Incentivizing Financial Regulators*

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Abstract

I study how promotion-based tournament incentives within the public sector affect financial regulation. I assemble individual data for all Securities and Exchange Commission enforcement attorneys between 2002 and 2017, including enforcement cases, salaries, and ranks. I find that stronger tournament incentives, reflected by expected salary upon promotion and likelihood of promotion, increase enforcement activity and facilitate the detection of severe financial misconduct. For identification, I rely on cross-sectional tests within offices and hierarchy ranks and on exogenous variation in salaries resulting from a rule-based conversion to a new pay system. The findings highlight a novel link between incentives and regulation and show that the regulator's organizational design affects securities markets.

Keywords: tournaments; security market regulation; public sector performance

JEL Classification: H83, J31, J33, J45, K22, M51, M52

1 Introduction

Enforcement is a key component of financial regulation. Every year the U.S. Securities and Exchange Commission, the primary regulator of securities markets and the subject of this paper, files hundreds of enforcement actions that impose significant costs on market participants and deter future misconduct. The SEC's enforcement staff consists of nearly one thousand attorneys, and yet little is known on how enforcement is affected by the incentives of these individuals. In particular, it is unknown how the internal organization of the enforcement staff can create incentives and stimulate effort. The prevailing perception is that a "faceless bureaucracy" enforces the law, and how the SEC chooses to organize itself is irrelevant to how it carries out its duties. Building on an original dataset I reach a different conclusion. I find that tournament incentives (Lazear and Rosen (1981)), reflected by hierarchical pay gaps and promotion opportunities inside the SEC, enhance the agency's enforcement activity.

A key contribution of this paper is original data on all SEC enforcement attorneys from 2002 to 2017. I submitted multiple Freedom of Information Act requests to various federal bureaus, and manually collected information from more than 3,000 original court documents filed by the SEC over the years. The result is a unique dataset which links each attorney's enforcement activity to employment information such as salary, hierarchy grade and tenure. This granular dataset allows me to overcome a major challenge for any empirical study of incentives and financial regulation: data shortage.

I start by showing that attorneys with a robust enforcement caseload are winning the tournament: they are promoted faster and in higher rates. This leads to the main hypothesis: enforcement should increase with the value of promotion, and in particular with its monetary value (the expected pay raise or the "prize"). Attorneys who expect a higher "prize" should put more effort into their enforcement activities in order to win the promotion. The evidence is consistent with that prediction, and the following example illustrates the main results. If the "prizes" in the Boston office are more valuable than in Chicago, i.e. there are large salary gaps between hierarchy grades in Boston, then Boston would file more enforcement actions and detect more cases of severe financial misconduct

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in the Boston area. Inside the Boston office, more cases are filed by grades that offer their attorneys higher "prize," i.e. grades that are far below the next hierarchy grade. Finally, within each Boston grade, lower-paid attorneys who will benefit even more from a promotion to the next grade are filing more actions.

The evidence is consistent with the central tournament hypothesis: offices, levels, and attorneys with higher promotion value - exert greater effort and file more enforcement actions. However, causal inference is challenging. The ideal experiment requires random assignment of tournament incentives. That hypothetical experiment did not materialize, and hence I identify the tournament effect mainly with fixed-effects specifications and cross-sectional tests that address plausible alternative stories. As a first pass, I show that the incentive effect is not explained by seniority or rank nor by national or agency-wide trends. The effect holds within office and so is not explained by various region-specific conditions such as managerial style, the extent of financial misconduct, and career opportunities in the local labor market. In the tightest specification I include year-office-grade indicators, which forces a comparison between attorneys who compete in the same tournament at the same time. While this specification may be "controlling away" some of the very effect I strive to document, it still shows the highly significant positive relation between incentives and enforcement. The results are robust to various clustering methods and winsorization thresholds.

The remainder of the paper addresses specific concerns, and I begin with the heterogeneity across enforcement actions. In the baseline specification I count all actions equally, but in reality not all actions are born equal. Simply put, filing an enforcement action of type X could require more effort than filing an action of type Y. Ignoring that heterogeneity could lead to a measurement error in the outcome variable. Moreover, it is possible that powerful incentives lead agents to allocate their effort toward less important or less desirable enforcement actions (as in Holmstrom and Milgrom (1991)). To draw the line between complex and important cases to simple and routine ones I consider several proxies from the legal literature: the factual complexity of the case (reflected by the number of defendants) and the severity of the allegations (reflected by parallel criminal

proceedings or by alleging violations of anti-fraud provisions). Across all criteria, I find that tournament incentives increase the probability of filing complex enforcement cases alleging severe financial misconduct.

I consider a set of alternative incentive structures to account for different features of the SEC organizational design. Those alterations include different promotion patterns, different treatment of missing hierarchy grades, and different expectations with regards to future pay raises. None of these permutations changes the main results. The main incentive measure which I use reflects the expected pay raise or the "prize", but in line with the literature on corporate executives (such as Coles et al. (2017)) I find that the promotion probability matters as well: holding the "prize" fixed, a higher promotion probability increases enforcement.

A potential omitted variable is the unobserved attorney quality. The main concern is of an upward bias, which would arise if strong incentives were assigned to "good" attorneys. In that case the unobserved quality would drive enforcement activity upward and bias the estimated incentive effect. That concern appears inconsistent with the SEC's institutional setting, based on numerous discussions I have had with current and former SEC employees. For instance, experienced attorneys who are more likely to file enforcement cases are likely assigned higher salaries and thus *weaker* incentives relative to their peers. For a large subsample of attorneys I collect additional data on bonuses and legal education, which are observable proxies for the unobserved attorney quality. I add a set of controls based on the bonus and education data and the results remain highly significant.

As a final test I exploit a plausibly exogenous shock to the incentives of a small subsample. In 2002, the SEC transferred is workforce to a new pay system. The conversion included an arbitrary pay raise, as each salary was rounded up to the closest pay step in the new system. That pay raise affected the tournament incentive: the higher the pay raise, the lower the incentive became. It was exogenous to the employee's characteristics, determined exclusively by the distance from the closest pay step. Focusing on that subsample I find a significant positive relation between enforcement and the incentive, this

time instrumented with the round-up component.

In sum, I find that stronger tournament incentives enhance the enforcement activity of the SEC. The average incentive for SEC enforcement staff is 23%, clearly low-powered relative to the 349% average incentive among CEOs (Coles et al. (2017)). Nevertheless, the impact on SEC enforcement is non-trivial. For instance, moving from the 10th to the 90th percentile of the incentive distribution increases enforcement probability by 11 percentage point or 16% relative to the mean. Similarly, recent studies of wage differences among peers report material responses to quasi-random pay gaps as small as 5% (Breza et al. (2016)) and 10 cents (Dube et al. (2019)).

The paper makes the following three contributions. First, I uncover a novel driver of financial regulation: tournaments among SEC staff. Studies of financial regulation in general, and SEC enforcement in particular, tend to focus on the costs and benefits for various market participants (Kedia and Philippon (2007); Karpoff et al. (2008a); Karpoff et al. (2008b); Yu and Yu (2011); Giannetti and Wang (2016)). However, the incentives of the individual regulators who draft and implement the rules are often overlooked. With that gap in mind I conduct the first study on the incentives generated by the SEC's internal organization. I document the existence of those incentives and explore their impact on the agency's enforcement program.

Second, I illustrate how promotion opportunities affect state bureaucracy. The common perceptions are that state employees prefer "quiet life" and respond mostly to intrinsic motivation. An emerging literature undermines those assertions and shows that motivation is affected by higher starting salaries (Dal Bó et al. (2013)), special rewards (Ashraf et al. (2014)), and outside career opportunities (Bond and Glode (2014); Lucca et al. (2014); Agarwal et al. (2014); Tabakovic and Wollmann (2017)). I contribute to this literature by focusing on internal promotion incentives, which are an indirect consequence of how the bureaucracy chose to organize its workforce. My paper is the first one to document how those incentives affect the operations of regulatory agencies.

Finally, I contribute to the tournament literature by studying employee-level incentives and output. Individual productivity is typically observed only among low-skilled

workers (Breza et al. (2016)), and thus prior studies have resorted to firm-level measures of productivity (Main et al. (1993); Kale et al. (2009); Kini and Williams (2012); Coles et al. (2017); Hibbs Jr and Locking (2000); Mueller et al. (2017a); Mueller et al. (2017b)). In contrast, the unique dataset I assemble allows me to study tournament effects at a granular level. Moreover, I am able to distinguish between various types of litigation activities and to show how agents allocate effort toward more complicated and consequential enforcement actions (Holmstrom and Milgrom (1991)).

2 Institutional Setting and Data

The paper's goal is to test the efficacy of tournament incentives. I would like to estimate the following regression:

$$y_{i,t} = \alpha + \beta \cdot incentive_{i,t} + \lambda + \epsilon_i \tag{1}$$

where $y_{i,t}$ represents litigation activity, $incentive_{i,t}$ is the main explanatory variable representing the tournament incentive, and λ is a vector of controls. Based on the extant literature on the impact of tournament incentives on corporate executives and professional athletes,[1] the prediction is that $\beta > 0$: stronger tournament incentives increase effort, which is reflected in an expanded enforcement portfolio. In this section I discuss the data sources and the relevant institutional background, and in Section 3 I turn to the empirical strategy and the construction of the main variables.

2.1 Institutional Setting

Enforcement - This paper is centered around enforcement actions, which are legal proceedings initiated by the SEC for violations of federal securities laws (see Figure 1). Examples of such violations are insider trading, accounting fraud and inadequate disclosure. Career staff at the SEC conduct examination and investigation, and present their findings to the Commission, a five-member body which oversees the SEC's operations and

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[1]The Online Appendix includes an extensive literature review.

can authorize the SEC staff to commence an enforcement action. The SEC can file a civil complaint in a U.S. District Court or institute a proceeding in front of an administrative law judge. A successful lawsuit could result in various injunctions, industry bars and suspensions, monetary penalties, and return of illegal profits (disgorgement). The SEC might also refer the case to the Department of Justice for parallel criminal prosecution.[2]

Organization - The SEC consists of 12 offices: the headquarters in Washington D.C. and 11 regional offices. As explained below, this paper is limited to attorneys from the Enforcement Division (which operates from D.C.) and the 11 regional offices. Each office is organized in a 9-grades hierarchical system: from SK-12 through SK-17 and from SO-1 through SO-3. Staff attorneys are in SK-12 through SK-14, mid-level attorneys in SK-15 and SK-16, and top managers who typically carry titles such as "Assistant Director" occupy SK-17 or higher (see Figure 2).[3]

Salaries and Promotions - The SEC attorney's salary consists of three main components, similar to many other federal agencies. The *base pay* is determined by the attorney's pay grade, which is capped from above and is identical across all SEC staff. The base pay is supplemented by *locality pay*, a fixed percentage determined by the employee's duty location. The grade caps and locality rates slowly increase over time, and, as of 2018, the locality rate is between 15.36% (Salt Lake City) and 39.3% (San Francisco). Lastly, the attorney may be awarded a *cash bonus*, distributed annually at the discretion of the attorney's supervisors to reflect high performance.[4] Promotions at the SEC are one grade at a time within the same office.[5] In the absence of promotion, within-grade pay raises are distributed among all peers and so the contemporary salary is a function of the attorney's starting salary and tenure. The variation in starting salary

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[2]For more details see the SEC's webpage, Dyck et al. (2010), Karpoff et al. (2008b), and Kedia and Rajgopal (2011).

[3]The remaining 11 grades (SK-11 and below) are populated almost exclusively by non-attorneys, a group which I do not study in this paper. I treat the 69 attorney-year observations which are in SK-11 or below as if they are in SK-12.

[4]A fourth component, *overtime payment*, is rarely observed in the sample (less than 0.3% of attorney-year observations received any overtime payments).

[5]See more details in the Online Appendix. For example, an SK-13 attorney has a 43.7% unconditional probability to be promoted to SK-14, and virtually 0% chance to be promoted more than one grade. Moreover, the annual probability of switching offices - for instance, moving from Boston to New York - is 1.0% (see Table 2).

is largely a function of the starting year and grade, education and past experience, as well employee-specific characteristics and improved negotiation skills.

2.2   Enforcement Data

I collect from the SEC's website all the complaints filed by the agency in U.S. District Courts. The original court documents are the primary source of information for this paper. I focus on civil actions because the SEC rarely discloses the names of the individual attorneys who participate in administrative proceedings (Choi et al. (2018)). I obtained the majority of the complaints from the Litigation Releases section, where all announcements pertaining to civil actions are posted. I also scanned the entire Accounting and Auditing Enforcement Releases section ("AAER"), which includes some enforcement proceedings that involve accountants or auditors, and the Press Releases section, which includes various official announcements. Finally I performed a generalized web search to locate any additional litigation documents stored elsewhere on the SEC's website. I discard actions filed before 2002 or after 2017, to match the availability of the workforce dataset. That yields the enforcement sample with $3,178$ actions filed between January 1, 2002 and December 31, 2017.

For each enforcement action I collect the date of filing, alleged violations, names of the SEC attorneys, and number of defendants. I read each of the releases to flag actions which were accompanied by criminal proceedings and actions which included an asset freeze or other form of temporary orders, and to identify actions that arise from the same misconduct and are therefore inherently connected. I classify actions as contested, settled, or partially settled, and for settled actions I code the information on the settlement terms: monetary penalties and other sanctions imposed on the defendants.

