

Crime and Punishment on Wall Street: Gender Stigmata in SEC Enforcements*

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Abstract

The SEC punishes major financial crimes with both monetary fines and professional bars. We document that punishments differ starkly across gender. Female offenders receive longer bars from the finance industry and smaller money penalties than male offenders on average. While men tend to receive combinations of punishment, women receive either professional bars or monetary penalties, but not both. Females are 50% less likely than males to cooperate with the SEC. This evidence is consistent with a model of enforcement where for women admitting guilt through accepting a professional bar entails social stigma. The SEC's two-dimensional punishment scheme thus entails economic disparities between men and women.

JEL Classification: G12, G14, G24

Key words: Financial crime, SEC, justice system, gender gap

The cost of different punishments to an defendant can be made comparable by converting them into their monetary equivalent or worth, which, of course, is directly measured only for fines. For example, the cost of an imprisonment is the discounted sum of the earnings foregone and the value placed on the restrictions in consumption and freedom.

Gary Becker (1968)

The economic approach to crime and punishment presumes that defendants trade off money versus time in punishment (Becker (1968) quote above). However, these assumptions are difficult to examine in the U.S. criminal justice system because prison sentences are primarily imposed for serious offenses. In contrast, civil enforcement actions by the Securities and Exchange Commission (SEC) punish major financial crimes with both monetary fines and employment bars from the finance industry.¹ For SEC enforcement cases, we study whether monetary fines and bars are substitutes (Becker (1968)), whether the SEC’s punishments are gender neutral (Becker (1957)), and whether the mix of punishment varies by gender. We find that monetary fines and bars are substitutes and that female and male defendants receive comparable total punishment for the same type of misconduct. However, there is substantial heterogeneity in the composition of the punishment by defendant’s gender. We use this variation in the realized composition of punishment due to gender to identify the SEC’s tradeoff in time versus money.

Our data is on the SEC enforcement actions filed against individuals affiliated with public companies traded on major U.S. exchanges at the time of the alleged misconduct. The Securities Enforcement Empirical Database (SEED) provided by NYU/Cornerstone tracks all 661 SEC enforcement actions filed against individuals between April 2003 and March 2018.² Data contains the type of violation, specific statutory sections and rules of the relevant violated regulations, legal case name, district court, case number or file number, relevant court documents, resolution date, and other relevant information. SEC enforcement cases are widely captured by the media and studied by law scholars. There is no clear sample selection bias, apart from any specific focus the SEC itself may set on monitoring and enforcing specific types of violations. The sample captures the entire set of the SEC enforcement actions over the sample period.

Figure 1 shows the unconditional composition of penalties imposed on individual male (left panel) and female (right panel) defendants. Each plot has the total value of money penalties on the vertical axis and the professional bar length on the horizontal axis. The size of each circle represents the fraction of defendants. No circle indicates that the combination does not exist in the data. Dashed lines indicate a positive professional bar term and, respectively, a money penalty above the maximum mandatory money penalty of \$150K.³ Women receive longer bars and smaller

¹Bars include cease and desist orders, suspension or revocation of broker-dealer and investment advisor registrations, censures, and bars from association with the securities industry.

²See <https://www.law.nyu.edu/centers/pollackcenterlawbusiness/seed>.

³Mandatory money penalties apply to “each act or omission” violating the securities laws. Depending on the nature and severity of the violation, they range per violation from \$0 to \$150,000 (until 2013) for individuals. Bars include cease and desist orders, suspension or revocation of broker-dealer and investment advisor registrations, censures, and bars from association with the securities industry.

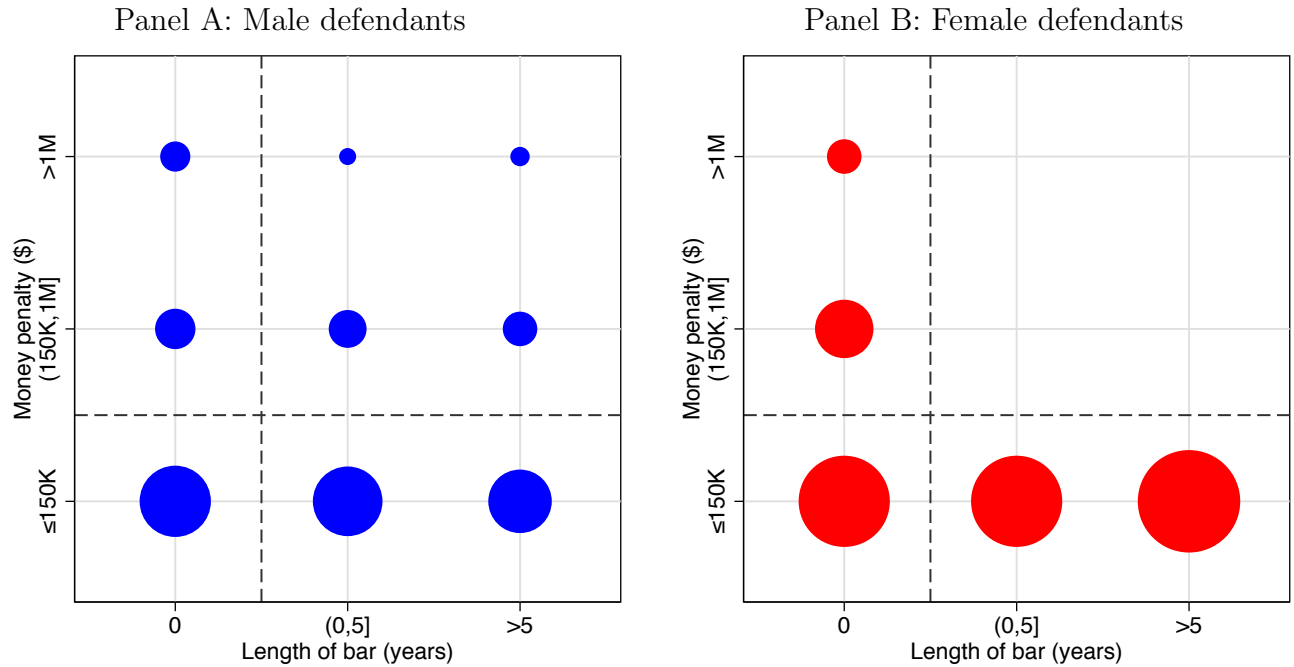


Figure 1: Combinations of money penalty and bars in SEC enforcement cases

The figure shows the combinations of length of bar on the horizontal axis and money penalty on the vertical axis imposed on male defendants (Panel A) and, respectively, female defendants (Panel B). The size of each circle represents the fraction of defendants. No circle indicates that the combination does not exist in the data. The dashed lines indicate a positive bar term and, respectively, a money penalty above \$150K, which is the largest minimum per violation money penalty (until 2013).

money penalties than men. These male/female differences are also present conditional on type of offense. Figure 1 further shows that, strikingly, women exclusively receive either money penalties or professional bars, while some men receive both penalties.

To rationalize this evidence we develop a model of enforcement and punishment choice under social norms that builds on the seminal work by Becker (1968) on crime and punishment and Akerlof and Kranton (2000) on social identity. In our stylized model, securities law defendants and/or their legal counsel negotiate with the SEC a punishment bundle consisting of a professional bar of length b and money penalty to minimize their CES disutility from punishment as per Becker (1968). The negotiation is bounded from below by a minimum total punishment deemed appropriate by the SEC for a given misconduct. Any negotiation to reduce a professional bar in return for a larger money penalty may require cooperation with the SEC and formal admission of guilt, which carries social stigma.⁴ The costs of social stigma from admitting guilt is zero up to a socially-acceptable

⁴Ample evidence exists that females, who are viewed to be communal and caring, are expected to commit fewer and less severe crimes and have less recidivist risk than males, who are perceived as aggressive, assertive, and competitive (see Chesney-Lind (2002) and Steffensmeier et al. (2005) for evidence on assaults, and Gavrilova and Campaniello (2015) for evidence on property crimes). The socioeconomic consequences for females who elect not to conform to traditional gender roles and engage in socially abhorred conduct and “male-only” activities, including outright criminal behavior, can differ starkly from males, even if the legal system and involved enforcement entities

threshold, $\bar{b} > 0$. Beyond this threshold, professional bars generate fixed disutility $\lambda \geq 0$. Disutility due to money penalty is increasing and convex.

Consistent with Figure 1, our parsimonious model yields “corner” outcomes with only one form of punishment. The “money corner” is associated with either strong or weak punishments. Under both types of punishment, the net utility gain from selecting a bar length equal to \bar{b} and high money penalty over a bar length longer than \bar{b} and low money penalty is greater than λ . It leads to a short bar at the critical non-stigma threshold \bar{b} and to a high money penalty. For example, having any professional bar on the employment record reduces the prospects of highly valuable future employment.

The “bar corner” case corresponds to an environment with either a strong preference for longer bars and misconduct warranting mostly minimum money penalty. Female defendants may prefer longer professional bars when they have better outside options and desire to save money. Women also prefer professional bars when they fear future discrimination in the labor market that significantly reduces their future employment opportunities in the field of finance. In this case the utility gain from selecting maximum bar length and minimum money penalty over the bar length below the social stigma threshold \bar{b} and higher money penalty is greater than λ . This leads to a long, potentially indefinite, bar and to a relatively low money penalty that does not exceed the defendant’s budget. For example, λ being low is equivalent to having valuable outside options which do not depend on their criminal history.

For the model to explain women empirically only receiving corner punishments, disutility due to social stigma, λ , must vary for women. Female defendants may have career and/or other options outside finance which are either unavailable to men, like motherhood, or much less desirable by men, e.g., being a full-time parent or having a job with a lesser pay but higher personal reward like teaching or philanthropy. These outside options reduce λ and lead to the bar corner. Other female defendants have valuable options in finance, stemming from being deeply invested in finance-specific human capital, having a well-established network of clients, or other similar reasons. Their disutility due to social stigma is large resulting in the money corner. If few women have intermediate λ , then women receive only corner punishments.

For the model to explain men receiving interior punishments of both money penalties and bars, male defendants must have higher tolerance for professional bars than female defendants, $\bar{b}_{Female} < \bar{b}_{Male}$. This is consistent with postmodern gender theory (e.g., Butler 1990), whereby women’s choices and performance are expected to adhere to socially constructed regulative discourses. Building on this, legal scholars have extensively argued that societal attitudes toward female defendants are the result of an attempt to enforce sex-role expectations (e.g., Crew 1991; Edwards 1989). Women working in a traditionally male field, like finance,⁵ may be subject to

are unbiased. The trial of Phryne in ancient Greece provides an early account of the consequences.

⁵The Olyver Wyman survey “Women in Financial Services” shows that globally, women occupied only 20% of Board level positions and 16% of Executive Committee member were female in financial services in 2016. The survey projects that at current rates of growth, financial services globally will not reach even 30% female Executive

double punishment—for committing a crime and for breaking a norm, with the second potentially being even more damaging. Women aware of such a double-standard in punishment are more reluctant to admit guilt than men. Unlike females, males in finance do not suffer from such gender stereotypes. Males may also belong to an “old boys” network that helps male offenders, and even repeat offenders, to find employment in the field of their expertise after finishing serving the imposed professional bars, while it is much more difficult for female offenders.⁶

In addition to qualitatively rationalizing the empirical findings, the model can help identify the money–time tradeoff in punishment. Conditional on misconduct, professional bars and money penalties are negatively correlated in the data. Causally identifying this tradeoff requires exogenous variation in the demand by the SEC or the preferences of defendants in the mix of punishment. Figure 1 shows that the mix of punishment varies across gender. This variation can only help identify the money–time tradeoff if the SEC does not discriminate on gender. We examine how total punishment varies by gender and find no evidence of discrimination by the SEC.⁷

The model suggests that the heterogeneity across corner outcomes for female defendants is due to heterogeneity in the size of the social stigma disutility λ . Thus, the interaction between the defendant’s gender and her aversion to social stigma determines the specific punishment corners. Because we do not directly observe λ in the data we employ four instrumental variable (IV) specifications with different proxies for the variation in λ in the first-stage: the defendants’ gender as well as their interactions with (i) dummies for money and bar corners; (ii) fitted probabilities of money and bar corners; (iii) a full set of the defendant and case characteristics; (iv) the hand-collected etymology of defender’s name.

Consistent with Becker (1968), all IV estimates of the elasticity of substitution between money and bars are negative with magnitudes ranging from -0.80, specification (iii), to -1.99, specification (iv), larger than the OLS estimate of -0.72. Our baseline specification using gender interacted with money and bar corner yields an estimated elasticity of -1.33. Economically, for an offender with a 5-year bar and a \$1million money penalty, this elasticity implies a 1-year reduction in bar increase the money penalty by \$266,000.

