Home State CEOs and Financial Misconduct Litigation

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Abstract

We evaluate the role of a CEO's home state identity on firm financial misrepresentation and

misconduct that result in punishment from SEC & DOJ regulation. We find that local (home state)

CEOs are not associated with a reduction or increase in the rate of financial misrepresentations.

However, there is evident disparate treatment between firms local to regulators especially when

the firm is helmed by a local CEO with a statistically significant reduction in the rate of completed

enforcement action against firms. Furthermore, the differential punishment issued from local

regulators to local firms is magnified when the CEO during regulation is also local. Our results

suggest that there is a local bias from SEC regulators.

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1. Introduction

In this paper, we focus on one of the most important dimensions of a CEO's personal background: his local identity. Human beings have a strong connection to where they lived in their formative years, and this identity has a deep influence on their personal characters and actions. In general, people have a fondness for their hometown and prefer to stay close to family. As the leader of a publicly traded company, a CEO's home state identity can have significant impacts on his decision making in every aspect of the business operation. Therefore, it is important to understand what benefits and drawbacks arise from having a local CEO.

Recent finance literature has scratched the surface of this topic. Yonker (2017), for example, finds that firms located near CEOs' childhood homes experience fewer employment cuts and pay reductions. Jiang, et al., (2019) show that firms are more likely to acquire targets located in the states of their CEOs' childhood homes than similar targets from elsewhere. However, the evidence of the impact of CEO hometown identity on corporate decisions is still scarce.

On one hand, a hometown CEO tends to receive greater support from his home state peers. He/she is a part of the "in group" with investors, employees, and board members from the same state, who share the common beliefs and values. This social support can make it easier for a firm to commit financial misbehavior. On the other hand, local CEOs tend to have longer horizons on decision making and they may care about their reputation more than an out-of-state CEO. Thus, a home state CEO will be less likely to engage in financial misconduct. Therefore, how a CEO's hometown identity affects financial misconduct is ultimately an empirical question.

¹ From 1900-2014, for example, only Wyoming and North Dakota have more people moving away than staying at home (Aisch, et al., 2014).

On the other side of the misconduct regulation is the SEC. The bulk of SEC enforcement work for decades has been performed at one of 10 SEC regional offices.² The overwhelming majority of all SEC awarded punishment from financial misconduct results from consented settlement agreements between the regional SEC office, the DOJ if applicable, the firm, and any culpable employees and outsiders. SEC offices are staffed with local employees. It follows to question whether a regulator's local identity has an impact on financial misconduct enforcement, which should also be examined empirically. Our study is the first to investigate how both the CEO and firm's locality in relation to the regulator is associated with financial misconduct litigation and punishment.

Utilizing a sample of 5,324 unique CEOs and 24,466 CEO-years, we find that a CEO's locality alone has no impact on the rate of regulatory actions taken against a firm due to financial misrepresentation. However, there is evident disparate treatment between firms local to regulators especially when the firm is helmed by a local CEO with a statistically significant reduction in the rate of completed enforcement action against firms. We confirm the robustness of this result with instrument variable regressions. Our results suggest that there is a local bias from SEC regulators.

Next, we study the punishment outcomes of these regulatory actions. A local CEO is more likely to know the attorneys working for the regulator than an outside CEO due to local connections. The firm's locality to the regulator also has a large impact on this result. A regulator within the same state as a company is going to have more personal interactions with the CEO and others at that firm than they will an out-of-state firm. Furthermore, a local CEO may be more able to escape the blame and receive less severe punishment since he/she enjoys more support from

² Prior to 2007 there were only five official regional offices and six large district offices that covered functionally the same area post 2008. We consolidate the Salt Lake City office with the Denver office. The SLC office operated as a subordinate office to Denver its entire existence and was closed permanently in 2024.

local stakeholders including the regulator. Therefore, we hypothesize that firms with home state CEOs, both during misconduct and regulation, are going to receive less severe punishment than firms with outside CEOs and that firms with local regulators will receive less punishment than out-of-state firms.

Examining the regulatory actions, we find that firms led by a home state CEO during regulation receive no different treatment and those that had a local CEO during the misrepresentation period receive 76% stiffer fines. Employees at firms local to an SEC regional office, on the other hand, receive 94% smaller fines and 62% shorter jail terms than their foreign counterparts, all other things being equal. When both the CEO during regulation and the firm share the state with an SEC regional office, employee fines are reduced by 98%. This is a strong indication that local connections are used to mitigate fines. In contrast to the reduction provided to employees when firm and CEO are local to a regulator, fines for the firm increase significantly possibly indicating a regulator's desire to shift fines from employees to the firm itself. These results are robust to the underlying magnitude of the financial misconduct and political environment.

Our paper contributes to the literature by adding a new dimension to the discussion of CEO and firm characteristics. We analyze the impact of a CEO's home state identity on both the probability of incurring regulatory actions and the ensuing punishments from the actions taken against the firm, and we also analyze the effect of being local to the federal regulator. To the best of our knowledge, our paper is the first one to examine the locality of both the CEO and the regulator.

The rest of the paper is organized as follows: Section 2 reviews the literature and develops the hypotheses. Section 3 describes the data. Section 4 discusses the empirical methodology and specifications. Section 5 reports the empirical results, and Section 6 concludes.

2. Literature Review and Hypothesis Development

Where a person spends their formative years plays a crucial role in shaping a person's identity. This place identity inevitably influences his psychological characteristics. Individuals can establish self-identity and form social groups according to their hometown status (Meagher, 2010). People from the same hometown tend to share common beliefs, values, and dialects (Hogg, et al., 1995). Because an individual learns about her social roles and acceptable behaviors by interacting with other people where they grew up, local identity is an extension of both place identity and social identity. Although a few studies find that where politicians grow up can have a significant impact on their decision-making (e.g., Cohen, et al., 2011; Knight, 2005; Hodler & Raschky, 2014), the evidence on the role of CEOs' hometown identity in firm decisions is still lacking, with the exceptions of Yonker (2017), Jiang, et al. (2019), Ren et al. (2021), Ren, et al. (2021), and Ren, et al. (2022), and Lei et al. (2022).

According to the social identity theory, people tend to classify themselves and others into different social groups. People from the same hometown may have common beliefs and values, and they may tend to agree with each other (Adarves-Yorno, et al., 2006; Kang, et al., 2018). A study of classification shifting in the United Kingdom has shown that strong external social connections with other executives and directors leads to more corporate malpractice (Malikov & Gaia, 2022). When the firm headquarters is located where the CEO grew up, the CEO tends to have more external social connections than one from out of state, and he receives greater support from his home state peers. It would then follow that it is easier for a home state CEO to engage in financial misconduct.

³ Classification shifting is where a company alters income statement presentation without changing bottom line income to inflate core earnings.

However, place identity should lead people to pursue interests in line with their community (Carrus, et al., 2005; Twigger-Ross, et al., 2003). Studies have demonstrated that place identity can be linked to attention to environmental sustainability (Uzzell, et al., 2002). Local CEOs also tend to have longer horizons in decision making (Lai, et al., 2020). Furthermore, a home state CEO may care about his reputation more than an out-of-state CEO. These together suggest that the home state CEO will be less likely to engage in financial misconduct. Some support for this has been recently found with US companies (Lei, et al., 2022).

These two channels discussed above can generate opposite predictions on the relation between CEO hometown identity and financial misconduct, which needs to be tested empirically. To that end, we will test the following null hypothesis:

Hypothesis 1: A CEO's locality does not have an impact on regulation rate from the SEC.

When analyzing financial misrepresentation enforcement, it is important to look at the locality of the regulator itself in addition to the CEO. Like every firm, each regional office is going to be staffed primarily with local employees. These employees are the ones who work directly with firm employees on securities enforcement including whether formal action is commenced. We can test any local preference toward in-state firms by in-state regulators empirically. This brings us to our second null hypothesis.

Hypothesis 2: A firm's locality in relation to an SEC regional office does not have an impact on regulation rate from the SEC.

During discussions with regulators, a firm's CEO is going to have an outsized impact on whether to bring an enforcement action against the firm. If a CEO can take advantage of local connections, this effect would be magnified when the CEO and firm are local to the regulator. Testing this connection leads to our third null hypothesis:

Hypothesis 3: Regulation rate is not different for local CEOs and foreign CEOs in states with local regulators.

The degree of punishment may be affected by whether a CEO is local or not. With a local CEO, he enjoys more support from inside the firm, and he may be more able to escape the blame and receive less severe punishment. In addition, the local CEO will more likely know the local attorneys working for the regulator as they, too, are typically working in their home state. Similarly, regulators may be more likely to treat firms local to them less harshly than those located in other states. The SEC regulators may also show disparate treatment to firms local to them headed by local CEOs. All of these can be tested empirically and lead to our next three null hypotheses:

Hypotheses 4: CEO Locality during misconduct and regulation has no impact on firm and employee punishment.

Hypothesis 5: Firm locality to the regulator has no impact on firm and employee punishment.

Hypotheses 6: The regulator treats local and foreign CEOs local to them the same.

Finally, in cases where the CEO himself is implicated in misconduct, he would ostensibly try to use his local connections to reduce their personal punishment. The behavior of the local regulator could be sympathetic to the local CEO, or they could punish local misconduct more harshly. We test these questions empirically with our final null hypotheses:

Hypotheses 7: When the CEO themself is implicated, locality has no impact on firm and employee punishment.