By construction, the sample excludes actions which were not stored anywhere on the SEC's website. To better understand the selection magnitude and criteria I obtained the appendixes of the SEC's annual reports, where the Enforcement Division lists all enforcement actions initiated during the fiscal year and the total number of defendants. According to the SEC, between 2002-2017 it filed $3,863$ civil actions, and during fiscal

years 2003-2017 it brought charges against 11,335 defendants. My enforcement sample in the corresponding periods includes 2,770 civil actions and 9,485 defendants, bringing the coverage ratio to 82.3% and 83.7% respectively. The SEC classifies actions into 11 primary categories, based on the nature of the underlying offense. The plurality of missing actions are classified as civil contempt (coverage 4%), essentially "secondary" cases triggered when a defendant fails to comply with court orders issued in a previously resolved enforcement action. Year-by-year analysis shows the coverage ratio improving over time and stabilizing at about 95% since 2012. Note that Velikonja (2015) argues that the SEC's published statistics may overrepresent the true scope of the SEC's enforcement filings. By her calculations, the total number of enforcement actions in the fiscal years 2002-2014 are almost 30% less than the official numbers published by the SEC. If true, it implies that the "real" coverage ratio I achieved is in fact higher.

Prior studies have relied extensively on the AAER section of the SEC's website (Dechow et al. (2011); Armstrong et al. (2013); Ali and Hirshleifer (2017)). As explained above, AAER designation is assigned to some of the enforcement proceedings which involve accountants or auditors, and not to all of them. Indeed, only 18.5% of the actions in my sample have an AAER designation, illustrating how the AAER seems to capture only a fraction of the civil enforcement activity of the SEC. Other studies have used Lexis-Nexis and the newly released Securities Enforcement Empirical Database ("SEED") to focus on some of the proceedings against public companies (Licht et al. (2018); Choi et al. (2018)). Finally, Karpoff et al. (2008a) collected all enforcement actions for financial misrepresentation initiated by the SEC between 1977-2006. This dataset includes 1,130 civil actions against 4,080 defendants and has been subsequently used in other studies (Karpoff et al. (2008b); Kedia and Rajgopal (2011); Hazarika et al. (2012)). It partially overlaps with my workforce dataset (which starts from 2002), and is limited to violations of three specific provisions of the Securities Exchange Act of 1934.

2.3 Workforce Data

I assemble a comprehensive workforce dataset on all individuals who worked at the SEC at any point between 2002-2017. I obtained the data through multiple Freedom of Information Act requests submitted to the SEC and to other Federal agencies, and I had numerous conversations with current and former SEC employees in order to better understand the organizational feature of the SEC's workforce. The dataset includes the employee's full name, occupation, and year of accession and separation (if applicable). It also provides annual information on location, salary, pay grade, job title, transition across offices, tenure, overtime payments, bonus, and promotions. To the best of my knowledge, the dataset is free of selection bias and includes the universe of SEC employees from that period.[6] I augment the workforce data with additional biographic information from LinkedIn and Martindale-Hubbell, a commonly used directory for U.S. lawyers (more on that below). To the best of my knowledge this is the most comprehensive employee-level dataset on financial regulators, and the only one to tap the regulator's official records as the primary source of workforce information.

Only attorneys sign the court documents, and I hence limit the workforce sample to attorneys. I manually match the names from the court documents to the names of the attorneys from the workforce sample. I was able to identify 99.8% of the litigating attorneys, virtually all except for 6 individuals. The matching confirmed that 96.9% of the litigating attorneys work at the Enforcement Division or in one of the SEC's 11 regional offices, which is consistent with my understanding of the SEC's functional organization. I therefore limit the study to attorneys who work at the Enforcement Division in Washington D.C. or in any of the 11 regional offices. The final workforce sample consists of 1,914 attorneys and 14,940 attorney-year observations.

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[6]The only exception is "SEC investigators and [employees at] the Office of Inspector General," whose information is withheld.

3 Empirical Strategy and Descriptive Statistics

As mentioned above, the paper is focused on estimating the following equation:

$$y_{i,t} = \alpha + \beta \cdot incentive_{i,t} + \lambda + \epsilon_i$$

where $y_{i,t}$ represents litigation activity, $incentive_{i,t}$ is the main explanatory variable representing the tournament incentive, and λ is a vector of controls. In this section I discuss the construction of the two main variables, enforcement (dependent) and incentive (independent), and the empirical strategy to connect the two.

As a general note, throughout the paper I conduct the analysis at two levels. In one level the unit of observation i is the individual attorney. This sample includes 1,914 attorneys and 14,940 attorney-year observations. I aggregate the individual attorneys into their respective hierarchy grades within the office, creating an office-grade sample where the unit of observation i is office-grade; for example, SK-12 in Boston. The office-grade sample includes 94 office-grades and 1,273 office-grade-year observations. Estimating Equation 1 with the attorney sample allows for a more granular analysis without losing statistical power. The office-rank sample is significantly smaller but has two main advantages. First, as opposed to the attorney sample, it allows me to abstract from the *individual* salary which is driven to a large extent by the attorney's unique characteristics (I will discuss it more concretely in Section 4). Second, conceptually, the tournament is likely designed at an aggregate level with regulatory caps and promotion patterns across pay grades. By conducting the analysis in two different levels I exploit different sources of variation, which lends more credibility to the tournament interpretation.

3.1 Measuring Enforcement and Incentives

Generally, the outcome variable is a function of the litigation portfolio:

$$y_{i,t} = f(enforcement_{i,t})$$

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Where $enforcement_{i,t}$ captures the litigation activity at time t of the office-grade or of the attorney.

The main version of $y_{i,t}$ is based on the quantity of enforcement actions. For the attorney sample I use the extensive and the intensive margin: an indicator which equals one if the attorney participated in any enforcement action, and the number of actions brought by the attorney. For the office-grade sample I use the equivalent measures, as well as the share of attorneys who participate in enforcement.

More formally, let $enf_{i,t}$ denote the number of enforcement actions brought by attorney i at time t, and $I(enf_{i,t}) = 1$ if $enf_{i,t} > 0$. I use $enf_{i,t}$ and $I(enf_{i,t})$ in the attorney sample, and the equivalent $enf_{o,g,t}$ and $I(enf_{o,g,t})$ in the office-grade sample. I also use $Engagement_{o,g,t} = \frac{\sum_{i \in (o,g)} I(enf_{i,t})}{N}$, where N is the number of attorneys in the office-grade. Note that $enf_{o,g,t} \leq \sum_{i \in (o,g)} enf_{i,t}$, but is typically strictly smaller, since multiple attorneys from the same office-grade can collaborate on a single action.

The counting-based enforcement measures provide a simple, intuitive way to compare litigation portfolios across attorneys, ranks and offices. The number of enforcement actions is a closely watched metric, computed and presented annually by the SEC to Congress and the general public. Moreover, Section 3.4 demonstrates how this "simplistic" representation of the litigation portfolio is an important predictor of internal rewards at the SEC, namely promotions. In other words, the SEC and those who oversee and study its activities seem to value the quantity of enforcement actions. At the same time, counting-based measures do not factor in potential heterogeneity across enforcement actions and across attorneys. This could introduce a measurement error in the outcome variable, and I address this and related concerns in Section 4.3 with a set of alternative outcome variables based on a deeper analysis of enforcement actions.

The tournament incentive is not explicit in the attorney's contract, and I define the ex-ante incentive as:

$$incentive_{i,t} = \frac{target_{i,t}}{current_{i,t}}$$

where the numerator is the target salary or the "prize" to which the attorney aspires within the SEC, and the denominator is the attorney's current compensation. The key

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question is what qualifies as the target salary, or in other words: who is competing against whom at the SEC, and for what prize? Based on the discussion in Section 2.1, the natural way to define tournament is between attorneys who work at the same grade and office, and compete for a promotion to the next grade within the same office. For example, SK-13 attorneys in Chicago compete for SK-14 in Chicago. Therefore, the incentive of the individual attorney is:

$$incentive_{i,o,g,t} = \frac{RegCap_{o,g+1,t}}{salary_{i,o,g,t}}$$

where $RegCap_{o,g+1,t}$ is the highest available salary in the next grade $(g + 1)$. For example, for an SK-12 attorney in Chicago, the incentive is the ratio between the top SK-13 Chicago salary and her own salary. Essentially, I consider the top $g + 1$ salary as the potential prize for tournament winners. It includes the immediate pay raise upon promotion and the embedded option for virtually guaranteed pay raises to the top of $g + 1$. Put differently, a promotion to the next grade carries two benefits: the direct pay raise upon promotion, and the sequence of virtually guaranteed pay raises to the new grade's cap. This notion is in line with tournament measures used in the literature. For instance, Coles et al. (2017) study industry tournaments and define the incentive as the compensation gap between the CEO under consideration and the second-highest-paid CEO in the same industry.[7]

Similarly, in the office-grade sample the incentive is:

$$incentive_{o,g,t} = \frac{RegCap_{o,g+1,t}}{MedianSalary_{o,g,t}}$$

where I replace the numerator with the median salary in office o, grade g, and time t. Note that the incentive in the office-grade sample is the median individual incentive from the attorney sample. I compute the incentive using the base pay plus locality pay, excluding cash bonus (which in itself is a function of performance). In Section 4.4 I discuss potential concerns and alternative incentive measures which all lead to similar

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[7]They use second-highest to deal with extremely high salaries, an irrelevant concern in the context of government compensation packages.

results.

3.2 Empirical Strategy

Proper identification of the tournament effect is difficult. Since salaries at the SEC are not randomly assigned, neither are the incentives. Numerous assignment mechanisms could generate similar incentive-enforcement correlations and bias the estimated tournament effect. The main strategy I employ is a set of fixed-effects specifications which rules out possible alternative explanations. I then introduce additional tests, combined with a deeper discussion of the SEC's institutional setting, to address other specific concerns and solidify the tournament interpretation of the results. I lay out the fixed effects strategy here and the additional tests in Section 4.

In the attorney sample, I estimate the following regression:

$$y_{a,o,g,t} = \alpha + \beta \cdot incentive_{a,o,g,t-1} + \lambda_{o,g,t} + \epsilon_a \tag{2}$$

The outcome is one of the attorney-level enforcement measures and *incentive* is the individual incentive. $\lambda_{o,g,t}$ is a flexible set of fixed effects. I start with the attorney's grade, which is necessary given the SEC's hierarchical structure that assigns more cases to more senior attorneys (Figure 4). This specification studies deviations from the average caseload. I add year dummies which control for agency-wide initiatives and other possible macroeconomic conditions, such as the financial crisis, all of which clearly shape the enforcement activity of the agency. In the third specification I replace year dummies with year-office dummies to absorb all cross-office variation. Specifically, it absorbs any source of variation coming from local conditions: outside career opportunities, pool of financial misconduct, differences in workforce characteristics, and managerial style of the office's top brass. Those could potentially affect the enforcement productivity of the office, and the year-office dummies force a comparison between attorneys who work at the same office (the SEC has 12 offices). Finally, the fourth specification includes year-office-grade fixed effects. In addition to controlling for macroeconomic forces and local conditions,

this specification directly compares attorneys who compete in the same tournament at the same time. This is arguably the tightest specification. Note, however, that including year-office-grade fixed effects may be "overcontrolling" - that is, it may be "controlling away" some of the very effect I strive to document. By forcing the comparison to be made between attorneys within the same "working unit" I essentially give away the variation in the target salary (the numerator), and focus on the variation in the individual salary (the denominator): the lower the salary, the higher the incentive.

Equivalently, in the office-grade sample I estimate:

$$y_{o,g,t} = \alpha + \beta \cdot incentive_{o,g,t-1} + \overrightarrow{\lambda}_{o,g,t-1} + \lambda_{o,g} + \lambda_t + \epsilon_{o,g} \tag{3}$$

The outcome is one of the office-grade aggregated enforcement measures, and *incentive* is the median incentive within the office-grade. I include office-grade controls (number of attorneys and the median tenure) and office-grade fixed effects, where the latter reflects the different case assignment between more or less senior grades. Similar to Equation 2, I alternately add year dummies and year-office dummies. In all specifications the explanatory variables are lagged, to rule out reverse causality. Standard errors are clustered at the attorney level (for Equation 2) or at the office-grade level (for Equation 3).

3.3   Summary Statistics

Table 1 and Table 2, and the accompanying Figure 3, Figure 4, Figure 5, Figure 6 and Figure 7 summarize the key statistics. All dollar values are in 2017 USD.

The 3,178 enforcement actions in the sample were filed between 2002 and 2017. On average, the SEC published 186 actions during a year. The average case involves 3.3 defendants, including relief defendants who are not accused of wrongdoing but have received property originally obtained illegally. The vast majority of the actions (90.4%) are standalone, which means no follow-up action based on the same misconduct was filed during the sample period. One in three cases is settled, and the remainder (60%) are filed as contested actions. One in five cases is related to criminal charges brought simultaneously

by the United States Department of Justice. One in six cases required an emergency relief in the form of asset freeze. Nearly two thirds of the cases allege anti-fraud behavior (more on that in Section 4.3). Less than 20% of the cases are labeled AAER and involve accountants or auditors. The average litigation team consisted of 3.9 attorneys, with 10 years of experience at the SEC and a combined annual income less than $800,000. One in five cases was litigated solely by D.C. attorneys, 70% solely by regional attorneys, and the remaining by a joint team of regional and D.C. attorneys.

