Is Corporate Taxation Bad for the Environment?
An Empirical Analysis of the Association between State-Level Taxation and Corporate Environmental Performance

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ABSTRACT

I investigate the impact of statutory tax rates on U.S. firms' environmental performance. Prior literature emphasizes the effect of manager influence on the relation between tax avoidance and environmental activities. However, it is unclear how taxes imposed on a firm impact environmental performance. Firms subject to higher statutory tax rates experience more restricted cash flows. As such, higher statutory tax rates may limit managers' ability to address environmental concerns. Firms that experience higher statutory tax rates may not prioritize environmental efforts, which are often non-essential to a firm's operations, despite government incentives. Alternatively, higher tax rates may encourage firms to address environmental concerns due to the tax shield that these expenses provide and the relatively lower cost to shareholders. Observing tax rate variation at the state level, I find higher state tax rates are associated with weaker environmental performance. My study contributes to regulators' understanding of the interaction between tax policy and firms' abilities to address their environmental impact.

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GENERAL AUDIENCE ABSTRACT

I investigate the impact of statutory state income tax rates on U.S. firms' environmental performance. Firms subject to higher tax rates experience more restricted cash flows. As such, higher tax rates may limit managers' ability to address environmental concerns. Alternatively, higher tax rates may encourage firms to address environmental concerns due to the tax write off that these expenses provide. Observing tax rate variation at the state level, I find higher state tax rates are associated with weaker environmental performance. My study contributes to regulators' understanding of the interaction between tax policy and firms' abilities to address their environmental impact.

I. INTRODUCTION

Shareholder concern regarding firm environmental performance has grown in recent years. In the first two months of 2023, more than 130 shareholder resolutions were filed on issues related to environmental concerns, representing a 12 percent increase from 2022 (Copley, 2023). Government interest in addressing environmental concerns has also increased.[1] However, it is unclear what effect tax incentives and restrictions from government intervention has relative to other tax effects. Because taxes and government policies can have large effects on corporate behavior, it is important to understand how taxes affect firms' environmental activities.

In this study, I examine how imposed taxation impacts environmental performance by investigating the impact of state tax rates on firms' environmental ratings.[2] This study deviates from prior work by emphasizing the environmental component of environmental, social, and governance (ESG) ratings because of the impact financial expenditures have on environmental concerns. Firms facing higher statutory tax rates are subject to more restricted cash flows, limiting their ability to address environmental concerns. Environmental concerns can also be detrimental to firm cash flows if they lead to litigation or fines and penalties stemming from environmental violations. The threat of litigation incentivizes firms to mitigate these issues. However, these environmental efforts are often in opposition to profit concerns. As such, firms may limit these expenditures when faced with resource constraints brought on by higher tax rates. On the other hand, higher statutory tax rates increase the tax shield provided by environmental expenditures and decrease the relative cost to shareholders to address firm

[1] In August of 2022, the Inflation Reduction Act marked the most significant environmental legislation passed in U.S. history (whitehouse.gov).

[2] Prior work has focused on statutory tax rates on multi-country or non-US countries. For instance, Farooq, et al. (2023) finds that statutory tax rates are positively correlated with pollution emissions within industrialized countries such as China, Japan, and Germany.

environmental concerns. Prior work has found mixed relations between effective tax rates and environmental performance in the U.S., however, effective tax rates, like environmental performance is influenced by management. In contrast, I examine statutory tax rates, which better represent government-imposed effects on companies.

I investigate how statutory tax rates impact firms' environmental performance using MSCI's KLD environmental strengths and concerns ratings to represent a firm's environmental performance. The statutory tax rates for each firm-year come from Serrato and Zida (2018) and the Tax Foundation website (taxfoundation.org). Using an OLS regression, I find a negative relation between state tax rates and environmental performance after controlling for states' political leanings. This relationship holds in a changes specification that minimizes the influence of firm characteristics on the model estimates. I also observe the impact of state-level environmental legislation on firm environmental performance. Using data from the NC Clean Technology Center, I find a positive (negative) relation between environmental performance and incentive (restriction) based environmental legislation. Overall, the results are consistent with the view that firms subject to higher tax rates limit their environmental efforts as a result of facing resource constraints.

I perform several robustness tests and additional analyses to support the main findings of my study. The main findings are robust to both state and firm fixed effects. Corroborating the main findings, I also investigate an alternative measure of environmental performance using violation data from the Environmental Protection Agency (EPA). This model reveals a positive relationship between firm violation of EPA regulations and corporate state income tax rates. Additionally, I examine environmental performance at the state level to determine whether tax rates influence governmental environmental efforts. In this setting, I observe a positive relation

between corporate state income tax rates and governmental environmental performance, indicating that states with higher levels of tax revenue are more able to pursue environmental investments. These additional tests indicate that the effects at the firm level may be offset by the state's actions.

This study makes several contributions. First, studying the relation between statutory tax rates and environmental ratings helps bridge the gap between tax policy and how firms address their environmental concerns. While legislation may add restrictions surrounding environmental concerns or assess fines and penalties for failing to do so, this paper suggests that firms will choose to address their environmental concerns when given more financial discretion resulting from lower tax rates. Further, the study provides evidence that firms will increase their environmental performance when given enough economic incentives, suggesting the "carrot" over the "stick" approach in relation to government intervention. Recent work outside of the accounting discipline has investigated the effectiveness of these two legislative approaches (Pacheco-Vega, 2020; Costa, 2021; Li, et. al, 2023). However, this study furthers the accounting literature by investigating each legislative approach using an environmental performance measure well established within the accounting setting.

Second, the study contributes to the literature on how statutory tax rates affect firm activities and investments. Prior work shows that higher tax rates restrict investment in profit maximizing activities (Atanassov & Liu, 2020; Djankov et al. 2010; Fazzari, 1988). However, these studies do not examine how taxation impacts firm activities unrelated to profit maximization. Managers' personal preferences may lead to decisions related to these activities that go beyond pure economic concerns. I find that firms facing resource constraints as a result

of higher tax rates also limit non-essential investments related to addressing their environmental concerns.

Finally, this study contributes to regulators' understanding of the relation between tax rates and firms' environmental activities within a US setting. Consistent with findings from an international setting (Farooq et al. 2023), I also find evidence that tax incentives act as a more effective motivation for environmental performance than legislative restrictions. Given the U.S.'s litigious tendencies regarding environmental issues, it was previously unclear whether these international findings would hold true in a domestic setting. Regulators attempting to help the environment should understand the impact tax policy can have on environmental efforts, and what type of legislation can be most effective for achieving their desired outcomes.

