Greenhouse Gases, Banking Stability, and Financial Development: Could Global Economy Achieve Climate Resilience?

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Abstract:

For the first time, the study quantifies the impacts of greenhouse gas (GHG) emissions on global banking stability for 174 economies over the past decades. Long-term GHG exposure decreases banking stability with a persistent decrease in Z-Score and liquidity. Systemic risks are transmitted to global financial development making financial institutions and markets vulnerable to climate risks. Sovereign ESG factors support commercial banks secure ample financial stability by decreasing systemic risks with higher renewable energy consumption (REC). In the era of global warming, REC plays a dominant role over conventional determinants of global banking stability. Economies with higher green outputs could achieve climate resilience with a decreased probability of GHG exposure affecting the financial stability of commercial banking systems. Our study implies the long-term consequences of GHG exposures with associated risks imposed on broad-based financial development, commercial banks, and the wider economy. Highlighting the roles of sovereign ESG factors, our findings offer critical policy implications for green growth and inclusive development through stabilized banking systems.

Keywords: Greenhouse gas, banking stability, climate resilience, financial development, sovereign ESG, bank liquidity.

JEL codes: G1, G2, G21, Q5,

1. Introduction:

How could the global economy achieve climate resilience when financial systems are sensitive to climate risk drivers?[2] This study provides global evidence of the effects of greenhouse gas emissions [hereafter, GHG] on banking stability and global financial development [GFD]. At first glance, we examine the long-term nexuses between GHG and banking stability with consequential outcomes to GFD. We then investigate mechanisms for which our global economy could secure ample banking stability through the lens of its environment, social, and governance [hereafter, sovereign ESG]. The study explores how the treatment effects of GHG on banking stability are transmitted to GFD with the importance of green growth in mitigating such treatment effects. For our empirical purposes, we employ global panel data constituted by 174 economies with their associated commercial banking systems from 1996 to 2019[3]. For each sample country, data on commercial banks are consolidated from Bank Scope (2000-14), Orbis (2015-21), and Bureau van Dijk (BvD) toward the global financial development database.

Our broad findings show that long-term GHG exposure is adversely associated with banking stability with a persistent predicted decrease in bank Z-SCORE. GHG also adversely affects bank liquidity with a predicted decrease in bank liquid assets [LIQ]. The long-term and severe treatment effects of GHG on banking stability are robust when we control for bank-related factors (e.g., credit, capital, liquidity) and time-varying macroeconomic determinants (e.g., GDP growth, money supply, capital flow, inflation). Treatment effects of GHG on banking stability transmitted to the wider economy via a degraded development of GFD including financial

[2] Climate Change, Central Banks and Financial Risk – IMF F&D | DECEMBER 2019; Climate-related Risks - Financial Stability Board (fsb.org); Climate risks: 3 strategies for financial institutions | World Economic Forum (weforum.org)

[3] The common period after matching diverse sets of data archives excluding the COVID-19 pandemic.

institutions (FI) and markets (FM). The treatment effects of GHG exposure led to a predicted decrease in bank credit to the private sector as a percent of GDP, pension fund assets to GDP, and lower accessibility to bank branches and ATMs per 100,000 adults (Appendix A2). The efficiency of financial institutions is also adversely affected by predicted interest margin, spread, non-interest income, overhead costs, and bank returns. For the development of financial markets, we find a positive treatment effect of GHG on financial market access (FMA) that indicates a predicted increase in market capitalization outside of the largest companies with higher debt issuance per 100,000 adults (foreign and domestic, financial, and non-financial corporations). Under GHG exposure, we observe a predicted decrease in the efficiency of financial markets [FME] with degraded stock market turnover ratio, the fraction of stock traded to market capitalization worldwide.

Even though the roles of GFD and world governance indicators [hereafter, WGIs] are inevitable, such mechanisms toward ample banking stability are conditional on sovereign ESG with the important contribution of renewable energy consumption [hereafter, REC]. The roles of REC are persistent when we control for the heterogeneity of banking systems including bank capital and liquidity. Along with REC, bank liquidity securing baking stability is conditional on diverse metrics of WGIs and GFD. Emerging markets [EM] and lower-income countries [LICs] are sensitive to the treatment effects of GHG on banking stability. The treatment effects of GHG exposure are pronounced for regional economies including Africa, Asia and Pacific, the Middle East, Central Asia, and the Western Hemisphere. Under the treatment effects of GHG exposure, we observe relatively high liquidity reserved by global banking systems to hedge GHG-induced climate risks. The treatment effects of GHG exposure on global banking stability become insignificant. Higher bank capital and sufficient liquidity play important roles in hedging GHG exposures with escalating and

unpredictable climate risk drivers. We find that green GDP significantly mitigate the probability of treatment effects of GHG on global banking stability.

The study contributes to related strands of literature on emissions, climate risk drivers and consequential outcomes to banking systems. Under the carbon pricing policy, banks might adjust their credit supply policy to GHG-emitting firms (Ivanov et al., 2023). Emitting firms could face shorter maturities for their loan terms and stringent bank financing with higher interest rates. Such transition risks due to GHG exposure might induce a higher probability of lending syndicates by shadow banks. Banks might adjust credit supply and pricing policy in the global syndicated loan market in response to climate transition risk (Bruno & Lombini, 2023). The study documents non-linear patterns between lending and carbon emissions. Our findings support prior studies by showing that, since the Paris Agreement, banking systems have somehow secured ample financial stability with increasing awareness about climate risks. Banks exposed to GHG might adjust lending policies away from climate-sensitive sectors (Miguel et al., 2024) with higher capital requirements in Brazil. Reghezza et al. (2022) provide evidence on credit adjustments by European banks under climate transition risks. Our study complements why local banks respond to natural disasters (Do et al., 2023) by showing the long-lasting subsequential impacts of GHG exposure on banking stability. Our global evidence shows that banking systems are not just prone to sudden climate events, but global financial stability is chronically vulnerable to climate risk drivers due to GHG concentration. While prior literature focuses on bank endogenous emissions (Ali et al., 2023), our global evidence on GHG exposure covers the most extensive coverages of types of gases with multidecade impacts of banking stability quantified in this study[4]. While prior literature focuses on climate-related risks,

[4] Greenhouse gas | Definition, Emissions, & Greenhouse Effect | Britannica; What is the greenhouse effect? - NASA Science; 5 things you should know about the greenhouse gases warming the planet | UN News

consequences, and responses of banks (Berlin et al., 2024; Bruno & Lombini, 2023; Chabot & Bertrand, 2023; Chen et al., 2021; Cludius & Betz, 2020; Cullen, 2023; Garcia-Villegas & Martorell, 2024; Herbohn et al., 2019; Ho & Wong, 2023; Huang et al., 2021; Kollenberg & Taschini, 2019; Laeven & Popov, 2023; Lintunen & Kuusela, 2018; Wu et al., 2024; Xing et al., 2022), our current study presents the long-term and systemic impacts of GHG exposure on global banking stability. Using GHG emissions, we argue the financial stability of banking systems has been systematically prone to climate physical and transition risk drivers.

While bank liquidity is critical to economic output (Berger & Sedunov, 2017), we find that GHG exposure induces a decrease in bank liquidity [hereafter, LIQ]. With billion-dollar natural disasters, our findings highlight incrementally severe and long-term impacts of GHG exposure on global banking stability. Such systemic risks could be imperfectly hedged by our banking systems for the following reasons. First, reducing emissions is our global effort. Second, physical risks emerge more frequently after many years of gases emitted into our global atmosphere[5]. Third, transition risks for mitigating GHG exposure might be long-lagged and come after severe and more frequent climate physical risks[6]. Consequently, long-term GHG exposure could impose liquidity risks on banking systems that matter to bank liquidity creation (Acharya & Thakor, 2016; Beck et al., 2023; Chatterjee, 2018; Davydov et al., 2021; Jiang et al., 2019; Wagner, 2007). Using new broad-based measures (Katsiaryna Svirydzenka, 2016), the study documents the adverse treatment effects of GHG exposure on GFD with a persistent decrease in the development of financial institutions [FI] and markets [FM] with their depth, access, and

[5] Natural disaster | Causes, Types, & Facts | Britannica; How do greenhouse gases actually warm the planet? (unep.org); The History of Carbon Dioxide Emissions | World Resources Institute (wri.org); How climate change worsens heatwaves, droughts, wildfires and floods (bbc.com)

[6] Climate policy success depends on transition risk mitigation | World Economic Forum (weforum.org); Assessing climate transition risk: methodologies and roles for financial institutions – United Nations Environment – Finance Initiative (unepfi.org)

efficiency [FID, FIA, FIE and FMD, FMA, FME]. The banking instability and liquidity risks of commercial banking systems explain the transmission effects of GFD caused by long-term GHG exposure and associated risks.

Multidimensional financial development and sound governance metrics present inevitable mechanisms for maintaining ample banking stability but are conditional on renewable energy consumption [hereafter, REC]. The importance of REC for the global economy achieving climate resilience is validated with different levels of bank capital and liquidity. More importantly, REC supports GFD with the involvement of FI and FM in securing ample banking stability toward climate resilience. While world governance indicators [hereafter, WGIs] present relatively weak roles, REC presents its inevitable role in maintaining global banking stability under GHG exposure. The findings are robust even when we control for bank-related variables, GFD, and governance metrics. The study implies the critical roles of sovereign environment, social and governance [ESG] in global banking stability toward climate resilience. Our study implies that REC could support the global economy in achieving green growth through stabilized banking systems under GHG exposure.

While prior studies focus on finance-growth nexuses and institutional quality (Demetriades et al., 2024; Herwartz & Walle, 2014; Law et al., 2013), REC could promote green finance by transmitting its contributions from stabilized banking systems to the wider economy to be resilient from climate risk drivers. Under global GHG exposure with its systemic risks and complex drivers, the roles of REC could be strategically adapted to banks' policies that are responsive to climate risks. Besides GFD and WGIs, we find critical contributions of REC to global banking stability toward climate resilience and growth. Our further analyses show that green GDP growth is associated with a lower significant probability that banking systems are

exposed to the impacts of GHG exposure. Our study complements prior literature on banking stability for which the global economy could achieve climate resilience by focusing on sovereign ESG perspectives in dealing with GHG exposure (Chiaramonte et al., 2022). Our evidence goes beyond conventional determinants of global banking stability (Ahamed & Mallick, 2019; Ali et al., 2023; Bai & Elyasiani, 2013; Chatterjee, 2018; Davydov et al., 2021; Garcia-Villegas & Martorell, 2024; Goetz, 2018; Jokipii & Monnin, 2013; Kiema & Jokivuolle, 2014; Koetter & Poghosyan, 2010; Kollenberg & Taschini, 2019; Lagoarde-Segot & Leoni, 2013; Shim, 2019; Silva Buston, 2016; Trinh & Tran, 2024; Wagner, 2007). More importantly, our evidence implies that GFD (e.g., financial institutions and markets), governance (e.g., corruption, political stability, governance effectiveness, etc.) and bank policies (e.g., capital, liquidity) are strengthened and conditional on the levels of renewable energy consumed by the global economy. Under GHG exposure, the study implies the critical roles of sovereign ESG in stabilizing global financial systems with ample banking stability toward inclusive growth. To cope with climate risk drivers caused by long-term GHG emissions, the roles of REC could go beyond conventional determinants of banking stability documented in prior literature

2. Data

2.1.Commercial Banking Systems

The study extracts data from multiple sources. Data on commercial banking systems are extracted from the Global Financial Development Database with data archives consolidated from the Bank Scope (2000-14), Orbis (2015-21), and Bureau van Dijk (BvD). The GFDD provides an extensive dataset of the characteristics of financial systems across 203 economies. The data coverage includes 4-layer metric measurements including i) the size of financial institutions [FI] and markets [FM] to capture their financial depth, ii) the degree to which people located in a

country could use financial services offered by its banking systems (accessibility), iii) the efficiency of financial institutions and markets in intermediating capitals and facilitating financial services with transactions needed (efficiency), and iv) the stability of financial institutions and markets. Čihák et al. (2012) describe the GFDD database with detailed discussions of related literature.

2.2. Sovereign ESG Data

The study extracts data on emissions, pollution, climate resilience, and other environment-related metrics from the sovereign environment, social, and governance [ESG] database of the World Bank. Our study focuses on the Environment [E] pillar that measures the sustainability of economic performance along with natural capital, climate-related risks, resilience, and diverse natural hazards of our sample economies. The database does cover energy use & security metrics covering renewable energy consumption [REC] that we focus on for the current study. In other words, we specifically focus on the environmental externalities caused by a country's economic activity with its internalization. The sovereign ESG database with our focus on the environment also accounts for sustainable energy accessibility and food security, critical determinants for the long-term sustainable economic growth of our global economy.

2.3. Global Financial Development

Distinguished from numerous prior literature on capturing financial development using single proxies either stock market capitalization to GDP or private credit to GDP ratio. We multidimensionally capture the complex nature of a country's financial development [FD] by using the new broad-based FD database of Katsiaryna Svirydzenka (2016). The study provides a comprehensive set of nine indices capturing how developed financial institutions [FI] and

financial markets [FI] in the forms of their depth [FID, FMD], access [FIA, FMA], and efficiency [FIE, FME]. These sub-FD indices are aggregated into an overall financial development index. The FD database covers 183 countries from 1980 onward on an annual basis, see methodology discussion paper by Sahay et al. (2015).

2.4.World Governance Indicators

For capturing comprehensive patterns in terms of governance, the study extracts data from the World Governance Indicators database [WGI] of the World Bank Kaufmann and Kraay (2023). The database offers six aggregate governance indicators including i) Voice and Accountability, ii) Political Stability and, Absence of Violence/Terrorism, iii) Government Effectiveness, iv) Regulatory Quality, v) Rule of Law, and vi) Control of Corruption estimates. The WGI database by Kaufmann and Kraay (2023) allows the study to capture six broad dimensions of world governance with a coverage of 200 countries and territories ranging from 1996 to 202. Regarding the methodology and analytical elaborations by Kaufmann et al. (2010), the WGI database offers meaningful comparisons across our sample countries over time.

2.5.World Development Indicators

The study collects data on GDP growth, inflation, broad money, and FDI net inflow from the World Development Indicators database of the World Bank (WDI-WB, 2023). The database is a compilation of internationally comparable and high-quality statistics about global development indicators. It covers 1,400 time series indicators across 217 economies, and 40 country groups, with data series dating from 1960 onward[7]. Regarding the World Bank[8], the WDI database represents the primary consolidation of development indicators which are compiled from

[7] See, WDI - Home (worldbank.org)
[8] Last Updated: 06/28/2024 World Development Indicators | Databank (worldbank.org)

internationally recognized official data sources. The WDI database represents the most accurate and current global development data available for economies across regions with global estimates.

3. Methodology

The study employs multivariate linear regression models to investigate the relation between greenhouse gas emissions [GHG] and banking stability [measured by Z-Score] with two-way and three-way interaction terms for capturing the moderation of selected variables hypothesized. After quantifying the impacts of GHG on banking stability with moderators. The study employs the regressions of a treatment dummy to stimulate the consequences and response of treated banking systems to the adverse impacts of GHG exposure on financial stability.

In the spirit of multivariable regressions, our regression models using the treatment dummy as the main independent variable also interacted with our moderating variables used in the multivariate regressions. While multivariate regressions allow us to formulate the baseline nexuses between Z-Score and GHG with control variables, the treatment models with difference-in-differences [DID] and DID in differences [DDD] capture the consequences of GHG exposure and predicted responses of banking systems toward climate resilience with our tested moderating channels. Furthermore, the regressions with the treatment dummy could validate our multivariable regressions with even strengthened roles of our moderating variables. For robustness tests, we also employ the treatment dummy as the dependent variable regressed on different types of emissions and climate-related risk drivers and diverse moderators. Our methodologies intend to quantify not only the nexuses between GHG exposure and banking stability but also predict, to what extent, our expected mechanisms on the environmental, social, and governance [ESG] could support global economy toward climate resilience and sustainable

development goals [SDGs]. Building on recent literature on global banking systems (Trinh & Tran, 2024), we follow Trinh (2023 2024a, 2024b) for our empirical settings with innovative approaches adopted for our global country-level panel data estimations.