The average enforcement attorney has 9 years of experience at the SEC and earns $186,000 annually. The attorney's incentive is 1.23 (1.16), relative to the top (median) salary in the next grade. The compensation structure at the SEC is concave, such that the incentives for the most senior grades are smaller on average. This seems to fall short of the optimal tournament design, which requires pay gaps between ranks to increase with the rank (Rosen (1985)). Each year, one in three attorneys files at least one enforcement action (unconditional probability 34.6%). The probability of bringing fraud charges is slightly lower (27.2%), and only one in ten attorneys is involved in criminally-related enforcement actions. Conditional on filing enforcement actions, the average attorney brings 2.3 actions against 7.8 defendants. Every year, one in ten attorneys is promoted (unconditional probability 10.1%). The majority of enforcement attorneys are male (62%), and the attrition rate among enforcement attorneys is 5.1%.

The Online Appendix includes descriptive statistics for the office-grade sample. The average grade includes 11 attorneys with 10 years experience at the SEC and an annual salary of $196,000. They face tournament incentives of 1.19 (1.14) relative to the top (median) salary at the next grade. The majority of grades (73.8%) are involved in enforcement, and half of the grades bring criminal-related actions. Conditional on filing, the average grades brought 13 actions, including 9 actions with fraud charges, 3 related to criminal charges, and 2 requiring freezing of assets. Conditional on filing, half of the attorneys were involved in enforcement.

3.4   Enforcement and Promotions

A key assumption in the paper is that enforcement has positive impact on promotion decisions. If that is not true, then any incentives-enforcement correlation is spurious: even if the value of promotion increases, attorneys have no reason to invest effort in enforcement since it does not improve their promotion chances.

The assumption seems appropriate in the sample I study - enforcement attorneys, whose promotion chances are reasonably linked to their enforcement portfolio. I test this formally in Table 3, which estimates the probability of promotion as a function of enforcement activity. All specifications include year-office-grade fixed effects, comparing attorneys who compete in the same tournament, i.e. all level-1 attorneys in Chicago in 2010. There is a significant positive relation between enforcement and winning the tournament: bringing at least one enforcement action in time $t-1$ predicts 1.6%-2.1% increase in promotion probability at time t. That relation is not explained by tenure and past promotions and it holds within employee, i.e. is not affected by skills, motivation and other employee-specific characteristics. The Online Appendix also shows that an attorney has a 54.4% chance to be promoted at least once during his or her entire career, but this probability varies significantly between attorneys who filed any enforcement action so far and those who did not: the formers have a 58.1% chance of being promoted at least once during their career, compared to 46.4% chance for the latter, and the difference is statistically significant at the 1% level. Finally, the Appendix shows how "enforcing" attorneys are promoted faster than "non-enforcing" attorneys.

To summarize, enforcement is internally rewarded: attorneys with expanded litigation portfolio are more likely to win the tournament and earn a promotion. This empirical fact leads to the main hypothesis of the paper: when the promotion value increases - attorneys should invest more effort in building their litigation portfolio. Note that I do not argue that promotions are necessarily a direct reward for enforcement. It could be that enforcement actions are a way to "stand out" from the crowd in a bureaucracy, and that attorneys can signal their skills and determination to their supervisors by bringing enforcement actions. Either explanation would suffice for the purpose of this paper.

4 Results

4.1 Main Result

To obtain a visual impression, Figure 8 plots the tournament incentive against the probability of bringing an enforcement action. The positive relationship between the two, at the aggregate office-grade level and also at the attorney level, is consistent with a tournament interpretation: stronger incentives lead to greater effort which results in higher probability of enforcement. Table 4 confirms this visual impression using regression analysis. The outcome variable in this specification is indicator which equals one if the attorney (Panel A) or the office-grade (Panel B) filed at least one enforcement action.

I start by examining individual incentives (Equation 2). I compare the litigation portfolios of attorneys throughout the SEC (year dummies) and within the same office (year-office). Finally, in the last column I include year-office-grade fixed effects, directly comparing attorneys who work at the same office, same year and same grade, all competing in the same tournament for the same prize. Either way, there is a significant positive relation between the attorney's tournament incentives and the likelihood of him or her participating in enforcement. Attorneys exhibit different propensity to bring enforcement actions, depending on their tournament incentive.

Taking the analysis one step further, I estimate Equation 3 to study the "tournament between tournaments:" how enforcement output differs across grades as a function of the promotion-based incentives. In one set of regressions I include office-grade indicators and year indicators. The tournament effect is then identified within the office-grade over time. In a second set I include year-office indicators, effectively comparing grades within the same office. This specifications absorbs all variation coming from local conditions, such as financial misconduct and labor market opportunities. Either way, the results show that incentives have a positive and significant impact on enforcement.

Recall that the average incentive for SEC enforcement staff is 23%. To put things in perspective, Coles et al. (2017) - who study within-industries tournament among CEOs - report an average incentive exceeding 349%. It follows that the SEC provides low-

powered tournament incentives, which is consistent with the compressed pay structure of the Federal government. Nevertheless, the impact of those incentives on SEC enforcement is non-trivial. For instance, moving from the 10th to the 90th percentile of the incentive distribution increases enforcement probability by 11 percentage point or 16% relative to the mean (in the office-grade sample), and by 5 percentage point or 14.9% relative to the mean (in the attorney sample).[8] The link between small pay gaps and individual productivity is consistent with a different, yet related, labor literature which studies wage differences among peers in low-skilled positions. Such studies report material responses, in terms of productivity and quitting rates, to quasi-random pay gaps as small as 5% (Breza et al. (2016)) and 10 cents (Dube et al. (2019)).

In Table 5 I use alternative outcome variables. I estimate the extensive margin by replacing $I(enf_{i,t})$ with $enf_{i,t}$ in the attorney sample, and replacing $I(enf_{o,g,t})$ with $enf_{o,g,t}$ in the office-grade sample (log plus one transformation). In the latter sample I am also able to estimate $Engagement_{o,g,t}$, representing the share of attorneys who participate in enforcement ($\frac{\sum_{i \in (o,g)} I(enf_{i,t})}{N}$). I use identical sets of fixed effects to the ones used in the main specification (Equation 2 and Equation 3). The results indicate that tournament incentives explain not only the likelihood of filing an enforcement action, which is the main takeaway from Table 4, but also the quantity of enforcement actions and the share of attorneys who participate in enforcement activity.

The Online Appendix contains a set of robustness tests. For the intensive margin I estimate Probit model instead of linear probability model, and the results remain qualitatively similar. I cluster standard errors at the grade, year, or office, as well as double-cluster at the attorney and grade, attorney and year, or attorney and office. All the results remain significant at the 1% level, except for office and attorney-office which are significant at the 10% level.

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[8]Since $(1.283 - 1.020) * 0.437/.738$ in the office-grade sample, and $(1.332 - 1.042) * 0.177/.346$ in the attorney sample.

4.2 Interpretation and Identification Challenges

The baseline results support the tournament hypothesis: when pay gaps increase, enforcement activity increases as well. Consider two level-1 Boston attorneys, A and B, where A has lower salary and hence higher pay gap from the "target" salary than B. Individual salaries should commensurate with marginal productivity, and hence *a priori* we expect A to be less productive in terms of enforcement activity. Moreover, the low salary in itself should have an adverse impact on productivity (Dal Bó et al. (2013)). Finally, A's lower salary is plausibly driven by shorter tenure and lower entry salary, and the latter is likely explained by differences in work experience, education and negotiation skills (see Section 2.1). Due to all that we expect A to be less engaged in enforcement, but I find the opposite: attorney A is more likely to engage in enforcement. This is consistent with a tournament effect: attorney A has stronger tournament incentives, which result in higher volume of enforcement. At the aggregate level, an office-grade with larger pay gaps offers its attorneys better promotion opportunities, which in turn induce greater effort and result in more enforcement activity.

While the results are aligned with the tournament hypothesis, identification is a challenge. Promotion-based incentives are a function of salaries, a clearly endogenous variable. An ideal experiment would randomize salaries to generate a random incentive structure. The SEC did not engage in such an experiment and therefore the causal interpretation of the results should be cautiously applied.

The fixed effects rule out the immediate "suspects" which could have generated similar incentive-enforcement correlations. The tournament effect is not explained by seniority and rank; macroeconomic or agency-wide trends; or local conditions including financial misconduct, outside job opportunities, and managerial style. The effect holds within the same year-office-grade, a specification which "controls away" some of the very effect I strive to document, and all the results are robust to various clustering methods and winsorization thresholds. The remainder of the paper addresses specific concerns. *First*, a measurement error in the outcome due to heterogeneity across enforcement actions. *Second*, the incentive variable is not a proper measure of ex-ante promotion value. *Third*,

strong incentives are assigned to "good" attorneys who pursue enforcement due to their unobserved quality (omitted variable bias).

4.3 Alternative Enforcement Measures

In the main specification I abstract from the nature of the enforcement cases and count them all equally toward the outcome variable. But not all enforcement actions are born equal. Some actions involve more complex legal issues, higher legal stakes and potentially larger penalties. Those distinctions are important for two complimentary reasons. *First*, tournament theory predicts that stronger incentives increase effort. The observed enforcement is a proxy for effort with a potential measurement error, and tightening the definition of enforcement could help reduce the measurement error (see a formal treatment in the Online Appendix). *Second*, in the classic multitask model (Holmstrom and Milgrom (1991)) the agent has a single task with several dimensions to it. Introducing performance-based incentives could lead the agent to work harder on the more observable dimensions and neglect others. In the current setting, it is possible that powerful tournament incentives would lead enforcement attorneys to allocate effort toward less desirable enforcement actions. Empirically, there is no consensus on how to weight enforcement actions based on their difficulty or quality. In this section I offer a set of measures which could capture some of those dimensions.

First, I consider the factual complexity of the case as reflected by the number of defendants named in the initial complaint. Two thirds (65%) of the complaints involve two or more defendants. Multi-defendant cases require greater amount of effort and also reasonably have more impact. Consider for instance a case from 11/9/2012, when the SEC charged a ring of seven high school friends with insider trading in health care stocks. Tracing the long chain of tippers and "tippees" presumably required more efforts than, say, bringing a charge against a single defendant. Based on this intuition I estimate the efficacy of tournament incentives with an outcome variable that counts the number of defendants (winsorized at the 2.5% level). The results are summarized in Table 6. The outcome variable is the number of defendants named on complaints filed by the

attorney (Panel A) or the office-grade (Panel B); I use log plus one transformation to handle zero defendants. The results remain unchanged if I omit relief defendants from the calculations, or use the number of defendants per case as outcome. Either way, the conclusion is similar: stronger tournament incentives lead to more defendants on SEC complaints, at the attorney and at the aggregate level.

Second, I consider two proxies which capture the gravity of the allegations. One in five (21.9%) civil complaints brought by the SEC was connected to criminal investigations, where the same nexus of misconduct led to criminal charges filed by the Department of Justice and occasionally by foreign or State-level prosecutors. Some notable examples include the Ponzi scheme orchestrated by Bernard Madoff and several of his employees and relatives, and the post-crisis settlement with UBS for enabling U.S. clients to maintain undisclosed accounts in Switzerland. Those criminally-tainted cases are presumably those with the most egregious behavior, and can therefore be classified as more important than others. Practically speaking, those actions tend to involve a more complicated set of facts. In addition, I rely on the legal literature and focus on anti-fraud cases. Some of the violations the SEC can allege are premised on negligence or strict liability, but allegations of fraud are more challenging since they require proof of *scienter*. Choi et al. (2018), based on discussions with prior Enforcement Division attorneys, conjecture that scienter cases are more complex and harder to prove and often result in contested litigation. I follow Choi et al. (2018) and classify cases as anti-fraud if they allege a provision explicitly mentioned in the Rule 506 (Rule 10b-5 and § 15(c)(1) of the Exchange Act, § 17(a)(1) of the Securities Act, § 206(1) of the Investment Advisers Act), or allege bribery (Foreign Corrupt Practices Act or (§ 13(b)(5) of the Exchange Act). For example, Rule 10b-5 is titled "employment of manipulative and deceptive devices," and prohibits various forms of fraudulent and deceitful behavior pursuant to section 10(b) of the Securities Exchange Act of 1934. Actions pursued under the Foreign Corrupt Practices Act typically entail multiple regulators over many domestic and foreign jurisdictions that consume considerable time and resources.

The results are summarized in Table 7, and all point to the same direction: tour-

nament incentives lead to more enforcement actions in general, and to more important enforcement cases in particular. Specifically, stronger tournament incentives increase the probability that SEC attorneys would file criminally-related enforcement actions and allegations of fraud. While the coefficients appear lower than the baseline results (Table 4), the economic magnitude relative to the mean of the outcome variable is in fact larger. For instance, one standard deviation increase in the incentive leads to 11.5% increase in probability of filing a criminally-related civil action ($0.12407 \cdot \frac{0.109}{0.118}$).

Third, I consider the procedural complexity of the case and distinguish between standalone and connected enforcement actions. A common nexus of misconduct could lead to multiple complaints, filed simultaneously or sometimes over the course of several years. For instance, between October 2009 and January 2011 the SEC brought three insider trading actions against fourteen defendants related to Galleon, a large New York-based hedge fund complex. It is possible that it takes more effort to file the first action in the sequence, while follow-up actions require less amount of effort. In the Online Appendix I show that dropping follow-up cases does not change the main results.

