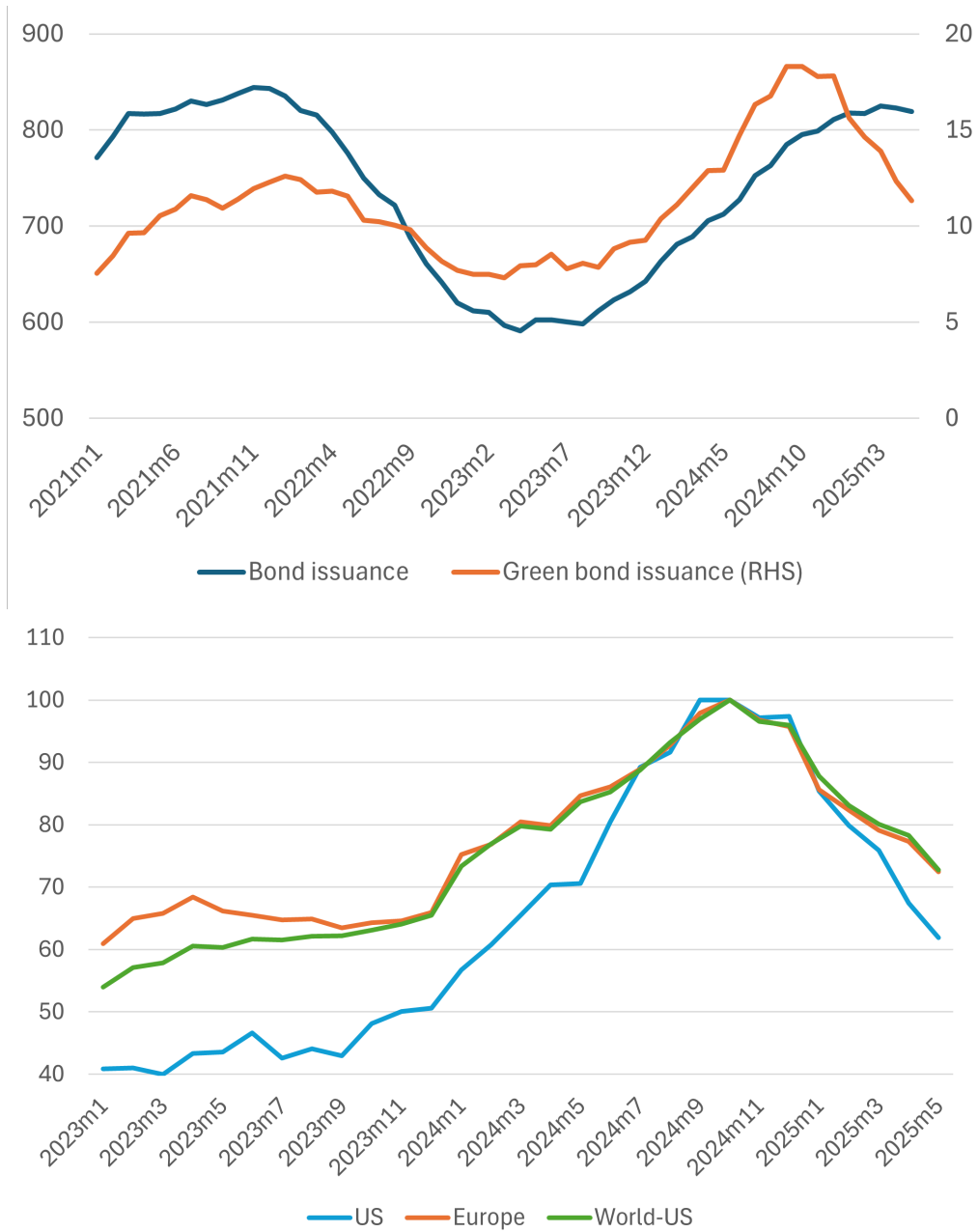


Figure 1: Volume of placements. Upper panel: total bond issuance and green bond issuance in the US market (USD billion, twelve-month moving average). Lower panel: green bond issuance in the US, World excluding US, Europe, index (October 2024=100), twelve-month moving average.

the post-Trump election period (US x Post) is negative and statistically significant across all specifications. In the probit model (columns 1 and 2), the probability of green bond issuance by US market issuers falls by approximately 4.4-4.7 percentage points following President Trump's re-election. In the OLS model (columns 3 and 4), the total value of the monthly green issuance per issuer declines by about USD 28 million per issuer-month.

These results suggest a substantial and robust negative effect of the re-election on green bond issuance in the US, both in terms of participation and volume. As a consequence of the reduction of both the intensive and extensive margin, the share of green bonds in the US market dropped from an already low 1.7 per cent in the pre-Trump period to just 0.6 per cent thereafter.