II. BACKGROUND AND PRIOR LITERATURE

Environmental, Social, Governance Performance (ESG) and Taxation

A number of prior papers have examined the relation between ESG and tax avoidance (Drake et al. 2020; Muller and Kolk. 2015; Schwab et al. 2021). Though defined in various ways, the most common method is using effective tax rates (ETRs), which captures a firm's tax payments as a percentage of total income. Prior literature finds inconsistent evidence regarding the relation between ESG performance and tax avoidance. For instance, Davis et. al. (2016) find a positive relationship between a firm's total ESG score and tax avoidance through observing five-year effective tax rates, indicating that firms view the two as compliments. Col and Patel (2019) also find a positive relationship between a firm's total ESG score and aggressive tax avoidance practices, suggesting that firms will hedge against reputational risks associated with tax avoidance by increasing positive ESG activities. However, other studies find an inverse

relationship between tax avoidance and ESG performance (Lanis and Richardson, 2015; Hoi, et. al, 2013; Watson 2015). In their review of this literature, Jemiolo and Farnsel (2023) reconcile these differences primarily through identifying sample variances found at the country level. The differences are attributed to differences in countries' legal environments, political systems, labor practices, and economic climates. My study seeks to provide evidence on a different aspect of the relation between taxes and environmental, social, and governance ratings. Rather than examine the joint determination of tax aggressiveness and ESG, I study how taxes imposed on corporations affect their costly socially responsible actions. Unlike effective tax rates or taxable income, statutory tax rates are unable to be manipulated via tax planning strategies. As a result, I avoid potential endogeneity issues faced by those in the prior literature. I focus on the environmental aspect of social responsibility because improving environmental performance often has clear costs and thus is more likely to be affected by tax policy.

Environmental Performance

Environmental, Social, Governance (ESG) research was first introduced in the 1960s (e.g. Frederick, 1960; McGuire, 1963, etc.) but has attracted great interest in recent years. This could be a reflection of the recent uptick in media attention. From 2016/17 to 2020/21, global media coverage on environmental issues has increased over 85 percent (2022 IPCC Report). Studies have used numerous metrics to represent socially responsible performance. One of the more common metrics is an ESG rating developed by KLD Research and Analytics, Inc. (purchased by MSCI in 2010). This variable, widely used in accounting literature (e.g. Cho and Patten 2007, Dhaliwal et al. 2011, Clarkson et al. 2008 etc.), captures both strengths and concerns across multiple socially minded categories. One of these categories is environmental performance. Toxic release data tracked by the EPA and carbon emissions data have also been used to proxy

for environmental performance (Patten 2002; Al-Tuwaijri, et al. 2004; Doonan et al. 2005). Despite other acceptable measures of environmental performance, MSCI's KLD ratings continue to play a major role in the ESG literature, especially as it relates to accounting. This study uses the net environmental sub-score of the overall ESG rating as a dependent variable and observes whether statutory tax rates influence how a firm addresses environmental performance. Addressing environmental performance carries larger cash flow requirements relative to the other components of the KLD ratings.[3] Because of this, the environmental sub-score is an appropriate measure to observe alongside corporate statutory income tax rates.

I also implement a secondary measure of environmental performance represented by EPA regulation violations to investigate whether tax rates influence a firm's ability to comply with federal regulations. Compliance with EPA standards is not a new metric for environmental performance. Clarkson et. al (2004) use waste data published by the EPA to establish a proxy for environmental performance in the pulp and paper industry. Using the EPA's Permit Compliance System, Magat and Viscusi (1990) track violations related to firms' permitted discharge limits. As such I observed EPA compliance violations using the EPA's Enforcement and Compliance History Online (ECHO) as a secondary measure of firm environmental performance.

Statutory Tax Rates and Environmental Performance

Statutory tax rates affect firms in a number of ways. Atanassov and Liu (2020) find that firms increase innovation after at least two years of experiencing tax cuts, indicating that reduced

[3] For example, another component of ESG, corporate governance, can be improved by limiting CEO compensation and increasing transparency by reporting governance. Under the Diversity component of ESG, firms will score higher if the CEO or any of the Board of Directors are women or a member of a minority group. In both of these examples, cash outflows may have a minimal impact. The Environmental component, however, is much more dependent on financial investment. For instance, strategic use of clean energy, implementing recycling practices within the supply chain, and maintaining property, plant, and equipment with above average environmental performance are all examples of methods to enhance a firm's environmental rating which require cash outflows to pursue.

taxes can lead to more investment. Statutory tax rates also affect firms' capital structures (Faccio and Xu, 2015). If changes in statutory tax rates influence operational and organizational strategies within a firm, they may also impact environmental performance. Environmental performance differs from business activities explored in most prior literature because it is less essential to the business, and activities addressing environmental concerns may not have a positive net present value in general.

Prior work on how statutory tax rates affect environmental efforts use multi-country or non-U.S. samples (Geng et al. 2021; Li et al. 2019; Yu et al. 2021; Farooq et, al. 2023; Faccio & Xu, 2015; Huseynov & Klamm, 2012). These findings are not as useful when setting policy within the U.S. because there is variation in environmental priorities across countries. Further, the U.S. regulatory environment is highly litigious regarding environmental issues. U.S. firms may face lawsuits and regulatory action if they fail to act in environmentally responsible ways, which is likely to affect how willing managers are to make environmentally friendly investments. Between 2011 and 2021, the EPA enforcement program filed over 20,000 judicial and administrative cases, many of which were against major public corporations.[4] Additionally, the U.S. leads all other countries in environmental litigation.[5] This unique regulatory environment reveals the importance of understanding the effect of U.S. tax policy on firm environmental performance. This study investigates the relation between statutory tax rates and environmental performance using U.S. firms and statutory rates to highlight the effect of U.S. tax policy on environmental performance.

[4] Per epa.gov, these claims resulted in over $14 billion of civil and criminal penalties, $78 billion in environmental compliance actions and injunctive relief.

[5] In 2019, the Guardian reported data from the Grantham Institute that found across 28 countries, more than 1,300 legal actions concerning climate change have been brought against governments and corporations since 1990, compared to the U.S. at 1,023 cases.

III. HYPOTHESIS DEVELOPMENT

There are several reasons why statutory tax rates could impact environmental performance. Tax rates have a direct impact on after-tax profits. Depending on the tax rate level, firms may be more likely to forgo discretionary spending on environmental efforts to maintain or grow after-tax profit. Bradley et al. (2018) shows this effect in the context of tax rate changes and workplace safety, suggesting that it is easier to cut investments that are difficult to track when facing resource constraints. This effect may be consistent with environmental spending, which also acts as an unconventional investment. Further, prior literature finds that firms increase debt when faced with tax rate increases, resulting in higher interest payments in the short term (Heider and Ljungqvist, 2015). This further constrains resources and requires firms to reduce risk by emphasizing investment in profit maximizing activities relative to unconventional investments (Ljungquist et. al. 2017). Because environmental investments are less likely to result in earnings compared to profit-motivated investments, firms may forego environmental efforts when facing cash flow constraints. When subject to lower tax rates, firms may experience more discretion to invest in environmental activities because statutory tax rates have a direct effect on firm cash flow. Firms consider cash tax outflows when making decisions about essential and non-essential firm activities. As such, firms operating under lower statutory rates experience better cash positions and are better equipped to invest in their environmental performance.