Lastly, I take into account the roles within the litigation team. In the tournament literature the focus is on the top executives: their effort drives the performance of the entire company, and therefore their incentives should be carefully designed. To carry on with this analogy, we would like to study the incentives of the "CEO" of the enforcement action: the lead attorney who is in charge of the litigation effort. I utilize the order of appearance on the document and count the enforcement action only for signatory attorneys who presumably played the most dominant role. I do not count the action for attorneys who are designated as "local counsel," "pro hac vice" (for this occasion), or "of counsel." The results in Table 8 demonstrate that the tournament effect is driven by attorneys who lead the litigation effort and sign the complaints. In contrast, tournament incentives seem uncorrelated with incendiary roles within the litigation team, namely "of counsel" or "local counsel."[9]

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[9]Some documents explicitly specify one or more attorneys as "lead attorney," but more often than not that designation is not mentioned at all. Additionally, 33% of the complaints list some of the attorneys at the top of the document. All signatory attorneys are at the top, but not vice versa. Counting "top" as signature does not change the results.

To summarize this section, attorneys with stronger tournament incentives are more likely to lead the SEC's enforcement activities and file complex cases with grave consequences. The positive relation between tournament incentives and different outcome variables, based on these intuitions, seem consistent with an interpretation of incentives and effort.

4.4 Alternative Incentive Measures

The tournament incentive is a forward-looking measure which is not explicitly stated in the attorney's contract. It reflects typical promotion patterns for SEC enforcement attorneys as shown in the data. For robustness I consider a set of alternative incentive measures and obtain similar results to those reported above.

First, in the Online Appendix I winsorize the incentive at 1%, 2%, 5% and 10%; the results remain significant at the 1% level and the coefficients increase in magnitude, assuring that the results are not driven by outliers. I remove observations with effectively zero incentive, i.e. when the target salary is lower than their current salary. This test essentially excludes attorneys who are at the very top of their respective grades, and the coefficients increase by a small amount.

Second, in Table 9 I consider twelve alternative incentive structures which account for different features of the SEC organizational design. First, occasionally the hierarchy structure in the office is incomplete, such that if grade $x + 1$ is unoccupied then the incentive for attorney from grade x is unclear. For instance, no SK-13 attorney worked at the Atlanta office during 2008. In the baseline specification I omit those observations, but now I calculate their incentive relative to grade $x + 2$. A second complication regards SK-16, which is a unique grade at the SEC: an SK-14 attorney could *ex-ante* be promoted to SK-15, a managerial position, or to SK-16, which is typically a non-managerial position albeit with better salary. For attorney in SK-15 or SK-16, the next available promotion is SK-17. In the main specification I treat SK-14 attorneys as if they compete for SK-16, which is hierarchically "closer," and SK-15 and SK-16 attorneys as if they compete for SK-17. I now allow SK-14 attorney to aspire to SK-15 position or to be indifferent

between SK-15 and SK-16, and I let SK-16 attorneys to view SK-15 as their target. Lastly, it is possible that the attorney has more moderate expectations: instead of aspiring to the top salary in the next grade, she views the median salary as more realistic. Those considerations yield various combinations, which I report in Table 9. The estimated tournament effect remain similar and significant at the 1% level.

Lastly, I take into account the promotion probability. In a tournament setting pay gaps matter, but so does the likelihood of getting a promotion and winning the pay gap. Holding the pay gap fixed, a higher probability of winning increases the effort exerted by the competing agents (Coles et al. (2017)).[10] At the SEC, promotion probability is affected by the number of attorneys in the office-grade who compete for that promotion. Office-grades above (below) the median size promote 11% (22%) of their attorneys, and the differences are statistically significant. The elasticity of promotions to size is between 0.24 to 0.41, and in any case significantly less than 1 (see Online Appendix). It implies that when the number of promotion candidates increases the unconditional probability of promotion decreases. The prediction is thus that a given incentive would have differential effect: higher impact in small tournaments (less attorneys in the office-grade), lower impact in large tournaments.

Figure 9 visualizes the difference, and the Online Appendix report regression results. I estimate Equation 2 with an interaction term between the incentive and the number of attorneys within the year-office-grade, denoted as *Large* (note that *Large* is absorbed by year-office-grade fixed effects). In the first three columns *Large* is an indicator which equals one if the office-grade is in the 50th, 90th, or 95th percentile or higher of the size distribution. In the last column *Large* is a continuous variable with the number of attorneys in the office-grade. Either way, the results indicate that the incentive effect is concentrated in small tournament, consistent with a tournament prediction. For instance, holding the individual incentive constant and moving to the 90th percentile size would decrease the incentive effect by 33%. Results from the office-grade sample point toward

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[10]This result relies on relatively weak assumptions: the cost function of the competing agents increases with effort, the function is convex, and the convexity does not increase with effort. Formally, for an effort μ and cost function $C(\mu)$: $C'(\mu) > 0, C''(\mu) > 0, C'''(\mu) \leq 0$.

the same direction: the incentive effect is concentrated in smaller tournaments, where the promotion probability is higher.

Overall, the evidence in this section is consistent with tournament predictions. Various measures of ex-ante tournament incentives lead to similar conclusions. Effort levels are adjusted based on the incentive size (gap relative to the "prize"), and also in response to change in promotion probability.

4.5 Unobserved Quality

A potential omitted variable is the unobserved attorney quality. The concern is that the unobserved quality is affecting the attorney's enforcement portfolio, and also correlates with the SEC's pay structure and the individual tournament incentives.

The main concern is that strong "incentives" are assigned to "good" attorneys, who pursue enforcement actions due to their unobserved qualifications. If that is true, then the estimated tournament effect is biased upward. But such a concern appears inconsistent with the SEC's institutional setting. The target salary, i.e. the numerator, reflects the pay caps for each grade. Those caps are closely related to the government-wide pay schedule (GS), and I have no evidence that the SEC is pushing the target salary upward for "good" attorneys.[11] As for the current salary, i.e. the denominator, those typically commensurate with experience and education which leads to the more likely conclusion that "good" attorneys in fact have higher salaries. Therefore, to the extent that incentives are allocated based on quality it appears that "good" attorneys receive weaker incentives, which implies a downward bias in the estimated tournament effect.

In the remainder of this section I propose two observable variables which likely capture top performance: bonus and education quality. To be clear, both variables are highly endogenous. Legal education is a mix of training and selection by university admission offices. Bonus is a function of past performance as well as a separate source of motivation for future performance. I do not lean too heavily on the causal effect of bonus and education, only on their ability to reflect the underlying quality of SEC attorneys.

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[11]In fact, such mechanism would suggest that the SEC recognizes the efficacy of tournament incentives and adjusts its pay structure accordingly.

I collect educational background from Linkedin; Martindale-Hubbell, a commonly used directory for U.S. lawyers; and a generalized web search. That data is available for 81.4% of the sample. I match the education data to the rank published by U.S. News in 2018, which ranks 203 law schools from 1 (Yale) to 144. Less than a third of attorneys (30%) graduated from a top-10 law school, nearly half (48%) graduated from a top-20 school, and the mean rank is 37 (out of 144). Table 10 summarizes the results. Consistent with the initial intuition, attorneys with better education are more likely to file enforcement action relative to their peers. More importantly, the power of tournament incentives is not diminished by this additional control. The results remain unchanged if I replace top-10 indicator with top-20 indicator or with a continuous variable. Note that in the latter specification (Panel C) the sign flips, as higher ranked school corresponds to a lower quality.[12]

Next, I consider bonus recipients. Those are employees who were judged by their superiors to perform above and beyond normal job requirements.[13] The observed bonus is therefore, by construction, correlated with the unobserved quality. Bonus distribution has virtually stopped in 2010 as part of a government-wide pay freeze, so the sample in this subsection is limited to the years 2002-2009 (including). Nearly two thirds (61.8%) of enforcement attorneys earned a bonus during that time period. Conditional on receiving one, the average bonus was $3,153 in 2017 USD or 1.6% of the attorney's base compensation. The results in Table 11 confirm that bonus recipients are $4-5$ percentage points more likely to engage in enforcement activity in the subsequent year. More importantly, tournament incentives still play a significant role, and the coefficients remain significant at the 1% level.

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[12]For brevity I report here only the results from the attorney sample, but the results from the office-grade sample are similar and are reported in the Online Appendix.

[13]Formally, 5 U.S.C 45 specifies that an incentive award may be granted to an employee who "by his suggestion, invention, superior accomplishment, or other personal effort contributes to the efficiency, economy, or other improvement of Government operations" (see also U.S. Government Accountability Office, 2013).

4.6 Additional Results

4.6.1 Case Study: Exogenous Pay Raise

A small subsample of SEC enforcement attorneys participated in a quasi-random experiment, where a component of their salary was close to randomly assigned.

In 2002, the SEC implemented a new compensation system. The new system consisted of 20 grades, each with 21-30 pay steps. All employees were transfered from the old system to the new one based on a fixed procedure. First, each employee was converted to the appropriate grade. Next, 6% were added to the employee's salary. Lastly, that salary-plus-6% was rounded up to the closest pay step within the new grade. Figure 10 illustrates the mechanism for an attorney with $114,679 base pay in the old system. Adding 6% to $114,679 yields $121,560. In grade 16 in the new pay system, the closest step *above* $121,560 is $122,399, which will be the employee's new base pay. It follows that the employee received an *individual* pay raise of $122,399 - $121,560 = $839, on top of the 6% across-the-board pay raise.

The pay conversion in 2002 introduced an exogenous shock to the SEC's pay structure. In particular, it included a unique round-up component: a salary raise up to the closest pay step in the new pay structure. I use this round-up component as an instrumental variable for tournament incentives. The instrument is defined as $RoundUp_{i,g} = Step_g - SalaryPlus_{i,g}$, where $SalaryPlus_{i,g}$ is the attorney's base pay just before the 2002 transition, plus 6%, and $Step_g$ is the closest pay step from abov e. In this section I exclude attorneys who joined the SEC after the 2002 transition, or those who were promoted several steps during the transition (which renders the round-up component meaningless). This leaves a sample of 301 attorneys and 3,032 attorney-year observations. The average round-up was $914, expressed in 2017 USD.

I estimate the baseline regression in a two-stage least squares model, using the same fixed-effects specification as in Table 4. The results are reported in Panel A in Table 12. The coefficients indicate that one standard deviation increase in the incentive leads to 16.7-18.6 percentage point increase in probability of enforcement, which is 46.9%-52.3% increase over the sample mean. It is consistent with the main result of the paper, sug-

gesting that tournament incentives are positively linked to enforcement activity. The larger magnitude of the effect suggests that the OLS coefficients are downward biased. A potential explanation is that in the OLS regressions the positive incentive effect is mitigated by the negative effect of lower salaries: higher incentive correlates with lower salary, which appears to correlate with less experience and skills. The wage-setting mechanism at the SEC suggests that the estimated coefficient provides only a lower bound, since the endogenous component of the incentive likely affects enforcement in the opposite direction.

The instrument relies on two identifying assumptions: relevance, and exclusion. For relevance, the 2002 pay raise became a permanent component of the employee's salary. A higher round-up component leads to a persistently higher salary and lower incentive, which justifies the relevance assumption. Indeed, the first stage shows a strong negative correlation between the round-up component and the attorney's tournament incentive, with a high $F-$statistic (> 12). For exclusion, the assumption is that the rule-based 2002 salary raise affects enforcement solely through the incentive, and not through any other channel. The institutional background seems consistent with this assumption. The 2002 pay raise was exogenous to the employee's characteristics, determined by the distance from the closest pay step within the pay level. If the salary raise has a direct causal effect on enforcement, then the instrument would violate the exclusion restriction. While I cannot rule out this option, it appears that if there is any effect it should go in the other direction, i.e. an exogenous pay raise would *increase* enforcement activity (as in Dal Bó et al. (2013)). While I argue that the instrument affects enforcement mainly through its effect on the incentive, I fully acknowledge the difficulties in identifying proper instruments that satisfy exclusion. Readers should apply appropriate caution in interpreting the results.[14]

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[14]Note the conceptual challenge: the incentive is not explicitly mentioned in the attorney's contract, but is constructed from the individual salary and a target salary. It follows that even a perfectly exogenous shock to one of those components could have direct causal effects on enforcement, on top of potential effects through the incentive.

4.6.2 Outside Option

Regulation could be affected by outside career opportunities, although the nature of that effect is still debated (Bond and Glode (2014); Lucca et al. (2014); Agarwal et al. (2014); Kedia et al. (2015); Tabakovic and Wollmann (2017)). In the context of the SEC the main concern is that strong "incentives" are assigned to attorneys with better outside options, and those attorneys pursue enforcement more aggressively because of their outside options. In that case, omitting the value of the outside option would lead to an upward bias of the estimated tournament effect.

A similar concern was discussed in Section 4.5, and it seems inconsistent with the SEC's institutional setting. If the outside option commensurates with qualifications, recall that a better-qualified attorney is likely assigned a higher salary and hence a *weaker* incentive, such that $cov(outside, incentive) < 0$. Moreover, the regulatory cap for each pay grade is set at the *national* level, regardless of local economic conditions; and the locality pay is *identical* for all attorneys who work at the office, regardless of grade. There is no mechanism which allows the SEC to increase target salaries for each office-grade in order to win a "bidding contest" with the private sector.[15]

The Online Appendix reports two additional tests. *First*, I estimate Equation 3 with an additional control variable which equals one if at least one attorney left the SEC. Departures presumably correlate with the unobserved outside option, as attorneys are more likely to leave when the outside option is more valuable, and yet the main results of the paper are not affected. *Second*, I find a weakly negative correlation between individual enforcement and departures. Assuming that attorneys leave the SEC when their outside option peaks, it appears that the value of the outside option does not increase with enforcement. This is in clear contrast with the significant positive relation between enforcement and internal promotion (Table 3): the internal reward for enforcement appears to be much more significant than the potential outside reward. Taken together, those results suggest that omitting the (unobserved) outside option should not affect the estimated incentive effect or at most introduce a downward bias.