In addition, the US dummy is negative and significant in the probit model (column 1), indicating that, prior to the 2024 presidential election, issuers in the US were already less likely to place green bonds than the issuers elsewhere.

From a global perspective, the negative and significant Post dummy in columns 1 and 3 suggests that Trump's re-election likely had spillover effects beyond the US. While the sharpest decline occurred among US issuers, the timing of this political shift appears to have influenced issuer behaviour in other jurisdictions as well. The US exit from the Paris Agreement likely weakened international efforts to combat climate change and heightened uncertainty about future regulatory support for sustainable finance. If so, our estimates probably understate the overall impact of Trump's re-election on both the likelihood and volume of green issuance in the US.

Table 1 presents in the lower panel the results of the analysis when using the European bond market as the control group. The effects are even more pronounced concerning the probability of green issuance. The US x Post coefficient in the probit model (columns 1 and

Table 1: Changes in probability and volume of placement of green bonds in the US market after the Trump election. Estimates of the probability of placing a green bond are reported in columns (1) and (2), estimates of the placement volume are reported in columns (3) and (4). In the upper panel the control sample is the global market excluding US, in the lower panel is the European market. Marginal effects. Cluster-robust standard errors at the issuer's sector level in parentheses. Significance level: *** p<0.01; ** p<0.05; * p<0.1.

	(1)	(2)	(3)	(4)
	Prob. of GB issuance	Prob. of GB issuance	GB issuance (USD mn.)	GB issuance (USD mn.)
Control Group: Rest of the World (54,247 observations)				
US	-0.0575*** (0.015)		0.0624 (9.435)	
Post	-0.0196*** (0.004)		-13.62*** (4.280)	
US x Post	-0.0471*** (0.015)	-0.0441*** (0.014)	-28.07*** (8.948)	-27.62*** (8.731)
Control Group: Europe (30,541 observations)				
US	-0.0936*** (0.019)		-38.02** (14.494)	
Post	-0.0111* (0.006)		-21.57** (8.838)	
US x Post	-0.0605*** (0.013)	-0.0567*** (0.013)	-20.93** (9.586)	-20.06** (9.453)
Sector FE	YES	YES	YES	YES
Market FE	NO	YES	NO	YES
Time FE	NO	YES	NO	YES

2) is negative at around 5.7-6.0 percentage points. At the same time, the decline in issuance value (columns 3 and 4) stands at approximately USD 20 million per issuer-month. Note that the estimate of the US dummy is more in the negative territory in this specification with respect to the previous one. Relative to their European counterparts, issuers in the US were substantially less engaged in green finance even before the Trump re-election. The Post dummy remains negative and significant, suggesting that Trump's re-election might have led to a broader decline in green bond issuance, even in Europe.

3 Effect on green bond yields

3.1 The estimation methodology

In order to assess the effect of the President Trump’s re-election on US green bond prices we must rely on an appropriate identification strategy. In particular, while remaining in the econometric framework of difference-in-differences (DID) by Wooldridge (2007), we take a step further in the analysis. We move from the traditional DID estimator, that, as well known, takes into account one control group, to the triple difference estimator (DDD), that instead takes into account two control groups. The rationale for employing two control groups lies in the need to isolate the effect of the treatment from broader trends that may confound the analysis. For example, suppose that in the six months following the US presidential election, the yield on US green bonds increased by 50 basis points relative to conventional bonds. At first glance, this differential might be interpreted as a causal effect of the election outcome. However, such an inference would be unwarranted without accounting for global trends in green bond performance. If, over the same period, green bonds issued in other markets also outperformed their conventional counterparts by a similar margin, the observed yield differential in the US could simply reflect a global shift in investor preferences or changed market conditions, rather than a country-specific response to the election. Incorporating a second control group – green bonds issued outside the US – allows for a more credible identification strategy by differencing out such common shocks.

The DDD methodology is instead perfectly suited to the task of assessing whether the US green bond prices were differently affected by the domestic election with respect to other markets. As shown by Olden and Møen (2022), the DDD estimator can be interpreted as the difference between two DID estimators. The first estimating the difference between US

green bonds and US non-green bonds after the Trump election; the second estimating the difference between green bonds and non-green bonds placed in other markets, over the same time span. In other words, the triple difference estimator of the change in the yield on US green bonds after the Trump election comes net of the change happened to green bonds in the rest of the world.

