Motivating Collusion*

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Abstract

We argue that executive compensation contracts can motivate product market collusion. We study two contract features: the use of relative performance benchmarking and the share of equity compensation in managerial pay. Relative performance evaluation is typically used to provide incentives for executives to outperform industry rivals but firms might strategically choose which rivals to consider. Meanwhile, decision makers with shorter horizons might deviate from collusive arrangements, making them unstable, while equity compensation can extend the horizon. We test this for U.S. firms over 2008-2017. Our identification comes from the 2013 decision to close the regional offices of the Department of Justice, which oversees antitrust enforcement. We find that firms located nearby the closed regional offices changed their executive compensation contracts by reducing the relative performance evaluation and extending their horizons.

Keywords: Product Market Collusion; Corporate Governance; Managerial Compensation

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1 Introduction

Firm shareholders adopt various corporate governance mechanisms to motivate the management pursue strategies that increase firm value. As posited by the industrial organization literature, entering into the collusive arrangements with product market peers might be profitable to the firm's shareholders, depending on their discount factors, market conditions, and antitrust enforcement. However, even when shareholders prefer firm to engage in collusion over competitive equilibrium, firm's management might have different incentives. For instance, due to career considerations they might have higher discount factors or stronger reputational concerns than an anonymous marginal investor would. In addition, in the U.S. the management is exposed to the criminal charges if the firm is convicted of the explicit price fixing or the bid rigging conspiracies, while that is not something that a passive investor would be subject to.

Among many corporate governance mechanisms, two particular ones stand out as likely to have an influence on the managerial incentives to enter into the collusive arrangements. First, in the case of product market collusion shareholders as principals might have longer term incentives than their agents, i.e., management. This implies that the management might not be optimally colluding with the peers from the perspective of shareholders. Longer term incentives in terms of the equity compensation might align the interests more closely. Second, managerial performance contracts often include the benchmark group of industry peers and part of their compensation depends on outperforming these benchmark peers. The reliance on such a benchmark group is likely to be different if outperforming the peers is not part of the incentivized performance goals. In other words, the sensitivity of pay to the colluding peer's performance should be less negative.

In this paper, we study managerial contract structures in relationship to changing incentives to enter into collusive arrangements. While antitrust enforcement has been generally strengthening in the U.S. and around the world, we analyze a recent policy change in the U.S. that made such enforcement weaker for some firms. We argue that such weaker en-

forcement has made shareholders more keen to engage in collusive arrangement with local peers. As such intentions are unlikely to be communicated directly[1], the shareholders might change the managerial incentives by increasing equity compensation and reducing the relative performance evaluation based on the peer performance.

We focus on the U.S. firms over 2008-2017. We first look at the anecdotal evidence based on the convicted collusion cases. We examine whether cartel peer firms are mentioned in evaluating relative performance compensation. We distinguish between general compensation benchmark group which is used to determine the general compensation of the executives and is related to the labor market considerations[2] and relative performance evaluation peers which the firm has to outperform for executives to receive additional compensation.

If we consider the years when cartel was active based on the evidence in the antitrust probes, in 20.7% cases the cartel firm mentions at least one of its peers in general compensation benchmarks, however, in only 10.1% cases it mentions cartel peers in relative performance benchmarks. That is, the firm is less likely to add cartel peers in terms of outperformance than in terms of benchmarking general compensation level. This suggests that firms might be strategically excluding the cartel peers in considering that executives should aim to outperform them. If we look at a similar number during the whole sample period, not limited to the cartel period, we find that in 23.5% cases at least one cartel peer is mentioned at some point in firm's relative performance benchmark.

However, just studying the convicted firms might not yield conclusive evidence as non-convicted firms might be engaging in the most profitable and stable cartels. We thus rely on the recent regulatory change that helps us to derive causal evidence. The particular event that we study is the decision in 2013 to close down four regional offices of Department of Justice (DoJ) Antitrust Division: Cleveland, Dallas, Atlanta, and Philadelphia. Among

[1]Major shareholders might be criminally liable in the antitrust probes if they explicitly instruct CEOs to engage in the collusive schemes. A well-known case is the investigation into the alleged price-fixing between Sotheby's and Christie's where Sotheby's CEO Diana Brooks implicated Sotheby's shareholder A. Alfred Taubman. He was fined $7.5m and imprisoned for ten months.

[2]Bizjak et al. (2008) show that the general compensation group provides a benchmark for the overall pay level, which plays an important role in retaining valuable human capital.

other responsibilities, these regional offices were in charge of sourcing information on potential conspiracies in local product markets. In 2013, the decision was made to save costs and focus on larger firms in the economy by transferring the casework of these offices to other offices (primarily to the DoJ main headquarters in Washington, DC). We argue that firms that were operating in these local markets further away from DC experienced a sudden shock in terms of lower expected antitrust compliance.

We then show two pieces of evidence. First, we look at the executive contracts[3] and find that firms nearby the closed regional office are less likely use relative performance evaluation after the event. Specifically, the total compensation of the executives of affected firms starts to depend more positively on the performance of industry rivals that are geographically located close to the firm. This squares opposite from the typical relationship found in the literature that the executive compensation depends negatively on the rival firm performance if the firm is aiming to outperform them (Jayaraman et al. (2018)).

Second, we look at whether the contracts set up longer term incentives. We find that the percentage of equity and option compensation increases for the affected firms in the cases where CEOs have few shares in the firm before the regulatory change. In addition, the CEO wealth-performance sensitivity increases which presumably means that managers are given longer term incentives than before. These findings are consistent with the argument in Spagnolo (2000) that equity-based compensation helps maintaining collusion since the stock market anticipates the future loses from the punishment phases, which is thus reflected in the stock prices.

Importantly, managerial incentive contracts were related to the changes in firms' operating performance. The firms that were exposed to the regulatory change and also had CEOs with high shareholdings or high wealth performance sensitivity experienced an increase in gross profit margins, which is consistent with them having had anti-competitive effects.

[3]We focus on the compensation of CEOs. As discussed by Harrington (2006), cartel decisions are typically taken by the top management to ensure the coordination at different layers of organization (e.g., avoid "overzealous sales representatives" who might share information about the cartel with the firm's customers).

In this paper, we paint a grim view that shareholders might be interested in setting up the incentives to motivate managers to pursue collusive strategies with their peers, and thus hurt consumer welfare. When doing so shareholders as a group or board members who represent them are not giving direct instructions to collude and thus have plausible deniability that the incentives schemes do not reflect this particular product market strategy to maximize profits. In this way, they are not subject to the personal antitrust liability. Our findings raise a public policy dilemma. On the one hand, corporate governance standards require the alignment between the incentives of investors and managers. On the other hand, if long-termist investor behavior facilitates collusion, policies that care about consumer welfare might choose to encourage manager short-termism if that has competitive effects.

Our paper contributes to the literature on how incentive structures affect the strategic interaction of firms in the product market. Theoretical literature has made multiple predictions. The optimal incentive contract depends on both the assumptions on competition environment and the restrictions on contracting space. For instance, while Fershtman and Judd (1987) and Sklivas (1987) show that providing powerful incentives with a bonus scheme is optimal to achieve strategic advantages, Reitman (1993) argues that options provide threats to rivals and thus can lead a higher profit for shareholders. In a dynamic setting, Spagnolo (2000) shows that stock-based compensation helps to sustain collusion while deferred compensation even further increases the regions of collusive equilibria. Moreover, Spagnolo (2005) argues that compensation schemes with income-smoothing and capped bonus plans facilitate product market collusion. Asbtracting from the incentive issues, Bernhardt and Chambers (2006) suggest that collusion is more likely when under uncertain demand firms choose to share profits with employees rather than pay fixed wages.

We contribute by providing empirical evidence on how compensation design adapts to changing incentives in product markets. In particular, our paper makes a contribution by establishing empirical evidence on the evolution of compensation structures in response to an exogenous shock on antitrust enforcement. In this our paper complements Anton et al.

(2018) who show that incentives facilitated through CEOs' wealth-performance-sensitivity are weakened by common ownership that arguably favors less aggressive competition in the product markets. Instead we establish that the need to weaken competition incentives also arises from the expected higher profits under collusive equilibrium.

Our paper is also closely related to the literature on relative performance evaluation. The principal-agent theories (e.g., Holmstrom et al. (1979), Holmstrom (1982), and Nalebuff and Stiglitz (1983)) suggest that managers should be rewarded based on their performance relative to that of their industry peers, which contains information on common shocks to performance that are outside of managers' control. Despite the compelling theoretical prediction, empirical evidence that managerial pay is negatively correlated with peer performance is rather mixed.[4] Aggarwal and Samwick (1999a) propose that the need to soften product market competition generates the optimal contract that has a positive weight on both own and peers' performance. They find supporting evidence of their model prediction that sensitivity of pay to peer performance is increasing in the industry competition degree. More recently, Jayaraman et al. (2018) find supporting evidence for Holmstrom (1982), using the product descriptions in 10-Ks to define peer firms. They also show that the sensitivity of pay to peer performance is weaker when peer firms' products are strategic complements, which is consistent with Aggarwal and Samwick (1999a). Bloomfield (2018) studies how disclosure of relative performance sensitivity commits firms to more aggressive product market behavior. Our paper contributes to this literature by showing that motivating collusion, a specific form of competition weakening, contributes to the relative performance evaluation. By relying on a shock to antitrust enforcement, we are able to identify the impact of strategic weakening of competition on the sensitivity of CEO pay to own-firm and peer-firm performance.

[4]See, e.g., Jensen and Murphy (1990), Gibbons and Murphy (1990), Antle and Smith (1986), Barro and Barro (1990), Janakiraman et al. (1992), Aggarwal and Samwick (1999b).

2 Data and descriptive statistics

Our main data source for CEO compensation is Execucomp. We extract information such as total compensation, fair value of stock and option compensation, and CEO ownership. Since performance benchmarking data is not available from Execucomp, we obtain it from Incentive Lab. We complement the compensation data with stock returns from CRSP and financial data from Compustat. The information on the field offices comes from DoJ Antitrust Division. In particular, we get the case coverage of all field offices before and after the closure of four field offices (Cleveland, Dallas, Atlanta, Philadelphia).

Table 1 shows descriptive statistics of our main variables. The summary statistics show that CEOs hold around 2.4% of shares in the firm on average in the sample.

