The "Green" Geography: Corporate Environmental Policies and Local Institutional Investors[*]

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Abstract:

Corporate environmental concerns (i.e., weaknesses) are spatially clustered, unlike environmental strengths. Firms headquartered in cities friendlier towards the environment ("green" cities) are less likely to have environmental concerns. Manufacturing facilities operated by such firms pose lower risks of toxic releases, even when the facilities are located in less environmentally friendly areas. This higher sensitivity to environmental performance is mirrored by investors. Institutional investors located in "green" cities do not overweight local firms with environmental concerns, unlike those in other cities who hold disproportionately more local stocks in their portfolios regardless of corporate environmental policies. Consistent with this asymmetric preference, firms with environmental concerns experience poor future stock performance and receive lower market valuations if they are located in "green" cities. We conclude that local environmental norms and preferences influence corporate policies, ownership structure, and valuation.

Keywords: Environmental issues; environmental performance; toxic substances; corporate environmental policies; local bias.

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1. Introduction

Spatial clustering of individuals in cities has long attracted the attention of researchers in various fields. Economists are particularly interested with the observed geographical clustering of firms and industries. Recent empirical evidence suggests that this clustering is related to similarities in corporate financial and investment policies across firms within each region. The incidence of these similarities seem reasonable in the presence of frictions, e.g., variations of legal environment across regions, or segmentation of labor or financial markets. However, the empirical evidence also indicates that these similarities are observed even in the relative absence of barriers to movement of capital, labor, and firms, e.g., across states or cities within the United States. Some of these similarities can be attributed to industry clustering in certain areas, e.g., Silicon Valley, as each industry may have a different set of optimal corporate policies. However, within-city similarities in corporate policies remain even for firms sharing a location, but operating in significantly different industries, and in areas with relatively diversified industries. Parsons, Sulaeman, and Titman (2018) attribute some of these variations to local norms; however, they argue that local norms are difficult to identify, let alone quantify.

In this paper, we focus on a specific set of local norms that is not only relevant, but also relatively easy to identify. Environmental resources such as clean air and water are important public goods. Not surprisingly, we observe a large regional variation of environmental practices, as countries and states grapple with balancing the costs and benefits of environmentally friendly policies. While economic conditions are an important driver of this variation as it affects both the cost and benefit of environmental protection, it is important to recognize that local environmental norms also vary substantially across regions. Societal norms are particularly important in this context given the negative externalities on social welfare that can result from free riding by individual entities. This variation in local norms can affect how much resident firms care about the well-being of their stakeholders and ultimately their environmental policies.

This paper analyzes the clustering of corporate environmental policies, and links it to the variations in local norms – environmental or otherwise. First, we document geographical clustering of corporate environmental performance. Corporate environmental performance – particularly with potential negative externalities – displays substantial spatial clustering beyond what would be expected by chance. We continue to observe within-city similarities in corporate environmental concerns (i.e., weaknesses) even after controlling for variations across industries and over time. In particular, we observe that a firm's environmental performance reflects that of other *local* firms, even those that operate in different broad categorizations of industries.

Next, we document that this clustering is correlated with the geographical distribution of measures of environmental norms as well as ethical standards. In particular, to study environmental norms, we employ "green city" ratings from a study conducted by the Economist Intelligence Unit (Siemens, 2011). This study developed a Green City Index that assessed major North American cities on their environmental performance and policies across nine categories – CO_2 emissions, energy, land use, buildings, transport, water, waste, air quality, and environmental governance. To capture ethical standards, we employ the geographic variation of incidence rate of prosecutions of elected regional officials by US Department of Justice. This measure reflects local norms that may affect environmental policies, such as the apathy towards the well-being of the local community and the strength of local legal enforcement.

Our results indicate a strong correlation between these measures of local norms and corporate environmental policies. This correlation is particularly strong for the presence of environmental concerns.[1] The relation remains after controlling for time-varying industry effects (by including industry*year fixed effects in the regressions) and various firm-level characteristics. Firms located in top 5 cleanest cities – in terms of either environmental norms or (lack of) corruption by public officials – have a 34% lower odds of exhibiting corporate environmental concerns, relative to otherwise similar firms. Our finding on the influence of local environmental norms are robust to simultaneously controlling for ethical practices.

Beyond the role of local norms at firms' corporate headquarters, corporate environmental policies could also be shaped by local regulations at their plants and facilities. The regulatory channel is more direct and institutionalized: local environment-related regulations are likely to generate (1) more uniform environmental practices among facilities within each region, and (2) more variations across regions with differing local norms and resulting regulatory practices. In our setting, the role of local norms at HQ location is less likely to manifest itself through the regulation channel, as local environmental regulations at the HQ location are unlikely to govern the environmental practices at far-flung facilities. If anything, the regulation channel may result in an observed negative relation: firms headquartered in areas with more stringent environmental regulations may strategically choose to locate their facilities in other areas with relatively less stringent local environmental regulations.

We attempt to disentangle the direct effect of the regulation channel and the broader norm-driven channel by analyzing a direct measure of the environmental impact of firms' operations: the potential toxicity of their manufacturing facilities. This toxicity measure is based on the Risk Screening Environmental Indicators (RSEI) provided by the U.S. Environmental Protection Agency (EPA), which is granular measure of the potential risk from toxic substance released from each facility. As

[1] We use the term "environmental issues" and "environmental concerns" interchangeably in this study. They refer to corporate environmental weaknesses that may elicit concerns from stakeholders. Previous studies that use the same data on corporate environmental performance have used both terms. They tend to use the term "issue" in a more general fashion for describing the conceptual framework. Prior studies have typically used the term "concerns" to refer to poor performance on environmental criteria recorded in the dataset, consistent with the data description provided by the data vendor (MSCI, or formerly KLD).

expected, manufacturing facilities located in "greener" areas tend to have lower RSEI scores, consistent with the regulation channel.

We also observe evidence consistent with the broader norm-driven channel. Facilities owned by firms headquartered in "green" cities release pose a lower risk from toxic substances, even after controlling for the potentially more stringent regulations at the facility location (i.e., by including facility location fixed effects). Firms headquartered in "green" cities operate facilities with lower toxicity risks, even for facilities located outside the "green" areas – where the prevailing local norms or environmental regulations may not be as stringent. In sum, the results provide support to the conjecture that corporate environmental policies are affected by local norms, beyond merely through the regulation channel.

We then turn our attention of a direct test of local investors' preference for corporate environmental policies. In particular, we examine whether the link between corporate environmental performance and local environmental norms is reflected in local investors' holdings. Previous literature has documented a local bias in institutional investors' portfolios: local stocks tend to receive disproportional over-allocation in their portfolios. We examine how this phenomenon varies across regions and across stocks as a joint function of (1) local environmental norms and (2) resident firms' environmental performance.

The empirical results indicate that investors in non-"green" cities exhibit local bias regardless of the corporate environmental performance of those stocks. We observe a strikingly different pattern in "green" cities. Resident firms in those cities do not receive overweighting by local investors if those firms are identified as having environmental concerns. If anything, these stocks are avoided by local investors: a *negative* local bias. This pattern stands in stark contrast to resident firms without environmental issues, which continue to experience overweighting by local institutional investors even in "green" cities.

The observed local institutional ownership patterns give rise to two questions: (1) is there any valuation effects of this violation of local norms, and (2) if there is, why do firms in "green" cities not attempt to mitigate this issue by improving their environmental policies? We explore these two questions by analyzing the relation between violations of local norms – i.e., the presence of environmental concerns in firms located in "green" cities – and firm valuation. We first observe that firms with environmental concerns have lower Tobin's *q* in general. This pattern can be due to two alternative channels. First, environmental issues could result in a lower firm valuation. In particular, the presence of environmental concerns can increase the firm's discount rate due to environmental risks. It can also deter some investors from holding the firm's stocks. Both of which can result in a lower stock valuation due to a higher risk premium associated with the stock. Second, the correlation could be due to an omitted variable: firms with poor prospects have lower valuation *and* limited resources to mitigate any environmental issues. As such, drawing causal inference is difficult from this general correlation.

Instead, we explore whether there is an *incremental* increase in the correlation between environmental issues and firm valuation in "green" cities – i.e., the interaction terms between environmental concerns and "green" cities. To the extent that any omitted variable driving both firm valuation and the presence of environmental issues is captured by the standalone environmental concern variable, the interaction term represents the incremental effect of the presence of environmental issues in "green" cities, which can be plausibly interpreted in a causal manner.

We observe two consistent patterns. First, stocks with environmental concerns experience worse future stock performance if they are located in "green" cities rather than in "non-green" areas. Second, we observe a stronger negative correlation between resident firms' environmental concerns and corporate valuations in "green" cities, consistent with the earlier evidence that investors in "green" cities are more sensitive to the presence of environmental issues in local companies.

Last, we explore whether these companies can mitigate the avoidance by local investors and the resulting correlation with firm valuation by establishing policies that give rise to environmental strengths in MSCI's ratings. Indeed, we find a strong within-firm correlation between the prevalence of environmental strengths and environmental concerns. This pattern is more prominent for firms in areas with a higher sensitivity to corporate environmental policies, i.e., the "green" cities. However, this potentially opportunistic tendency does not seem to mitigate the lower valuation for firms with environmental concerns in "green" areas that we document earlier. In other words, the presence of environmental strengths does not seem to be effective in erasing the negative effects of the presence of concerns in "green" areas.

In sum, this study documents clustering of corporate environmental policies that are related to local norms. Violations of local norms in this context are associated with avoidance by local investors and lower firm valuations. The valuation effect persists despite potentially opportunistic efforts of these firms to camouflage these violations.

The analysis and results in this paper contribute to several strands of literature. First, the literature on corporate policies and local norms. Our results indicate that corporate environmental policies are related to local norms. We document that this relation exists for local environmental norms as well as a more general measure of local norms that captures an apathy towards the well-being of the local community. Second, the literature on local bias. Our results highlight the conditional nature of local bias, with local environmental norms being one of the relevant conditioning measures. Third, the link between local investor preference and firm valuation. Several prior studies document the link between corporate social responsibilities and firm valuation, but this paper is the first to explore the role of local norms in this dynamic. In particular, we reconfirm the findings of Fernando, Sharfman, and Uysal (2017) in the context of environmental policies, and present novel evidence on the effects of local environmental norms.[2] While the empirical evidence does not allow us to derive a direct causal inference, the results are consistent with violations of local norms associated with lower firm valuations. Additionally, we document a potential evidence of opportunism in corporate environmental policies. Firms located in "green" cities appear more likely to display environmental strengths alongside the occurrence of concerns, although such behavior does not appear to translate to valuation effects.

2. Data

2.1. Firm and Institutional Investor Locations

We determine a firm's location using its headquarter location (i.e., ZIP code) reported on S&P Global Market Intelligence's Compustat database. In addition, we identify each institutional investor's location (i.e., ZIP code) using the Nelson's Directory of Investment Managers and by searching the SEC documents and websites of institutional managers.

We assign firms and institutional investors to geographical areas based on the Combined Statistical Area (CSA) delineations issued by the U.S. Office of Management and Budget (OMB). These delineations are used in the last U.S. Census (2010). A CSA consists of two or more adjacent Core Based Statistical Areas (CBSAs) that have substantial employment ties.[3] The OMB defines a CBSA as a collective representation of metropolitan and micropolitan statistical areas covering a county or counties (or equivalent entities) associated with at least one core (urbanized area or urban cluster) of at least 10,000 population, plus adjacent counties having a high degree of social and economic integration with the core as measured through commuting ties. Given the social and

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[2] Our unconditional results are also consistent with the findings of Dowell, Hart, and Yeung (2000) that firms adopting stringent internal environmental standards tend to have higher firm valuation. Our marginal contribution lies in the conditional analysis of the role of local environmental norms.

[3] The OMB identifies substantial employment ties using an employment interchange measure (EIM) of 15 or more. EIM refers to the sum of the percentage of workers living in the smaller entity who work in the larger entity and the percentage of employment in the smaller entity that is accounted for by workers who reside in the larger entity

economic linkages among people within each CSA, the CSA level geographical classification is suitable for studying local culture and norms. We use the term "city" and CSA interchangeably in the rest of the paper.

Our final sample of firm-year observations summarized in Table 1 consists of Russell 1000 firms that are located in CSAs with at least five other such firms for which the financial and environmental rating data is available.[4] The resulting sample covers 36 CSAs, with the mean and median number of sample firms across these CSAs (averaged over the period 2001–2013) of 10.80 and 20.44, respectively.

[Insert Table 1 here]

2.2. Corporate Environmental Ratings

We obtain data on corporate environmental ratings from MSCI ESG Research Data. This dataset, previously referred as KLD Data, is extensively used in the extant literature. While this data is reported beginning in 1991, its coverage includes different subsets of firms across time. To alleviate potential issues associated with a changing sample of firms, we focus on the constituents of Russell 1000 index whose environmental ratings are available on MSCI dataset from 2001 to 2013.

The MSCI database provides numerous proprietary indicators (1 for presence and 0 for absence) for various environmental criteria. These criteria focus on either strengths or concerns in certain issue. For environmental strengths, ratings are provided for criteria in the following areas: Environmental Opportunities - Clean Technology; Toxic Emissions and Waste; Packaging Materials and Waste; Climate Change; and Carbon Emissions. For environmental concerns, ratings are provided

[4] The results of our analysis is insensitive to changing the minimum requirement of number of local firms. Technically, we need at least one other firm in an area to analyze local effect. However, the presence of only very few firms in the area may skew the estimates for the local firm variable, which requires averaging the rating of other firms. In addition, such areas are less likely to be CSAs with a reasonable level of economic activities.

for criteria in the following issues: Toxic Emissions and Waste; Impact of Products and Services (including ozone depletion and agricultural chemicals); and Regulatory Compliance.