Analytically, we estimate the following model for the yield of bond b , issued by issuer i , in currency c , at time t :

$$\begin{aligned}
 Yield_{b,i,c,t} = & \beta_0 + \beta_1 Green_b + \beta_2 US_b + \beta_3 Post_t + \beta_4 (Green_b \times US_b) \\
 & + \beta_5 (Green_b \times Post_t) + \beta_6 (US_b \times Post_t) + \beta_7 (Green_b \times US_b \times Post_t) \quad (3) \\
 & + \alpha X_{b,i,c,t} + \gamma_i + \lambda_{c,t} + \varepsilon_{b,i,c,t}
 \end{aligned}$$

where $Yield_{b,i,c,t}$ is the annualized yield to maturity at issuance, $Green_b$ is a dummy variable tracking green bonds, $X_{b,i,c,t}$ are bond controls (issuance volume, maturity, rating, frequency of coupon, dummies for fixed-rate, collateralized and callable bonds), γ_i are issuer-specific fixed effect, $\lambda_{c,t}$ are currency per time fixed effects.³ The coefficient of interest is β_7 , that provides the estimate of the President Trump effect on US green bonds, net of the change in the US non-green bonds and the overall development of green bonds placed elsewhere.

Regressions are run via weighted OLS regressions for three different treated and control samples: the US market vs the global bond market (excluding US); the US vs the European market; the segment of US vs European non-financial corporations (NFCs). The regression sample period goes from January 2024 to May 2025. As in the previous analysis, bond characteristics are sourced from Dealogic DCM Analytics, yields from LSEG Data & Analytics

³Since time fixed effects capture all time-specific shocks common to all units, the $Post_t$ dummy becomes collinear with them and is thus not separately identified in the model.

and Bloomberg.

The OLS weights are obtained from an entropic procedure implemented before running the DDD estimations, in order to make green and non-green bonds more comparable (Hainmueller, 2012). The entropic algorithm induces a re-weighting of a dataset such that the covariate distributions in the re-weighted data satisfy a set of specified conditions on selected moments of the variables in both the treated and the control groups. The method boils down to delivering a set of matching weights for each unit in the sample that forces given metrics to hold. On this respect, we select which of the first three moments (mean, variance, and skewness) of each of the chosen covariates, has to match between the treated group (green bonds) and the control group (traditional bonds). In particular, the entropic rebalancing can be seen as a generalization of a propensity score weighting. In the latter methodology, one would first estimate the unit weights and then compute balance checks to make sure that the estimated weights indeed equalize the covariate distributions. The entropic algorithm tackles the matching problem from the opposite side, i.e., it estimates the weights directly from the imposed restrictions on the moments of the covariates. Instead of checking ex-post whether an accurately estimated score has managed to balance the covariates, the entropy exploits the knowledge of the sample moments of the covariates and requires that the sample moments in the re-weighted control group exactly match the corresponding moments in the treatment group. In this way, ex-post balance checking is no longer necessary.⁴

We selected the following variables to be matched: value placed; maturity at issuance; quarter of issuance; dummy for collateralized bonds; dummy for subordinated bonds; dummy for callable bonds; currency of denomination; issuer rating; issuer business sector. In particular, for dummies and discrete variables we required the first moment to be matched, while

⁴See Tsang et al. (2024), Yu et al. (2024), Di Tommaso et al. (2025) for recent contributions in the green finance literature relying on the entropic matching approach.

for the continuous variables also the second moment had to be matched.

3.2 Baseline results

According to the estimates presented in Table 2, Column 1, in which the global bond market is employed as the control group, before the Trump's re-election there was a greenium of 9.5 basis points worldwide. However, in the six-month period after the US election, the Green x Post coefficient suggests a significant deterioration of the premium of around 13 basis points. Was this deterioration felt the same way by the US market? To answer this question, we must look at the coefficient β_7 in equation 3. As mentioned, β_7 is the post-Trump effect on the yield on US green bonds when taking into account not only the development of US non-green bonds, but also the development of green vs non-green bonds in the global market. The Green x US x Post estimate indicates that green bonds placed in the US recorded a further large deterioration of 68 basis points.

In order to assess the overall deterioration experienced by US green bonds and get an estimate of the value of the US greenium before and after the Trump's re-election, several coefficients have to be compared. Following Olden and Møen (2022), we have that the value of the greenium before Trump is given by $(\beta_1+\beta_4)$; the value of the greenium after Trump by $(\beta_1+\beta_4+\beta_5+\beta_7)$; the overall deterioration by $(\beta_5+\beta_7)$. The estimated values so computed, together with the standard errors, are reported in the lower panel of Table 2. The change in the US greenium is striking. In the period following the Trump's election, green bonds placed in the US market experienced a deterioration in the yield spread with respect to traditional bonds of 81 basis points. This worsening is so large that the greenium turned from a negative value of 29 basis points to a positive value of 53 basis points. The loss is large also in economic terms: given that the unconditional average yield on bonds placed in