In all our tests we log-transform our variables. Considering the right skewness of total compensation (Jayaraman et al. (2018)), we take the natural logarithm of total compensation. Similarly, we take natural logarithm of annual returns on the stocks of the firm and its peers. In terms of the estimation of the peer returns, we take the simple average of peers' annual returns in the main tests. In a robustness check, we also consider the value-weighted average of peer returns. Firm size is calculated as the logarithm of total asset of each firm, while the sales growth is the percentage change of the sales from the previous years. The length of CEO tenure comes from Execucomp.

Table 2 displays the argument we make in this paper. This table shows the overlap between the peers who were convicted in the same collusion case and the peers in the compensation scheme. General compensation benchmark refers to the peer group companies that are picked to benchmark overall compensation level for CEO and executives. Faulkender and Yang (2010) find that this compensation benchmark group appears to be comprised of highly paid peers that can be used to justify the general level of the CEO compensation. Bizjak et al. (2008) show that the general compensation group provides a benchmark for the overall pay level, which plays an important role in retaining valuable human capital. Accordingly, if collusion is expected to be profitable, firms would include those cartel peers

as benchmark of CEO compensation so that CEOs can achieve higher remuneration.

On the other hand, relative performance evaluation benchmark refers to the peer firms that the firm needs to outperform for the executives to be eligible for relative performance awards. If the firm intends to collude in the product markets with the peer firms, such peer firms should not be included in the relative performance group as the executives should not be given incentives to outperform them.

We manually name-match 416 firm-cartel-year observations from Connor (2014) to Incentive Lab database. By manual name matching we also capture private firms and non-US firms that might be included in the benchmark peer sets. Table 2 shows that in 86 cases, i.e. 20.78%, at least one cartel peer is included in the compensation peer benchmark but in terms of relative performance benchmark only 42 cartel cases, i.e. 10.1%, have at least one peer. This suggests that cartel peers overlap more with the benchmark firms in general compensation scheme than in relative performance evaluation scheme. If we consider the fraction of the cartel peers appearing in the benchmark sets, the respective averages are 7.8% for general compensation benchmark and 3.7% for relative performance benchmark. The differences between the compensation benchmark and relative performance evaluation benchmark are statistically significant.

This finding is also consistent when instead of matching the firms in the actual period when cartel was active, we match in the entire period of sample. In this way we are able to match 497 cases, suggesting that in 81 cases (=497-416) the relative performance evaluation benchmarks are not available during the years when cartel is active but they are available in the other years.

When we check if the cartel peers as benchmark peers are mentioned including the years when the cartel was not active according to the antitrust cases, we see that that in over half of the cases (252) at least one cartel peer is included in the compensation peer benchmark and 20.25% of peers are mentioned at least in some year. In terms of relative performance benchmark the numbers are lower and a quarter of cartel members (117) mention at least

one of their peers and just 8.09% of peers are mentioned at least once.

3 Identification

Focusing only on the convicted cartel cases might be misleading as convicted cases might not be a representative sample of all collusive arrangements. In particular, firms might put more effort to retain the most profitable collusive arrangements, which then might have fewer whistleblowers or leniency applicants who are often crucial in providing evidence for legal prosecution. We thus turn to describing our identification strategy which exploits a regulatory change that presumably made the collusion in some local markets less costly.

In particular, we rely on the DoJ's decision that reduced firms' expected costs from antitrust investigation and thus changed their trade-off whether to engage in collusive arrangements. In 2013, DoJ closed down four of its seven regional offices (Atlanta, Cleveland, Dallas, and Philadelphia) that dealt with the antitrust enforcement. Some of the regional coverage was relocated to other three offices (Chicago, New York, and San Francisco) but most of it was moved to Washington, DC. This event came purely from the budget cuts but analysts considered that this made it harder for DoJ to police regional cases[5] and instead DoJ started focusing more on the big nation-wide cases.

The change in coverage affected 23 states and territories.[6] After the closure, three remaining field offices (Chicago, New York, and San Francisco) and two additional central offices (Washington Criminal I and II) took over the cases from these states. Figure 1 shows the number of antitrust case filings in the state courts where the field offices are closed over

[5]See, e.g., https://www.cleveland.com/open/2012/01/cleveland_antitrust_office_sho.html, where Cleveland mayor Frank Jackson is quoted saying that "Closing Cleveland's field office will (...) impair the Department of Justice's ability to pursue effective criminal enforcement of antitrust laws" while Assistant Attorney General Ronald Weich responded that DoJ "wants larger concentrations of lawyers in fewer locations so it can investigate more sophisticated bid-rigging and price fixing crimes."

[6]The change affected all cases from Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, New Mexico, North Carolina, Ohio, Oklahoma, Pennsylvania, Puerto Rico, South Carolina, Tennessee, Texas, Virginia, West Virginia, and U.S. Virgin Islands. The change has also affected Eastern judicial district of Michigan and Southern New Jersey. See Table 3 for the list of states covered by the field offices.

the period from 2008 to 2017, suggesting that the number of the antitrust cases in the affected state courts has decreased after the closure of field offices in 2013. The corresponding trend for the antitrust case filings in the state courts where the field offices were closed does not show such a stark drop.

We capture the exposure of the firm to this event by the change of distance to the nearest DoJ field office. To measure the distance from a firm's headquarters and field office, we get their geographic coordinates based on the zip codes. The average change in the distance from the headquarters to the covering field offices, including the firms that did not experience the change in distance, is 185.1 miles. If we focus on the firms that experienced an increase in distance,[7] the mean value of change in distance is 525.5 miles.[8]

In addition, we focus on those firms that have peer firms in the same industry based on Hoberg-Phillips classification (Hoberg and Phillips, 2016) and these peer firms are also headquartered within 400 mile radius (*local peers*). We argue that only the firms with local peers will be affected by this regulatory change, since the interstate collusive schemes are less likely to have been covered by the regional antitrust offices. Our *treated* group of firms is thus comprised of those that experienced those that experienced an increase in distance to the closest antitrust office and had local peer firms. The *control* group of firms is then comprised of those that are located in the states which were not affected by the change or were affected by the change but did not have local peer firms within 400 mile radius.

Before moving to the main analysis, we compare treated and control firms. Table 4 shows that the differences between firms in treated and untreated groups are mostly not statistically significant, except for two firm characteristics: size and sales growth. We also estimate a regression where the treated dummy is regressed on the firm characteristics such as total executive compensation, firm return, peer firm return, size, sales growth, tenure, shares owned by CEO, net stock acquired by CEO, % of option granted and the ratio of

[7]For a small number of firms the distance to the governing office got closer. These are not defined as treated in our analysis.

[8]In unreported tests we consider that only the change in distance of over 100 miles is material. The qualitative results do not change.

realized and intrinsic value of option) and find that none of the variables significantly explain the treated dummy.

4 Empirical results

Our empirical analysis tests whether the DoJ policy change of closing regional offices has had an effect on the CEO compensation arrangements. Even with low antitrust enforcement, shareholder and managerial incentives could differ, among other reasons if managers have strong career and reputational concerns or shorter horizons due to eventual retirement. In such cases, managers might prefer to focus on shorter-term performance and this increases the appeal of deviations from the collusive schemes.

However, if shareholder and manager discount factors differ, shareholders could increase the alignment of incentives by tying the CEO compensation more positively to the peer firm performance, and increasing the equity compensation in general (Spagnolo, 2000). That is especially true for higher-ability CEOs who would otherwise outperform rivals and could achieve better outcomes in the labor markets, thus high equity pay is required for retaining talent and stabilizing collusion. In addition, firms might want to increase profit sharing to signal to peer firms their commitment to collusion (Bernhardt and Chambers, 2006).

We separately provide the results on the relative performance sensitivity and on equity compensation.

4.1 Relative performance sensitivity

We first investigate whether firms change the sensitivity of CEO pay to own-firm and peer-firm performance after the regulatory change. Theory literature has discussed that rewarding CEOs based on their performance relative to that of peers can help to align incentives, since relative performance benchmarking filters out the common shocks to performance that are out of CEOs' control (e.g., Holmstrom (1982)). Empirical studies have also provided sup-

porting evidence that CEO pay is on average positively associated with own performance and negatively related to peer performance (e.g., Jayaraman et al. (2018)). On the other hand, it has also been recognized that a powerful incentive scheme facilitated by relative performance evaluation can encourage over-aggressive strategies in the product market competition, which may reduce profitability and shareholder value (e.g., Aggarwal and Samwick (1999a); Bloomfield (2018)).

After the closure of the regional DoJ offices, the expected profits of collusion have increased for the shareholders. If shareholders were interested to weaken product market competition, the firms should have reduced the usage of relative performance evaluation. Specifically, CEO compensation should have become more positively related to peer-firm performance and relatively less positively related to own-firm performance. This should have held even more so for local peers given that an important responsibility of the regional DoJ offices was to source information on the local market conspiracies and thus their closure could have increased collusion among the local firms. In other words, CEO pay should have become more positively sensitive to the performance of the local firms in the same industry.

One way to explore this would be to examine the benchmark peer groups, as we did in Table 2. However, explicitly mentioned peer groups might be incomplete. Moreover, large part of the CEO compensation is in the form of discretionary awards (De Angelis and Grinstein, 2015) and firms can implement the strategic compensation contracts based on the subjective discretion of the board rather than commit to an explicit contract. We thus rely on the implicit test by looking whether the CEO's total compensation becomes more or less sensitive to the local peer firm performance.

To test this conjecture, we follow the empirical specification which is widely used in prior studies on relative performance evaluation (e.g., Jayaraman et al. (2018), Albuquerque (2009), Gibbons and Murphy (1990)) where we check whether CEO compensation is sensitive to the performance of own-firm stock returns and local peer-firm stock returns. Following the literature, we focus on the stock returns as the measure of the firm performance, not

least since in our context stock returns take into account the short-term firm performance but also all future returns to the shareholders from the collusive schemes.