3.1.Multivariate regression models

The study starts with examining the nexuses between GHG exposure and banking stability by proposing the baseline multivariate linear regression model:

$$Z - SCORE_{i,j,t} = \beta_0 + \beta_1 GHG_{i,j,t} + \beta_k \sum_{i=0}^{n} X_{i,j,t} + \gamma_{i,j,t} + \delta_{i,j,t} + \vartheta_{i,j,t} + \varepsilon_{i,j,t} \quad (1)$$

The characters of i, j, t indicate country i region j, and year t. Z-SCORE is the dependent variable measuring banking stability. GHG is the main independent variable capturing total greenhouse gas emissions (kt of CO2 equivalent). GHG is the greenhouse gas emissions in kt of CO2 equivalent that are composed of carbon dioxide emissions [CO2] totals. GHG excludes short-cycle biomass burning (e.g., agricultural waste burning, savanna burning). GHG emissions include other biomass burning (e.g., forest fires, decay of drained peatlands peat fires, post-burn decay, etc), and all other anthropogenic greenhouse gases including i) methane (CH4), ii) nitrous oxide (N2O), iii) hydrofluorocarbons (HFCs), iv) perfluorocarbons (PFCs), v) Sulphur hexafluoride (SF6)), and vi) to carbon dioxide (CO2) equivalents. GHG allows us to compare them and determine the aggregated contributions to global warming. Using GHG, we can track the long-term impacts of global warming and climate risk drivers on the financial stability of banking systems. Focusing on long-term exposure, we could also mitigate endogeneity concerns as well as long-lagged consequences of climate risks to banking stability that are critical to policy implications toward climate resilience.

Bank Z-SCORE captures the default probability for each of our 174 banking systems around the world. The Z-SCORE makes the comparison of the buffer of the banking system in a country (e.g., capitalization and returns) with its return volatility. The Z-SCORE is computed as follows.

$$\text{Z-SCORE} = \frac{(ROA+(EQUITY/ASSETS))}{STD(ROA)} \quad (2)$$

Std (ROA) is the standard deviation of return on assets (ROA), which is estimated for country years with bank-level observations from five or higher. ROA, equity, and assets are the aggregated bank-level measures for commercial banks for each of our sample countries each year. The measures are calculated using the underlying bank-by-bank unconsolidated data extracted from Bank Scope and Orbis. The measure is only reported if a country in a specific year has at least 3 bank-level observations or more.

We control for a vector of explanatory bank-related and macroeconomic variables. Bank-related variables include bank credit and bank capital. Macroeconomic variables include economic growth (GDPG), broad money (BM), inflation rate (INFLATION), and foreign direct investment net inflow (FDI Net). The model fits multi-way fixed effect regressions including the fixed effects for time γ, region δ, and, country ϑ. We employ dynamic panel data estimations by lagging all the control variables by one year.

3.2. Regression models with interaction/moderation

We examine the possible mechanisms by which commercial banking systems could secure ample financial stability under GHG exposure. We propose the regression models with interaction/moderation as follows.

$$Z-SCORE_{i,j,t} = \beta_0 + \beta_1 GHG \times MODERATORS_{i,j,t} + \beta_2 GHG + \beta_3 MODERATORS_{i,j,t} + \beta_k \sum_{i=0}^{n} X_{i,j,t} + \gamma_{i,j,t} + \delta_{i,j,t} + \vartheta_{i,j,t} + \varepsilon_{i,j,t} \quad (3)$$

We dynamically examine possible mechanisms with multiway interaction terms. Our moderators include i) Broad-based financial development (FD); world governance indicators (WGIs), bank liquidity (LIQ), and renewable energy consumption (REC). We comprehensively test for broad-based FD measures including financial institutions (FI) and markets (FM) with sub-proxies that

capture depth, access, and efficiency (Katsiaryna Svirydzenka, 2016). The WGIs feature a total of six aggregate governance estimates including i) Voice and Accountability (VAE), ii) Political Stability and Absence of Violence/Terrorism (PVE), iii) Government Effectiveness (GEE), iv) Regulatory Quality (RQE), v) Rule of Law (RLE), vi) Control of Corruption (CCE), see Kaufmann and Kraay (2023). LIQ is measured by the ratio of liquid assets to deposits and short-term funding (%), see Acharya et al. (2010); Hugonnier and Morellec (2017); Wagner (2007). The ratio captures the value of liquid assets to short-term funding plus total deposits. Liquid assets cover cash and due from banks, reverse repos, trading securities and income at the fair value, advances and loans to banks, and collaterals that could be easily converted to cash. REC is Renewable energy consumption (% of total final energy consumption).

3.3. Regression models with treatment

For mitigating endogeneity issues and examining reliable mechanisms in which banking systems could serve ample financial stability. We respectively implement multivariate regression models with treatment as follows.

$$Z-SCORE_{i,j,t} = \beta_0 + \beta_1 TREAT_{i,j,t} + \beta_k \sum_{i=0}^{n} X_{i,j,t} + \gamma_{i,j,t} + \delta_{i,j,t} + \vartheta_{i,j,t} + \varepsilon_{i,j,t} \qquad (4)$$

$$Z-SCORE_{i,j,t} = \beta_0 + \beta_1 TREAT \times MODERATORS_{i,j,t} + \beta_2 GHG + \beta_3 MODERATORS_{i,j,t} + \beta_k \sum_{i=0}^{n} X_{i,j,t} + \gamma_{i,j,t} + \delta_{i,j,t} + \vartheta_{i,j,t} + \varepsilon_{i,j,t} \qquad (5)$$

All else being constant to our earlier multivariate regressions, we use a treatment dummy instead of GHG emissions as the main independent variable. TREAT is a treatment dummy set equal to one country-year observations with their bank-level aggregated yearly mean values presenting a degradation in bank Z-SCORE for an observed increase in GHG exposure, otherwise, it is set equal to zero. Motivated by Wang et al. (2023), we examine the impacts of green GDP on the probability of treatment and the consequences of the treatment of GHG exposure on GFD using the following models.

$$TREAT_{i,j,t} = \beta_0 + \beta_1 GREEN\ GDP_{i,j,t} + \beta_k \sum_{i=0}^{n} X_{i,j,t} + \gamma_{i,j,t} + \delta_{i,j,t} + \vartheta_{i,j,t} + \varepsilon_{i,j,t} \quad (6)$$

We capture green GDP by the ratio of GDP per capita to GHG emissions total. A higher green GDP indicates that a country each year produces higher GDP outputs per capita with lower GHG emitted to the atmosphere. This measure indicates a country is achieving green growth by decreasing GHG emissions for total economic outputs per capita.

$$GFD_{i,j,t} = \beta_0 + \beta_1 TREAT_{i,j,t} + \beta_k \sum_{i=0}^{n} X_{i,j,t} + \gamma_{i,j,t} + \delta_{i,j,t} + \vartheta_{i,j,t} + \varepsilon_{i,j,t} \quad (7)$$

We test the transmission of GHG exposure to GFD by regression multidimensional broad-based FD indexes on the treatment dummy. GFD includes the development of financial institutions (FI) and markets (FM) with sub-proxies for depth, access, and efficiency.

4. Results:

[Table 1 Inserted Herer]

Results derived from multivariate regressions show that a unit increase in GHG is associated with a decrease in Z-SCORE and LIQ. Statistically, a unit increase in GHG induces a predicted unit decrease from -0.080 to -0.111 in Z-Score, indicating a decrease in banking stability (Table 1A). A unit increase in GHG induces a decrease from -0.096 to -0.286 in bank LIQ (Table 1B). The adverse association between GHG exposure, banking stability, and liquidity is statistically robust when we control for a diverse set of bank-related variables (e.g., credit, bank capital) and country-level economic variables (e.g., GDP growth, broad money, inflation, and FDI net inflow). The baseline results indicate long-term and negative impacts of GHG exposure on banking stability with a persistent decrease in bank Z-SCORE and LIQ. The results show that higher bank credit and capital safeguard banking stability with lower liquidity needed under the GHG exposure. While an increase in bank credit in the earlier year generates a decrease but statistically insignificant decrease in Z-SCORE, a higher bank capital increases banking stability

with a predicted increase in Z-SCORE. Our multivariate regressions initially affirm a predicted and negative association between GHG and banking stability over the past decades for a total of 174 economies around the world (Appendix A1.3). With global evidence lasting from 1996 to 2019, the multivariate regressions present the long-term adverse treatment impacts of GHG emissions on the global financial stability of commercial banking systems.

[Tables 2-3 Inserted Herer]

The adverse association remains robust with moderators highlighting the standalone and persistent negative impacts of GHG exposure on banking stability. Additional multivariate regressions with two and three-way interactions present the potential moderating effects of global financial development (e.g., institutions and markets), world governance indicators (e.g., corruption, political stability, governance effectiveness, etc.), and renewable energy consumption (REC). Even when we control for various moderators, the adverse impacts of GHG on banking stability are persistently exhibited in their statistical significance. Interacted with GHG, overall financial development with the development of financial markets (FM) with its depth (FMD) and efficiency (FME) maintains a marginal and statistically significant increase in banking stability (Table 2). We do not observe any significant results for which the development of financial institutions (FI) with their depth (FID), access (FIA, and efficiency (FIE) plays a role in mitigating the consequences of GHG on banking stability. Standalone world governance indicators (WGIs) somehow improve banking stability, however, WGIs are not showing their statistically significant roles in supporting the global economy with an expected improvement in banking stability under GHG exposure (Table 3). Economies with an improvement in Political Stability and Absence of Violence/Terrorism [PVE], interacted with GHG exposure levels in the previous year, present a negative and statistically significant decrease in bank Z-SCORE in the current year. A decreased banking stability is similarly observed with the rule of law [RLE].

[Tables 4-7 Inserted Herer]

The roles of FD are strengthened in mitigating the adverse impacts of GHG with supporting power of renewable energy consumption (Table 4) and bank liquidity (Table 5). Economies with higher FD and REC exhibit an increase of 1.215-unit change in Z-SCORE (Column 2). Interacted with GHG, REC induces the adverse impacts of GHG on banking stability to become

insignificant for all the fitted models (Columns 1-10). More specifically, conditional on the efficiency of financial institutions (FIE), Column 6 shows that economies with higher REC could secure their ample banking stability with a predicted increase of 0.086 in Z-SCORE. While the severe impacts of GHG on banking stability remain robust, REC supports global financial development with favorable outcomes to banking stability under GHG exposure. Improved Z-SCORE could be marginal under the long-term impacts of GHG exposure, REC presents its inevitable roles in global financial development for which the global economy could be resilient from climate risk drivers. Table 4 again highlights the importance of the efficiency of financial markets (FM) in securing banking stability under GHG exposure.

Bank liquidity plays certain roles in securing its stability under GHG exposure (Table 5). Increased LIQ with a higher level of FD in the prior year presents an increase in banking stability. Given GHG exposure, incremental LIQ in the prior year predicts a decrease in banking stability in the upcoming years. Interacted with GHG, LIQ could secure a marginal increase in banking stability with a predicted higher Z-SCORE. While LIQ with FI, FIA, FIE, FM, FMD, FMA, and FME could marginally secure banking stability, GHG exposure still presents its severe and long-lasting adverse impacts on banking stability with a predicted decrease in Z-SCORE. Similar outcomes are observed when we control for WGIs with bank liquidity (Table 6). While changes in LIQ could showcase the sensitivity of commercial banking systems exposed to GHG, REC combined with sound WGIs indicates its promising role in securing banking stability (Table 7). The results show that economies with REC and improved VAE, PVE, GEE, and CCE could maintain a positive change in Z-SCORE for which their commercial banks present ample financial stability.

[Tables 8-16 Inserted Herer]

Our multivariate regressions of banking stability on the treatment of GHG exposure (TREAT) show that banking systems present a decrease of -0.042-unit change in bank Z-SCORE (Table 8). The predicted decreased banking stability is statistically significant at the 1% level for all the fitted models, showing the robust treatment effects of GHG exposure on banking stability. Capturing the country-year observations with real GHG treatments, our results mitigate endogeneity issues by affirming the long-lasting adverse impacts of GHG on our global banking stability. REC remains in its inevitable role in securing ample banking stability under the

treatment effects of GHG exposure (Table 9). Interacted with REC, we observe insignificant impacts of GHG on banking stability. the results highlight the roles of FD with financial institutions and markets in mitigating the treatments of GHG to banking stability (Table 10). PVE shows a significant moderation in the treatment effects of GHG on banking stability (Table 11). Controlled for FD and WDIs, REC presents its dominant moderation to the treatment effects of GHG on banking stability (Tables 12 and 13). The treatment effects of GHG exposure on banking stability become less significant with the presence of REC with positive bank Z-SCORE (Table 14). Even though the treatment effects of GHG exposure with climate risk drivers remain substantial, our global economy could secure ample banking stability by flexibility combining three strategies. Strategic plans to mitigate the treatment effects of GHG simultaneously include i) a well-functioning financial development, ii) sound governance metrics, and iii) promoting renewable energy consumption. Table 15 shows that green GDP mitigates the probability of the treatment effects of GHG on banking stability between -1.1931- and -1.081-unit change. In other words, with a higher fraction of GDP per capita to total GHG emissions, the probability that our global banking systems are prone to GHG-induced risks is mitigated. With complex climate risk drivers, banking systems with larger bank capitals are sensitive to the treatment effects of GHG on their financial stability.