Becker (1957) shows how labor market discrimination can cause economic inefficiencies and distortions. The labor literature has found that gender plays an important role in heterogeneous labor supply outcomes, especially in the finance industry (Bertrand, Goldin, and Katz (2010)). Hence, lower finance female labor market participation may be due to discrimination by the SEC or a response to industry labor market discrimination. Our findings are consistent with females responding to the labor market, but not the SEC, imposing harsher punishment for financial misconduct on

Committee representation until 2048. For more information, see https://www.oliverwyman.com/content/dam/oliver-wyman/global/en/2016/june/WiFS/WomenInFinancialServices_2016.pdf

⁶Egan, Matvos, and Seru (2019b) find that male financial advisors with the misconduct record are more likely to find future employment than female advisors with the same record of misconduct.

⁷While it seems unlikely given the SEC does not discriminate on total punishment, we cannot rule out the possibility that the SEC offers females only corner punishment bundles of entirely bars or entirely money penalties. SEC discrimination of this form would not impact our use of gender to help identify the money–time tradeoff.

females.

In view of this, an important implication of these findings is that social norms continue to affect females who have succeeded in braking the “glass ceiling” in the corporate world. Female white-collar professionals, including those at the very top of the corporate ladder violating securities laws are more likely than comparable men to permanently leave the field of finance. Forward-looking potential entrants into finance may be discouraged due to perceived gender-specific norms and stereotypes. This can further increase gender imbalance in already male-dominated professions.⁸

Our work relates to a novel strand of literature on financial misconduct and punishment. The existing literature mainly focuses on fraud and misconduct among financial advisors (Egan, Matvos, and Seru, 2019a and 2019b; Dimmock, Gerken, and Grahm, 2015; Qureshi and Sokobin, 2015; McCann, Qin, and Yan, 2016). It uses the BrokerCheck database maintained by the Financial Industry Regulatory Authority (FINRA) to document that misconduct is wide-spread (7.8% of brokers have misconduct disclosures on their record as reported by Egan, Matvos, and Seru, 2019a) and that a large share of brokers remain in the industry despite repeated misconduct. While our data shares some of the cases with the BrokerCheck database, misconduct by financial advisors constitutes only 14% of our data.⁹ The rest of our data relates our paper to the work on corporate fraud (Povel, Singh, and Winton, 2007; Dyck, Morse, and Zingales 2010 and 2014; Wang, Winton, and Yu, 2010; Khanna, Kim and Lu, 2015; and Parsons, Sulaeman, and Titman, 2015) and misconduct in the mortgage industry (Piskorski, Seru, and Witkin, 2013; Griffin and Maturana, 2018). All of these papers, with the exception of Egan, Matvos, and Seru (2019b), focus on documenting instances of fraud and their welfare implications rather than on their prosecution by legal and regulatory authorities, which is the main focus of our paper.

The effect of offender gender on punishment has been studied by Egan, Matvos, and Seru (2019b) in the context of financial advisors. For a sample of financial advisors from BrokerCheck they find substantial differences in the punishment of misconduct across gender, with female advisors being punished more severely. Specifically, they report that following an incidence of misconduct, female advisors are 20% more likely to lose their jobs and 30% less likely to find new jobs relative to male advisors. Unlike Egan, Matvos, and Seru (2019b) we do not find that female offenders are punished more severely than male offenders in the SEC enforcement actions. All else being equal, female offenders in our sample tend to receive a different combination of professional bars and money penalties than male offenders, but the combined penalties are comparable across genders. This difference is due to the fact that in Egan, Matvos, and Seru (2019b) females advisors face a disproportionate share of misconduct complaints initiated by the firm, instead of regulators like in

⁸Bertrand and Hallock (2001), Bertrand, Goldin, and Katz (2010) and Bair (2016) document significant gender participation and pay gaps in finance and other high paying jobs.

⁹The SEC handles most severe fraud cases by financial advisors, which is a small fraction of all misconduct reported in BrokerCheck. Table 2 in Egan, Matvos, and Seru (2019a) shows that all regulatory misconduct disclosures contribute 0.1% (Regulatory - Final and Regulatory - Pending) to the flow of new disclosures and 1.24% to the stock of disclosures.

our data. Egan, Matvos, and Seru (2019b) find supporting evidence for taste-based discrimination existing within firms employing financial advisors. They report that firms with a greater percentage of male executives or owners at a given branch tend to punish female advisors more severely following misconduct and also tend to hire fewer female advisors with past record of misconduct. We do not find evidence of neither discrimination nor lenience in our data—male/female judges do not impose different penalties on female/male than male/female offenders.

Our work also contributes to a large body of legal literature studying the role of gender in sentencing outcomes. These studies find that women, if sentenced, are less likely to receive custodial sentences (Freiburger and Hilinski, 2013; Gruhl, Welch, and Spohn, 1984; Harrington and Spohn, 2007; Spohn and Beichner, 2000; Spohn and Spears, 1997), are less likely to serve long prison terms (O’Neil 1999; Koons-Witt, Sevigny, Burrow, and Hester, 2014; Steffensmeier, Ulmer, and Kramer, 1998) and more likely to benefit from downward departure sentencing (Bontrager, Barrick, and Stupi, 2013; Steffensmeier, Kramer, and Streifel, 1993). These results hold for all types of courts, including the federal court system (Starr 2015). Unlike these papers we find that in the case of misconduct involving the U.S. securities laws, offender’s gender affects the punishment’s composition but not the total punishment.

The remainder of the paper is organized as follows. Section 1 describes the data. In Section 2 we use a variant of Becker (1968) model of defendant behavior in the SEC enforcement trials to estimate the elasticity of substitution between money and professional bars. Section 3 investigates the role of defendants’ gender in the SEC enforcement outcomes. In Section 4 we extend the model from Section 2 and use it motivate the IV estimation of the SEC’s elasticity of substitution between money and professional bars. Finally, Section 5 concludes.

1 Data and descriptive statistics

We collect data on SEC enforcement cases from a number of public data sources. The SEED database provided by NYU/Cornerstone tracks and records information for SEC enforcement actions filed against public companies traded on major U.S. exchanges and their subsidiaries and against individuals affiliated with them.¹⁰ We use all 661 SEC enforcement actions against individuals reported in SEED between April 2003 and March 2018. The number of observations reflects the fact that SEC enforcement actions against public entities and their employees are rare, yet visible events in the public domain. SEC enforcement cases are widely covered by the media and studied by law scholars. Thus sample selection bias is limited to any potential focus the SEC itself may have on monitoring and enforcing any specific sectors and types of violations. The sample captures the entire set of successful publicized SEC enforcement actions over the sample period.

¹⁰According to the SEED website (<https://www.law.nyu.edu/centers/pollackcenterlawbusiness/seed/methodology>), the data is collected from publicly-available documents released by the SEC and publicly-available court orders, if resolution information is not released by the SEC. Each SEC enforcement-related document is analyzed and information on characteristics of each enforcement action is recorded.

The variables in SEED include defendant names, violations, venues, and resolutions. For defendant names, SEED uses standardized names of the defendant explicitly named in the enforcement action. For violations, SEED records the specific statutory sections and rules of the Exchange Act, Securities Act, and other regulations the defendant is alleged to have violated. For allegation type, each enforcement action is assigned a category describing the SEC’s primary allegation against the defendant. SEED also stores the legal case name, district court, case number or file number, relevant court documents, and the resolution date. The resolution date is the date of the earliest document that mentions a resolution of the enforcement action. We define the length of the legal proceedings as the difference between the first resolution date and the first document date reported in SEED, expressed in years. The length of legal proceedings varies significantly with the type of filing.

If available, the total money penalty and disgorgement numbers are taken from the relevant SEC document. When the total is not reported, it is computed as the sum of the individual figures for civil penalty, disgorgement, prejudgment interest, and other money penalties. If there is more than one document for the same defendant in the same action that contains a penalty or disgorgement amount, the most recent document is used. Some penalties and disgorgement are shared across multiple defendants. The database notes when a penalty or disgorgement is shared and reports the full shared penalty and disgorgement for each separate defendant. Information on professional bar(s) is also parsed from SEED. Each bar comes with a term. We define the bar length as the longest bar length across all bars received.

We augment the SEED database with other publicly available information. We start with the information on the defendant’s name etymology in SEED. We classify the defendant’s name according to its origin and most common use into five regions: North America (424, 78.37%), Asia (48, 8.87%), EMEA (38, 7.02%), South America (16, 2.96%), India (15, 2.77%). Next, we use public information to identify the defendant’s gender. We collect and verify data through automated data scraping from a variety of sources. We determine defendant characteristics, including gender and the name etymology, by crawling the SEC website,¹¹ searching Google for press articles related to SEC enforcement, and looking up defendants on LinkedIn. Data also include reports of investigations, litigation releases concerning civil lawsuits brought by the Commission in federal court, notices and settlements on administrative proceedings, and accounting and auditing enforcement releases. Finally, we look up the picture of the defendant on LinkedIn to try to unambiguously determine the gender of the defendant.

Table 1 documents descriptive statistics on the SEC cases. The sample consists of all defendants in each legal case adjudicated by the SEC against individuals between 2003 and 2018. The number of individual cases/defendants is 574. Because the SEC pursues both civil and administrative

¹¹The enforcement division of the SEC provides information on SEC enforcement actions via its website (<https://www.sec.gov/litigation.shtml>). We also search the SEC releases and press articles for gender-specific words, such as ‘Miss,’ ‘Mrs.’, ‘Mr.’, ‘she’ or ‘he’, ‘her’ or ‘his.’

Table 1: Descriptive statistics

The table documents descriptive statistics of SEC trial cases. The sample consists of all defendants in each legal case against individuals in the SEED database between 2003 and 2018. The number of individual cases/defendants is 574. The total number of civil and administrative proceedings is 648.

	N/Fraction	Mean	S.D.	Min	Median	Max
No. of trial cases	648					
No. of defendants	574					
No. of defendants per trial		3.46	4.30	1.00	2.00	20.00
Female defendants	10%					
Allegation type:						
Issuer reporting and disclosure	54%					
Broker-dealer and trading	14%					
Investment advisory	13%					
Securities offering	6%					
Market manipulation	6%					
FCP Act	3%					
Munis and public pension	2%					
Other	1%					
Filing format:						
Civil filing only	47%					
Administrative filing only	40%					
Civil and administrative filing	13%					
Sanction type:						
Money penalty only	32%					
Money penalty and bar	26%					
Bar only	25%					
Monetary penalties:						
Money penalty >0	58%					
Money penalty (\$K)	376	952.85	4,693.97	2.24	100.00	60,000.00
Bars:						
Barred	51%					
Barred for life	22%					
Barred for life, if barred	43%					
Length of bar, if barred	331	8.39	6.06	0.08	5.00	15.00
Length of proceeding:						
Length of proceeding reported	44%					
Length of proceeding	286	2.04	2.50	0.00	1.10	9.99

proceedings in some cases, the total number of proceedings is 648. 10% of the defendants are female. Issuer reporting and disclosure cases constitute with 54% the majority of cases, followed by broker-dealer and trading cases (14%), and investment advisory cases (13%).

In 47% of cases, the SEC files only a civil suit. Only administrative filings occur 40% of the time. Both civil and administrative charges represent 13% of the cases.¹² The number of defendants in the majority of cases is small, with a mode of 1, median of 2, mean of 3.46, and maximum of 20.

¹²Thus only a small fraction of our cases overlaps with the BrokerCheck database considered by Egan, Matvos, and Seru (2019).

Sanctions are about equally split between joint money penalties and bars (26%), money penalties only (32%), and bars only (25%). The SEC imposes a money penalty in 58% of cases. Money penalties are highly skewed. Therefore, we use log scale for money penalty: $\text{MoneyPenalty} = \log_{10}(\text{Penalty in } \$M + 1e-4) + 4$. Thus, MoneyPenalty equals 0 for no penalty, 1 for a \$1K penalty, 2 for \$10K, 3 for \$100K, 4 for \$1M, 5 for \$10M, 6 for \$100M, etc.

The mean non-zero money penalty is \$952.85K (3.98 in log-terms) and the median is \$100K (3 in log-terms), which is close to the SEC’s Tier 2 civil money penalty of \$80K imposed for violations involving fraud, deceit, manipulation or deliberate or reckless disregard of regulatory requirement. The largest penalty is \$60M.

51% of the defendants in our sample are subject to some type of a professional bar, while 22% of all defendants and 43% of barred offenders receive indefinite professional bars. Out of all offenders who received professional bars, several offenders received multiple bars with the maximum number of bars equal to four. As noted above, in cases with multiple bars our bar variable is coded as the longest bar. The mean number of bars equals 1.31 with the standard deviation equal to 0.57, while the median number of bars is one. Excluding indefinite bars, the mean bar length for the whole sample is four years, and, conditional on receiving a bar, it increases to 8.39 years. 44% of cases have a start and resolution date for the proceedings. The average proceeding lasts for 2 years with a median length equal to 1.1 years and the longest proceeding going as long as 10 years.