In particular, we are interested if the sensitivity to the stock price performance has changed after the closure of DoJ offices. We thus estimate the following difference-in-differences specification:

$$ln(TotalCompensation_t) = \beta_1 \cdot N + \beta_2 \cdot T + \beta_3 \cdot \Psi + \beta_4 \cdot X_{i,t} + \tau_t + \gamma_i + \epsilon_{i,t} \qquad (1)$$

where,

$$\begin{aligned} N &= [Post_t, \Delta Distance_i, Post_t \cdot \Delta Distance_i] \\ T &= [Return_{i,t}, Post_t \cdot Return_{i,t}, \Delta Distance_i \cdot Return_{i,t}, \\ &\quad Post_t \cdot \Delta Distance \cdot Return_{i,t}] \\ \Psi &= [PeerReturn_{i,t}, Post_t \cdot PeerReturn_{i,t}, \Delta Distance_i \cdot PeerReturn_{i,t}, \\ &\quad Post_t \cdot \Delta Distance \cdot PeerReturn_{i,t}] \end{aligned}$$

where β_1, β_2, and β_3 refer to the vector of coefficients for each variable vector, respectively. $Post_t$ refers to the post dummy which is equal to one for years on or after 2013. $\Delta Distance_i$ refers to the logarithm of change in distance to field office before and after the closure of the four field offices. This variable is zero for the firms whose covering field offices does not change or the distance to new field office is closer than before. $\Delta Distance_i$ captures firms' exposure to the exogenous shock, and so β_1 reflects the changes in CEO pay level for the treated and control groups in response to the regulatory change.

$Return_{i,t}$ refers to the firm i's own stock market return in year t, while $PeerReturn_{i,t}$ refers to the average stock market return of firms that are classified to be peers according to the Hoberg-Phillips industry groups and headquartered within 400 miles from firm i. $X_{i,t}$ refers to firm i's characteristics in year t, which includes firm size, sales growth, and CEO tenure. τ_t and γ_i refer to year- and firm-fixed effects. Standard errors are clustered at the

state level.

In this specification, the coefficient for $Post_t \times \Delta Distance \times Return_{i,t}$ and $Post_t \times \Delta Distance \times PeerReturn_{i,t}$ are the main coefficients of interest. The coefficient on $Post_t \times \Delta Distance \times Return_{i,t}$ shows the sensitivity of pay to own performance before and after the firm has fewer antitrust constraints to form collusive arrangements as compared to other firms that do not face the change in such constraints. To form a stable collusive arrangement, the firms are expected to align the incentives of CEO to the stream of future profits rather than the current profits. This long-term alignment of CEO wealth and firm value allows CEOs not to deviate from the collusion by undercutting the rivals in the short-term and increasing the profits at the cost of long term value. Therefore, we expect the sensitivity of pay to own performance to be negative or non-positive after the shock compared to the firms that are not treated.

The second estimate we focus on is $Post_t \times \Delta Distance \times PeerReturn_{i,t}$ which reflects the performance sensitivity of CEO compensation to performance of peer firms who have incentive to collude with before and after the closure of field offices compared to untreated firms. If firms do not have incentive to outperform peer firms, the performance sensitivity on peer firms' performance would be less negative or positive. Therefore, the previous relative performance evaluation attenuates when the firms get larger incentives to collude.

Table 5 shows the estimation results. We start with the pay-for-performance sensitivity with respect to the firms' own performance in column (1). As expected, the coefficient on $Post_t \times \Delta Distance \times Return_{i,t}$ is negative and significant at 1% level. In economic terms, CEO compensation decreases around 0.066% (around $3,775 on average) by the increase in stock return by 1% when the distance to new field office increases by 1% compared to the firms whose field offices do not change. Consistent with the positive performance sensitivity from the previous literature (Jayaraman et al. (2018)), the coefficient of $Return_{i,t}$ and its interactions with indicators are positive. This evidence supports the argument that the reduced disincentive of collusion induced longer-term incentive alignment of CEO and firm

value.

More importantly, the coefficient on $Post_t \times \Delta Distance \times PeerReturn_{i,t}$ is positive and significant at 1% level. In economic terms, CEO compensation increases around 0.065% (around $3,718 on average) by 1% increase of peer firms' stock market return when distance to new field office increases by 1% compared to the firm whose field offices do not change. Consistent with the original relative performance evaluation theory, the coefficient of $PeerReturn_{i,t}$ and its interactions with indicators are negative. This evidence supports the argument that the lower expected antitrust enforcement against collusion reduced the incentive for the firms to outperform peer firms with whom they have a possibility of colluding in the product markets.

In column (2) of Table 5, we repeat the analysis but now we also control for the national industry trends by including year × SIC 2-digit industry fixed effects. In this specification we are thus comparing treated and control firms in the same year and in the same industry, thus we take into account any common industry trends that could be related to the disincentives of competition. The coefficient of $Post_t \times \Delta Distance \times Return_{i,t}$ remains negative and statistically significant and the coefficient of $Post_t \times \Delta Distance \times PeerReturn_{i,t}$ remains positive and statistically significant. Including these additional fixed effects only slightly changes the magnitude of the coefficients of interest.

Given that a large part of the CEO compensation is in the form of discretionary awards (De Angelis and Grinstein, 2015), we further separate the total compensation into cash compensation (i.e., salary and bonus) which is more likely to be discretionary and equity compensation which is less likely to be an outcome of the relative performance evaluation. In columns (3)-(4) we report the same specification as columns (1)-(2) but here we have cash compensation as the outcome variable. Instead in columns (5)-(6) we report these specifications where equity compensation is the outcome variable. We see that indeed the effect is driven by the cash compensation, while the effect on equity compensation, which is less likely to be a result of relative performance evaluation, is not significant.

The previous analysis has linked CEO compensation to the average performance of peer firms, controlling for the industry trends. We further perform the analysis at the firm-pair level and we aim to control for the richer set of fixed effects and estimate the effects separately for the local and non-local peers. In particular, at the firm level, we are able to control for the pair-fixed effects, thus taking into account any non-time-varying relationship between the focal and the peer firms. In addition, we can control for the peer firm $\times$ year fixed effects and thus remove any particular time trends at the peer firm level.

We report the specifications in Table 6. In column (1), we report the specification with year, focal firm, and peer firm fixed effects. In column (2), we report the specification with year, focal firm, and peer firm $\times$ year fixed effects. In column (3), we instead have pair fixed effects. Across all specification we see that the attenuating effect of relative performance evaluation is strongest with respect to the local peer firms where the incentives for collusion following DoJ changes are likely would have been strongest. In Table IA1 we split the CEO compensation into the cash compensation and equity compensation and across all specifications we see that the effect is driven by the cash compensation which is more likely to be an outcome of the relative performance evaluation.

Table IA2 provides robustness tests where we define the peer groups differently. We separately look at the cases where we define peers as being classified in the same SIC3 industry rather than according to Hoberg-Phillips classification. We also vary the definition of being local by providing the specifications separately being headquartered in the same state; being located within 100 miles; and being located within 400 miles.

4.2 Equity compensation

After establishing that the relative performance evaluation gets attenuated when the expected costs of collusion decrease, we look at the other components of the CEO compensation that could be affected by the changing incentives to collude. In particular, more profit sharing and in particular stock compensation can align the incentives between principals and

agents in facilitating collusion (Spagnolo, 2000; Bernhardt and Chambers, 2006).

We explore such incentive alignment by looking at the changes in CEO's wealth performance sensitivity after the regulatory change of antitrust enforcement (Edmans et al., 2008; Anton et al., 2018).[9] Since the wealth-performance-sensitivity captures the change in CEO's total wealth for a percent of change in shareholder value, it takes into account the overall alignment of CEO wealth to shareholder incentives. To test this conjecture, we conduct the following test:

$$\begin{aligned} Ln(\omega_{i,t,k}) = \beta_1 \cdot Post_t \cdot Ln(\Delta Distance_i) + \beta_2 \cdot LocalDummy_i + \beta_3 \cdot LocalDummy_i \cdot Post_t \\ + \beta_4 \cdot LocalDummy_i \cdot Ln(\Delta Distance_i) + \beta_5 \cdot LocalDummy_i \cdot Post_t \cdot Ln(\Delta Distance_i) \\ + \beta_6 \cdot X_{i,t} + \tau_{tk} + \gamma_i + \epsilon_{i,t} \end{aligned}$$

$\omega_{i,t}$ here represents the wealth-performance sensitivity. We control for the firm fixed effects γ_i and 2-digit SIC industry x year fixed effects τ_{tk}, following Edmans et al. (2008), and cluster standard errors at the state level.

Under this specification, β_1 captures the difference-in-differences effect for the firms without local peers (i.e., there are no other firms in the same Hoberg-Phillips industry k and within 400 miles of headquarters). It estimates the elasticity of the wealth $\omega_{i,t}$ to the changes in the distance to the nearest DoJ office in response to the regulatory change in 2013. As illustrated before, the closure of regional DoJ office should mainly affect the strategic interactions among the local firms. Thus, we expect a more profound effect for the firms that have local peers. This effect is captured by the coefficient of β_5.

In Table 7, we report the regression results of wealth-performance-sensitivity. The evidence suggests that the overall alignment of CEO with shareholders increases for the firms that are more exposed to the shock on antitrust enforcement. This effect is more profound

[9]The majority of a CEO's stake in the firm comes from the equity compensation granted before (as oppose to in the current year) and still held by the CEO, so looking at the wealth-performance-sensitivity is more comprehensive than capturing the annual flow of grants of stocks or options (Edmans et al., 2008).

for the firms with local peers, confirming underlying channel is the weakening of antitrust enforcement in the local product market.

As pointed out by Edmans et al. (2008), CEOs' wealth-performance-sensitivity is determined by two components, their existing holding of stocks (which is mainly subject to the manager's decision to hold or sell) and the annual flows of equity compensation (which is mainly determined by the board on behalf of shareholders). In our context, it is important to understand which component is more sensitive to the shock. If shareholders have actively made changes to compensation structures in response to the shock, the result should be at least partially driven by the annual flows of equity compensation. On the other hand, if the managers expect a greater profitability from collusion, they may choose to hold onto their existing stocks for a longer period, making the first component also relevant.

To further investigate, we conduct two additional sets of analysis. First, we estimate the incentives provided by the new grants of equity compensation by taking the ratio between total fair value of stock and option compensation and the stock price of fiscal year end.[10] This measure broadly captures the total number of shares granted through incentive plans and pseudo shares underlying the option grants.[11] We estimate regressions of this measure following the previous specification, the results of which are reported in Table 8. In the first column, we report the results in the full sample and find β_5 is statistically insignificant. However, when we split the sample according to whether the CEO had high or low share holding in 2012, we find β_5 to be significantly positive in the low-holding sub-sample. This suggests that the board actively grants more equity compensation to the CEOs who have not already held large stakes in the firm. Second, we conduct a similar sub-sample analysis for wealth-performance-sensitivity, reported in the last two columns of Table 7. In contrast to new share grants, the result of wealth-performance sensitivity is stronger in the high-holding sub-sample, which evidences that CEOs with large stakes in firm choose to hold onto their

[10]This is a conservative estimation, since the incentive effect of option compensation should be the underlying delta, which is usually higher than the grant-date fair value scaled by stock price.