5. Conclusion

The study provides empirical evidence on GHG exposure and associated risks to global banking stability. The broad findings show that GHG exposure adversely affects banking stability with a predicted decrease in bank Z-SCORE and liquidity. The long-term impacts of GHG exposure on global banking stability are severely persistent when we control for bank-related characteristics and time-varying macroeconomic factors. The development of institutions and financial markets and sound governance indicators are possible mechanisms for ample financial stability of commercial banking systems. However, such mechanisms are marginal and conditional on sovereign ESG metrics with persistent adverse consequences of GHG exposure to global financial development with related risks. Renewable energy consumption presents inevitable roles in mitigating systemic risks caused by GHG exposure over the past decades. While prior studies focus on conventional determinants and banks' responses to risk drivers, this study sheds light on the long-term systemic impacts of GHG exposure causing global warming and chronic risks to commercial banking systems. Under GHG exposure, banking instability transmits risks

to the wider economy which become more severe and unpredictable over the years. Emerging markets and low-income economies present higher sensitivity with higher liquidity reserved in the banking systems. Even though regional economies are heterogeneously exposed to GHG exposure, green outputs with decreased emissions are our global efforts in securing banking stability for green finance and climate resilience. Inclusive growth requires a healthy banking system with proper functionality toward social and economic outcomes. Therefore, decreasing GHG exposure would mitigate systemic risks not only to banks but also to broad-based financial development and global growth

Tale 1A: Greenhouse gas emissions and banking stability

VARIABLES	(1) Z-SCORE	(2) Z-SCORE	(3) Z-SCORE	(4) Z-SCORE	(5) Z-SCORE
GHG	-0.111***	-0.096**	-0.092**	-0.080**	-0.092**
	(0.033)	(0.037)	(0.040)	(0.040)	(0.041)
BANK CREDIT		-0.052*	0.004	0.007	0.006
		(0.027)	(0.028)	(0.028)	(0.029)
BANK CAPITAL		0.468***	0.287***	0.288***	0.284***
		(0.027)	(0.028)	(0.029)	(0.029)
GDPG		0.005	0.002	-0.000	0.003
		(0.008)	(0.008)	(0.008)	(0.008)
BM			-0.160***	-0.147***	-0.166***
			(0.034)	(0.034)	(0.035)
INFLATION				0.000	-0.004
				(0.007)	(0.007)
FDI NET					0.015
					(0.009)
Constant	3.906***	2.926***	3.685***	3.494***	3.703***
	(0.355)	(0.416)	(0.471)	(0.479)	(0.484)
Observations	2,376	1,490	1,221	1,168	1,147
R-squared	0.877	0.930	0.945	0.948	0.949
Year FE	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
HDFE Models	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 1B: Greenhouse gas emissions and bank liquidity

VARIABLES	(1) LIQ	(2) LIQ	(3) LIQ	(4) LIQ	(5) LIQ
GHG	-0.237***	-0.096	-0.277***	-0.271***	-0.286***
	(0.045)	(0.066)	(0.076)	(0.078)	(0.079)
BANK CREDIT		-0.461***	-0.289***	-0.293***	-0.310***
		(0.049)	(0.053)	(0.054)	(0.055)
BANK CAPITAL		-0.001	-0.042	-0.030	-0.014
		(0.049)	(0.053)	(0.053)	(0.054)
GDPG		0.020	0.008	0.013	0.014
		(0.014)	(0.015)	(0.015)	(0.016)
BM			-0.364***	-0.354***	-0.348***
			(0.064)	(0.065)	(0.067)
INFLATION				0.040***	0.035**
				(0.014)	(0.014)
FDI NET					0.014
					(0.018)
Constant	6.010***	6.532***	9.269***	9.081***	9.254***
	(0.482)	(0.743)	(0.900)	(0.921)	(0.939)
Observations	2,324	1,447	1,208	1,157	1,137
R-squared	0.697	0.712	0.728	0.737	0.737
Year FE	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
HDFE Models	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 2: Greenhouse gas emissions, banking stability and global financial development

VARIABLES	(1) Z-SCORE	(2) Z-SCORE	(3) Z-SCORE	(4) Z-SCORE	(5) Z-SCORE	(6) Z-SCORE	(7) Z-SCORE	(8) Z-SCORE	(9) Z-SCORE
GHG	-0.129***	-0.107**	-0.067	-0.096**	-0.092**	-0.129***	-0.124***	-0.105**	-0.101**
	(0.045)	(0.044)	(0.047)	(0.042)	(0.046)	(0.043)	(0.043)	(0.044)	(0.041)
FD	-0.873								
	(0.605)								
GHG x FD	0.092*								
	(0.050)								
BANK CREDIT	-0.003	0.000	-0.015	0.009	0.007	-0.006	-0.000	0.006	-0.005
	(0.029)	(0.029)	(0.030)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)
BANK CAPITAL	0.276***	0.285***	0.279***	0.278***	0.287***	0.276***	0.273***	0.284***	0.285***
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.028)
GDPG	0.003	0.004	0.002	0.003	0.002	0.003	0.002	0.003	0.003
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
BM	-0.169***	-0.176***	-0.190***	-0.158***	-0.173***	-0.161***	-0.168***	-0.163***	-0.159***
	(0.036)	(0.037)	(0.036)	(0.036)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)
INFLATION	-0.005	-0.005	-0.005	-0.005	-0.004	-0.004	-0.004	-0.004	-0.004
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
FDI NET	0.014	0.016*	0.016*	0.014	0.015	0.014	0.014	0.015	0.014
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
FI		-0.099							
		(0.462)							
GHG x FI		0.022							
		(0.039)							
FID			0.887						
			(0.721)						
GHG x FID			-0.043						
			(0.058)						
FIA				-0.280					
				(0.265)					
GHG x FIA				0.022					
				(0.022)					
FIE					0.148				

					(0.474)				
GHG x FIE					-0.004				
					(0.043)				
FM						-1.230**			
						(0.521)			
GHG x FM						0.112***			
						(0.043)			
FMD							-0.697		
							(0.442)		
GHG x FMD							0.069**		
							(0.035)		
FMA								-0.602	
								(0.648)	
GHG x FMA								0.047	
								(0.053)	
FME									-0.551**
									(0.271)
GHG x FME									0.050**
									(0.023)
Constant	4.116***	3.861***	3.529***	3.731***	3.654***	4.123***	4.094***	3.846***	3.800***
	(0.524)	(0.514)	(0.533)	(0.494)	(0.532)	(0.510)	(0.512)	(0.514)	(0.488)
Observations	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147
R-squared	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HDFE Models	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3: Greenhouse gases, banking stability and world governance

VARIABLES	(1) Z-SCORE	(2) Z-SCORE	(3) Z-SCORE	(4) Z-SCORE	(5) Z-SCORE	(6) Z-SCORE
GHG	-0.091**	-0.107***	-0.086**	-0.094**	-0.101**	-0.096**
	(0.041)	(0.041)	(0.041)	(0.041)	(0.041)	(0.041)
VAE	-0.090					
	(0.185)					
GHG x VAE	0.005					
	(0.016)					
BANK CREDIT	0.010	0.002	0.005	0.002	0.004	0.004
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)
BANK CAPITAL	0.282***	0.277***	0.286***	0.283***	0.281***	0.284***
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)
GDPG	0.004	0.001	0.002	0.002	0.003	0.003
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
BM	-0.163***	-0.176***	-0.165***	-0.171***	-0.181***	-0.174***
	(0.035)	(0.035)	(0.035)	(0.036)	(0.036)	(0.036)
INFLATION	-0.005	-0.004	-0.005	-0.004	-0.004	-0.004
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
FDI NET	0.014	0.014	0.014	0.014	0.014	0.014
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
PVE		0.289***				
		(0.099)				
GHG x PVE		-0.024***				
		(0.009)				
GEE			0.098			
			(0.136)			
GHG x GEE			-0.011			
			(0.012)			
RQE				0.020		
				(0.144)		
GHG x RQE				0.001		
				(0.013)		

RLE					0.336**	
					(0.159)	
GHG x RLE					-0.029**	
					(0.015)	
CCE						0.106
						(0.137)
GHG x CCE						-0.008
						(0.012)
Constant	3.660***	3.946***	3.635***	3.765***	3.886***	3.791***
	(0.486)	(0.492)	(0.491)	(0.490)	(0.493)	(0.492)
Observations	1,147	1,147	1,147	1,147	1,147	1,147
R-squared	0.949	0.949	0.949	0.949	0.949	0.949
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
HDFE Models	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4: Greenhouse gases, banking stability and renewable energy consumption										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
VARIABLES	ZSCORE	ZSCORE	ZSCORE	ZSCORE	ZSCORE	ZSCORE	ZSCORE	ZSCORE	ZSCORE	ZSCORE
GHG	-0.125**	-0.237***	-0.222***	-0.180***	-0.127**	-0.406***	-0.195***	-0.185***	-0.106*	-0.189***
	(0.053)	(0.077)	(0.072)	(0.068)	(0.059)	(0.088)	(0.066)	(0.066)	(0.063)	(0.060)
REC	0.002	-0.330	-0.362*	-0.324*	0.047	-1.073***	-0.124	-0.126	0.083	-0.123
	(0.132)	(0.208)	(0.220)	(0.174)	(0.163)	(0.295)	(0.163)	(0.162)	(0.162)	(0.147)
GHG x REC	-0.005	0.017	0.012	0.020	-0.016	0.086***	0.005	0.005	-0.016	0.006
	(0.012)	(0.019)	(0.020)	(0.016)	(0.014)	(0.026)	(0.015)	(0.015)	(0.015)	(0.013)
FD		-4.681***								
		(1.537)								
GHG x FD		0.359***								
		(0.128)								
REC x FD		1.215***								
		(0.471)								
GHG x REC x FD		-0.082**								
		(0.039)								
BANK CREDIT	0.004	-0.010	-0.005	-0.017	0.001	0.009	-0.009	-0.004	0.006	-0.008
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.028)	(0.029)	(0.029)	(0.029)	(0.029)
BANK CAPITAL	0.285***	0.275***	0.281***	0.270***	0.271***	0.297***	0.276***	0.272***	0.281***	0.283***
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)
GDPG	0.002	0.001	-0.001	-0.001	-0.003	0.003	0.001	0.000	0.001	0.001
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
BM	-0.166***	-0.172***	-0.171***	-0.186***	-0.147***	-0.154***	-0.162***	-0.169***	-0.161***	-0.155***
	(0.035)	(0.036)	(0.037)	(0.036)	(0.036)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)
INFLATION	-0.004	-0.002	-0.002	-0.004	-0.003	-0.002	-0.004	-0.004	-0.003	-0.005
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
FDI NET	0.013	0.013	0.014	0.015	0.012	0.013	0.012	0.012	0.014	0.012
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
FI			-4.509***							
			(1.462)							
GHG x FI			0.300**							
			(0.119)							
REC x FI			1.228***							
			(0.450)							

GHG x REC x FI	-0.073*				
	(0.038)				
FID		-5.729***			
		(1.611)			
GHG x FID		0.447***			
		(0.131)			
REC x FID		1.913***			
		(0.455)			
GHG x REC x FID		-0.143***			
		(0.039)			
FIA			-0.601		
			(0.914)		
GHG x FIA			-0.005		
			(0.073)		
REC x FIA			-0.059		
			(0.286)		
GHG x REC x FIA			0.024		
			(0.024)		
FIE				-5.903***	
				(1.530)	
GHG x FIE				0.494***	
				(0.126)	
REC x FIE				1.945***	
				(0.470)	
GHG x REC x FIE				-0.165***	
				(0.041)	
FM					-2.072*
					(1.077)
GHG x FM					0.172*
					(0.090)
REC x FM					0.263
					(0.363)
GHG x REC x FM					-0.018
					(0.030)
FMD					

	-1.691
	(1.036)

GHG x FMD								0.136		
								(0.086)		
REC x FMD								0.351		
								(0.346)		
GHG x REC x FMD								-0.023		
								(0.029)		
FMA									-0.869	
									(1.256)	
GHG x FMA									0.037	
									(0.104)	
REC x FMA									0.030	
									(0.439)	
GHG x REC x FMA									0.012	
									(0.037)	
FME										-1.454**
										(0.679)
GHG x FME										0.130**
										(0.057)
REC x FME										0.287
										(0.221)
GHG x REC x FME										-0.026
										(0.018)
Constant	4.237***	5.777***	5.887***	5.176***	4.500***	7.496***	5.095***	4.998***	4.099***	4.955***
	(0.661)	(0.902)	(0.873)	(0.795)	(0.729)	(1.061)	(0.792)	(0.788)	(0.751)	(0.727)
Observations	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147
R-squared	0.949	0.950	0.950	0.950	0.950	0.950	0.949	0.949	0.949	0.949
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HDFE Models	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5: Greenhouse gases, banking stability and global financial development

VARIABLES	(1) Z-SCORE	(2) Z-SCORE	(3) Z-SCORE	(4) Z-SCORE	(5) Z-SCORE	(6) Z-SCORE	(7) Z-SCORE	(8) Z-SCORE	(9) Z-SCORE
GHG	-0.323***	-0.371***	-0.167**	-0.309***	-0.422***	-0.220***	-0.225***	-0.165**	-0.164***
	(0.074)	(0.084)	(0.069)	(0.066)	(0.140)	(0.063)	(0.061)	(0.065)	(0.056)
FD	-7.521***								
	(1.835)								
GHG x FD	0.620***								
	(0.149)								
LIQ	-0.827***	-1.038***	-0.435***	-0.838***	-1.305***	-0.519***	-0.558***	-0.398***	-0.436***
	(0.174)	(0.217)	(0.145)	(0.157)	(0.413)	(0.138)	(0.130)	(0.144)	(0.121)
GHG x LIQ	0.064***	0.082***	0.032**	0.069***	0.105***	0.040***	0.042***	0.030**	0.035***
	(0.016)	(0.019)	(0.012)	(0.014)	(0.037)	(0.013)	(0.012)	(0.014)	(0.011)
FD x LIQ	1.854***								
	(0.496)								
GHG x FD x LIQ	-0.145***								
	(0.041)								
BANK CREDIT	-0.044	-0.035	-0.031	-0.030	-0.004	-0.037	-0.035	-0.017	-0.027
	(0.030)	(0.030)	(0.031)	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)
BANK CAPITAL	0.265***	0.272***	0.271***	0.268***	0.280***	0.269***	0.263***	0.279***	0.279***
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.028)	(0.028)	(0.029)	(0.028)
GDPG	-0.001	-0.000	-0.000	-0.000	-0.002	-0.001	-0.002	-0.000	-0.000
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
BM	-0.221***	-0.230***	-0.223***	-0.201***	-0.207***	-0.206***	-0.221***	-0.202***	-0.197***
	(0.036)	(0.037)	(0.037)	(0.036)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)
INFLATION	-0.000	-0.002	-0.002	-0.001	-0.002	0.000	-0.000	-0.001	-0.000
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
FDI NET	0.014	0.016	0.015	0.014	0.014	0.015	0.016	0.015	0.014
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
FI		-7.146***							
		(1.858)							
GHG x FI		0.594***							
		(0.152)							
FI x LIQ		1.938***							

	(0.520)					
GHG x FI x LIQ	-0.154***					
	(0.043)					
FID		-2.444				
		(1.864)				
GHG x FID		0.204				
		(0.153)				
FID x LIQ		0.639				
		(0.469)				
GHG x FID x LIQ		-0.046				
		(0.039)				
FIA			-5.418***			
			(1.278)			
GHG x FIA			0.466***			
			(0.106)			
FIA x LIQ			1.522***			
			(0.378)			
GHG x FIA x LIQ			-0.130***			
			(0.031)			
FIE				-6.648**		
				(2.603)		
GHG x FIE				0.553**		
				(0.228)		
FIE x LIQ				1.831**		
				(0.717)		
GHG x FIE x LIQ				-0.149**		
				(0.063)		
FM					-6.049***	
					(1.550)	
GHG x FM					0.492***	
					(0.127)	
FM x LIQ					1.451***	
					(0.422)	
GHG x FM x LIQ					-0.114***	
					(0.035)	
FMD						-5.744***

							(1.463)		
GHG x FMD							0.455***		
							(0.117)		
FMD x LIQ							1.483***		
							(0.412)		
GHG x FMD x LIQ							-0.113***		
							(0.034)		
FMA								-3.328*	
								(1.786)	
GHG x FMA								0.259*	
								(0.149)	
FMA x LIQ								0.775*	
								(0.464)	
GHG x FMA x LIQ								-0.060	
								(0.040)	
FME									-3.534***
									(1.034)
GHG x FME									0.292***
									(0.085)
FME x LIQ									0.954***
									(0.301)
GHG x FME x LIQ									-0.077***
									(0.025)
Constant	7.063***	7.617***	5.174***	6.674***	8.016***	5.715***	5.908***	4.999***	4.938***
	(0.883)	(1.019)	(0.841)	(0.811)	(1.578)	(0.739)	(0.740)	(0.756)	(0.676)
Observations	1,116	1,116	1,116	1,116	1,116	1,116	1,116	1,116	1,116
R-squared	0.952	0.951	0.951	0.951	0.951	0.951	0.952	0.951	0.951
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HDFE Models	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6: Greenhouse gases, bank liquidity, and world governance