Alternatively, firms with lower tax rates might have less incentive to improve environmental performance. With less of each dollar being remitted as taxes, firms may choose to use their better cash position to further their profit focused endeavors. For firms experiencing lower tax rates, the after-tax cost of improving environmental performance is relatively high.

Conversely, for firms experiencing higher statutory tax rates, environmental investment may act as a tax shield to decrease taxable income. Consider the following example:

Green Intervention cost	($200,000)			
	Low Tax Rate		**High Tax Rate**	
	Normal	**Green**	**Normal**	**Green**
Earnings before tax and Green Cost	$1,000,000	$1,000,000	$1,000,000	$1,000,000
Green Intervention Cost	$0	($200,000)	$0	($200,000)
Earnings before tax	$1,000,000	$800,000	$1,000,000	$800,000
Tax rate	21%	21%	30%	30%
***Tax Paid**	($210,000)	($168,000)	($300,000)	($240,000)
Profit to share holders	$790,000	$632,000	$700,000	$560,000
Profit per share (10K shares outstanding)	**$79.00**	**$63.20**	**$70.00**	**$56.00**
Green intervention cost per share:	**$15.80**		**$14.00**	
*Tax rates are based on 21% federal rate and either 0% or 9% state tax rate				

In either tax environment (high/low), the cost to pursue green intervention results in lower profit. However, the firm's taxable income is also lower as a result of green expenditures, displaying the effects of the tax shield. As a result, the after-tax additional cost of green intervention is higher for firms experiencing lower tax rates. Thus, while firms with lower tax rates are in better cash positions to invest, the cost to do so is higher than for firms subject to higher tax rates. This difference in taxation may affect a firm's decision whether to incur environmental expenditures. However, it could also be that statutory tax rates do not influence the decision to incur environmental expenditures. While tax rates have a direct impact on firm cash flow, the decision to pursue environmental activities may be more dependent on non-cash flow characteristics, such as corporate culture. It could also be that firms use tax planning strategies to better their cash positions for environmental efforts, rendering the statutory tax rate less able to predict environmental rating. As such, I state my hypothesis in the null:

H1 Statutory tax rates have no association with firm environmental performance ratings.

Additionally, firms may be affected by environmental regulation targeting economic incentives via tax credits or economic restriction via penalties. Tax credits and penalties directly impact tax cash flows. Depending on the extent and type of tax policy, firms may be more likely to forgo environmental expenditures to maintain or grow profit-focused activities. Similar to the effect observed in Bradley et al (2018), it may be easier to forgo unconventional spending in order to alleviate cash flow constraints. However, government intervention may lessen the effects of this tradeoff. Firms may be enticed to invest in environmental activities when regulatory incentives establish a direct, positive effect on firm cash flow. Firms consider cash tax implications when making investment decisions. As such, firms operating under incentive-based regulations may leverage these opportunities to increase future cash flows by investing in environmental performance.

Conversely, regulations that require environmental investment and threaten penalties may stifle firms already facing cash constraints. Firms experiencing mandatory investments may be negatively impacted in future years based on current year cash outflows. However, despite the tax shield provided by environmental investment, it could also be that firms forego regulatory compliance in exchange for furthering profitable activities in the short term, despite the costs

associated with noncompliance. Consider the following example:

Green Legislation		$20,000 Credit Economic Incentive		$20,000 Penalty Economic Penalty	
	Non-Compliance	Compliance	Non-Compliance	Compliance
Earnings Before Tax and Green Cost	$ 1,000,000	$ 1,000,000	$ 1,000,000	$1,000,000
Green Intervention Cost	$ -	$ (200,000)	$ -	$ (200,000)
Pre-Tax Book Income	$ 1,000,000	$ 800,000	$ 1,000,000	$ 800,000
Permanent Tax Adjustment from Penalty	$ -	$ -	$ 20,000	$ -
Taxable Income	$ 1,000,000	$ 800,000	$ 1,020,000	$ 800,000
Tax rate	0.21	0.21	0.21	0.21
Tax Due (pre-credit)	$ (210,000)	$ (168,000)	$ (214,200)	$ (168,000)
Tax Credit	$ -	$ 20,000	$ -	$ -
Profit to share holders	$ 790,000	$ 652,000	$ 805,800	$ 632,000
Profit per share (10K shares outstanding)	**$ 79.00**	**$ 65.20**	**$ 80.58**	**$ 63.20**
Green intervention cost per share:	**$ 13.80**		**$ 17.38**	

Similar to the prior example, both scenarios (incentive/penalty) pursuing green intervention experience the benefits of the tax shield. However, the green intervention cost per share is higher for firms subject to required environmental investment relative to firms experiencing economic incentives via tax credits. Thus, firms leveraging economic incentives to make green investments are in a better future cash position. This difference in regulatory policy may affect a firm's decision whether to incur environmental expenditures. However, it could also be that regulatory policies do not influence the decision to incur environmental expenditures. Similar to statutory tax rates, tax incentives/penalties have a direct impact on firm cash flow. However, the decision to pursue green investment may not be related to incremental cash-tax attributes. It could also be that firms emphasize environmental efforts as a result of corporate values or public pressure, rendering governmental intervention less able to predict environmental performance. As such, I state a second hypothesis in the null:

H2a Incentive based environmental legislation has no association with firm environmental performance ratings.

H2b Restriction based environmental legislation has no association with firm environmental performance ratings.

IV. RESEARCH DESIGN

Measuring Environmental Performance

I measure environmental performance using a sub-score of a commonly used metric for Corporate Social Responsibility (CSR). Morgan Stanley Capital International's (MSCI) (formerly KLD) publish annual CSR ratings across multiple categories that make up a total CSR score. This within-industry comparison rating is composed of seven categories, one of which is the Environment.[6] Each category is made up of multiple binary scores of Concerns and Strengths. These scores are then combined to get a net score for each category. This ESG measure within the accounting literature was first established in the 1990s, with several studies validating its relevance compared to previously used metrics (Sharfman, 1996; Waddock and Graces, 1997). Since then, this metric for ESG has been extensively used in the accounting literature (Chand, 2006; Kim et al. 2012; Hoi et al. 2013). I also gather environmental data for years 1999 to 2018. I follow Hoi et al. (2013) and Watson (2015) to establish an environmental measure from this data set: the net of all Strengths and Concerns for each firm year (*ENV*).