[11]By "pseudo shares" we mean the equivalent number of shares if the same value of stock compensation were granted to replace the options.

shares expecting better a profitability from collusion.

4.3 Incentive alignment and profitability

Successful collusion should be associated with higher profit margins. In this section, we examine whether there is indeed an increase in profit margins for the firms experiencing the exogenous weakening of antitrust enforcement. We are particularly interested in differentiated changes of profitability for firms with different levels of alignment between CEO and shareholders. As argued before, we expect that incentives for collusion are higher for the CEO, if they retain a large stake in the firm.

Using the following specification, we estimate regressions of the next-period gross margins and report the results in Table 9:

$$ProfitMargin_{i,t+1} = \beta_1 \cdot Post_t \cdot \Delta Distance_i + \beta_2 \cdot \omega_{i,t} + \beta_3 \cdot Post_t \cdot \omega_{i,t} + \beta_4 \cdot \Delta Distance_i \cdot \omega_{i,t} + \beta_5 \cdot Post_t \cdot \Delta Distance_i \cdot \omega_{i,t} + \beta_6 \cdot X_{i,t} + \tau_t + \gamma_i + \epsilon_{i,t}$$

$\omega_{i,t}$ here represents the measures for incentive alignment, which are the wealth-performance sensitive and CEO ownership in the firm. Following the same intuition as the previous section, β_5 is the coefficient of our interest. It captures the incremental changes in profit margin for firms experiencing the shock, if their CEOs are better aligned with shareholders.

As shown in Table 9, β_5 is significantly positive for both wealth-performance-sensitivity and CEO ownership. This confirms that the shock has induced a greater increase in profit margin for the firms whose CEOs have a larger stake in the firms. Further, we split the sample according to whether or not the firm has a local peer. We find that the positively significant β_5 is only concentrated in the sub-sample of firms with local peers, which confirms that the underlying channel of shock is to weaken antitrust enforcement among local firms.

4.4 Placebo tests

One concern with our difference-in-differences setting is that the results may be driven by the general trends in the pre-shock period. If this is the case, we should find similar results during the pre-treatment period. To address this concern, we conduct a placebo test by defining the post-shock period as the years since 2010, and adjusting sample period from 2007 to 2012 according. We then perform same estimations as before by interacting this placebo period dummy with the change in distance for each firm to the nearest antitrust field office, and the presence of a local peer.

In Table IA3, Table IA4, Table IA5, and Table IA6, we report such placebo test results corresponding to Table 5, Table 7, Table 8, and Table 9. We do not find that the results are statistically significant if we consider a placebo year instead of the actual year when the antitrust field office reform was implemented.

5 Conclusion

In this paper we study the relationship between managerial incentives schemes and collusion in the product markets. We explore the decision by the Department of Justice to close down its four regional offices in 2013, which affected antitrust enforcement of regional collusion cases and thus made collusion a more attractive strategic choice to the affected firms' shareholders.

We study whether executive compensation contracts changed accordingly. First, we look at the relative performance evaluation, which is typically used to provide incentives for executives to outperform industry rivals. We find that affected firms reduced incentives by limiting relative performance evaluation after this regulatory change. Second, decision makers with shorter horizons might deviate from collusive arrangements, making them unstable. We find that after the closure of regional offices, affected firms increased the fraction of equity compensation component in total compensation, which effectively extended the hori-

zon of managerial contracts. We find that firms which adjust executive incentive schemes experience better product market outcomes in terms of profitability.

These results raise cautionary corporate governance implications. In the absence of antitrust enforcement, aligning incentives of investors and managers might reduce consumer welfare.

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Table 1: Summary statistics

Panel A: Execucomp summary statistics

	N	Mean	STD	Q1	Median	Q3
Total Compensation$_t$(\$ thousand)	11458	5721.78	5792.29	1889.27	4001.14	7479.22
Ln(Total Compensation)$_t$	11458	8.192	1.072	7.544	8.295	8.920
ΔDistance$_t$	11458	0.546	0.907	0	0	0.953
Ln(Firm Return)$_t$	11458	0.0642	0.427	-0.106	0.111	0.298
Ln(Local Peer Firm Return)$_t$	5467	0.088	0.362	-0.052	0.123	0.301
Size$_{t-1}$	11458	7.875	1.815	6.580	7.768	9.013
Sales Growth$_{t-1}$	11458	0.0827	0.280	-0.0286	0.0514	0.143
Ln(Firm Return)$_{t-1}$	11290	0.0518	0.430	-0.130	0.0961	0.291
Ln(Tenure)$_t$	11458	1.790	0.896	1.099	1.792	2.485
% Shares owned$_t$	10637	2.411	5.215	0.226	0.692	1.971
Number of option and plan-based share grants$_t$	11458	3.687	1.881	0	3.029	4.935
WPS$_t$	10399	1.999	1.293	0.013	1.783	2.491
Gross profit margin$_t$	11458	41.374	25.438	23.459	37.822	58.187

Panel B: Summary statistics of Incentive Lab matched to Execucomp

	N	Mean	STD	Q1	Median	Q3
Post	8592	0.407	0.491	0	0	1
ΔDistance$_i$	7618	0.538	0.903	0	0	0.947
Size$_t$	8436	2.225	1.649	1.261	2.272	3.353
Book Leverage$_t$	8475	0.268	0.207	0.112	0.238	0.384
Sales Growth$_t$	8451	0.0723	0.197	-0.0183	0.0547	0.136
ROA	8469	0.0568	0.0826	0.0155	0.0496	0.0964
Firm Return$_{t-1}$	8256	0.133	0.394	-0.0910	0.107	0.312
Ln(Tenure)$_t$	8184	1.778	0.841	1.099	1.792	2.398

Notes: Total Compensation is comprised of salary, bonus, non-equity incentive plan compensation, grant-date fair value of option awards, grant-date fair value of stock awards, deferred compensation earnings reported as compensation, and other compensation from Execucomp. ΔDistance is the logarithm of one plus difference between the geographical distances between headquarter of a firm and an antitrust office which governs the area where the headquarter is located before and after the closure of four field offices (Atlanta, Cleveland, Dallas and Philadelphia) divided by a 100. Ln(Firm Return) refers to natural logarithm of one plus annual stock market return of a firm, which is measured as combination of 12 monthly returns minus one. Ln(Local Peer Firm Return) refers to natural logarithm of one plus the average annual stock market return of firms who are with the same state-level location and 3-digit SIC code. Size is natural logarithm of one plus total asset. Sales Growth is the ratio of current year sales minus previous year sales and previous year sales. Tenure is the years since the executives assume their CEO position in the firm from Execucomp. Number of option and plan-based share grants refer to logarithm value of the grant date fair value of plan-based shares divided by the end of fiscal year stock price plus the number of options grants in a year. WPS refers to logarithm of the dollar change in wealth for a percentage change in firm value, divided by annual pay (Edmans et al. (2008)). Gross profit margin refers to the percentage of revenue minus cost of good sold and revenue. All the variables are winsorized at the 0.5% and 99.5% levels. Data spans from 2008 to 2017.

Table 2: Benchmark groups

	At least one peer	Fraction peers	N
	Overlap at the time of cartel		
General compensation benchmark	86	20.67%	7.81%	416
Relative performance evaluation benchmark	42	10.09%	3.67%	416
Difference	42	10.58%***	4.13%***	416
		(5.8033)	(4.8382)	
	Overlap over the entire sample period			
General compensation benchmark	252	50.70%	20.25%	497
Relative performance evaluation benchmark	117	23.54%	8.09%	497
Difference	135	27.16%***	12.26%***	497
		(12.0951)	(10.3174)	

Notes: This table shows the overlapping number of cartel peers and peer firms who are included in compensation benchmarks. The list of firms who are in compensation benchmarks are from Incentive Lab. The cartel cases are from Connor (2014). General compensation benchmark refers to peer group constituent companies for the peer group used to benchmark general compensation for the CEO and executives as disclosed in proxy documents (CompPeer). Relative performance evaluation benchmark refers to peer group constituent companies for relative performance awards benchmarked against a peer group and as disclosed in proxy documents (GpbaRelPeer). T-statistics for the differences are reported in the brackets.

Table 3: States covered by Antitrust Division field offices

Field office	States covered by the field offices
Atlanta	Alabama, Florida, Georgia,Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, U.S. Virgin Islands
Chicago	Colorado, Illinois, Indiana, Iowa, Kansas, West District of Michigan, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, Wisconsin
Cleveland	Kentucky, Eastern District of Michigan, Ohio, West Virginia
Dallas	Texas, Oklahoma, Louisiana, New Mexico, Arkansas
New York	Connecticut, Maine, Massachusetts, New Hampshire, Northern New Jersey, New York, Rhode Island, Vermont
Philadelphia	Delaware, Maryland, Southern New Jersey, Pennsylvania, Virginia
San Francisco	Alaska, Arizona, California, Hawaii, Idaho, Montana, Nevada, Oregon, Utah, Washington, Wyoming

Notes: This table shows the state coverage of field offices in the US before the closure of four field offices (Atlanta, Cleveland, Dallas, Philadelphia) in 2013. After the closure 23 states and territories are affected. The data comes from Antitrust Division's April 2001 Report to the Chairman, Subcommittee on Administrative Oversight and the Courts, Committee on the Judiciary United States Senate, available at https://www.gao.gov/assets/240/231337.pdf.