2 Professional bars versus money penalty

To motivate our empirical analysis, we start by writing a simple model of SEC enforcement in the spirit of Becker (1968). In our setting, offenders of securities laws, or/and their legal counsel, negotiate with the SEC a punishment bundle consisting of a professional bar $b \geq 0$ and a money penalty $m \geq 0$ to minimize their disutility from punishment. The enforcement agency imposes a total punishment of

$$I = m + \gamma b > 0, \tag{1}$$

where, following Becker (1968), $\gamma b \geq 0$ represents a money equivalent of the professional bar length with γ being the rate used by the SEC to monetize professional bars. When written as $m = -\gamma b + I$ equation (1) can be interpreted as the SEC’s money penalty demand curve. The model assumes that the conversion rate, γ , is a constant. This assumption is in the spirit of Becker (1968) and is consistent with the SEC monetizing professional bars as the present value of lost annual earnings, potentially growing at a constant rate, per each year barred, discounted at a constant discount rate.¹³ It ignores the time-varying discount rate or/and the diminished earnings potential upon labor market re-entry, both of which are very hard for the SEC to account for. The total punishment, I , is a commensurate punishment for a committed misconduct and thus can be viewed as its “severity”.

¹³Strictly speaking, this holds true when b and m are the log-transformed bar length and, respectively, money penalty—equivalent to how we use the variables in our empirical implementation.

Both I and γ are independent of the defendant's socioeconomic characteristics such as gender, age, race, and wealth. This is consistent with the SEC's policy of fair practices in enforcement. For instance, the SEC's "Enforcement Manual" states that "Values integral to that mission are: ... Fairness – assuring that everyone receives fair and respectful treatment, without regard to wealth, social standing, publicity, politics, or personal characteristics."

In addition, a misconduct warrants a non-negotiable minimum money penalty of $\bar{m} \geq 0$. Since \bar{m} is the minimum money penalty, $(I - \bar{m})/\gamma$ represents the maximum professional bar length. We then define a set of feasible punishment bundles as, \mathcal{P}^F , as

$$\mathcal{P}^F \equiv \{(m, b) \in \mathbb{R} \times \mathbb{R} | m \geq \bar{m}, b \geq 0, m + \gamma b = I\}. \quad (2)$$

To be as general as possible, we assume that a defendant has a direct convex disutility $U(m, b)$ over the punishment bundle $(m, b) \in \mathcal{P}$. It satisfies standard conditions $U_{11} \geq 0$, $U_{22} \geq 0$, and has a positive semi-definite Hessian. Such disutility admits a punishment bundle $(m^*, b^*) \in \mathcal{P}^F$ solving

$$(m^*, b^*) \equiv \arg \min_{(b, m) \in \mathcal{P}^F} U(m, b) \Leftrightarrow (I - \gamma b^*, b^*) = \arg \min_{b \in [0, (I - \bar{m})/\gamma]} U(I - \gamma b, b), \quad (3)$$

leading to a standard first-order condition

$$\gamma = \frac{U_2(m^*, b^*)}{U_1(m^*, b^*)}, \quad (4)$$

pinning down the rate γ as the ratio of marginal utilities. The FOC (4) can also be interpreted as a "supply" equation for money penalty. For example, in the case of a CES disutility:

$$U(m, b) = - [\alpha^{1-\beta} m^\beta + (1 - \alpha)^{1-\beta} b^\beta]^{\frac{1}{\beta}}, \quad (5)$$

with $\beta > 1$ implying that the individual components of the punishment bundle are complements, the optimal professional bar and money penalty are constant fractions of the total punishment, I :

$$m^* = \max \left\{ \left(1 - \frac{\gamma}{\gamma + \gamma^{\frac{1}{1-\beta}} \frac{\alpha}{1-\alpha}}\right) I, \bar{m} \right\}, \quad (6)$$

$$b^* = \min \left\{ \frac{1}{\gamma + \gamma^{\frac{1}{1-\beta}} \frac{\alpha}{1-\alpha}} I, \gamma^{-1} (I - \bar{m}) \right\}. \quad (7)$$

Therefore, on the set of feasible punishment bundles, \mathcal{P}^F , CES disutility yields a linear supply of money penalty:

$$m^* = -\gamma \cdot g^* \cdot b^*, \quad (8)$$

where

$$g^* \equiv \frac{d \log(m^*)}{d \log(b^*)} = -\frac{1-\alpha}{\alpha} \gamma^{-\frac{\beta}{1-\beta}} \quad (9)$$

is the elasticity of substitution between money penalties and professional bars. Our goal is to estimate g^* from the data and verify that it is negative as predicted by Becker (1968).

To begin our empirical analysis we start with a straightforward approach. In the data we observe both money penalty, Money Penalty $_{ijt}$, and professional bars, Length of Bar $_{ijt}$, for defendant i in proceeding j at time t as functions of the same set of observable characteristics, \mathbf{X}_{ijt} . Characteristics \mathbf{X}_{ijt} consist of fixed effects from the 8 allegation types, 27 violations alleged, 13 job positions, 37 court districts, and 10 defendant counts described in Appendix A. We proceed by removing the component due to observable characteristics from both punishments using the following regression specifications:

$$\log(\$1 + \text{Money Penalty}_{ijt}) = \alpha_M + \beta'_M \mathbf{X}_{ijt} + \varepsilon_{ijt}, \quad (10)$$

$$\log(1 + \text{Length of Bar}_{ijt}) = \alpha_B + \beta'_B \mathbf{X}_{ijt} + \eta_{ijt}. \quad (11)$$

We then define the residual (unexplained) components of money penalties, $\hat{\varepsilon}_{ijt}$, and professional bars, $\hat{\eta}_{ijt}$, unexplained by \mathbf{X}_{ijt} , as

$$\hat{\varepsilon}_{ijt} \equiv \underbrace{\log(\$1 + \text{Money Penalty}_{ijt})}_{\text{Actual Money Penalty}} - \underbrace{\log(\$1 + \text{Money Penalty}_{ijt})}_{\text{Predicted Money Penalty}}, \quad (12)$$

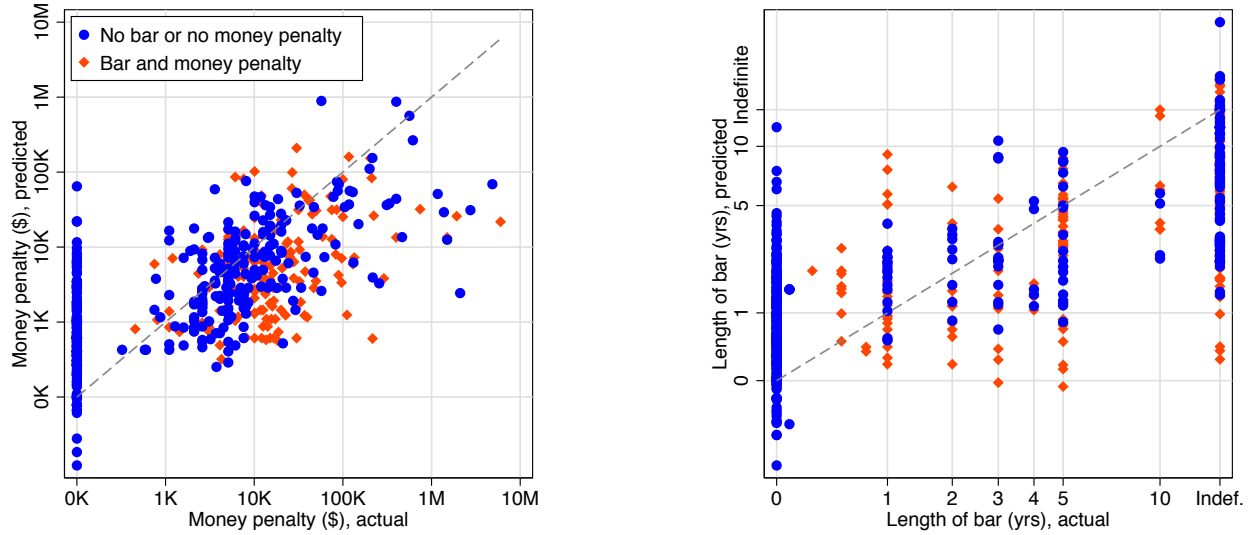
$$\hat{\eta}_{ijt} \equiv \underbrace{\log(1 + \text{Length of Bar}_{ijt})}_{\text{Actual Length of Bar}} - \underbrace{\log(1 + \text{Length of Bar}_{ijt})}_{\text{Predicted Length of Bar}}, \quad (13)$$

and inspect the relationship between $\hat{\varepsilon}_{ijt}$ and $\hat{\eta}_{ijt}$. We compute the predicted money penalty, $\log(\$1 + \text{Money Penalty}_{ijt})$, and predicted length of bar, $\log(1 + \text{Length of Bar}_{ijt})$ using the estimated regression coefficients $(\hat{\alpha}_M, \hat{\beta}_M, \hat{\alpha}_B, \hat{\beta}_B)$.

We restrict the sample to the 541 cases in which at least one of money penalty and professional bar are not zero. The residuals capture the unexplained penalties. Adding unity to money penalties and professional bars under the log allows us to accommodate offenders with either zero money penalties or zero professional bars. Finally, we use 15 years to quantify an indefinite professional bar, but our results are robust to alternative specifications of 20, 25, and 50 years.

We illustrate these results graphically. The left plot in Panel A of Figure 2 uses a log-log graph to plot predicted money penalty against actual money penalty. The fit is quite good for non-zero monetary penalties, but the linear model (10) struggles to explain zero and largest ($\geq \$1\text{M}$) money penalties. Specifically, the regression model (10) predicts positive money penalties for offenders who actually have zero money penalties, and it predicts much lower money penalties for offenders with money penalties greater than a million dollars. In addition, as the plot shows, the unexplained money penalties for money penalties greater than a million dollars have the same sign and

Panel A: Explained vs. actual money penalty (left) and length of bar (right)



Panel B: Unexplained money penalty vs. unexplained length of bar

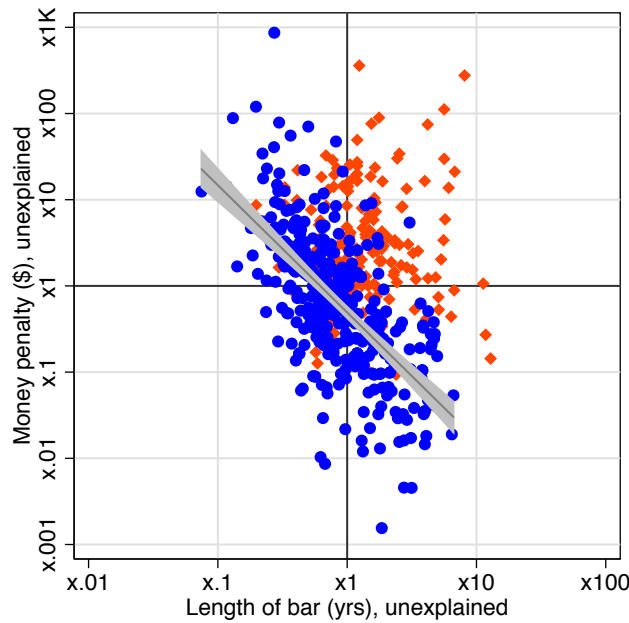


Figure 2: Relation between unexplained money penalty and unexplained length of bar

The figure documents the relation between unexplained money penalty and unexplained length of bar. Panel A graphs predicted against actual values. The left plot shows the explained money penalty, $\log(\$1 + \text{Money Penalty}_{ijt})$, calculated from the regression model (10) against its actual value. The right plot shows the explained length of bar, $\log(1 + \text{Length of Bar}_{ijt})$, calculated from the regression model (11) against its actual value. 15 years is used to proxy for indefinite bars. The plots illustrate the relation for offenders with bar and monetary penalty separately from the rest. Panel B graphs the relation between unexplained money penalty $\hat{\varepsilon}_{ijt}$, defined in equation (12), and unexplained length of bar $\hat{\eta}_{ijt}$, defined in equation (13). The solid line shows the fitted OLS regression of the unexplained money penalty on unexplained length of bar. Grey areas show confidence intervals.

cluster together. This indicates that cases with high money penalties share a common unobserved characteristic(s).

Actual professional bars are more difficult to predict than money penalties using linear specification (11) due to bunching at bar lengths equal to 1, 2, 3, 4, 5, and 10 years, as well as indefinite bars. The right plot of Panel A graphs predicted against actual length of bar. The regression (11) overfits professional bars shorter than 5 years, and underfits professional bars longer than 10 years. In contrast to money penalties, the unexplained professional bars do not cluster. The largest unexplained professional bars are at the corners; zero bars and indefinite bars.