To measure the impact of a firm's environmental strengths and concerns, we use indicator variables, EnvStrength and EnvConcern, respectively. *EnvStrength* takes the value 1 for the presence of strength in any environmental criteria, and 0 otherwise. *EnvConcern* takes the value 1 for the presence of concern in any environmental criteria, and 0 otherwise.[5] Unlike most of the prior literature that studies sustainability or corporate social responsibility (CSR), we do not focus on netting the environmental strengths and concerns. By netting, one implicitly assumes that firms can negate the impact of concerns with strength. As we show later, many firms may display strengths to potentially camouflage their existing concerns. Therefore, the net measure (EnvNet) may not be indicative of the various dimensions of corporate environmental policies.

The summary statistic in Table 1 show that the mean for the EnvNet variable across 9,040 firm year observations is 2.86 percent. However, this masks the large variations in the dichotomous variables, EnvStrength and EnvConcern. The means for these variables (also reported in Table 1) indicate that 19.48 percent of firm-year observations in our sample display at least one environmental strengths, whereas 16.62 percent are identified as having at least one environmental concerns.

2.3. Area Environmental Ratings

[5] Similar to Nofsinger, Sulaeman, and Varma (2017), we abstain from using the sum of the number of strengths and concerns, and instead employ indicator variables for the following reasons. First, the numerous environment related indicators do not describe the intensity of a particular strength or concern; as such, summing can create the unintended effect of measuring the intensity of the strengths (or concerns) solely based on the number of strengths (or concerns). Second, there are a different number of issues – which can give rise to potential strengths and concerns – analyzed across time. Some issues are merged, while others are removed and new ones added. As a result, the sum-based measures are not comparable over time. Third, there are unequal numbers of potential strengths and concerns available in the KLD/MSCI dataset. A strength on a particular environmental issue may not have a corresponding measure that captures environmental concern. For example, there is a criterion for environmental concerns relates to regulatory (non-) compliance, but there is no corresponding strength for regulatory compliance. Given the drawbacks of merely summing strengths and/or concerns, including separate indicator variables for strengths and concerns seems more appropriate to capture these environmental ratings.

We obtain "green" city ratings from the Siemens (2011) study, which is conducted by the Economist Intelligence Unit and commissioned by Siemens. This study assessed and compared major North American cities on environmental performance and policies across nine categories – CO_2 emissions, energy, land use, buildings, transport, water, waste, air quality, and environmental governance. We use the ranking for the overall Green City Index for U.S. cities that are sufficiently large economic centers, i.e., those that are associated with CSAs having more than five Russell 1000 firms. This ranking includes 18 large U.S. cities, which represent approximately 70 percent of all Russell 1000 firms during the 2001–2013, and approximately 87 percent of all Russell 1000 firms that are located in the 36 CSAs with more than five local Russell 1000 firms. The ratings are a reasonable representation of the 2001–2013 period in our study as the various quantitative indicators used in the rating construction were based on various publicly available official data sources that were disseminated at different points in time prior to 2011.[6]

2.4. Toxicity of Manufacturing Facilities

For our analysis of toxicity of facilities operated by manufacturing firms in our sample (Section 3.4), we employ data obtained from the Environmental Protection Agency (EPA). Our measure of toxicity is based on the Risk Screening Environmental Indicators (RSEI) score, which is a measure of risk from toxic substance releases and incorporates information from the Toxics Release Inventory (TRI) on the amount of toxic chemicals released, each chemical's fate and transport through the

[6] For example, CO_2 data was sourced from the 2002 datasets provided by Purdue University's Vulcan Project and US Bureau of Economic Analysis. Air quality data was sourced from the 2005 data of EPA and US Census Bureau. Transportation data was sourced from 2009 data provided by National Transit Databased and US Census Bureau American Community Survey. Overall, in order to ensure consistency in measures across cities, the Siemens (2011) study favors national data sources over city sources. Its data sources include the US Census Bureau, the US EPA, the US Geological Survey, the National Oceanic and Atmospheric Administration, the Trust for Public Land, Purdue University's Vulcan Project, and the National Transport Database. The full study is available online at the following web address: https://www.siemens.com/press/pool/de/events/2011/corporate/2011-06-northamerican/northamerican-gci-report-e.pdf

environment, each chemical's relative toxicity, and potential human exposure. The RSEI score is measured annually at the facility level. We assign each facility's score to its owner and match the owner with firms in our sample.

2.5. Other Data Sources

We obtain stock market related data from the Center for Research in Security Prices (CRSP) database, and annual financial data from the Compustat database. For institutional investors' quarter-end portfolio holdings, we use 13F filings from Thompson Reuters. Similar to Glaeser and Saks (2006), we obtain data on corruption in public office from the US Department of Justice's "Report to Congress on the Activities and Operations of the Public Integrity Section." We calculate a corruption index for each city as the number of federal convictions for corruption-related crimes by elected officials, per million of population.

3. Corporate Environmental Policies and Local Norms

3.1. Geographical Clustering of Firms and Environmental Ratings

We begin by exploring whether corporate environmental policies have a geographical clustering. We first estimate a negative binomial model with the variable of interest being the number of firm-years associated with a certain type of environmental indicators (strengths or concerns) in each area. This empirical approach is used in Ellison and Swanson (2016) to detect the clustering of high mathematics test scores at the school level and in Parsons, Sulaeman and Titman (2018) to detect geographical clustering of financial misconduct at the city level.

We present the estimates from the negative binomial analysis in Table 2. The estimate for α in this model measures the excess variance of the random effect at the area level. A higher α indicates a higher likelihood of geographical clustering beyond what could be expected by chance. We perform formal statistical tests of such clustering using χ^2 test, and report the p-value in Table 2.

[Insert Table 2 here]

In Panel A of Table 2, we present the results for 36 CSAs with more than five firms in the Russell 1000 index. In columns (1) and (3), the area level variable of interest is the number of firm-years in which the firm is identified as having environmental strengths. In columns (2) and (4), the dependent variable is the number of firm-years with environmental concerns.

In columns (1) and (2), the only independent variable is the (log of) the area's total number of firm-year observations. If there was no excess geographical clustering, the cross-area variation in the number of firm-years with environmental strengths (or concerns) can be explained by the geographical variation in the total number of firm-year observations, and therefore, the unexplained variation, α, is small and statistically indistinguishable from zero. Instead, we find evidence of statistically significant α values (p-value < 0.01) for both strengths and concerns. It is important to note that the point estimate of α for concerns (0.3752) is nearly four times that for strengths (0.0960), indicating that environmental concerns are more geographically clustered than environmental strengths. When additional demographic city level controls are introduced in columns (3) and (4), we continue to observe a higher prevalence of clustering of corporate environmental concerns than that of environmental strengths.[7]

Our study focuses on the relationship of local environmental norms with corporate environmental policies. We use Green City ranking (section 2.3) to capture such norms, which is

[7] The area specific demographic variables include age, education, log of population, average income, democrat tilt and religiosity. All demographic variables with the exception of Democrat Tilt are measured at the beginning of our sample (i.e. 2001). Demographic Tilt is averaged over the 3 presidential elections during our sample period and refers to the difference between the percentage of voters that voted for the Democratic and Republican. Religiosity refers to the fraction of the population that attend religious institutions. These variables are obtained from the U.S. Census Bureau data and Association of Religion Data Archives (ARDA) data.

available for only 18 CSAs. In Panel B of Table 2, we restrict our analysis to these 18 areas.[8] Columns (1) and (2) of Panel B show that the geographical clustering of corporate environmental concerns (α=0.2960; p-value <0.01) is nearly 30 times higher than the clustering for strengths (α =0.0122; p-value=0.05).

Upon the inclusion of demographic controls in column (3), we no longer observe geographical clustering of environment strengths beyond what could be expected by chance, with a very small α that is neither economically nor statistically distinguishable from zero. This indicates that any clustering in environmental strengths can be explained by either the differences in demographic makeup across areas or merely random chance. In contrast, the parameter estimate of α for environmental concerns continue to be significant (α=0.1899, p-value <0.01) in column (4), reflecting the excess geographical clustering of those concerns.

Overall, this area level analysis provides a strong indication that the prevalence of environmental concerns has a substantial geographical component, unlike environmental strengths. We next turn our attention to a firm-level analysis, in which we control directly for the possibility that the excess clustering we detect in the negative binomial analysis is related to (potential clustering of) firm characteristics.

3.2. Local Firms

In this section, we analyze whether the cross-regional variation of corporate environmental policies is related to a reflective measure of local norms: the behavior of other local firms. More specifically, we test whether a firm's environmental performance, in particular the occurrence of

[8] These 18 cities represent a large fraction of the economic activities in the US as they account for nearly 86 percent of firm-year observations across the 36 cities analyzed in Panel A.

environmental concerns, is related to other firms headquartered in the same area as the focal firm's headquarter, after controlling for firm characteristics and various fixed effects.

In Table 3, we use the average environmental ratings for other local firms, i.e. those sharing the same CSA with the focal firm's headquarters location. We calculate the average separately for each dimension of environmental ratings: strength, concern, and net strength. The average ratings of other firms in the local area for environmental strengths (EnvStrength), environmental concerns (EnvConcern), and net environmental strengths (EnvNet) are referred to as *Area_EnvStrength, Area_EnvConcern*, and *Area_EnvNet*, respectively.[9]

To study the relationship between the focal firm's net environment strengths (EnvNet) and that of other local firms, we conduct an ordinary least squares regression on firm-year observations with the focal firm's Env_Net being regressed on Area_EnvNet and firm characteristics that may influence corporate environmental policies. Our control variables are lagged by a year and include return on assets (*ROA*), Leverage, log of total assets (*log(TA)*), Tobin's *Q*, and log of cash flow by total assets (*Log(CF/TA)*).[10] To control for potential variation in environmental policies due to time or industry trends, we include fixed effects for year and industry. We categorize industries based on Fama-French's (FF) 10-industry classification.

The results are presented in Table 3. First, Column (1) show a statistically significant coefficient of 0.35 for Area_EnvNet, which indicate a positive relationship between a firm's net environment policies (EnvNet) and that of other local firms (Area_EnvNet). We then turn to the question of whether this relation is driven by strengths, concerns, or both.

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[9] As mentioned earlier, for each firm we calculate the EnvNet as EnvStrength minus EnvConcern, where EnvStrength and EnvConcern take the values 1 for presence of environmental strengths and concerns, respectively, and 0 otherwise.

[10] *Leverage* is the ratio of debt to book value of assets. *Return on Assets (ROA)* is the ratio of earnings before extraordinary items to book value of total assets for fiscal year t. Tobin's Q is calculated as market value of assets by the book value of assets where the market value of assets is calculated as the book value of assets plus the market value of equity less book value of common equity and balance sheet deferred taxes. All book values for fiscal year t are combined with the market value of common equity at the calendar end of year t.

[Insert Table 3 here]

As mentioned earlier, we measure a firm's environmental strengths and concerns with the dichotomous variables, EnvStrength and EnvConcern, respectively. These variables take the value of 1 for the presence of a trait, and 0 otherwise. For the remainder of this paper, we use the logistic regression approach for any analysis that involves modeling the relationship of these variables with independent variables of interest.

Cao, Liang, and Zhan (2018) documents that the passing of shareholder proposals involving corporate social responsibility (CSR) influences the CSR policies of other firms sharing the focal firm's product and industry characteristics. This highlights the need to control for industry effects in our analysis. We use the conditional logistics regression model, with the conditioning performed at industry-year stratum. This is akin to using industry-year fixed effects in the ordinary least squares regression framework.[11] Our conditional logistic regression specification take the following general form:

$$logit(\pi_{i,h}) = \alpha_h + \sum_{j=1}^{N} \beta_j X_{j,i,h}, \quad (1)$$

where $\pi_{i,h}$ is the event probability for the *i*th observation in stratum *h* (based on industry and year), and the stratum-specific intercepts α_h are the nuisance parameters that are conditioned out. The independent variables denoted by X_js include average area ratings as well as other firm specific control variables.

The results indicate that the observed commonality in environmental policies within cities is driven almost exclusively by local correlations in environmental concerns, whereas we do not observe any correlation in environmental strengths. In particular, the parameter estimate for the rate of

[11] While controlling for fixed effects in an ordinary least squares is relatively straight forward, the use of fixed effects in non-linear models for a panel data could lead to biased coefficients, referred to as the incidental variables problem (Neyman and Scott, 1948). Our results are robust to using an unconditional logistic regression framework with regular fixed effects for year and industry.

occurrence of environmental strengths for other local firms (Area_EnvStrength) is practically zero (0.04) and statistically insignificant in the regression of EnvStrength in column 2 of Table 3.

The absence of geographical clustering of environmental strengths may seem surprising at first. However, this is consistent with a deeper analysis that we perform in Section 4.4. We suspect that firms develop environmental strengths to cover for the presence of environmental concerns, and therefore the presence of strengths are not clustered only in areas with strong environmental norms.

In contrast, we find a positive relationship between the presence of environmental concerns for a firm and rate of occurrence of environmental concerns observed for other local firms (Area_EnvConcern). The coefficient estimate of 1.21 for Area_EnvConcern (Table 3, column 3) is both economically and statistically significant (p-value <0.01). It implies that a one standard deviation (11.15%) increase in Area_EnvConcern will lead to an approximately 14.44 percent increase in the odds of the occurrence of environmental concerns for the focal firm. This is consistent with local effects wherein firms are influenced by the behavior of other local firms.

Some areas may have a clustering of firms in certain industries. In such industry clusters, the Area_EnvConcern variable for a focal firm could be more representative of the firm's own industry dynamics as opposed to a pure reflection of geographical preferences related to persistent local norms. While we have controlled for the general industry dynamics by employing industry*year stratification, this does not control for local industry dynamics. Thus, we repeat the regression and replace the area-level average with its analog calculated using only other local firms in different industries. *Area_OthIndEnvConcern* is defined as the rate of occurrence of environmental concerns observed among other local firms that operate in different broad industry categories from the focal firm.[12] In

[12] Similar to the Area_EnvConcern variable that requires at least five other local firms, our calculation of Area_OthIndEnvConcern also requires the existence of at least five other local firms that are in an industry that is different from the focal firm. This leads to a slight decline in number of firm-year observations between regression results presented in columns 3 and 4.

column (4) of Table 3, we observe a coefficient estimate of 0.70 (p-value < 0.01) for Area_OthIndEnvConcern, indicating that the observed local effects cannot be solely attributed to the focal firm's local industry dynamics.