Table 4: Validity check

	Untreated	Treated	T-stat
Total Compensation$_t$	5303	5075	1.629
Log(Total Compensation)$_t$	8.062	8.103	-1.496
Firm Return$_t$	0.0685	0.0781	-0.810
Firm Return$_{t-1}$	0.00340	0.0146	-0.937
Peer Firm Return$_t$	0.0463	0.0377	1.184
Peer Firm Return$_t$(if a firm has peer)	0.0934	0.0894	0.254
Sales growth$_{t-1}$	0.102	0.0815	2.667
Size$_{t-1}$	7.665	7.898	-5.082
Log(1+CEO Tenure)$_t$	1.776	1.807	-1.376
Number of option and plan-based shares$_t$	3.643	3.660	-0.366
WPS$_t$	2.049	1.988	1.88
Gross profit margin$_t$	42.535	36.883	9.246

Notes: This table shows the random distribution of firm in treated and untreated groups before the year of field office closure in 2013. Untreated refers to the groups of firms whose governing field offices do not change or got closer than before in 2013. Treated refers to the the groups of firms whose governing field offices became further than before in 2013. Total Compensation is comprised of salary, bonus, non-equity incentive plan compensation, grant-date fair value of option awards, grant-date fair value of stock awards, deferred compensation earnings reported as compensation, and other compensation from Execucomp. Firm Return refers to natural logarithm of one plus annual stock market return of a firm, which is measured as combination of 12 monthly returns minus one. Peer Firm Return refers to natural logarithm of one plus the average annual stock market return of firms who are with the same state-level location and 3-digit SIC code. Size is natural logarithm of one plus total asset. Sales Growth is the ratio of current year sales minus previous year sales and previous year sales. Tenure is the years since the executives assume their CEO position in the firm from Execucomp. Number of option and plan-based share grants refer to logarithm value of the grant date fair value of plan-based shares divided by the end of fiscal year stock price plus the number of options grants in a year. WPS refers to logarithm of the dollar change in wealth for a percentage change in firm value, divided by annual pay (Edmans et al. (2008)). Gross profit margin refers to the percentage of revenue minus cost of good sold and revenue. All the variables are winsorized at the 0.5% and 99.5% levels. Data spans from 2008 to 2012.

Table 5: Peer performance sensitivity

	Ln(1+Total Compensation)		Ln(1+Cash Compensation)		Ln(1+Equity Compensation)	
	(1)	(2)	(3)	(4)	(5)	(6)
Δ Distance x Post x Return	-0.021***	-0.018***	-0.018***	-0.016***	-0.044*	-0.024
	(0.003)	(0.004)	(0.005)	(0.005)	(0.024)	(0.025)
Δ Distance x Post x Peer return	0.031**	0.029*	0.041**	0.038***	0.033	0.008
	(0.012)	(0.015)	(0.018)	(0.012)	(0.043)	(0.057)
Δ Distance x Post	0.005*	0.004	0.001	0.003	0.002	-0.003
	(0.003)	(0.003)	(0.003)	(0.006)	(0.011)	(0.013)
Return	0.086***	0.080***	0.173***	0.157***	-0.046	-0.000
	(0.020)	(0.019)	(0.020)	(0.020)	(0.097)	(0.093)
Δ Distance x Return	0.002	0.000	0.002	-0.001	0.004	-0.000
	(0.003)	(0.004)	(0.003)	(0.002)	(0.025)	(0.025)
Post x Return	0.185***	0.174***	0.253***	0.252***	0.353***	0.242**
	(0.025)	(0.025)	(0.034)	(0.033)	(0.093)	(0.110)
Peer return	0.095	0.105	0.135	0.132	0.200	0.150
	(0.092)	(0.078)	(0.115)	(0.079)	(0.329)	(0.357)
Δ Distance x Peer return	-0.017	-0.013	-0.034***	-0.027***	-0.010	0.019
	(0.010)	(0.010)	(0.013)	(0.009)	(0.040)	(0.042)
Post x Peer return	-0.167	-0.176	-0.148	-0.178	-0.378	-0.348
	(0.114)	(0.121)	(0.173)	(0.113)	(0.399)	(0.492)
Local dummy	0.020	0.038	-0.001	0.036	-0.099	-0.025
	(0.071)	(0.083)	(0.100)	(0.103)	(0.231)	(0.275)
Local dummy x Δ Distance	-0.001	-0.000	0.002	0.007	-0.020	-0.033
	(0.008)	(0.009)	(0.011)	(0.012)	(0.025)	(0.030)
Local dummy x Post	-0.008	-0.030	0.110	0.065	0.210	0.067
	(0.057)	(0.058)	(0.142)	(0.157)	(0.221)	(0.243)
Local dummy x Δ Distance x Post	-0.005	-0.003	-0.012	-0.015	-0.026	-0.007
	(0.006)	(0.007)	(0.015)	(0.017)	(0.023)	(0.027)
Size_{t-1}	0.253***	0.257***	0.103***	0.103***	0.592***	0.608***
	(0.022)	(0.024)	(0.030)	(0.033)	(0.080)	(0.090)
$\text{Sales Growth}_{t-1}$	0.105***	0.088***	0.122***	0.098***	0.138	0.169
	(0.030)	(0.026)	(0.030)	(0.028)	(0.115)	(0.113)
$\text{Ln(1+Tenure)}_{t-1}$	0.040***	0.038***	0.074***	0.072***	-0.142***	-0.151***
	(0.011)	(0.011)	(0.012)	(0.014)	(0.045)	(0.049)
Adjusted R-squared	0.797	0.810	0.748	0.766	0.584	0.607
Observations	11079	11038	11079	11038	11079	11038
Year FE	YES	NO	YES	NO	YES	NO
Firm FE	YES	YES	YES	YES	YES	YES
SIC2xYear FE	NO	YES	NO	YES	NO	YES

Notes: The dependent variables are the logarithm of different compensation metrics from Execucomp. In columns (1)-(2), the dependent variables are total compensation (TDC1). In columns (3)-(4), the dependent variables are cash compensation. In columns (5)-(6), the dependent variables are equity-based compensation. Post is a dummy variable which is one if the year is on or after 2013 or zero otherwise. ΔDistance is the logarithm of one plus change in geographical distance between headquarter of a firm and an governing antitrust office before and after the closure of four field offices (Atlanta, Cleveland, Dallas and Philadelphia) divided by a 100. Return refers to logarithm of one plus annual stock market return. Peer Return refers to logarithm of one plus the average annual stock market return of firms who are headquartered within 400 miles from the focal firm and are classified to be in the Hoberg-Phillips industry. Local dummy is an indicator for the presence of firms with peer firms headquartered within 400 miles from the focal firm and are classified to be in the Hoberg-Phillips industry. Size is logarithm of one plus total asset. Sales Growth is the ratio of current year sales minus previous year sales and previous year sales. Tenure is the years since the executives assume their CEO position in the firm from Execucomp. SIC2XYear FE is joint fixed effect between year and industry with the same 2-digit SIC code. All the variables are winsorized at the 0.5% and 99.5% levels. The data spans from 2008 to 2017. Standard errors are clustered at the state level. Robust t-statistics are in parentheses.

Table 6: Pair-Wise Regression

	Ln(1+Total Compensation)		
	(1)	(2)	(3)
Peer return x Local dummy x Post x Δ Distance	0.014**	0.020*	0.014*
	(0.007)	(0.010)	(0.008)
Δ Distance x Post	0.000	-0.003	-0.001
	(0.003)	(0.004)	(0.004)
Peer return	-0.006		-0.008
	(0.016)		(0.020)
Peer return x Local dummy	0.052	0.093	0.078
	(0.060)	(0.058)	(0.068)
Peer return x Δ Distance	0.001	0.002	-0.000
	(0.003)	(0.003)	(0.004)
Peer return x Post	0.049***		0.047**
	(0.018)		(0.020)
Peer return x Local dummy x Δ Distance	-0.011*	-0.014*	-0.015**
	(0.006)	(0.007)	(0.007)
Peer return x Local dummy x Post	-0.055	-0.131	-0.049
	(0.073)	(0.084)	(0.079)
Peer return x Post x Δ Distance	-0.009***	-0.007*	-0.007*
	(0.003)	(0.004)	(0.004)
Local dummy	0.016	0.036	
	(0.029)	(0.034)	
Local dummy x Δ Distance	-0.001	-0.006	
	(0.004)	(0.005)	
Local dummy x Post	-0.061	-0.081	-0.082
	(0.049)	(0.055)	(0.057)
Local dummy x Post x Δ Distance	0.006	0.011	0.004
	(0.007)	(0.008)	(0.008)
Return	0.121***	0.106***	0.107***
	(0.021)	(0.020)	(0.022)
Size_{t-1}	0.277***	0.264***	0.249***
	(0.034)	(0.032)	(0.040)
$\text{Sales Growth}_{t-1}$	0.040	0.041	0.039
	(0.039)	(0.040)	(0.033)
$\text{Ln(1+Tenure)}_{t-1}$	0.040**	0.031**	0.042*
	(0.018)	(0.015)	(0.023)
Adjusted R-squared	0.814	0.840	0.843
Observations	70859	68892	64068
Year FE	YES	YES	NO
Firm FE	YES	YES	YES
Pair(focal & peer) FE	NO	NO	YES
Peer FE	YES	NO	NO
PeerxYear FE	NO	NO	YES

Notes: The dependent variable is the logarithm of total compensation (TDC1) from Execucomp. Post is a dummy variable which is one if the year is on or after 2013 or zero otherwise. ΔDistance is the logarithm of one plus change in geographical distance between headquarter of a firm and an governing antitrust office before and after the closure of four field offices (Atlanta, Cleveland, Dallas and Philadelphia) divided by a 100. Return refers to logarithm of one plus annual stock market return. Peer Return refers to logarithm of one plus the average annual stock market return of firms that are classified to be in the Hoberg-Phillips industry. Local dummy is an indicator for the presence of firms with peer firms headquartered within 400 miles from the focal firm. Size is logarithm of one plus total asset. Sales Growth is the ratio of current year sales minus previous year sales and previous year sales. Tenure is the years since the executives assume their CEO position in the firm from Execucomp. PeerXYear FE is joint fixed effect between year and a particular peer firm. PairXYear FE is joint fixed effect between the focal firm and a particular peer firm. All the variables are winsorized at the 0.5% and 99.5% levels. The data spans from 2008 to 2017. Standard errors are clustered at the state level. Robust t-statistics are in parentheses.