Hypothesis 8: When the CEO themselves is implicated, firm locality to the regulator has no impact on firm and employee punishment.

3. Data Description

3.1 CEO Home State Data

Our data comes from numerous sources. One set of data is courtesy of Yonker (2017). His data includes all S&P 1500 CEOs from 1997 to 2016, with 3,177 individual CEOs and 14,130 CEO-years. We further supplement the CEO home state information using online sources such as prebook.com, nndb.com, and Wikipedia along with news articles sourced from Dow Jones Factiva. We combine Yonker's data along with our hand collected data to find home states for 5,324 unique CEOs corresponding to 24,466 CEO-years during our sample period of 1992-2016. If a CEO's hometown is in the same state as the firm's headquarters, we call the CEO the local CEO or home state CEO. We identify 1,552 unique CEOs as home state CEOs which is 29.15% of our sample of unique CEOs, and there are 7,946 firm-years with home state CEOs which is 32.48% of the firm-year observations. Further, we have identified 13,629 (55.71%) firm-year observations that have a firm headquarters in one of the nine states with an SEC regional office.

3.2 Financial Misrepresentation Enforcement Data

The cases of financial misrepresentation enforcement are based on those used by Karpoff, et al. (2017). Their data contains the universe of SEC and DOJ litigations for financial misrepresentation against publicly traded companies from 1976 through 2012 that ultimately resulted in punishment to either the firm or individuals. This data is used as a starting point to find all instances of financial misrepresentation committed by S&P 1500 companies from 1993-2016. This hand collected data is then combined with the CEO home state data described above to identify the home state of both the CEO during the bad action and the CEO during the SEC

⁴ Yonker (2017) uses Execucomp data and background check services to obtain the first five digits of a CEO's Social Security Number (SSN). This represents the state in which a CEO first requested their SSN. Approximately 60% of his sample requested their SSN when between ages 14-17. This request during their formative years gives a strong indication of where a CEO actually "grew up."

regulation period. Our data has 300 fully identified instances of misconduct that occur between 1993-2016 and has been fully concluded by the regulatory body between 1993-2018.

Table 1 reports descriptive statistics for our litigation probability or enforcement rate sample. Panel A reports summary statistics of the control variables for the full sample, the subset with out-of-state CEOs, and the subset with home state CEOs. Definitions of the control variables are provided in the Appendix. Continuous control variables are Winsorized at the 1st and 99th percentiles to mitigate the possible impact of outliers. The companies led by home state and out of state CEOs are comparable.

Panel B lists the breakdown of the sample by industry based upon the Fama French 12-industry classifications. The enforcement actions are not proportional to the industry splits. For example, business equipment makes up 17% of all firms but 26% of the enforcement firms.

Panel C of Table 1 lists the 10 regional offices of SEC and the number of firm-years that fall under that regional offices' jurisdiction. We find 13,629 firm-years that share a headquarters state with an SEC regional office.

Insert Table 1

Table 2 lists the distribution of the sample used in our enforcement action/punishment analysis. Panel A shows that the enforcement sample has a similar percentage of home state CEOs to the general population of firms, at roughly 26% to 31%. We check the presence of home state CEOs during both misconduct period (the time when the alleged misconducts happen) and the regulation period (the time when the enforcement occurs). Among the 300 enforcement actions, 174 are associated with companies whose headquarters are in the same state as the regional SEC office.

Panel B lists the respondents to each regulation action identified. The firm is named in more than 88% of the enforcement actions, and the CEO is explicitly named in 35.7% of the actions. Among the 107 CEOs who are named in the litigation, 35 CEOs worked for firms in their home state.

Table 3 reports the summary statistics for the punishment. Panel A reports the full sample. Panel B has the subset with a home state CEO. Panel C reports the information for firms with an out-of-state CEO. The control variables have comparable values of mean and median between the two subsets. The mean punishment varies, though, as firms led by home state CEOs have larger average firm fines and employee prison terms but lower employee fines. The subset with home state or local CEOs, on average, have around \$4m larger firm fines, \$30m smaller employee penalties, and five-month longer prison terms.

Insert Table 2

Insert Table 3

4. Empirical Specifications

4.1. Enforcement Probability Analysis

For our analysis into the effect that a local CEO has on the probability of enforcement, we use a probit regression as our dependent variable is binomial. We have panel data with 2,983 individual companies spread over 23 fiscal years. Our dataset is amenable to pooling, and we do so for increased efficiency over random effects analysis. The coefficients and standard errors between the two analyses are nearly identical. This is confirmed using likelihood ratio tests, where we fail to reject the null that random effects and pooled probit have different coefficients. As a

⁵ The median values for firm and employee fines are inverted from the mean, but this is due to the skew in the distribution. When restricting to only the firms actually punished, the difference in averages persists but the median between home state and non-home state led firms is nearly zero.

result, our estimations for our enforcement rate analysis are based upon a pooled probit model.

Our first model takes the following form:

$$E(ENF_{it}) = \Phi(\beta_0 + \beta_1 HomeState_{it} + \beta_2 LocalReg_{it} + \beta_{cv} Controls_{it} + \beta_{\sigma}\sigma_{it})$$
 (1)

ENF_{it} is a dummy variable equal to one when a regulation action is announced. *Homestate_{it}* is a dummy variable equal to one if the CEO during the financial misconduct work in his home state. *LocalReg_{it}* is a dummy variable equal to one if the headquarters of the firm is in the same state as the SEC regional office. The controls used are CEO age, CEO cumulative experience, the log of distance to a major SEC office, the percentage of blockholders in the firm⁶, the natural log of the market cap, market to book ratio, leverage ratio, cash to asset ratio, net income to asset ratio and year, SEC Region⁷, and year fixed effects. ⁸ Continuous control variables are Winsorized at the 1st and 99th percentiles. The standard errors are robust and clustered at the firm level. We use this regression to test our first set of hypotheses:

$$H_1:\widehat{\beta_1}=0$$
 and $H_2:\widehat{\beta_2}=0$

Next, we test the interaction between our two variables of interest to test if there is a disparate treatment of local and foreign CEOs by local regulators with the following model:

$$E(ENF_{it}) = \Phi(\beta_0 + \beta_1 H S_{it} + \beta_2 L R_{it} + \beta_3 H S_{it} * L R_{it} + \beta_{cv} Control S_{it} + \beta_{\sigma} \sigma_{it})$$
 (2)

This is used to test our third null hypothesis:

$$H_3$$
: $\widehat{\beta_3} = 0$

⁶ Blockholder data courtesy Schwartz-Ziv & Volka (2024).

⁷ SEC regions have changed over time. From 1993-2007, there were only five regions compared to 10 in 2025. In 2007, the SEC officially raised six district offices to regional status because they had been functioning as regional offices for decades already. The Utah region is consolidated with the Denver region as it only encompassed the state of UT and other wise has no impact on the sample.

⁸ We additionally test whether the company has a Big 4 Auditor and whether the SEC commissioner or President has any impact on the results of all specifications and find no change.

4.2 Endogeneity

The standard pooled and random effects assumptions require that the independent variables are not correlated with the error term. This is a strong assumption to make as there is likely some correlation between our explanatory variables and the unobserved effects contained in the error. One tried and true method of addressing this endogeneity is instrumental variable (IV) regression. An IV estimation replaces our potentially endogenous independent variables with a vector of instruments. Valid instruments must have explanatory power on the suspect independent variable but no impact on the dependent variable except through our potentially endogenous variable. In the present case, this means that our instruments have a significant impact on a firm's employment of a home state CEO but otherwise do not have a direct effect on enforcement probability.

The key step is to identify the potential instruments. Yonker (2017) finds that the desirability of a location affects local hiring patterns and a state's proportional population to the nation 36 years prior also has a strong effect. Neither of these have any impact on justiciable financial misrepresentation, but they have a direct impact on local hiring decisions. This makes these instruments excellent candidates to address endogeneity in our variable of interest.

Following Yonker (2017), we proxy the location desirability by using the average number of cloudy days per year by city. Cloud coverage for a city is a good indicator of how much people want to live in a certain city. Cleveland, OH, for example, has cloudy days 55% of the year. Los Angeles, CA, on the other hand, is cloudy only 24% of the time. People appreciate clear weather which makes it easier for a Los Angeles firm to recruit an out-of-state CEO compared to one in Cleveland. In Ohio, they have to hire people who are already in Ohio because no one wants to move to Ohio in part because of the weather.

To calculate the percentage of cloudy days number, we collect the average cloudy days per National Weather Service station from the National Ocean and Atmospheric Administration. The cloud coverage data is based upon an average of 44.5 years of data across 255 NWS stations. We matched NWS stations to company headquarters using the firm's zip code to acquire its latitude and longitude and then calculated the distance to the nearest NWS station in nautical miles (NMs). We match 1883 unique zipcodes to NWS station with an average distance of 11.26 NMs and a median of 7.63 NMs. While there is a right skewness, these are mostly outliers. Only 2.5% of the distances are greater than 50 NMs. The 95th percentile of distance is 36.5 NMs. When matched with our full sample, the average distance is 10.28 NMs with a median of 5.68NM. The 95th percentile, when fully matched, drops to 30.7 NMs as well. Our average cloud cover variable is thus representative of a location's true cloud cover.

Our next instrument, the historic population proportion, is another factor identified by Yonker that is relevant as an instrument in our analysis. The basic idea is that more populous states in year t-36 will lead to a larger pool of local talent from which firms can hire. We use the population of each state proportionate to the fifty united states plus Washington, DC from 1955 to 1980 to calculate this variable. This gives us each state's proportional population 36 years prior to the fiscal years in our sample. We generate this variable with information collected from US census data.