We also consider alternative variables to measure the impact of local norms. In particular, we define the variable HArea_EnvConcern (HArea_OthIndEnvConcern) to have a value of 1 if the corresponding value of Area_EnvConcern (Area_OthIndEnvConcern) is above the median across all firms, and 0 otherwise. We observe positive coefficients for these indicator variables, with comparable economic magnitudes to those obtained from the raw variables. The coefficient of 0.19 (p-value <.01) for HArea_EnvConcern implies that the odds of the occurrence of concerns are about 21 percent higher for a firm that is surrounded by other firms with relatively high incidence rates of environmental concerns, relative to those sharing domicile with firms with low incidence rates. We conclude that a firm's corporate environmental performance, and specifically the occurrence of environmental concerns, exhibits strong local effects that cannot be explained by firm characteristics or industry effects.

3.3. Local Norms

Our earlier results imply the potential role of local norms in influencing corporate environmental policies. In this section, we perform a more direct test of the influence of local norms. Rather than taking the average of other local firms to reflect local norms, we employ more direct measures of local norms. In particular, we examine city-level measures of environmental friendliness ("Green City" rating; section 2.3) and corruption by public officials. First, we examine a relatively clean measure of local environmental norms: the acceptable practices with respect to the environment. It is unlikely that existing corporate policies drive this particular dimension of local norms, which alleviates concerns regarding reverse causality.[13] Second, we employ an indicator of local political corruption. Such corruption reflects a general apathy towards the well-being of the local community. In addition, less corrupt areas may feature stronger legal enforcements, serving as a deterrent for poor corporate environmental performance.

[Insert Table 4 here]

We first document a preliminary but compelling evidence that area-wide environmental concerns reflect local norms. Table 4 presents the Green City Index for the 18 cities in the sample, along with the city-level averages of environmental concern (*EnvConcern*) rates. As the occurrence of environmental concerns could potentially be driven by industry effects, we also present the city-level averages of industry-adjusted environmental concern (*Ind-Adj EnvConcern*) rates to control for the potential effects of industry clustering.[14] We sort cities on the industry-adjusted rate so that the ordering reflects the within-industry variation of regional corporate environmental policies. We report the ranks for these variables in parentheses, where higher ranks indicate worse corporate environmental policies. We observe a strong negative rank correlation of –0.78 between EnvConcern Rate and the Green City Index, which implies that the rate of occurrences of corporate environmental concerns in an area is a strong reflection of the area's regard for the environment.

The rank correlation is lower for industry-adjusted environmental concern rate (–0.52), indicating that the correlation between corporate environmental policies and the Green City Index is

[13] The Green City Index is based on in-depth quantitative indicators across nine different categories in the most populous metropolitan areas in North America, which would make it difficult to argue in favor of a specific firm's corporate policies driving the city-level index. Also, to enhance the index's credibility and comparability, the Economic Intelligence Unit picked cities without relying on requests for inclusion from city governments.

[14] We begin by calculating Ind-Adj EnvConcern measure for each firm-year as the residual from the annual cross-sectional regression of the variable EnvConcern on FF-10 industry dummies. Next, we calculate the average Ind-Adj EnvConcern at the CSA-year level. Finally, we average this measure over time to calculate the Ind-Adj EnvConcern Rate for each city's CSA. The rank for this measure has a high correlation of 0.77 with the rank for raw environment concern rates (EnvConcern Rate). The striking exception is Houston, TX with the rank for EnvConcern Rate and Ind-Adj EnvConcern Rate being 14 and 2, respectively. This can be explained by the significant environmental concerns associated with the high concentration of energy industry in the Houston area.

partially due to firms in "green" cities operating in industries that are less likely to exhibit environmental concerns. However, the substantial correlation remaining after the industry adjustment indicates that the within-industry variation of corporate environmental policies across cities is related to the variation of environmental norms.

In addition, we also observe a negative rank correlation (–0.20) between corporate environmental concerns (EnvConcern) and city-level Ethical rankings (in which a higher rank signifies a lower prevalence of political corruptions). This indicates that firms headquartered in areas where local officials in general appear to behave more ethically are associated with a lower rate of corporate environmental concerns. Similarly, the correlations between the ranks of Ind-Adj EnvConcern Rate and Ethical rankings is -0.17.

Table 5 presents the results of a formal examination of the relationship between poor corporate environmental performance (i.e., the presence of environmental concerns) and local norms. Similar to the methodology in Section 3.2, we conduct conditional logistic regressions of the occurrence on environmental concerns (EnvConcern) on a set of independent variables. We are particularly interested in the coefficient estimates for measures of local environmental friendliness (Green and Best5_Green) and local corruption (Ethical and Best5_Ethical) across 18 cities.[15] *Green* refers to the ranking for the area's Green City Index in ascending order, with a higher rank implying greater environmental friendliness, as reported in parentheses in Table 4. *Best5_Green* is a dummy variable that take the value 1 for areas in the top 5 of Green City Index, and 0 otherwise. *Ethical* refers to the ranking for the area's corruption index. This variable is employed in descending order, such that a higher rank implies stronger ethical behaviors, to allow for direct comparisons with the *Green*

[15] For our analysis, we assign each cities ratings to its CSA as there are substantial economic and social linkages across the area.

variable. *Best5_Ethical* is a dummy variable that take the value 1 for the five most ethical cities (i.e., cities with the lowest rates of corruption), and 0 otherwise.

[Insert Table 5 here]

Table 5 reports the parameter estimates from these logistic regressions. We observe a negative coefficient estimate of –0.05 (p-value < 0.01) for the Green variable (column 1), which implies that the odds of a firm having at least one environmental concerns in San Francisco (the highest Green City Index in our sample) are about 57.26 percent lower than a firm in Detroit (the lowest Green City Index in our sample). A coefficient estimate of –0.47 for the Best5_Green indicator variable (column 2) indicates that a firm located in one of the five cities with the highest Green City Index measures has a 34.30 percent lower odds of exhibiting environmental concerns relative to firms located in other cities.

Columns (3) and (4) in Table 5 report a strong relationship between an area's corruption rate and the probability of resident firms having environmental concerns. We observe a negative coefficient of –0.04 (p-value < 0.01) for Ethical rankings, which implies that a firm located in San Francisco (the least politically corrupt in our sample) has a 49.33 percent lower odds of having environmental concerns than a firm located in Washington, DC (the most corrupt in our sample). Similarly, the Best5_Ethical coefficient of –0.41 indicates that firms in areas with the strongest ethical norms (and/or weaker legal enforcement) have a 33 percent lower odds of having environmental concerns than firms located in other areas.

In column (5), we examine the measures of local environmental and ethical norms simultaneously. For ease of exposition, we report the estimates from a regression model that includes the two indicator variables: Best5_Green and Best5_Ethical. We find that both measures retain their economic and statistical significance; indeed, the magnitude of each coefficient estimate is almost identical relative to when each variable is included by itself (in columns 2 and 4, respectively). This indicates that the general apathy towards local community reflected in the corruption index has implications for corporate environmental policies above and beyond the effects of local environmental norms.[16] An alternative inference is that we reconfirm our findings in relation to local environmental norms, after using the corruption index to control for potential variations in local legal enforcements.

Lastly, we note that the observed results may partially reflect the cross-regional variation in demographic, religious, and political preferences. While these factors play a role in shaping local environmental norms, we find that our results are robust to the inclusion of city-level demographic controls in column 6, consistent with the results from the negative binomial analysis tabulated in Table 2.[17] We also performed a sub-period analysis to capture the potential time-series variation in the awareness of environmental issues. We observe similar empirical patterns in the earlier half of our sample period (2001–2006) and in the latter half (2007–2013). The point estimates are higher in the latter half for both types of local norms, consistent with the higher prevalence of social media and consequently higher likelihood of exposure of negative environmental practices in the latter half of our sample.

3.4. Toxicity of Manufacturing Facilities

Our sample consists of mostly large firms (i.e., Russell 1000 constituents) that are likely to be regulated by various entities outside of the firms' local headquarter jurisdiction. One potential channel

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[16] In a set of (untabulated) analyses, we examine the link between these local norms measures and local demographic characteristics, e.g., income, city size, religiosity, education. Some of these characteristics have relatively strong correlation with environmental norms. In particular, cities with richer and more educated residents tend to have a higher green ranking. However, including these demographic variables in regression models similar to those reported in Table 5 does not affect the economic and statistical inferences regarding the link between local norms and corporate environmental performance.

[17] The list of city-level demographic variables includes PopAge, Edu, Log(Pop), Money, Democrat Tilt and Religiosity. PopAge is average age of the population. Log(Pop) is the log of the population. Money refers to the average income of the population. Democratic Tilt refers to the difference between the percentage of voters that voted for the Democratic and Republican parties in the most recent presidential election prior to a given year. Religiosity refers to the fraction of the population that attend religious institutions. These variables are obtained from the U.S. Census Bureau data and Association of Religion Data Archives (ARDA) data.

through which local norms can affect corporate environmental policies is through the prevailing environmental regulations (and norms) at various locations of their operations. To examine the plausibility of this channel, we conduct a preliminary analysis on the subsample of Russell 1000 firms whose financial statements mention many U.S. states. This approach is used to identify the geographical dispersion of corporate operations in recent studies by Garcia and Norli (2012) and Bernile, Kumar, and Sulaeman (2015). Our analysis uses the cutoff of five states mentioned in the annual statements (i.e.., 10-K). We perform regressions with the specifications presented in Table 5, both with and without the inclusion of city demographic controls. The parameter estimates for variables reflective of local norms at HQ location (Green, Best5_Green, Ethical, and Best5_Ethical) continue to display similar magnitudes; some estimates are larger.[18] Therefore, our results seem robust even in the subsample of firms that are likely to be exposed to more regulatory jurisdictions than just the local or regional environmental bodies at the firm headquarters location.

A major drawback of this preliminary analysis is that we are not able to directly control for local environmental risks and regulations across each firm's facilities. To mitigate this drawback, we employ granular data provided by the U.S. EPA on the risk of toxic releases from 2,295 facilities operated by 215 manufacturing firms in our sample. Using this data, we examine the relationship between the environmental risks emanating from a firm's facility with the respective local norms of both its headquarters location and the facility location.[19] We define *HqRank* as the Green City Index ranking of the firm's headquarters location used in our earlier analysis, whereas *FacRank* represents the facility location's Green City Index ranking. We report the analysis in Table 6, in which all

[18] The results are untabulated to conserve space and are available upon request.
[19] Please refer to data description in Section 2.4. The average number of manufacturing firms in our sample annually is 223 (2,903 firm year observations across 13 years), of which we have facility level RSEI scores for 130 firms (1,691 firm year observations across 13 years). Our data provides us with 16,192 facility-year observations during our 2001–2013 sample period.

regression specifications include the standard firm control variables used in the earlier analysis in Table 5.[20]

Panel A of Table 6 reports the analysis at the firm level, in which the unit of observation is a firm-year pair. We begin our analysis by examining the relationship between local norms at the firm's headquarters location and the choice of geographical locations of its facilities. In particular, we ask whether the firm's facilities are located in "green" areas or in the remaining "non-green" areas. We designate facilities located in U.S. cities ranked in the top 5 of Green City Index as located in "green" locations, and designate all facilities located in the remaining 13 cities as located in "non-green" locations. For facilities located outside the 18 cities covered by the Green City Index, we designate them as located in "green" or "non-green" locations based on the Green City Index of the nearest city covered by this index.

[Insert Table 6 here]

Columns (1) and (2) present the coefficient estimates from conditional logistic regressions with the dependent variable being *Loc_FacNGreen*, a dichotomous variable that takes the value of 1 if the firm operates any facility in a "non-green" location (i.e., outside the spheres of the top 5 U.S. cities in the Green City Index) and 0 otherwise. We find a negative coefficient for *HQRank* in column (1), indicating that firms headquartered in greener cities are less likely to operate facilities in non-green areas. In terms of economic significance, the parameter estimate of –0.20 (p-value<0.01) indicates that the odds of a firm headquartered in Philadelphia (with the median Green City Index) operating a facility in non-green areas are 81 percent lower than a firm headquartered in Detroit (the lowest Green City Index).

[20] The *HqRank* variable is identical to the *Green* variable employed in our other analyses. We use a different variable name only in Table 6 to differentiate between the Green City Index ranking of headquarters (*HqRank*) and facility (*FacRank*) locations for the analyses in Panel B.

To ensure that these findings are not completely driven by co-domiciles of facilities and headquarters, we restrict the analysis in column (2) to firms that have at least one facility operating outside its headquarters area, i.e. beyond a 100-mile radius from the headquarters. The results reported in column (2) display similar patterns to column (1). The negative coefficient estimate of –0.06 (p-value<0.02) for the HQRank variable implies that a firm headquartered in Philadelphia have 38 percent lower odds of operating a facility in non-green areas than a firm headquartered in Detroit.

The previous analysis only employs the facility location data, but does not directly employ the EPA's data on risk from toxic releases from these facilities. We do this in the remainder of this section, in which the focus is the toxicity of manufacturing facilities. Our first set of analyses on toxicity is at the firm level, wherein we begin by calculating the average RSEI across each firm's facilities. The RSEI score measures the potential risk emanating from toxic substance releases at each facility and can be aggregated/averages across facilities at any point in time. We define an annual *Toxicity* variable for each firm, which is calculated as the log of one plus the average RSEI score across all of the firm's facilities.

In column (3) of Panel A in Table 6, the dependent variable is the average firm-level toxicity across all of its facilities.[21] We find a negative coefficient estimate of –0.07 (p-value<0.01) for *HQRank*. Due to the log transformation of the dependent variable, this coefficient implies that a one unit increase in the Green City Index ranking of the firm's HQ location is associated with a 7 percent decrease in the average toxicity across all of the firm's facilities. This result corroborates our main finding on the relationship between local norms at the HQ location and the presence of environmental concerns.

[21] Note that our regression specifications control for firm size as larger firms may mechanically have a higher Toxicity score because of greater number of facilities across which RSEI scores are aggregated.