Table 2: Estimates of the DDD model for the evolution of the US yield on green bonds versus non-green bonds and versus other markets. Cluster-robust standard errors at the currency level in parentheses. Significance level: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

VARIABLES	(1) World	(2) Europe	(3) NFCs
Green	-0.1058* (0.0543)	-0.1575* (0.0884)	-0.0919* (0.0523)
US	-0.4554*** (0.1496)	-0.4822*** (0.1561)	0.0452 (0.0387)
Green x US	-0.1822*** (0.0425)	-0.1733*** (0.0571)	-0.2740*** (0.0489)
Green x Post	0.1288** (0.0568)	0.1680* (0.0906)	0.1355*** (0.0294)
US x Post	0.4102*** (0.0762)	0.4685*** (0.1069)	0.2277*** (0.0516)
Green x US x Post	0.6846*** (0.0446)	0.6601*** (0.0786)	0.6377*** (0.0479)
Pre-Trump US greenium	-0.2881*** (0.0342)	-0.3301*** (0.0389)	-0.3659*** (0.0517)
Trump's effect	0.8134*** (0.0285)	0.8281*** (0.0236)	0.7732*** (0.0324)
Post-Trump US greenium	0.5254*** (0.0342)	0.4974*** (0.0311)	0.4073*** (0.0669)
Observations	49,428	34,356	8,090
R-squared	0.831	0.773	0.907
Bond Controls	YES	YES	YES
Issuer FE	YES	YES	YES
Currency x Month FE	YES	YES	YES

the US market over the period taken into account is 5.5 per cent, the post-election positive premium amount to an additional cost of funding of around 10 per cent for environmentally friendly projects.

These results are confirmed when taking into account the European market alone as the second control sample for the US market (Column 2). With respect to the deterioration of the European green segment by 17 basis points, the β_7 coefficient suggests a further worsening

in the US market by 66 basis points. This in turn leads to an overall decline in the US greenium by 83 basis points and to the switch from a negative to a positive premium of 50 basis points. Results do not change even when focusing on more restricted and homogeneous samples of US and European non-financial corporations (NFCs) only. Column 3 shows that the overall effect on US green bonds stands at 77 basis points.

From the DDD estimations thus emerges that after the Trump’s re-election green bonds in the US market experienced a significant repricing with respect to non-green bonds. The repricing was so strong that the yield on green bonds increased much more than that on traditional bonds leading to a sign reversal of the spread: the greenium, usually negative, turned into the positive territory.

4 Robustness

4.1 Parallel trend hypothesis

To support a causal interpretation of the effects of the President Trump’s election on green bonds, it is important to verify the parallel trend assumption for the groups of treated and non-treated bonds in the pre-treatment period, that is at the base of the DID approach (Wooldridge, 2007). However, when relying on the DDD framework, there are two groups of non-treated bonds, one from each DID in which the DDD can be decomposed (Olden and Møen, 2022). We thus run the following regression for both the set of bonds placed in the US market and the set of bonds placed worldwide (excluding the US):

$$Yield_{b,i,c,t} = \beta_0 + \sum_s \delta_s Green_b \times Bim_s + \alpha X_{b,i,c,t} + \varepsilon_{b,i,c,t} \quad (4)$$

where all the variables are defined as in Eq. (3) and Bim_s are dummy variables tracking the bimesters in the period under analysis. The coefficients of interest are the δ_i up to the fifth bimester in 2024: they estimate the yield difference between green and non-green bonds in the pre-election period. They are reported in Figure 2 together with the 95% confidence interval, for both the US market (upper panel) and the rest of the world (lower panel).

Even though not a formal test, the visual inspection suggests that the difference between green and non-green bond was not showing any trend. In both panels, the four changes recorded between the five consecutive bimesters before November 2024 do not show more than two consecutive changes in the same direction, and in the lower panel they are equally split into two increases and two decreases. The evidence thus supports the parallel trend assumption for the whole DDD framework.

Interestingly, in the period after the Trump's re-election, there emerges a different behaviour between the two markets. While in the US the yield difference significantly move into positive territory, it remains almost unchanged in the rest of the world. This evidence is fully in line with the results provided in the previous sections.

