

**Internet Appendix for**  
**“Climate Change and Corporate Cash Holdings: Global Evidence”**

December 2021

**Abstract**

In this internet appendix, we report the results of additional analyses to address omitted variable bias and improve causal interpretation of our results, including Oster (2019) test, a placebo test, and entropy balancing. We also provide the complete version of Tables 5, 6, 7, and 10 (panel B).

*JEL Classification: G15, G32, G38, Q54*

*Keywords: Climate change, corporate cash holdings, financial constraints*

## 1. Oster test for Omitted Variable Bias

There is a concern that our analysis may suffer from omitted variable bias. We use Oster (2019) test to address this issue. This test is widely used in the literature (Mian and Sufi, 2014; Smith, 2016; Heimer et al., 2019; Irani et al., 2021). Oster (2019) builds on Altonji et al. (2005) by using the stability of coefficients while accounting for the change in R-square when switching from uncontrolled to controlled regression. The intuition is that as the R-square increases when more controls are added but the coefficient of interest is fairly stable and not varying much, then it is expected that the inclusion of the unobservable variable(s) would not change it either. More formally, Oster (2019) method shows if selection on observed and unobserved controls is proportional, we can compute an identified set. This test then examines whether the identified set includes zero. If there is no zero in the constructed identifiable set, then the null that an omitted variable is driving the results is rejected.

We perform this test by computing the identified set as:  $[\tilde{\beta}, \beta^{*'}]$  where  $\beta^{*'}$  is obtained from the following the formula: 
$$\beta^{*' } = \tilde{\beta} - \delta[\hat{\beta} - \tilde{\beta}] \frac{R_{max} - \tilde{R}}{\tilde{R} - \hat{R}} \quad (1)$$

In Eq. (1),  $\tilde{\beta}$  and  $\tilde{R}$  are the coefficient estimated from our key independent variable (i.e., TREND) and the R-square value of our baseline regression with other controls, respectively.  $\hat{\beta}$  and  $\hat{R}$  are their counterparts from the regression without any control variables and fixed effects. Following Oster's (2019) suggestion about the appropriate upper bound, the value we choose for  $\delta$  is 1, which implies that any omitted variable must be at least as influential as the variables we include in the regression to set the research coefficient value in the identified set equal to zero.

We follow Mian and Sufi (2014) and set a conservative value of  $R_{max} = \min(2.2\tilde{R}, 1)$  as the upper Oster bound. The results are presented in Table A.1. It shows that our identified sets safely

exclude zero, indicating that the relationship between our TREND measure and cash holding is statistically unlikely to be confounded by omitted variable bias.

**Table A.1: Oster Test and Entropy Balancing**

<b>Tests for omitted variable bias using Oster (2019)</b>				
<i>Oster Condition</i>	<i>Variable of interest</i>	<i>Lower Bound</i>	<i>Upper Bound</i>	<i>Includes Zero?</i>
Assume $d=1$ ; $RMAX=\min(1.25\tilde{R},1)$	TREND	0.0254	0.0313	NO
Assume $d=1$ ; $RMAX=\min(1.5\tilde{R},1)$	TREND	0.0195	0.0313	NO
Assume $d=1$ ; $RMAX=\min(1.8\tilde{R},1)$	TREND	0.0125	0.0313	NO
Assume $d=1$ ; $RMAX=\min(2.2\tilde{R},1)$	TREND	0.0031	0.0313	NO

## **2. Placebo Test**

As our second step to alleviate omitted variable bias, we conduct a placebo test. We first divide our sample into quartiles based on TREND (for each country, as described in Section 4.1) and then conduct a placebo test by employing nearest neighbor propensity score matching. We match firms in top (Q4) and bottom (Q1). In both cases we match firms based on SIZE, MB, LEV, RD, CASH\_FLOW, NWC, CAPEX, ACQ, DIV\_DUM, IND\_SIGMA, and industry fixed effects. The key independent variable in this analysis is PLACEBO\_TREND. We construct this variable by replacing TREND values associated with firms in the top quartile, Q4, with TREND values associated with their matched firms in the bottom quartile, Q1. We use the original values of TREND for the firms in the bottom quartile, Q1. In other words, we replace the TREND exposure of a firm that is in the top quartile with the TREND of a matched firm in the bottom quartile.

If the effect of TREND on cash holdings merely reflects time trends in cash holdings driven by the omitted variables, we expect that PLACEBO\_TREND will continue to load positively and significantly. We report the results from this placebo test in Table A.2. The coefficient on PLACEBO\_TREND is small and insignificant coefficients in all specifications. We find similar

results when applying the same procedure to median instead of the top and bottom quartiles of TREND. Thus, our main findings survive the placebo test, mitigating the omitted variable bias.