For our IV estimation we utilize a maximum likelihood estimation instead of a two-step estimation for our IV process. This procedure estimates our two equations simultaneously versus the two-step procedure that has a clearly delineated first and second stage. The advantages to such a procedure are more accurate standard errors and faster estimation. The primary drawback is that some postestimation tests are not available and there is no calculated F statistic for the first stage, as it is simultaneously estimated. To address these limitations, we perform weak instrument tests

⁹ The extremes are simply due to their remote nature with the largest being Laredo, TX at 112NM from the nearest NWS in Corpus Christi.

and obtain an F-statistic for the first stage using standard two stage least square regression. ¹⁰ Our IV estimation is given by equation two below:

$$E(ENF_{it}) = \Phi(\beta_0 + \beta_{IV}z_{it} + \beta_{CV}Controls_{it} + \beta_{\sigma}\sigma_{it})$$
(3)

In this equation, z_{it} is a vector of our instruments: the percentage of cloudy days and historic population proportion and our control variables match all of the above with the exception of the regional fixed effects as our instrumental variables are localized variables themselves.

4.3 Enforcement Punishment Outcomes

We next turn to analysis of the punishment received from the enforcement actions. We look at fines against the firm and the employees in millions of dollars along with prison terms in months. The punishment awarded can be one or any combination of the three. Many times, there will be just a fine for the firm and no punishment at all for anyone else. The SEC is very lenient on those that cooperate with investigations. Many parties in our sample receive limited to no punishment for their wrongdoing simply because of their level of cooperation with the SEC's investigation. Refusal to cooperate is an aggravating factor resulting in more severe punishments. When punishment is awarded, it tends to be extreme. The combination of these two effects is that the punishment results have many zeros along with large positive skewness. The Poisson pseudomaximum likelihood (PPML) estimator¹¹ is an effective model for approaching this type of dataset while other models will be highly biased. (Wooldridge, 2010). We use the PPML to estimate equation four.

$$LN(\lambda_Y) = \beta_0 + \beta_4 HSCEOMC_{it} + \beta_5 HSCEOReg_{it} + \beta_6 LocalReg_{it} + \beta_{CT} Controls$$
 (4)
Our dependent variables are represented by Y and are firm fines, employee fines, and prison sentences to individuals. $HSCEOMC_{it}$ and $HSCEOReg_{it}$ are dummy variables equal to 1 if the CEO

¹⁰ See Wooldridge (2010).

¹¹ First discussed in Gourieroux, et al. (1984).

is local during the misconduct or regulation negotiation timeframes. *LocalRegit* is a dummy variable equal to one if the firm is in the same state as the regional SEC office. Controls include CEO factors such as age and cumulative experience, firm controls, punishment controls¹², and year, region, and industry fixed effects. The inclusion of these factors is vital to ensure that they are not driving our ultimate results. The definition of these controls along with the estimated regression results are available in the Appendix. These controls help isolate the specific effect that a local CEO has on the punishment outcomes. We use this estimation to test our second set of hypotheses:

$$H_4$$
: $\widehat{\beta_4} = 0$, H_5 : $\widehat{\beta_5} = 0$, and H_6 : $\widehat{\beta_6} = 0$

Lastly, we test the interaction between our home state dummy variables and the local regulator with our final models:

$$LN(\lambda_Y) = \beta_0 + \beta_4 HSMC_{it} + \beta_5 HSReg_{it} + \beta_6 LR_{it} + \beta_7 LR_{it} * HSMC_{it} + \beta_{CT}Ctrl$$
 (5)

$$LN(\lambda_Y) = \beta_0 + \beta_4 HSMC_{it} + \beta_5 HSReg_{it} + \beta_6 LR_{it} + \beta_8 LR_{it} * HSReg_{it} + \beta_{CT}Ctrl$$
 (6)

We use these to test our final null hypotheses:

$$H_7$$
: $\widehat{\beta_7} = 0$, and H_8 : $\widehat{\beta_8} = 0$

5. Empirical Results

5.1. Probability of Enforcement Action

We start with the univariate t-test to compare the means of enforcement for the local versus non-local CEO subsets. The results show near identical mean enforcement rates. The local CEOs have a mean of 0.0118% while the non-local CEOs have a mean of 0.0124%. In a two tailed test of the hypothesis that these means are different, the p-value is 0.6702, suggesting that the

¹² For detailed explanation of how the SEC and DOJ use these factors in determining recommended punishment, please see Call, et. al. (2017).

enforcement rate between companies employing local vs non-local CEOs is not statistically different from each other.

In Table 4 we report univariate probit regression results in columns 1 through 11 along with the full specification identified in Equation (1) above in row 12. Average partial effects are reported next to the full model. For all specifications we include SEC region, year, and industry fixed effects. Standard errors are clustered by firm. We find that CEO and firm locality do not have a statistically significant impact on the rate of regulatory enforcement in both univariate and full models.

Insert Table 4

We find all control variables significant in the univariate model except the distance from company headquarters to the regulator. In the full specification, age, leverage, and cash all lose significance. CEO Cumulative experience, market to book ratio, and net income ratio have a negative impact on the rate of regulation statistically significant at the 1% level. Blockholder ownership percentage and market cap have a positive relationship also significant at the 1% level.

We next check to see if there is differential treatment of CEOs by regulators by interacting our two variables of interest in Equation (2). The results are reported in Table 5. We find that when a firm shares a state with an SEC regional office and employs a home state CEO, there is a decrease in the rate of enforcement actions, significant at the 5% level. In the 41 states that do not have an SEC regional office, home state CEOs are linked to a higher rate of enforcement. The results may suggest that regulators give some leniency to firms and CEOs that are local to them, or they may indicate that firms and CEOs who are from the same state as the regional SEC office are less likely to engage in financial misrepresentations or misconduct.

Insert Table 5

5.2 Addressing Endogeneity

To address potential endogeneity concerns, we use an MLE probit IV estimation. The first stage results are reported in Panel A of Table 6 while the second stage results are reported in Panel B. We test specifications with and without the interaction term. The interaction results are in Panel C. We perform a strong instrument test using a 2SLS IV regression to obtain an F-stat for the first stage, following the discussion by Wooldridge (2010). We find a robust F-stat of 22.61 which is highly significant and exceeds Stock-Yogo and Montiel-Pflueger critical values indicating our instruments do not suffer from weak instrument bias.

We find results similar to those in the baseline regression in Table 4. Our IV variable is positive and is not significantly different than zero. In Panel C we find again consistent results in our interaction model in Table 5. In presence of a local SEC office, firms with a home state CEO are less likely to be the target of enforcement action than firms with an out-of-state CEO.

Insert Table 6

5.3 Effect on Punishment Outcomes

We further explore the outcomes of the enforcement actions. We first analyze the impact of CEO locality on punishment outcomes using the model described in Equation (3). The coefficients from the regression results are reported in Table 7, alongside Incident Rate Ratios (IRR). These IRRs give us a representation of the multiplicative increase or decrease in the rate for one group to another. There are three dependent variables in Table 7: fines to the firm, fines to the employees of the firm, and jail sentences to the employees. Fines to firm and the employees are in millions of dollars while prison sentences are measured in months.

Insert Table 7

Among our 300 enforcement actions, we find that a home state CEO during misconduct is associated with higher fines to the firm, significant at the 10% level, and CEO locality otherwise

is insignificant. A firm sharing a state with an SEC regional office has a strong negative relationship with employee fines and prison terms, significant at the 1% level. This is a reduction on average of 94% in fines and 63% in prison sentences, all other things held equal.

In Table 8, we interact the CEO locality with firm locality to the SEC regional offices. In Panel A, we test the CEO during the misconduct period and in Panel B the CEO during the regulation period. Panel A yields similar results to Table 6. The only significance now is the reduction in employee fines and prison terms showing an average drop of 91% and 67% each.

In Panel B, however, we find higher fines for named employees of firms that employ home state CEOs during regulation in the states without an SEC regional office significant at the 10% level. In contrast, employees at firms in state with a regulator are associated with large reductions in fines magnified if the CEO is also from the same state. When the CEO is not local, the marginal effect of just being local to the regulator indicates an 84% drop in employee fines. When the regulation period CEO is also local, the marginal effect is a 98% reduction in fines compared to firms outside the regulator state. These results could indicate lenience to individuals due to familiarity. Employees at firms closest to the regulator tend to have significantly smaller fines while employees at firms most foreign to regulators face stiffer punishment. We finally find that there is a statistically significant increase in firm fines when the regulation CEO and firm are both local to the regulator. This could indicate a shift in punishment from people to the firm.

Insert Table 8

5.4 Effect on Punishment Outcomes when CEO is Implicated

Our final analysis is a repeat of the punishment models in Table 8 isolated to the 107 incidents where the CEO during misconduct is named personally in the enforcement action. The results are presented in Table 9. Panel A has the model where we interact with CEO locality during misconduct and regulator locality and Panel B is the interaction of the regulation CEO.

Insert Table 9

In both panels, we see that culpable CEOs still at the helm of the company during regulation are punished more severely with dramatically increased rates of employee fines and prison terms significant at the 1% and 5% levels respectively. This would indicate there is no leniency given by regulators to the implicated CEOs themselves.