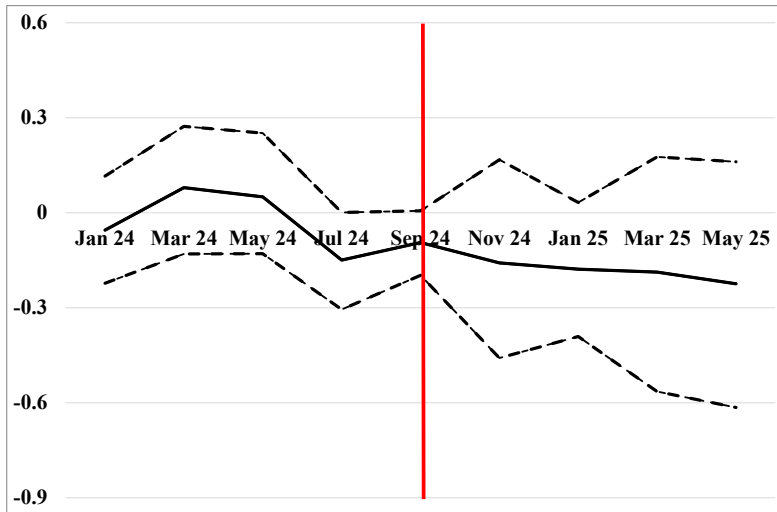
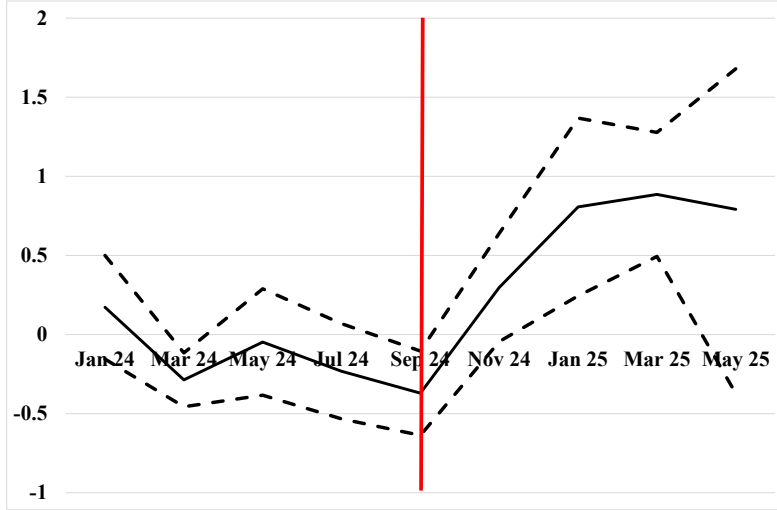


Figure 2: DDD parallel trend assumption: visual inspection. Estimated difference of the yield at issuance between green bonds and non-green bonds placed in the US market (upper panel) and in the global market without US (lower panel) at the bimonthly frequency (continuous lines); 95% confidence interval (dashed lines).

4.2 Treatment period

In this section we propose two robustness checks concerning the treatment period. The first is about the length of the treatment period: 9 months instead of the 6-month baseline period. The second regards the starting point of the treatment period: 20 January, 2025 (the first day of office for president Trump) instead of 5 November, 2024 (the election day) the baseline.

The first three columns in the upper panel of Table 3 show a structure of the estimations very close to the baseline scenario built on the 6-month period after the 2024 election results. At the same time, the lower panel indicates that the negative effect of president Trump is still strong after 9 months from election day: the positive premium on US green bonds ranging between 38 and 42 basis points.

Columns 4 to 6 report instead the coefficient estimates when the first day of office of president Trump is taken into account as a starting moment of the treatment period. Even though there were no reasons to believe that once appointed president Trump would not implement the policy measures proposed in the electoral campaign, the very first set of 26 executive orders left no doubt about his commitment. However, notwithstanding the fact that most likely the decisions about environmental sustainability were already anticipated by market participants,⁵ the estimates are in line with the baseline scenario whatever international sample is taken into account. The deterioration in the yield on US green bonds let the greenium turn largely positive, in the 39-47 basis points range.

⁵Indeed, as shown in the upper panel of Figure 2, the yields spread on US green bonds deteriorated already in the last bimester of 2024.

Table 3: Estimates of the DDD model for the evolution of the yield on green bonds placed in the US market versus non-green bonds and versus other markets. 9-month period after the election day (5 November, 2024) in columns 1 to 3; 6-month period after the first day of office of President Trump (20 January, 2025) in columns 4 to 6. Cluster-robust standard errors at the currency level in parentheses. Significance level: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