**Table A.2: Placebo test using propensity score match**

VARIABLES	Top Quartile vs. Bottom Quartile		Above Median vs. Below Median	
	(1) CASH	(2) CASH	(3) CASH	(4) CASH
PLACEBO_TREND	0.001 (0.30)	-0.001 (-0.39)	0.002 (0.94)	-0.001 (-0.35)
SIZE	-0.004*** (-12.30)	-0.005*** (-12.61)	-0.004*** (-13.16)	-0.005*** (-13.46)
MB	0.004*** (12.06)	0.003*** (10.57)	0.004*** (15.50)	0.004*** (13.76)
LEV	-0.310*** (-84.04)	-0.309*** (-83.26)	-0.311*** (-92.89)	-0.311*** (-91.84)
RD	0.479*** (34.81)	0.488*** (35.00)	0.460*** (37.35)	0.471*** (37.61)
CASH_FLOW	-0.012*** (-3.88)	-0.008** (-2.53)	-0.011*** (-4.04)	-0.006** (-2.23)
NWC	-0.092*** (-27.73)	-0.094*** (-28.19)	-0.087*** (-30.38)	-0.090*** (-30.98)
CAPEX	-0.182*** (-28.68)	-0.184*** (-28.43)	-0.203*** (-35.44)	-0.197*** (-33.85)
ACQ	-0.280*** (-27.20)	-0.290*** (-27.87)	-0.286*** (-33.90)	-0.291*** (-34.02)
DIV_DUM	-0.013*** (-10.45)	-0.013*** (-10.31)	-0.013*** (-11.52)	-0.013*** (-11.38)
INDUSTRY_SIGMA	0.311*** (17.97)	0.325*** (17.89)	0.322*** (21.28)	0.317*** (20.18)
GDP_PERCAPITA		0.000*** (3.74)		0.000*** (6.33)
PRIVATECREDIT_GDP		0.000 (0.23)		0.000*** (3.01)
CPI		-0.026*** (-4.38)		-0.025*** (-4.58)
STOCKMARKET_CAP		0.000*** (11.87)		0.000*** (11.43)
CONSTANT	0.240*** (71.78)	0.195*** (15.82)	0.239*** (78.22)	0.168*** (15.17)
Obs.	191,832	188,366	384,966	373,344
Adj. R <sup>2</sup>	0.347	0.350	0.337	0.340
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes

### 3. Entropy Balancing Approach

We employ “entropy balancing” pioneered by Hainmueller (2012) as our next attempt to enhance the causal interpretation of our findings. This method is similar to the widely used Propensity Score Matching (PSM) technique that eliminates differences in observable covariates between treatment and control groups. This method, however, has several advantages over

traditional PSM, and it is increasingly used in the social science research (see, e.g., Amiram et al., 2017; Athey et al., 2017; Chapman and Green, 2018; McMullin and Schonberger, 2020; Levy, 2021; etc.). Most importantly, this method enables the researcher to achieve a high degree of covariate balance. It also retains valuable information in the preprocessed data by allowing the unit weights to vary smoothly across units.

We split our sample into two subsamples based on the median value of TREND for each country. Then, we set the high TREND group as the treatment group, and low TREND group as control. We report the multivariate regression results using the sample constructed by entropy balancing in Table A.3. Results closely mimic those of our baseline results. We report the proof of convergence in Table A.4.

**Table A.3: Entropy Balancing Approach**

	CASH	FCASH	ΔCASH
TREND	0.083*** (3.52)	0.068*** (2.64)	4.732*** (2.80)
SIZE	-0.005*** (-10.65)	-0.006*** (-11.03)	0.025 (0.78)
MB	0.003*** (6.36)	0.003*** (4.63)	-0.230*** (-3.63)
LEV	-0.303*** (-63.16)	-0.280*** (-55.52)	1.121 (1.50)
RD	0.503*** (23.16)	0.534*** (22.05)	4.903* (1.82)
CASH_FLOW	0.015*** (2.91)	0.017*** (2.89)	1.282 (1.17)
NWC	-0.102*** (-24.74)	-0.104*** (-22.89)	0.190 (0.56)
CAPEX	-0.235*** (-23.98)	-0.254*** (-24.58)	-1.091 (-0.99)
ACQ	-0.285*** (-19.96)	-0.284*** (-19.65)	-0.298 (-0.70)
DIV_DUM	-0.004*** (-2.60)	-0.005*** (-2.88)	0.003 (0.03)
INDUSTRY_SIGMA	0.331*** (15.08)	0.300*** (13.00)	-0.147 (-0.08)
GDP_PERCAPITA	0.000 (1.39)	0.000 (1.46)	-0.000*** (-6.77)
PRIVATECREDIT_GDP	0.000 (0.09)	0.000 (0.87)	-0.002 (-0.49)
CPI	-0.016** (-2.48)	-0.039*** (-5.16)	4.891*** (3.14)
STOCKMARKET_CAP	0.000*** (5.93)	0.000*** (5.30)	-0.004*** (-3.64)
CONSTANT	0.225*** (16.27)	0.237*** (16.10)	5.719*** (7.96)
Obs.	373,344	319,529	317,164
Adj. R <sup>2</sup>	0.331	0.294	0.014
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Country FE	Yes	Yes	Yes