Our simple model predicts unexplained penalties to be negatively correlated. Panel B of Figure 2 shows that the relation between unexplained money penalty and unexplained length of bar is indeed negative. The correlation in unexplained penalties equals -0.31 ($p < 0.01$). When we measure the substitution between money and time by a regression of the residuals on each other, we find

$$\widehat{\varepsilon}_{ijt} = \overbrace{-0.72}^{g^*} \star \widehat{\eta}_{ijt} + u_{ijt}, \quad (14)$$

($t=-6.45$)

where the standard errors are robust to heteroskedasticity and clustering at the case level (for when there are multiple defendants). The fitted values of the unexplained money penalties from the regression (14) are shown in Panel B of Figure 2 using a solid line. The grey area around the line indicates the confidence interval. The estimated elasticity of -0.72 implies the substitution between money and professional bars is not one-to-one. Instead, a 10% increase in the professional bar length results in 7.2% decline in money penalties. Economically, for an offender with a 5-year bar and a \$1million money penalty, this elasticity implies a 1-year reduction in bar increases the money penalty by \$144,000.

Specifications (10) and (11) do a poor job predicting the corner outcomes; zero penalties and largest penalties. We, therefore, examine the corner cases separately. The blue dots in Figure 2 show the relation between unexplained money penalty and unexplained length of bar for offenders with no money penalty or no bar. Here, the negative correlation in unexplained penalties is even more negative.

Instrumental variables (IV) are a standard approach for estimating the price elasticity of demand or supply, which is isomorphic to our problem. This requires an exogenous variable correlated with the supply/demand of the SEC punishments. In our data, such a variable could be an defendant's characteristic outside of the defendant's control, but still important for defendant's choice of the SEC punishment bundle. Defendants' gender is the only such characteristic reliably available to us. However, to be used as an instrument, defendant's gender has to be relevant to the SEC punishment outcomes.

3 Role of gender in SEC punishments

Substantial evidence exists on gender differences in economic domains including labor, consumption, and investment, and in social domains including reciprocity, altruism, and trust. Beyond potentially different preferences, an explanation for these findings is that gender differences arise from prevailing social norms. Norms govern, from the ancient to modern societies, what is appropriate behavior for each gender, with deviations being externally punished (e.g., Akerlof, 1976; Kandori, 1992; Cole et al., 1992) or costs of deviation being internalized (e.g., Akerlof and Kranton, 2000; Huang and Wu, 1994). Therefore, females, who are viewed to be communal and caring, are expected to commit fewer and less severe crimes and have less recidivist risk than males, who are perceived as aggressive, assertive, and competitive.¹⁴ The socioeconomic consequences for females who do not conform to traditional gender roles and engage in socially abhorred conduct and “male-only” activities, including outright criminal behavior, can differ starkly from males, even if the legal system and involved enforcement entities are unbiased. Therefore, female defendants may choose the SEC punishment bundle conforming with their traditional gender role and very different from the punishment bundles chosen by male defendants.

An alternative or, potentially complimentary factor, directly related to our model, is the fact that women are more risk-averse than men.¹⁵ However, another competing hypothesis is that gender differences in economic and social outcomes arise from discrimination (Egan, Matvos, and Seru, 2019; Card, DellaVigna, Funk, and Iriberry, 2019). The effect of offender gender on punishment in the context of finance has been studied by Egan, Matvos, and Seru (2019b) in the context of financial advisors. For a sample of financial advisors from the BrokerCheck database they find substantial differences in the punishment of misconduct across gender with female advisors being punished more severely. However, one of the assumptions behind our model is that the SEC punishments are gender-neutral. Therefore, in this section we both establish the relevance of gender to the SEC punishment choices and test for evidence of gender-based discrimination in the SEC punishment outcomes.

¹⁴See Chesney-Lind (2002) and Steffensmeier et al. (2005) for evidence on assaults, and Gavrilova and Campaniello (2015) for evidence on property crimes.

¹⁵Croson and Gneezy (2009) use economic experiments to show that women are more risk averse than men and that social preferences of women are more situationally specific than those of men; women are neither more nor less socially oriented, but their social preferences are more malleable. Bertrand, Goldin, and Katz (2010) show that the growth in the gender gap among graduates of a prestigious MBA program can be explained almost entirely by differences in hours worked, which can, in turn, be explained by child rearing. Gallen (2015) finds in a sample of Danish workers that mothers are less productive than other women or men, which explains most of the wage difference. Cook et al. (2019) find that the earnings gap among Uber drivers can be explained by men being more experienced on the Uber platform than women, men choosing different routes and work hours than women, and, finally, men having different preferences for driving speed than women. Bolotnyy and Emanuel (2019) find that women make less than men at a large public, unionized employer since women are less likely than men to game the scheduling system by trading off work hours at regular wages for overtime hours at premium wages.

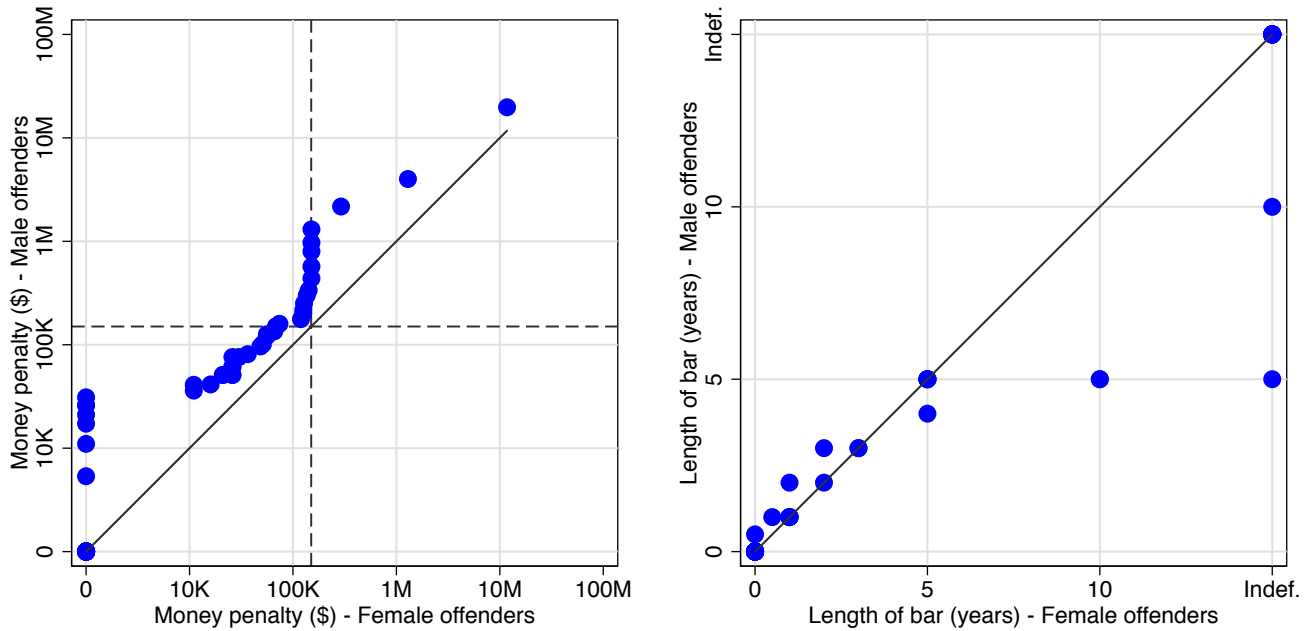


Figure 3: Q–Q plots of money penalty and bar length

The figure presents Q–Q plots of ordered money penalties (left) and professional bar lengths (right) for male (vertical) versus female (horizontal). In both plots a value above (below) the 45-degree line represents a higher likelihood of a given penalty for male (female) defendants. The dashed line in the left plot indicates a \$150K penalty.

3.1 Gender-sorted descriptive statistics of SEC punishments

Distributions of penalties: We start with a statistical analysis of the SEC penalties partitioned by the defendant’s gender. Figure 3 presents Q–Q plots of ordered money penalties (left) and professional bar lengths (right) for male (vertical) versus female (horizontal) defendants. In both plots a value above (below) the 45-degree line represents a higher likelihood of a given penalty for male (female) defendants. The dashed line in the left plot indicates a \$150K penalty. The left plot clearly shows that male defendants are more likely to receive a money penalty. Bunching along the vertical line at zero indicates that female defendants are unlikely to be penalized up to \$10K. The data point at \$10M is almost on the 45-degree line thus indicating that men and women are almost equally likely to receive very high money penalties.

The right plot of Figure 3 paints a quite different picture. Male and female defendants are equally likely to receive professional bars up to 5 years in length. However, female defendants are significantly more likely than male defendants to receive professional bars longer than five years, including ten year long and indefinite bars. Overall, Figure 3 suggests gender-based heterogeneity in the SEC punishments.

Table 2 presents gender-sorted sample statistics. Panel A documents the distribution of SEC penalties by the defendant’s gender unconditionally and conditional on the penalty being nonzero. Out of 376 defendants who received a money penalty 342 (91%) are male and 34 (9%) are female. Money penalties vary with gender. Unconditionally/conditionally males pay on average

Table 2: SEC punishments: Distributional statistics and tests by defendant gender

The table documents the distribution of SEC punishments by defendant’s gender. Indefinite bars are coded with a length of 15 years.

	Gender	N	Mean	SD	Min	10%	25%	50%	75%	90%	Max
<i>Panel A: Distribution by defendant gender</i>											
Money penalty (\$K)	M	579	592	3,781	0	0	0	30	125	496	60,000
	F	69	226	1,417	0	0	0	0	55	150	11,752
Money cond. (\$K)	M	342	1,002	4,880	2	25	50	100	265	1,049	60,000
	F	34	458	2,007	10	20	25	60	141	150	11,752
Length of bar (yrs)	M	579	4.25	5.99	0	0	0	0.5	5	15	15
	F	69	4.57	6.35	0	0	0	0	10	15	15
Length of bar cond.	M	297	8.29	6.05	0.08	1	3	5	15	15	15
	F	34	9.28	6.16	0.5	1	3	12.5	15	15	15
<i>Panel B: Kolmogorov-Smirnov distributional tests</i>											
	Raw			Demeaned			Log-demeaned				
	M<F	F<M	K-S	M<F	F<M	K-S	M<F	F<M	K-S		
Money penalty (\$K)	0.001	-0.174	0.174	0.879	-0.057	0.879	0.128	-0.160	0.160		
	[1.00]	[0.02]	[0.04]	[0.00]	[0.67]	[0.00]	[0.36]	[0.20]	[0.36]		
Money cond. (\$K)	0.026	-0.280	0.280	0.839	-0.070	0.839	0.128	-0.160	0.160		
	[0.96]	[0.01]	[0.01]	[0.00]	[0.74]	[0.00]	[0.36]	[0.20]	[0.36]		
Length of bar (yrs)	0.041	-0.020	0.041	0.041	-0.507	0.507	0.101	-0.424	0.424		
	[0.82]	[0.95]	[1.00]	[0.82]	[0.00]	[0.00]	[0.54]	[0.00]	[0.00]		
Length of bar cond.	0.101	-0.003	0.101	0.101	-0.424	0.424	0.101	-0.424	0.424		
	[0.54]	[1.00]	[0.88]	[0.54]	[0.00]	[0.00]	[0.54]	[0.00]	[0.00]		

\$592K/\$1,002K in penalties, while females pay less than half that on average. The standard deviation, median, 75% and 90% quantiles, and maximum fine are all smaller for women, both conditionally and unconditionally.

Out of 331 defendants who received professional bars 297 (90%) are male and 34 (10%) are female. The summary statistics in the table show that the average bar length is 4.25 years for men and 4.57 for women.¹⁶ However, the 75% quantile is 5 years for men and 10 years for women. Conditional on receiving a bar, women receive 9.28 years (12.5 years) on average (median) and men only 8.29 (5) years. In summary, female defendants receive lower money penalties than male defendants, but longer bars.

Next, we use the two-sample Kolmogorov-Smirnov distance test to determine if there are statistically significant differences in the distributions of money penalties and professional bars between male and female defendants. The Kolmogorov-Smirnov distance is the maximum absolute difference between the two cumulative distribution functions and is invariant to reparametrizations, including

¹⁶Indefinite bars are coded with a length of 15 years, as the maximum finite bar in the data is 10 years. Our results are robust to alternative specifications of 20, 25, and 50 years.

demeaning and log transformation. Panel B of Table 2 documents the results for the raw (Columns 1 to 3), demeaned (Columns 4 to 6), and demeaned and log-transformed samples. We test the hypothesis that penalties for males take smaller values, i.e., smaller money penalties and shorter bars, than for females in Columns 1, 4, and 7. The reverse hypothesis is tested in Columns 2, 5, and 8. Columns 3, 6, and 9 report the Kolmogorov-Smirnov distance test.