[6] The seven categories of MSCI's rating are Corporate Governance, Community Relations, Diversity, Employee Relations, Environment, Human Rights, and Products. Separate categories for Concern related industries are the following: alcohol, firearms, gambling, military, tax disputes, nuclear, and tobacco.

Measuring Statutory Tax Rates

Statutory tax rates will be derived for each firm year from Serrato and Zida (2018) and the Tax Foundation (taxfoundation.org). I assign the tax rate for each firm-year based on the state in which each firm is headquartered.

Measuring State Government Intervention

In order to understand the effect of state legislation on environmental performance, I divide state-level legislation into two groups: financial incentives and regulatory restrictions. These variables represent a carrot versus stick approach to regulating firms to encourage (dissuade) environmental investment (violations). For example, in 2011 the state of Florida issued a special loan program regarding environmental initiatives, incentivizing firm investment into green technologies.[7] Conversely, in 2008 the state of Utah enacted the Energy Resource and Carbon Emission Reduction Initiative,[8] requiring renewable energy consumption over traditional means when said methods are deemed to be cost-effective. In order to observe differences between legislative incentives and penalties, I create two variables: one representing legislation using the incentive (carrot) approach and one representing legislation using the penalty/restriction (stick) approach.

Main Model and Sample Selection

This study will use panel data to estimate the following model:

$$\mathbf{ENV\_1}_{i,t+1} = \beta_0 + \beta_1 \mathbf{STR}_{i,t} + \beta_2 \mathbf{GN\_LG\_S}_{it} + \beta_3 \mathbf{GN\_LG\_C}_{it} \beta_4 \mathbf{CashCon}_{it} + \beta_5 \mathbf{CashCon\_1}_{it} + \beta_6 \mathbf{DEM} + \beta_7 \mathbf{LEV}_{it} + \beta_8 \mathbf{Size}_{it} + \beta_9 \mathbf{EBIT}_{it} + \beta_{10} \mathbf{PPE\_A}_{it} + \beta_{11} \mathbf{ECAPX\_A}_{it} + \varepsilon_{it}$$

[7] It should be noted that not all of these incentives are related to tax cash savings. They do, however, relate to positive cashflows. These opportunities include but are not limited to tax credits, tax deductions, favorable interest rates, rebates, and other cash sensitive opportunities. Additionally, state-level restrictions relate to potential cash outflows. Examples of these include additional taxes, fines, penalties, and required compliance costs.

[8] S.B. 202

ENV_1 is MSCI's KLD net environmental rating in year *t+1* from 1999-2018. Similar to Atanassov and Liu (2020), I observe my dependent variable in a future year relative to the main independent variable. This approach allows me to observe how firms might change their behavior as a result of government imposition. *STR* is the state statutory tax rate based on the state headquarters of each firm (Serrato and Zidar, 2018; taxfoundation.org). *GN_LG_C* represents incentive-based environmental legislation at the state level. *GN_LG_S* represents restriction based environmental legislation at the state level. This data was provided by the NC Clean Technology Center. I also follow prior literature that finds a correlation between political affiliation and environmental efforts. Cruz (2017) finds a strong link between political ideology and environmental concern. As such, I establish *DEM* as a control representing the proportion of state population that voted democrat in the most recent national presidential election relative to time *t*.[9] This data was provided by MIT's Election Lab (https://electionlab.mit.edu). In line with prior studies (Faccio & Xu, 2015; Farooq et, al) this model also controls for both year fixed effects and industry fixed effects based on two digit SIC codes.

Regarding control variables, *CashCon* represents Cash Constraint, measured as cash used for dividends, stock repurchases, capital expenditures, and acquisition, minus net operating cash flows, scaled by total assets (Shaw and Zhang 2010). *CashCon_1* is *CashCon* in year *t + 1*. Also represented in this sample are various control variables calculated using COMPUSTAT unless otherwise noted. *Size* is measured as a log of total assets. *EBIT* is measured as the earnings before income taxes, scaled by total assets. *LEV* is measured as debt over equity. *PPE_A* is Plant, Property, and Equipment divided by total assets. *CAPX_A* is capital expenditure divided by total

[9] Using a national approach should allow political consistency across the country. Alternatively, taking a state/local approach would fail to account for the political variances across the states within the U.S. For instance, a republican governor in a progressive leaning state may be more left-leaning than a democratic governor in a right-leaning state. As such, taking a national approach should be more dependable when assessing a state's political leaning.

assets. The sample originated with 66,142 MSCI KLD environmental scores. Observations were removed from the sample that were missing data for the control variables, state tax rates, or voting records to get to a final sample size of 32,748. Table 1 displays the state corporate income tax rate changes from 1999 to 2018. Table 2, Panel A reports the descriptive statistics for the panel-level data. Table 2, Panel B reports the correlation matrix. Initial findings from the correlation matrix reveal highly significant relationships between environmental performance and the main variables of interest: *STR*, *GN_LG_S*, and *GN_LG_C*. Controlling for state fixed effects reveals the positive correlation between *ENV_1* and *STR* is likely driven by political differences observed at the state level. This is also the case with the positive correlation between *ENV_1* and *GN_LG_S*. All terms and definitions can be found in Appendix A.

V. RESULTS

Level Model

The results for the main level model can be found under Table 3 and include controls for both year and fixed effects. The dependent variable, *ENV_1,* is negatively related to the main independent variable of interest, *STR*. Higher levels of statutory state income tax rates are associated with lower levels of environmental performance. This result is consistent with the hypothesis that firms resort to focusing on essential business activities when faced with higher levels of tax imposition. It could also be that firms experiencing lower statutory tax rates use their financial flexibility to increase their environmental investments. The coefficient, -0.403, relative to a standard deviation of 0.031 suggests a substantial economic magnitude in the context of MSCI's ratings. The negative coefficient on *CashCon_1* also supports the previous

assertion that firms, when faced with resource restrictions, will pull back from less-essential environmental activities to further develop more essential firm efforts.

Regarding the environmental legislative variables, *GN_LG_S* carries a negative coefficient, indicating that legislative restrictions regarding the environment may not result in their intended outcomes. Conversely, the positive coefficient result represented by the legislative incentive variable, *GN_LG_C*, provides evidence that economic incentives may counteract the burden represented by statutory tax rates. These results suggest that state governments can use a variety of legislative actions to encourage firm environmental performance. More legislative changes occur in relation to environmental restrictions and incentives when compared to statutory tax rate changes. As such, states should weigh the potential impact of these methods as they relate to their intended environmental outcomes.