VARIABLES	(1) Z-SCORE	(2) Z-SCORE	(3) Z-SCORE	(4) Z-SCORE	(5) Z-SCORE	(6) Z-SCORE
GHG	-0.128**	-0.140***	-0.124**	-0.121**	-0.107**	-0.110**
	(0.052)	(0.053)	(0.053)	(0.052)	(0.052)	(0.052)
VAE	0.614					
	(0.489)					
GHG x VAE	-0.055					
	(0.041)					
LIQ	-0.328***	-0.296***	-0.295***	-0.296***	-0.236**	-0.254**
	(0.103)	(0.103)	(0.103)	(0.106)	(0.109)	(0.106)
GHG x LIQ	0.024***	0.023**	0.022**	0.022**	0.017*	0.019**
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
VAE x LIQ	-0.199					
	(0.133)					
GHG x VAE x LIQ	0.017					
	(0.011)					
BANK CREDIT	-0.004	-0.011	-0.014	-0.011	-0.010	-0.019
	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)
BANK CAPITAL	0.276***	0.275***	0.272***	0.279***	0.277***	0.279***
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.028)
GDPG	0.001	-0.003	-0.001	-0.001	-0.001	-0.001
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
BM	-0.194***	-0.205***	-0.201***	-0.196***	-0.209***	-0.208***
	(0.036)	(0.035)	(0.036)	(0.036)	(0.036)	(0.036)
INFLATION	-0.002	-0.002	-0.001	-0.001	-0.001	-0.001
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
FDI NET	0.014	0.013	0.013	0.013	0.013	0.013
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
PVE		0.374				
		(0.447)				
GHG x PVE		-0.037				
		(0.037)				
PVE x LIQ		-0.037				
		(0.121)				

GHG x PVE x LIQ		0.005				
		(0.010)				
GEE			-1.039**			
			(0.509)			
GHG x GEE			0.084*			
			(0.043)			
GEE x LIQ			0.304**			
			(0.140)			
GHG x GEE x LIQ			-0.025**			
			(0.012)			
RQE				-0.419		
				(0.598)		
GHG x RQE				0.031		
				(0.050)		
RQE x LIQ				0.092		
				(0.160)		
GHG x RQE x LIQ				-0.006		
				(0.013)		
RLE					-0.169	
					(0.563)	
GHG x RLE					0.006	
					(0.047)	
RLE x LIQ					0.101	
					(0.148)	
GHG x RLE x LIQ					-0.006	
					(0.012)	
CCE						-0.481
						(0.436)
GHG x CCE						0.036
						(0.037)
CCE x LIQ						0.159
						(0.123)
GHG x CCE x LIQ						-0.012
						(0.010)
Constant	4.474***	4.640***	4.478***	4.419***	4.299***	4.355***
	(0.645)	(0.651)	(0.650)	(0.645)	(0.646)	(0.645)

Observations	1,116	1,116	1,116	1,116	1,116	1,116
R-squared	0.951	0.951	0.951	0.950	0.951	0.951
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
HDFE Models	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 7: Banking stability, world governance, and renewable energy consumption

VARIABLES	(1) Z-SCORE	(2) Z-SCORE	(3) Z-SCORE	(4) Z-SCORE	(5) Z-SCORE	(6) Z-SCORE
GHG	-0.082	-0.130**	-0.107**	-0.124**	-0.108**	-0.117**
	(0.056)	(0.053)	(0.054)	(0.054)	(0.054)	(0.054)
VAE	-1.048**					
	(0.415)					
GHG x VAE	0.077**					
	(0.034)					
REC	0.092	0.094	0.100	0.033	0.110	0.079
	(0.137)	(0.134)	(0.137)	(0.134)	(0.138)	(0.137)
GHG x REC	-0.012	-0.013	-0.013	-0.008	-0.014	-0.011
	(0.012)	(0.012)	(0.013)	(0.012)	(0.012)	(0.012)
VAE x REC	0.308**					
	(0.128)					
GHG x VAE x REC	-0.023**					
	(0.011)					
BANK CREDIT	0.001	0.003	-0.012	-0.003	-0.004	-0.002
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)
BANK CAPITAL	0.279***	0.275***	0.273***	0.281***	0.270***	0.283***
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)
GDPG	0.000	-0.002	-0.000	0.001	-0.000	0.002
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
BM	-0.166***	-0.181***	-0.173***	-0.173***	-0.184***	-0.172***
	(0.035)	(0.036)	(0.035)	(0.036)	(0.036)	(0.036)
INFLATION	-0.004	-0.003	-0.002	-0.003	-0.003	-0.004
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
FDI NET	0.013	0.012	0.013	0.012	0.012	0.012
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
PVE		-0.373				
		(0.317)				
GHG x PVE		0.025				
		(0.027)				
PVE x REC		0.187**				
		(0.091)				

GHG x PVE x REC		-0.014*				
		(0.008)				
GEE			-1.083***			
			(0.411)			
GHG x GEE			0.077**			
			(0.034)			
GEE x REC			0.325***			
			(0.115)			
GHG x GEE x REC			-0.023**			
			(0.010)			
RQE				-0.425		
				(0.428)		
GHG x RQE				0.032		
				(0.036)		
RQE x REC				0.112		
				(0.115)		
GHG x RQE x REC				-0.007		
				(0.010)		
RLE					-0.086	
					(0.507)	
GHG x RLE					-0.006	
					(0.043)	
RLE x REC					0.093	
					(0.132)	
GHG x RLE x REC					-0.004	
					(0.011)	
CCE						-0.482
						(0.324)
GHG x CCE						0.041
						(0.027)
CCE x REC						0.193**
						(0.093)
GHG x CCE x REC						-0.017**
						(0.008)
Constant	3.747***	4.391***	4.155***	4.305***	4.197***	4.182***
	(0.686)	(0.660)	(0.669)	(0.664)	(0.670)	(0.665)

Observations	1,147	1,147	1,147	1,147	1,147	1,147
R-squared	0.949	0.950	0.950	0.949	0.949	0.949
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
HDFE Models	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 8: Treatment effects of greenhouse gases on banking stability

VARIABLES	(1) Z-SCORE	(2) Z-SCORE	(3) Z-SCORE	(4) Z-SCORE	(5) Z-SCORE
TREAT	-0.042***	-0.042***	-0.045***	-0.045***	-0.042***
	(0.010)	(0.010)	(0.009)	(0.009)	(0.009)
BANK CREDIT		-0.064**	-0.007	-0.002	-0.004
		(0.027)	(0.028)	(0.028)	(0.028)
BANK CAPITAL		0.471***	0.281***	0.283***	0.280***
		(0.027)	(0.028)	(0.028)	(0.028)
GDPG		0.005	0.003	0.000	0.004
		(0.008)	(0.008)	(0.008)	(0.008)
BM			-0.167***	-0.153***	-0.170***
			(0.034)	(0.034)	(0.035)
INFLATION				0.001	-0.004
				(0.007)	(0.007)
FDI NET					0.014
					(0.009)
Constant	2.716***	1.923***	2.765***	2.689***	2.759***
	(0.005)	(0.141)	(0.202)	(0.203)	(0.204)
Observations	2,376	1,490	1,221	1,168	1,147
R-squared	0.877	0.930	0.946	0.949	0.949
Year FE	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
HDFE Models	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9: Treatment effects, banking stability, and renewable energy consumption

VARIABLES	(1) Z-SCORE	(2) Z-SCORE	(3) Z-SCORE	(4) Z-SCORE	(5) Z-SCORE
TREAT	-0.054**	-0.038	-0.044*	-0.049**	-0.055**
	(0.025)	(0.025)	(0.023)	(0.024)	(0.024)
REC	0.034	0.018	-0.013	-0.023	-0.017
	(0.021)	(0.020)	(0.023)	(0.023)	(0.023)
TREAT x REC	0.004	-0.001	-0.000	0.001	0.004
	(0.008)	(0.008)	(0.007)	(0.007)	(0.007)
BANK CREDIT		-0.060**	-0.008	-0.004	-0.004
		(0.027)	(0.028)	(0.028)	(0.028)
BANK CAPITAL		0.468***	0.282***	0.284***	0.281***
		(0.027)	(0.028)	(0.028)	(0.028)
GDPG		0.006	0.002	-0.001	0.003
		(0.008)	(0.008)	(0.008)	(0.008)
BM			-0.167***	-0.154***	-0.171***
			(0.034)	(0.034)	(0.035)
INFLATION				0.001	-0.004
				(0.007)	(0.007)
FDI NET					0.013
					(0.009)
Constant	2.620***	1.862***	2.812***	2.771***	2.819***
	(0.063)	(0.157)	(0.220)	(0.220)	(0.221)
Observations	2,374	1,490	1,221	1,168	1,147
R-squared	0.877	0.930	0.946	0.949	0.949
Year FE	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
HDFE Models	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 10: Treatment effects on banking stability and global financial development

VARIABLES	(1) Z-SCORE	(2) Z-SCORE	(3) Z-SCORE	(4) Z-SCORE	(5) Z-SCORE	(6) Z-SCORE	(7) Z-SCORE	(8) Z-SCORE	(9) Z-SCORE
TREAT	-0.049***	-0.059***	-0.049***	-0.063***	0.017	-0.043***	-0.045***	-0.044***	-0.039***
	(0.016)	(0.020)	(0.013)	(0.016)	(0.043)	(0.012)	(0.012)	(0.012)	(0.011)
FD	0.177								
	(0.128)								
TREAT x FD	0.023								
	(0.042)								
BANK CREDIT	-0.010	-0.010	-0.018	-0.001	0.001	-0.006	-0.008	-0.004	-0.003
	(0.029)	(0.029)	(0.029)	(0.029)	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)
BANK CAPITAL	0.282***	0.286***	0.279***	0.278***	0.283***	0.279***	0.278***	0.278***	0.280***
	(0.028)	(0.029)	(0.028)	(0.029)	(0.028)	(0.028)	(0.028)	(0.029)	(0.028)
GDPG	0.003	0.004	0.003	0.002	0.002	0.003	0.003	0.004	0.004
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
BM	-0.181***	-0.183***	-0.187***	-0.165***	-0.182***	-0.173***	-0.177***	-0.170***	-0.171***
	(0.036)	(0.036)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)
INFLATION	-0.004	-0.004	-0.004	-0.004	-0.005	-0.004	-0.003	-0.004	-0.004
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
FDI NET	0.013	0.015	0.015	0.013	0.014	0.013	0.012	0.014	0.013
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
FI		0.144							
		(0.123)							
TREAT x FI		0.044							
		(0.046)							
FID			0.350**						
			(0.137)						
TREAT x FID			0.027						
			(0.037)						
FIA				-0.069					
				(0.065)					
TREAT x FIA				0.059					
				(0.038)					
FIE					0.219***				
					(0.082)				

TREAT x FIE					-0.105				
					(0.074)				
FM						0.071			
						(0.080)			
TREAT x FM						0.002			
						(0.035)			
FMD							0.122		
							(0.075)		
TREAT x FMD							0.013		
							(0.033)		
FMA								0.032	
								(0.088)	
TREAT x FMA								0.008	
								(0.034)	
FME									0.008
									(0.037)
TREAT x FME									-0.014
									(0.027)
Constant	2.771***	2.764***	2.800***	2.758***	2.658***	2.766***	2.787***	2.760***	2.760***
	(0.205)	(0.204)	(0.205)	(0.205)	(0.207)	(0.205)	(0.205)	(0.205)	(0.205)
Observations	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147
R-squared	0.950	0.950	0.950	0.950	0.950	0.949	0.950	0.949	0.949
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HDFE Models	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 11: Treatment effects, banking stability and world governance

VARIABLES	(1) Z-SCORE	(2) Z-SCORE	(3) Z-SCORE	(4) Z-SCORE	(5) Z-SCORE	(6) Z-SCORE
TREAT	-0.038***	-0.038***	-0.042***	-0.042***	-0.039***	-0.039***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
VAE	-0.044					
	(0.028)					
TREAT x VAE	0.028**					
	(0.012)					
BANK CREDIT	0.003	-0.011	-0.004	-0.006	-0.005	-0.004
	(0.028)	(0.029)	(0.028)	(0.028)	(0.028)	(0.028)
BANK CAPITAL	0.279***	0.280***	0.285***	0.280***	0.281***	0.281***
	(0.028)	(0.028)	(0.029)	(0.028)	(0.028)	(0.028)
GDPG	0.004	0.002	0.004	0.003	0.004	0.004
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
BM	-0.168***	-0.175***	-0.164***	-0.172***	-0.172***	-0.173***
	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)
INFLATION	-0.004	-0.003	-0.004	-0.004	-0.004	-0.003
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
FDI NET	0.014	0.013	0.014	0.013	0.014	0.014
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
PVE		0.011				
		(0.016)				
TREAT x PVE		0.019*				
		(0.011)				
GEE			-0.033			
			(0.027)			
TREAT x GEE			0.015			
			(0.011)			
RQE				0.012		
				(0.026)		
TREAT x RQE				0.017		
				(0.012)		
RLE					0.008	
					(0.030)	

TREAT x RLE					0.018	
					(0.011)	
CCE						0.008
						(0.024)
TREAT x CCE						0.016
						(0.011)
Constant	2.717***	2.816***	2.725***	2.778***	2.771***	2.769***
	(0.205)	(0.212)	(0.206)	(0.208)	(0.210)	(0.208)
Observations	1,147	1,147	1,147	1,147	1,147	1,147
R-squared	0.950	0.950	0.950	0.950	0.950	0.950
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
HDFE Models	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 12: Treatment effects on banking stability, global financial development, and renewable energy consumption

VARIABLES	(1) Z-SCORE	(2) Z-SCORE	(3) Z-SCORE	(4) Z-SCORE	(5) Z-SCORE	(6) Z-SCORE	(7) Z-SCORE	(8) Z-SCORE	(9) Z-SCORE
TREAT	-0.123**	-0.166***	-0.077**	-0.169***	-0.029	-0.081*	-0.082**	-0.070*	-0.069**
	(0.055)	(0.064)	(0.035)	(0.050)	(0.113)	(0.042)	(0.040)	(0.038)	(0.034)
FD	-0.298								
	(0.236)								
TREAT x FD	0.164								
	(0.119)								
REC	-0.074**	-0.109***	-0.083***	-0.071**	0.064	-0.032	-0.034	-0.054**	-0.016
	(0.034)	(0.040)	(0.030)	(0.030)	(0.046)	(0.026)	(0.025)	(0.027)	(0.024)
TREAT x REC	0.021	0.032*	0.008	0.031**	0.014	0.011	0.011	0.007	0.009
	(0.016)	(0.019)	(0.010)	(0.014)	(0.033)	(0.012)	(0.012)	(0.011)	(0.010)
FD x REC	0.179**								
	(0.075)								
TREAT x FD x REC	-0.041								
	(0.040)								
BANK CREDIT	-0.009	-0.010	-0.018	-0.003	0.002	-0.005	-0.006	-0.000	-0.003
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.028)	(0.029)
BANK CAPITAL	0.282***	0.283***	0.268***	0.278***	0.282***	0.279***	0.278***	0.274***	0.280***
	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)	(0.029)	(0.028)
GDPG	0.001	0.001	-0.001	-0.001	0.002	0.002	0.002	0.001	0.003
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
BM	-0.189***	-0.190***	-0.199***	-0.168***	-0.181***	-0.176***	-0.179***	-0.176***	-0.171***
	(0.036)	(0.036)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)
INFLATION	-0.003	-0.003	-0.003	-0.003	-0.005	-0.003	-0.003	-0.003	-0.003
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
FDI NET	0.013	0.015	0.013	0.014	0.014	0.012	0.012	0.014	0.013
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
FI		-0.529**							
		(0.248)							
TREAT x FI		0.254*							
		(0.136)							
FI x REC		0.230***							
		(0.075)							