VARIABLES	9-month after 5 Nov 2024			6-month after 20 Jan 2025		
	(1) World	(2) Europe	(3) NFC	(4) World	(5) Europe	(6) NFCs
Green	-0.1146** (0.0501)	-0.1577** (0.0780)	-0.0553 (0.0441)	-0.1144** (0.0504)	-0.1616** (0.0780)	-0.0593 (0.0481)
US	0.4761*** (0.1311)	0.5222*** (0.1325)	0.0319 (0.0354)	-0.4797*** (0.1354)	-0.5246*** (0.1362)	0.0278 (0.0324)
Green x US	-0.2000*** (0.0397)	-0.1703*** (0.0435)	-0.2570*** (0.0403)	-0.2027*** (0.0410)	-0.1720*** (0.0469)	-0.2619*** (0.0413)
Green x Post	0.1160** (0.0506)	0.1607** (0.0781)	0.1185** (0.0419)	0.1302 (0.0529)	0.1800** (0.0832)	0.1375*** (0.0387)
US x Post	0.4362*** (0.0720)	0.5024*** (0.0939)	0.2451*** (0.0471)	0.4283*** (0.0691)	0.5003*** (0.0922)	0.2318*** (0.0433)
Green x US x Post	0.5737*** (0.0480)	0.5773*** (0.1372)	0.6142*** (0.0415)	0.5817*** (0.0414)	0.5821*** (0.0754)	0.6540*** (0.0448)
Pre-Trump US greenium	-0.3144*** (0.0419)	-0.3280*** (0.0509)	-0.3123*** (0.0694)	-0.3171*** (0.0362)	-0.3336*** (0.0433)	-0.3213*** (0.0652)
Trump's effect	0.6897*** (0.0532)	0.7380*** (0.0354)	0.7327*** (0.0088)	0.7119*** (0.0578)	0.7621*** (0.0274)	0.7915*** (0.0137)
Post-Trump US greenium	0.3753*** (0.0513)	0.4050*** (0.0639)	0.4204*** (0.0694)	0.3949*** (0.0445)	0.4285*** (0.0403)	0.4702*** (0.0716)
Observations	60,528	42,355	10,172	56,713	39,541	9,488
R-squared	0.823	0.766	0.909	0.829	0.773	0.908
Bond Controls	YES	YES	YES	YES	YES	YES
Issuer FE	YES	YES	YES	YES	YES	YES
Currency*Month FE	YES	YES	YES	YES	YES	YES

4.3 Markets and elections

While just around 5 per cent of bonds from American issuers are placed outside the US market, the share of bonds placed by foreign issuers in the US market is much larger at 17 per cent. A check of the results of the previous Section is provided in Table 4 (columns 1-3), where instead of looking at the US market, we focus on American placements. In other

words, with respect to the baseline sample, we do not take into account the 17 per cent of foreign issues in the US market, while we include the 5 per cent of bonds placed by American issuers elsewhere.

Table 4: Estimates of the DDD model for the evolution of the yield on US green bonds versus non-green bonds and versus other markets. Bonds placed by American issuers in columns 1 to 3; bonds placed in the US market around the first Trump election (20 November, 2016) in columns 4 to 6. Cluster-robust standard errors at the currency level in parentheses. Significance level: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

VARIABLES	US issuers (2024 election)			1st Trump's election (2016)		
	(1) World	(2) Europe	(3) NFC	(4) World	(5) Europe	(6) NFCs
Green	-0.1052* (0.0535)	-0.1298* (0.0754)	-0.1735* (0.0911)	-0.3001** (0.1396)	-0.1851 (0.1627)	0.0488 (0.2145)
US	0.9533*** (0.0988)	0.7431*** (0.1985)	-1.1671** (0.4058)	-0.1867* (0.1026)	-0.1039 (0.1597)	-0.6539*** (0.1092)
Green x US	-0.2635*** (0.0914)	-0.2407** (0.0960)	0.0743 (0.1019)	0.2233 (0.1864)	0.2490 (0.2198)	-0.1603 (0.2366)
Green x Post	0.1764* (0.0897)	0.1608*** (0.0537)	0.2467*** (0.0598)	-0.0733 (0.1604)	-0.2248 (0.2073)	-0.0869 (0.1604)
US x Post	0.0712* (0.0360)	0.2394*** (0.0814)	0.0272 (0.0731)	-0.4183*** (0.0660)	-0.7414*** (0.1502)	0.0194 (0.2064)
Green x US x Post	0.3904*** (0.1254)	0.4441*** (0.1372)	0.4923** (0.2174)	-0.1063 (0.1270)	0.0408 (0.1429)	0.1265 (0.3035)
Pre-Trump US greenium	-0.3687*** (0.1169)	-0.3706*** (0.1357)	-0.0991* (0.0559)	-0.0768 (0.2334)	0.0640 (0.2793)	-0.115 (0.0944)
Trump's effect	0.5668*** (0.2001)	0.6049*** (0.1649)	0.7390*** (0.2308)	-0.1796* (0.0172)	-0.1840 (0.1777)	0.0396 (0.0863)
Post-Trump US greenium	0.1981* (0.1270)	0.2344*** (0.0797)	0.6399** (0.2255)	-0.2564* (0.1433)	-0.1201 (0.1079)	-0.0718 (0.0989)
Observations	54,415	33,122	7,164	71,036	45,645	7,810
R-squared	0.849	0.765	0.908	0.838	0.785	0.951
Bond Controls	YES	YES	YES	YES	YES	YES
Issuer FE	YES	YES	YES	YES	YES	YES
Currency*Month FE	YES	YES	YES	YES	YES	YES