Rows 1 (all defendants) and 2 (defendants with non-zero money penalties) of Panel B report Kolmogorov-Smirnov tests for the distribution of money penalties. For all defendants, the largest difference between the raw distribution functions under the hypothesis that penalties for males take smaller values is 0.001 (Column 1) with a p-value equal to 1.00, which is not significant. The largest difference between the raw distribution functions under the hypothesis that money penalties for males take larger values than for females (Column 2) is equal to -0.174, which is statistically significant. The combined difference reported in the third column is 0.174 and it is significantly different from zero with the p-value equal to 0.04. For demeaned distributions the largest difference between distribution functions under the hypothesis that penalties for males(females) take smaller values is equal to 0.879(-0.057) with a p-value equal to 0.00(0.67). The combined difference reported in the sixth column is 0.879 and it is significantly different from zero with a p-value equal to 0.00. However, for the log-demeaned distributions the largest difference between distribution functions reported in Column 9 is equal to 0.160 with a p-value equal to 0.36. The results for defendants with non-zero money penalties are quite similar.

Rows 3 (all defendants) and 4 (defendants with non-zero bars) of Panel B report Kolmogorov-Smirnov tests for the distribution of bar length. For all defendants, the largest difference between the raw distribution functions under the hypothesis that males get shorter bars is 0.041 (Column 1) with a p-value equal to 0.82. The largest difference between the raw distribution functions under the hypothesis that females get shorter bars (Column 2) is -0.020 with a p-value equal to 0.95. The combined difference reported in the third column is equal to 0.041 with a p-value equal to 1.00. For demeaned distributions the largest difference between distribution functions under the hypothesis that bars are shorter for males(females) is equal to 0.041(-0.507) with a p-value equal to 0.82(0.00). The combined difference reported in the sixth column is 0.507 and it is significantly different from zero with a p-value equal to 0.00. For the log-demeaned distributions the largest difference between distribution functions reported in Column 9 is equal to 0.424 with a p-value equal to 0.00. The results for defendants with non-zero money penalties are quite similar. These results indicate that, while the distributions of raw bar length are not statistically different between male and female defendants, both the demeaned and log-demeaned distributions in bar length are statistically different.

Finally, as a direct test of gender relevance to the SEC punishments, we sort punishment bundles consisting of money penalties and professional bars on defendant's gender. Table 3 documents the frequency of all possible combinations of money penalty and length of bar imposed on male (Panel A) and female (Panel B) defendants. Money penalties are reported across rows, split into \$0-\$150K,

Table 3: Combinations of money penalty and professional bars

The table documents the combinations of length of bar (rows) and money penalty (columns) imposed on male (panel A) and female (Panel B) defendants. The numbers represent the fraction of defendants.

	Total	Split by length of bar (yrs)		
		0	(0–5]	>5
<i>Panel A: Male defendants</i>				
Fraction of defendants	100.0%	48.7%	27.8%	23.5%
Split by money penalty (\$):				
≤\$150K	76.5%	38.3%	20.9%	17.3%
(\$150K–\$1M]	17.4%	6.7%	5.9%	4.8%
>\$1M	6.0%	3.6%	1.0%	1.4%
<i>Panel B: Female defendants</i>				
Fraction of defendants	100.0%	50.7%	21.7%	27.5%
Split by money penalty (\$):				
≤\$150K	88.4%	39.1%	21.7%	27.5%
(\$150K–\$1M]	8.7%	8.7%	–	–
>\$1M	2.9%	2.9%	–	–

(\$150K–\$1M], >\$1M. Professional bars are reported across columns, split into 0, (0–5], and > 5 years. The reported numbers represent the percentage of defendants.

Male, 48.7%, and female, 50.7%, defendants are almost equally likely to receive no professional bar. Within the group of defendants without professional bars, 38.3% of male and 39.1% of female defendants receive a money penalty no greater than \$150K, which is the maximum “minimum” money penalty. 3.6% of male and 2.9% of female defendants receive no professional bars but pay more than a million dollars in penalties. In fact, only female defendants who do not receive a professional bar pay more than \$1M in money penalties, while 2.4% of male defendants pay more than \$1M in money penalties and receive some type of professional bar.

27.8% (23.5%) of male and 21.7% (27.5%) of female defendants have been barred for no longer (longer) than five years. The most striking feature of gender-sorted punishment bundles is that *all barred* female defendants paid no greater than \$150K in money penalties. By way of contrast, barred male defendants are represented in all money penalty buckets. In summary, Table 3 quantifies the evidence from Figure 1 that the defendant’s gender is correlated with the choice of SEC punishment bundle. Next, we investigate money penalties at a more granular level.

Composition of money penalties: It is possible that total money penalties differ between female and male defendants not because female defendants’ demand for them is less than male defendants’ demand, but simply because of composition effects. As discussed in Appendix A.1, civil money penalties as well as disgorgements and prejudgment interest together form the total money penalty for a defendant. Civil money penalties are a punitive fine imposed by the SEC. They constitute the main direct money punishment imposed on a securities law offender. The SEC

Table 4: Differences in types of money penalties between female and male defendants

The table documents characteristics of defendants in SEC trial cases. The sample consists of all defendants in each legal case against individuals in the SEED database between 2003 and 2018. The number of individual cases/defendants is 574. The total number of civil and administrative proceedings is 648. Standard errors are clustered at the legal case. Significance levels are * 10%, ** 5%, *** 1%, # .1%.

	Female	Male	Female – Male
<i>Panel A: All filings</i>			
Total punishment (\$K)	246.52	681.94#	–435.42*
Civil penalty (\$K)	86.42	237.27***	–150.85*
Disgorgement and interest (\$K)	160.10	444.67***	–284.57*
<i>Panel B: Civil filings</i>			
Total punishment (\$K)	231.02	427.14***	–196.12
Civil penalty (\$K)	73.00	113.25#	–40.25
Disgorgement and interest (\$K)	158.02	313.89**	–155.87
<i>Panel C: Administrative filings</i>			
Total punishment (\$K)	15.50***	254.80*	–239.30*
Civil penalty (\$K)	13.42***	124.02*	–110.60
Disgorgement and interest (\$K)	2.08	130.78*	–128.70*

may also seek the return of illegal profits as disgorgements and prejudgment interest. Therefore, it is possible that male defendants pay more in disgorgements, which can be quite large, than female defendants who are mostly paying punitive fines.

Table 4 documents that the differences between female and male defendants exist within all types of money penalties. It is the case that male defendants need to disgorge more illicit profits than female defendants and, in addition, pay larger civil fines. Both civil penalties and disgorgements are lower for female than male defendants, and this is true across all filings types (results are reported in the first panel) as well as separately for civil filings (results are reported in the second panel) and for administrative filings (results are reported in the third panel).

Characteristics of SEC enforcement cases sorted on gender: It is well known that occupations and labor market outcomes are different for men and women. Some of our unconditional results may, therefore, be explained by systematic differences in observable characteristics that correlate with punishment outcomes. The type of allegation, nature and severity of crime, job position and other factors all determine punishment outcomes and, at the same time, they may differ across gender groups. We therefore start by documenting various characteristics of SEC enforcement cases and how they vary between female and male defendants.

Table 5 reports characteristics of defendants in SEC trial cases. The sample consists of all defendants in each legal case against individuals in the SEED database between 2003 and 2018. The total number of civil and administrative proceedings is 648. The number of individual cases/defendants is 574. The first/second column reports the fraction of female/male defendants with the feature

indicated in the row header. t -tests check if the fraction is different from zero. The third column reports differences in characteristics of the SEC enforcement cases between female and male defendants. Here, t -tests check if the difference is statistically significant. All reported standard errors are clustered at the legal case. Significance levels are * 10%, ** 5%, *** 1%, # .1%.

Across panels in Table 5, we sort case characteristics into allegation type (Panel A), filing format (administrative or civil proceeding, or both) and number of defendants (Panel B), alleged violations of Exchange Act and Securities Act (Panel C), job position at the time of violation (Panel D), and court’s state (Panel E). Table 5 shows that male and female defendants vary systematically in their characteristics. Many of the differences are, however, not statistically significant. For instance, issuer reporting and disclosure issues are the most frequent allegation type. Females face this allegation 58% of the time and men 53% of the time. Yet, the 5 percentage point difference is not statistically different. Females are more likely to commit crimes related to issuer reporting and disclosure, market manipulation, municipal bonds and public pension, and others. By way of contrast, females are less likely to commit crimes related to broker-dealer and insider trading, investment advisory, securities offering, and the Foreign Corrupt Practices (FCP) Act. Filing format and number of defendants vary very slightly across genders. Exchange Act violations vary systematically and statistically significantly across female and male defendants. By contrast, Securities Act violations do not vary across genders. Overall, it is not apparent if these differences are economically material and how they could affect our results.

Panel D presents gender differences in job positions. Note that defendants may fall into multiple job categories during the violation period, so that the rows do not necessarily sum to one. We find that females are less often in a founder/owner position (2% versus 5%), though the difference is not statistically significant. This could be because the difference is immaterial or because we lack statistical power due to the small population size of the SEC enforcement cases. There are many fewer female than male CEOs in our sample. Here the difference is significant. They are also less represented than men in other high-ranking positions such a chairman, head of a division or unit, president, and vice president, as well as in not so high ranking capacities as the associate and broker-dealer/specialist. Women, however, are relatively more often than men employed as a CFO, Chief Officer, director, and manager. Overall, it is not clear that in our sample women are systematically employed in lower-ranked jobs than men during their allegation period, with the exception of the CEO–CFO/CO divide.

3.2 Multivariate analysis of SEC punishments

In this section we further test whether female defendants choose different punishment bundles than male defendants using multivariate analysis to control for differences in the observable characteristics between them and their crimes.

Table 5: Differences in characteristics of SEC enforcement cases between female and male defendants

The table documents characteristics of defendants in SEC trial cases. The sample consists of all defendants in each legal case against individuals in the SEED database between 2003 and 2018. The number of individual cases/defendants is 574. The total number of civil and administrative proceedings is 648. Standard errors are clustered at the legal case. Significance levels are * 10%, ** 5%, *** 1%, # .1%.

	Female defendants	Male defendants	Female – Male
<i>Panel A: Allegation type</i>			
Issuer reporting and disclosure	0.58#	0.53#	0.05
Broker-dealer and trading	0.07*	0.14#	-0.08*
Investment advisory	0.10**	0.14#	-0.04
Securities offering	0.05*	0.06#	-0.01
Market manipulation	0.13*	0.06*	0.08
FCP Act	0.00	0.04***	-0.04***
Munis and public pension	0.03	0.02***	0.01
Other	0.03	0.01**	0.02
<i>Panel B: Filing format and number of defendants</i>			
Civil filing only	0.43#	0.48#	-0.04
Administrative filing only	0.42#	0.40#	0.02
Civil and administrative filing	0.15***	0.13#	0.02
No. of defendants per trial	2.93#	3.52#	-0.58
<i>Panel C: Violations</i>			
Exchange Act Rule12b20	0.00	0.01**	-0.01**
Exchange Act Rule13a1	0.07**	0.18#	-0.12***
Exchange Act Rule13a13	0.00	0.01**	-0.01**
Exchange Act Rule13a14	0.07**	0.18#	-0.11***
Exchange Act Rule13a15	0.00	0.00	-0.00
Exchange Act Rule14a3	0.00	0.02***	-0.02***
Exchange Act Rule14a9	0.00	0.03#	-0.03#
Exchange Act Sec10bRule10b5	0.45#	0.45#	-0.00
Exchange Act Sec13a	0.00	0.01***	-0.01***
Exchange Act Sec13b2A	0.02	0.02**	-0.00
Exchange Act Sec13b2B	0.02	0.02**	-0.00
Exchange Act Sec13b5	0.27#	0.25#	0.01
Exchange Act Sec14a	0.00	0.03#	-0.03#
Exchange Act Sec14eRule14e3	0.00	0.00	0.00
Exchange Act Sec15c	0.00	0.00	-0.00
Exchange Act Sec20a	0.02	0.01*	0.01
Exchange Act Sec20e	0.00	0.02**	-0.02**
Exchange Act Sec30A	0.00	0.04***	-0.04***
Securities Act Sec15b	0.00	0.00	-0.00
Securities Act Sec17a	0.27***	0.30#	-0.03
Securities Act Sec17a1	0.12***	0.08#	0.03
Securities Act Sec17a2	0.10**	0.16#	-0.06
Securities Act Sec17a3	0.17***	0.18#	-0.02
Securities Act Sec5	0.02	0.03**	-0.01
Securities Act Sec5a	0.02	0.03**	-0.01
Securities Act Sec5c	0.02	0.03**	-0.01

Table 5: Differences in characteristics of SEC enforcement cases between female and male defendants—Continued