In Panel A we find no apparent preference for local CEOs who have committed misconduct themselves. Local CEOs during regulation, though, are associated with large decreases in employee punishment in the case of 74% smaller fines and 96% smaller prison terms. Likewise, the firm's locality to the regulator continues to show massive reductions in both fines and jail sentences.

In Panel B we find again large reductions from sharing a state with an SEC regional office magnified if the CEO negotiating the resolution is also from the same state. The employees at a firm led by a foreign CEO that is local to the SEC regional office will see 85% reduction in fines and 98% reduction in prison terms. When the CEO during the regulation is local, the marginal effects are magnified with a 99% reduction in fines and prison terms for employees of the firm. As in the full sample, fines appear to shift from the employees to the firm when the firm is local to the regulator. These results together indicate that the SEC does not show leniency to culpable parties themselves even though there appears to be a preference based on locality of the firm and the CEO who negotiates during regulation.

6. Conclusions

A person tends to have a strong attachment to their hometown, and a CEO may not be so different. Similarly, this local attachment is shared by employees of a local federal regulator's office. Therefore, there may be a connection between a firm's locality and that of their regulator.

The people employed at both the regulator and firms are sourced from the local talent pool. It follows that a firm sharing a home with a federal regulator could result in differential treatment than those who do not. The emerging literature has suggested that a CEO's local identity can play a role in the decisions he makes. In this paper we analyzed the local impact of both CEO and regulator on the rate of being regulated for financial misrepresentation and the outcome of that regulation.

We find that whether a CEO works in his home state does not have significant influence on the rate of SEC action resulting in punishment, however being in a state with an SEC regional office does impact that rate of regulation and there is indication of disparate treatment by the regulator in favor of home state CEOs. Additionally, being local to the regulator has a large impact on the punishment received. Our paper is the first to analyze these local impacts on the regulatory actions against the firm, contributing to the literature by adding a new dimension to the studies of CEO and firm characteristics.

References

- Adarves-Yorno, I., Postmes, T. & Alexander Haslam, S., 2006. Social identity and the recognition of creativity in groups. *British Journal of Social Psychology*, Volume 45, pp. 479-497.
- Aisch, G., Gebeloff, R. & Quealy, K., 2014. Where We Came From and Where We Went, State by State. [Online]

 Available at: https://www.nytimes.com/interactive/2014/08/13/upshot/where-people-ineach-state-were-born.html
 [Accessed 6 June 2023].
- Bai, J., Ma, L., Mullally, K. A. & Solomon, D. H., 2019. What a Difference a (birth) Month Makes: The Relative Age Effect and Fund Manager Performance. *Journal of Financial Economics*, 132(1), pp. 200-221.
- Bernile, G., Bhagwat, V. & Rau, P. R., 2017. What Doesn't Kill You Will Only Make You More Risk-Loving: Early-Life Disasters and CEO Behavior. *The Journal of Finance (New York)*, 72(1), pp. 167-206.
- Call, A., Margin, G., Sharpe, N. & Wilde, J., 2017. Whistleblowers and Outcomes of Financial Misrepresentation Enforcement Actions. *Journal of Accounting Research*, 56(1), pp. 123-171.
- Cameron, A. C. & Trivedi, P. K., 2010. *Microeconomics Using Stata*. Revised Edition ed. College Station, TX: Stata Press.
- Cao, F., Li, S., Jian, H. & Lu, Y., 2022. Do Local CEOs Commit Less Fraud? Evidence from Chinese Listed Firms. *Applied Economics Letters*, Volume Ahead of Print.
- Carrus, G., Bonaiuto, M. & Bonnes, M., 2005. Enironmental concern, regional identity, and support for protected areas in Italy. *Environment and Behavior*, Volume 37, pp. 237-257.
- Cohen, L., Coval, J. & Malloy, C., 2011. Do powerful politicians cause corporate downsizing?. *Journal of Political Economy*, Volume 119, pp. 1015-1060.
- Cornaggia, J. N., Cornaggia, K. J. & Israelsen, R. D., 2020. Where the Heart Is: Information Production and the Home Bias. *Management Science*, 66(12), pp. 5532-5557.
- Faccio, M., Marchica, M.-T. & Mura, R., 2016. CEO Gender, Corporate Risk-Taking, and the Efficiency of Capital Allocation. *Journal of Corporate Finance (Amsterdam, Netherlands)*, Volume 39, pp. 193-209.
- Galasso, A. & Simcoe, T. S., 2011. CEO Overconfidence and Innovation. *Management Science*, 57(8), pp. 1469-1484.
- Gourieroux, C., Monfort, A. & Trognon, A., 1984. Pseudo Maximum Likelihood Methods: Applications to Poisson Models. *Econometrica*, Volume 52, pp. 701-720.

- Hirschleifer, D., Low, A. & Teoh, S. H., 2012. Are Overconfident CEOs Better Innovators?. *The Journal of Finance (New York)*, 67(4), pp. 1457-1498.
- Hodler, R. & Raschky, P. A., 2014. Regional Favoritism. *The Quarterly Journal of Economics*, Volume 129, pp. 995-1033.
- Hogg, M. A., Terry, D. J. & White, K. M., 1995. A tale of two theories: a critical comparison of identity. *Social Psychology Quarterly*, Volume 58, pp. 255-269.
- Huang, J., Li, Y., Dai, M. & Han, F., 2023. Risk Perception and Audit Fees: How Do Auditors Respond When Working with Hometown CEOs?. *Emerging Markets Finance & Trade*, 59(4), pp. 1179-1204.
- Hu, Y., 2023. Local CEOs, Career Concerns and Voluntary Disclosure. *Journal of Business Finance & Accounting*, 50(3-4), pp. 565-597.
- Irarrazabal, A., Moxnes, A. & Opromolla, L. D., 2013. The Margins of Multinational Production and the Role of Intra-Firm Trade. *Journal of Political Economy*, Volume 121, pp. 74-126.
- Jiang, F., Qian, Y. & Yonker, S. E., 2019. Hometown Biased Acquisitions. *Journal of Financial and Quantitative Analysis*, 54(5), pp. 2017-2051.
- Kang, J. K., Liu, W. L., Low, A. & & Zhang, L., 2018. Friendly boards and innovation.. *Journal of Empirical Finance*, Volume 45, pp. 1-25.
- Karolyi, G. A. a. A. G. T., 2015. Regulatory Arbitrage and Cross-Border Bank Acquisitions.. *The Journal of Finance,* Issue 70, pp. 2395-2450.
- Karpoff, J., Koester, A., Lee, S. & Martin, G., 2017. Proxies and Databases in Financial Misconduct Research.. *The Accounting Review*, pp. Vol. 92, No. 6, pp. 129-163.
- Knight, B., 2005. Estimating the value of proprals power.. *American Economic Review*, Volume 95, pp. 1639-1652.
- Lai, S., Li, Z. & Yang, Y. G., 2020. East, West, Home's Best: Do Local CEOs Behave Less Myopically?. *The Accounting Review*, 95(2), pp. 227-255.
- Lei, Z. P. D. R. P. Y. C., 2022. CEO personal reputation and financial misconduct. *Working Paper*, p. 60.
- Lim, I. & Nguyen, D. D., 2021. Hometown Lending. *Journal of Financial and Quantitative Analysis*, 56(8), pp. 2894-2933.
- Lv, J. & Zhang, S., 2022. Hometown Sentiment: CEO Hometown Identity and Corporate Audit Fees. *Managerial Auditing Journal*, 37(8), pp. 993-1016.
- Malikov, K. & Gaia, S., 2022. Do CEO Social Connections Promote Corporate Malpractices? Evidence from Classification Shifting.. *Accounting Forum*, 46(4), pp. 369-393.

- Meagher, K., 2010. *Identity Economics: Social Networks and the Informal Economy in Nigeria*. s.l.:James Currey.
- Parsons, C. A., Sabbatucci, R. & Titman, S., 2020. Geographic Lead-Lag Effects. *The review of Financial Studies*, 33(10), pp. 4721-4770.
- Ren, S., Cheng, Y., Hu, Y. & Yin, C., 2011. Feeling Right at Home: Hometown CEOs and Firm Innovation. *Journal of Corporate Finance (Amsterdam, Netherlands)*, Volume 66.
- Ren, S., Sun, H. & Tang, Y., 2022. CEO's Hometown Identity and Corporate Social Responsibility. *Journal of Management*, 1(35).
- Ren, S., Wang, Y., Hu, Y. & Yan, J., 2021. CEO Hometown Identity and Firm Green Innovation. *Business Strategy and the Environment*, 30(2), pp. 756-774.
- Santos Silva, J. & Tenreyro, S., 2006. The Log of Gravity. *The Review of Economics and Statistics*, Volume 88, pp. 641-658.
- Santos Silva, J. & Tenreyro, S., 2011. Further Simulation Evidence on the Performance of the Poisson Pseudo-Maximum Likelihood Estimator.. *Economics Letters*, Volume 112, pp. 220-222.
- Schwartz-Ziv, M. V. E., 2024. Is Blockholder Diversity Detrimental?. *Management Science*, 71(2).
- Tenreyro, S., 2007. On the Trade Impact of Nominal Exchange Rate Volatility.. *Journal of Development Economics*, Volume 82, pp. 485-508.
- Tesar, L. L. & Werner, I. M., 1995. Home Bias and High Turnover.. *Journal of International Money and Finance*, 14(4), pp. 467-492.
- Twigger-Ross, C., Bonaiuto, M. & Breakwell, G., 2003. Identity theories and environmental psychology.. *Psychological theories for environmental issues.*, pp. 203-234.
- Uzzell, D., Pol, E. & Badenas, D., 2002. Place identification, social cohesion, and environmental sustainability.. *Environment and Behavior*, Volume 34, pp. 26-53.
- Wang, L., Xiao, W., Xie, S. & Wei, R., 2022. CEOs' Psychological Trait and Firms' Adoption of Blockchain Technology: The Role of Hometown Identity. *Frontiers in Psychology*, Volume 13.
- Wooldridge, J., 2010. *Econometric Analysis of Cross Section and Panel Data*. Cambridge, MA: MIT Press.
- Yonker, S. E., 2017. Do Managers Give Hometown Labor an Edge?. *The Review of Financial Studies*, 30(10), pp. 3581-3604.