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[15]As a side note, such mechanism would imply that the SEC recognizes the efficacy of tournament incentives and adjusts its pay structure accordingly.

4.6.3 Settlement Terms

Settled actions constitute one third of the enforcement sample. In this section I show that stronger tournament incentives lead to tougher settlement terms, which supports the main argument in the paper that incentives affect effort. For brevity, tables and results are in the Online Appendix.

I focus on 1,260 cases which were filed as settled, and study two proxies for the harshness of the settlement terms: barring defendants from the industry, and orders to pay a money penalty or disgorgement. One third of those (37.2%) involved various forms of bars and suspensions. Examples of that include barring an individual from serving as officer or director in a publicly traded company, or suspension from appearing before the SEC as accountant or attorney. Of the 469 settled cases resulting in bars, 20.7% required permanent bar. One in ten settled cases did not specify the monetary terms. Of the remaining 1,136 cases, the average settlement imposed $54 million in penalties and disgorgement with some mega-settlements exceeding $25 billion.

I construct two sets of outcome variables based on this partial data. One is a set of dummies which equals one if the attorney's enforcement activity resulted in at least one industry bar or resulted in disgorgement or penalty. The second is a set of continuous variables, which are the total number of industry bars and the natural log of monetary awards in 2017 USD. I regress the new outcome variables on incentives. The results show that tournament can explain not only enforcement activity in general, but also the propensity and scope of pursuing tougher settlements. For instance, one standard deviation increase in the incentive is associated with 2.2 percentage point increase in the probability of an industry bar, which is 5.9% increase over the unconditional probability. One standard deviation increase in the incentive is associated with 4.7 percentage point increase in the probability of a monetary order, which is 5.7% increase over the unconditional probability.

5 Conclusion

In the wake of the global financial crisis, many commentators have argued that financial regulators are not properly incentivized. The focus is mostly on how the prospects of "switching sides" and obtaining a lucrative private sector job induces regulatory leniency. In this paper I take a different approach and study the role of promotion-based tournament incentives. Those incentives arise endogenously, based on how the regulatory agency chooses to organize its workforce. I find that the competition for promotion among SEC enforcement attorneys increases the quantity of enforcement and facilitates the discovery of severe financial misconduct.

The important role of enforcement is a timeless concept, and it has gained considerable attention in recent years in the context of financial regulation. As noted by the Group of 20 Countries (G-20), "if the system of enforcement is ineffective... the ability of the system to achieve the desired outcome is undermined."[16] To be clear, I do not examine the total welfare effects of enforcement or its relation to other mechanisms that improve market efficiency (Jackson and Roe (2009)). That discussion deserves a separate study. Instead, the key takeaway from the paper is that tournament incentives play a role in shaping the SEC's enforcement activity. The design of promotion-based tournament incentives affects effort and thus law enforcement in financial markets.

On a broader level, mine is the first paper to study how tournaments inside the public sector could affect the economy. It is a potential step toward understanding the social costs and benefits of the government's compensation scheme. Relying on the methodology of this paper, future research can extend the analysis to study the effects of compensation schemes on the production of various public goods.

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[16]G-20 Working Group 1 "Enhancing Sound Regulation and Strengthening Transparency Final Report" (3/25/2009).

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Figure 1: **Example of a Civil Enforcement Action**

VIII.

Retaining jurisdiction of this action in accordance with the principles of equity and the Federal Rules of Civil Procedure in order to implement and carry out the terms of all orders and decrees that may be entered or to entertain any suitable application or motion for additional relief within the jurisdiction of this Court.

Dated: April 28, 2004
Washington, D.C.

Respectfully submitted,

_____
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The signature page of an enforcement action filed on April 2004 in the U.S. District Court for the District of Columbia against Barry Richard Kusatzky, the former controller of California Amplifier. On February 2006, the Court entered a settled final judgment against Kusatzky for falsifying the company's financial statements and insider trading. The final judgment imposed a permanent officer and director bar and ordered payment of partial disgorgement of $25,000.

Figure 2: **Hierarchy Structure**
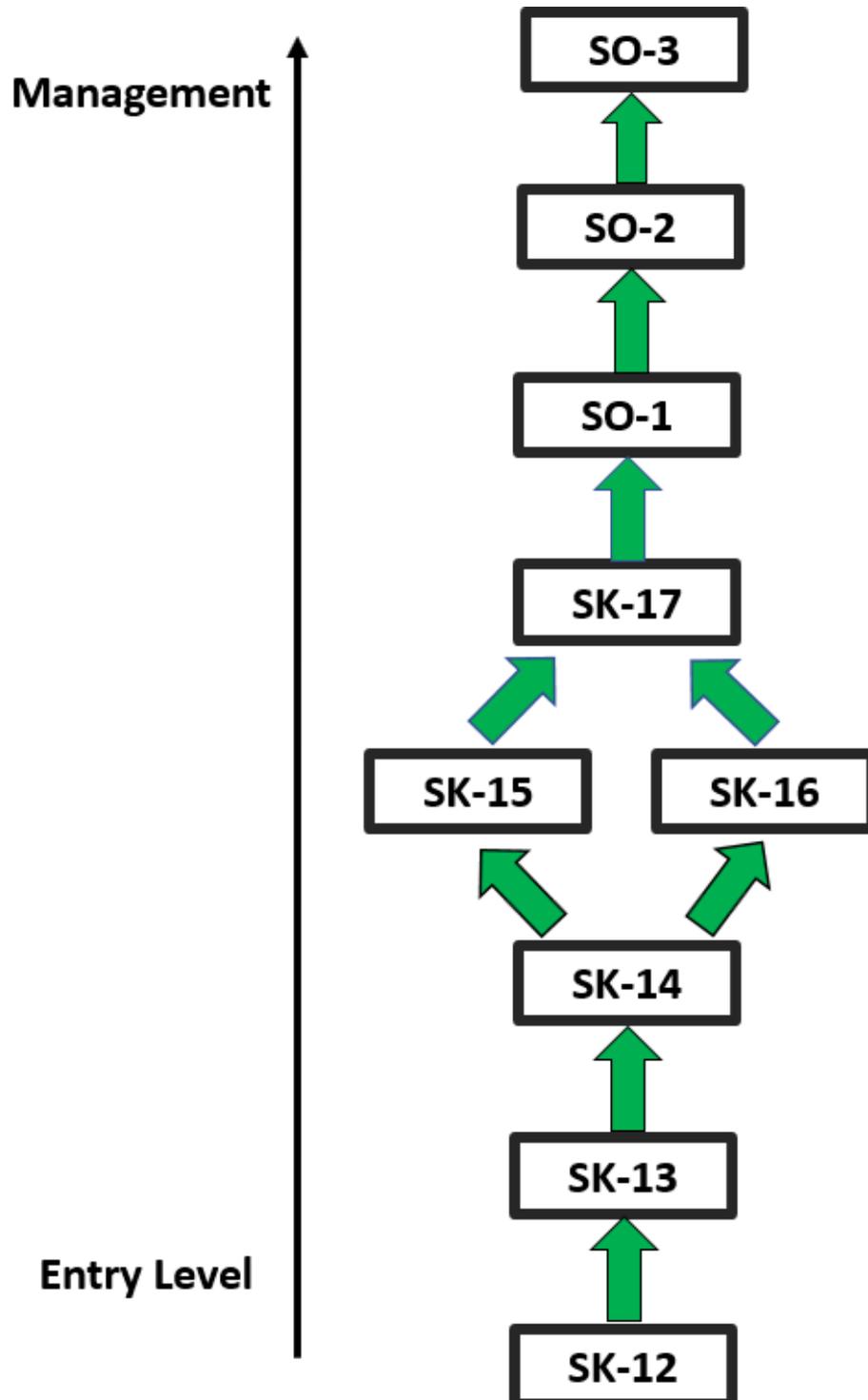
The figure presents the hierarchy structure at the SEC. There are nine grades, ordered from SK-12 (lowest) to SO-3 (highest).

Figure 3: **Compensation Structure**
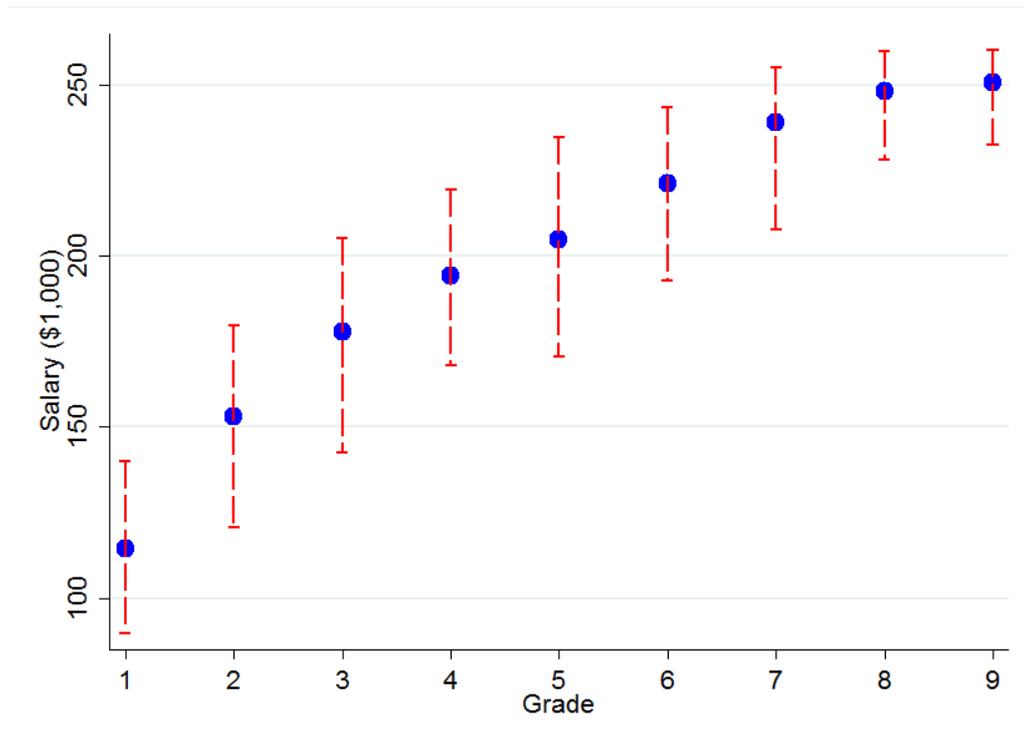
The figure describes the compensation structure at the SEC by grade. Salaries (mean and 95% confidence intervals) are in 2017 USD. The lowest grade is SK-12, and the highest is SO-3 (see Figure 2).

Figure 4: **Distribution of Enforcement by Hierarchy**

Panel A. Total Enforcement
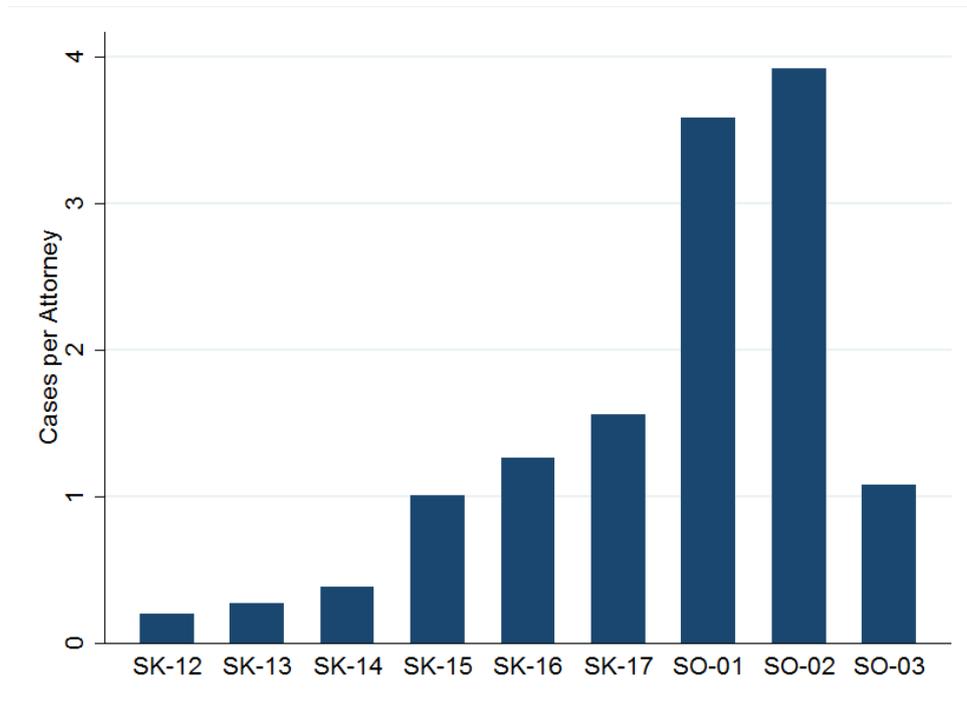
Panel B. Engagement
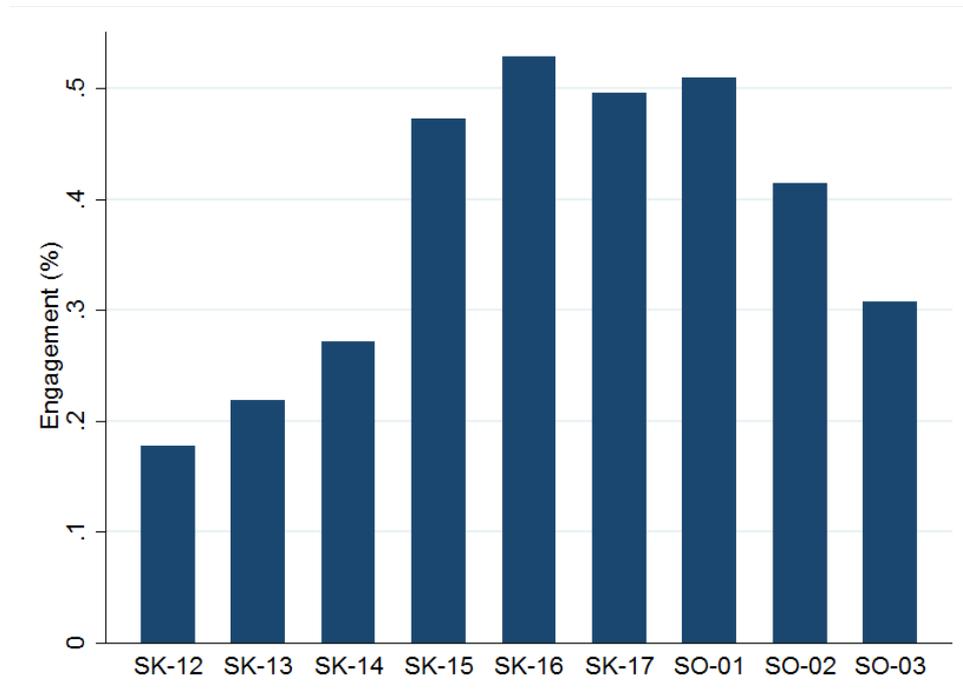
The figure presents the distribution of enforcement over grades. Panel A shows total enforcement activity by grade (total actions divided by number of attorneys), and Panel B shows engagement by grade (share of attorneys filing any enforcement action).