The positive coefficient of *DEM* supports the assertion that states with higher levels of democrat voters may be more inclined towards supporting higher levels of environmental regulation in pursuit of optimal environmental outcomes. However, whether these regulations are implemented as a restriction or an incentive is a powerful factor in determining higher environmental performance. The positive coefficient of *CAPX_A* suggests that firms investing in newer capital and capital improvements are achieving better environmental ratings. While capital expenditures can often signal firm expansion and growth, it can also be the result of replacing older capital assets that are less environmentally efficient. Capital expenditures related to green initiatives that are not primarily profit focused would also contribute to better environmental ratings.

VI. ADDITIONAL ANALYSIS

EPA Violations

The use of an alternative measure of environmental performance provides additional support for the initial findings. The results for this model are found in Table 5. While MSCI's metric for environmental performance is well established in the accounting literature, tracking EPA violations provides an added measure of environmental performance by the US federal government. To do this, I track violations using publicly available data on the EPA's Enforcement and Compliance History website. Once gathered, I replace the original performance metric (dependent variable) with the new measure capturing EPA violation data (*EPA_VIO*). This variable represents firm-year violations assigned by the EPA. The analysis yields supporting results in relation to the original analysis. The original findings revealed an inverse correlation between statutory tax rates and environmental performance as measured by MSCI's KLD rating. The alternative performance measure yielded a positive relation. Firms experiencing higher statutory corporate state income tax rates are associated with higher levels of EPA violations. While the interpretation of these results is similar to the original model, there are some differences. The independent variables representing cash constraint (*CashCon_1*) and economic incentives (*GN_LG_C*) are no longer statistically significant, indicating that they are not as relevant for firm compliance with environmental incentive policies. However, state-level environmental regulations (*GN_LG_S*) is still significantly related, suggesting that firms are subject to compliance tradeoffs between state and federal environmental restrictions.

Change Model

While the main model's findings reject the null hypothesis (H1) using both measures of environmental performance, additional analysis may be useful to further support these initial

assertions. In pursuit of this, I run a change model in an attempt to accommodate for any bias resulting from potential correlated omitted variables. While the variables of this model will be measured as changes instead of levels, I separate out the tax changes using continuous variables representing tax increases and tax decreases. This allows me to observe whether the directional change in tax policy has an effect on a firm's environmental performance. Table 4 shows the change model's results.

Under the change model, the *Tax_Decrease* variable is insignificant. However, the *Tax_Increase* variable has a statistically significant inverse relation with environmental performance. In years where statutory tax rates increase, I find that environmental performance drops the following year. This finding supports the assertion drawn from the main model. In addition to the variables of interest, I also find a significant positive coefficient for the capital expenditure variable (*CAPX_A*). In years where capital expenditures increase, I find that environmental performance increases the following year, suggesting that investing in capital improvements can lead to better environmental outcomes. This would especially be true if the capital expenditures were replacing older capital investments, which are likely not as environmentally efficient. Lastly, the *DEM* change is also positively correlated with environmental performance, which follows the same intuition drawn from the main model. Firms headquartered in states with increasing levels of democrat voters tend to have increasing levels of environmental performance. In summary, increases to statutory tax rates are inversely related with a firm's environmental performance the following year, and a positive relation exists with respect to capital expenditures. These results give limited insight as to the role of government intervention and firm activities when increased environmental performance is the intended outcome.

To provide additional support of the main findings, I also run a change model using the alternative metric for environmental performance (*EPA_VIO_Chg*) as a dependent variable. Results for this model are found in Table 6. I find a positive relation between tax increases and EPA violations, corroborating the findings in Table 5. Additionally, increases in restriction-based legislation at the state level is associated with increases in EPA violations. This provides further evidence of the results in Table 5 that firms experience compliance tradeoffs between state and federal environmental regulations.

Placebo Test

I also run a placebo test to determine whether the results would be consistent across the other components of ESG, as opposed to just environmental performance. To do this I replace the dependent variable, environmental performance, with a firm's diversity performance from MSCI. The results of this model do not yield any significant results across any of the independent variables. This outcome provides assurance that the main findings are driven by the environmental performance sub-score rather than measurement bias within the MSCI KLD ratings.

Polluting and Non-Zero Score Sub-Samples

Because most firms within my sample have a net environment score of zero, it could be that these firms carry a muted response to government established incentives or regulations due to performance improvement difficulty. As such, I re-run the main models with a sample limited to firms with non-zero environmental scores. This approach corroborates some of the findings in the main model. There is a positive relation between environmental performance and incentive-based legislation (*GN_LG_C*). Additionally, there is also a positive coefficient on the *DEM* variable, indicating that firms in states with more democrat voters are more likely to score better

environmental ratings. However, I did not find a significant relationship between statutory corporate income tax rates and environmental performance, suggesting that firms with non-zero scores may be less effected by taxation. Additionally, firms in industries known for their pollution may have more potential to improve their environmental score, and thus more sensitive to environmental incentives/regulations. Conversely, due to the nature of these industries, firms may find it more difficult effectively address their environmental performance, and thus less willing to pursue these activities. Using data from the EPA, I limit my sample to firms associated with any of the seven industry sectors that contain 89% of managed waste reported to the EPA.[10] Using this sub-sample, the models do not yield any major differences from the main findings, with the exception of a stronger correlation with the cash constraint variable. These findings support the assertion that polluting firms are less willing to prioritize environmental performance.

Environmental Strengths vs. Concerns

To better understand the relationship between statutory tax rates and environmental performance, I examine a new dependent variable that reflects the environmental strengths of a firm. Starting with the same sub-categorical environmental score, I filter out all concerns of the net score, only capturing the environmental strengths. This exercise should help determine whether firms unable to address their environmental concerns are still trying to increase their environmental performance. Firms that experience lower tax rates may be in a better position to increase economic investment. However, firms associated with industries commonly linked to higher levels of environmental concerns will likely have net environmental scores that do not

[10] The seven industries identified by the EPA of containing 89% of the TRI production-related waste managed are Electric Utilities, Paper Manufacturing, Petroleum Products Manufacturing, Metal Mining, Food Manufacturing, Primary Metals, and Chemical Manufacturing.

reflect their green investments. Measuring environmental performance by strengths alone (and not the net score) mitigates this issue. Conversely, firms experiencing higher tax rates may have less means to take environmentally friendly actions, resulting in lower levels of reported environmental strengths. Replacing the main model's dependent variable with environmental strength finds a strong inverse correlation with *STR* and *CashCon_1*, providing evidence in support of the original findings. Firms experiencing higher statutory tax rates are more cash constrained and less able to pursue environmental actions. Additionally, there is a negative coefficient on the legislative restriction variable *GN_LG_S*.