**Table A.4: Proof of Entropy Convergence**

	TREATMENT			CONTROL		
	MEAN	VARIANCE	SKEWNESS	MEAN	VARIANCE	SKEWNESS
SIZE	7.706	9.73	-0.04127	5.646	9.492	0.585
MB	1.876	8.244	6.45	2.153	9.796	5.337
LEV	0.2366	0.04415	1.105	0.2395	0.05458	1.184
RD	0.02016	0.004182	5.642	0.03504	0.008515	3.769
CASH_FLOW	0.003612	0.07409	-7.019	-0.05849	0.1594	-4.409
NWC	-0.00212	0.07413	-3.253	0.009646	0.1064	-3.174
CAPEX	0.04901	0.004298	3.012	0.08051	0.009608	2.224
ACQ	0.005935	0.000656	5.837	0.01134	0.001323	4.017
DIV_DUM	0.49	0.2499	0.03993	0.358	0.2298	0.5925
INDUSTRY_SIGMA	0.05937	0.003244	2.186	0.09832	0.005117	1.194
GDP_PERCAPITA	32431	3.23E+08	-0.4827	35845	2.43E+08	-0.6965
PRIVATECREDIT_GDP	130.6	2143	-0.4015	120	1693	-0.4123
CPI	0.9405	0.01957	-1.59	0.8243	0.03389	0.4289
STOCKMARKET_CAP	78.77	1798	1.366	94.62	1142	-0.09903

**After Convergence**

	TREATMENT			CONTROL		
	MEAN	VARIANCE	SKEWNESS	MEAN	VARIANCE	SKEWNESS
SIZE	7.706	9.73	-0.04127	7.705	12.68	0.1877
MB	1.876	8.244	6.45	1.876	9.169	6.056
LEV	0.2366	0.04415	1.105	0.2366	0.04248	1.052
RD	0.02016	0.004182	5.642	0.02016	0.00439	5.377
CASH_FLOW	0.003612	0.07409	-7.019	0.003579	0.0815	-6.747
NWC	-0.00212	0.07413	-3.253	-0.00213	0.07794	-3.347
CAPEX	0.04901	0.004298	3.012	0.04902	0.003273	2.792
ACQ	0.005935	0.000656	5.837	0.005935	0.000525	5.782
DIV_DUM	0.49	0.2499	0.03993	0.49	0.2499	0.04005
INDUSTRY_SIGMA	0.05937	0.003244	2.186	0.05938	0.001921	1.883
GDP_PERCAPITA	32431	3.23E+08	-0.4827	32433	3.02E+08	-0.1843
PRIVATECREDIT_GDP	130.6	2143	-0.4015	130.6	2418	-0.2264
CPI	0.9405	0.01957	-1.59	0.9405	0.03672	2.91E-05
STOCKMARKET_CAP	78.77	1798	1.366	78.77	973.3	-0.05748