Table 7: Wealth performance sensitivity

	Wealth-performance-sensitivity		
Sample	*Full*	*High*	*Low*
		CEO Own% 2012	
PostxΔDistance	-0.065**	-0.053	-0.047*
	(-2.216)	(-0.734)	(-1.725)
Local Dummy	-0.033	-0.155	0.217*
	(-0.101)	(-0.390)	(1.749)
Local DummyxPost	-0.110**	-0.177**	-0.023
	(-2.210)	(-2.239)	(-0.382)
Local DummyxΔDistance	-0.116	0.119	-0.255***
	(-0.704)	(0.475)	(-2.962)
Local DummyxPostxΔDistance	0.103***	0.136*	0.018
	(3.251)	(1.979)	(0.277)
Size_{t-1}	-0.102*	-0.040	-0.097
	(-1.923)	(-0.559)	(-1.397)
$\text{Sales Growth}_{t-1}$	0.017	-0.048	0.115**
	(0.426)	(-1.367)	(2.170)
Ln(1+Tenure)	0.352***	0.423***	0.306***
	(16.066)	(9.404)	(18.534)
Ln(Return)_{t-1}	0.133***	0.130***	0.107***
	(5.277)	(3.917)	(2.789)
Constant	2.239***	2.014***	1.923***
	(4.753)	(3.427)	(3.268)
Observations	10,324	4,670	4,474
Adjusted R-Squared	0.754	0.807	0.592
Firm FE	YES	YES	YES
YearxIndustry FE	YES	YES	YES

Notes: Wealth-performance-sensitivity is logarithm of the dollar change in wealth for a percentage change in firm value, divided by annual pay (Edmans et al. (2008)). Post is a dummy variable which is one if the year is on or after 2013 or zero otherwise. ΔDistance is the logarithm of one plus change in geographical distance between headquarter of a firm and an governing antitrust office before and after the closure of four field offices (Atlanta, Cleveland, Dallas and Philadelphia) divided by a 100. Local dummy is a dummy variable which is one if a firm has peer firms with the same state-level location and the same 3-digit SIC industry code or zero otherwise in the same year. Controls include lagged value of size, lagged value sales growth and logarithm of CEO tenure. All the variables are winsorized at the 0.5% and 99.5% levels. The data spans from 2008 to 2017. Standard errors are clustered at the state level. Robust t-statistics are in parentheses.

Table 8: Equity compensation

	Number of option and plan-based share grants		
Sample	*Full*	*High*	*Low*
		CEO Own% 2012	
PostxΔDistance	0.065	0.103	-0.022
	(1.334)	(1.201)	(-0.505)
Local Dummy	0.233	0.222	0.023
	(1.661)	(1.172)	(0.128)
LocalxΔDistance	-0.071	-0.077	-0.015
	(-0.850)	(-0.382)	(-0.147)
LocalxPost	0.086	0.204**	-0.020
	(1.592)	(2.444)	(-0.243)
LocalxPostxΔDistance	-0.024	-0.024	0.103*
	(-0.637)	(-0.242)	(1.684)
Size_{t-1}	0.342***	0.421***	0.194*
	(6.696)	(3.937)	(1.827)
$\text{Sales Growth}_{t-1}$	-0.077	0.014	-0.129
	(-1.007)	(0.133)	(-1.300)
Ln(1+Tenure)	-0.096***	-0.117**	-0.049
	(-3.124)	(-2.597)	(-1.547)
Ln(Return)_{t-1}	0.031	-0.038	0.097*
	(0.708)	(-0.485)	(1.873)
Constant	1.043***	0.431	2.425**
	(2.502)	(0.577)	(2.583)
Observations	11,959	5,498	5,209
Adjusted R-Squared	0.522	0.514	0.507
Year FE	YES	YES	YES
Firm FE	YES	YES	YES

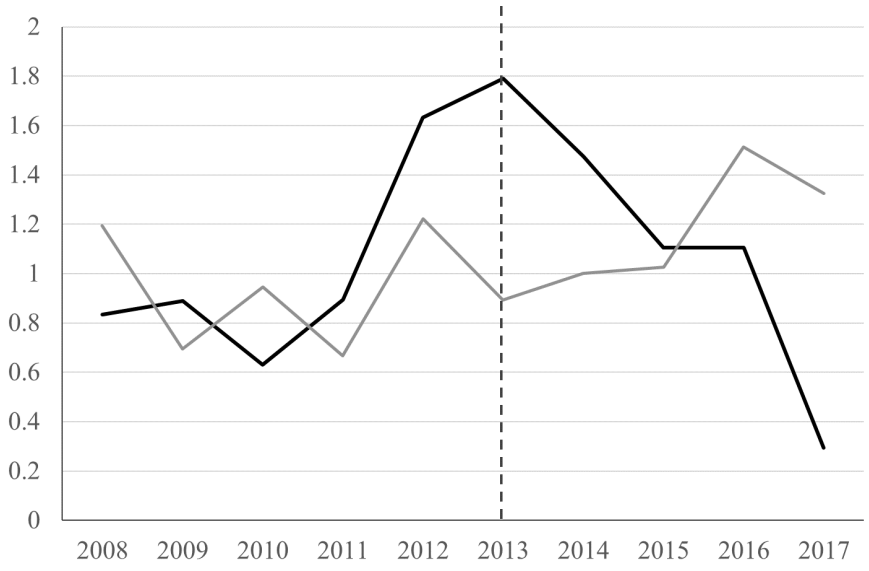
Notes: Number of option and plan-based share grants refer to logarithm value of the grant date fair value of plan-based shares divided by the end of fiscal year stock price plus the number of options grants in a year. Post is a dummy variable which is one if the year is on or after 2013 or zero otherwise. ΔDistance is the logarithm of one plus change in geographical distance between headquarter of a firm and an governing antitrust office before and after the closure of four field offices (Atlanta, Cleveland, Dallas and Philadelphia) divided by a 100. Local dummy is a dummy variable which is one if a firm has peer firms with the same state-level location and the same 3-digit SIC industry code in the same year or zero otherwise. Controls include lagged value of size, lagged value sales growth and logarithm of CEO tenure. All the variables are winsorized at the 0.5% and 99.5% levels. The data spans from 2008 to 2017. Standard errors are clustered at the state level. Robust t-statistics are in parentheses.

Table 9: Incentive alignment and profit margin

	Gross profit margin$_{t+1}$					
Sample	*Full*	*With*	*Without*	*Full*	*With*	*Without*
		Local Peers			*Local Peers*	
PostxΔDistance	-1.862***	-3.222**	-0.721**	-2.011**	-3.395**	-0.962*
	(-2.731)	(-2.650)	(-2.162)	(-2.467)	(-2.387)	(-1.783)
CEO Own%$_t$	0.020	0.052	-0.016			
	(0.323)	(0.582)	(-0.266)			
Postx CEO Own%$_t$	-0.201***	-0.296***	-0.131***			
	(-5.107)	(-4.900)	(-2.668)			
ΔDistancexCEO Own%$_t$	-0.002	-0.027	0.059			
	(-0.026)	(-0.122)	(1.409)			
PostxΔDistance xCEO Own%$_t$	0.119***	0.275***	-0.044			
	(2.569)	(4.219)	(-0.677)			
WPS$_t$				0.671***	0.927***	0.556
				(2.337)	(3.000)	(1.437)
PostxWPS$_t$				-0.313	-0.428	-0.262
				(-1.659)	(-1.393)	(-0.898)
ΔDistancexWPS$_t$				0.485*	1.206***	-0.068
				(1.840)	(2.847)	(-0.281)
PostxΔDistancexWPS$_t$				0.321***	0.583**	0.111
				(2.272)	(2.286)	(0.606)
Size$_{t-1}$	-2.925**	-2.810	-2.934***	-2.640***	-2.076	-3.366***
	(-2.198)	(-1.412)	(-2.922)	(-1.789)	(-1.013)	(-3.759)
Sales Growth$_{t-1}$	0.153	-0.429	1.384	0.658	-0.074	1.775
	(0.140)	(-0.263)	(0.769)	(0.663)	(-0.060)	(1.163)
Ln(1+Tenure)	0.528	1.053	0.014	-0.149	-0.043	-0.354
	(1.616)	(1.509)	(0.039)	(-0.551)	(-0.096)	(-0.876)
Ln(Return)$_{t-1}$	1.809***	2.119***	1.651***	1.954***	2.358***	1.843***
	(6.176)	(4.327)	(3.970)	(5.701)	(4.043)	(4.161)
Constant	64.532***	70.120***	59.025***	61.459***	62.735***	62.162***
	(6.274)	(4.650)	(7.444)	(5.313)	(3.925)	(8.956)
Observations	9,851	4,583	5,234	10,321	4,799	5,486
Adjusted R-squared	0.830	0.807	0.842	0.829	0.806	0.846
Year FE	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES

Notes: Gross profit margin refers to the percentage of revenue minus cost of good sold and revenue. Post dummy is 1 of year is on or after 2013 and zero otherwise. ΔDistance is the logarithm of one plus change in geographical distance between headquarter of a firm and an governing antitrust office before and after the closure of four field offices (Atlanta, Cleveland, Dallas and Philadelphia) divided by a 100. Controls include the lagged value of size, lagged value of sales growth, logarithm of CEO tenure and lagged value of logarithm of firm stock market return. All the variables are winsorized at the 0.5% and 99.5% levels. The data spans from 2008 to 2017. Standard errors are clustered at the state level. Robust t-statistics are in parentheses.

Figure 1: Number of antitrust case filings



Notes: This figure shows the number of antitrust case filings separately for the state courts where the field offices were closed over the period from 2008 to 2017 (dark grey line) and the state courts where the field offices were not closed over the same time period (light grey line). In 2013 DoJ closed down four of its seven regional offices (Atlanta, Cleveland, Dallas, and Philadelphia) that dealt with the antitrust enforcement. The change in coverage affected 23 states and territories: Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Michigan (Eastern judicial district), Mississippi, New Jersey (Southern part), New Mexico, North Carolina, Ohio, Oklahoma, Pennsylvania, Puerto Rico, South Carolina, Tennessee, Texas, Virginia, West Virginia, and U.S. Virgin Islands.