- Yonker, S. E., 2017. Geography and the Market for CEOs. *Management Science*, pp. Vol. 63, No. 3, pp. 609-630.
- Zhu, H., Pan, Y., Qiu, J. & Xiao, J., 2022. Hometown Ties and Favoritism in Chinese Corporations: Evidence from CEO Dismissals and Corporate Social Responsibility. *Journal of Business Ethics*, 176(2), pp. 283-310.

Table 1: Descriptive/Summary Statistics of the Litigation Probability Sample

This table reports the descriptive statistics for the litigation probability sample. Panel A reports summary statistics of the control variables for the full sample, the subset with out-of-state CEOs, and the subset with home state CEOs. Panel B breaks down the sample distribution by industry, based upon the Fama-French 12 industry classification. Panel C lists the total number of firm-years under each regional SEC offices along with the total number of firms that share a state with an SEC regional office. Variable definitions are available in the Appendix.

Panel A: Summary Statistics of the Control Variables

Full Sample									
Variables	N	Mean	Std. Dev.	Median	Minimum	Maximum			
CEO Age	24,466	55.92	7.53	56.00	29.00	93.00			
CEO Cumulative Experience	24,466	10.52	6.94	9.00	1.00	54.03			
Market Cap	24,466	7,122.99	22,497.67	1,544.75	3.02	476,118.53			
Market to Book	24,466	2.10	1.42	1.68	0.41	8.47			
Leverage Ratio	24,466	0.23	0.19	0.21	0.00	0.88			
Cash to Asset Ratio	24,466	0.14	0.16	0.07	0.00	0.74			
Net Income to Asset Ratio	24,466	0.04	0.11	0.04	-0.54	0.26			
Blockholder %	24,466	0.08	0.06	0.07	0.00	0.38			
Distance to Regulator	24,466	132.82	158.62	76.34	2.32	2,086.50			

Out-of-State CEOs									
Variables	\mathbf{N}	Mean	Std. Dev.	Median	Minimum	Maximum			
CEO Age	16,520	56.00	7.33	56.00	29.00	93.00			
CEO Cumulative Experience	16,520	9.94	6.60	9.00	1.00	54.03			
Market Cap	16,520	7,577.16	23,701.12	1,624.72	3.02	476,118.53			
Market to Book	16,520	2.13	1.43	1.72	0.41	8.47			
Leverage Ratio	16,520	0.23	0.19	0.22	0.00	0.88			
Cash to Asset Ratio	16,520	0.14	0.17	0.07	0.00	0.74			
Net Income to Asset Ratio	16,520	0.03	0.11	0.04	-0.54	0.26			
Blockholder %	16,520	0.08	0.06	0.07	0.00	0.38			
Distance to Regulator	16,520	130.14	159.23	69.21	2.32	2,086.50			

Home State CEOs								
Variables	N	Mean	Std. Dev.	Median	Minimum	Maximum		
CEO Age	7,946	55.74	7.94	56.00	30.00	90.00		
CEO Cumulative Experience	7,946	11.71	7.47	10.00	1.00	52.02		
Market Cap	7,946	6,178.74	19,730.45	1,386.82	3.04	386,405.06		
Market to Book	7,946	2.03	1.39	1.60	0.41	8.47		
Leverage Ratio	7,946	0.23	0.18	0.21	0.00	0.88		
Cash to Asset Ratio	7,946	0.13	0.15	0.06	0.00	0.74		
Net Income to Asset Ratio	7,946	0.04	0.10	0.04	-0.54	0.26		
Blockholder %	7,946	0.08	0.06	0.07	0.00	0.38		
Distance to Regulator	7,946	138.40	157.19	93.14	3.00	2,086.50		

Panel B: Industry Breakdown by FF12

	Full	Sample	Companies with Home State CEOs		Enforcement Actions		Actions with Home State CEOs	
Industry	N	% of Companies	N	% of Companies	N	% of Actions	N	% of Actions
Consumer Nondurables: food, tobacco, textiles, apparel, leather, toys	1,540	6.29%	554	6.97%	18	6%	7	7.45%
Consumer Durables: cars, TVs, furniture, household appliances	703	2.87%	182	2.29%	9	3%	4	4.26%
Manufacturing: machinery, trucks, planes, office furniture, paper, commercial printing	2,950	12.06%	906	11.4%	31	10.33%	9	9.57%
Oil, Gas, & Coal Extraction & Products	1,053	4.3%	318	4%	15	5%	4	4.26%
Chemicals & Allied Products	786	3.21%	278	3.5%	9	3%	4	4.26%
Business Equipment: computers, software & electronic equip	4,083	16.69%	1,088	13.69%	78	26%	18	19.15%
Telephone and Television Trans	663	2.71%	257	3.23%	5	1.67%	1	1.06%
Utilities	1,206	4.93%	438	5.51%	11	3.67%	5	5.32%
Wholesale, Retail & Some Services (Laundries, Repair Shops)	2,876	11.76%	1,002	12.61%	25	8.33%	9	9.57%
Healthcare, Medical Equip & Drugs	1,872	7.65%	456	5.74%	34	11.33%	11	11.7%
Finance	3,810	15.57%	1,627	20.48%	37	12.33%	12	12.77%
Other: mines, construction, building maintenance, trans, hotels, business services, entertainment	2,924	11.95%	840	10.57%	28	9.33%	10	10.64%
Total	24,466	100%	7,946	100%	300	100%	94	100%

Panel C: Regional offices of SEC

	Full	Sample	Enforce	Enforcement Actions		
Regional Office	N	% of Cos	N	% of Actions		
Atlanta	2,324	9.5%	23	7.67%		
Boston	1,936	7.91%	30	10%		
Chicago	5,567	22.75%	62	20.67%		
Denver	871	3.56%	9	3%		
Fort Worth	3,010	12.3%	41	13.67%		
Los Angeles	2,164	8.84%	21	7%		
Miami	1,285	5.25%	15	5%		
New York City	2,704	11.05%	52	17.33%		
Philadelphia	2,244	9.17%	19	6.33%		
San Francisco	2,361	9.65%	28	9.33%		
Total	24,466	100%	300	100%		
Companies in state with SEC Regional Office	13,629	55.71%	126	42%		

Table 2: Distribution of the Enforcement Action Sample

This table reports the distribution of the sample used in our analysis of enforcement action portion. Panel A lists the breakdown of CEO locality both during misconduct and regulation as well as the number of companies who share a state with an SEC regional office. Panel B reports the distribution by the respondent type in the financial misrepresentation litigations.

Panel A: Home State CEO Statistics

	N	%
Total Enforcement Actions	300	100%
Home State CEO during Misconduct	94	31.33%
Out-of-State CEO during Misconduct	206	68.67%
Home State CEO during Regulation	78	26.0%
Out-of-State CEO during Regulation	222	74%
Same CEO during both	84	28%
Firm in State with SEC Regional Office	174	58%

Panel B: Enforcement Actions by Respondent Type

			Home State CEO			
Litigation Respondent Type	N	% of Actions	No	Yes	%	
CEO Named	107	35.7%	72	35	32.7%	
Other C-Level	169	56.3%	110	59	34.9%	
Executive	190	63.3%	123	67	35.3%	
Nonexecutive employee	80	26.7%	60	20	25.0%	
Firm Outsider	54	18.0%	38	16	29.6%	
Firm Named	266	88.7%	185	81	30.5%	
Firm Only	85	28.3%	64	21	24.7%	

Table 3: Summary Statistics of Variables in Enforcement Action Sample

This table reports the summary statistics for the enforcement action sample. The 300 enforcement actions represent the sample of lawsuits with fully identified CEO information. Panel A reports the full sample. Panel B has the subset with a home state CEO. Panel C reports the information for firms with an out-of-state CEO. Variable definitions are available in the Appendix. Continuous variables are Winsorized at the 1st and 99th percentiles.