Next, we examine this finding by separating facilities located in "green" and "non-green" areas. Facilities located in non-green areas are likely to be associated with weaker local environmental regulations that do not require firms to exhibit the highest standards of environmentally responsible behaviors. Column (4) provides a strong evidence that firms headquartered in "green" cities operate facilities with lower toxicity risks even in "non-green" areas, relative to firms headquartered elsewhere. The coefficient estimate for *HQRank* in column 4 is –0.08 (p-value<0.01), almost identical to its coefficient estimate in column (3).

In contrast, facilities located in "green" areas are likely to face stringent local environmental regulations, which are applied uniformly regardless of firm domiciles. As such, there could be little difference in toxicity risks across facilities, regardless of whether they are owned by firms headquartered in green or non-green areas. In column (5) we restrict our analysis to only facilities in "green" locations. The results are consistent with the assertion above; the point estimate for *HQRank* is practically zero.

Next, we explore if firms behave strategically with the toxicity risks of their facilities. In column 6, we use the dependent variable as the difference between the average toxicity risk for a firm's facilities in non-green vs. green areas, for firms operating in both areas. A negative estimate of 0.09 (p-value <0.01) for *HQRank* in column (6) indicates that firms headquartered in "green" cities exhibit greater toxicity risks in facilities located in non-green areas, relative to their other facilities in green areas.

Our analysis in Panel A is informative at the firm level, and we further extend our analysis in Panel B by studying toxicity risks at the facility level. The latter allows us to capture location-based effects at each facility and contrast them with HQ location effects. However, it is important to note that multiple facilities operated by the same firm are likely to be correlated in many ways, including their environmental practices, as we observed in Panel A. To control for this potential correlation, we cluster standard errors by firm-year in all specifications in Panel B.

We first consider *HQRank* in column (1) of Panel B. As expected, this variable is negatively related to the toxicity of individual facilities. The coefficient estimate for *HQRank* of –0.06 (p-value<0.01) implies that a one unit increase in the Green City Index ranking at a firm's headquarter location results in a reduction of 6 percent in the facility's toxicity level.

The effect is more than doubled for the *facility* location's Green City Index, as reported in column (2). The coefficient estimate for *FacRank*, which represents the facility location's Green City Index ranking, is –0.14 (p-value<0.01), indicating that a one unit increase in the facility location's green ranking is associated with a reduction of 14 percent in the facility's toxicity risk level.

In column (3), we include *HqRank* and *FacRank* simultaneously. The effects of the HQ location and the facility location seem to be orthogonal. Their parameter estimates in column (3) are quite similar to those in columns (1) and (2). This indicates that even after controlling for local norms at each facility's location, the local norms at the firm's *HQ* location still play a significant role in determining the environmental policies at each (remote) facility.

Our analysis involving *FacRank* in columns (2) and (3) of Panel B is restricted to the sub-sample of facilities located in one of the 18 cities with Green City rankings. This restriction excludes more than 60 percent of our initial sample of facilities operated by Russell 1000 firms headquartered in the 18 cities. In columns (4) and (5) of Panel B, we mitigate this loss by employing the *FacRankNr* variable to capture the facility location's environmental norms, instead of *FacRank*. *FacRankNr* supplements *FacRank* for facilities located outside of the 18 ranked cities by assigning the nearest ranked city's Green City Index ranking. While the estimates for the facility-level environmental norms are weaker, we continue to observe that the local norms at the firm's HQ location play a significant role in determining the environmental policies at each facility; indeed, the parameter estimate for the *HqRank* variable is almost unchanged relative to column (3).

Finally, we attempt to control for variations in local environmental regulations at the facility level – beyond what is captured by our measures of local environmental norms (i.e., FacRank or FacRankNr). In column (6) of Panel B, we include facility location fixed effects (FacFEs) to control for observable and unobservable facility location specific effects. The FacFEs are defined at the CSA level, while facilities located outside of CSAs are indicated by a missing CSA dummy. We observe a negative coefficient estimate for *HqRank* of –0.03 (p-value<0.01) with this stringent specification. This implies that a unit increase in the HQ location's Green City Index ranking is associated with a reduction of 3 percent in the firm's facilities. This economic magnitude is quite large as the Green City Index ranking ranges from 1 to 18. In particular, the estimate implies that moving a firm's HQ from the city with the lowest Green City Index to the city with the highest index value is associated with a reduction of about 50 percent in the average toxicity risks of the firm's facilities.

In sum, our results in Table 6 indicate that the local norms at a firm's headquarter continue to influence its environmental policies even after controlling for the potential effects of local norms and regulations at each of the firm's facility locations. This indicates that while the local regulatory channel is likely important to explain facility-level performance, it is unlikely to fully explain the link between local environmental norms and corporate environmental policies. We conclude that the local effects that we document earlier indeed reflect variations in local norms.

4. Environmental Policies, Local Investors, and Firm Valuation

Having established the relationship between local environmental norms and corporate environmental concerns, we now focus on studying the financial market implications of these norms. First, we highlight the sensitivity of institutional investors to local environmental norms. Next, we explore the interplay of local environmental norms and corporate environmental concerns in the context of investors demand and firm valuation. Last, we explore the valuation effects associated with firms attempting to obfuscate environmental concerns with the presence of strengths, particularly in greener cities.

4.1. Institutional Investors and Green City Index

Institutional investors in general display a preference for local stocks, referred to as local bias (Coval and Moskowitz, 1999). We find similar patterns in our sample. In particular, the average institutional investor in our sample allocates 13.99 percent of their portfolio to local stocks in our Russell 1000 sample during the 2001–2013 sample period. Adjusting for the aggregated market capitalization weights of local stocks, institutional investors overweight local stocks by a sizeable amount of 2.29 percent (of their portfolio value).

Another strand of literature has also examined the preference of institutional investors in terms of corporate social responsibility. Hong and Kostovetsky (2010) find that the political preferences of US investment managers influence their holdings of socially irresponsible stocks. We attempt to bridge these two strands of literature. To the best of our knowledge, the current study is the first to explore whether institutional investors' preference for local firms and their environmental policies is sensitive to the prevailing local norms.

For our analysis of institutional investors' preference, we use quarterly institutional investor portfolio allocations over the period 2001–2013. Given our focus on the impact of local norms, we restrict our analysis of institutional investors' portfolio holdings to Russell 1000 firms with headquarters in areas (CSAs) that are covered by the Siemens (2011) "Green City" ranking. We conduct panel data regressions at the investor-quarter level and cluster the standard errors by area to account for any geographical clustering of institutional investors as well as the static nature of area "green" ratings. Our regression specification is as follows:

$$InstMeasure_{h,t} = \alpha + \beta_j AreaGreenMeasure_{h,t} + \sum_{t=1}^{N} \gamma_t TimeFE_t + \varepsilon_{h,t},$$

where *InstMeasure* refers to a measure of stock preferences for institutional investor *h* at time *t*, *AreaGreenMeasure* refers to the institutional investor's area measures of environmental friendliness (Green or Best5_Green defined earlier), and *TimeFE* refers to quarter-year fixed effects. Table 6 presents the regressions results using our four measures of institutional investor stock preferences: *Adj_Loc*, *Adj_LocNoCon*, *Adj_LocCon* and *Ex_Adj_LocNoCon*.

These institutional investor level measures are expressed as percentages. Their construction involves adjusting raw portfolio weights by the market capitalization weights. We first calculate aggregate portfolio weights across stocks with the certain defined characteristics. Thereafter, we subtract the aggregate market capitalization weights for the same set of stocks from the raw portfolio weights. The *Adj_Loc* variable is intended to capture the general (abnormal) preference for local stocks. It is calculated as the aggregate portfolio weight allocated to all local stocks (e.g., zero for stocks that the institutional investor does not hold) minus the market capitalization weight for these local stocks. The latter represents the expected portfolio weight if the investor does not have any local bias. As such, a positive value of *Adj_Loc* represents abnormal preference for local stocks, i.e., local bias.

The rest of the variables are constructed in a similar manner. *Adj_LocCon* is intended to measure institutional investor's abnormal preference for local stocks with some environmental concerns. It is calculated as the aggregate portfolio weight allocated to local stocks with environmental concerns (*LocCon*) minus the aggregate market capitalization weight for these stocks. *Adj_LocNoCon* captures the preference for local stocks without any environmental concerns. It is calculated as the aggregate portfolio weight allocated to local stocks without environmental concerns, again minus the market capitalization weight for these stocks.

Last, *Ex_AdjLocNoCon* is the excess preference for local stocks without environmental concerns over local stocks with concerns. It is defined as the difference between *Adj_LocNoCon* and *Adj_LocCon*. As such, it captures a double-difference: the first difference is between local holdings and local market weight, and the second difference is between firms without environmental concerns and with environmental concerns. A positive value of this variable indicates that the abnormal preference for local stocks without environmental concerns is stronger that the corresponding abnormal preference for local stocks with concerns. Our hypothesis is that this variable should be more positive for investors located in areas where the residents are more sensitive to environmental policies, i.e., cities ranked high using the Green City Index.

[Insert Table 7 here]

We report the estimates from two sets of regression. First, we employ the raw Green City Index ranking from Siemens (2001) in Panel A of Table 7. Second, we employ a categorical variable, *Best5_Green*, in Panel B to compare areas where local norms strongly favor environmental friendliness (i.e., top 5 cities in the Green City Index) to other areas. While the results in Panel A are helpful in gauging the incremental effects of Green City Index rankings on institutional investors' preference for various types of local stocks, Panel B provides easier categorical comparisons. Both panels paint the same picture, but we focus on Panel B in the discussion below for ease of exposition.

The intercept in Panel B reflects the preference of institutional investors in non-"green" cities, whereas the coefficient estimates for Best5_Green captures the incremental impact of residing in an areas with strong preferences for environmental friendliness. The parameter estimate for the intercept in column (1) indicate that institutional investors in general over-allocated 3.50% (p-value <0.02) of their portfolio to local stocks, consistent with extant evidence of local bias. Institutional investors in "green" cities seem to have a weaker local bias, but the difference is not statistically significant.

We then separate institutional investors' excess preference for local stocks without any environmental concerns (Adj_LocNoCon; column 2) and for local stocks with some environmental concerns (Adj_LocCon; column 3). Column 2 exhibits statistically and economically insignificant coefficients for the "green" area measures, indicating that institutional investors' local bias appears to be geographically pervasive in the absence of corporate environmental concerns.

Next, we explore a more pertinent question in this context: Do institutional investors penalize local firms for violating local environment norms? If institutional investors are sensitive to local environmental norms, we expect investors located in environmentally friendlier locations to display reduced bias for local stocks with environmental concerns. In other words, observing violations of local environmental norms could mitigate these investors' local bias.

To test this hypothesis, we employ a dependent variable that measures investors' preference for stocks that have environmental concerns (Adj_LocCon). Our prediction is that the parameter estimate for Best5_Green is negative. We report the results in column (3) of Table 7. We first observe a positive value for the intercept, indicating an average local bias of 1.27% (p-value<0.01) for stocks with environmental concerns in non-"green" cities. More importantly, we observe a negative coefficient for Best5_Green dummy of –2.13 (p-value <0.01), indicating that stocks with environmental concerns do not experience local bias if they are headquartered in the top 5 greenest cities. While institutional investors in other areas continue to show a local bias for stocks with environmental concerns, institutional investors in the top 5 greenest cities display a slight *aversion* towards local firms with environmental concerns.[22] In sum, institutional investors in greener areas appear to penalize local firms for poor environmental performance with a disproportionately lower allocation of their portfolio to local stocks with environmental concerns.

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[22] San Francisco, CA and Detroit, MI have a green ranking of 18 (highest) and 1(lowest), respectively. Using the parameter estimates in Panel A of Table 7, the predicted Adj_LocCon for San Franciso, CA = 3.29 – 0.25(18) = –1.21, whereas the predicted Adj_LocCon for Detroit, MI = 3.29 – 0.25(1) = 3.04.

We formally compare investors' preference for local stocks with and without concerns in column (4). To do this, we regress Ex_AdjLocNoCon (i.e., Adj_LocNoCon minus Adj_LocCon) on Best5_Green and find a positive coefficient of 2.32 (p-value <0.01), indicating that investment managers in greener locations display a greater portfolio tilt (of 2.32%) away from local firms displaying environmental concerns.[23]

Overall, unlike institutional investors in other areas who display local bias regardless of corporate environmental policies, investors in green locations do not overweight local firms with environmental concerns. If anything, they seem to underweight these stocks. As such, our results support the hypothesis that investors in greener areas are more sensitive to violations of local norms.

4.2. Green City Index and Local Stock Returns

Demand (or lack thereof) for a stock from local institutional investors could have an impact on stock returns. In this section, we study the future performance of stocks based on the firm's corporate environmental performance and local norms. This analysis helps us understand the capital market implication of norm-dependent behavior of local institutional investors toward firms with environmental concerns. We begin our analysis by calculating monthly returns of (equal-weighted or value-weighted) portfolios formed by sorting stocks on two dimensions: (1) the existence of environmental concerns (Concern [C] or No Concern [NC]) during the previous calendar year, and (2) the local environmental norms at the firm's headquarters location (Green [G] or Non-Green [NG]). We focus on exploring the returns for the difference-in-difference portfolio, which can be interpreted as the return difference between portfolios with and without concerns (C-NC) in green

[23] We perform an untabulated analysis examining the role of local public pension funds. Quite surprisingly, we observe that public pension funds in "green" areas appear to over-weight local stocks with environmental concerns. We observe similar pattern with other long-horizon institutional investors. This pattern can arise due to various reasons; two among them: (1) the investors have a long-term view and therefore may play activist roles, e.g., exert pressure on these firms to take corrective actions, and (2) certain long-term investors such as public pension funds may feel the need to support firms in the local economy, even when the firms do not conform to local norms. These results are available upon request.

(G) areas, relative to the same difference in non-green (NG) areas.[24] To account for potential auto-correlation in returns, we estimate standard errors with the Newey-West (1987) correction.