Figure 5: **Distribution of Tournament Incentives**

A. Attorney Sample
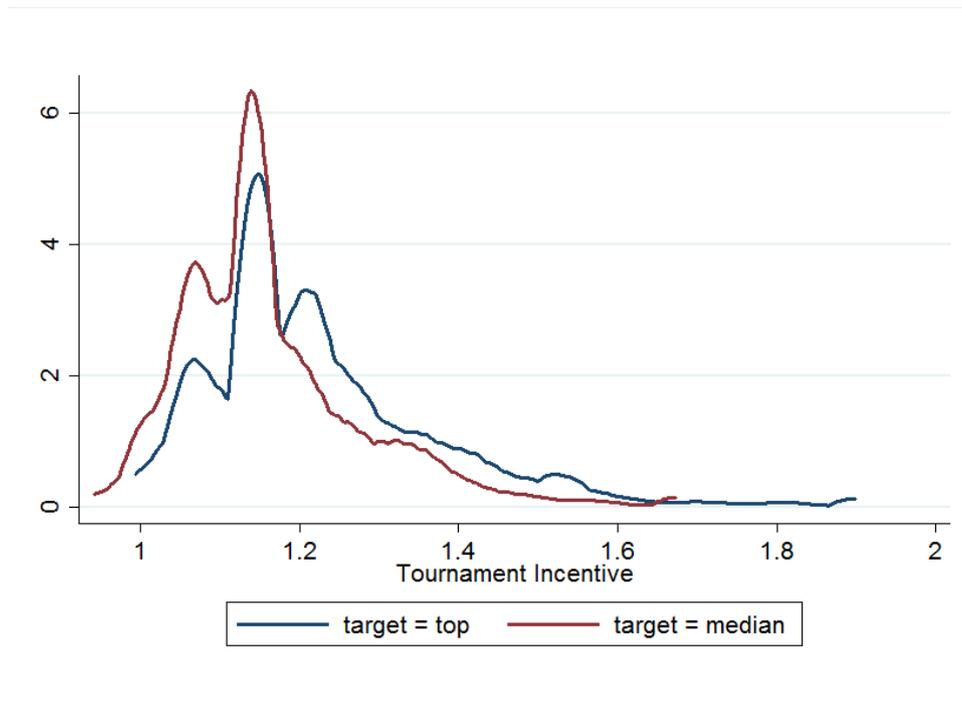
B. Office-Grade Sample
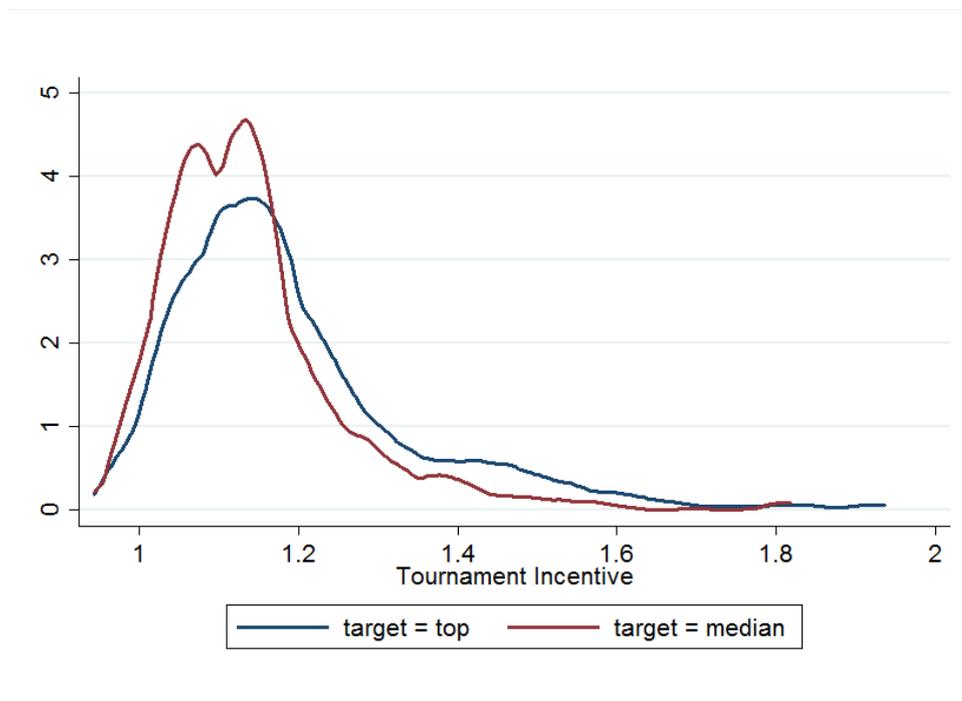
The figure presents the distribution of tournament incentives. In Panel A, *Incentive* is the ratio between current salary and target salary; the target is either the top or the median salary in the next grade. In Panel B, *Incentive* is the median incentive within the office-grade.

Figure 6: **Classification of Enforcement Actions**

Panel A. By Actions
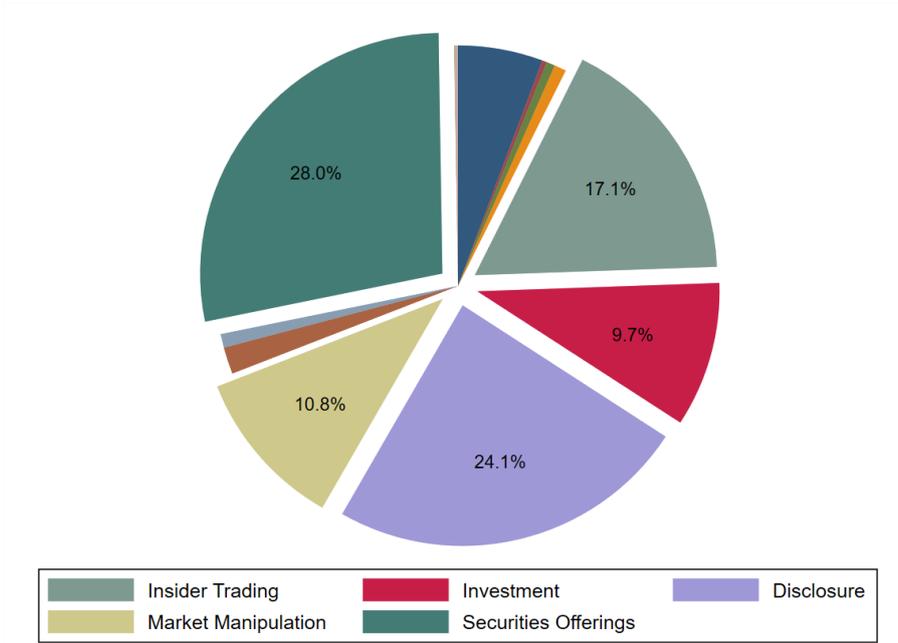
Panel B. By Defendants
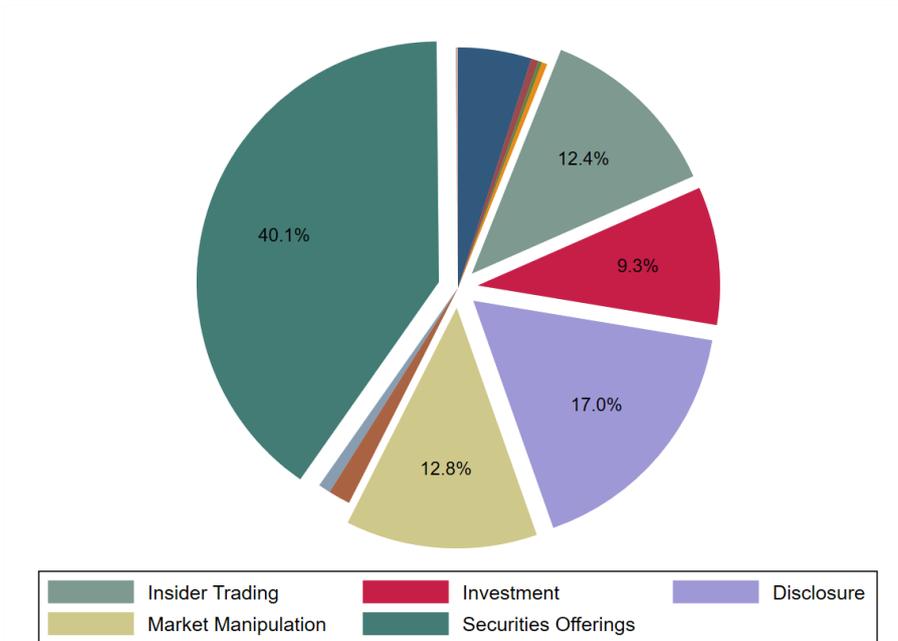
The figure describes the distribution of enforcement actions by category.

Figure 7: **Geographic Distribution of Attorneys**
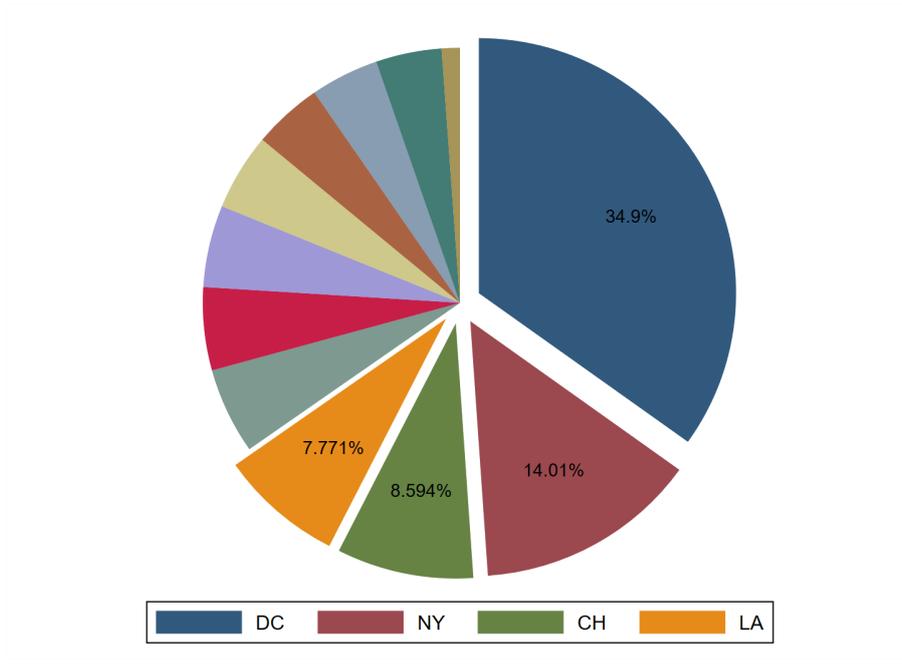
The figure describes the distribution of attorney-year observations over offices. The SEC's headquarters is in Washington DC (DC), and the regional offices are in New York (NY), Chicago (CH), Los Angeles (LA), Boston, Miami, Denver, Fort Worth, San Francisco, Philadelphia, Atlanta and Salt Lake City.