It could also be that firms focus more on limiting their environmental footprint, rather than pursuing green investment. In order to determine whether tax policy impacts a firm's ability to mitigate their environmental issues, I also implement a dependent variable using the concerns component of the environmental score. Firms experiencing higher tax rates may be too constrained to pursue green investment. However, firms experiencing these constraints may also limit their pursuit of environmentally concerning activities. Replacing the main model's dependent variable with environmental concern finds an inverse relation with *STR* and *CashCon_1*, providing evidence that firms experiencing higher statutory tax rates are more cash constrained and limit their pursuit of environmentally concerning activities. The results of both models suggest the incentive to decrease activity is present, as both dependent variables (i.e. environmental strengths and environmental concerns) have an inverse relation with *STR*. As such, the net score in the main model indicates that the negative relation between statutory tax rates and environmental strengths is the stronger of the two effects. Additionally, there is a negative relation between the legislative incentive variable, *GN_LG_C*, and environmental concern. In support of the original findings, the results of both models suggest that economic

incentives are more effective at achieving intended environmental outcomes when compared to economic restrictions.

Red States vs. Blue States

Prior studies find that political ideology is related to environmental concerns and compliance with regulations (Gromet, et al. 2013; Wahlund, 1992). However, it is unclear whether economic motivation also impacts environmental outcomes. For instance, a firm may choose to invest in newer technologies that lower energy costs and increase profits. The lower energy consumption also leads to better environmental performance. As a result, firms operating in more economically friendly areas may be more motivated to increase their environmental performance. As such, it could be that the negative relationship between statutory tax rates and environmental performance is driven by economic, rather than environmental, motivations. If true, the political leanings and economic environment of each state may pose a significant impact on firm environmental performance. To test for this, I bifurcate the sample between red (republican) and blue (democrat) states based on the voting percentages in the most recent federal House of Representative elections and re-run the main models. The results for this model are found in Table 7. In red states, I find that firms are much more sensitive to the statutory tax rate than firms located in blue states. This is evidenced by an inverse correlation between *STR* and environmental performance, similar to the findings of the main model. However, firms located in blue states do not experience the same effect. Additionally, I find that firms in blue states are more sensitive to environmental legislation, regardless of whether it is based on economic incentives or environmental restrictions. Firms in blue states carry a positive coefficient for legislative incentives and an inverse coefficient of legislative restrictions. However, firms in red states show no statistical significance in either setting. This provides

evidence that firm reaction to governmental policy is impacted by the political makeup of the state in which they reside. These results suggest that, for purposes of optimal environmental outcomes, state-level political leanings should impact the method of government intervention.

VII. CONCLUSION

This paper investigates the association between corporate state income tax rates of U.S. firms and their respective environmental performance. There has been an increasing interest in firms addressing their environmental impact, but it is not initially clear how tax policy might affect a firm's ability to address these concerns. Statutory corporate income tax rates represent an imposition on firm cash flow in the pursuit of profit maximizing activities. This imposition reinforces the prioritization of investments with higher returns over less essential business activities such as environmental performance. As such, statutory tax rates hinder a firm's ability to pursue investments that carry better environmental outcomes. I find an inverse relation between corporate statutory state income tax rates and firm environmental performance using two measures: MSCI's KLD environmental sub-category rating and a measure of EPA violations. I also find evidence that state-level environmental legislation is more effective in the form of economic incentives rather than environmental restrictions. Lastly, environmental performance for firms headquartered in blue states is more sensitive to state legislation, while performance for firms in headquartered in red states is more sensitive to statutory income tax rates.

This paper adds to the existing body of accounting research by bridging the gap between tax policy and its impact on environmental performance, an association previously unknown. Contributing to the statutory tax rate literature, this study shows that firms will pull back from

non-essential expenditures under resource constraints, despite those activities being encouraged by stakeholders. Regulators will also benefit from these findings, as this paper reveals how both tax rates and environmental legislation affect firm environmental efforts.

While this paper gives new insight into both the ESG and tax rate literature, it also opens up additional avenues for future research. First, one could develop a different measurement of environmental performance. There may be more robust data that better represents a firm's environmental performance than the KLD rating or EPA violations. As such, future studies could use these different measures to determine whether the results are consistent with my findings. A second avenue of future work could analyze the impact of taxation on greenwashing. If a firm's environmental performance is negatively impacted by statutory tax rates, it could be that firms react by greenwashing their performance in order to bolster stakeholder perception in the face of decreasing performance. Future studies could develop a measure of greenwashing and see whether firms engage in this activity when subjected to different tax rates and different types of environmental regulations. A third area of future research could focus on environmental legislation at the federal level and compare it to policies imposed at the state and local level. One could compare the effectiveness of environmental policy at both levels of government and determine which method is better at increasing environmental performance. This effort could help inform governmental agencies about the optimal setting in which environmental restrictions and economic incentives should be implemented.

APPENDIX A	
VARIABLE	DEFINITION
ENV	Net environmental rating (environmental strengths minus concerns) taken from MSCI's KLD Index
ENV_1	*ENV* in time *t+1*
EPA_VIO	Number of firm EPA violations
STR	Corporate State Income Tax based on firm headquarters
GN_LG	Number of environmental legislation passed at the state-level
GN_LG_C	Number of incentive based environmental legislation passed at the state-level
GN_LG_S	Number of restriction-based environmental legislation passed at the state-level
DEM	Proportion of U.S. state that voted democrate in most recent election cycle for Houst of Representatives
Size	Log of total assets
LEV	Leverage measured as total debt divided by total equity
EBIT	Earnings before income taxes scaled by total assets
PPE_A	Plant, property, and equipment scaled by total assets
CAPX_A	Capital expenditures scaled by total assets
Tax_Increase	Tax increases from the prior year
Tax_Decrease	Tax decreases from the prior year
CashCon	Cash constraint measured as cash used for dividends, stock repurchases, capital expenditures, and acquisition, minus net operating cash flows, scaled by total assets.
CashCon1	*CashCon* in time *t+1*
SIC_2	Two digit SIC code
ENV_blue	Net environmental rating (environmental strengths minus concerns) for blue states
ENV_red	Net environmental rating (environmental strengths minus concerns) for red states
ENV_STR_1	Net environmental strength rating taken from MSCI's KLD Index
CashCon_H	Indicator variable equal to one if firm's Cash Constraint is in upper quartile.
CashCon_L	Indicator variable equal to one if firm's Cash Constraint is in lower quartile.
CHANGE VARIABLE	DEFINITION
ENV_Chg	Change in net environmental rating (environmental strengths minus concerns) from the previous year.
ENV_Chg1	Change in net environmental rating one year into the future.
Tax_Increase	Change in tax as measured by increases from the prior year
Tax_Decrease	Change in tax as measured by decreases from the prior year
GN_LG_Chg	Change in number of environmental legislation passed at the state-level from the previous year.
DEM_Chg	Change in the proportion of democratic voters relative to the last election cycle.
Size_Chg	Change in *Size* variable from the prior year.
LEV_Chg	Change in *LEV* from the prior year.
EBIT_Chg	Change in *EBIT* from the prior year.
PPE_Chg	Change in *PPE_A* from the prior year.
CAPX_Chg	Change in *CAPX_A* from the prior year.
CashCon_Chg	Change in *CashCon* from the prior year.
CashCon_Chg1	Change in *CashCon* one year into the future.
CashCon_Chg2	Change in *CashCon* two years into the future.