	Female	Male	Female – Male
<i>Panel D: Job position</i>			
FounderOwner	0.02	0.05#	–0.03*
CEO	0.05*	0.20#	–0.15#
CFO	0.22#	0.15#	0.06
Chief	0.20***	0.10#	0.10
DirectorChairman	0.07**	0.12#	–0.05
Director	0.27#	0.18#	0.09
Head	0.02	0.03#	–0.01
Controller	0.07**	0.06#	0.00
Manager	0.15***	0.07#	0.08*
President	0.05*	0.11#	–0.06**
VicePresident	0.17***	0.21#	–0.04
Associate	0.00	0.02***	–0.02***
BrokerTraderSpecialist	0.02	0.10***	–0.08***
<i>Panel E: Court state</i>			
Alabama	0.00	0.00	–0.00
California	0.03	0.02**	0.01
Connecticut	0.00	0.00	–0.00
Delaware	0.00	0.01	–0.01
DC	0.03	0.06#	–0.03
Florida	0.03	0.03***	0.00
Illinois	0.05*	0.03**	0.02
Indiana	0.00	0.01	–0.01
Kansas	0.00	0.01	–0.01
Louisiana	0.00	0.01	–0.01
Maryland	0.00	0.01	–0.01
Massachusetts	0.08	0.03**	0.05
Michigan	0.00	0.00	–0.00
Nebraska	0.00	0.00	–0.00
New Jersey	0.02	0.01*	0.01
New York	0.10**	0.11#	–0.01
North Carolina	0.02	0.00	0.01
Ohio	0.02	0.01	0.01
Pennsylvania	0.00	0.00	–0.00
Puerto Rico	0.00	0.00	–0.00
Rhode Island	0.00	0.01	–0.01
Texas	0.00	0.04**	–0.04**
Wisconsin	0.03	0.00	0.03
No Court Specified	0.00	0.00	–0.00
Missing	0.58#	0.60#	–0.02

Money penalty: To ensure our results are not driven by heterogeneity in the severity of the allegations, experience, qualifications, or firm characteristics, we examine whether defendant’s gender

Table 6: Money penalties by gender

The table documents the relation between money penalties and gender. Panel A documents the determinants of the probability that a defendant faces money penalties. Coefficient estimates are obtained from Probit regressions. Panel B documents the determinants of money penalties. Coefficient estimates are obtained from linear regressions. Across columns, the specifications control for fixed effects from the 8 allegation types, 10 defendant counts, 27 violations alleged, 13 job positions, 37 court districts, and 6 defendant name etymologies described in Appendix A. The number of observations is 648. The number of observations with positive money penalty is 376. Clustered at the legal case p -values are reported in square brackets.

Panel A: <i>Predicting positive money penalty</i>				
	Money penalty>0 (probit)		Money penalty>0 (logit)	
	(1)	(2)	(3)	(4)
<i>Female</i>	-0.25 [0.16]	-0.11 [0.59]	-0.40 [0.16]	-0.15 [0.67]
Pseudo R ²	0.003	0.240	0.003	0.241
Fixed Effects	N	Y	N	Y
Panel B: <i>Determinants of money penalties</i>				
	log(\$1 + Money Penalty) (cum 0)		log(Money Penalty) (ex 0)	
	(1)	(2)	(3)	(4)
<i>Female</i>	-0.33 [0.02]	-0.15 [0.24]	-0.25 [0.03]	-0.20 [0.07]
Pseudo R ²	0.008	0.386	0.010	0.527
Fixed Effects	N	Y	N	Y

relates to the likelihood of positive money penalties using the following specification:

$$(\text{Money penalty}>0)_{ijt} = \beta_0 + \beta_1 \cdot \text{Female}_{ijt} + \beta_2' \mathbf{X}_{ijt} + \varepsilon_{ijt}. \quad (15)$$

The dependent variable $(\text{Money penalty}>0)_{ijt}$ is a dummy variable that indicates whether defendant i in proceeding j at time t received a money penalty. The explanatory variable of interest is the gender of the defendant, Female_{ijt} , equal to one (zero) if the defendant is female (male). We also control for defendant characteristics in \mathbf{X}_{ijt} and include fixed effects for allegation type, filing format, defendant's job positions, court districts, and defendants' name etymology. We estimate equation (15) using Probit and Logit regressions. In all specifications, standard errors are clustered at the legal case and clustered p -values are reported in square brackets.

Panel A of Table 6 reports these results. They confirm the findings of the previous section that female defendants are substantially less likely than male defendants to receive money penalties: 11% (Column 2 of Panel A) with fixed effects to 25% (Column 1 of Panel A) without fixed effects for the Probit model, and 15% (Column 4 of Panel A) with fixed effects to 40% (Column 3 of Panel A) without fixed effects for the Logit model. The coefficients are, however, not statistically significant.

We next investigate whether defendants' gender relates to the size of money penalties using the

same set of controls, \mathbf{X}_{ijt} , as in specification (15):

$$\log(\$1 + \text{Money Penalty}_{ijt}) = \beta_0 + \beta_1 \cdot \text{Female}_{ijt} + \beta_2' \mathbf{X}_{ijt} + \varepsilon_{ijt}. \quad (16)$$

Panel B of Table 6 presents the results for four regression specifications. In all specifications money penalty is expressed in \$1,000. Columns 1 (without fixed effects) and 2 (with fixed effects) report our results for all cases, including ones with zero money penalties. The \$1 is omitted for cases with positive money penalties column 3 (without fixed effects) and column 4 (with fixed effects). Because money penalty is expressed in logarithmic terms, the coefficient on the Female_{ijt} dummy measures the percentage difference between female and male defendants.

All columns indicate that the average money penalty received by male defendants is higher than money penalty received by female defendants. For all cases the regression coefficient on the *Female* dummy indicates that women receive 33%(15%) smaller money penalties relative to men without(with) fixed effects. For cases with non-zero money penalty, women receive 25%(20%) smaller money penalties relative to men without(with) fixed effects. All these coefficients are both economically significant and coefficients reported in columns 1, 3, and 4 are statistically significant, at least at the 10% level. In summary, Table 6 provides additional evidence that female defendants receive lower money penalties than male defendants.

Professional bars: Next, we investigate whether female defendants are more or less likely than male defendants to receive professional bars, and, conditional on receiving professional bars, whether female defendants receive longer bars than male defendants. We employ the following Probit model to estimate the likelihood of receiving a professional bar:

$$(\text{Length of Bar} > 0)_{ijt} = \beta_0 + \beta_1 \cdot \text{Female}_{ijt} + \beta_2' \mathbf{X}_{ijt} + \varepsilon_{ijt}, \quad (17)$$

We use the same set of controls, \mathbf{X}_{ijt} , and fixed effects as in specification (15). Some defendants receive multiple professional bars. We use a Poisson regression to study whether defendants' gender is related to the total number of professional bars received. In all specifications, standard errors are clustered at the legal case and clustered p -values are reported in brackets.

Table 7 presents these results. Columns 1 (without fixed effects) and 2 (with fixed effects) report results for specification (17). Columns 3 (without fixed effects) and 4 (with fixed effects) report Poisson regression results predicting the total number of professional bars for all cases, including ones without professional bars. Finally, Columns 5 (without fixed effects) and 6 (with fixed effects) present Poisson regression results predicting the total number of professional bars just for cases with professional bars. In all specifications, standard errors are clustered at the legal case and clustered p -values are reported in square brackets.

Column 2 of Table 7 shows that female defendants are 25% less likely to receive professional bars than male defendants, but the coefficient is not statistically significant. Columns 3 and 4 of Table 7

Table 7: Predicting the occurrence of professional bars

The table documents the determinants of bars. Coefficient estimates are obtained from linear regressions. Across columns, the specifications control for fixed effects from the 8 allegation types, 27 violations alleged, 13 job positions, 37 court districts, and 10 defendant counts described in Appendix A. The number of observations is 648. The number of observations with positive bar length is 331. Standard errors are clustered at the legal case. Clustered p -values are reported in square brackets.

	Professional bar (probit)		Number of bars (poisson)		Number of bars if barred	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Female</i>	-0.05 [0.77]	-0.25 [0.19]	-0.04 [0.80]	-0.09 [0.56]	-0.00 [0.99]	0.09 [0.51]
Pseudo R ²	0.000	0.254			0.000	0.392
Fixed Effects	N	Y	N	Y	N	Y
N	648	579	648	648	331	331

indicate that female defendants receive fewer bars than male defendants for the whole sample, but both coefficients are not statistically significant. Results are not significant, both economically and statistically, when we condition the number of bars on bars being received, as Columns 5 and 6 report. Overall, these results indicate that female defendants are not more likely to receive professional bars than male defendants, and that female and male defendants receive, on average, the same total number of professional bars.

Next we study whether the defendant’s gender relates to the length of professional bars. We start by studying long-term, e.g., longer than 5 years, professional bars and indefinite professional bars using the following specifications:

$$(\text{Length of Bar} > 5\text{yrs})_{ijt} = \beta_0 + \beta_1 \cdot \text{Female}_{ijt} + \beta_2' \mathbf{X}_{ijt} + \varepsilon_{ijt}, \quad (18)$$

$$(\text{Length of Bar} = \infty)_{ijt} = \beta_0 + \beta_1 \cdot \text{Female}_{ijt} + \beta_2' \mathbf{X}_{ijt} + \varepsilon_{ijt}, \quad (19)$$

where we use the same set of controls \mathbf{X}_{ijt} with fixed effects as in specifications (15) and (17). We use a Tobit model with the same set of controls as in specifications (18) and (19) to predict the bar length. In all specifications, standard errors are clustered at the legal case and clustered p -values are reported in brackets.

Table 8 presents our results. Columns 1 (without fixed effects) and 2 (with fixed effects) report results for all defendants, while Columns 3 (without fixed effects) and 4 (with fixed effects) report results for only barred defendants. Results for the whole sample show that in expectation female defendants are as likely as male defendants to receive long-term, -1% (column 2 of Panel A), and indefinite bars, -4% (column 2 of Panel B), with both coefficients being not statistically significant. The Tobit model with fixed effects applied to all defendants predicts that, on average, men and women receive professional bars of equal length (Column 2 of Panel C). None of the coefficients on the Female_{ijt} dummy are statistically significant for the sample of all defendants.

Table 8: Predicting the length of professional bars

The table documents the determinants of bar length. Coefficient estimates are obtained from linear regressions. Across columns, the specifications control for fixed effects from the 8 allegation types, 27 violations alleged, 13 job positions, 37 court districts, and 10 defendant counts described in Appendix A. The number of observations is 648. The number of observations with positive bar length is 331. Standard errors are clustered at the legal case. Clustered p -values are reported in brackets.

	All defendants		Barred defendants	
	(1)	(2)	(3)	(4)
Panel A: <i>Long-term professional bar (probit)</i>				
<i>Female</i>	0.13 [0.51]	-0.01 [0.98]	0.25 [0.31]	0.51 [0.09]
Pseudo R ²	0.001	0.308	0.003	0.429
Panel B: <i>Life-time professional bar (probit)</i>				
<i>Female</i>	0.09 [0.63]	-0.04 [0.86]	0.19 [0.44]	0.44 [0.15]
Pseudo R ²	0.000	0.326	0.002	0.423
Panel C: <i>Length of bar (tobit)</i>				
<i>Female</i>	0.41 [0.89]	0.02 [0.99]	0.99 [0.42]	1.50 [0.17]
Pseudo R ²	0.000	0.102	0.002	0.507
Fixed Effects	N	Y	N	Y
N	648	648	331	331

Conditional on the bar being received, female defendants are significantly more likely than male defendants to receive long-term professional bars, between 25% (column 3 of Panel A) and 51% (column 4 of Panel A). Female defendants are more likely to be banned for life than male defendants: 19% (column 3 of Panel B) and 44% (column 4 of Panel B). Female defendants receive, on average, longer bars than male defendants by 1 year (column 3 of Panel C) and 1.5 years (column 4 of Panel C). Overall, Table 8 confirms that among barred defendants, women receive longer bars and are more likely to be barred for life than male defendants. However, coefficients on the $Female_{ijt}$ dummy are marginally statistically significant only in column 4.