[Insert Table 8 here]

Panel A of Table 8 presents the average raw monthly returns of the four portfolios alongside their differences and the diff-in-diff portfolio. Stocks with environmental concerns in green areas experience worse performance than those in non-green areas. The difference in equal-weighted monthly returns between stocks with environmental concerns located in green areas and those located in non-green areas is –0.36% (p-value<0.03), whereas the difference in value-weighted monthly returns is –0.44% (p-value<0.03). We do not observe much difference in stocks without concerns. As such, the equal-weighted (value-weighted) diff-in-diff portfolio earns -0.45% (-0.52%) average monthly returns.

Panel B of Table 8 presents monthly Carhart (1997) four factor alphas of these portfolios.[25] The results are qualitatively similar to those for raw returns. The equal-weighted diff-in-diff portfolio earns a monthly alpha of –0.33% (p-value<0.03), whereas the value-weighted portfolio earns –0.45% (p-value<0.01). These alphas are economically significant. A monthly alpha of –0.33% (–0.45%) translates to abnormal returns of –4% (–5.4%) annually. Thus, even after adjusting for return factors, we find that firms defying local norms in green areas suffer severe underperformance.

From the perspective of the observed preferences of local institutional investor documented in Section 4.1, we present two alternative interpretations of the observed differences in returns for stocks with and without concerns in green and non-green areas. Weaker demand from institutional

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[24] Alternatively, the diff-in-diff portfolio return can be interpreted as difference between portfolios in green and non-green areas (G-NG) for stocks with concerns (C), relative to those without concerns (NC).

[25] We use the following specification: $R_{i,t} - R_{f,t} = \alpha + \beta_1(R_{m,t} - R_{f,t}) + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 WML_t + \varepsilon_{i,t}$, where $R_{i,t}$ is the equal-weighted (or value-weighted) is the monthly i at time t; α refers to the monthly alpha; $R_{m,t}$ is the market return; Rf,t is the risk free rate (one month T-bill rate); the beta coefficients (β1, β2, β3, β4) measure the loading for systematic risk, size (SMB), value (HML), and momentum (WML) factors, respectively; and $\varepsilon_{i,t}$ refers to the idiosyncratic return component. The data for $R_{m,t}$, $R_{f,t}$, SMB, HML, and WML are obtained from Kenneth French's web page.

investors in green areas for local firms with environment concerns could result in temporary stock underpricing. This effect should be reversed in the subsequent periods, and those stocks should experience higher (abnormal) returns. The results in this section indicates that this is not the case: those firms experience lower stocks returns, relative to stocks with environmental concerns in non-green areas. The alternative interpretation is that the weaker demand is not transitory in nature and therefore should be reflected in long-term firm valuation. We explore this alternative in the next section.

4.3. Firm Valuation and Green City Index

In Section 4.1, we document that the average institutional investor located in green appears to show a weakened demand for local firms exhibiting environmental concerns. Heinkel, Kraus, and Zechner (2001) develop a model in which green investors would not invest in polluting firms. The fewer potential investors available to own polluting stocks allow for less risk sharing among potential shareholders. This in turn could lead to lower stock prices and higher costs of capital, in the spirit of Merton (1987).[26]

Previous empirical research has documented the relationship between CSR and firm valuation.[27] The closest related study to ours is the work of Fernando, Sharfman and Uysal (2017),

[26] In an untabulated analysis, we examine local retail investors using data from Odean (1999). We observe that (1) retail investors overweight local stocks, more so in greener cities, (2) local stocks without environmental concerns generally exhibit an even stronger local bias, and (3) consistent with our main result, the local bias in green areas is stronger for stocks without environmental concerns. The results are statistically significant when we cluster errors by household. However, an issue with this particular out-of-sample test is the high geographic concentration of retail investors in this dataset in greener cities. The percent of observations in SF, NY and LA is 22.87, 16.95 and 10.56, respectively. The green city index rank for SF, NY and LA is 18 (highest), 17 (second highest) and 13, respectively. In combination with the relatively short time-series, this result in statistical tests failing to detect significant variation across green and non-green areas when we cluster errors by regions. These tests are available upon request.

[27] El Ghoul et al. (2011) empirically examine the relationship between CSR and the cost of equity for the firm. They report that positive CSR policies are associated with lower equity costs. Although they do not directly include firm value in their analysis, they conclude that lower costs support higher valuations. Similarly, Dhaliwal et al. (2011) also finds that voluntary disclosure of CSR strengths is associated with lower cost of capital. Jiao (2010) studies the relationship between firm value

who exclusively focus on environmentally green firms and those with concerns. They report that both groups have lower values, but it is more severe for those with environmental concerns. A major difference between Fernando et al. (2017) and other extant papers in the literature is that Fernando et al. (2017) separate the strengths and concerns in their analyses, instead of employing a 'net' measure. This is similar to our approach of separating strengths and concerns, and investigating the contribution of each separately. Relative to Fernando et al. (2017), our analysis adds the extra wrinkle of the environmental norms at the firm's location.

We use Tobin's Q as a measure of firm valuation and follow Gompers, Ishii and Metrick (2003) by calculating the industry median adjusted Tobin's Q (Kaplan and Zingales, 1997).[28] To study the relationship between measures of corporate environmental performance and firm valuation, we conduct Fama-Macbeth (1997) type analysis by estimating a cross sectional regression each year and then calculating the averages of the time-series of coefficients. To control for potential autocorrelation (i.e., due to the stickiness of both dependent and independent variables) and heteroscedasticity, we perform statistical tests using the Newey-West (1987) corrected standard errors. While we report the Fama-Macbeth approach in Table 9, we also perform unreported analysis using a panel approach which include year fixed effects and cluster the standard errors at the firm level. The results are similar.

Our general regression specification for the results presented in Table 9 is as follows:

$$Q_{i,t} = \alpha + \sum_{j=1}^{N_j} \beta_j KeyVar_{j,i,t} + \sum_{k=1}^{N_k} \gamma_k Control_{k,i,t} + \varepsilon_{i,t}, \quad (2)$$

and net strengths (i.e., number of strength minus concerns) for various ES issues, and finds a positive association between the stakeholder welfare measure and Tobin's Q. Gillan et al. (2010) examine the relationship between ESG ratings and corporate governance issues. They conclude that firms with ESG strengths have higher valuations than otherwise similar firms.

[28] Tobin's Q is calculated as market value of assets by the book value of assets where the market value of assets is calculated as the book value of assets plus the market value of equity less book value of common equity and balance sheet deferred taxes. All book values for fiscal year t are combined with the market value of common equity at the calendar end of year *t*. Consistent with prior analysis in this study, we use the Fama and French's 10 industry classification.

where Q refers to the industry median adjusted Tobin's Q (defined above), *KeyVar* refers to a environmental variables that include the firm's environmental measures, the area "green" measures, and their interaction. *Control* refers to the following firm specific characteristics (from Gompers, Ishii and Metrick, 2003 and Jiao, 2010): size, age, Delaware incorporation dummy, SP500 dummy, sales growth, leverage, ROA, R&D/sales, advertising/sales, and dummies for missing R&D expenses and advertising, respectively.[29] Column (1) displays the impact of net corporate environmental ratings (*EnvNet*), whereas columns (2) and (3) focus on the impact of the existence of corporate environmental strengths and concerns, respectively.

[Insert Table 9 here]

Consistent with our prior result in Section 3.2 that the local effect in the context of net environmental ratings is weakened due to the potential noise introduced by environmental strengths, we find that a firm's net environmental rating (i.e., strength minus concern) have a weak statistical (p-value>0.05) and economic relationship (coefficient of 0.09 for *EnvNet*) with firm valuation.

The *EnvNet* variable is likely to be noisy because the implications of corporate environmental strengths on firm value are slightly complex. In column (2), we observe a negative coefficient estimate of –0.18 for EnvStrength, implying that environmental strengths are associated with *lower* firm value. This result is partly driven by the potentially high cost associated with developing and implementing corporate policies that can give rise to environmental strengths. It could also reflect the greater

[29] *Delaware Dummy:* Takes value 1 if the firm is registered in Delaware and 0 otherwise. *SP500 Dummy*: Takes value 1 if the firm is included in the S&P500 index in year t and 0 otherwise. *Size* is calculated as the log of market capitalization at end of calendar year t. *Age* is calculated at the end of calendar year t as log of the number of years since the firm first appeared on the CRSP database. The remaining variables are calculated for fiscal year t. *Sales Growth* is the ratio of change in total sales in fiscal year t from previous year t-1. *Leverage* is the ratio of debt to book value of assets. *Return on Assets (ROA)* is the ratio of earnings before extraordinary items to book value of total assets for fiscal year t. *R&D/Sales* is the ratio of research & development (R&D) expenses to sales. The *missing dummy for R&D Expenses* is included to prevent significant loss of observations and to control for any characteristics for non-reporting firms. *Advertising/Sales* is the ratio of advertising expenses to sales. Similar to R&D expenses, we also include a *missing dummy for advertising expenses*.

likelihood of the presence of environmental strengths in firms with environment concerns; we discuss this in more details in Section 4.4.[30]

In contrast, we observe a negative coefficient of –0.30 (p-value <0.01) for *EnvConcern* in column 3, consistent with the expected negative consequences of the presence of corporate environmental concerns. Our findings so far are consistent with Fernando et al. (2017), who find that both green and toxic firms are associated with lower firm valuation.

Next, we investigate the role of local environmental norms in the context of corporate environmental policies and firm valuation. Given our finding about institutional investors' sensitivity to local stocks that violate local environmental norms, we focus on the interplay of corporate environmental concerns alongside measures of the area's green ratings. The analyses reported in columns (4) and (5) include area environmental ratings and its interaction with firm-level *EnvConcern* variable.

Column (4) reports that the *EnvConcern* variable by itself has no relationship with firm valuation, after controlling for area environmental rating. However, we find a negative coefficient of –0.03 (p-value <.01) for the interaction term *EnvConcern*Green*. This indicates that the presence of environmental concerns is associated with lower valuation for firms residing in greener areas. Our results for this incremental effect can be interpreted in a causal manner as it particularly hard to argue that firms in poor financial condition would be more likely to display environmental weakness when located in environmentally friendly areas (vs. if they are located in less environmentally friendly areas). In addition, we observe a positive coefficient of 0.02 (p-value <0.01) for the standalone *Green* variable, which can be interpreted as a "halo" effect wherein firms located in greener cities are generally

[30] In untabulated analyses, we find that negative effects of environmental strengths are smaller for firms with environmental strengths that do not have any environmental concerns.

associated with a higher firm valuation. The coefficients for Green and EnvConcern*Green are also economically significant given that the median industry adjusted Tobin's Q is 0.20.

The joint effects of the firm and area environmental variables imply that while the difference in firm valuations are relatively insignificant between firms with and without environmental concerns that are located in areas with low Green City Index, these differences monotonically increase as we consider environmentally more progressive areas. To illustrate these patterns, we compare the estimates for San Francisco, CA (the city with the highest Green City Index) and Detroit, MI (with the lowest Green City Index). In Detroit, the difference in industry-adjusted Q between firms without and with environmental concerns is relatively insignificant at 0.01. However, a San Francisco firm with environmental concerns will have an industry-adjusted Q that is 0.18 lower than other SF firms.[31]

Column (5) employs the *Best5_Green* indicator variable and its interaction with firm-level corporate environmental concerns. The results confirm our finding that firm valuation is significantly affected by violations of local norms in green locations. This finding is consistent with the results in the Section 4.1, wherein we document that green locations are associated with a weaker institutional investor demand for local firms with environmental concerns. We conclude that local environmental norms play an important role in the context of corporate environmental concerns and firm valuation.

One concern with interpretation of our evidence of Tobin's Q is whether lower firm valuation implies shareholder value destruction or it simply reflects temporary under-valuation. In Section 4.2, we observe evidence of worse return performance for stocks with environmental concerns in the green areas, which goes against the argument that the lower Tobin's Q for firms defying local norms in green areas is driven by temporary under-valuation.

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[31] Our regression models include a measure of firm performance (ROA). As such, the results can be interpreted in the context of market valuation above the observable determinants of firm valuation. In a separate analysis, we find no evidence that firms that violate local environmental norms have poor profitability relative to other firms in the area. This result is available upon request.

4.4. Camouflaging Concerns with Strength?

Our earlier results indicate a generally insignificant local effect associated with environmental strengths as well as a negative link between environmental strengths and firm valuation (Fernando et al., 2017). We hypothesize that these patterns are partly driven by obfuscation: firms camouflaging the presence of environmental concerns with strengths. To examine the relationship between the presence of environmental strengths and concerns, we follow a similar methodology to Section 3.2. We estimate the likelihood of the presence of environmental strengths (*EnvStrength*) on a set of variables using conditional logistic regressions that condition for industry (FF-10) and time (year).

We first perform a preliminary analysis with only *EnvConcern* as the explanatory variable, we find that the odds of a firm having an environmental strength are 2.94 time higher in the presence of environmental concerns. While this sizeable effect may reflect a potential intent to camouflage the presence of environmental concerns with strengths, this evidence by itself is insufficient to make a strong conclusion. A stronger evidence would be that this pattern is more pervasive in areas where firms could potentially suffer greater negative consequences due to environmental concerns. We present this analysis in Panel A of Table 10, in which the independent variables include EnvConcern, "green" area measure, and their interaction. Columns (1) and (2) use the raw Green variable as a measure of local environmental norms, while columns (3) and (4) use the categorical Best5_Green variable. Columns (1) and (3) do not include control variables, while columns (2) and (4) include various firm specific controls.

[Insert Table 10 here]

In column (1) the coefficient for the interaction term EnvConcern*Green is 0.07 (p-value <0.01). This indicates that environmentally friendly locations are likely to witness an incremental increase in the likelihood of a firm displaying environmental strengths in the presence of environmental concerns. Given our use of an interaction variable for our key variable of interest, we compare the odds of a firm having an environmental strength alongside existence of concerns across different regions for ease of interpretation. The parameter estimates in column 1 imply that the odds in the most environmentally friendly area (SF) are 3.90 times those of the least friendly area (Detroit). In column 2, with inclusion of additional control variables, while the significance of coefficient for EnvConcern disappears, the overall odds (at the mean level for other variables) of a firm having strengths in the presence of concerns for SF are still 3.29 times those of Detroit.