Figure 8: **Tournament Incentives and Enforcement Activity at the SEC**

Panel A. Attorney Sample

Panel B. Office-Grade Sample
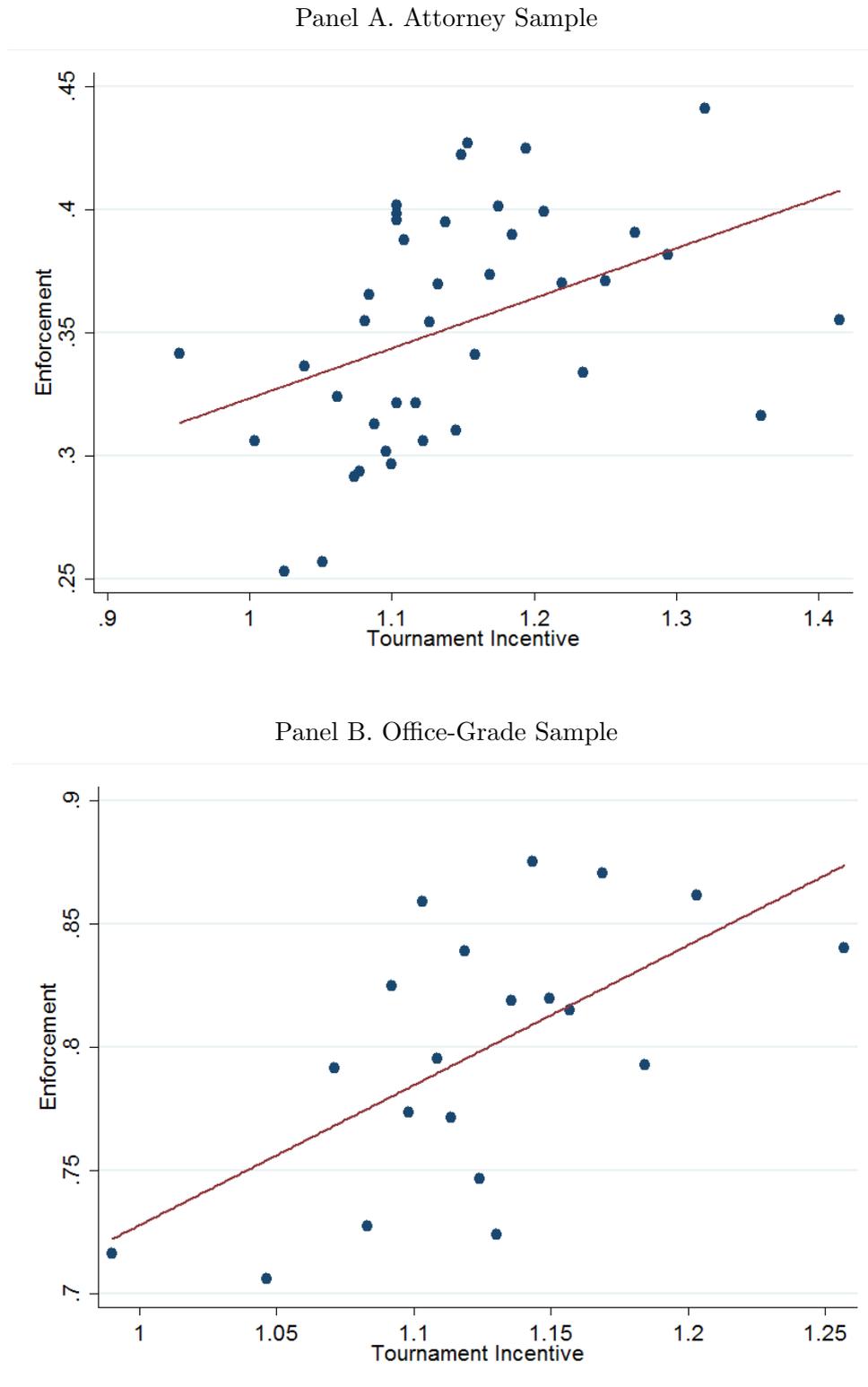
The figure shows the non-parametric relation between enforcement and lagged tournament incentives, controlling for grade. *Enforcement* is an indicator which equals one for any enforcement.

Figure 9: **Tournaments and Number of Contestants**

Panel A. Large Tournaments
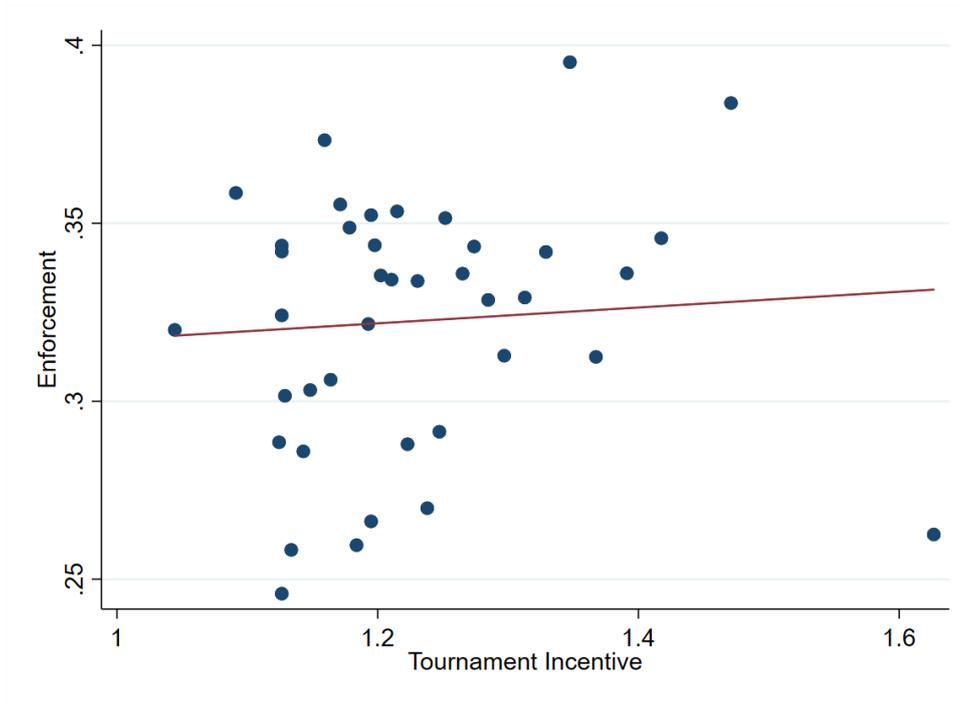
Panel B. Small Tournaments
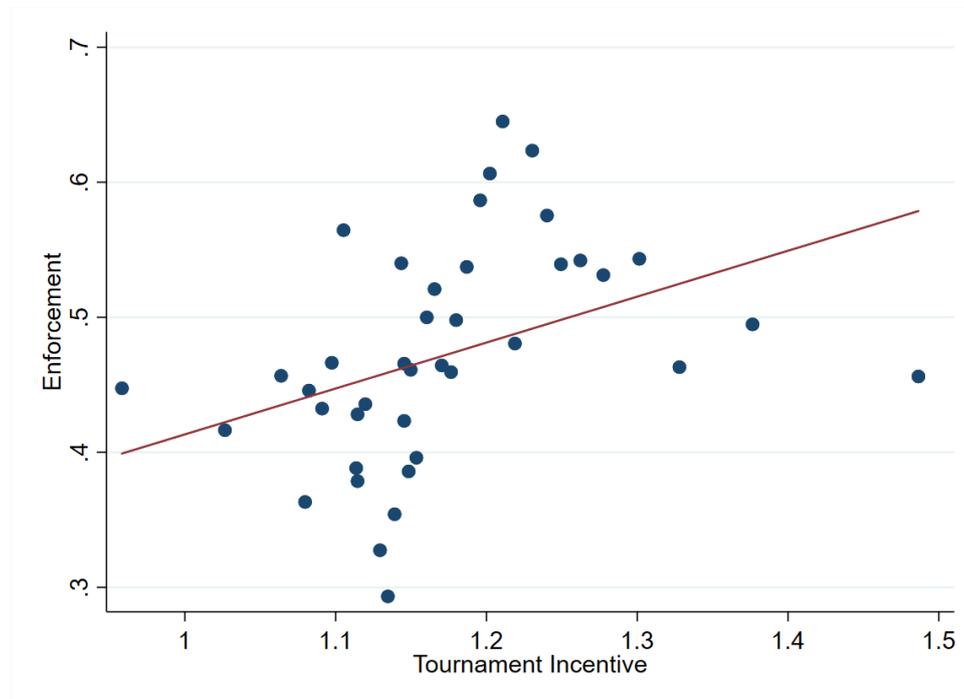
Non-parametric relation between incentive and enforcement (an indicator which equals one for any enforcement). I split attorneys based on the number of promotion candidates, i.e. number of attorneys in the same office-grade. The cutoff is the mean office-grade size (10 attorneys).

Figure 10: **Illustration of the 2002 Pay Transition**
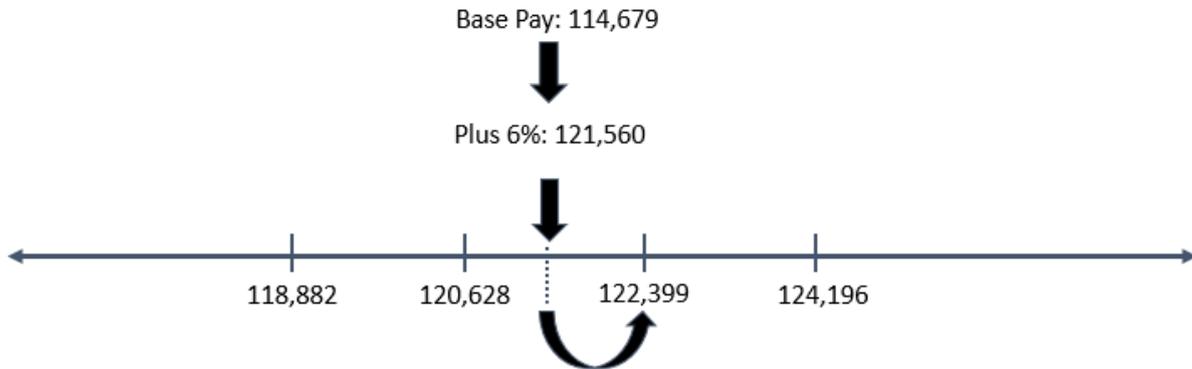
Illustration of the pay raise mechanism during the 2002 transition. The example is based on a level-16 employee with $114,679 base pay in the old system. Adding 6% to $114,679 yields $121,560. In level 16 in the new pay system, the closest step *above* $121,560 is $122,399, which will be the employee's new base pay. It follows that the employee received an *individual* pay raise of $122,399 − $121,560 = $839, on top of the 6% across-the-board pay raise.

Table 1: **Summary Statistics: Enforcement Actions**

	Mean	Min	Max	Obs
A. Case Characteristics				
Year	2009.36	2002	2017	3,178
Defendants	3.30	1	293	3,178
Contested	60.4%	0	1	3,178
Standalone	90.4%	0	1	3,178
B. Complexity and Severity				
Criminal	21.9%	0	1	3,178
Freeze	16.5%	0	1	3,178
Fraud	70.7%	0	1	3,178
AAER	18.6%	0	1	3,178
C. Litigation Teams				
Attorneys	3.9	1.0	11.0	3,175
Resources (tenure)	39.9	1.0	138.0	3,175
Resources ($)	$787,920	$101,063	$2,278,193	3,175
Regional	71.4%	0	1	3,175
HQ	21.9%	0	1	3,175
Collaborate	6.7%	0	1	3,175

Summary statistics for the sample of $3,178$ civil enforcement actions filed by the SEC between 2002-2017. $Defendants$ = number of listed defendants, relief or otherwise. $Contested = 0$ if the action was filed as settled or partially settled, and $Contested = 1$ otherwise (fully contested). $Standalone = 1$ if no follow-up action arising from the same nexus of misconduct was filed during the sample period. $Criminal = 1$ if the civil SEC complaint was accompanied by criminal proceedings. $Freeze = 1$ if the SEC requested an emergency relief in the form of asset freeze. $Fraud = 1$ if the complaint alleged a violation of anti-fraud provision (see Section 4.3). $AAER = 1$ if the case was reported in the AAER section of the SEC's website (see Section 2). $Attorneys$ is the number of SEC attorneys listed on the complaint, and $Resources(tenure)$ and $Resources(\$)$ are their combined tenure (in years) and salaries. $Regional = 1$ ($HQ = 1$) if the case was handled exclusively by a regional office (by Headquarters), and $Collaborate = 1$ if handled by a joint regional-headquarters team.

Table 2: **Summary Statistics: Workforce**

	Mean	Min	Max	Obs
A. Employment				
Tenure	9.36	1	51	14,940
Salary	$186,107	$48,267	$261,164	14,940
Incentive	1.23	0.87	3.64	13,954
I(Promotion)	10.1%	0	1	14,940
I(Separation)	5.1%	0	1	14,940
I(Male)	61.8%	0	1	1,904
B. Enforcement				
I(Enforcement)	34.6%	0	1	14,940
I(Lead)	26.4%	0	1	14,940
I(Criminal)	11.8%	0	1	14,940
I(Fraud)	27.2%	0	1	14,940
C. Conditional on $I(Enforcement) = 1$**:**				
Enforcement	2.35	1	29	5,163
Lead	1.60	0	29	5,163
Criminal	0.56	0	15	5,163
Fraud	1.58	0	25	5,163
Defendants	7.77	1	302	5,163

Summary statistics for all SEC enforcement attorneys, 2002-2017. In Panel A, $Tenure =$ years working at the SEC; $Salary$ is in 2017 USD, excluding bonus and overtime; $Incentive =$ ratio between current salary and the highest salary in the next grade within the same office; I(Promotion=1) if the attorney was promoted during the year; and I(Separation=1) for leaving the SEC during the year. In Panel B, I(Enforcement)=1 for any action; I(Lead)=1 if the attorney signed the complaint; I(Criminal)=1 if the action was accompanied by criminal proceedings; and I(Fraud)=1 if the complaint alleged a violation of anti-fraud provision (see Section 4.3). In Panel C, the equivalent continuous variables are conditional on filing at least one action ($I(Enforcement)=1$), and $Defendants =$ total defendants listed on the complaints in which the attorney participated.