3.3 Evidence on discrimination

Gender does not enter the total punishment constraint in our model. However, our findings so far indicate that male and female defendants receive different punishment bundles. Specifically, male defendants receive a variety of combinations of money penalties and professional bars, ranging from a small fine and no bar to a large fine and indefinite bar. Female defendants often receive a small fine with long-term bar or a significant fine without bar. But they never receive a medium or large fine with a medium or long professional bar. These outcomes could be due to gender-based

Panel A: Q–Q plot of total punishment = money penalty + length of bar * \$250,000

Panel B: Q–Q plot of total punishment = money penalty + length of bar * \$500,000

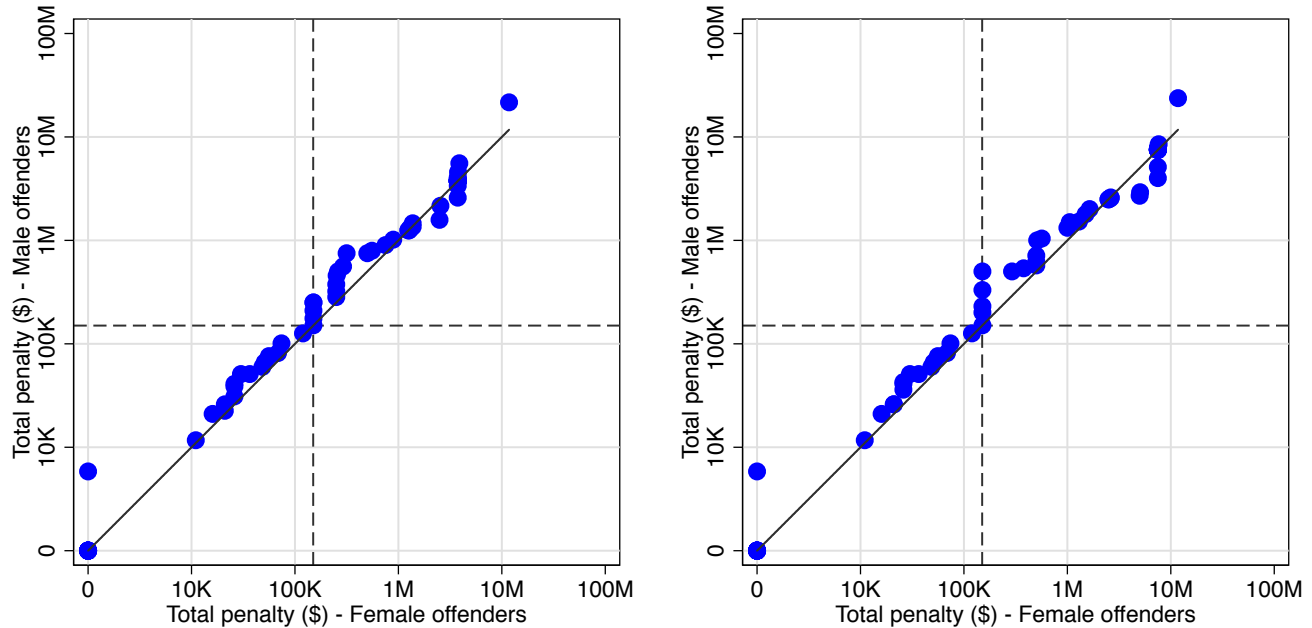


Figure 4: Distribution of total penalties for female vs male defendants

The figure uses Q–Q plots to compare distributions of the total punishment for male (vertical axis) versus female (horizontal axis) defendants. Values above 45-degree line indicate a higher (lower) likelihood of penalties depicted on the vertical axis than penalties depicted on the horizontal axis. The dashed line indicates a \$150K penalty.

discrimination. In this section we investigate whether the gender neutrality of the total punishment still holds using univariate analysis as well as in multivariate regressions to control for heterogeneity with a host of case-specific and defendant-specific characteristics.

Total punishment: We start by computing proxies for the total punishment by monetizing professional bars at a rate of \$250K per year and, for robustness, at a rate of \$500K per year and adding them to money penalties.¹⁷ Figure 4 uses Q–Q plots to compare distributions of the total punishment for male (vertical axis) versus female (horizontal axis) defendants.¹⁸ Panel A(B) graphs the total punishment computed by monetizing professional bars at a rate of \$250K(\$500K) per year. Both plots clearly show that while the mixture of penalties varies between female and male defendants, the distribution of *total* penalty is similar between genders.

We next investigate the relation between the total punishment and defendant’s gender using the

¹⁷Our results are also robust if \$100,000 is used to monetize the professional bars.

¹⁸Just like in Figure 1 dashed lines a money penalty above \$150K.

Table 9: Determinants of total punishments

The table documents the determinants of total penalties. We compute total penalties by monetizing professional bars at a rate of \$250,000 (Panel A) or \$500,000 (Panel B) per year and adding them to money penalties. Coefficient estimates are obtained from linear regressions including individuals with zero total penalties (columns 1 and 2) and excluding individuals with zero total penalties (columns 3 to 6). Across columns, the specifications control for fixed effects from the 8 allegation types, 3 filing formats, 10 defendant counts, 27 violations alleged, 13 job positions, 37 court districts, and 6 defendant name etymologies described in Appendix A. The number of observations with positive total penalties is 541. Standard errors are clustered at the legal case. Clustered p -values are reported in brackets.

	Total punishment (cum 0)		Total punishment (ex 0)		log(Total punishment)	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: <i>Total punishment @ \$250,000</i>						
<i>Female</i>	-285.75 [0.31]	-225.24 [0.55]	-322.33 [0.34]	-337.48 [0.45]	-0.13 [0.67]	-0.29 [0.29]
R ²	0.000	0.162	0.001	0.212	0.000	0.496
Panel B: <i>Total punishment @ \$500,000</i>						
<i>Female</i>	-205.53 [0.66]	-300.82 [0.55]	-210.08 [0.72]	-350.26 [0.54]	-0.12 [0.74]	-0.31 [0.31]
R ²	0.000	0.217	0.000	0.289	0.000	0.495
Fixed Effects	N	Y	N	Y	N	Y
N	648	648	541	541	541	541

following multivariate specifications:

$$\text{Total punishment} \geq 0 : \quad (\text{Total punishment} \geq 0)_{ijt} = \beta_0 + \beta_1 \cdot \text{Female}_{ijt} + \beta_2 \mathbf{X}_{ijt} + \varepsilon_{ijt}, \quad (20)$$

$$\text{Total punishment} > 0 : \quad (\text{Total punishment} > 0)_{ijt} = \beta_0 + \beta_1 \cdot \text{Female}_{ijt} + \beta_2 \mathbf{X}_{ijt} + \varepsilon_{ijt}, \quad (21)$$

$$\log(\text{Total punishment}) : \quad \log(\text{Total punishment})_{ijt} = \beta_0 + \beta_1 \cdot \text{Female}_{ijt} + \beta_2 \mathbf{X}_{ijt} + \varepsilon_{ijt}. \quad (22)$$

The dependent variable $(\text{Total punishment} \geq 0)_{ijt}$ is the total punishment for a defendant i in proceeding j at time t including defendants with zero total punishment. The dependent variable $(\text{Total punishment} > 0)_{ijt}$ excludes defendants with zero total punishment. Specification (22) uses as the dependent variable the natural logarithm of the total punishment for cases where total punishment is non-zero. The explanatory variable of interest is the gender of the defendant, Female_{ijt} . We control for defendant characteristics in \mathbf{X}_{ijt} and include across specifications fixed effects for allegation type, filing format, defendants' job positions, court districts, and defendants' name etymology. We cluster standard errors at the legal case.

Table 9 presents our findings. Panel A(B) reports results for the total punishment computed by monetizing professional bars at a rate of \$250K(\$500K) per year. Columns 1 (without fixed effects) and 2 (with fixed effects) report results for Probit specification (20). Columns 3 (without fixed effects) and 4 (with fixed effects) report results for Probit specification (21). Finally, Columns 5

(without fixed effects) and 6 (with fixed effects) present regression results for specification (22).

Table 9 shows that all estimated coefficients on the defendant’s gender dummy, Female_{ijt} , are negative, demonstrating that, on average, female defendants receive lower total penalties than male defendants, although none of the estimates are statistically significant.

The Appendix analyzes whether the judge’s gender impacts the punishment by gender. We do not find evidence of disparities based on the judge’s gender.

4 Becker (1968) & Akerlof and Kranton (2000): IV estimation using gender as instrument

Section 3 establishes that female and male defendants choose different punishment bundles. Female defendants tend to select either long professional bars and the minimal money penalty or no professional bars and an above minimum money penalty. Some male defendants go for a combination of professional bars and money penalties. We also do not find evidence of gender-based discrimination in SEC punishments. In this section, we first extend our model to help understand the heterogeneity in the composition of male and female punishment bundles. Based on the extended model we use gender to instrument the “demand” for professional bars. The instrumented professional bars are then used to estimate the elasticity of substitution between money penalties and bars.

4.1 Extended model

Because the baseline model of defendant behavior considered in Section 2 does not address the gender differences in punishments, we incorporate the defendant’s gender by using the insight of Akerlof and Kranton (2000). Akerlof and Kranton integrate an agent’s identity into an economic model of behavior by proposing that an agent’s identity is associated with different social categories. Conventional consumer theory suggests that agents’ behavior and choices differ across these social categories, thus affecting agents’ utilities. Specifically, we assume that professional bars are associated with costs that we refer to as social stigma. These costs can come from expected future statistical discrimination against defendants in the labor market.

Let $\bar{b} \in \mathcal{P}^F$ be the threshold at which social stigma arises. Beyond \bar{b} , professional bars generate a discontinuous disutility $\lambda \geq 0$ in addition to the conventional disutility $U(m, b)$ introduced in Section 2. Discontinuity in disutility is a parsimonious way to generate money-only and bar-only punishments, which are prevalent in the data.¹⁹ To simplify the discussion, we focus on more significant offenses by assuming that $I > \bar{m} + \gamma\bar{b}$, which implies that the severity of the misconduct is such that it is not feasible for the defendant to escape with a minimum money fine and without

¹⁹While there is substantial evidence in the literature to suggest social stigma, it is not possible to rule out other explanations in the data.

incurring a social stigma, $(\bar{m}, \bar{b}) \notin \mathcal{P}^F$. The defendant's optimal punishment bundle, (\hat{m}, \hat{b}) , solves

$$(\hat{m}, \hat{b}) = \arg \min_{(b,m) \in \mathcal{P}^F} U(m, b) + \underbrace{\lambda \mathbf{1}\{b > \bar{b}\}}_{\text{Stigma}}. \quad (23)$$

We start by considering a case of $(m^*, b^*) \notin \mathcal{P}^F$ implying that the no-stigma optimal money penalty is below the minimal money penalty, $m^* < \bar{m}$, and that the no-stigma optimal bar length is longer than the maximum feasible bar length, $b^* > (I - \bar{m})/\gamma$. This is possible when the misconduct warrants mostly minimum money penalty, $\bar{m} \approx I$, or when the total punishment is weak, such that the enforcement agency's punishment threshold I is sufficiently low. In the case of the CES disutility, it follows from equation (6) that $m^* < \bar{m}$ when α is small.

Since the no-stigma optimal bundle, (m^*, b^*) , is not feasible, "corner" solutions have to be analyzed. Using relation $I = m + \gamma b$ we eliminate the money penalty, m , from the defendant's utility to yield $U(I - \gamma b, b)$. $U(I - \gamma b, b)$ monotonically decreases on the interval $b \in [0, \bar{b}]$, then jumps up by the value of λ as b crosses the social stigma threshold, and then once again monotonically decreases on the interval $b \in (\bar{b}, \gamma^{-1}(I - \bar{m})]$. We therefore need to compare $U(I - \gamma \bar{b}, \bar{b})$ and $U(\bar{m}, \gamma^{-1}(I - \bar{m})) + \lambda$. If the stigma disutility is large, then it is optimal to select the shortest feasible bar length not leading to stigma and to pay the rest in fines

$$(\hat{m}, \hat{b}) = (I - \gamma \bar{b}, \bar{b}), \text{ if } U(I - \gamma \bar{b}, \bar{b}) < U(\bar{m}, \gamma^{-1}(I - \bar{m})) + \lambda. \quad (24)$$

By way of contrast, if the stigma disutility is small, then it is optimal to pay the smallest feasible fine and accept the longest feasible bar length which corresponds to the professional bar corner:

$$(\hat{m}, \hat{b}) = (\bar{m}, \gamma^{-1}(I - \bar{m})), \text{ if } U(I - \gamma \bar{b}, \bar{b}) \geq U(\bar{m}, \gamma^{-1}(I - \bar{m})) + \lambda. \quad (25)$$

Next, we consider the case of $(m^*, b^*) \in \mathcal{P}^F$ and once again eliminate the money penalty, m , from the defendant's utility to yield $U(I - \gamma b, b)$. If the no-stigma optimal bar length is shorter than \bar{b} , $b^* \leq \bar{b}$, then the "interior" solution is optimal:

$$(\hat{m}, \hat{b}) = (m^*, b^*), \text{ if } b^* \leq \bar{b}. \quad (26)$$

In this case the defendant has high tolerance to the professional bar length, making \bar{b} large. Consequently, the defendant is willing to trade off money and bar length and selects a portfolio-like punishment bundle.