Estimations results confirm that after the President Trump's re-election: 1) there is a significant deterioration of green bond prices worldwide (β_5 ranging from 16 to 25 basis points); 2) American green bonds fare worse than global and European green bonds (β_7

ranging from 39 to 49 basis points); 3) the overall effect is so large that the American greenium switches from negative to positive (lower panel).

A different exercise is proposed in the last three columns of Table 4, where the focus of the analysis is centered on the first Trump's election in November 2016. We consider the time period from January 2016 to September 2017. We use this period both as a placebo test and as a benchmark of comparison with the extant literature.

Besides the fact that the outcome of the election day on 3 November 2016 was a surprise, the policy changes proposed in the Trump's first presidential program were so vast that there was uncertainty not only about the speed of realization but also about the actual implementation of the reforms. In addition to dismantle the environmental protection rules introduced during the Obama presidency and exit the Paris Agreement, among Trump's key policy proposals were a decrease in the corporate tax rate, the expensing of capital expenditures with limits on interest deductions, the increase in tariffs to protect American businesses, the taxation of accumulated foreign earnings.

It is thus not a surprise that, as already mentioned in the Introduction, the results of the literature about the financial market developments in that period are somewhat mixed. For instance, Mukanjari and Sterner (2024) while finding a negative reaction of renewable and alternative energy stocks prices, they surprisingly do not find a positive effect for the coal industry, with only oil and gas benefiting of abnormal returns. On the other hand Ramelli et al. (2021) find that investors reacted to the Trump election by rewarding the coal industry and other carbon-intensive firms. At the same time, they suggest that investors also rewarded companies demonstrating more responsible climate strategies.

The DDD regression results from equation (3) show that the first Trump's election had a very limited impact on the green segment of the US bond market. Indeed, most of the

coefficients are statistically not significant. The only exception arises when the US market is compared to the global benchmark (column 4, lower panel), where the estimated effect is statistically significant but opposite in sign with respect to that observed following the 2024 election. This suggests that, rather than penalizing green bonds, investors may have continued to reward them – possibly reflecting a persistent market endorsement of the environmental policy framework inherited from the previous Democratic administration. While the latter result is in line with the evidence by Ramelli et al. (2021), it is not robust to the change of sample of comparison from the Rest of the World to the European market (columns 5 and 6).

5 Concluding remarks

After the re-election, President Trump withdrew the US from the Paris Agreement, signalling a major shift in climate policy. This move, coupled with a renewed focus on fossil fuel production, raised concerns about the global effort to mitigate climate change and influenced investor sentiment, particularly in the green finance sector.

In the case of the US green bond market, we provide evidence consistent with a demand shock, that typically occurs when both prices and quantities decrease. In the six-month period following election day, we estimate a significant drop in both the probability of issuance and the amount placed per month (i.e., a drop in the equilibrium quantities). At the same time this contraction was accompanied by a deterioration in the pricing conditions of green bonds (i.e., a drop in the equilibrium prices). The deterioration was so strong that it even triggered a sign reversal of the usually negative green bond premium.

The combined effect of reduced issuance and higher yields most likely reflects a weakening

of investor appetite for green assets, driven by diminished expectations of regulatory support and climate leadership. Overall, our findings highlight the sensitivity of sustainable finance to political signals that are able to affect market expectations on earning prospects of the green sector, and underscore the importance of credible and stable climate policies in sustaining investor engagement and market development.

References

- Albori, M., Nispi Landi, V., and Moro, A. (2024). US election risks and the impact of Trump's re-election odds on financial markets. *VoxEu*.
- Baker, M., Bergstresser, D., Serafeim, G., and Wurgler, J. (2022). The pricing and ownership of US green bonds. *Annual Review of Financial Economics*, 14(1):415–437.
- Caramichael, J. and Rapp, A. C. (2024). The green corporate bond issuance premium. *Journal of Banking and Finance*, 162:107126.
- Cosma, S., Cosma, S., Gambarelli, L., Pennetta, D., and Rimo, G. (2025). Political elections and market reactions: The "Trump effect" on green stocks. *Economics Letters*, 249:112261.
- Di Tommaso, C., Perdichizzi, S., Vigne, S., and Zaghini, A. (2025). Is the government always greener? *Energy Economics*, 152:108976.
- Ehlers, T. and Packer, F. (2017). Green bond finance and certification. *BIS Quarterly Review*, September.
- Fatica, S. and Panzica, R. (2021). Green bonds as a tool against climate change? *Business Strategy and the Environment*, 30(5):2688–2701.
- Ferriani, F., Gazzani, A., and Taboga, M. (2025). The impact of Trump's victory on equity markets: The power of proximity. *Economics Letters*, 247:112199.
- Flammer, C. (2021). Corporate green bonds. *Journal of Financial Economics*, 142(2):499–516.
- Fricke, D. and Meinerding, C. (2025). Who pays the greenium and why? a decomposition. *Journal of International Money and Finance*, 157:103381.