**Table A.5: Difference-in-Differences around Stern Review (Complete version of Table 5)**

	Panel A: Entire Sample								
	No Fixed Window			10 Years (2002-2011)			Excluding the Crisis Period		
	CASH	FCASH	ΔCash	CASH	FCASH	ΔCash	CASH	FCASH	ΔCash
TREND×STERN	0.041*** (5.34)	0.063*** (7.78)	6.062*** (6.00)	0.043*** (5.45)	0.057*** (6.83)	2.901*** (3.45)	0.089*** (8.90)	0.107*** (10.02)	7.487*** (5.08)
TREND	0.017 (1.24)	0.004 (0.29)	3.492** (2.28)	0.029 (1.48)	0.008 (0.41)	-3.206*** (-3.80)	-0.006 (-0.45)	-0.020 (-1.34)	3.133** (2.08)
STERN	-0.083*** (-12.23)	-0.074*** (-10.70)	0.845** (2.43)	0.010*** (3.29)	0.011*** (3.42)	0.657** (2.11)	-0.099*** (-13.15)	-0.090*** (-11.78)	0.793 (1.50)
SIZE	-0.005*** (-13.42)	-0.005*** (-13.67)	0.048** (2.02)	-0.007*** (-14.99)	-0.008*** (-15.38)	0.035 (1.07)	-0.004*** (-12.11)	-0.005*** (-12.77)	0.070** (2.54)
MB	0.004*** (13.87)	0.003*** (9.10)	-0.218*** (-4.84)	0.003*** (9.72)	0.003*** (6.35)	-0.100*** (-2.83)	0.004*** (14.26)	0.003*** (9.16)	-0.223*** (-4.55)
LEV	-0.311*** (-91.81)	-0.285*** (-78.60)	0.584** (2.51)	-0.316*** (-70.08)	-0.293*** (-62.84)	1.040** (2.12)	-0.310*** (-89.24)	-0.284*** (-75.34)	0.489** (2.03)
RD	0.471*** (37.62)	0.490*** (33.87)	1.933*** (2.75)	0.512*** (31.34)	0.538*** (28.56)	2.910** (2.28)	0.462*** (36.18)	0.480*** (32.25)	1.801** (2.44)
CASH_FLOW	-0.006** (-2.18)	-0.007** (-2.00)	0.220 (0.87)	-0.007** (-2.01)	-0.005 (-1.01)	1.189*** (3.28)	-0.003 (-0.96)	-0.006 (-1.58)	0.102 (0.36)
NWC	-0.090*** (-30.97)	-0.096*** (-28.06)	-0.067 (-0.47)	-0.073*** (-18.39)	-0.082*** (-17.87)	0.439* (1.68)	-0.095*** (-32.01)	-0.101*** (-28.71)	-0.110 (-0.75)
CAPEX	-0.197*** (-33.82)	-0.216*** (-33.56)	-0.851 (-1.17)	-0.213*** (-23.35)	-0.236*** (-24.20)	-2.834* (-1.76)	-0.196*** (-32.96)	-0.212*** (-31.69)	-0.972 (-1.17)
ACQ	-0.291*** (-34.01)	-0.281*** (-30.61)	-0.412** (-2.02)	-0.359*** (-28.29)	-0.333*** (-24.29)	-0.712*** (-3.08)	-0.284*** (-31.86)	-0.271*** (-28.15)	-0.577** (-2.47)
DIV_DUM	-0.013*** (-11.33)	-0.011*** (-9.49)	-0.056 (-0.64)	-0.009*** (-5.97)	-0.007*** (-4.75)	-0.152 (-1.48)	-0.014*** (-12.28)	-0.013*** (-10.51)	-0.083 (-0.83)
INDUSTRY_SIGMA	0.317*** (20.12)	0.308*** (18.10)	-0.708 (-1.06)	0.306*** (16.17)	0.302*** (14.81)	0.070 (0.09)	0.316*** (19.82)	0.304*** (17.70)	-0.409 (-0.52)
GDP_PERCAPITA	0.000*** (6.91)	0.000*** (7.35)	-0.000*** (-6.71)	0.000*** (2.65)	-0.000 (-1.63)	-0.000** (-2.49)	0.000*** (7.25)	0.000*** (7.74)	-0.000*** (-7.19)
PRIVATECREDIT_GDP	0.000*** (3.57)	0.000*** (3.00)	0.006* (1.67)	-0.000 (-0.21)	-0.000*** (-2.68)	0.008*** (2.65)	0.000* (1.79)	0.000** (2.15)	0.005 (1.18)
CPI	-0.008 (-1.31)	-0.015** (-2.27)	5.947*** (3.60)	-0.025** (-2.45)	-0.046*** (-4.36)	2.885** (2.56)	0.013* (1.90)	0.004 (0.46)	6.961*** (3.38)
STOCKMARKET_CAP	0.000*** (10.61)	0.000*** (8.36)	-0.003*** (-4.64)	0.000** (2.52)	0.000*** (3.98)	-0.007*** (-3.65)	0.000*** (9.93)	0.000*** (7.51)	-0.006*** (-4.75)
CONSTANT	0.151*** (9.78)	0.140*** (8.69)	7.030*** (6.52)	0.162*** (5.58)	0.294*** (9.83)	3.166 (1.30)	0.130*** (7.84)	0.120*** (6.97)	7.228*** (6.66)
Obs.	373,344	319,529	317,164	174,065	155,813	150,964	318,579	270,214	270,209
Adj. R <sup>2</sup>	0.340	0.300	0.015	0.353	0.333	0.007	0.338	0.294	0.017
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes



	Panel B: Excluding US								
	No Fixed Window			10 Years (2002-2011)			Excluding the Crisis Period		
	CASH	FCASH	ΔCash	CASH	FCASH	ΔCash	CASH	FCASH	ΔCash
TREND×STERN	0.037*** (4.54)	0.047*** (5.46)	6.084*** (6.01)	0.034*** (4.05)	0.045*** (5.07)	3.128*** (3.77)	0.096*** (8.62)	0.096*** (8.13)	7.640*** (5.04)
TREND	0.041*** (2.70)	0.034** (2.20)	3.323** (2.10)	0.081*** (4.04)	0.057*** (2.80)	-4.446*** (-4.59)	0.009 (0.54)	0.004 (0.23)	3.007* (1.91)
STERN	-0.060*** (-5.35)	-0.051*** (-4.80)	-0.029 (-0.06)	0.014*** (4.32)	0.017*** (4.94)	0.634* (1.86)	-0.082*** (-6.83)	-0.070*** (-6.19)	-0.162 (-0.24)
SIZE	-0.005*** (-13.62)	-0.005*** (-12.91)	0.096*** (2.66)	-0.008*** (-16.28)	-0.008*** (-15.30)	0.091** (2.00)	-0.005*** (-12.05)	-0.005*** (-11.65)	0.127*** (2.92)
MB	0.004*** (13.37)	0.004*** (11.04)	-0.301*** (-4.37)	0.005*** (11.05)	0.004*** (8.94)	-0.067** (-2.24)	0.004*** (13.35)	0.004*** (10.85)	-0.325*** (-4.19)
LEV	-0.292*** (-73.40)	-0.266*** (-64.42)	0.169 (0.97)	-0.306*** (-63.24)	-0.280*** (-56.46)	0.017 (0.08)	-0.289*** (-70.87)	-0.262*** (-61.65)	0.156 (0.74)
RD	0.434*** (20.80)	0.446*** (19.03)	1.329* (1.78)	0.454*** (18.45)	0.461*** (16.90)	0.977 (0.91)	0.433*** (19.75)	0.446*** (18.07)	1.524 (1.59)
CASH_FLOW	-0.050*** (-13.38)	-0.060*** (-13.02)	-0.151 (-0.48)	-0.045*** (-9.78)	-0.056*** (-9.86)	0.877** (2.12)	-0.048*** (-12.15)	-0.060*** (-11.92)	-0.219 (-0.56)
NWC	-0.087*** (-24.54)	-0.083*** (-21.32)	-0.229* (-1.84)	-0.076*** (-17.14)	-0.078*** (-16.21)	0.180 (1.50)	-0.091*** (-24.91)	-0.086*** (-21.58)	-0.205 (-1.43)
CAPEX	-0.159*** (-21.76)	-0.176*** (-23.08)	-0.799 (-0.82)	-0.161*** (-16.80)	-0.183*** (-18.31)	-2.140* (-1.66)	-0.158*** (-20.99)	-0.171*** (-21.52)	-0.921 (-0.78)
ACQ	-0.246*** (-20.04)	-0.224*** (-16.72)	0.291 (0.72)	-0.278*** (-17.65)	-0.255*** (-14.88)	-0.126 (-0.53)	-0.242*** (-18.27)	-0.209*** (-13.98)	0.190 (0.37)
DIV_DUM	-0.000 (-0.31)	-0.000 (-0.26)	-0.100 (-0.81)	0.001 (0.84)	0.002 (1.30)	-0.270** (-1.99)	-0.001 (-0.95)	-0.002 (-1.27)	-0.144 (-1.01)
INDUSTRY_SIGMA	0.202*** (12.38)	0.197*** (11.41)	-0.328 (-0.44)	0.165*** (8.30)	0.153*** (7.26)	0.540 (0.76)	0.210*** (12.46)	0.198*** (11.18)	-0.315 (-0.34)
GDP_PERCAPITA	0.000*** (3.35)	0.000*** (2.80)	-0.000*** (-6.60)	0.000 (0.84)	-0.000*** (-3.19)	-0.000** (-2.09)	0.000*** (3.80)	0.000*** (3.34)	-0.000*** (-7.01)
PRIVATECREDIT_GDP	0.000 (1.51)	-0.000 (-0.15)	0.008** (2.49)	-0.000 (-1.40)	-0.000*** (-4.20)	0.011*** (3.48)	0.000 (0.47)	-0.000 (-0.04)	0.006 (1.61)
CPI	-0.010 (-1.60)	-0.023*** (-3.35)	6.140*** (3.74)	-0.028*** (-2.77)	-0.048*** (-4.60)	3.518*** (2.95)	0.016** (2.17)	-0.001 (-0.10)	7.194*** (3.51)
STOCKMARKET_CAP	0.000*** (7.05)	0.000*** (4.25)	-0.006*** (-5.48)	0.000** (2.53)	0.000*** (3.39)	-0.010*** (-3.71)	0.000*** (6.99)	0.000*** (4.00)	-0.008*** (-6.29)
CONSTANT	0.190*** (9.97)	0.212*** (10.99)	7.007*** (5.83)	0.229*** (7.33)	0.362*** (11.26)	0.077 (0.04)	0.161*** (7.93)	0.185*** (8.97)	7.372*** (5.86)
Obs.	248,612	213,995	211,630	134,295	121,707	115,400	205,136	174,468	174,721
Adj. R <sup>2</sup>	0.310	0.286	0.018	0.327	0.302	0.007	0.307	0.281	0.021
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