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Table 1
State-level Corporate Tax Rate Changes
This table presents the tax rate changes by state from years 1999 to 2018. A total of 74 changes were made across 24 states in this time span.

State	Year	to	from	State	Year	to	from
AL	2001	6.50%	5.00%	MI	2005	1.90%	2.00%
AZ	2000	8.00%	9.00%	MI	2008	4.95%	1.90%
AZ	2001	6.97%	8.00%	MI	2012	6.00%	4.95%
AZ	2014	6.50%	6.97%	NC	2000	6.90%	7.00%
AZ	2015	6.00%	6.50%	NC	2014	6.00%	6.90%
AZ	2016	5.50%	6.00%	NC	2015	5.00%	6.00%
AZ	2017	4.90%	5.50%	NC	2016	4.00%	5.00%
CO	2000	4.63%	4.75%	NC	2017	3.00%	4.00%
CT	2000	7.50%	8.50%	ND	2005	7.00%	10.50%
CT	2013	9.00%	7.50%	ND	2008	6.50%	7.00%
CT	2018	8.25%	9.00%	ND	2010	6.40%	6.50%
IA	2000	12.00%	10.00%	ND	2012	5.20%	6.40%
ID	2002	7.60%	8.00%	ND	2013	5.15%	5.20%
ID	2013	7.40%	7.60%	ND	2014	4.53%	5.15%
IL	2009	7.30%	4.80%	ND	2016	4.31%	4.53%
IL	2011	9.50%	7.30%	NH	2002	8.50%	8.00%
IL	2015	7.75%	9.50%	NM	2014	7.30%	7.60%
IN	2003	8.50%	3.40%	NM	2015	6.90%	7.30%
IN	2013	8.00%	8.50%	NM	2016	6.60%	6.90%
IN	2014	7.50%	8.00%	NM	2017	6.20%	6.60%
IN	2015	7.00%	7.50%	NY	2000	8.50%	9.00%
IN	2016	6.50%	7.00%	NY	2001	8.00%	8.50%
IN	2017	6.00%	6.50%	NY	2002	7.50%	8.00%
IN	2018	5.75%	6.00%	NY	2009	7.10%	7.50%
KS	2009	7.10%	7.35%	NY	2016	6.50%	7.10%
KS	2010	7.05%	7.10%	OH	2000	8.50%	8.90%
KS	2011	4.00%	7.05%	OH	2011	0.00%	8.50%
KS	2013	7.00%	4.00%	OR	2009	7.90%	6.60%
KY	2005	7.00%	8.25%	OR	2011	7.60%	7.90%
KY	2008	6.00%	7.00%	RI	2015	7.00%	9.00%
MA	2010	8.75%	9.50%	TN	2003	6.50%	6.00%
MA	2012	8.00%	8.75%	VT	2007	8.50%	9.75%
MD	2008	8.30%	7.00%	WV	2007	8.75%	9.00%
MD	2009	8.25%	8.30%	WV	2008	8.50%	8.75%
MI	2000	2.20%	2.30%	WV	2012	7.50%	8.50%
MI	2001	2.10%	2.20%	WV	2013	7.00%	7.50%
MI	2002	2.00%	2.10%	WV	2014	6.50%	7.00%

Table 2 Panel A
Descriptive Statistics
This table presents the summary statistics of my sample. The sample consists of firm observations from 1999 to 2018 and is made up exclusively of U.S. firms. The data originated from a combination of sources. Environmental performance (*ENV_1*) is from MSCI's KLD ratings. State tax rates (*STR*) is from The Tax Foundation (taxfoundation.org). State-level environmental legislation (*GN_LG_C* and *GN_LG_S*) is collected from the NC Clean Technology Center. Voting records (*DEM*) are sourced from MIT's Election Lab (https://electionlab.mit.edu), and additional control variables are from *COMPUSTAT*. Other variables in this sample include Earnings Before Income Taxes (*EBIT*), log of total assets (*Size*), capital expenditures scaled by assets (*CAPX_A*), plant, property and equipment scaled by total assets (*PPE_A*). Additionally, cash constraint is measured as cash used for dividends, stock repurchases, capital expenditures, and acquisition, minus net operating cash flows, scaled by total assets, and *CashCon_1* is CashCon at time *t+1*. Observations where variables were not available were taken out of the final sample. All data is windsorized at 1 and 99 percent.

Variable	N	Mean	Standard Deviation	P25	Median	P75
ENV_1	32,748	0.130	0.770	0.000	0.000	0.000
STR	32,748	0.064	0.031	0.055	0.071	0.088
GN_LG_S	32,748	12.000	9.400	6.000	9.000	14.000
GN_LG_C	32,748	29.000	24.000	7.000	24.000	48.000
LEV	32,748	2.600	49.000	0.550	1.200	2.500
EBIT	32,748	0.061	1.600	0.020	0.065	0.120
Size	32,748	3.300	0.790	2.700	3.200	3.800
DEM	32,748	0.520	0.081	0.450	0.530	0.580
CAPX_A	32,748	0.041	0.066	0.006	0.025	0.053
PPE_A	32,748	0.410	0.440	0.076	0.280	0.650
CashCon	32,748	0.023	0.290	-0.045	-0.005	0.046
CashCon_1	32,748	0.015	0.150	-0.038	0.000	0.030
EPA_VIO	32,748	0.840	14.000	0.000	0.000	0.000

Table 2 Panel B
Correlation Matrix
This table presents the correlation matrix of the variables observed in the main model. Correlation coefficients in bold are statistically significant at the .05 level.