Internet Appendix

Table IA1: Pair-Wise Regression: Decomposition

Panel A: Cash Compensation

	Ln(1+Cash Compensation)		
	(1)	(2)	(3)
Peer return x Local dummy x Post x Δ Distance	0.032***	0.034***	0.031***
	(0.008)	(0.008)	(0.011)
Δ Distance x Post	-0.003	-0.004	-0.004
	(0.005)	(0.004)	(0.005)
Peer return	-0.004		0.007
	(0.015)		(0.015)
Peer return x Local dummy	0.124**	0.139***	0.168*
	(0.062)	(0.045)	(0.084)
Peer return x Δ Distance	0.002	0.002	-0.000
	(0.002)	(0.002)	(0.002)
Peer return x Post	0.046**		0.024
	(0.018)		(0.020)
Peer return x Local dummy x Δ Distance	-0.029***	-0.023***	-0.033***
	(0.006)	(0.006)	(0.008)
Peer return x Local dummy x Post	-0.098	-0.150**	-0.088
	(0.078)	(0.056)	(0.102)
Peer return x Post x Δ Distance	-0.010***	-0.011***	-0.006**
	(0.002)	(0.004)	(0.003)
Local dummy	-0.013	0.010	
	(0.047)	(0.052)	
Local dummy x Δ Distance	0.002	-0.003	
	(0.006)	(0.006)	
Local dummy x Post	0.015	-0.039	0.019
	(0.070)	(0.071)	(0.087)
Local dummy x Post x Δ Distance	-0.005	0.005	-0.009
	(0.009)	(0.008)	(0.011)
Return	0.199***	0.174***	0.178***
	(0.022)	(0.030)	(0.024)
Size_{t-1}	0.110**	0.127**	0.096*
	(0.048)	(0.053)	(0.056)
$\text{Sales Growth}_{t-1}$	0.093**	0.078*	0.092**
	(0.041)	(0.040)	(0.038)
$\text{Ln(1+Tenure)}_{t-1}$	0.087***	0.074***	0.087***
	(0.019)	(0.018)	(0.023)
Adjusted R-squared	0.745	0.783	0.787
Observations	70859	68892	64068
Year FE	YES	YES	NO
Firm FE	YES	YES	YES
Pair(focal & peer) FE	NO	NO	YES
Peer FE	YES	NO	NO
PeerxYear FE	NO	YES	NO

Panel B: Equity Compensation

	Ln(1+Equity Compensation)		
	(1)	(2)	(3)
Peer return x Local dummy x Post x Δ Distance	-0.031	-0.036	-0.016
	(0.033)	(0.043)	(0.035)
Δ Distance x Post	-0.025*	-0.042**	-0.037**
	(0.013)	(0.017)	(0.014)
Peer return	0.023		0.018
	(0.065)		(0.066)
Peer return x Local dummy	0.047	0.139	0.069
	(0.189)	(0.232)	(0.167)
Peer return x Δ Distance	-0.012	-0.006	-0.014
	(0.008)	(0.011)	(0.011)
Peer return x Post	0.078		0.074
	(0.086)		(0.085)
Peer return x Local dummy x Δ Distance	0.027	0.033	0.023
	(0.019)	(0.027)	(0.018)
Peer return x Local dummy x Post	-0.043	-0.156	-0.139
	(0.321)	(0.406)	(0.308)
Peer return x Post x Δ Distance	-0.017	-0.003	-0.012
	(0.016)	(0.018)	(0.025)
Local dummy	-0.045	0.005	
	(0.105)	(0.120)	
Local dummy x Δ Distance	0.003	-0.010	
	(0.016)	(0.018)	
Local dummy x Post	-0.008	-0.013	-0.103
	(0.197)	(0.225)	(0.192)
Local dummy x Post x Δ Distance	0.000	0.012	0.008
	(0.028)	(0.033)	(0.030)
Return	0.085	0.065	0.050
	(0.098)	(0.097)	(0.093)
Size_{t-1}	0.658***	0.581***	0.614***
	(0.149)	(0.164)	(0.169)
$\text{Sales Growth}_{t-1}$	-0.000	0.022	0.007
	(0.156)	(0.180)	(0.129)
$\text{Ln(1+Tenure)}_{t-1}$	-0.165***	-0.185***	-0.167***
	(0.057)	(0.062)	(0.060)
Adjusted R-squared	0.600	0.648	0.654
Observations	70859	68892	64068
Year FE	YES	YES	NO
Firm FE	YES	YES	YES
Pair(focal & peer) FE	NO	NO	YES
Peer FE	YES	NO	NO
PeerxYear FE	NO	NO	YES

Notes: The dependent variables are the logarithm of cash compensation from Execucomp in Panel A and the logarithm of equity compensation from Execucomp in Panel B. Post is a dummy variable which is one if the year is on or after 2013 or zero otherwise. ΔDistance is the logarithm of one plus change in geographical distance between headquarter of a firm and an governing antitrust office before and after the closure of four field offices (Atlanta, Cleveland, Dallas and Philadelphia) divided by a 100. Return refers to logarithm of one plus annual stock market return. Peer Return refers to logarithm of one plus the average annual stock market return of firms that are classified to be in the Hoberg-Phillips industry. Local dummy is an indicator for the presence of firms with peer firms headquartered within 400 miles from the focal firm. Size is logarithm of one plus total asset. Sales Growth is the ratio of current year sales minus previous year sales and previous year sales. Tenure is the years since the executives assume their CEO position in the firm from Execucomp. PeerXYear FE is joint fixed effect between year and a particular peer firm. PairXYear FE is joint fixed effect between the focal firm and a particular peer firm. All the variables are winsorized at the 0.5% and 99.5% levels. The data spans from 2008 to 2017. Standard errors are clustered at the state level. Robust t-statistics are in parentheses.

Table IA2: Robustness test for peer performance sensitivity

	Ln(1+Total Compensation)					
Peers defined as:	*Same State & SIC 3-digit*		*Less than 100 miles & SIC 3-digit*		*Less than 400 miles & SIC 3-digit*	
ΔDistance x Post	0.002	0.006	0.001	0.004	0.003	0.007
	(0.681)	(1.317)	-0.407	-0.838	(0.820)	(1.070)
Return_t	0.095***	0.106***	0.100***	0.106***	0.097***	0.104***
	(4.782)	(4.945)	-5.108	-5.018	(4.773)	(4.912)
ΔDistance x Return_t	0.000	-0.004	0	-0.004	0.001	-0.003
	(0.160)	(-0.978)	-0.034	(-1.022)	(0.266)	(-0.889)
Post x Return_t	0.179***	0.139***	0.173***	0.142***	0.178***	0.144***
	(7.109)	(4.644)	-7.04	-4.879	(7.101)	(4.978)
ΔDistance x Post x Return_t	-0.019***	-0.016***	-0.019***	-0.017***	-0.021***	-0.017***
	(-5.924)	(-3.421)	(-5.957)	(-3.388)	(-5.181)	(-3.301)
Peer Return_t	0.035	0.048	0.009	0.014	0.025	0.024
	(1.286)	(1.272)	-0.546	-0.603	(1.033)	(0.982)
Peer Return_t x ΔDistance	-0.004	0.002	-0.003	0.004	-0.005**	-0.001
	(-1.291)	(0.353)	(-1.592)	-0.937	(-2.010)	(-0.269)
Peer Return_t x Post	-0.148***	-0.181***	-0.088***	-0.101**	-0.088***	-0.080*
	(-6.121)	(-3.924)	(-3.048)	(-2.523)	(-3.071)	(-1.987)
Peer Return_t x Post x ΔDistance	0.021***	0.015*	0.023***	0.023***	0.024***	0.021***
	(6.069)	(1.678)	(4.295)	(2.811)	(2.899)	(3.075)
Local Dummy	0.011	-0.008	-0.003	-0.073	-0.057	-0.079
	(0.088)	(-0.055)	(-0.055)	(-0.833)	(-0.837)	(-1.125)
Local Dummy x ΔDistance	-0.004	-0.003	0.019**	0.030**	0.003	0.011
	(-0.255)	(-0.147)	-2.616	-2.181	(0.308)	(0.857)
Local Dummy x Post	0.099***	0.086**	0.061**	0.046	0.055	0.045
	(4.396)	(2.434)	-2.266	-1.006	(1.603)	(0.846)
Local Dummy x Post x ΔDistance	-0.006	-0.011*	-0.005	-0.01	-0.006	-0.012
	(-1.199)	(-1.914)	(-0.773)	(-1.412)	(-1.081)	(-1.409)
Size_{t-1}	0.256***	0.287***	0.256***	0.284***	0.255***	0.284***
	(12.266)	(12.243)	-12.136	-12.172	(12.488)	(12.246)
$\text{Sales Growth}_{t-1}$	0.105***	0.073**	0.106***	0.075**	0.104***	0.073**
	(3.798)	(2.282)	-3.877	-2.375	(3.875)	(2.360)
$\text{Ln(1+Tenure)}_{t-1}$	0.045***	0.031***	0.045***	0.030***	0.045***	0.030***
	(4.269)	(2.803)	-4.327	-2.761	(4.266)	(2.765)
Constant	6.061***	5.859***	6.063***	5.893***	6.113***	5.921***
	(33.030)	(30.748)	-35.767	-35.025	(38.197)	(34.114)
Observations	12,185	11,661	12,185	11,661	12,185	11,661
Adjusted R-squared	0.765	0.770	0.765	0.77	0.765	0.770
Year FE	YES	NO	YES	NO	YES	NO
Firm FE	YES	YES	YES	YES	YES	YES
YearxSIC2-digit FE	NO	YES	NO	YES	NO	YES

Notes: We define Post dummy as one if the year is on or after 2010 or zero otherwise. ΔDistance is the logarithm of one plus change in geographical distance between headquarter of a firm and an governing antitrust office before and after the closure of four field offices (Atlanta, Cleveland, Dallas and Philadelphia) divided by a 100. Return refers to logarithm of one plus annual stock market return of a firm, which is measured as combination of 12 monthly returns minus one. Peer Return refers to logarithm of one plus the average annual stock market return of firms that are classified to be in the Hoberg-Phillips industry. Local dummy is an indicator for the presence of firms with peer firms headquartered within 400 miles from the focal firm. Controls include lagged value of size, lagged value of sales growth, logarithm of CEO tenure. Size is logarithm of one plus total asset. Sales Growth is the ratio of current year sales minus previous year sales and previous year sales. Tenure is the years since the executives assume their CEO position in the firm from Execucomp. YearxSIC2-digit FE refers to joint fixed effect of fiscal year and industry in 2-digit SIC code. All the variables are winsorized by 0.5% in each tail. The data spans from 2007 to 2012. Standard errors are clustered at state and firm level. Robust t-statistics are in parentheses.