Pane	I A:	Full	Sampl	le

Dependent Variables	N	Mean	Std. Dev.	Median	Min	Max
Firm Penalty (\$MM)	300	36.03	137.96	0.00	0.00	1,522.40
Employee Penalty (\$MM)	300	31.60	383.33	0.05	0.00	6,557.17
Prison Term (months)	300	14.86	67.45	0.00	0.00	700.00

Firm Characteristic Variables	N	Mean	Std. Dev.	Median	Min	Max
Market Cap (\$MM)	300	17,438.87	46,425.54	2,137.52	10.11	397,834.59
Market to Book Ratio	300	1.89	1.30	1.57	0.41	8.45
Leverage Ratio	300	0.26	0.19	0.24	0.00	0.88
Net Income to Asset Ratio	300	-0.00	0.13	0.02	-0.56	0.21
Cash to Asset Ratio	300	0.14	0.15	0.08	0.00	0.74

Panel B: Home State CEOs During Misconduct

Dependent Variables	N	Mean	Std. Dev.	Median	Min	Max
Firm Penalty (\$MM)	94	38.94	141.61	0.00	0.00	825.00
Employee Penalty (\$MM)	94	10.69	54.32	0.12	0.00	505.73
Prison Term (months)	94	18.53	66.72	0.00	0.00	396.00

Firm Characteristic Variables	N	Mean	Std. Dev.	Median	Min	Max
Market Cap (\$MM)	94	15,210.13	44,947.69	1,810.67	26.85	267,689.25
Market to Book Ratio	94	1.78	1.27	1.45	0.41	8.45
Leverage Ratio	94	0.28	0.20	0.23	0.00	0.85
Net Income to Asset Ratio	94	-0.01	0.13	0.02	-0.48	0.21
Cash to Asset Ratio	94	0.12	0.15	0.07	0.00	0.72

Panel C: Out-of-State CEOs During Misconduct

	Out o	i state en	25 22 dilling 10	nscomaact		
Dependent Variables	N	Mean	Std. Dev.	Median	Min	Max
Firm Penalty (\$MM)	206	34.71	136.60	0.30	0.00	1,522.40
Employee Penalty (\$MM)	206	41.14	461.18	0.03	0.00	6,557.17
Prison Term (months)	206	13.18	67.88	0.00	0.00	700.00
Firm Characteristic Variables	N	Mean	Std. Dev.	Median	Min	Max
Market Cap (\$MM)	206	18,455.87	47,157.06	2,540.46	10.11	397,834.59
Market to Book Ratio	206	1.95	1.31	1.61	0.41	8.45
Leverage Ratio	206	0.26	0.19	0.25	0.00	0.88
Net Income to Asset Ratio	206	-0.00	0.14	0.02	-0.56	0.21
Cash to Asset Ratio	206	0.14	0.15	0.08	0.00	0.74

Table 4: Baseline Regression Results

In this table we report pooled probit regression results on the probability of financial misrepresentation litigation actions. The 300 enforcement actions represent the sample of all S&P 1500 regulatory actions initiated by the DOJ or SEC for financial misrepresentation from 1992-2016 that resulted in punishment to either the company or individuals where the CEO's home state has been identified. Probit coefficients are presented along with robust standard errors clustered by firm in parentheses. The dependent variable for all specifications is the dummy variable for enforcement which is equal to 1 if the SEC or DOJ initiated an enforcement action that results in punishment in a specified year. Column 13 is the average partial effects for the full model. Control variables are Winsorized at the 1st and 99th percentiles. Year, SEC region, and industry fixed effects are included for all specifications. ***, ***, and * represent significance at 0.01, 0.05, and 0.10, respectively.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(APE)
Home State CEO	-0.0136											0.0918	1.096
	(0.0523)											(0.0576)	(0.0631)
In-state Regulator		-0.0277										-0.0373	0.963
		(0.0570)										(0.0834)	(0.0804)
CEO Age			-0.0146***									-0.00322	0.997
			(0.00326)									(0.00381)	(0.00379)
CEO Cumulative Exp				-0.0564***								-0.0582***	0.943***
				(0.00747)								(0.00817)	(0.00771)
Blockholder %					2.303***							2.292***	9.892***
					(0.317)							(0.322)	(3.190)
Log Distance to Regulator						0.00122						0.00432	1.004
						(0.0168)						(0.0240)	(0.0241)
Log Market Cap							0.0655***					0.135***	1.144***
							(0.0159)					(0.0194)	(0.0221)
Market to Book								-0.0988***				-0.0967***	0.908***
								(0.0249)				(0.0313)	(0.0284)
Leverage Ratio									0.519***			0.0456	1.047
									(0.118)			(0.146)	(0.153)
Cash to Asset Ratio										-0.482***		-0.185	0.831
										(0.169)		(0.198)	(0.164)
Net Income to Asset Ratio											-0.883***	-1.057***	0.348***
											(0.159)	(0.204)	(0.0710)
Intercept	-2.676***	-2.669***	-1.869***	-2.396***	-2.789***	-2.684***	-3.149***	-2.496***	-2.829***	-2.661***	-2.626***	-3.116***	0.0443***
	(0.239)	(0.239)	(0.297)	(0.243)	(0.238)	(0.243)	(0.270)	(0.243)	(0.242)	(0.238)	(0.238)	(0.390)	(0.0173)
Region, Year, & Ind., FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	24,466	24,466	24,466	24,466	24,466	24,466	24,466	24,466	24,466	24,466	24,466	24,466	24,466
X^2	175.9	176.5	195.5	212.7	232.7	176.7	196.4	189.4	185.3	180.7	214.3	317.3	317.3
(p-value)	0	0	0	0	0	0	0	0	0	0	0	0	0
Pseudo R-squared	0.0489	0.0490	0.0557	0.0909	0.0645	0.0489	0.0557	0.0563	0.0544	0.0515	0.0562	0.136	0.136

Robust SE in parentheses clustered by Company. *** p<0.01, ** p<0.05, * p<0.1

Table 5: Interaction Regression Results

In this table we report pooled probit regression results on the probability of financial misrepresentation litigation actions with the interaction between our local dummies included. The 300 enforcement actions represent the sample of all S&P 1500 actions initiated by the DOJ or SEC for financial misrepresentation from 1992-2016 that resulted in punishment to either the company or individuals where the CEO's home state has been identified. Probit coefficients are presented along with robust standard errors clustered by firm in parentheses. The dependent variable for all specifications is the dummy variable for enforcement which is equal to 1 if the SEC or DOJ initiated an enforcement action that results in punishment in a specified year. Column 12 is the average partial effects for the model. Control variables are Winsorized at the 1st and 99th percentiles. Year, SEC region, and industry fixed effects are included for all specifications. ***, ***, and * represent significance at 0.01, 0.05, and 0.10, respectively.

Variables	Probit Coef.	APE
Home State CEO	0.215***	1.240***
	(0.0819)	(0.102)
In-state Regulator	0.0302	1.031
	(0.0919)	(0.0947)
Home State CEO with In-State Regulator	-0.219**	0.803**
	(0.111)	(0.0892)
Region FE	Y	Y
Year FE	Y	Y
Industry FE	Y	Y
Observations	24,466	24,466
X2	323.1	323.1
(p-value)	0	0
Pseudo R-squared	0.138	0.138

Robust standard errors in parentheses clustered by company.

^{***} p<0.01, ** p<0.05, * p<0.1

Table 6: Instrumental Variable Regressions

In this table we report probit instrumental variable regression results. Panel A shows the first stage regression results with the home state CEO dummy as the dependent variable and Panel B shows the probit IV results alongside the probit regression results from Table 4 with the enforcement dummy as our dependent variable. Panel C shows the results with our local interaction included. Coefficients are presented with robust standard errors. Control variables are Winsorized at the 1st and 99th percentiles. Year and industry fixed effects are included for all specifications with state fixed effects present in the full probit and logit models. ***, **, and * represent significance at 1%, 5%, and 10%, respectively (two-tailed tests).

Panel	\mathbf{A}		Panel B		I	Panel C
Variables	Home State CEO	Variables	Probit IV	Probit	Variables	Probit IV
D	0.592***	Home State CEO	0.773	0.0918	Home State CEO	1.606*
Percent Cloudy	(0.0984)	Home State CEO	(0.523)	(0.0576)	Home State CEO	(0.851)
Historic Pop.	2.925***	In-state Regulator	-0.0584	-0.0373	In-state Regulator	0.426
Proportion	(0.539)	m-state Regulator	(0.0838)	(0.0834)	in-state Regulator	(0.318)
	-0.0492		0.000260	-0.00322	In-state Regulator	-1.559*
In-state Regulator	(0.0518)	CEO Age	(0.00544)	(0.00381)	with Home State CEO	(0.881)
D11-11-10/	0.108	CEO Cumulative	-0.0668***	-0.0582***	CEO A	0.00147
Blockholder %	(0.0919)	Experience	(0.0105)	(0.00817)	CEO Age	(0.00413)
Distance to	0.00695	Blockholder %	2.168***	2.292***	CEO Cumulative	-0.0642***
Regulator	(0.0106)	Blockholder %	(0.308)	(0.322)	Experience	(0.0110)
CEO Age	-0.00541***	Distance to	-0.0160	0.00432	Blockholder %	2.225***
CEO Age	(0.00136)	Regulator	(0.0257)	(0.0240)	Diockholder 70	(0.300)
CEO Cumulative	0.0116***	Market Cap	0.149***	0.135***	Distance to	-0.0257
Experience	(0.00170)	магкет Сар	(0.0160)	(0.0194)	Regulator	(0.0232)
Market Cap	-0.0304***	Market to Book	-0.0960**	-0.0967***	Market Cap	0.142***
Магкет Сар	(0.00597)	Market to Dook	(0.0373)	(0.0313)	Market Cap	(0.0145)
Market to Book	0.00560	Leverage Ratio	0.127	0.0456	Market to Book	-0.0910**
Market to Book	(0.00838)	Leverage Ratio	(0.149)	(0.146)	Market to book	(0.0372)
Leverage Ratio	-0.0620	Cash to Assets	-0.0681	-0.185	Leverage Ratio	0.174
Leverage Ratio	(0.0416)	Ratio	(0.163)	(0.198)	Leverage Ratio	(0.153)
Cash to Assets	-0.148***	Net Income to	-1.156***	-1.057***	Cash to Assets Ratio	-0.0513
Ratio	(0.0508)	Assets Ratio	(0.216)	(0.204)	Cash to Assets Ratio	(0.169)
Net Income to	0.221***	Intercept	-3.449***	-3.116***	Net Income to	-1.060***
Assets Ratio	(0.0494)	тистсері	(0.371)	(0.390)	Assets Ratio	(0.232)
T	0.411**	SEC Region FE	N	Y	T. A. A.	-3.584***
Intercept	(0.176)	Year FE	Y	Y	Intercept	(0.340)
SEC Region FE	N	Industry FE	Y	Y	SEC Region FE	N
Year FE	Y	Observations	22,572	24,466	Year FE	Y
Industry FE	Y	X^2	128.8	317.3	Industry FE	Y
Observations	22,572	(p-value)	0	0	Observations	22,572
X^2	128.8	Robust standard erro	ors in parenthes	ses	X^2	345.3
F-Stat		*** p<0.01, ** p<0.	.05, * p<0.1		(p-value)	0
(p-value)	0				Robust standard errors	in parentheses