The results using categorical Best5_Green variable are presented in columns (3) and (4). They paint a similar picture. The coefficient for EnvConcern*Best5_Green is positive and statistically significant (p-value <0.01) in both specifications. In particular, the results in column (3) imply that the odds of a firm having an environmental strength alongside existence of concerns in a top 5 green area are 2.39 times those of other areas. The corresponding figure in column (4) is 2.06 times. Thus, the evidence is consistent with an intent to camouflage environmental concerns by developing strengths, particularly for resident firms in "green" areas.

Last, we examine whether this potential cover-up is useful to mitigate the effect of environmental concerns on firm valuations. While firms located in environmentally friendly areas are more likely to display environmental strengths in the presence of concerns, we examine whether the resulting firm valuations reflect these efforts. We follow the same methodology in section 4.2 and regress industry-adjusted Tobin's *q* on the same set of independent variables.

The regression specification presented in column (1) of Panel B of Table 10 is similar to column (4) in Table 9, but with an additional triple interaction term *EnvConcern*Green*EnvStrength*. Similarly, the specification in column (2) is similar to column (5) in Table 9, but also with an additional triple interaction term *EnvConcern*Best5_Green*EnvStrength*. In both specifications, the triple interaction term is insignificant, providing no evidence that the presence of strengths can mitigate the negative effects of environmental concerns for firms in green areas.

5. Conclusion

This study examines corporate policies in the presence of local norms. In particular, we examine the clustering of corporate environmental performance as a function of local environmental norms. Our results are mostly confined to the presence of corporate environmental weaknesses, rather than environmental strengths. These results are quite robust using various empirical specifications as well as in subsample and subperiod analyses.

To disentangle the effects of local norms at headquarter location vs. local environmental regulations that prevail at the locations of the firm's operations, we examine the toxicity levels of each firm's facilities. This analysis allows us to control for the local effects of facility locations, and confirm that the local effects that we observed reflect the variation in local environmental norms, beyond what is reflected in local or regional environmental regulations.

We also document that violations of local environmental norms are associated with avoidance by local institutional investors. This local avoidance is a crucial caveat to the pattern of overweighting of local stocks generally observed for institutional investors. Whereas investors located in area with low environmental awareness overweight local stocks irrespective of the presence of corporate environmental concerns, investors located in environmentally friendlier areas appear sensitive to such concerns. Indeed, institutional investors located in "green" cities display some *negative* bias (i.e., underweighting) against local firms that violate local environmental norms. This bias is also consistent with poor future stock performance observed for such firms.

We find that the relationship between corporate environmental concerns and firm valuation is influenced by local environmental norms. Prior studies provide empirical evidence linking poor corporate environmental performance and lower firm valuation. We find that this relationship is stronger for firms located in relatively "green" cities. This pattern is consistent with local investors penalizing firms for violating local norms.

Similar to Fernando et al. (2017), we find that corporate environmental strengths are also associated with lower firm value. This result may appear counterintuitive, but it makes sense in the presence of a reasonably large cost of going green. Additionally, we find evidence that the presence of environmental strengths in company profiles may be an attempt to camouflage poor corporate environmental performance. In particular, firms located in "green" cities appear more likely to display environmental strengths in the presence of concerns. Given our earlier results on the impact of violating local norms in green cities, this pattern reflects potential opportunism. However, this behavior does not seem to mitigate the negative valuation effects associated with corporate environmental concerns.

The analysis and results in this paper contribute to several strands of literature. Our results indicate that corporate environmental performance is related to local norms that capture the apathy towards the well-being of the local community. Our results also indicate that corporate environmental performance could be one of the conditioning measures of local bias of institutional investors. We document novel evidence on the effects of local environmental norms on the link between environmental policy and firm valuation. The patterns we observe are consistent with violations of local norms associated with lower firm valuations. Firms seem to be aware of this link, and consequently attempt mitigate this negative relation – albeit unsuccessfully.

References

Baik, Bok, Jun-Koo Kang, and Jin-Mo Kim, 2010. Local institutional investors, information asymmetries, and equity returns. *Journal of Financial Economics* 97(1), 81–106.

Bernile, Gennaro, Alok Kumar, and Johan Sulaeman, 2015, Home Away from Home: Geography of Information and Local Investors, *Review of Financial Studies* 28, 2009-2049.

Cao, Jie, Hao Liang and Xintong Zhan, 2018, Peer Effects of Corporate Social Responsibility, *Management Science*, forthcoming.

Carhart, Mark M., 1997, On persistence in mutual fund performance, *The Journal of Finance* 52(1), 57-82.

Coval, Joshua D., and Tobias J. Moskowitz, 1999. Home bias at home: Local equity preference in domestic portfolios. *The Journal of Finance* 54(6), 2045–2073.

Coval, Joshua D., and Tobias J. Moskowitz, 2001. The geography of investment: Informed trading and asset prices. *Journal of Political Economy* 109(4), 811–841.

Dowell, Glen, Stuart Hart, and Bernard Yeung, 2000, Corporate Global Environmental Standards and Market Value. *Management Science* 46(8), 1059–1074.

Dhaliwal, Dan S., Oliver Zhen Li, Albert Tsang, and Yong George Yang, 2011, Voluntary nonfinancial disclosure and the cost of equity capital: The initiation of corporate social responsibility reporting, *The Accounting Review* 86(1), 59–100.

El Ghoul, Sadok, Omrane Guedhami, Chuck C. Y. Kwok, and Dev R. Mishra, 2011, Does corporate social responsibility affect the cost of capital? *Journal of Banking and Finance* 35, 2388–2406.

Ellison, Glenn, and Ashley Swanson, 2016, Do schools matter for high math achievement? Evidence from the American mathematics competitions, *American Economic Review* 106, 1244-1277

Fama, Eugene F., and James D. MacBeth, 1973, Risk, return, and equilibrium: Empirical tests, *The Journal of Political Economy* 81, 607–636.

Fernando, Chitru S., Mark P. Sharfman, and Vahap B. Uysal, 2017, Corporate environmental policy and shareholder value: Following the smart money, *Journal of Financial and Quantitative Analysis* 52(5), 2023-2051.

French, Kenneth R., 2015. Data library. Retrieved from: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

Garcia, Diego and Oyvind Norli, 2012, Geographic Dispersion and Stock Returns, *Journal of Financial Economics* 106, 547-565.

Gillan, Stuart L., Jay C. Hartzell, Andrew Koch, and Laura T. Starks, 2010, Firms' environmental, social and governance (ESG) choices, performance and managerial motivation, University of Texas at Austin Working Paper.

Glaeser, Edward L., and Raven E. Saks, 2006. Corruption in America. *Journal of Public Economics*, 90(6), 1053–1072.

Gompers, Paul A., Joy L. Ishii, and Andrew Metrick, 2003, Corporate governance and equity prices, *Quarterly Journal of Economics* 118(1), 107–155.

Heinkel, Robert L., Alan Kraus, and Josef Zechner, 2001, The effect of green investment on corporate behavior, *Journal of Financial and Quantitative Analysis* 36, 431–449.

Hong, Harrison, and Leonard Kostovetsky , 2012. Red and blue investing: Values and finance. *Journal of Financial Economics* 103(1), 1–19.

Kaplan, Steven N., and Luigi Zingales, 1997, Do investment-cash flow sensitivities provide useful measures of financing constraints? *Quarterly Journal of Economics* 112(1), 169–215.

Merton, Robert C., 1987, A simple model of capital market equilibrium with incomplete information, *Journal of Finance* 42(3), 483–510.

Neyman, Jerzy, and Elizabeth L. Scott, 1948, Consistent estimates based on partially consistent observations, *Econometrica* 16, 1–32.

Newey, Whitney K, and Kenneth D. West, 1987, A simple, positive semi-definite, heteroscedastic and autocorrelation consistent covariance matrix, *Econometrica* 55, 703–708.

Nofsinger, John, Johan Sulaeman, and Abhishek Varma, 2017, Institutional Investors and Corporate Social Responsibility, Working Paper.

Odean, Terrance, 1999, Do Investors Trade Too Much?, *American Economic Review* 89, 1279-1298.

Parsons, Christopher A., Johan Sulaeman, and Sheridan Titman, 2018, The Geography of Financial Misconduct, *Journal of Finance*, forthcoming.

Siemens, 2011, *US and Canada Green City Index*.

Table 1: Summary Statistics

This table presents a summary statistics of variables across firm-year observations analyzed in our study. Our analysis is restricted to only those firms where there are at least five other firms in the same Combined Statistical Area (CSA) during any given year. *EnvStrength* is a dummy variable that takes the value 1 if the firm has any environmental strengths and 0 otherwise. *EnvConcern* is a dummy variable that takes the value 1 if the firm has any environmental concerns and 0 otherwise. *EnvNet* refers to EnvStrength minus EnvConcern; its value ranges from –1 to 1. For each firm-year observation, we calculate the Area_EnvNet, Area_EnvStrength, Area_EnvConcern and Area_OthIndEnvConcern as the equal-weighted average across an appropriately defined sample of other firms located in the same area. *Area_EnvNet* refers to the average EnvNet observed for other firms in the same area. Similarly, *Area_EnvStrength* (*Area_EnvConcern*) refers to the average EnvStrength (EnvConcern) observed for other firms in the same area. *Area_OthIndEnvConcern* is the average EnvConcern observed for other firms that are in the same area, but belong to a different industry. We use the Fama-French 10 industry classification (French, 2017) to identify industries. In addition, Area_OthIndEnvConcern is calculated only for firm-year observations for which there are at least five other local firms operating in other industries during the year. For any firm-year observation, *HArea_EnvConcern* (*HArea_OthIndEnvConcern*) is a dummy variable takes the value 1 if the firm's Area_EnvConcern (Area_OthIndEnvConcern) is above the median for all firms that year and 0 otherwise. *ROA* is the income before extraordinary items by total assets. *Leverage* is the sum of current liabilities and long term debt divided by shareholders equity. *Log(TA)* is the log of the total assets. The *Tobin's Q* is calculates as total assets minus common equity plus market capitalization divided by total assets. *Log(CF/TA)* is the log of the firm's cash flow scaled by total assets.

Variable	#	Mean	SD	25th Pctl	Median	75th Pctl
Firm-Level Environmental Ratings						
EnvNet	9,084	0.0286	0.4724			
EnvStrength	9,084	0.1948	0.3961			
EnvConcern	9,084	0.1662	0.3723			
Area-Level Average Environmental Ratings						
Area_EnvNet	9,084	0.0278	0.1867	-0.0893	0.0000	0.1351
Area_EnvStrength	9,084	0.1879	0.1445	0.0877	0.1387	0.2941
Area_EnvConcern	9,084	0.1600	0.1115	0.0789	0.1496	0.2203
Area_OthIndEnvConcern	8,700	0.1727	0.1207	0.0909	0.1488	0.2400
HArea_EnvConcern	9,084	0.4020	0.4903	0.0000	0.0000	1.0000
HArea_OthIndEnvConcern	8,700	0.4387	0.4963	0.0000	0.0000	1.0000
Firm-Level Characteristics						
ROA	9,084	0.0542	0.1060	0.0192	0.0495	0.0911
Leverage	9,084	0.2576	0.2156	0.0991	0.2322	0.3758
Log(TA)	9,084	15.6545	1.4270	14.6708	15.4673	16.5166
Q	9,084	2.0661	1.6375	1.1861	1.5700	2.2973
Log(CF/TA)	9,084	4.4450	0.8338	4.0619	4.5721	5.0013

Table 2: Geographical Clustering of Corporate Environmental Performance

This table presents estimates for negative binomial regressions with dependent variables being the number firm-years with environmental Strengths (in columns 1 and 2) or Concerns (in columns 3 and 4) in each economic area. Our observations are at the economic area level. Panel A covers economic areas with at least 5 other firms (36 areas), while Panel B covers economic areas rated in green city ratings (18 areas). In columns (1) and (2) the only independent variable is the log of the number of firm-years for the area. In columns (3) and (4), we also include area specific demographic variables namely, age, education, log of population, average income, Democrat Tilt and Religiosity (refer to text for more details). All demographic variables with the exception of Democrat Tilt are measured at the beginning of our sample (i.e. 2001). Demographic Tilt is averaged over the 3 presidential elections during our sample period. The statistical significance of the estimates at the 1%, 5% and 10% levels are indicated using ***, ** and *, respectively. The α measures the variance of the random effects for each location. The χ^2 test the significance of the estimate for α and the P-value presents the statistical significance of the test.

Panel A: Areas with more than five firms (36 CSAs)				
	(1)	(2)	(3)	(4)
	Strengths	Concerns	Strengths	Concerns
Log (# of firm-years)	1.033***	0.94***	0.949***	1.07***
	[16.58]	[9.47]	[8.99]	[7.12]
Constant	-1.877***	-1.43***	-2.144	-3.98
	[-5.51]	[-2.74]	[-0.95]	[-0.97]
Observations	36	36	36	36
R^2	0.227	0.142	0.238	0.157
Demographic controls			✓	✓
α	0.0960	0.3752	0.0800	0.3146
χ^2 test	24.32	366.84	16.71	216.17
P-value (χ^2 test)	<0.01	<0.01	<0.01	<0.01

Panel B: Areas ranked in the Green City Index (18 CSAs)				
	(1)	(2)	(3)	(4)
	Strengths	Concerns	Strengths	Concerns
Log (# of firm-years)	0.936***	0.69***	0.632***	1.12**
	[16.90]	[3.91]	[4.04]	[2.25]
Constant	-1.285***	0.07	-2.359	3.02
	[-3.75]	[0.07]	[-1.35]	[0.36]
Observations	18	18	18	18
R^2	0.263	0.0631	0.334	0.126
Demographic controls			✓	✓
α	0.0122	0.2960	0.0000	0.1899
χ^2 test	2.61	286.94	0.00	134.24
P-value (χ^2 test)	0.05	<0.01	1	<0.01

Table 3: Environmental Ratings of Firms and Local Averages

This table below presents regression results with dependent variable for each regression specification mentioned in the column label. For detailed definitions of all variables, please refer to the caption for table 1. The results for the dependent variable EnvNet (column 1) are based on ordinary least squares (OLS). The results for dependent variables EnvStrength (column 2) and EnvConcern (columns 3 to 6) are based on conditional logistic regressions (CLogit) that condition for industry and year (equivalent to fixed effects in an OLS specification). We use the Fama-French 10 industry classification (French, 2017) to identify industries. The t-statistic for the coefficients is presented in parenthesis and the statistical significance at the 1%, 5% and 10% levels are indicated using the ***, ** and * asterisks notation, respectively.