Table IA3: Robustness test for peer performance sensitivity

	Ln(1+Total Compensation)			
PostxΔDistance	-0.002	-0.015	-0.005	-0.013
	(-0.155)	(-0.842)	(-0.341)	(-0.664)
Return_t	0.014	0.005	0.004	-0.001
	(0.638)	(0.225)	(0.141)	(-0.058)
PostxReturn_t	0.240***	0.248***	0.265***	0.267***
	(4.918)	(5.014)	(5.254)	(5.318)
Return_txΔDistance	0.007	0.016	0.008	0.014
	(0.603)	(1.089)	(0.464)	(0.806)
Return_txΔDistancexPost	-0.002	-0.006	-0.004	-0.006
	(-0.082)	(-0.231)	(-0.148)	(-0.193)
Local Peer Return_t		0.053*		0.088**
		(1.882)		(2.579)
Local Peer Return_txΔDistance		-0.032**		-0.023
		(-2.099)		(-1.347)
Local Peer Return_txPost		-0.053		-0.055
		(-0.641)		(-0.523)
Local Peer Return_txΔDistancexPost		0.024		-0.015
		(0.492)		(-0.250)
Local Dummy		-0.162		-0.145
		(-1.491)		(-1.162)
Local DummyxPost		0.006		-0.005
		(0.173)		(-0.159)
Local DummyxΔDistance		0.144		0.166
		(1.286)		(1.456)
Local DummyxPostxΔDistance		0.024		0.016
		(1.245)		(0.696)
Constant	6.854***	6.897***	6.619***	6.644***
	(19.802)	(19.536)	(20.353)	(19.445)
Control	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Firm FE	YES	YES	NO	NO
YearxSIC2-digit FE	NO	NO	YES	YES
Observations	5,780	5,780	5,765	5,765
Adjusted R-squared	0.793	0.793	0.791	0.791

Notes: We defined Post as a dummy variable which is one if the year is on or after 2010 or zero otherwise. ΔDistance is the logarithm of one plus change in geographical distance between headquarter of a firm and an governing antitrust office before and after the closure of four field offices (Atlanta, Cleveland, Dallas and Philadelphia) divided by a 100. Return refers to logarithm of one plus annual stock market return of a firm, which is measured as combination of 12 monthly returns minus one. Peer Return refers to logarithm of one plus the average annual stock market return of firms that are classified to be in the Hoberg-Phillips industry. Local dummy is an indicator for the presence of firms with peer firms headquartered within 400 miles from the focal firm. Controls include lagged value of size, lagged value of sales growth, logarithm of CEO tenure. Size is logarithm of one plus total asset. Sales Growth is the ratio of current year sales minus previous year sales and previous year sales. Tenure is the years since the executives assume their CEO position in the firm from Execucomp. YearxSIC2-digit FE refers to joint fixed effect of fiscal year and industry in 2-digit SIC code. All the variables are winsorized by 0.5% in each tail. The data spans from 2007 to 2012. Standard errors are clustered at state and firm level. Robust t-statistics are in parentheses.

Table IA4: Placebo test for wealth performance sensitivity

	Wealth-performance-sensitivity			
Sample	*Full Sample*		*High*	*Low*
			CEO Own% 2009	
PostxΔDistance	0.029	0.036	0.049	0.005
	(-0.714)	(-0.937)	(1.245)	(0.094)
Local Dummy	0.207	0.185	0.576*	-0.064
	(-0.945)	(-0.796)	(1.930)	(-0.445)
Local DummyxPost	-0.041	0.005	0.011	-0.015
	(-1.052)	(-0.094)	(0.135)	(-0.255)
Local DummyxΔDistance	-0.258	-0.278	-0.560***	-0.071
	(-1.211)	(-1.530)	(-3.348)	(-0.636)
Local DummyxPostxΔDistance	-0.03	-0.045	0.003	-0.000
	(-0.695)	(-0.921)	(0.056)	(-0.005)
Size_{t-1}	-0.222***	-0.198***	-0.196*	-0.150
	(-0.695)	(-0.921)	(-1.999)	(-1.567)
$\text{Sales Growth}_{t-1}$	-0.003	-0.019	-0.004	-0.059
	(-0.078)	(-0.349)	(-0.055)	(-0.840)
Ln(1+Tenure)	0.234***	0.233***	0.358***	0.206***
	-8.63	-8.118	(6.099)	(9.547)
Ln(Return)_{t-1}	0.025	0.026	0.016	0.031
	-1.13	-0.938	(0.341)	(0.730)
Constant	3.283***	3.094***	2.998***	2.653***
	-7.336	-6.908	(4.530)	(3.173)
Observations	5,615	5,597	2,409	2,125
Adjusted R-Squared	0.815	0.826	0.876	0.784
Year FE	YES	NO	NO	NO
Firm FE	YES	YES	YES	YES
YearxSIC2-digit	NO	YES	YES	YES

Notes: Wealth-performance-sensitivity is the dollar change in wealth for a percentage change in firm value, divided by annual pay (Edmans et al. (2008)). We defined Post as a dummy variable which is one if the year is on or after 2010 or zero otherwise. ΔDistance is the logarithm of one plus difference between the geographical distances between headquarter of a firm and an antitrust office which governs the area where the headquarter is located before and after the closure of four field offices (Atlanta, Cleveland, Dallas, and Philadelphia) divided by a 100. Local dummy is a dummy variable which is one if a firm has peer firms with the same state-level location and the same 3-digit SIC industry code or zero otherwise in the same year. Controls include lagged value of size, lagged value sales growth and logarithm of CEO tenure. YearxSIC2-digit FE is joint fixed effect between year and industry with the same 2-digit SIC code. All the variables are winsorized at the 0.5% and 99.5% levels. The data spans from 2007 to 2012. Standard errors are clustered at the state level. Robust t-statistics are in parentheses.

Table IA5: Placebo test for equity compensation awards

	Number of option and plan-based share grants		
Sample	*Full*	*High*	*Low*
		CEO Own % in 2009	
PostxΔDistance	0.042	0.015	-0.032
	(0.704)	(0.240)	(-0.406))
Local Dummy	-0.222	-1.171	-0.023
	(-1.092)	(-1.576)	(-0.124)
Local DummyxΔDistance	0.138	0.424	0.217
	(0.838)	(1.051)	(0.613)
Local DummyxPost	-0.070	-0.109	0.009
	(-1.166)	(-1.151)	(0.049)
Local DummyxPostxΔDistance	-0.007	0.130*	-0.018
	(-0.161)	(1.940)	(-0.177)
Size_{t-1}	0.459***	0.607***	0.292**
	(4.662)	(4.588)	(2.188)
$\text{Sales Growth}_{t-1}$	0.059	0.152	-0.093
	(0.536)	(0.938)	(-0.765)
Ln(1+Tenure)	-0.081*	-0.131	0.009
	(-1.910)	(-1.570)	(0.182)
Ln(Return)_{t-1}	0.087	0.065	0.112
	(1.458)	(0.897)	(1.157)
Constant	0.331	-0.211	1.503
	(0.438)	(-0.228)	(1.398)
Observations	5,713	2,519	2,208
Adjusted R-Squared	0.576	0.579	0.572
Year FE	YES	YES	YES
Firm FE	YES	YES	YES

Notes: Number of option and plan-based share grants refer to the logarithm value of the grant date fair value of plan-based shares divided by the end of fiscal year stock price plus the number of options grants in a year. We define Post as a dummy variable which is one if the year is on or after 2010 or zero otherwise. ΔDistance is the logarithm of one plus difference between the geographical distances between headquarter of a firm and an antitrust office which governs the area where the headquarter is located before and after the closure of four field offices (Atlanta, Cleveland, Dallas, and Philadelphia) divided by a 100. Local dummy is a dummy variable which is one if a firm has peer firms with the same state-level location and the same 3-digit SIC industry code or zero otherwise in the same year. Controls include lagged value of size, lagged value sales growth and logarithm of CEO tenure. All the variables are winsorized at the 0.5% and 99.5% levels. The data spans from 2007 to 2012. Standard errors are clustered at the state level. Robust t-statistics are in parentheses.

Table IA6: Placebo test for incentive alignment and profitability

	Gross profit margin$_{t+1}$					
Sample	*Full*	*With*	*Without*	*Full*	*With*	*Without*
		Local Peers			*Local Peers*	
PostxΔDistance	0.137	0.086	0.152	0.468	0.856	0.187
	(0.477)	(0.144)	(0.577)	(0.671)	(0.659)	(0.373)
CEO Own%	-0.029	-0.053	-0.016			
	(-0.578)	(-0.612)	(-0.295)			
Postx CEO Own%	-0.122***	-0.224***	-0.029***			
	(-4.328)	(-3.768)	(-0.791)			
ΔDistancexCEO Own%	0.052	-0.020	0.049			
	(1.121)	(-0.088)	(1.439)			
PostxΔDistance xCEO Own%	0.006	0.053	-0.039			
	(0.103)	(0.498)	(-0.747)			
WPS				0.208	-0.030	0.460
				(0.575)	(-0.080)	(0.848)
PostxWPS				-0.486*	-0.751**	-0.116
				(-1.924)	(-2.208)	(-0.378)
ΔDistancexWPS				-0.052	0.311	-0.260
				(-0.169)	(0.741)	(-0.739)
PostxΔDistancexWPS				-0.018	0.014	-0.088
				(-0.064)	(0.041)	(-0.353)
Size$_{t-1}$	-1.454	-1.592	-1.834*	-1.075	-0.248	-2.569**
	(-1.492)	(-1.211)	(-1.748)	(-0.873)	(-0.122)	(-2.438)
Sales Growth$_{t-1}$	-2.411*	-3.630*	-0.162	-1.647	-2.615	-0.246
	(-1,789)	(-1.829)	(-0.155)	(-1.279)	(-1.332)	(-0.312)
Ln(1+Tenure)	0.063	0.424	-0.226	-0.444	-0.163	-0.693
	(0.128)	(0.485)	(-0.423)	(-1.010)	(-0.240)	(-1.252)
Ln(Return)$_{t-1}$	-0.261	-0.190	-0.103	0.043	0.442	0.005
	(-0.630)	(-0.284)	(-0.256)	(0.099)	(0.626)	(0.014)
Constant	52.736***	60.571***	50.017***	50.250***	50.460***	56.038***
	(7.094)	(6.459)	(5.957)	(5.389)	(3.351)	(6.587)
Observations	4,984	2,263	2,706	5,612	2,556	3,037
Adjusted R-squared	0.875	0.860	0.881	0.867	0.848	0.881
Year FE	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES

Notes: Gross profit margin refers to the percentage of revenue minus cost of good sold and revenue. CEO Own % refers the percentage of total shares owned by CEO compared to total number of shares outstanding. Post is a dummy variable which is 1 if it is on or after 2011 or zero otherwise. ΔDistance is the logarithm of one plus difference between the geographical distances between headquarter of a firm and an antitrust office which governs the area where the headquarter is located before and after the closure of four field offices (Atlanta, Cleveland, Dallas, and Philadelphia) divided by a 100. WPS refers to logarithm of the dollar change in wealth for a percentage change in firm value, divided by annual pay (Edmans et al. (2008)). Controls include the lagged value of size, lagged value of sales growth, logarithm of CEO tenure and lagged value of logarithm of firm stock market return. All the variables are winsorized by 0.5%. The data spans from 2008 to 2013. Standard errors are clustered at the firm level. Robust t-statistics are in parentheses.