**Table A.6: Financially constrained vs. unconstrained firms after Stern Review (Complete version of Table 6)**

	Panel A: Entire Sample					
	KZ Index		WW Index		SA Index	
	Constrained	Unconstrained	Constrained	Unconstrained	Constrained	Unconstrained
TREND×STERN	9.655*** (4.83)	0.784* (1.87)	58.201*** (7.03)	0.008 (1.52)	11.109*** (2.81)	1.772*** (4.00)
TREND	14.946*** (2.78)	0.015 (0.06)	16.307* (1.76)	-0.003 (-0.22)	-1.785* (-1.70)	-0.596* (-1.76)
STERN	1.321** (2.24)	0.412 (1.33)	-1.790 (-0.30)	0.015** (2.52)	3.518** (2.02)	0.898*** (3.61)
SIZE	0.035 (0.53)	0.034* (1.87)	-0.928*** (-5.67)	-0.000 (-0.53)	-0.017 (-0.48)	0.180*** (2.82)
MB	-0.229*** (-4.65)	0.017*** (5.35)	-0.348*** (-3.06)	-0.002 (-0.66)	-0.095*** (-3.03)	-0.087 (-1.31)
LEV	1.468** (2.25)	0.262*** (3.47)	1.066*** (3.43)	-0.015*** (-6.14)	1.588** (2.54)	-0.199 (-1.58)
RD	3.415** (2.27)	-0.081 (-1.32)	0.704 (1.32)	-0.023 (-1.29)	2.137** (2.28)	-1.046 (-1.48)
CASH_FLOW	0.040 (0.10)	0.361*** (5.09)	0.507* (1.79)	0.135*** (9.07)	0.878*** (4.74)	-0.007 (-0.03)
NWC	0.212 (0.71)	-0.012 (-0.30)	0.087 (0.43)	-0.033*** (-14.24)	0.537** (1.97)	0.140 (1.14)
CAPEX	-1.924 (-1.05)	-0.015 (-0.11)	-1.333 (-0.82)	-0.114*** (-9.76)	-2.072 (-1.40)	-1.215 (-1.45)
ACQ	0.969** (1.99)	-0.714*** (-7.34)	3.420*** (3.06)	-0.177*** (-14.81)	-0.599** (-2.13)	0.292 (1.40)
DIV_DUM	-0.357 (-1.43)	-0.121** (-2.11)	-2.235*** (-4.85)	0.006*** (4.96)	-0.292* (-1.71)	-0.299*** (-2.66)
INDUSTRY_SIGMA	-1.802 (-0.83)	-0.043 (-0.49)	-3.337** (-1.99)	-0.002 (-0.18)	-0.080 (-0.08)	0.726** (2.21)
GDP_PERCAPITA	-0.001*** (-5.61)	-0.000 (-1.58)	-0.002*** (-6.17)	-0.000*** (-7.73)	-0.000*** (-2.72)	-0.000*** (-4.21)
PRIVATECREDIT_GDP	-0.010 (-1.05)	0.004* (1.88)	-0.057** (-2.24)	0.000*** (4.01)	0.005** (1.99)	0.008** (2.55)
CPI	13.653*** (3.33)	0.236 (1.45)	82.866*** (3.84)	-0.037*** (-5.07)	2.805** (2.16)	1.460* (1.91)
STOCKMARKET_CAP	-0.004** (-2.24)	-0.001 (-1.56)	-0.041*** (-4.05)	0.000*** (3.79)	-0.007** (-2.53)	-0.001 (-1.22)
CONSTANT	15.133*** (5.99)	1.423 (1.53)	44.476*** (6.25)	0.096*** (10.86)	5.836 (1.57)	3.652*** (4.04)
Obs.	95,947	94,623	87,042	94,362	84,005	108,091
Adj. R <sup>2</sup>	0.019	0.005	0.123	0.028	0.012	0.014
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
$\chi^2$ test of coefficient difference	17.03		53.14		5.40	
p-value of $\chi^2$ test	0.000		0.000		0.020	