- Hainmueller, J. (2012). Entropy balancing for causal effects: A multivariate reweighting method to produce balanced samples in observational studies. *Political Analysis*, 20:25–46.
- Moro, A. and Zaghini, A. (2025). The green sin: how exchange rate volatility and financial openness affect green premia. *Review of Finance*, 29(4):1189–1217.
- Mukanjari, S. and Sterner, T. (2024). Do markets Trump politics? fossil and renewable market reactions to major political events. *Economic Inquiry*, 62(2):805–836.
- Nerger, G.-L., Huynh, T. L. D., and Wang, M. (2021). Which industries benefited from Trump environmental policy news? Evidence from industrial stock market reactions. *Research in International Business and Finance*, 57(C).
- Olden, A. and Møen, J. (2022). The triple difference estimator. *The Econometrics Journal*, 25(3):531–553.
- Pastor, L. and Veronesi, P. (2012). Uncertainty about Government Policy and Stock Prices. *Journal of Finance*, 67(4):1219–1264.
- Pastor, L. and Veronesi, P. (2013). Political uncertainty and risk premia. *Journal of Financial Economics*, 110(3):520–545.
- Pastor, L. and Veronesi, P. (2017). Explaining the puzzle of high policy uncertainty and low market volatility. *VoxEu*.
- Ramelli, S., Wagner, A. F., Zeckhauser, R. J., and Ziegler, A. (2021). Investor rewards to climate responsibility: Stock-price responses to the opposite shocks of the 2016 and 2020 U.S. elections. *The Review of Corporate Finance Studies*, 10(4):748–787.

- Tsang, A., Wang, Y., Xiang, Y., and Yu, L. (2024). The rise of esg rating agencies and management of corporate esg violations. *Journal of Banking & Finance*, 169:107312.
- Wagner, A. F., Zeckhauser, R. J., and Ziegler, A. (2018). Company stock price reactions to the 2016 election shock: Trump, taxes, and trade. *Journal of Financial Economics*, 130(2):428–451.
- Wooldridge, J. (2007). What’s new in econometrics? Lecture 10 difference-in-differences estimation. *NBER Summer Institute*.
- Yu, Q., Hui, E. C.-M., and Shen, J. (2024). The real impacts of third-party certification on green bond issuances: Evidence from the chinese green bond market. *Journal of Corporate Finance*, 89:102694.
- Zaghini, A. (2024). Unconventional green. *Journal of Corporate Finance*, 85:102556.
- Zerbib, O. D. (2019). The effect of pro-environmental preferences on bond prices: Evidence from green bonds. *Journal of Banking and Finance*, 98:39–60.

Recent Issues

All CFS Working Papers are available at www.gfk-cfs.de.

No.	Authors	Title
741	Alessandro Moro, Andrea Zaghini	GREEN IS THE NEW BLACK
740	Janosch Brenzel-Weiss, Winfried Koeniger, Arnau Valladares-Esteban	Tax Incentives, Portfolio Choice, and Macroprudential Risks
739	Andreas Fuster, Virginia Gianinazzi, Andreas Hackethal, Philip Schnorpfeil, Michael Weber	The Response of Debtors to Rate Changes
738	Hans Gersbach, Hugo van Buggenum, Sebastian Zelzner	Stablecoins as Private Money: A Policy Agenda
737	Volker Brühl, Marie-Therèse Radetzky, Oscar A. Stolper	Shaping the Compass? How Sustainability Preference Elicitation Guides Investor Demand
736	Volker Brühl	Die regulatorische Komplexität des European Green Deal – zu viel zu schnell?
735	Felix Rossmann, Jan Greitens, and Lisa Knoll	SMEs within a data-driven sustainable finance framework: A European Survey
734	Volker Brühl	The regulatory complexity of the European Green Deal – too much too fast?
733	Alessandro Moro, Andrea Zaghini	Cui prodest? The heterogeneous impact of green bonds on companies' ESG score
732	Robert S. Chirinko	The 'Secret Sauce'?: Understanding The Success Of The State Bank Of North Dakota