Variable	(1) EnvNet	(2) EnvStrength	(3) EnvConcern	(4) EnvConcern	(5) EnvConcern	(6) EnvConcern
Area_EnvNet	0.35***					
	[8.82]					
Area_EnvStrength		0.04				
		[0.11]				
Area_EnvConcern			1.21***			
			[3.56]			
Area_OthIndEnvConcern				0.70**		
				[2.06]		
HArea_EnvConcern					0.19***	
					[2.60]	
HArea_OthIndEnvConcern						0.13*
						[1.72]
ROA	0.06*	0.11	0.09	0.10	0.09	0.09
	[1.82]	[0.21]	[0.17]	[0.18]	[0.16]	[0.16]
Leverage	0.00	0.33**	0.45**	0.42*	0.45**	0.42*
	[0.18]	[2.08]	[2.21]	[1.92]	[2.19]	[1.92]
Log[TA]	0.02***	0.82***	0.76***	0.78***	0.76***	0.78***
	[5.47]	[29.13]	[25.87]	[25.74]	[25.86]	[25.76]
Q	0.01***	0.00	-0.43***	-0.44***	-0.43***	-0.44***
	[3.63]	[0.10]	[-7.54]	[-7.58]	[-7.56]	[-7.59]
Log[CF/TA]	0.01**	0.49***	0.50***	0.45***	0.49***	0.44***
	[2.15]	[7.95]	[7.53]	[6.72]	[7.47]	[6.69]
Method	OLS	CLogit	CLogit	CLogit	CLogit	CLogit
FE - Ind & Year	✓	✓	✓	✓	✓	✓
Observations	9,084	9,084	9,084	8,700	9,084	8,700
R^2	0.133	0.208	0.205	0.212	0.204	0.212

Table 4: Environmental and Corruption Ratings across Cities

This table summarizes the environmental and corruption ratings across 18 large cities in the U.S. *Avg # firms* refers to average number of firms in each Consolidated Statistical Area (CSA) over the period 2001–2013. *EnvConcern Rate* refers to the average percentage of firms with environmental concerns in each firm's city. *Ind.-Adj. EnvConcern* is the average of residuals obtained from annual cross-sectional regressions of EnvConcern on FF-10 industry dummies. To calculate *Ind.-Adj. EnvConcern Rate*, we average the Ind-Adj EnvConcern at the CSA-year level and then the average over time for each CSA. The *Green City Index* is obtained from the Siemens (2011) study, which was conducted by the Economist Intelligence Unit and commissioned by Siemens. It is based on the following nine criteria: CO_2 emissions, energy, land use, buildings, transport, water, waste, air quality and environmental governance. The Corruption index is defined as the number of federal convictions for corruption-related crimes by elected officials, per million of population. The data on corruptions has been obtained from US DOJ's "Report to Congress on the Activities and Operations of the Public Integrity Section." Rankings for the Ind-Adj. EnvConcern Rate, EnvConcern Rate, Green City Index and Corruption Index are placed in brackets. For ease in interpretation, we rank the variables in different orders. A higher rank for EnvConcern Rate implies worse corporate environmental performance. A higher ranking for the Green City Index indicates a greener city. For the remainder of this study we use the variable "Green" to refer to this rank. A higher ranking for Corruption Index implies less corruption by elected official in the city. For the remainder of this study we use the term "Ethical" (i.e. less corrupt) to refer to this rank.

Consolidated Statistical Area (CSA)	Avg # Firms	Industry-Adjusted EnvConcern Rate	Raw EnvConcern Rate	Green City Index	Corruption Index
Worst Areas (by EnvConcern Rate):					
Detroit, MI	11.69	0.13 (18)	0.39 (18)	28.4 (1)	1.83 (12)
Pittsburgh, PA	13.85	0.08 (17)	0.35 (17)	56.6 (3)	2.16 (11)
Cleveland, OH	14.46	0.06 (16)	0.30 (16)	39.7 (2)	5.03 (3)
Atlanta, GA	22.08	0.06 (15)	0.20 (12)	57.8 (5)	2.53 (8)
Chicago, IL	56.69	0.05 (14)	0.22 (13)	66.9 (10)	4.92 (4)
Washington, DC	38.62	0.04 (13)	0.17 (10)	71.4 (12)	7.97 (1)
Charlotte, NC	9.23	0.03 (12)	0.29 (15)	59.0 (6)	1.66 (15)
New York, NY	137.92	0.02 (11)	0.14 (7)	79.2 (17)	4.30 (5)
Dallas, TX	40.15	0.02 (10)	0.20 (11)	62.3 (7)	1.69 (14)
Best Areas (by EnvConcern Rate):					
Philadelphia, PA	30.23	0.01 (9)	0.17 (9)	66.7 (9)	3.86 (6)
Denver, CO	21.15	-0.02 (8)	0.12 (6)	73.5 (15)	1.78 (13)
Minneapolis, MN	23	-0.02 (7)	0.15 (8)	67.7 (11)	1.18 (17)
Seattle, WA	16.31	-0.03 (6)	0.06 (3)	79.1 (16)	1.42 (16)
Boston, MA	41.46	-0.04 (5)	0.07 (5)	72.6 (14)	2.31 (9)
Los Angeles, CA	39.08	-0.05 (4)	0.05 (2)	72.5 (13)	2.27 (10)
San Francisco, CA	83.31	-0.06 (3)	0.04 (1)	83.8 (18)	1.00 (18)
Houston, TX	45.92	-0.06 (2)	0.26 (14)	62.6 (8)	3.24 (7)
Miami, FL	10.85	-0.07 (1)	0.06 (4)	57.3 (4)	5.39 (2)

Table 5: Firms' Environmental Concerns and City Ratings

This table presents coefficient estimates for conditional logistic regressions with dependent variable being EnvConcern, a dichotomous variables that take the value 1 for presence of concerns and 0 otherwise. The regressions are conditioned for industry and year (equivalent to fixed effects in an OLS specification). The variables *Green* and *Ethical* are based on the Green city index and Corruption index, respectively. We form these variables by ranking the underlying indices (across 18 cities) in different order: ascending ranking of Green city index for Green ranking, and descending ranking of Corruption index for Ethical ranking. We present these rankings in brackets in Table 4 alongside their respective indices. A higher value for Green (Ethical) implies a greener (more ethical) city. *Best5_Green* (*Best5_Ethical*) takes the value 1 for the top five greenest (most ethical) cities, and 0 otherwise. For detailed definitions of other variables, please refer to the caption for Table 1. We use the Fama-French 10 industry classification (French, 2017) to identify industries. Panel A reports the results for the full sample, while Panel B reports the results for subsample of firms: (1) S&P 500 constituents, and (2) firms with dispersed operations, defined as mentioning more than 5 states in the financial statement (Bernile, Kumar, and Sulaeman, 2015). The coefficient estimates for city-level demographic control variables (refer to text for more details) in column 6 of Panel A have been suppressed to conserve space. The t-statistic for the coefficients is presented in parenthesis and the statistical significance at the 1%, 5% and 10% levels are indicated using the ***, ** and * asterisks notation, respectively.

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Green	-0.05***					
	[-6.23]					
Best5_Green		-0.42***			-0.43***	-0.40**
		[-5.01]			[-5.08]	[-2.55]
Ethical			-0.04***			
			[-4.94]			
Best5_Ethical				-0.41***	-0.42***	-0.39***
				[-4.25]	[-4.33]	[-3.41]
ROA	-0.03	-0.05	-0.12	-0.06	-0.10	-0.18
	[-0.06]	[-0.09]	[-0.23]	[-0.12]	[-0.19]	[-0.34]
Leverage	0.42*	0.42*	0.39	0.42*	0.41*	0.42*
	[1.78]	[1.78]	[1.61]	[1.74]	[1.73]	[1.77]
Log(TA)	0.81***	0.80***	0.79***	0.79***	0.81***	0.82***
	[25.13]	[25.03]	[24.77]	[24.95]	[25.15]	[24.81]
Q	-0.45***	-0.46***	-0.46***	-0.46***	-0.43***	-0.42***
	[-6.99]	[-7.23]	[-7.21]	[-7.27]	[-6.74]	[-6.57]
Log(CF/TA)	0.48***	0.48***	0.50***	0.49***	0.50***	0.52***
	[6.79]	[6.76]	[6.93]	[6.94]	[6.95]	[7.16]
City-Demographic Controls						✓
Observations	7,823	7,823	7,823	7,823	7,823	7,823
R^2	0.235	0.231	0.231	0.230	0.236	0.242

Table 6: Local Norms and Toxicity Risks across Facilities

This table contrasts the effect of headquarter and facility location on environmental risks emanating from a manufacturer's operations. Columns 1 and 2 of Panel A presents coefficient estimates for conditional logistic regressions with dependent variable *FacNGreen*, a dichotomous variables that take the value 1 if the firm has any facility in a "non-green" location and 0 otherwise. We define a "non-green" location as all city areas expect for the best 5 green city areas. For locations outside the ranked green city areas, we assign the green ranking of the nearest ranked green city as the locations' green rank. *HQRank* (*FacRank*) refers to the green city ranking of the firm's headquarter (facility's) location. The sample in column 2 of Panel A is restricted to firms that have at least one facility operating outside it's headquarter area (i.e. area beyond a 100 mile radius). The dependent variable of interest in the rest of the regression analyses is *Toxicity*, a measure of the potential risk emanating from toxic substance releases. We define Toxicity as the log of one plus the RSEI (Risk Screening Environmental Indicators) score. Columns 3 to 6 of Panel A involve analyses at the firm level (i.e. firm-year observations), in which the dependent variable measures the average toxicity for a firm's facilities across various sets of locations. In columns 3, 4 and 5 this variable is calculated for facility locations in all, only non-green (NG), and only green (G) areas, respectively. Column 6 uses a measure of the difference in firm's toxicity across NG and G areas. Panel B presents results for analyses at the facility level (i.e. facility-year observations) with the dependent variable being the facility's Toxicity. Columns 2 and 3 of Panel B use only the sub-sample of facilities located in ranked green city areas. To reduce the loss of observations, in columns 4 and 5 of Panel B, we use *FacRankNr*, which assigns the nearest city's green rankings for facility locations outside the ranked green cities. Instead of facility location green rankings, column 6 of Panel B uses facility location fixed effects (*FacFE*s) defined at the CSA area level, with a missing dummy assigned for locations in an unassigned area. Log(# Facilities) refers to log of the total number of facilities for a firm. For detailed definitions of other variables, please refer to the caption for Table 1. The t-statistic for the coefficients is presented in parenthesis and the statistical significance at the 1%, 5% and 10% levels are indicated using the ***, ** and * asterisks notation, respectively.

Panel A: Firm level analysis of facilities

Variables	(1) Location: FacNGreen	(2) Location: FacNGreen	(3) Toxicity: All Areas	(4) Toxicity: Non-Green (NG) Areas	(5) Toxicity: Green (G) Areas	(6) Toxicity: Difference (NG - G)
HQRank	-0.20***	-0.06**	-0.07***	-0.08***	-0.00	0.09***
	[-6.78]	[-2.36]	[-4.82]	[-5.43]	[-0.02]	[3.57]
Log(TA)	0.24**	0.25**	-0.20***	-0.23***	-0.02	0.10
	[2.23]	[2.24]	[-3.43]	[-3.68]	[-0.29]	[0.96]
Log(# Facilities)	2.54***	1.82***	1.63***	1.52***	1.08***	-0.68***
	[11.37]	[9.69]	[22.33]	[18.99]	[10.58]	[-4.41]
ROA	-2.45*	-2.38	3.07***	3.21***	0.24	-2.52
	[-1.76]	[-1.35]	[2.86]	[2.64]	[0.15]	[-1.28]
Leverage	-1.13**	-1.07*	0.83*	-0.35	1.04	-0.19
	[-1.99]	[-1.76]	[1.71]	[-0.61]	[1.52]	[-0.17]
Q	-0.24***	-0.13	-0.03	0.15	-0.03	-0.20
	[-2.59]	[-1.23]	[-0.35]	[1.55]	[-0.31]	[-1.31]

(Continued in next page)

Table 6: Firm Headquarter Norms and Toxicity Levels across Facilities (Continued)

Panel A Continued

	(1)	(2)	(3)	(4)	(5)	(6)
Log(CF/TA)	0.06	-0.39	-0.29*	-0.43**	0.15	-0.05
	[0.27]	[-1.53]	[-1.79]	[-2.34]	[0.75]	[-0.18]
Intercept			8.65***	9.94***	1.55	-2.54
			[7.46]	[7.72]	[0.98]	[-1.26]
Method	CLogit	CLogit	OLS	OLS	OLS	OLS
Observations	1,691	1,584	1,691	1,519	1,126	954
R^2	0.553	0.386	0.311	0.244	0.127	0.049
FE: Year	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Facility level analysis of toxicity