Table 3: **Internal Reward for Enforcement**

Outcome:	I(Promotion)				
I(Enforcement)	0.020***	0.021***	0.016***	0.016***	0.011**
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
R^2	0.541	0.542	0.543	0.544	0.680
Obs	12069	12069	12069	12069	11874
Year-Office-Grade FE	YES	YES	YES	YES	YES
Tenure(grade)	-	YES	-	YES	YES
PastReward	-	-	YES	YES	YES
Attorney FE	-	-	-	-	YES

The table links enforcement to internal rewards. $I(Promotion) = 1$ if the attorney was promoted to the next grade, $I(Enforcement) = 1$ if the attorney filed at least one enforcement action, $Tenure(grade) =$ years spent in the current grade, and $PastReward = 1$ if the attorney received a promotion in the previous year. Explanatory variables are lagged. The sample includes all attorneys in the Enforcement Division and regional offices, 2002-2017. Robust standard errors, clustered by attorney, are in parentheses. ***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

Table 4: **Enforcement and Incentives - Main Specification**

Outcome:	I(Enforcement)			
Panel A. Attorney				
Incentive	0.178***	0.188***	0.149***	0.177***
	(0.051)	(0.050)	(0.049)	(0.055)
R^2	0.061	0.082	0.134	0.199
Obs.	12177	12177	12177	12014
Panel B. Office-Grade				
Incentive	0.435***	0.408***	0.437***	-
	(0.141)	(0.146)	(0.137)	-
Attorneys	0.191***	0.206***	0.194***	-
	(0.037)	(0.034)	(0.033)	-
R^2	0.539	0.570	0.669	-
Obs.	878	878	878	-
Grade FE	YES	-	-	-
Year, Grade FE	-	YES	-	-
Year-Office, Grade FE	-	-	YES	-
Year-Office-Grade FE	-	-	-	YES

The table shows that incentives increase enforcement probability. Panel A estimates Equation 2, where *I(Enforcement)* = 1 for any enforcement action, *Incentive* is the ratio between the top salary in the next grade to the attorney's own salary, and robust standard errors (clustered by attorney) are in parentheses. Panel B estimates Equation 3, *Incentive* is the median incentive in the office-grade, *Attorneys* is the log of attorneys in the office-grade, and SE are clustered by office-grade. All explanatory variables are lagged. ***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

Table 5: **Alternative Enforcement Outcomes**

A. Attorney

Outcome:	Enforcement			
Incentive	0.385***	0.419***	0.317**	0.376***
	(0.124)	(0.124)	(0.132)	(0.117)
R^2	0.183	0.201	0.241	0.348
Obs.	12177	12177	12177	12014
Grade FE	YES	-	-	-
Year, Grade FE	-	YES	-	-
Year-Office, Grade FE	-	-	YES	-
Year-Office-Grade FE	-	-	-	YES

B. Office-Grade

Outcome:	Enforcement			Engagement		
Incentive	0.817**	0.639**	0.860***	0.350***	0.290**	0.392***
	(0.337)	(0.318)	(0.312)	(0.126)	(0.124)	(0.126)
Attorneys	0.484***	0.535***	0.539***	0.056**	0.070***	0.073***
	(0.097)	(0.086)	(0.078)	(0.024)	(0.020)	(0.021)
R^2	0.739	0.765	0.851	0.546	0.592	0.712
Obs.	878	878	878	878	878	878
Grade FE	YES	-	-	YES	-	-
Year, Grade FE	-	YES	-	-	YES	-
Year-Office, Grade FE	-	-	YES	-	-	YES

The table explores alternative enforcement measures. Variable definitions and standard error clustering are as in Table 4, except for the following: $Enforcement$ is the natural log of one plus enforcement actions, and $Engagement$ is the share of attorneys participating in enforcement (number of attorneys who filed at least one action divided by total number of attorneys). ***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

Table 6: **Defendants in Civil Enforcement**

Outcome:	Defendants			
Panel A. Attorney				
Incentive	0.279***	0.298***	0.198**	0.262***
	(0.090)	(0.088)	(0.087)	(0.094)
R^2	0.107	0.128	0.181	0.256
Obs.	12177	12177	12177	12014
Panel B. Office-Grade				
Incentive	1.868***	1.572***	1.685***	-
	(0.607)	(0.576)	(0.562)	-
Attorneys	0.707***	0.762***	0.711***	-
	(0.122)	(0.108)	(0.100)	-
R^2	0.703	0.734	0.826	-
Obs.	878	878	878	-
Grade FE	YES	-	-	-
Year, Grade FE	-	YES	-	-
Year-Office, Grade FE	-	-	YES	-
Year-Office-Grade FE	-	-	-	YES

The table shows that incentives lead to discovery of more complicated misconduct schemes. Variable definitions and standard error clustering are similar to the main specification (Panel A of Table 4), except for the outcome variable which is log plus one of number the defendants (relief or otherwise). ***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

Table 7: **Criminal Cases and Fraud Allegations**

Outcome:	$I(Criminal)$				$I(Fraud)$			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Attorney								
Incentive	0.109***	0.109***	0.100***	0.110***	0.127***	0.136***	0.122***	0.144***
	(0.031)	(0.031)	(0.031)	(0.033)	(0.045)	(0.044)	(0.042)	(0.047)
R^2	0.049	0.050	0.113	0.165	0.065	0.085	0.130	0.193
Obs.	12177	12177	12177	12014	12177	12177	12177	12014
Panel B. Office-Grade								
Incentive	0.413**	0.452**	0.460**	-	0.434***	0.401**	0.450***	-
	(0.197)	(0.195)	(0.206)	-	(0.161)	(0.167)	(0.158)	-
Attorneys	0.190***	0.191***	0.176***	-	- 0.178***	0.194***	0.182***	-
	(0.036)	(0.038)	(0.035)	-	(0.036)	(0.033)	(0.033)	-
R^2	0.401	0.418	0.651	-	0.535	0.562	0.655	-
Obs.	878	878	878	-	878	878	878	-
Grade FE	YES	-	-	-	YES	-	-	-
Year, Grade FE	-	YES	-	-	-	YES	-	-
Year-Office, Grade FE	-	-	YES	-	-	-	YES	-
Year-Office-Grade FE	-	-	-	YES	-	-	-	YES

The table shows that incentives lead to discovery of severe financial misconduct. Variable definitions and standard error clustering are similar to the main specification (Table 4), except for the outcome variables. In columns 1-4, $I(Criminal) = 1$ for any action accompanied by a criminal proceeding. In columns 5-8, $I(Fraud) = 1$ for any action alleging fraudulent behavior (see Section 4.3). ***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

Table 8: **Various Roles within the Litigation Team**

Panel A. Outcome = *I(Lead)*				
Incentive	0.156***	0.163***	0.152***	0.183***
	(0.047)	(0.044)	(0.046)	(0.048)
R^2	0.078	0.162	0.121	0.239
Obs.	12177	12177	12176	12014
Panel B. Outcome = *I(Non-lead)*				
Incentive	0.031	-0.005	-0.033	0.008
	(0.041)	(0.035)	(0.036)	(0.038)
R^2	0.053	0.219	0.194	0.284
Obs.	12177	12177	12176	12014
Grade FE	YES	-	-	-
Year, Grade FE	-	YES	-	-
Year-Office, Grade FE	-	-	YES	-
Year-Office-Grade FE	-	-	-	YES

The table shows that strong incentives increase the probability of leading enforcement litigation. Variable definitions and standard error clustering are as in Panel A of Table 4, except for the outcome variable. In Panel A, *I(Lead)=1* if the attorney was leading any enforcement action (signing the complaint). In Panel B, *I(Non-lead)=1* if the attorney was assigned to a case in a non-leading role. ***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

Table 9: **Alternative Incentive Measures**

Outcome:		*I(Enforcement)*				
Ladder:	(1)		(2)		(3)	
Gaps:	(omit)	(fill)	(omit)	(fill)	(omit)	(fill)
Panel A. Target = Median Salary						
Incentive	0.169***	0.164***	0.242***	0.197***	0.202***	0.196***
	(0.054)	(0.054)	(0.061)	(0.057)	(0.057)	(0.056)
R^2	0.193	0.199	0.206	0.199	0.199	0.199
Obs.	11733	12467	11039	12467	12014	12467
Panel B. Target = Top Salary						
Incentive	0.180***	0.179***	0.259***	0.223***	0.194***	0.192***
	(0.051)	(0.051)	(0.056)	(0.052)	(0.052)	(0.052)
R^2	0.194	0.199	0.206	0.200	0.199	0.199
Obs.	11733	12467	11039	12467	12014	12467
Year-Office-Grade FE	YES	YES	YES	YES	YES	YES

The table explores alternative incentive measures. Variable definitions and standard error clustering are similar to the main specification (Panel A of Table 4), except for *Incentive* for which I consider 12 versions of the target salary (the numerator). I use the median (Panel A) or the top (Panel B) salary in the next grade. If the target grade is unoccupied, I either omit the observations (odd columns) or let those attorneys aspire to the next available grade (even columns). Finally, I let SK-14 attorneys aspire for SK-15 positions (ladder (1)) or to the highest salary between SK-15 and SK-16 (ladder (2)), and let SK-16 attorneys aspire for SK-15 (ladder (3)). See Section 4.4 for more details. ***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

Table 10: **Legal Education**

Outcome:	I(Enforcement)			
Panel A. _Education = I(Top10)_				
Incentive	0.186***	0.166***	0.126**	0.210***
	(0.056)	(0.056)	(0.058)	(0.064)
Education	0.065***	0.042***	0.049***	0.042***
	(0.016)	(0.016)	(0.016)	(0.016)
R^2	0.079	0.133	0.112	0.211
Panel B. _Education = I(Top20)_				
Incentive	0.193***	0.171***	0.131**	0.217***
	(0.056)	(0.056)	(0.058)	(0.064)
Education	0.066***	0.050***	0.057***	0.051***
	(0.015)	(0.015)	(0.015)	(0.015)
R^2	0.080	0.134	0.113	0.213
Panel C. _Education = Rank_				
Incentive	0.192***	0.173***	0.131**	0.217***
	(0.056)	(0.056)	(0.058)	(0.064)
Education	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
R^2	0.080	0.135	0.113	0.213
Obs.	9577	9577	9576	9421
Year, Grade FE	YES	-	-	-
Year-Office, Grade FE	-	YES	-	-
Year-Grade, Office FE	-	-	YES	-
Year-Office-Grade FE	-	-	-	YES

The table studies incentives and legal education. Variable definitions and standard error clustering are similar to the main specification (Panel A of Table 4), and I control for the attorney's legal education. _Education_ = 1 if the attorney graduated from a top-10 school (Panel A) or from a top-20 school (Panel B); in Panel C, _Education_ is the school's ranking (continuous). Ranking is from the U.S. News 2018 list. ***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

Table 11: **Top Performers**

Outcome:		I(Enforcement)		
Panel A. Bonus = *I(Bonus)*				
Incentive	0.280***	0.255***	0.234**	0.279***
	(0.096)	(0.096)	(0.096)	(0.105)
Bonus	0.050***	0.046***	0.043***	0.047***
	(0.015)	(0.015)	(0.016)	(0.017)
R^2	0.142	0.146	0.172	0.207
Obs.	5325	5325	5325	5254
Panel B. Bonus = *log(Bonus)*				
Incentive	0.358***	0.321**	0.330**	0.398***
	(0.130)	(0.130)	(0.132)	(0.146)
Bonus	-0.006	-0.009	-0.002	0.008
	(0.012)	(0.013)	(0.014)	(0.016)
R^2	0.155	0.160	0.189	0.226
Obs.	3283	3283	3282	3214
Grade FE	YES	-	-	-
Year, Grade FE	-	YES	-	-
Year-Office, Grade FE	-	-	YES	-
Year-Office-Grade FE	-	-	-	YES

The table studies incentives and cash bonuses. Variable definitions and standard error clustering are similar to the main specification (Panel A of Table 4), and I control for the attorney's bonus record. In Panel A $Bonus = 1$ if the attorney received bonus award, and in Panel B $Bonus =$ log of the dollar amount (only bonus recipients). Sample is limited to 2002-2009. All explanatory variables are lagged. ***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

Table 12: **Case Study: Exogenous Shock to Salaries**

A. Instrumenting Incentives

Outcome:	I(Enforcement)		
$\widehat{Incentive}$	2.195**	2.133**	2.175**
	(0.997)	(1.009)	(1.078)
Year, Office, Grade	YES	-	-
Year-Grade, Office	-	YES	-
Year-Office-Grade	-	-	YES
Obs.	2714	2711	2483

B. First Stage

Outcome:	Incentive		
RoundUp	-0.012***	-0.012***	-0.011***
	(0.002)	(0.003)	(0.003)
Year, Office, Grade	YES	-	-
Year-Grade, Office	-	YES	-
Year-Office-Grade	-	-	YES
$partial - F$	24.46	23.27	16.37
Obs.	2714	2711	2483

The table applies IV approach to a subsample of enforcement attorneys. *Incentive* is instrumented with *RoundUp*, the pay raise during the 2002 transition which equals to the difference between the attorney's base pay and the closest pay step. Explanatory variables are lagged. The sample includes only enforcement attorneys who worked at the SEC prior to the 2002 pay raise and did not receive a separate merit-based pay raise during the transition. Robust standard errors, clustered by attorney, are in parentheses. ***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.