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Probit 0.215*** (0.0819)0.0302 (0.0919)-0.219** (0.111)-0.00312 (0.00381)-0.0586*** (0.00817)2.310*** (0.321)0.00488 (0.0243)0.134*** (0.0194)-0.186 (0.198)0.0454 (0.146)-0.0973*** (0.0313)-1.053*** (0.205)-3.172*** (0.394)Y Y Y 26,584 292.1 0

^{***} p<0.01, ** p<0.05, * p<0.1

³²

Table 7: Regression Results of Enforcement Outcomes

In this table we report exponential regression results and Incidence Rate Ratios (IRR) between CEO characteristics and the punishment awarded following regulatory enforcement actions. The 300 enforcement actions represent the sample of all S&P 1500 regulatory enforcement actions initiated for financial misrepresentation from 1992-2016 where punishment was awarded. The dependent variable for each specification is firm penalties and employee penalties in millions of dollars and prison sentences in months. Industry, firm, punishment and regional FE are included in the regression analysis. For descriptions of controls, please see the Appendix. Coefficients are listed along with robust standard errors and p-value. ***, **, and * represent significance at 1%, 5%, and 10%, respectively (two-tailed tests).

	Firm Pe	enalties	Employe	ee Penalties	Prison Sentences		
Variables	Poisson Coef.	IRR	Poisson Coef.	IRR	Poisson Coef.	IRR	
Home state CEO	0.583*	1.791*	0.410	1.507	0.0218	1.022	
During Misconduct	(0.315)	(0.563)	(0.688)	(1.036)	(0.370)	(0.379)	
Home state CEO	0.320	1.377	-0.394	0.675	-0.0585	0.943	
During Regulation	(0.342)	(0.471)	(0.683)	(0.461)	(0.356)	(0.336)	
Same CEO	-0.0805	0.923	1.428	4.169	0.434	1.543	
Throughout	(0.369)	(0.340)	(1.273)	(5.308)	(0.493)	(0.761)	
In-State regulator	-0.0185	0.982	-2.900***	0.0550***	-1.005***	0.366***	
III-State regulator	(0.348)	(0.342)	(1.091)	(0.0600)	(0.380)	(0.139)	
CEO Implicated	0.0855	1.089	2.941	18.94	-0.257	0.773	
CEO implicated	(0.599)	(0.652)	(2.149)	(40.71)	(0.606)	(0.469)	
Aga	-0.00367	0.996	0.00781	1.008	-0.0159	0.984	
Age	(0.0244)	(0.0243)	(0.0277)	(0.0279)	(0.0251)	(0.0247)	
Distance from	0.0688***	1.071***	0.0412	1.042	0.00131	1.001	
Regulator	(0.0245)	(0.0263)	(0.0474)	(0.0494)	(0.0320)	(0.0320)	
CEO Evanoriones	0.0823	1.086	-0.844***	0.430***	-0.255	0.775	
CEO Experience	(0.0992)	(0.108)	(0.220)	(0.0947)	(0.163)	(0.126)	
Intercept	-4.927**	0.00725**	-9.569***	6.98e-05***	-4.672**	0.00935**	
тиегсері	(2.353)	(0.0171)	(3.087)	(0.000216)	(2.373)	(0.0222)	
Industry FE	Ŋ	7		Y	Y		
Firm FE	Y	7		Y	•	Y	
Punishment FE	Y	7		Y	•	Y	
SEC Region FE	Υ	7		Y	•	Y	
Observations	30	00	3	300	30	00	
X^2	21	45	22	2489	32	284	
(p-value)	()		0	(0	
Pseudo R-squared	0.7	82	0	.974	0.8	355	

^{***} p<0.01, ** p<0.05, * p<0.1

Table 8: Enforcement Interaction Regression

In this table we present exponential regression results of enforcement outcomes with local interactions between the misconduct CEO and regulation CEO. Panel A tests the interaction with the misconduct CEO, and Panel B tests the regulation CEO. The 300 enforcement actions represent the sample of all S&P 1500 regulatory enforcement actions initiated for financial misrepresentation from 1992-2016 where a regulatory action was commenced, punishment was handed down and the home state of the CEO is identified. Coefficients are listed along with robust standard errors. Total firm penalties in millions of dollars, employee penalties in the same, and total employee prison sentence in months are the dependent variables. ***, **, and * represent significance at 1%, 5%, and 10%, respectively (two-tailed tests).

Panel A: Interaction Between Misconduct CEO and Regulator

	Firm F	Penalties	Employe	ee Penalties	Prison S	entences	
Variables	Poisson Coef.	IRR	Poisson Coef.	IRR	Poisson Coef.	IRR	
Home state CEO	0.561	1.752	1.078	2.939	-0.193	0.824	
During Misconduct	(0.512)	(0.897)	(0.817)	(2.402)	(0.687)	(0.566)	
Home state CEO	0.263	1.301	-0.439	0.645	-0.0829	0.920	
During Regulation	(0.323)	(0.420)	(0.650)	(0.419)	(0.339)	(0.312)	
In-State Regulator	0.00646	1.006	-2.437**	0.0874	-1.143**	0.319**	
III-State Regulator	(0.329)	(0.332)	(1.052)	(0.0920)	(0.554)	(0.177)	
HS CEO	0.0100	1.010	-1.011	0.364	0.340	1.405	
Misconduct with Local Regulator	(0.637)	(0.644)	(0.728)	(0.265)	(0.750)	(1.055)	
T.,4.,4	-4.616**	0.00989**	-9.710***	6.07e-05***	-4.589**	0.0102**	
Intercept	(2.355)	(0.0233)	(2.915)	(0.000177)	(2.284)	(0.0232)	
Industry FE		Y	Y		Y		
Firm FE		Y	Y		Y		
Punishment FE		Y		Y		Y	
SEC Region FE		Y		Y	Y		
Observations	3	600	3	300		300	
X^2	2	444	49	49449		2185	
(<i>p</i> -value)		0		0		0	
Pseudo R-squared	0.	781	0.975		0.854		

^{***} p<0.01, ** p<0.05, * p<0.1

Panel B: Interaction Between Regulation CEO and Regulator

	Firm P	enalties	Employe	ee Penalties	Prison	Sentences	
Variables	Poisson Coef.	IRR	Poisson Coef.	IRR	Poisson Coef.	IRR	
Home state CEO	0.530*	1.699*	0.00394	1.004	-0.0466	0.954	
During Misconduct	(0.293)	(0.498)	(0.508)	(0.510)	(0.424)	(0.405)	
Home state CEO	-1.032	0.356	1.068*	2.911*	0.207	1.230	
During Regulation	(0.631)	(0.225)	(0.628)	(1.828)	(0.619)	(0.762)	
In State Deculator	-0.545	0.580	-1.859**	0.156**	-0.772	0.462	
In-State Regulator	(0.432)	(0.251)	(0.876)	(0.137)	(0.539)	(0.249)	
HS CEO	1.616**	5.032**	-2.164**	0.115**	-0.464	0.629	
Regulation with Local Regulator	(0.742)	(3.735)	(0.848)	(0.0974)	(0.935)	(0.588)	
T.,4.,4	-3.902**	0.0202**	-9.201***	0.000101***	-4.738**	0.00875**	
Intercept	(1.956)	(0.0395)	(2.787)	(0.000281)	(2.263)	(0.0198)	
Industry FE	•	Y	Y		Y		
Firm FE	•	Y		Y		Y	
Punishment FE	•	Y		Y		Y	
SEC Region FE	•	Y		Y	Y		
Observations	3	00		300	3	300	
X^2	21	27	13	8940	2130		
(<i>p</i> -value)	(0		0		0	
Pseudo R-squared	0.7	789	0	0.975		0.854	

^{***} p<0.01, ** p<0.05, * p<0.1

Table 9: Enforcement Interaction Regression when CEO is Implicated

In this table we present exponential regression results of enforcement outcomes with local interactions between the misconduct CEO and regulation CEO. Panel A tests the interaction with the misconduct CEO, and Panel B tests the regulation CEO. The 107 enforcement actions represent the sample of all S&P 1500 regulatory enforcement actions initiated for financial misrepresentation from 1992-2016 where a regulatory action was commenced, punishment was handed down, the home state of the CEO is identified, and the CEO during misconduct is implicated. Coefficients are listed along with robust standard errors. Total firm penalties in millions of dollars, employee penalties in the same, and total employee prison sentence in months are the dependent variables. ***, **, and * represent significance at 1%, 5%, and 10%, respectively (two-tailed tests).