	Panel B: Excluding US					
	KZ Index		WW Index		SA Index	
	Constrained	Unconstrained	Constrained	Unconstrained	Constrained	Unconstrained
TREND×STERN	10.898*** (4.79)	0.711* (1.85)	51.253*** (7.20)	0.005 (0.81)	11.643*** (2.93)	1.066*** (2.70)
TREND	12.636*** (2.60)	0.130 (0.36)	26.990** (2.15)	-0.002 (-0.12)	-2.951** (-2.03)	-0.000 (-0.00)
STERN	-1.563 (-1.33)	0.289 (1.14)	-7.797 (-1.23)	0.014* (1.87)	2.043 (1.36)	1.030*** (3.37)
SIZE	0.109 (1.03)	0.053* (1.81)	-1.771*** (-5.84)	-0.000 (-0.44)	0.039 (0.90)	0.251*** (2.80)
MB	-0.300*** (-4.10)	0.016*** (2.98)	-0.694*** (-2.89)	-0.003 (-0.81)	-0.092*** (-2.64)	-0.099 (-1.28)
LEV	0.475 (0.96)	0.270** (2.12)	2.373*** (3.12)	-0.015*** (-5.74)	0.432 (1.33)	-0.338* (-1.67)
RD	0.589 (0.48)	-0.156* (-1.71)	0.341 (0.22)	-0.033* (-1.88)	0.708 (0.72)	-2.447** (-2.19)
CASH_FLOW	-0.858** (-2.20)	0.132*** (2.95)	1.177* (1.91)	0.145*** (8.43)	0.682*** (3.39)	-0.164 (-0.52)
NWC	-0.235 (-1.16)	0.032 (0.49)	-0.243 (-0.47)	-0.034*** (-13.51)	0.274** (2.10)	0.100 (0.65)
CAPEX	-1.725 (-0.70)	0.213 (0.84)	-4.399 (-1.19)	-0.122*** (-8.54)	-2.108 (-1.34)	-2.126 (-1.30)
ACQ	3.111*** (2.98)	-0.669*** (-4.53)	6.341*** (2.70)	-0.156*** (-8.56)	-0.638 (-1.40)	1.422** (2.27)
DIV_DUM	-0.483 (-1.52)	-0.124 (-1.44)	-2.674*** (-3.97)	0.008*** (5.37)	-0.449* (-1.87)	-0.412*** (-2.78)
INDUSTRY_SIGMA	-1.016 (-0.42)	0.042 (0.36)	-6.434*** (-2.67)	-0.005 (-0.33)	0.114 (0.11)	1.549** (2.05)
GDP_PERCAPITA	-0.001*** (-5.55)	-0.000 (-1.55)	-0.002*** (-5.96)	-0.000*** (-7.06)	-0.000*** (-2.58)	-0.000*** (-4.11)
PRIVATECREDIT_GDP	-0.001 (-0.14)	0.004* (1.91)	-0.079*** (-2.72)	0.000*** (3.83)	0.006** (2.30)	0.008** (2.57)
CPI	14.257*** (3.43)	0.343 (1.64)	89.176*** (4.05)	-0.038*** (-5.17)	4.078*** (3.22)	1.402* (1.89)
STOCKMARKET_CAP	-0.004* (-1.71)	-0.002 (-1.60)	-0.057*** (-5.15)	0.000*** (3.02)	-0.013*** (-3.04)	-0.005*** (-2.71)
CONSTANT	14.327*** (5.57)	1.458 (1.41)	52.419*** (5.97)	0.099*** (8.89)	4.781 (1.10)	3.905*** (3.18)
Obs.	63,842	63,575	42,714	83,232	45,835	77,024
Adj. R <sup>2</sup>	0.028	0.005	0.138	0.028	0.019	0.015
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
$\chi^2$ test of coefficient difference		17.72		56.96		6.90
p-value of $\chi^2$ test		0.000		0.000		0.008

**Table A.7: Environmental Litigation and Regulations (Complete version of Table 7)**

	Litigation Risk				Stringency of Environmental Regulation			
	Entire Sample		Excluding US		Entire Sample		Excluding US	
	High	Low	High	Low	Stringent	Lax	Stringent	Lax
TREND×STERN	0.111*** (6.05)	0.010 (1.23)	0.114*** (5.69)	0.013 (1.51)	0.089*** (2.84)	0.014 (0.83)	0.089*** (2.84)	0.012 (0.72)
TREND	0.130*** (3.71)	0.014 (0.98)	0.168*** (4.18)	0.021 (1.33)	0.114** (2.27)	0.063* (1.89)	0.114** (2.27)	0.071** (2.00)
STERN	-0.080*** (-5.03)	-0.075*** (-10.36)	-0.049* (-1.88)	-0.062*** (-5.06)	-0.020 (-1.47)	0.088*** (5.70)	-0.020 (-1.47)	0.099*** (6.36)
SIZE	-0.001 (-0.98)	-0.006*** (-16.92)	-0.006*** (-6.54)	-0.005*** (-12.21)	-0.007*** (-10.66)	-0.004*** (-7.59)	-0.007*** (-10.66)	-0.004*** (-5.38)
MB	0.004*** (8.79)	0.003*** (10.81)	0.006*** (8.47)	0.004*** (10.23)	0.006*** (8.36)	0.003*** (6.39)	0.006*** (8.36)	0.003*** (5.79)
LEV	-0.382*** (-52.25)	-0.275*** (-72.99)	-0.392*** (-40.90)	-0.260*** (-60.91)	-0.309*** (-43.73)	-0.278*** (-51.29)	-0.309*** (-43.73)	-0.259*** (-42.20)
RD	0.449*** (28.86)	0.245*** (11.59)	0.414*** (16.16)	0.233*** (6.87)	0.436*** (13.33)	0.515*** (20.22)	0.436*** (13.33)	0.437*** (10.09)
CASH_FLOW	0.018*** (3.85)	-0.029*** (-9.17)	-0.017** (-2.42)	-0.065*** (-15.10)	-0.060*** (-9.27)	-0.001 (-0.27)	-0.060*** (-9.27)	-0.012* (-1.84)
NWC	-0.105*** (-17.94)	-0.080*** (-24.42)	-0.125*** (-14.94)	-0.077*** (-20.17)	-0.110*** (-15.47)	-0.083*** (-17.45)	-0.110*** (-15.47)	-0.076*** (-14.47)
CAPEX	-0.309*** (-24.36)	-0.157*** (-24.51)	-0.262*** (-14.96)	-0.136*** (-17.17)	-0.255*** (-16.01)	-0.132*** (-14.22)	-0.255*** (-16.01)	-0.102*** (-10.27)
ACQ	-0.433*** (-22.89)	-0.240*** (-26.65)	-0.360*** (-13.14)	-0.206*** (-16.05)	-0.245*** (-11.19)	-0.288*** (-15.62)	-0.245*** (-11.19)	-0.180*** (-7.74)
DIV_DUM	-0.020*** (-7.11)	-0.005*** (-3.76)	-0.005* (-1.68)	0.004*** (3.10)	-0.005** (-2.54)	0.008*** (4.68)	-0.005** (-2.54)	0.016*** (8.10)
INDUSTRY_SIGMA	0.404*** (11.77)	0.206*** (12.13)	0.174*** (4.67)	0.179*** (10.12)	0.126*** (4.20)	0.253*** (9.80)	0.126*** (4.20)	0.164*** (5.73)
GDP_PERCAPITA	0.000** (2.15)	0.000*** (6.58)	0.000 (0.72)	0.000*** (3.86)	-0.000** (-2.16)	-0.000 (-0.16)	-0.000** (-2.16)	0.000 (0.29)
PRIVATECREDIT_GDP	-0.000 (-0.33)	0.000*** (4.58)	-0.000 (-0.62)	0.000*** (2.63)	-0.000*** (-4.35)	0.000*** (4.78)	-0.000*** (-4.35)	0.000*** (4.88)
CPI	0.010 (0.66)	-0.017*** (-2.69)	-0.004 (-0.23)	-0.014** (-2.13)	0.004 (0.14)	-0.124*** (-9.35)	0.004 (0.14)	-0.119*** (-8.91)
STOCKMARKET_CAP	0.000*** (5.09)	0.000*** (7.86)	0.000*** (2.88)	0.000*** (6.16)	0.000*** (7.27)	0.000*** (4.58)	0.000*** (7.27)	0.000*** (4.16)
CONSTANT	0.251*** (8.24)	0.166*** (10.29)	0.318*** (7.83)	0.175*** (8.75)	0.378*** (9.02)	0.206*** (6.60)	0.378*** (9.02)	0.173*** (5.33)
Obs.	98,210	275,134	56,666	191,946	61,564	84,737	61,564	72,286
Adj. R <sup>2</sup>	0.390	0.277	0.349	0.272	0.322	0.331	0.322	0.309
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$\chi^2$ test of coefficient difference	52.10		44.08		7.53		7.91	
p-value of $\chi^2$ test	0.000		0.000		0.006		0.005	