TREAT x c.FI x REC	-0.066				
	(0.045)				
FID		-0.425*			
		(0.240)			
TREAT x FID		0.070			
		(0.093)			
FID x REC		0.271***			
		(0.069)			
TREAT x FID x REC		-0.011			
		(0.035)			
FIA			-0.451***		
			(0.151)		
TREAT x FIA			0.294**		
			(0.119)		
FIA x REC			0.127***		
			(0.047)		
TREAT x FIA x REC			-0.073*		
			(0.038)		
FIE				0.664***	
				(0.232)	
TREAT x FIE				-0.035	
				(0.183)	
FIE x REC				-0.143**	
				(0.070)	
TREAT x FIE x REC				-0.021	
				(0.057)	
FM					-0.072
					(0.153)
TREAT x c.FM					0.069
					(0.091)
c.FM x REC					0.058
					(0.052)
TREAT x c.FM x REC					-0.018
					(0.031)
FMD					

-0.098
(0.150)

TREAT x FMD							0.057		
							(0.085)		
FMD x REC							0.092*		
							(0.054)		
TREAT x FMD x REC							-0.007		
							(0.031)		
FMA								-0.340**	
								(0.160)	
TREAT x FMA								0.049	
								(0.085)	
FMA x REC								0.172***	
								(0.062)	
TREAT x FMA x REC								-0.009	
								(0.028)	
FME									0.025
									(0.086)
TREAT x FME									0.046
									(0.068)
FME x REC									-0.007
									(0.028)
TREAT x FME x REC									-0.021
									(0.023)
Constant	3.015***	3.145***	3.140***	3.007***	2.441***	2.870***	2.885***	2.924***	2.805***
	(0.235)	(0.248)	(0.233)	(0.229)	(0.261)	(0.224)	(0.222)	(0.224)	(0.223)
Observations	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147
R-squared	0.950	0.950	0.951	0.950	0.950	0.950	0.950	0.950	0.950
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HDFE Models	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 13: Treatment effects on banking stability, world governance, and renewable energy consumption						
VARIABLES	(1) Z-SCORE	(2) Z-SCORE	(3) Z-SCORE	(4) Z-SCORE	(5) Z-SCORE	(6) Z-SCORE
TREAT	-0.070**	-0.065***	-0.070***	-0.070***	-0.071***	-0.065***
	(0.029)	(0.024)	(0.026)	(0.025)	(0.025)	(0.024)
VAE	-0.132**					
	(0.066)					
TREAT x VAE	-0.005					
	(0.032)					
REC	-0.015	-0.013	-0.020	-0.019	-0.013	-0.014
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.024)
TREAT x REC	0.010	0.010	0.009	0.010	0.011	0.009
	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
VAE x REC	0.031					
	(0.021)					
TREAT x VAE x REC	0.012					
	(0.011)					
BANK CREDIT	0.004	-0.009	-0.014	-0.007	-0.011	-0.005
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)
BANK CAPITAL	0.277***	0.279***	0.276***	0.280***	0.270***	0.280***
	(0.028)	(0.028)	(0.029)	(0.028)	(0.029)	(0.028)
GDPG	0.002	-0.001	0.000	0.002	0.000	0.002
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
BM	-0.175***	-0.175***	-0.173***	-0.180***	-0.182***	-0.173***
	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)
INFLATION	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
FDI NET	0.012	0.012	0.012	0.012	0.012	0.012
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
PVE		-0.104**				
		(0.044)				
TREAT x PVE		0.004				
		(0.032)				
PVE x REC		0.038***				
		(0.014)				

TREAT x PVE x REC		0.006				
		(0.010)				
GEE			-0.174***			
			(0.059)			
TREAT x GEE			0.026			
			(0.028)			
GEE x REC			0.048***			
			(0.018)			
TREAT x GEE x REC			-0.001			
			(0.009)			
RQE				-0.057		
				(0.062)		
TREAT x RQE				0.002		
				(0.030)		
RQE x REC				0.021		
				(0.019)		
TREAT x RQE x REC				0.008		
				(0.010)		
RLE					-0.175**	
					(0.072)	
TREAT x RLE					0.021	
					(0.029)	
RLE x REC					0.056***	
					(0.021)	
TREAT x RLE x REC					0.002	
					(0.010)	
CCE						-0.042
						(0.055)
TREAT x CCE						0.015
						(0.025)
CCE x REC						0.014
						(0.016)
TREAT x CCE x REC						0.002
						(0.008)
Constant	2.793***	2.862***	2.912***	2.884***	2.925***	2.824***
	(0.222)	(0.225)	(0.226)	(0.228)	(0.227)	(0.223)

Observations	1,147	1,147	1,147	1,147	1,147	1,147
R-squared	0.950	0.950	0.950	0.950	0.950	0.950
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
HDFE Models	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 14: Treatment effects on banking stability, world governance, renewable energy consumption, and global financial development

VARIABLES	(1) Z-SCORE	(2) Z-SCORE	(3) Z-SCORE	(4) Z-SCORE	(5) Z-SCORE	(6) Z-SCORE
TREAT	-0.170**	-0.127**	-0.121	-0.175**	-0.121	-0.118*
	(0.070)	(0.058)	(0.077)	(0.078)	(0.078)	(0.071)
VAE	-0.208*					
	(0.120)					
TREAT x VAE	-0.129*					
	(0.078)					
REC	-0.066*	-0.066**	-0.056	-0.080**	-0.057	-0.075**
	(0.036)	(0.034)	(0.036)	(0.034)	(0.036)	(0.035)
TREAT x REC	0.050**	0.029*	0.036	0.052**	0.036	0.030
	(0.020)	(0.017)	(0.023)	(0.023)	(0.023)	(0.021)
VAE x REC	0.062*					
	(0.037)					
TREAT x VAE x REC	0.046*					
	(0.024)					
FD	-0.318	-0.299	-0.269	-0.176	-0.273	-0.419*
	(0.239)	(0.224)	(0.261)	(0.253)	(0.252)	(0.245)
TREAT x FD	0.239*	0.174	0.136	0.275	0.124	0.135
	(0.132)	(0.137)	(0.206)	(0.211)	(0.199)	(0.170)
VAE x FD	0.288					
	(0.230)					
TREAT x VAE x FD	0.203					
	(0.158)					
REC x FD	0.195**	0.175**	0.206**	0.155*	0.183**	0.233***
	(0.076)	(0.072)	(0.087)	(0.082)	(0.083)	(0.079)
TREAT x REC x FD	-0.118**	-0.066	-0.087	-0.126*	-0.078	-0.071
	(0.046)	(0.045)	(0.066)	(0.067)	(0.063)	(0.055)
VAE x REC x FD	-0.113					
	(0.074)					
TREAT x VAE x REC x FD	-0.038					
	(0.053)					
BANK CREDIT	-0.012	-0.018	-0.031	-0.008	-0.023	-0.020
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)

BANK CAPITAL	0.278***	0.280***	0.285***	0.283***	0.276***	0.282***
	(0.028)	(0.028)	(0.029)	(0.028)	(0.029)	(0.028)
GDPG	0.001	-0.001	0.001	0.001	0.000	0.002
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
BM	-0.188***	-0.193***	-0.197***	-0.202***	-0.200***	-0.195***
	(0.036)	(0.036)	(0.036)	(0.037)	(0.037)	(0.037)
INFLATION	-0.001	-0.002	-0.003	-0.001	-0.002	-0.002
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
FDI NET	0.013	0.013	0.014	0.012	0.013	0.013
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
PVE		-0.082				
		(0.084)				
TREAT x PVE		-0.069				
		(0.076)				
PVE x REC		0.038				
		(0.024)				
TREAT x PVE x REC		0.018				
		(0.021)				
PVE x FD		0.001				
		(0.222)				
TREAT x PVE x FD		0.096				
		(0.161)				
PVE x REC x FD		-0.030				
		(0.069)				
TREAT x PVE x REC x FD		-0.001				
		(0.051)				
GEE			-0.221*			
			(0.114)			
TREAT x GEE			-0.140			
			(0.087)			
GEE x REC			0.077**			
			(0.034)			
TREAT x GEE x REC			0.043*			
			(0.026)			
GEE x FD			0.276			
			(0.240)			

TREAT x GEE x FD	0.213		
	(0.141)		
GEE x REC x FD	-0.173**		
	(0.075)		
TREAT x GEE x REC x FD	-0.038		
	(0.044)		
RQE		0.202*	
		(0.114)	
TREAT x RQE		-0.178**	
		(0.074)	
RQE x REC		-0.053	
		(0.032)	
TREAT x RQE x REC		0.063***	
		(0.024)	
RQE x FD		-0.558**	
		(0.253)	
TREAT x RQE x FD		0.232*	
		(0.135)	
RQE x REC x FD		0.157**	
		(0.077)	
TREAT x RQE x REC x FD		-0.055	
		(0.046)	
RLE			-0.166
			(0.126)
TREAT x RLE			-0.101
			(0.077)
RLE x REC			0.058*
			(0.035)
TREAT x RLE x REC			0.036
			(0.023)
RLE x FD			0.140
			(0.283)
TREAT x RLE x FD			0.178
			(0.139)
RLE x REC x FD			-0.078
			(0.081)

TREAT x RLE x REC x FD					-0.037	
					(0.045)	
CCE						-0.056
						(0.104)
TREAT x CCE						-0.099
						(0.071)
CCE x REC						0.026
						(0.029)
TREAT x CCE x REC						0.028
						(0.020)
CCE x FD						0.134
						(0.212)
TREAT x CCE x FD						0.162
						(0.123)
CCE x REC x FD						-0.084
						(0.064)
TREAT x CCE x REC x FD						-0.025
						(0.040)
Constant	3.003***	3.078***	3.098***	3.076***	3.093***	3.096***
	(0.243)	(0.239)	(0.237)	(0.239)	(0.243)	(0.241)
Observations	1,147	1,147	1,147	1,147	1,147	1,147
R-squared	0.951	0.951	0.951	0.951	0.951	0.951
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
HDFE Models	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 15: Green growth, treatment effects, and global financial development

VARIABLES	(1) TREAT	(2) TREAT	(3) TREAT	(4) TREAT	(5) TREAT	(6) TREAT	(7) TREAT	(8) TREAT	(9) TREAT
GREEN GDP	-1.489*	-1.971*	-1.258*	-1.932**	-1.289	-1.220**	-1.472**	-1.209**	-1.081**
	(0.863)	(1.131)	(0.689)	(0.934)	(1.981)	(0.573)	(0.585)	(0.578)	(0.477)
FD	-0.187								
	(0.412)								
GREEN GDP x FD	0.825								
	(1.913)								
BANK CREDIT	-0.033	-0.005	-0.035	-0.013	-0.046	-0.042	-0.041	-0.040	-0.037
	(0.089)	(0.089)	(0.090)	(0.089)	(0.088)	(0.088)	(0.088)	(0.088)	(0.088)
BANK CAPITAL	0.245***	0.221**	0.246***	0.229***	0.236***	0.243***	0.245***	0.228***	0.249***
	(0.086)	(0.086)	(0.085)	(0.086)	(0.086)	(0.085)	(0.085)	(0.086)	(0.085)
GDPG	0.021	0.018	0.021	0.017	0.022	0.020	0.020	0.020	0.022
	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)
BM	-0.201*	-0.150	-0.209*	-0.170	-0.195*	-0.221**	-0.213*	-0.215**	-0.213*
	(0.111)	(0.112)	(0.111)	(0.111)	(0.110)	(0.110)	(0.110)	(0.109)	(0.109)
INFLATION	0.007	0.008	0.007	0.008	0.009	0.007	0.007	0.007	0.007
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
FDI NET	0.037	0.032	0.036	0.034	0.035	0.033	0.036	0.036	0.034
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)
FI		-0.832**							
		(0.379)							
GREEN GDP x FI		1.587							
		(1.930)							
FID			-0.054						
			(0.437)						
GREEN GDP x FID			0.225						
			(1.406)						
FIA				-0.398**					
				(0.202)					
GREEN GDP x FIA				1.466					
				(1.504)					
FIE					-0.351				
					(0.252)				

GREEN GDP x FIE					0.265				
					(3.498)				
FM						0.243			
						(0.261)			
GREEN GDP x c.FM						0.243			
						(1.661)			
FMD							0.031		
							(0.244)		
GREEN GDP x FMD							1.205		
							(1.546)		
FMA								0.461*	
								(0.279)	
GREEN GDP x FMA								0.155	
								(1.405)	
FME									0.077
									(0.120)
GREEN GDP x FME									-0.704
									(1.395)
Constant	0.607	0.627	0.598	0.518	0.804	0.622	0.627	0.573	0.587
	(0.647)	(0.646)	(0.648)	(0.647)	(0.664)	(0.648)	(0.649)	(0.647)	(0.648)
Observations	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260
R-squared	0.172	0.176	0.172	0.175	0.173	0.172	0.172	0.174	0.172
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HDFE Models	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 16: Green growth, treatment effects and world governance

VARIABLES	(1) TREAT	(2) TREAT	(3) TREAT	(4) TREAT	(5) TREAT	(6) TREAT
GREEN GDP	-1.316***	-2.345***	-1.596***	-1.265**	-1.698***	-1.798***
	(0.481)	(0.733)	(0.526)	(0.508)	(0.540)	(0.577)
VAE	0.104					
	(0.088)					
GREEN GDP x VAE	0.341					
	(0.439)					
BANK CREDIT	-0.051	-0.047	-0.041	-0.026	-0.032	-0.047
	(0.088)	(0.089)	(0.088)	(0.089)	(0.089)	(0.088)
BANK CAPITAL	0.258***	0.265***	0.258***	0.246***	0.254***	0.249***
	(0.086)	(0.086)	(0.085)	(0.085)	(0.085)	(0.085)
GDPG	0.019	0.021	0.020	0.024	0.021	0.020
	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)
BM	-0.208*	-0.200*	-0.192*	-0.200*	-0.186*	-0.211*
	(0.109)	(0.109)	(0.110)	(0.110)	(0.110)	(0.109)
INFLATION	0.007	0.009	0.007	0.007	0.007	0.009
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
FDI NET	0.039	0.040	0.040	0.039	0.040	0.039
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)
PVE		-0.031				
		(0.051)				
GREEN GDP x PVE		1.463**				
		(0.725)				
GEE			-0.125			
			(0.079)			
GREEN GDP x GEE			0.596			
			(0.433)			
RQE				-0.079		
				(0.081)		
GREEN GDP x RQE				0.218		
				(0.506)		
RLE					-0.128	
					(0.095)	

GREEN GDP x RLE					0.727	
					(0.452)	
CCE						0.012
						(0.079)
GREEN GDP x CCE						0.684*
						(0.410)
Constant	0.628	0.552	0.515	0.507	0.448	0.637
	(0.648)	(0.657)	(0.649)	(0.655)	(0.658)	(0.651)
Observations	1,260	1,260	1,260	1,260	1,260	1,260
R-squared	0.173	0.175	0.175	0.173	0.175	0.174
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
HDFE Models	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix A1.1: Variables and definition

Variable	Definition
GHG	The lograrithm value of one plus Total greenhouse gas emissions (kt of CO2 equivalent) [EN.ATM.GHGT.KT.CE]
Z-SCORE	The lograrithm value of one plus Bank Z-score [GFDD.SI.01]
BANK CREDIT	The lograrithm value of one plus Bank credit to bank deposits (%) [GFDD.SI.04]
BANK CAPITAL	The lograrithm value of one plus Bank capital to total assets (%) [GFDD.SI.03]
BANK LIQUIDITY	The lograrithm value of one plus Liquid assets to deposits and short-term funding (%) [GFDD.SI.06]
GDPG	The lograrithm value of one plus GDP growth (annual %) [NY.GDP.MKTP.KD. ZG]
BM	The lograrithm value of one plus Broad money (% of GDP) [FM.LBL.BMNY.GD.ZS]
INFLATION	The lograrithm value of one plus Inflation, GDP deflator (annual %) [NY.GDP.DEFL.KD.ZG]
FDI NET	The lograrithm value of one plus Foreign direct investment, net inflows (% of GDP) [BX.KLT.DINV.WD.GD.ZS]
FD	FD: Financial development index
FI	FI: Financial institutions
FM	FM: Financial markets
FID	FID: Financial institutions depth
FIA	FIA: Financial institutions access
FIE	FIE: Financial institutions efficiency
FMD	FMD: Financial markets depth
FMA	FMA: Financial markets access
FME	FME: Financial markets efficiency
VAE	Voice and Accountability, Estimate
PVE	Political Stability and Absence of Violence/Terrorism, Estimate
GEE	Government Effectiveness, Estimate
RQE	Regulatory Quality, Estimate
RLE	Rule of Law, Estimate
CCE	Control of Corruption, Estimate
REC	The lograrithm value of one plus Renewable energy consumption (% of total final energy consumption) (EG.FEC.RNEW.ZS)