Panel A: Interaction Between Misconduct CEO and Regulator

-	Firm	Penalties	Employe	e Penalties	Prison Sentences		
Variables	Poisson Coef.	IRR	Poisson Coef.	IRR	Poisson Coef.	IRR	
Home state CEO	-1.064	0.345	-0.290	0.748	2.306	10.04	
During Misconduct	(2.143)	(0.740)	(0.897)	(0.671)	(2.164)	(21.72)	
Home state CEO	0.847	2.332	-1.361*	0.256*	-3.288***	0.0373***	
During Regulation	(0.967)	(2.254)	(0.739)	(0.189)	(0.852)	(0.0318)	
In State Degulator	4.741**	114.5**	-4.535***	0.0107***	-3.934***	0.0196***	
In-State Regulator	(2.289)	(262.2)	(0.896)	(0.00961)	(1.191)	(0.0233)	
Misconduct CEO	0.492	1.635	1.438	4.213	-0.483	0.617	
with Local Reg.	(2.107)	(3.445)	(1.610)	(6.782)	(3.171)	(1.957)	
Same CEO	-0.276	0.759	1.686**	5.397**	3.310**	27.38**	
Throughout	(1.491)	(1.132)	(0.656)	(3.540)	(1.577)	(43.20)	
Intonomi	-17.30***	3.07e-08***	-8.730***	0.00016***	-2.783	0.0618	
Intercept	(5.661)	(1.74e-07)	(3.042)	(0.000492)	(5.933)	(0.367)	
Industry FE		Y	Y		Y		
Firm FE		Y	Y		Y		
Punishment FE		Y	Y		Y		
SEC Region FE		Y	Y		Y		
Observations		107	107		107		
X^2	39	58.88	129	1299.05		339.53	
(p-value)		0		0	0		
Pseudo R-squared	0	.976	0.	982	0.930		

^{***} p<0.01, ** p<0.05, * p<0.1

Panel B: Interaction Between Regulation CEO and Regulator

	Firm 1	Penalties	Employe	ee Penalties	Prison Sentences		
Variables	Poisson Coef.	IRR	Poisson Coef.	IRR	Poisson Coef.	IRR	
Home state CEO	-0.617	0.539	0.197	1.218	2.715**	15.11**	
During Misconduct	(0.778)	(0.419)	(0.395)	(0.481)	(1.382)	(20.88)	
Home state CEO	0.760	2.139	-0.0434	0.958	-2.886**	0.0558**	
During Regulation	(1.490)	(3.189)	(0.700)	(0.670)	(1.227)	(0.0684)	
In-State Regulator	4.759**	116.7**	-3.008***	0.0494***	-3.766**	0.0232**	
III-State Regulator	(1.987)	(231.7)	(0.716)	(0.0354)	(1.856)	(0.0430)	
Reg. CEO with	0.130	1.139	-1.984*	0.138*	-5.324**	0.00487**	
Local Regulator	(1.523)	(1.735)	(1.131)	(0.156)	(2.090)	(0.0102)	
Same CEO	-0.274	0.761	1.959***	7.090***	5.062**	158.0**	
Throughout	(1.464)	(1.113)	(0.521)	(3.697)	(1.968)	(310.8)	
Intonont	-17.54***	2.42e-08***	-7.662***	0.000470***	-1.459	0.233	
Intercept	(5.359)	(1.30e-07)	(2.940)	(0.00138)	(5.396)	(1.255)	
Industry FE		Y	Y		Y		
Firm FE		Y	Y		Y		
Punishment FE		Y	Y		Y		
SEC Region FE		Y	Y		Y		
Observations		107	107		1	107	
X^2	4	312	1650		372		
(<i>p</i> -value)		0	0		0		
Pseudo R-squared	0	.976	0.982		0.935		

^{***} p<0.01, ** p<0.05, * p<0.1

Appendix

A1. Variable Descriptions and Calculations

Table A1: Variable Definitions

This table provides the definitions of the variables used throughout the paper. Panels A and B apply to both the enforcement probability and enforcement outcome analyses. Panel C describes the instrumental variables used to address endogeneity in the enforcement probability. Panels D lists the additional independent variables and the dependent variables for punishment analysis. Panel E lists the punishment control variables to account for factors the SEC and DOJ use for punishment determination. Some definitions provide by (Call, et al., 2017).

Panel A: Enforcement Probability Dependent and Independent Variables

Variable	Definition
Enforce	A dummy variable equal to one for the fiscal year prior to the announcement that a firm is the potential target of a regulatory action that ultimately results in punishment to the firm or individuals.
Home State CEO During Misconduct	A dummy variable equal to one if the CEO has a home state that matches the state of the firm headquarters during the period of financial misrepresentation.
Local Regulator	A dummy variable equal to one if the company is headquartered in one of the nine states with an SEC regional office.
CEO Age	The CEO's age in a given fiscal year.
CEO Cumulative Experience	This variable is calculated using data acquired from Execucomp. The CEO gets one year of credit for every year they appear in Execucomp as a CEO. If Execucomp lists a start date for the CEO prior to its first appearance in the database, the CEO gets credit for this additional time as well.

Panel B: Universal Control Variables

Variable	Definition
Market Capitalization	The natural logarithm of the market value of equity measured in millions of dollars calculated by the share price at the close of the fiscal year times the common shares outstanding.
Market-to-book ratio	The sum of market cap plus total assets minus total debt divided by total assets Winsorized at the 1 st and 99 th percentiles.
Leverage ratio	The sum of current and long-term debt divided by total assets. Winsorized at the 1 st and 99 th percentiles.
Cash to Assets Ratio	Fiscal year end cash and cash equivalents divided by the total assets. Winsorized at the 1st and 99th percentiles.
Net Income Ratio	Annual net income divided by total assets. Winsorized at the 1 st and 99 th percentiles.

Distance to Regulator	The natural logarithm of the distance between the firm's headquarters and the firm's respective SEC regional office.
Blockholder Percentage	The percentage of the firm held by investors that hold more than 5% of the total common stock of the firm.

Panel C: Instrumental Variables

Variable	Definition
Percent Cloudy	The average number of cloudy days in a company's headquarter city per year. Data obtained from NOAA.
Percent Pop. T-36	Relative proportion of the state population to the total United States population 36 years prior to the present fiscal year in the sample.

Panel D: Enforcement Punishment Dependent and Independent Variables

Variable	Definition
Home State CEO During Regulation	A dummy variable is equal to one if the CEO has a home state that matches the state for the firm headquarters during the period of regulation.
Still CEO at Regulation	A dummy variable is equal to one if the CEO is the same CEO across both misconduct and regulation periods.
CEO Implicated	A dummy variable equal to one if the CEO is personally named in the lawsuit.
Firm penalties (\$MM)	The total firm civil and criminal monetary penalties assessed against the firm, its parent and subsidiaries consisting of disgorgement, prejudgment interest, civil fines, criminal restitution, and criminal fines in millions of dollars.
Employee penalties (\$MM)	The total civil and criminal penalties assessed against all employees consisting of disgorgement, prejudgment interest, civil fines, criminal restitution, and criminal fines in millions of dollars.
Prison sentences (mos.)	Total incarceration consisting of jail, prison, home detention, and halfway house in months imposed upon employee respondents named in the enforcement action.

Panel E: Enforcement Outcome Punishment Control Variables

Variable	Definition
Big 4 Auditor	An indicator variable equal to one if the misreporting firm uses Ernst & Yong, Deloitte, KPMG, or Price Waterhouse Cooper as their auditor.
Bribery	An indicator variable equal to one if the enforcement actions include charges under the Foreign Corrupt Practices Act for bribery of a foreign official and zero otherwise.
C-Level Implicated	The natural logarithm of the total number of C-level officers from the firm implicated in the misconduct as identified in either court filings or administrative proceedings.

The natural logarithm of the total number of unique federal statutes and Log Code violations SEC violated by all parties related to each action. An indicator variable equal to one if the administrative release or SEC Cooperation legal filing identifies the party cooperated in the investigation. An indicator variable equal to one if the violation includes an offense for either option backdating, insider trading, or an offense related to an Deterrence offering, IPO, merger, or reverse merger and equal to zero otherwise. An indicator variable equal to one if the firm terminated an executive Executive terminated respondent as a result of the violations and equal to zero otherwise. An indicator variable equal to one if fraud under 15 USC §§ 77q, 78j(b), or Fraud rules promulgated thereunder are included among the charges in the enforcement action. An indicator variable equal to one if regulators acknowledged they were deliberately misled and/or charges were included for lying to investigators Impeded investigation and equal to zero otherwise. An indicator variable equal to one if the violation included violations of 17 CFR 240.13b2-2 that prohibits materially false or misleading statement to Misled auditor an accountant in connection with the preparation of financial statements and zero otherwise. An indicator variable equal to one if the firm was previously the subject of Recidivist a regulatory enforcement action and equal to zero otherwise. An indicator variable equal to one if the violation includes self-dealing such as embezzlement and theft by respondents and equal to zero Self-dealing otherwise. The natural logarithm of the total time the violation occurred in months as Violation period indicated in the regulatory enforcement proceedings.