Fac =	--	FacRank	FacRank	FacRankNr	FacRankNr	FacFE
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Fac		-0.14***	-0.12***	-0.06***	-0.05***	
		[-9.79]	[-8.91]	[-6.91]	[-5.85]	
HqRank	-0.06***		-0.05***		-0.05***	-0.03***
	[-5.00]		[-3.53]		[-4.31]	[-3.22]
ROA	3.37**	4.90***	4.79***	3.47**	3.32**	2.95**
	[2.35]	[3.51]	[3.51]	[2.43]	[2.37]	[2.36]
Leverage	-1.71***	-2.99***	-3.21***	-1.55***	-1.77***	-1.72***
	[-2.86]	[-4.80]	[-5.06]	[-2.62]	[-2.98]	[-3.28]
Log(TA)	0.26***	0.28***	0.27***	0.26***	0.25***	0.28***
	[5.57]	[4.91]	[4.93]	[5.04]	[5.31]	[6.17]
Q	-0.20***	-0.25***	-0.19**	-0.27***	-0.20***	-0.22***
	[-2.63]	[-2.84]	[-2.19]	[-3.45]	[-2.58]	[-3.14]
Log(CF/TA)	-0.41***	-0.67***	-0.68***	-0.39**	-0.40**	-0.29**
	[-2.59]	[-3.35]	[-3.57]	[-2.41]	[-2.56]	[-2.29]
Intercept	3.27***	5.54***	6.05***	3.20***	3.69***	2.12**
	[3.03]	[3.68]	[4.27]	[2.69]	[3.35]	[2.25]
Observations	16,192	5,973	5,973	16,192	16,192	16,192
R^2	0.026	0.072	0.076	0.025	0.030	0.124
FE: Year	Yes	Yes	Yes	Yes	Yes	Yes
Cluster: Firm-Year	Yes	Yes	Yes	Yes	Yes	Yes
FE: Facility Area	No	No	No	No	No	Yes

Table 7: Local Institutional Ownership and Green City Index

This table presents regression specifications with the dependent variable being an institutional ownership variable (Adj_Loc, Adj_LocNoCon, Adj_LocCon and Ex_AdjLocNoCon) and the independent variable being a measure of environmental friendliness of the city. We use institutional investor level data across 52 quarter (2001–2013) as observations. We cluster standard error by area (i.e. eighteen CSAs with Green City Index) and use year-quarter fixed effects. The dependent variable for each regression specification mentioned in the column label. Panel A uses the variable Green to measure environmental friendliness, where Panel B uses Best5_Green. Green refers to rankings (1 to 18) for the Green City Index and a higher value for Green implies a greener city. *Best5_Green* takes the value 1 for the top five greenest cities and 0 otherwise. *Adj_Loc* is calculated as the fraction of the investor's portfolio invested in local stocks (*Loc*) minus local stocks' fraction of market capitalization. *Adj_LocNoCon* is defined as the fraction of the investor's portfolio invested in local stocks without concerns (*LocNoCon*) minus the fraction of market capitalization for local stocks without concerns. *Adj_LocCon* is the analog of *Adj_LocNoCon* for local stocks with concerns (*LocCon*). *Ex_AdjLocNoCon* is defined as Adj_LocNoCon minus Adj_LocCon. The t-statistic for the coefficients is presented in parenthesis and the statistical significance at the 1%, 5% and 10% levels are indicated using the ***, ** and * asterisks notation, respectively.

Panel A: Local institutional ownership and green city rankings

Variable	(1) Adj_Loc	(2) Adj_LocNoCon	(3) Adj_LocCon	(4) Ex_AdjLocNoCon
Green	-0.22	0.03	-0.25**	0.27***
	[-0.96]	[0.17]	[-2.88]	[3.00]
Intercept	5.29	1.99	3.29**	-1.30
	[1.66]	[0.92]	[2.90]	[-0.94]
Clustering: Area	✓	✓	✓	✓
FE: Year-Qtr	✓	✓	✓	✓
Observations	77203	77203	77203	77203
R^2	0.0054	0.0021	0.0262	0.0096

Panel B: Local institutional ownership and best 5 green cities

Variable	(1) Adj_Loc	(2) Adj_LocNoCon	(3) Adj_LocCon	(4) Ex_AdjLocNoCon
Best5_Green	-1.94	0.19	-2.13**	2.32***
	[-0.96]	[0.15]	[-2.63]	[2.92]
Intercept	3.50**	2.23**	1.27**	0.96
	[2.50]	[2.20]	[2.75]	[1.33]
Clustering: Area	✓	✓	✓	✓
FE: Year-Qtr	✓	✓	✓	✓
Observations	77203	77203	77203	77203
R^2	0.0052	0.0021	0.0246	0.0090

Table 8: Stock Returns, Corporate Environmental Ratings, and Green City Index

This table presents the average monthly stock returns for (equal and value-weighted) portfolios formed by sorting stocks on two dimensions: (1) existence of environmental concerns (Concern [C] or No Concern [NC]) during the previous calendar year, and (2) local norms at the firm's headquarters location. We define CSAs with best 5 green city rankings as "Green" [G], and other CSAs as "Non-Green" [NG]. Panel A presents monthly raw stock returns. Panel B presents monthly Carhart (1997) four factor abnormal returns. The t-statistic for the test of differences is presented in parentheses. The statistical significance of returns at the 1%, 5% and 10% levels are indicated using the ***, ** and * asterisks notation, respectively.

Panel A. Monthly Raw Returns

	Equal-Weighted			Value-Weighted		
Local Area	Concern (C)	No Concern (NC)	Diff: (C-NC)	Concern (C)	No Concern (NC)	Diff: (C-NC)
Green (G)	0.67	1.08	-0.40	0.39	0.71	-0.32*
			[-1.54]			[-1.81]
Non-Green (NG)	1.03	0.99	0.04	0.83	0.64	0.19
			[0.27]			[0.91]
Diff: G – NG	-0.36**	0.09	-0.45**	-0.44**	0.07	-0.52***
	[-2.20]	[0.71]	[-2.20]	[-2.18]	[0.55]	[-3.53]

Panel B. Monthly Alphas (Carhart 4 factor)

	Equal-Weighted			Value-Weighted		
Local Area	Concern (C)	No Concern (NC)	Diff: (C-NC)	Concern (C)	No Concern (NC)	Diff: (C-NC)
Green (G)	-0.00	0.27***	-0.27	-0.14	0.03	-0.17
	[-0.00]	[3.32]	[-1.52]	[-1.33]	[0.45]	[-1.19]
Non-Green (NG)	0.22	0.16**	0.06	0.19	-0.08	0.28
	[1.30]	[2.08]	[0.37]	[1.20]	[-1.34]	[1.47]
Diff: G – NG	-0.22	0.11	-0.33**	-0.34**	0.11	-0.45***
	[-1.46]	[1.43]	[-2.24]	[-2.24]	[1.16]	[-3.13]

Table 9: Firm Valuation, Corporate Environmental Ratings, and Green City Index

This table presents relationship between a firm's environment ratings and firm value measured by industry-adjusted Tobin's Q (adjusted by median industry estimate). We employ the Fama-Macbeth approach. We conduct annual cross-sectional regressions with Q being the dependent variable regressed on firm environment ratings, control variables and measures based on the Green City Index. We present time series averages of the coefficients and calculate the Newey-West corrected standard errors. In all specifications we control for the following firm specific characteristics: age, size, Delaware incorporation dummy (*Del_Incorp*), S&P 500 component dummy (*SP500*), annual growth in sales (*SalesGrowth*), Leverage, Return on Assets (ROA), R&D/Sales, Advertising/Sales, Missing dummies for R&D expenditure (*MissingAdvt*) and Advertising (*MisssingR&D*). *Leverage* is the ratio of debt to book value of assets. *ROA* is the ratio of earnings before extraordinary items to book value of total assets for the fiscal year. *Age* is the log of the number of years since the firm first appeared on the CRSP database. *Size* is the log of the firm's market capitalization at the end of the calendar year. The t-statistic for the coefficients is presented in parenthesis and the statistical significance at the 1%, 5% and 10% levels are indicated using the ***, ** and * asterisks notation, respectively.

Variable	(1)	(2)	(3)	(4)	(5)
EnvNet	0.09*				
	[2.11]				
EnvStrength		-0.18***			
		[-6.58]			
EnvConcern			-0.30***	0.00	-0.23***
			[-7.22]	[0.05]	[-5.74]
Green				0.02***	
				[8.57]	
EnvConcern * Green				-0.03***	
				[-9.14]	
Best5_Green					0.14***
					[5.72]
EnvConcern * Best5_Green					-0.17***
					[-7.76]
Size	0.14***	0.14***	0.14***	0.14***	0.14***
	[4.62]	[5.42]	[5.31]	[5.18]	[5.30]
Age	-0.21***	-0.20***	-0.18***	-0.17***	-0.17***
	[-9.70]	[-9.85]	[-7.98]	[-7.20]	[-7.20]
SP500	-0.14***	-0.12***	-0.13***	-0.14***	-0.14***
	[-4.75]	[-4.26]	[-4.78]	[-5.06]	[-5.16]
Advertising/Sales	3.59***	3.72***	3.61***	3.43***	3.51***
	[7.19]	[7.32]	[7.22]	[7.04]	[7.24]
Del_Incorp	-0.08**	-0.08**	-0.07*	-0.08**	-0.07*
	[-2.61]	[-2.55]	[-2.16]	[-2.54]	[-2.16]

(Continued in next page)

Table 9: Firm Valuation, Corporate Environmental Ratings, and Green City Index (Continued)

Variable	(1)	(2)	(3)	(4)	(5)
Leverage	0.01	0.02	0.04	0.05	0.04
	[0.05]	[0.11]	[0.19]	[0.24]	[0.21]
R&D/Sales	1.51***	1.52***	1.48***	1.42***	1.45***
	[3.21]	[3.18]	[3.21]	[3.21]	[3.22]
ROA	5.78***	5.77***	5.75***	5.77***	5.77***
	[5.23]	[5.20]	[5.21]	[5.26]	[5.24]
SalesGrowth	0.00***	0.00**	0.00**	0.00**	0.00**
	[3.06]	[3.04]	[3.01]	[2.99]	[2.99]
MissingAdv	-0.10**	-0.09**	-0.07*	-0.07*	-0.07
	[-2.70]	[-2.32]	[-1.84]	[-1.86]	[-1.71]
MissingR&D	-0.11	-0.11	-0.11	-0.09	-0.09
	[-1.45]	[-1.58]	[-1.55]	[-1.30]	[-1.40]
Intercept	-1.38***	-1.51***	-1.59***	-1.78***	-1.62***
	[-3.34]	[-4.08]	[-3.99]	[-4.28]	[-4.02]
Observations	8,490	8,490	8,490	8,490	8,490
R^2	0.2934	0.2939	0.2980	0.3041	0.3015

Table 10: Firm Environmental Strengths and Concerns

This table examines the simultaneous presence of environmental strengths and concerns. Panel A presents the coefficient estimates for conditional logistic regressions in which the dependent variable is *EnvStrength*, a dichotomous variables that take the value 1 for presence of concerns and 0 otherwise. The regressions are conditioned for industry and year (equivalent to industry*year fixed effects in an OLS specification). *EnvConcern* is a dichotomous variables that take the value 1 for presence of concerns and 0 otherwise. *Green* refers to the ranking (1 to 18) for cities based on the Siemens (2011) Green City index. The actual ranking is presented in brackets in Table 4; a higher value for Green implies a greener city. *Best5_Green* takes the value 1 for the best five cities in the Green City index and 0 otherwise. For detailed definitions of all variables, please refer to the caption for table 1. We use the Fama-French 10 industry classification (French, 2017) to identify industries. Panel B presents the relationship between a firm's industry adjusted Tobin's Q and the simultaneous presence of environmental concerns (EnvConcern) and environmental strengths (EnvStrength). We follow the methodology described in the caption of Table 7. The t-statistic for the coefficients is presented in parenthesis and the statistical significance at the 1%, 5% and 10% levels are indicated using the ***, ** and * asterisks notation, respectively.

Panel A: Relationship between strengths and concerns				
Variable	(1)	(2)	(3)	(4)
EnvConcern	0.67***	-0.10	1.11***	0.36***
	[3.77]	[-0.54]	[11.27]	[3.27]
Green	0.01*	-0.00		
	[1.66]	[-0.07]		
Best5_Green			0.08	-0.05
			[1.07]	[-0.63]
EnvConcern * Green	0.07***	0.07***		
	[4.59]	[4.33]		
EnvConcern * Best5_Green			0.79***	0.77***
			[5.09]	[4.56]
ROA		0.14		0.18
		[0.26]		[0.33]
Leverage		0.35**		0.33**
		[2.06]		[1.98]
Log(TA)		0.70***		0.70***
		[23.14]		[23.18]
Q		0.01		0.01
		[0.26]		[0.35]
Log(CF/TA)		0.41***		0.41***
		[6.38]		[6.33]
Observations	8,528	7,823	8,528	7,823
R^2	0.072	0.213	0.071	0.213

Table 10: Firm Environmental Strengths and Concerns (Continued)

Panel B: Implications for firm value		
Variable	(1)	(2)
EnvConcern	0.00	-0.23***
	[0.01]	[-5.76]
Green	0.02***	
	[8.57]	
EnvConcern * Green	-0.03***	
	[-10.88]	
EnvConcern * Green * EnvStrength	0.00	
	[0.52]	
Best5_Green		0.14***
		[5.67]
EnvConcern * Best5_Green		-0.12**
		[-2.56]
EnvConcern * Best5_Green * EnvStrength		-0.07
		[-0.83]
Size	0.14***	0.14***
	[5.17]	[5.34]
Age	-0.17***	-0.17***
	[-7.08]	[-7.14]
SP500	-0.14***	-0.14***
	[-5.06]	[-5.12]
Advertising/Sales	3.43***	3.52***
	[7.05]	[7.24]
Del_Incorp	-0.08**	-0.07*
	[-2.53]	[-2.14]
Leverage	0.05	0.04
	[0.24]	[0.21]
R&D/Sales	1.42***	1.45***
	[3.21]	[3.22]
ROA	5.77***	5.78***
	[5.25]	[5.24]
SalesGrowth	0.00**	0.00**
	[3.00]	[2.99]
MissingAdv	-0.07*	-0.07
	[-1.87]	[-1.71]
MissingR&D	-0.09	-0.09
	[-1.30]	[-1.42]
Intercept	-1.78***	-1.64***
	[-4.26]	[-4.06]
Observations	8,490	8,490
R^2	0.3043	0.3019