**Table A.8: Cash Flow Risk (Complete version of Table 10 – Panel B)**

<b>Excluding US</b>	(1)	(2)	(3)	(4)	(5)	(6)
	STDERN3	STDERN5	STDROA3	STDROA5	STDCF3	STDCF5
TREND	0.246*** (4.62)	0.336*** (4.14)	0.249*** (4.70)	0.340*** (4.19)	0.061*** (6.20)	0.082*** (6.71)
CASH_FLOW	-0.852*** (-5.58)	-0.982*** (-5.95)	-0.847*** (-5.55)	-0.977*** (-5.91)		
SIZE	-0.016*** (-4.07)	-0.029*** (-4.49)	-0.016*** (-4.07)	-0.029*** (-4.48)	-0.014*** (-41.25)	-0.017*** (-39.29)
FIRM AGE	0.000 (0.21)	0.001 (0.40)	0.000 (0.20)	0.001 (0.37)	0.000** (2.50)	0.001*** (4.74)
MB	0.052*** (5.04)	0.058*** (4.84)	0.051*** (5.01)	0.058*** (4.82)	0.008*** (16.87)	0.009*** (17.68)
LEV	0.061 (1.22)	0.088 (1.43)	0.060 (1.20)	0.088 (1.42)	0.038*** (14.35)	0.038*** (12.70)
CAPEX	-0.111 (-1.27)	-0.034 (-0.16)	-0.105 (-1.20)	-0.027 (-0.13)	-0.016* (-1.95)	-0.010 (-1.10)
GDP_PERCAPITA	0.000 (0.04)	-0.000 (-0.24)	0.000 (0.10)	-0.000 (-0.21)	0.000*** (4.84)	0.000*** (7.42)
PRIVATECREDIT_GDP	0.000 (0.41)	0.001 (1.49)	0.000 (0.43)	0.001 (1.51)	0.000*** (2.58)	0.000*** (4.84)
CPI	-0.034 (-1.50)	-0.050 (-1.19)	-0.033 (-1.44)	-0.048 (-1.16)	-0.018*** (-5.06)	-0.015*** (-3.78)
STOCKMARKET_CAP	-0.000*** (-2.91)	-0.001*** (-3.34)	-0.000*** (-3.17)	-0.001*** (-3.48)	-0.000*** (-3.77)	-0.000*** (-4.62)
CONSTANT	0.019 (0.26)	-0.029 (-0.23)	0.017 (0.24)	-0.034 (-0.26)	0.072*** (6.00)	0.048*** (3.25)
Obs.	201,274	205,360	201,133	205,227	201,274	205,360
Adj. R <sup>2</sup>	0.034	0.030	0.034	0.030	0.181	0.221
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes

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