Appendix A1.2: Descriptive statistics

Variable	N	Mean	Min	p50	Max	SD
GHG	3654	10.19509	3.926347	10.32223	16.35965	2.220605
Z-SCORE	2618	2.700937	-0.39449	2.766731	4.214108	0.580434
BANK CREDIT	3383	4.434787	2.153962	4.45908	7.959315	0.516581
BANK CAPITAL	2058	2.345575	0.912446	2.353441	3.453157	0.354429
BANK LIQUIDITY	2569	3.466345	0.322078	3.474757	5.060886	0.499346
GDPG	3304	1.511255	-9.73179	1.635797	4.499339	0.763358
BM	3055	3.822225	1.815346	3.853415	6.354677	0.678693
INFLATION	3387	1.687171	-3.35623	1.683471	8.47669	1.015686
FDI NET	3466	1.430699	-4.90212	1.400836	6.109427	0.888377
FD	3654	0.299174	0	0.221072	1	0.228059
FI	3654	0.384508	0	0.337614	1	0.220659
FM	3654	0.20312	0	0.058828	0.989362	0.256367
FID	3654	0.24265	0	0.137645	1	0.252166
FIA	3654	0.31902	0	0.258972	1	0.273877
FIE	3654	0.552027	0	0.57149	0.843037	0.13673
FMD	3654	0.201155	0	0.066783	0.998192	0.267237
FMA	3654	0.205917	0	0.021512	1	0.273066
FME	3654	0.193917	0	0.001641	1	0.322929
VAE	3642	-0.02819	-2.25916	-0.01985	1.800992	0.976404
PVE	3622	-0.02943	-3.00591	0.030277	1.758681	0.934172
GEE	3593	-0.01891	-2.45031	-0.18387	2.426029	0.963989
RQE	3596	-0.01337	-2.36604	-0.16504	2.255347	0.944419
RLE	3642	-0.03444	-2.26423	-0.20963	2.124782	0.963049
CCE	3607	-0.03018	-1.78443	-0.28144	2.459118	0.991665
REC	3639	2.896033	0	3.235536	4.579545	1.33687

Appendix A1.3: List of commercial banking systems with country names [1996-2019]

ID	Country Name	Freq.	Percent	Cum.	ID	Country Name	Freq.	Percent	Cum.
1	Albania	21	0.57	0.57	101	Marshall Islands	21	0.57	58.05
2	Algeria	21	0.57	1.15	102	Mauritania	21	0.57	58.62
3	Angola	21	0.57	1.72	103	Mauritius	21	0.57	59.2
4	Antigua and Barbuda	21	0.57	2.3	104	Mexico	21	0.57	59.77
5	Argentina	21	0.57	2.87	105	Micronesia, Fed. Sts.	21	0.57	60.34
6	Armenia	21	0.57	3.45	106	Moldova	21	0.57	60.92
7	Australia	21	0.57	4.02	107	Mongolia	21	0.57	61.49
8	Austria	21	0.57	4.6	108	Morocco	21	0.57	62.07
9	Azerbaijan	21	0.57	5.17	109	Mozambique	21	0.57	62.64
10	Bahamas, The	21	0.57	5.75	110	Myanmar	21	0.57	63.22
11	Bahrain	21	0.57	6.32	111	Namibia	21	0.57	63.79
12	Bangladesh	21	0.57	6.9	112	Nepal	21	0.57	64.37
13	Barbados	21	0.57	7.47	113	Netherlands	21	0.57	64.94
14	Belarus	21	0.57	8.05	114	New Zealand	21	0.57	65.52
15	Belgium	21	0.57	8.62	115	Nicaragua	21	0.57	66.09
16	Belize	21	0.57	9.2	116	Niger	21	0.57	66.67
17	Benin	21	0.57	9.77	117	Nigeria	21	0.57	67.24
18	Bhutan	21	0.57	10.34	118	North Macedonia	21	0.57	67.82
19	Bolivia	21	0.57	10.92	119	Norway	21	0.57	68.39
20	Bosnia and Herzegovina	21	0.57	11.49	120	Oman	21	0.57	68.97
21	Botswana	21	0.57	12.07	121	Pakistan	21	0.57	69.54
22	Brazil	21	0.57	12.64	122	Panama	21	0.57	70.11
23	Brunei Darussalam	21	0.57	13.22	123	Papua New Guinea	21	0.57	70.69
24	Bulgaria	21	0.57	13.79	124	Paraguay	21	0.57	71.26
25	Burkina Faso	21	0.57	14.37	125	Peru	21	0.57	71.84

26	Burundi	21	0.57	14.94	126	Philippines	21	0.57	72.41
27	Cabo Verde	21	0.57	15.52	127	Poland	21	0.57	72.99
28	Cambodia	21	0.57	16.09	128	Portugal	21	0.57	73.56
29	Cameroon	21	0.57	16.67	129	Qatar	21	0.57	74.14
30	Canada	21	0.57	17.24	130	Russian Federation	21	0.57	74.71
31	Central African Republic	21	0.57	17.82	131	Rwanda	21	0.57	75.29
32	Chad	21	0.57	18.39	132	Samoa	21	0.57	75.86
33	Chile	21	0.57	18.97	133	Sao Tome and Principe	21	0.57	76.44
34	China	21	0.57	19.54	134	Saudi Arabia	21	0.57	77.01
35	Colombia	21	0.57	20.11	135	Senegal	21	0.57	77.59
36	Comoros	21	0.57	20.69	136	Serbia	21	0.57	78.16
37	Congo, Rep.	21	0.57	21.26	137	Seychelles	21	0.57	78.74
38	Costa Rica	21	0.57	21.84	138	Sierra Leone	21	0.57	79.31
39	Croatia	21	0.57	22.41	139	Singapore	21	0.57	79.89
40	Cyprus	21	0.57	22.99	140	Slovak Republic	21	0.57	80.46
41	Czechia	21	0.57	23.56	141	Slovenia	21	0.57	81.03
42	Denmark	21	0.57	24.14	142	Solomon Islands	21	0.57	81.61
43	Djibouti	21	0.57	24.71	143	South Africa	21	0.57	82.18
44	Dominica	21	0.57	25.29	144	South Sudan	21	0.57	82.76
45	Dominican Republic	21	0.57	25.86	145	Spain	21	0.57	83.33
46	Ecuador	21	0.57	26.44	146	Sri Lanka	21	0.57	83.91
47	Egypt, Arab Rep.	21	0.57	27.01	147	St. Kitts and Nevis	21	0.57	84.48
48	El Salvador	21	0.57	27.59	148	St. Lucia	21	0.57	85.06
49	Equatorial Guinea	21	0.57	28.16	149	St. Vincent and the Grenadines	21	0.57	85.63
50	Eritrea	21	0.57	28.74	150	Sudan	21	0.57	86.21
51	Estonia	21	0.57	29.31	151	Suriname	21	0.57	86.78
52	Eswatini	21	0.57	29.89	152	Sweden	21	0.57	87.36
53	Ethiopia	21	0.57	30.46	153	Switzerland	21	0.57	87.93
54	Fiji	21	0.57	31.03	154	Syrian Arab Republic	21	0.57	88.51
55	Finland	21	0.57	31.61	155	Tajikistan	21	0.57	89.08
56	France	21	0.57	32.18	156	Tanzania	21	0.57	89.66

57	Gabon	21	0.57	32.76	157	Thailand	21	0.57	90.23
58	Gambia, The	21	0.57	33.33	158	Togo	21	0.57	90.8
59	Georgia	21	0.57	33.91	159	Tonga	21	0.57	91.38
60	Germany	21	0.57	34.48	160	Trinidad and Tobago	21	0.57	91.95
61	Ghana	21	0.57	35.06	161	Tunisia	21	0.57	92.53
62	Greece	21	0.57	35.63	162	Turkmenistan	21	0.57	93.1
63	Grenada	21	0.57	36.21	163	Uganda	21	0.57	93.68
64	Guatemala	21	0.57	36.78	164	Ukraine	21	0.57	94.25
65	Guinea	21	0.57	37.36	165	United Arab Emirates	21	0.57	94.83
66	Guinea-Bissau	21	0.57	37.93	166	United Kingdom	21	0.57	95.4
67	Guyana	21	0.57	38.51	167	United States	21	0.57	95.98
68	Haiti	21	0.57	39.08	168	Uruguay	21	0.57	96.55
69	Honduras	21	0.57	39.66	169	Uzbekistan	21	0.57	97.13
70	Hungary	21	0.57	40.23	170	Vanuatu	21	0.57	97.7
71	Iceland	21	0.57	40.8	171	Venezuela, RB	21	0.57	98.28
72	India	21	0.57	41.38	172	Vietnam	21	0.57	98.85
73	Indonesia	21	0.57	41.95	173	Yemen, Rep.	21	0.57	99.43
74	Iran, Islamic Rep.	21	0.57	42.53	174	Zambia	21	0.57	100
75	Ireland	21	0.57	43.1					
76	Israel	21	0.57	43.68		Total	3,654	100	
77	Italy	21	0.57	44.25					
78	Jamaica	21	0.57	44.83					
79	Japan	21	0.57	45.4					
80	Jordan	21	0.57	45.98					
81	Kazakhstan	21	0.57	46.55					
82	Kenya	21	0.57	47.13					
83	Kiribati	21	0.57	47.7					
84	Korea, Rep.	21	0.57	48.28					
85	Kuwait	21	0.57	48.85					
86	Kyrgyz Republic	21	0.57	49.43					
87	Lao PDR	21	0.57	50					

88	Latvia	21	0.57	50.57
89	Lebanon	21	0.57	51.15
90	Lesotho	21	0.57	51.72
91	Liberia	21	0.57	52.3
92	Libya	21	0.57	52.87
93	Lithuania	21	0.57	53.45
94	Luxembourg	21	0.57	54.02
95	Madagascar	21	0.57	54.6
96	Malawi	21	0.57	55.17
97	Malaysia	21	0.57	55.75
98	Maldives	21	0.57	56.32
99	Mali	21	0.57	56.9
100	Malta	21	0.57	57.47

Appendix A2: Treatment effects of greenhouse gas emissions on global financial development

VARIABLES	(1) FD	(2) FI	(3) FID	(4) FIA	(5) FIE	(6) FM	(7) FMD	(8) FMA	(9) FME
TREAT	-0.004*	-0.005**	0.000	-0.012***	-0.001	-0.003	-0.003	0.006*	-0.011
	(0.002)	(0.002)	(0.002)	(0.004)	(0.004)	(0.003)	(0.004)	(0.003)	(0.007)
BANK CREDIT	0.034***	0.046***	0.046***	0.077***	-0.028***	0.021**	0.031***	0.008	0.022
	(0.006)	(0.007)	(0.006)	(0.013)	(0.010)	(0.010)	(0.011)	(0.009)	(0.022)
BANK CAPITAL	-0.012*	-0.036***	-0.004	-0.062***	-0.030***	0.013	0.011	0.039***	-0.012
	(0.006)	(0.007)	(0.006)	(0.013)	(0.010)	(0.010)	(0.010)	(0.009)	(0.021)
GDPG	0.000	-0.004*	0.001	-0.012***	0.003	0.005	0.003	0.003	0.008
	(0.002)	(0.002)	(0.002)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.006)
BM	0.054***	0.068***	0.042***	0.088***	0.046***	0.038***	0.055***	0.008	0.046*
	(0.008)	(0.009)	(0.007)	(0.016)	(0.013)	(0.012)	(0.013)	(0.012)	(0.027)
INFLATION	0.000	0.001	-0.002	0.002	0.005*	-0.000	-0.001	-0.001	0.000
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.006)
FDI NET	0.002	-0.007***	-0.003*	-0.010**	-0.004	0.011***	0.009**	0.001	0.024***
	(0.002)	(0.002)	(0.002)	(0.004)	(0.003)	(0.003)	(0.004)	(0.003)	(0.007)
Constant	-0.014	0.036	-0.093**	-0.166*	0.576***	-0.064	-0.173**	0.060	-0.057
	(0.047)	(0.051)	(0.044)	(0.096)	(0.077)	(0.074)	(0.079)	(0.069)	(0.161)
Observations	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260
R-squared	0.981	0.975	0.988	0.938	0.835	0.967	0.966	0.972	0.906
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HDFE Models	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

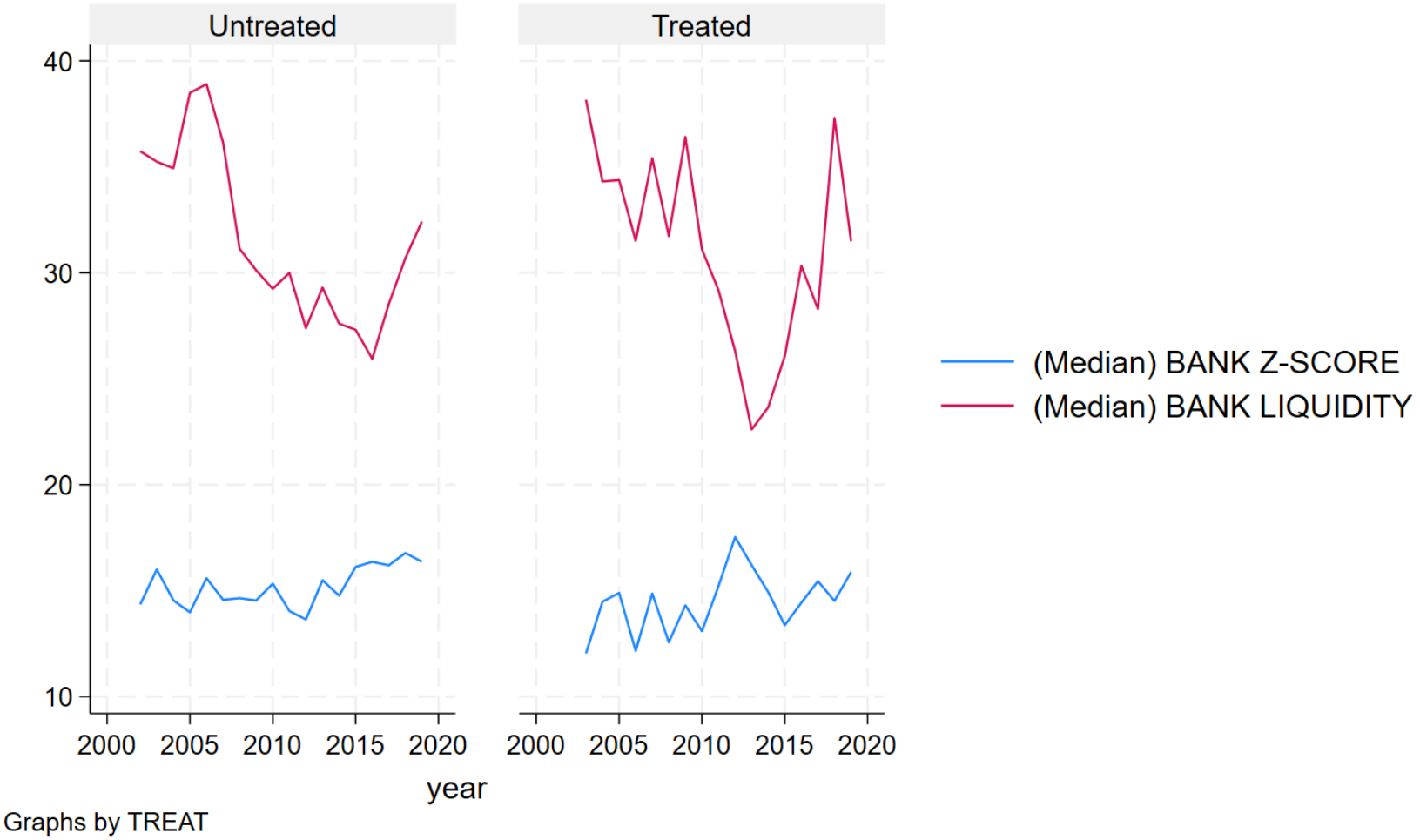

Figure 1: Bank Z-Score and Liquidity [yearly median values] by treatment. Authors' work.