	ENV_1	*STR*	*GN_LG_S*	*GN_LG_C*	*Size*	*EBIT*	*Size*	*DEM*	*CAPX_A*	*PPE_A*	*CashCon*	*CashCon_1*	*EPA_VIO*
ENV_1	1												
STR	**0.032**	1											
GN_LG_S	**0.121**	**(0.011)**	1										
GN_LG_C	**0.172**	**(0.017)**	**0.789**	1									
LEV	0.008	(0.001)	(0.001)	(0.005)	1								
EBIT	0.003	**(0.021)**	0.002	(0.001)	0.000	1							
Size	(0.004)	**(0.083)**	**(0.045)**	**(0.041)**	0.028	0.003	1						
DEM	**0.114**	**0.503**	0.281	**0.318**	**(0.003)**	**(0.022)**	**(0.091)**	1					
CAPX_A	**0.022**	0.000	(0.006)	(0.007)	(0.001)	0.000	0.008	**(0.013)**	1				
PPE_A	**0.011**	0.007	(0.002)	0.001	(0.007)	0.001	(0.008)	(0.002)	**0.546**	1			
CashCon	**(0.017)**	0.001	**0.041**	**0.039**	**(0.001)**	**(0.375)**	**(0.020)**	**0.021**	(0.005)	(0.007)	1		
CashCon_1	**(0.023)**	(0.002)	**0.034**	**0.035**	0.004	**(0.044)**	**(0.010)**	0.010	(0.005)	**(0.013)**	**0.210**	1	
EPA_VIO	**(0.072)**	0.002	**0.028**	**0.015**	0.002	(0.000)	(0.005)	(0.002)	**(0.014)**	**(0.018)**	0.004	0.007	1

Table 3
Level Model
This table presents the results of the main model with *ENV_1* representing the dependent variable. All continuous variables are windsorized at the 1st and 99th percentile. Standard errors are reported in parentheses below each coefficient. *, **, *** denote coefficients that are significant at the p <= 0.10, 0.05, 0.10 respectively. Appendix A within the dissertation contains all other variable definitions.

Dependent Variable	*ENV_1*
STR	-0.403**
	(0.160)
GN_LG_S	-0.003***
	(0.001)
GN_LG_C	0.001***
	(0.000)
CashCon	-0.027*
	(0.016)
CashCon_1	-0.120***
	(0.028)
LEV	0.000
	(0.000)
EBIT	-0.001
	(0.003)
Size	-0.006***
	(0.005)
DEM	0.602***
	(0.067)
CAPX_A	0.300***
	(0.073)
PPE_A	-0.007***
	(0.011)
Observations	32,748
Adj. R-Squared	0.056
Fixed Effects	Year, Industry

Table 4
Change Model
This table presents the results of the main model in a change specification with *ENV_Chg1* representing the dependent variable. All variables are windsorized at the 1st and 99th percentile. Standard errors are reported in parentheses below each coefficient. *, **, *** denote coefficients that are significant at the p <= 0.10, 0.05, 0.10 respectively. Appendix A within the dissertation contains all other variable definitions.

Dependent Variable	*ENV_Chg1*
Tax_Decrease	0.003
	(0.006)
Tax_Increase	-0.023**
	(0.011)
GN_LG_S_Chg	-0.001
	(0.002)
GN_LG_C_Chg	0.000
	(0.001)
CashCon_Chg_1	0.001
	(0.018)
LEV_Chg	0.000
	(0.000)
EBIT_Chg	-0.002
	(0.003)
Size_Chg	0.001
	(0.003)
DEM_Chg	0.227**
	(0.098)
CAPX_Chg	0.181***
	(0.046)
PPE_Chg	0.008
	(0.010)
Observations	32,748
Adj. R-Squared	0.010
Fixed Effects	Year

Table 5
Alternative Measure of Environmental Performance
This table presents the results of the main model using an alternate dependent variable, *EPA_VIO*. All continuous variables are windsorized at the 1st and 99th percentile. Standard errors are reported in parentheses below each coefficient. *, **, *** denote coefficients that are significant at the p <= 0.10, 0.05, 0.10 respectively. Appendix A within the dissertation contains all other variable definitions.

Dependent Variable	*EPA_VIO*
STR	24.998***
	(2.989)
GN_LG_S	0.050***
	(0.014)
GN_LG_C	-0.003
	(0.006)
CashCon	-0.143
	(0.291)
CashCon_1	-0.190
	(0.519)
LEV	0.000
	(0.002)
EBIT	0.004
	(0.050)
Size	-0.158
	(0.098)
DEM	4.460***
	(1.263)
CAPX_A	-1.694
	(1.364)
PPE_A	-0.278
	(0.206)
Observations	32,748
Adj. R-Squared	0.116
Fixed Effects	Year, Industry

Table 6
Alternative Measure of Environmental Performance - Change Model
This table presents the results of the main model in change a specification using an alternate dependent variable, *EPA_VIO_Chg*. All continuous variables are windsorized at the 1st and 99th percentile. Standard errors are reported in parentheses below each coefficient. *, **, *** denote coefficients that are significant at the p <= 0.10, 0.05, 0.10 respectively. Appendix A within the dissertation contains all other variable definitions.

Dependent Variable	*EPA_VIO_Chg*
Tax_Decrease_Chg	0.004
	(0.476)
Tax_Increase_Chg	-0.005
	(0.850)
GN_LG_S_Chg	0.008***
	(0.001)
GN_LG_C_Chg	0.003
	(0.001)
CashCon_Chg_1	0.001
	(0.001)
LEV_Chg	0.001
	(0.001)
EBIT_Chg	-0.008
	(0.092)
Size_Chg	-0.016
	(0.080)
DEM_Chg	-2.726
	(2.701)
CAPX_Chg	0.168
	(1.280)
PPE_Chg	-0.029
	(0.281)
Observations	32,748
Adj. R-Squared	0.008
Fixed Effects	Year

Table 7
Red and Blue States
This table reports the results of the original model with the sample partitioned between red states and blue states based on their political affiliation. All continuous variables are windsorized at the 1st and 99th percentile. Standard errors are reported in parentheses below each coefficient. *, **, *** denote coefficients that are significant at the p <= 0.10, 0.05, 0.10 respectively. Appendix A within the dissertation contains all other variable definitions.

Dependent Variable	*ENV_red*	*ENV_blue*
STR	-0.780***	0.171
	(0.251)	(0.268)
GN_LG_S	0.002	-0.005***
	(0.002)	(0.001)
GN_LG_C	-0.001	-0.002***
	(0.001)	(0.001)
CashCon	0.066	-0.061*
	(0.042)	(0.034)
CashCon_1	-0.029	-0.194***
	(0.048)	(0.035)
LEV	0.000	0.000
	(0.000)	(0.000)
EBIT	-0.001	-0.009
	(0.003)	(0.013)
Size	-0.009	-0.004
	(0.008)	(0.007)
CAPX_A	0.304***	0.494***
	(0.091)	(0.121)
DEM	0.754***	0.292**
	(0.108)	(0.122)
PPE_A	-0.013	-0.001
	(0.016)	(0.016)
Observations	13,873	18,875
Adj. R-Squared	0.065	0.049
Fixed Effects	Year, Industry	Year, Industry