Figure 2: Bank Z-Score and Liquidity [yearly standard deviation – Sd] by treatment. Authors' work.

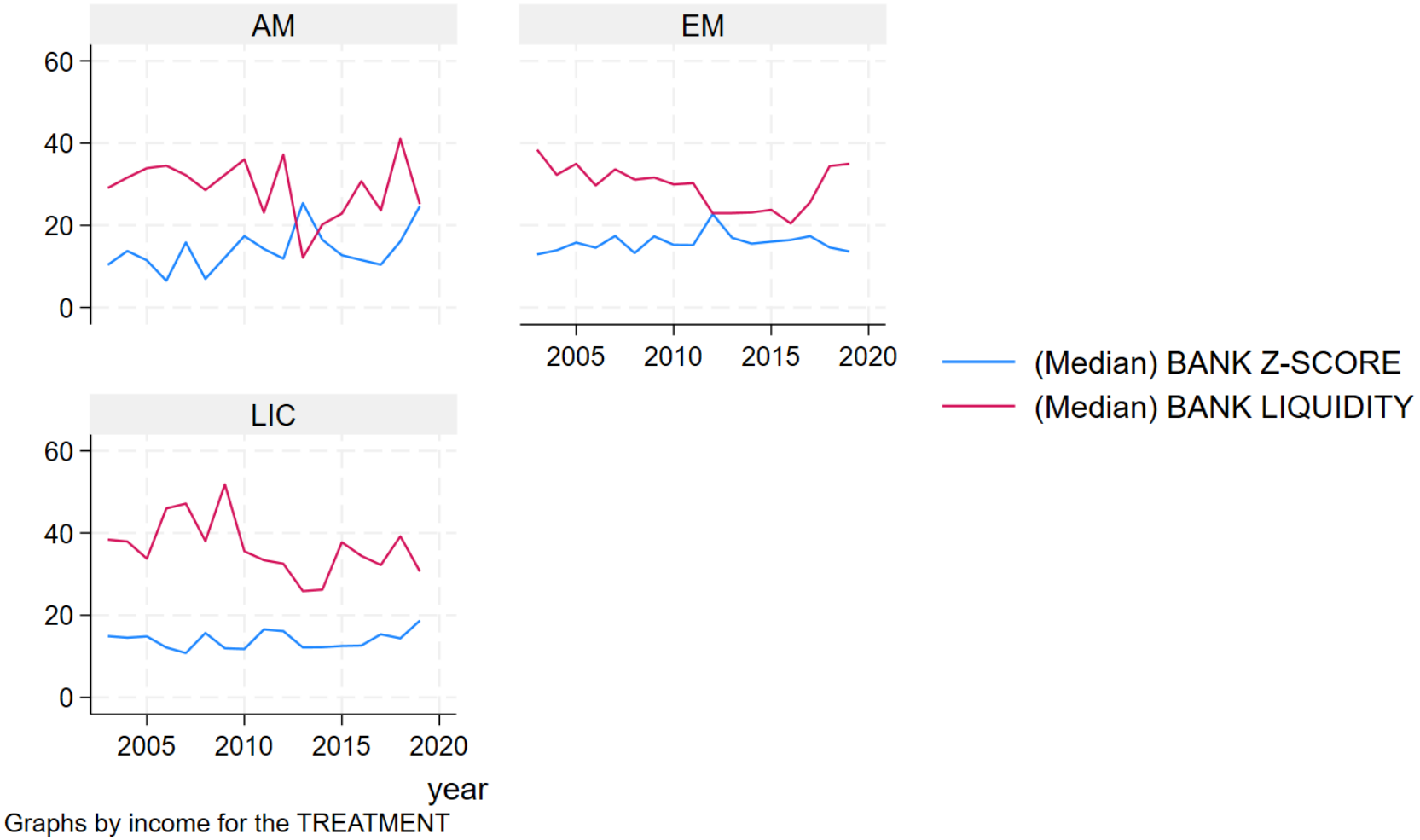

Figure 3: Bank Z-Score and Liquidity [yearly median values] by income. Authors' work.

Appendix A3: Treatment effects of greenhouse gas emissions by income group

VARIABLES	(1) Z-SCORE Advanced markets [AM]	(2) Z-SCORE Emerging markets [EM]	(3) Z-SCORE Low-income countries [LICs]
TREAT	0.018	-0.056***	-0.032*
	(0.034)	(0.011)	(0.018)
BANK CREDIT	-0.290**	-0.023	0.241***
	(0.124)	(0.033)	(0.065)
BANK CAPITAL	0.387**	0.252***	0.229***
	(0.150)	(0.034)	(0.059)
GDPG	-0.014	0.008	-0.015
	(0.031)	(0.010)	(0.017)
BM	-0.065	-0.224***	-0.137*
	(0.153)	(0.040)	(0.074)
INFLATION	0.012	-0.011	-0.005
	(0.021)	(0.009)	(0.014)
FDI NET	-0.004	0.009	0.030*
	(0.031)	(0.012)	(0.018)
Constant	3.828***	3.120***	1.560***
	(1.063)	(0.243)	(0.394)
Observations	152	742	253
R-squared	0.945	0.956	0.943
Year FE	Yes	Yes	Yes
Region FE	Yes	Yes	Yes
Country FE	Yes	Yes	Yes
HDFE Models	Yes	Yes	Yes

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

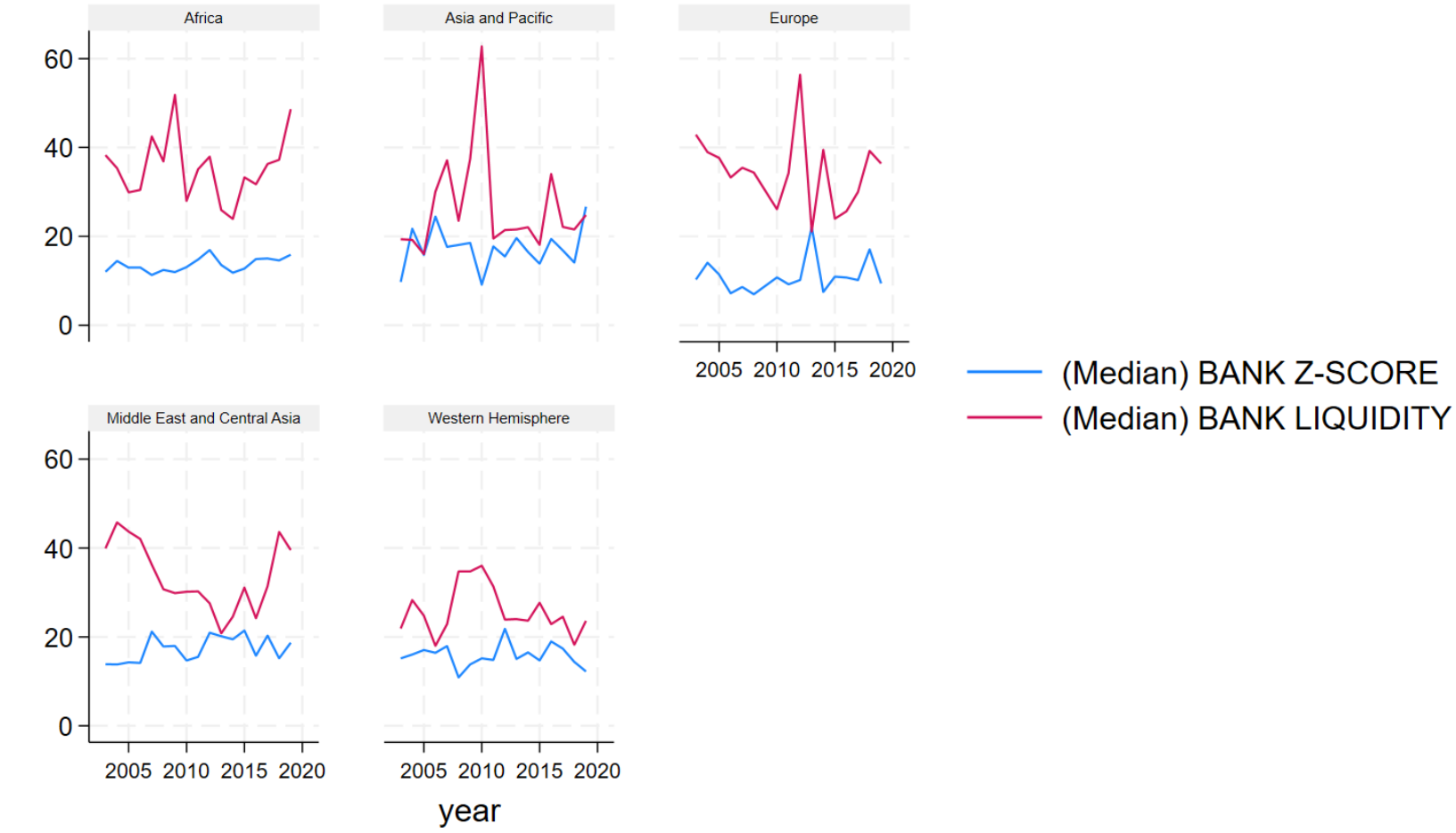

Figure 4: Bank Z-Score and Liquidity [yearly median values] by region. Authors' work.

Appendix A4: Treatment effects of greenhouse gas emissions by region

VARIABLES	(1) Z-SCORE Africa	(2) Z-SCORE Asia and Pacific	(3) Z-SCORE Europe	(4) Z-SCORE Middle East and Central Asia	(5) Z-SCORE Western Hemisphere
TREAT	-0.029*	-0.045**	-0.017	-0.069***	-0.057***
	(0.017)	(0.018)	(0.031)	(0.026)	(0.014)
BANK CREDIT	0.145**	-0.064	-0.121	-0.022	0.058
	(0.056)	(0.080)	(0.085)	(0.076)	(0.052)
BANK CAPITAL	0.166***	0.567***	0.520***	0.162*	0.182***
	(0.040)	(0.071)	(0.096)	(0.088)	(0.058)
GDPG	-0.001	0.008	0.013	-0.033	0.005
	(0.016)	(0.023)	(0.022)	(0.026)	(0.015)
BM	-0.204***	0.034	-0.126	-0.209**	-0.223***
	(0.069)	(0.082)	(0.122)	(0.094)	(0.054)
INFLATION	-0.006	0.023*	0.001	-0.013	-0.013
	(0.011)	(0.012)	(0.025)	(0.023)	(0.016)
FDI NET	0.017	0.018	0.029	0.048*	-0.019
	(0.015)	(0.027)	(0.026)	(0.026)	(0.015)
Constant	2.397***	1.634***	2.334***	3.318***	3.080***
	(0.381)	(0.585)	(0.689)	(0.569)	(0.344)
Observations	244	209	233	199	262
R-squared	0.946	0.973	0.908	0.957	0.973
Year FE	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
HDFE Models	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix A5: Treatment effects of greenhouse gas emissions before and after the Paris Agreement

VARIABLES	(1) Z-SCORE	(2) Z-SCORE
TREAT	-0.047***	-0.008
	(0.011)	(0.010)
BANK CREDIT	-0.051	0.246***
	(0.035)	(0.067)
BANK CAPITAL	0.268***	0.227***
	(0.034)	(0.075)
GDPG	-0.003	0.011
	(0.010)	(0.015)
BM	-0.207***	-0.092
	(0.045)	(0.095)
INFLATION	-0.012	0.012
	(0.009)	(0.009)
FDI NET	0.018	-0.019*
	(0.012)	(0.011)
Constant	3.143***	1.517**
	(0.256)	(0.606)
Observations	862	272
R-squared	0.947	0.990
Year FE	Yes	Yes
Region FE	Yes	Yes
Country FE	Yes	Yes
HDFE Models	Yes	Yes

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix A6: Treatment regressions by quartile of financial development

VARIABLES	(1) Z-SCORE	(2) Z-SCORE	(3) Z-SCORE	(4) Z-SCORE	(5) Z-SCORE	(6) Z-SCORE	(7) Z-SCORE	(8) Z-SCORE	(9) Z-SCORE
TREAT x FD_Q	-0.0271***								
	(0.0055)								
L.LOG_BANK_CREDIT	-0.0018	-0.0009	-0.0017	-0.0018	-0.0030	-0.0021	-0.0017	-0.0014	-0.0025
	(0.0282)	(0.0283)	(0.0283)	(0.0283)	(0.0283)	(0.0282)	(0.0282)	(0.0283)	(0.0283)
L.LOGBANK_CAPITAL	0.2777***	0.2768***	0.2785***	0.2783***	0.2791***	0.2801***	0.2798***	0.2798***	0.2802***
	(0.0283)	(0.0283)	(0.0283)	(0.0283)	(0.0283)	(0.0282)	(0.0283)	(0.0283)	(0.0283)
L.LOGGDPG	0.0038	0.0040	0.0037	0.0038	0.0033	0.0032	0.0030	0.0037	0.0036
	(0.0083)	(0.0083)	(0.0083)	(0.0083)	(0.0083)	(0.0083)	(0.0083)	(0.0083)	(0.0083)
L.LOGBM	-0.1690***	-0.1685***	-0.1692***	-0.1690***	-0.1666***	-0.1703***	-0.1704***	-0.1712***	-0.1692***
	(0.0346)	(0.0346)	(0.0347)	(0.0347)	(0.0346)	(0.0346)	(0.0346)	(0.0347)	(0.0346)
L.LOGINFLATION	-0.0034	-0.0034	-0.0037	-0.0035	-0.0031	-0.0034	-0.0035	-0.0037	-0.0035
	(0.0072)	(0.0072)	(0.0072)	(0.0072)	(0.0072)	(0.0072)	(0.0072)	(0.0072)	(0.0072)
L.LOGFDINET	0.0136	0.0134	0.0133	0.0134	0.0131	0.0135	0.0135	0.0136	0.0133
	(0.0092)	(0.0092)	(0.0092)	(0.0092)	(0.0092)	(0.0092)	(0.0092)	(0.0092)	(0.0092)
TREAT x FI_Q		-0.0260***							
		(0.0056)							
TREAT x FID_Q			-0.0261***						
			(0.0057)						
TREAT x FIA_Q				-0.0249***					
				(0.0055)					
TREAT x FIE_Q					-0.0275***				
					(0.0057)				
TREAT x FM_Q						-0.0275***			
						(0.0055)			
TREAT x FMD_Q							-0.0265***		
							(0.0054)		
TREAT x FMA_Q								-0.0249***	
								(0.0054)	
TREAT x FME_Q									-0.0255***
									(0.0052)
Constant	2.7514***	2.7466***	2.7497***	2.7491***	2.7447***	2.7540***	2.7530***	2.7533***	2.7501***
	(0.2041)	(0.2044)	(0.2044)	(0.2045)	(0.2042)	(0.2040)	(0.2041)	(0.2045)	(0.2042)

Observations	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147
R-squared	0.9496	0.9494	0.9494	0.9494	0.9495	0.9496	0.9496	0.9494	0.9495
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HDFE Models	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix A7: Treatment regressions by quartile of financial development with high renewable energy consumption

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	Z-SCORE	Z-SCORE	Z-SCORE	Z-SCORE	Z-SCORE	Z-SCORE	Z-SCORE	Z-SCORE	Z-SCORE
TREAT x FD_Q	-0.0253***								
	(0.0079)								
BANK CREDIT	0.0205	0.0237	0.0234	0.0214	0.0214	0.0198	0.0191	0.0219	0.0206
	(0.0360)	(0.0360)	(0.0361)	(0.0360)	(0.0360)	(0.0359)	(0.0359)	(0.0361)	(0.0360)
BANK CAPITAL	0.2908***	0.2918***	0.2928***	0.2924***	0.2935***	0.2943***	0.2939***	0.2944***	0.2938***
	(0.0324)	(0.0325)	(0.0325)	(0.0324)	(0.0324)	(0.0323)	(0.0323)	(0.0325)	(0.0324)
GDPG	-0.0076	-0.0080	-0.0081	-0.0078	-0.0084	-0.0083	-0.0085	-0.0081	-0.0077
	(0.0106)	(0.0107)	(0.0107)	(0.0107)	(0.0107)	(0.0106)	(0.0106)	(0.0107)	(0.0107)
BM	-0.1067**	-0.1050**	-0.1062**	-0.1049**	-0.1031**	-0.1073**	-0.1068**	-0.1076**	-0.1053**
	(0.0427)	(0.0428)	(0.0429)	(0.0427)	(0.0428)	(0.0427)	(0.0426)	(0.0428)	(0.0427)
INFLATION	-0.0036	-0.0041	-0.0043	-0.0042	-0.0030	-0.0038	-0.0039	-0.0040	-0.0038
	(0.0091)	(0.0092)	(0.0092)	(0.0091)	(0.0092)	(0.0091)	(0.0091)	(0.0092)	(0.0091)
FDI NET	-0.0019	-0.0018	-0.0019	-0.0020	-0.0022	-0.0021	-0.0023	-0.0020	-0.0025
	(0.0110)	(0.0111)	(0.0111)	(0.0110)	(0.0110)	(0.0110)	(0.0110)	(0.0111)	(0.0110)
TREAT x FI_Q		-0.0212***							
		(0.0082)							
TREAT x FID_Q			-0.0195**						
			(0.0080)						
TREAT x FIA_Q				-0.0240***					
				(0.0082)					
TREAT x FIE_Q					-0.0228***				
					(0.0080)				
TREAT x FM_Q						-0.0250***			
						(0.0076)			
TREAT x FMD_Q							-0.0257***		
							(0.0074)		
TREAT x FMA_Q								-0.0203***	
								(0.0075)	
TREAT x FME_Q									-0.0218***
									(0.0071)
Constant	2.3882***	2.3645***	2.3683***	2.3741***	2.3635***	2.3874***	2.3912***	2.3767***	2.3762***
	(0.2524)	(0.2530)	(0.2534)	(0.2526)	(0.2526)	(0.2523)	(0.2519)	(0.2531)	(0.2525)

Observations	581	581	581	581	581	581	581	581	581
R-squared	0.9569	0.9565	0.9565	0.9567	0.9567	0.9569	0.9570	0.9566	0.9568
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HDFE Models	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix A8: Treatment regressions by quartile of financial development with low renewable energy consumption

VARIABLES	(1) Z-SCORE	(2) Z-SCORE	(3) Z-SCORE	(4) Z-SCORE	(5) Z-SCORE	(6) Z-SCORE	(7) Z-SCORE	(8) Z-SCORE	(9) Z-SCORE
TREAT x FD_Q	-0.0255***								
	(0.0077)								
BANK CREDIT	-0.0337	-0.0344	-0.0350	-0.0347	-0.0356	-0.0338	-0.0332	-0.0331	-0.0343
	(0.0465)	(0.0465)	(0.0465)	(0.0466)	(0.0464)	(0.0465)	(0.0465)	(0.0465)	(0.0465)
BANK CAPITAL	0.2412***	0.2381***	0.2402***	0.2405***	0.2400***	0.2410***	0.2409***	0.2402***	0.2423***
	(0.0516)	(0.0516)	(0.0516)	(0.0517)	(0.0516)	(0.0515)	(0.0516)	(0.0516)	(0.0515)
GDPG	0.0112	0.0117	0.0109	0.0117	0.0109	0.0109	0.0107	0.0114	0.0108
	(0.0129)	(0.0129)	(0.0129)	(0.0129)	(0.0128)	(0.0128)	(0.0129)	(0.0129)	(0.0128)
BM	-0.2602***	-0.2598***	-0.2597***	-0.2610***	-0.2603***	-0.2627***	-0.2631***	-0.2635***	-0.2632***
	(0.0566)	(0.0567)	(0.0566)	(0.0568)	(0.0566)	(0.0566)	(0.0567)	(0.0567)	(0.0566)
INFLATION	0.0012	0.0019	0.0017	0.0017	0.0010	0.0014	0.0013	0.0011	0.0012
	(0.0111)	(0.0111)	(0.0111)	(0.0112)	(0.0111)	(0.0111)	(0.0111)	(0.0111)	(0.0111)
FDI NET	0.0086	0.0078	0.0080	0.0081	0.0082	0.0086	0.0085	0.0088	0.0088
	(0.0160)	(0.0160)	(0.0160)	(0.0160)	(0.0160)	(0.0160)	(0.0160)	(0.0160)	(0.0160)
TREAT x FI_Q		-0.0252***							
		(0.0079)							
TREAT x FID_Q			-0.0270***						
			(0.0081)						
TREAT x FIA_Q				-0.0217***					
				(0.0076)					
TREAT x FIE_Q					-0.0280***				
					(0.0083)				
TREAT x FM_Q						-0.0269***			
						(0.0078)			
TREAT x FMD_Q							-0.0250***		
							(0.0078)		
TREAT x FMA_Q								-0.0252***	
								(0.0079)	
TREAT x FME_Q									-0.0261***
									(0.0076)
Constant	3.3897***	3.3974***	3.3959***	3.3964***	3.4028***	3.4015***	3.4007***	3.4023***	3.4035***
	(0.3417)	(0.3419)	(0.3416)	(0.3426)	(0.3414)	(0.3413)	(0.3419)	(0.3419)	(0.3414)

Observations	562	562	562	562	562	562	562	562	562
R-squared	0.9493	0.9492	0.9493	0.9490	0.9494	0.9494	0.9492	0.9492	0.9494
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HDFE Models	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix A9: Treatment regressions by quartile of world governance indicators

VARIABLES	(1) Z-SCORE	(2) Z-SCORE	(3) Z-SCORE	(4) Z-SCORE	(5) Z-SCORE	(6) Z-SCORE
TREAT x VAE_Q	-0.0254***					
	(0.0060)					
BANK CREDIT	-0.0038	-0.0004	-0.0022	-0.0034	-0.0022	-0.0033
	(0.0283)	(0.0284)	(0.0283)	(0.0284)	(0.0283)	(0.0284)
BANK CAPITAL	0.2784***	0.2801***	0.2792***	0.2803***	0.2801***	0.2804***
	(0.0284)	(0.0284)	(0.0283)	(0.0284)	(0.0283)	(0.0284)
GDPG	0.0035	0.0036	0.0034	0.0032	0.0032	0.0032
	(0.0083)	(0.0083)	(0.0083)	(0.0083)	(0.0083)	(0.0083)
BM	-0.1699***	-0.1683***	-0.1682***	-0.1701***	-0.1677***	-0.1691***
	(0.0347)	(0.0348)	(0.0346)	(0.0347)	(0.0347)	(0.0347)
INFLATION	-0.0038	-0.0037	-0.0037	-0.0037	-0.0037	-0.0036
	(0.0072)	(0.0072)	(0.0072)	(0.0072)	(0.0072)	(0.0072)
FDI NET	0.0137	0.0132	0.0135	0.0139	0.0137	0.0134
	(0.0092)	(0.0092)	(0.0092)	(0.0092)	(0.0092)	(0.0092)
TREAT x PVE_Q		-0.0238***				
		(0.0063)				
TREAT x GEE_Q			-0.0264***			
			(0.0058)			
TREAT x RQE_Q				-0.0232***		
				(0.0057)		
TREAT x RLE_Q					-0.0258***	
					(0.0061)	
TREAT x CCE_Q						-0.0250***
						(0.0060)
Constant	2.7615***	2.7347***	2.7468***	2.7554***	2.7417***	2.7517***
	(0.2049)	(0.2050)	(0.2044)	(0.2050)	(0.2047)	(0.2049)
Observations	1,147	1,147	1,147	1,147	1,147	1,147
R-squared	0.9493	0.9491	0.9494	0.9492	0.9493	0.9492
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
HDFE Models	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix A10: Treatment regressions by quartile of world governance indicators with high renewable energy consumption						
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Z-SCORE	Z-SCORE	Z-SCORE	Z-SCORE	Z-SCORE	Z-SCORE
TREAT x VAE_Q	-0.0193**					
	(0.0079)					
BANK CREDIT	0.0208	0.0236	0.0220	0.0227	0.0233	0.0219
	(0.0362)	(0.0361)	(0.0361)	(0.0361)	(0.0360)	(0.0361)
BANK CAPITAL	0.2926***	0.2940***	0.2935***	0.2934***	0.2929***	0.2934***
	(0.0325)	(0.0325)	(0.0325)	(0.0325)	(0.0325)	(0.0325)
GDPG	-0.0085	-0.0082	-0.0080	-0.0085	-0.0083	-0.0082
	(0.0107)	(0.0107)	(0.0107)	(0.0107)	(0.0107)	(0.0107)
BM	-0.1051**	-0.1048**	-0.1035**	-0.1057**	-0.1041**	-0.1047**
	(0.0429)	(0.0429)	(0.0428)	(0.0429)	(0.0428)	(0.0428)
INFLATION	-0.0043	-0.0043	-0.0041	-0.0042	-0.0041	-0.0041
	(0.0092)	(0.0092)	(0.0092)	(0.0092)	(0.0092)	(0.0092)
FDI NET	-0.0014	-0.0021	-0.0019	-0.0014	-0.0018	-0.0020
	(0.0111)	(0.0111)	(0.0111)	(0.0111)	(0.0111)	(0.0111)
TREAT x PVE_Q		-0.0206**				
		(0.0086)				
TREAT x GEE_Q			-0.0221***			
			(0.0081)			
TREAT x RQE_Q				-0.0197**		
				(0.0080)		
TREAT x RLE_Q					-0.0225***	
					(0.0084)	
TREAT x CCE_Q						-0.0204**
						(0.0083)
Constant	2.3758***	2.3590***	2.3623***	2.3672***	2.3606***	2.3679***
	(0.2536)	(0.2532)	(0.2528)	(0.2533)	(0.2528)	(0.2533)
Observations	581	581	581	581	581	581
R-squared	0.9565	0.9565	0.9566	0.9565	0.9566	0.9565
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes

HDFE Models	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix A11: Treatment regressions by quartile of world governance indicators with low renewable energy consumption						
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Z-SCORE	Z-SCORE	Z-SCORE	Z-SCORE	Z-SCORE	Z-SCORE
TREAT x VAE_Q	-0.0252***					
	(0.0091)					
BANK CREDIT	-0.0358	-0.0338	-0.0356	-0.0377	-0.0365	-0.0370
	(0.0466)	(0.0467)	(0.0465)	(0.0466)	(0.0466)	(0.0466)
BANK CAPITAL	0.2408***	0.2412***	0.2403***	0.2423***	0.2431***	0.2441***
	(0.0517)	(0.0518)	(0.0516)	(0.0518)	(0.0517)	(0.0517)
GDPG	0.0111	0.0115	0.0107	0.0109	0.0106	0.0105
	(0.0129)	(0.0129)	(0.0129)	(0.0129)	(0.0129)	(0.0129)
BM	-0.2633***	-0.2625***	-0.2625***	-0.2637***	-0.2617***	-0.2637***
	(0.0569)	(0.0569)	(0.0567)	(0.0569)	(0.0568)	(0.0568)
INFLATION	0.0014	0.0015	0.0012	0.0014	0.0013	0.0015
	(0.0112)	(0.0112)	(0.0111)	(0.0112)	(0.0112)	(0.0112)
FDI NET	0.0077	0.0077	0.0083	0.0083	0.0084	0.0085
	(0.0160)	(0.0160)	(0.0160)	(0.0160)	(0.0160)	(0.0160)
TREAT x PVE_Q		-0.0239***				
		(0.0092)				
TREAT x GEE_Q			-0.0260***			
			(0.0082)			
TREAT x RQE_Q				-0.0220***		
				(0.0082)		
TREAT x RLE_Q					-0.0248***	
					(0.0087)	
TREAT x CCE_Q						-0.0253***
						(0.0088)
Constant	3.4121***	3.3969***	3.4103***	3.4174***	3.4028***	3.4109***
	(0.3428)	(0.3431)	(0.3419)	(0.3430)	(0.3426)	(0.3426)
Observations	562	562	562	562	562	562
R-squared	0.9490	0.9489	0.9492	0.9489	0.9490	0.9490
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes

HDFE Models	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix A12: Bank capital and liquidity

VARIABLES	(1) Z-SCORE	(2) Z-SCORE	(3) Z-SCORE	(4) Z-SCORE	(5) Z-SCORE
TREAT x FD_Q x REC_Q	-0.0165***				
	(0.0037)				
BANK CREDIT	-0.0047	0.0003	0.0184	-0.0030	0.0151
	(0.0283)	(0.0282)	(0.0285)	(0.0283)	(0.0285)
BANK CAPITAL	0.2777***	0.2855***	0.2734***	0.2846***	0.2726***
	(0.0283)	(0.0282)	(0.0283)	(0.0283)	(0.0284)
GDPG	0.0040	0.0038	0.0001	0.0038	0.0002
	(0.0083)	(0.0083)	(0.0083)	(0.0083)	(0.0083)
BM	-0.1675***	-0.1666***	-0.1836***	-0.1650***	-0.1834***
	(0.0347)	(0.0346)	(0.0346)	(0.0347)	(0.0346)
INFLATION	-0.0035	-0.0033	-0.0023	-0.0035	-0.0025
	(0.0072)	(0.0072)	(0.0073)	(0.0072)	(0.0073)
FDI NET	0.0132	0.0133	0.0131	0.0130	0.0126
	(0.0092)	(0.0092)	(0.0096)	(0.0092)	(0.0096)
TREAT x FD_Q x BANK_CAPITAL_Q		-0.0174***			
		(0.0034)			
TREAT x FD_Q x BANK_LIQUIDITY_Q			-0.0146***		
			(0.0036)		
TREAT x FD_Q x REC_Q x BANK_CAPITAL_Q				-0.0104***	
				(0.0023)	
TREAT x FD_Q x REC_Q x BANK_LIQUIDITY_Q					-0.0093***
					(0.0025)
Constant	2.7574***	2.7142***	2.7315***	2.7239***	2.7474***
	(0.2046)	(0.2038)	(0.2038)	(0.2043)	(0.2042)
Observations	1,147	1,147	1,116	1,147	1,116
R-squared	0.9494	0.9497	0.9505	0.9494	0.9504

Year FE	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
HDFE Models	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

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