If the no-stigma optimal bar length is longer than \bar{b} , $b^* > \bar{b}$, then the optimal solution depends on the value of the stigma disutility λ . If λ is large, then, once again, it is optimal to select the shortest feasible bar length not leading to stigma and to pay the rest in fines:

$$(\hat{m}, \hat{b}) = (I - \gamma \bar{b}, \bar{b}), \text{ if } U(I - \gamma \bar{b}, \bar{b}) < U(m^*, b^*) + \lambda. \quad (27)$$

By way of contrast, if λ is small, then the “interior” solution is optimal:

$$(\widehat{m}, \widehat{b}) = (m^*, b^*), \text{ if } U(I - \gamma\bar{b}, \bar{b}) \geq U(m^*, b^*) + \lambda. \quad (28)$$

Proposition 1 summarizes these results.

PROPOSITION 1: *The solution to the defendant’s problem takes the following form:*

$$(\widehat{m}, \widehat{b}) = \begin{cases} (m^*, b^*) & \text{if } (m^*, b^*) \in \mathcal{P}^F \text{ and } b^* \leq \bar{b} \text{ or} \\ & \text{if } b^* > \bar{b} \text{ and } U(I - \gamma\bar{b}, \bar{b}) \geq U(m^*, b^*) + \lambda, & \text{(interior)} \\ (I - \gamma\bar{b}, \bar{b}) & \text{if } (m^*, b^*) \notin \mathcal{P}^F \text{ and } U(I - \gamma\bar{b}, \bar{b}) < U(\bar{m}, \frac{I-\bar{m}}{\gamma}) + \lambda \text{ or} \\ & \text{if } (m^*, b^*) \in \mathcal{P}^F \text{ and } b^* > \bar{b} \text{ and } U(I - \gamma\bar{b}, \bar{b}) < U(m^*, b^*) + \lambda, & \text{(money corner)} \\ (\bar{m}, \frac{I-\bar{m}}{\gamma}) & \text{if } (m^*, b^*) \notin \mathcal{P}^F \text{ and } U(I - \gamma\bar{b}, \bar{b}) \geq U(\bar{m}, \frac{I-\bar{m}}{\gamma}) + \lambda. & \text{(bar corner)} \end{cases} \quad (29)$$

The “money corner” is associated with either strong or weak punishments. Under both types of punishment, the net utility gain from selecting a bar length equal to \bar{b} and high money penalty over a bar length longer than \bar{b} and low money penalty is greater than λ . It leads to a short bar at the critical non-stigma threshold \bar{b} and a high money penalty $I - \bar{b} > \bar{m}$. For example, having any professional bar on the employment record reduces the prospects of highly valuable future employment with present value equal to λ .

The “bar corner” case corresponds to an environment with either a strong preference for longer bars or misconduct warranting mostly minimum money penalty. Female defendants may prefer longer professional bars when they have better outside options and desire to save money. Women also prefer professional bars when they fear future statistical discrimination in the labor market that significantly reduces their future employment opportunities in the field of finance. In this case the utility gain from selecting maximum bar length and minimum money penalty over the bar length below the social stigma threshold \bar{b} and higher money penalty is greater than λ . This leads to a long, potentially indefinite bar, $I - \bar{m} > \bar{b}$, and to a relatively low money penalty equal to \bar{m} that does not exceed the defendant’s budget. For example, λ being low is equivalent to having valuable outside options that do not depend on their criminal history.

The insights from Akerlof and Kranton (2000) help with introducing gender into the model. One difference between men and women is in \bar{b} —for women \bar{b} is lower than for men. In other words, if labor markets discriminate against women who are found guilty of misconduct, then bars are more costly for women. Indeed, Egan, Matvos, and Seru (2019) find that male financial advisors with misconduct record are more likely to find future employment than female advisors with the same record of misconduct. The relationship between the defendant’s gender and the public assessment of her/his criminal record, e.g., female defendants even with short bars are judged harshly by potential employers, can be driven by gender stereotypes and sexist attitudes towards women. Another

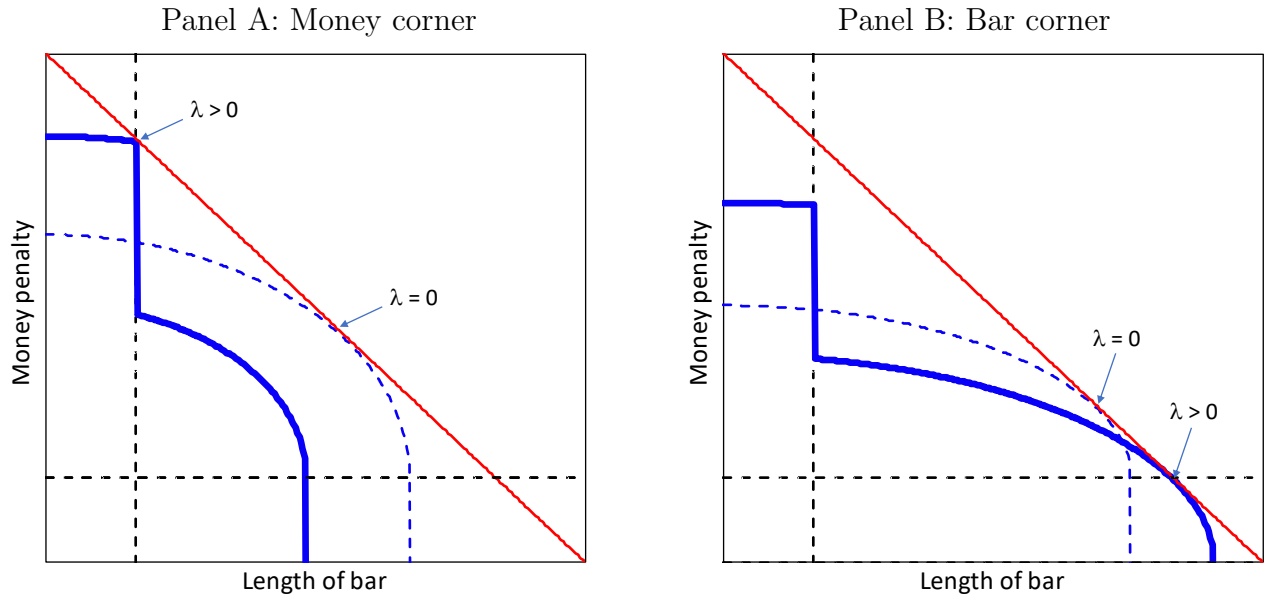


Figure 5: Interior and corner equilibrium

The figure shows indifference curves and equilibrium punishment bundles for defendants with different tolerances to social stigma. Panel A illustrates the equilibrium in which female defendants ($\lambda > 0$, thick solid line) choose a money corner solution and male defendants ($\lambda = 0$, dashed line) choose an interior solution. Panel B presents the equilibrium in which female defendants ($\lambda > 0$, thick solid line) choose a bar corner solution and male defendants ($\lambda = 0$, dashed line) choose an interior solution. In both panels the red line corresponds to $\gamma = 1$.

difference between male and female defendants can be captured by the social stigma disutility λ . Women may have greater heterogeneity in λ due to greater variability in outside options.

Societal attitudes towards female defendants have been extensively studied by legal scholars. According to the “selective chivalry” argument, female defendants who conform to traditional gender roles are entitled to the protection granted by society in the form of leniency (see Farnworth and Teske 1995; Bickle and Peterson 1991; Spohn and Beichner 2000; Herzog and Oreg 2008). However, “nontraditional” female defendants who do not fit such traditional gender roles, e.g., by being single, careerist, feminist, and/or working in a traditionally male field like finance dominated by the “old boys” network, should receive harsher punishment for the same crime than men (see Johnson and Scheuble 1991; O’Neil 1999; Steury and Frank 1990).²⁰ Therefore, female defendants in financial crimes may be reluctant to admit any guilt, i.e., they should have a low guilt tolerance threshold \bar{b} , because they are afraid to be punished for a double deviance: once for the crime they have committed, and once more for departing from what is considered gender-appropriate behavior (e.g., Bickle and Peterson 1991; Steury and Frank 1990).

Social stigma disutility λ and threshold \bar{b} both play a key role in potentially explaining the

²⁰The selective chivalry hypothesis has been broadly supported in the legal literature. The existing evidence demonstrates that women who commit domestic violence offenses against other women (Romain and Freiburger, 2016), who commit violent offenses (Rodriguez, Curry, and Lee, 2006), and who have more extensive criminal histories (Tillyer, Hartley, and Ward, 2015) are less likely to receive lenient sentences.

gender-based dichotomy in punishing bundles observed in the data. Figure 5 illustrates this point. Consider an extreme case of male defendants not being affected by social stigma, $\lambda = 0$, and female defendants being affected by it, $\lambda > 0$. Panel A of Figure 5 shows that when λ is large, female defendants who are strongly affected by stigma are better off selecting the longest professional bar not leading to stigma and fulfilling the rest of the punishment with a money penalty. When the social stigma threshold \bar{b} is small, female defendants pay large money penalty and have short professional bars. By way of contrast, Panel B of Figure 5 shows that if λ is small, female defendants are better off paying minimum money penalty and having longest possible bars appropriate for a degree of misconduct measured by I .

While highly stylized, the model explains how money penalties and professional bars can vary between female and male defendants and how the combinations of money penalty and professional bars can vary between female and male defendants. First, differential options across genders outside the field of finance can translate into systematic gender differences in punishment. Female defendants may have career and/or other options outside finance which are less desirable to men, such as greater childcare responsibility, or having a job with lesser pay but higher personal reward, such as teaching or philanthropy. These outside options are less affected by having professional bars, thus reducing the disutility due to social stigma, λ , (Case 3 in solution (29)). Therefore, consistent with our findings, the model can predict that women pay lower money penalties than men. Following case 3 in solution (29), the model also predicts that female defendants are more likely to face longer professional bars than male defendants.

Second, differential gender punishment preferences can arise from possible gender discrimination in the labor market. Professional bars can impact men less due to gender stereotypes where female misconduct is viewed more negatively by employers. In addition, the “old boys” network can help male defendants with professional bars on their records, even repeat defendants, find employment in finance, while this is much more difficult for female defendants. In the model, the post-misconduct exposure to labor market discrimination is associated with a social stigma threshold, \bar{b} , that captures the differential tolerance across genders to professional bars. If women have low \bar{b} , they do not choose an interior solution since it is impossible if $\bar{b} \leq b^*$. If men have higher \bar{b} than women, they more often prefer an interior solution (Case 1 in solution (29)), but can also choose corner punishment bundles.

4.2 IV estimation

We use the extended model to specify an IV estimation of the money–time tradeoff in punishment. Section 3 establishes that the defendant’s gender is relevant to the SEC enforcement outcomes. However, changing the defendant’s gender does not shift the relative demand for money and professional bars in a conventional and continuous way, i.e., higher/lower money and shorter/longer professional bars or vice versa. Instead, female defendants’ prefer/demand “corner” punishment

bundles with either money and no bars or no money and longer bars. Therefore, we anticipate the defendant's gender to be a weak instrument if used alone. However, our modified model proposes that female defendants select corner outcomes due to their lower tolerance for the social stigma caused by professional bars. The model suggests that the heterogeneity across corner outcomes for female defendants is due to heterogeneity in the size of the social stigma disutility λ . Thus, the interaction between the defendant's gender and her aversion to social stigma makes her pick the specific punishment corners. Unfortunately, we do not directly observe λ in the data. Below we consider several proxies for λ and study their performance. All of the specifications utilized in this section control for fixed effects from the 8 allegation types, 27 violations alleged, 13 job positions, 37 court districts, and 10 defendant counts in \mathbf{X}_{ijt} .

First stage: In our first specification, we use dummies for the money, (No Money Penalty) $_{ijt}$, and the professional bar, (Not barred) $_{ijt}$, corners, as well as their interaction with the gender dummy to instrument the defendants' demand for professional bars:

$$\begin{aligned} \text{Gender} \times \text{Corner: } \log(1 + \text{Length of Bar}_{ijt}) = & \beta_0 + \beta_1 \text{Female}_{ijt} + \beta_2 (\text{Not barred})_{ijt} + & (30) \\ & \beta_3 (\text{No Money Penalty})_{ijt} + \beta_4 \text{Female}_{ijt} \cdot (\text{Not barred})_{ijt} + \\ & \beta_5 \text{Female}_{ijt} \cdot (\text{No Money Penalty})_{ijt} + \beta_6' \mathbf{X}_{ijt} + \varepsilon_{ijt}. \end{aligned}$$

Rather than using the realization of corner punishments, we also employ the fitted probabilities of the professional bar corner estimated in (15),

$$\Pr(\text{No Money Penalty})_{ijt} \equiv 1 - (\widehat{\text{Money penalty}} > 0)_{ijt},$$

and the money corner estimated in (17),

$$\Pr(\text{Not barred})_{ijt} \equiv 1 - (\widehat{\text{Length of Bar}} > 0)_{ijt},$$

in our second specification:

$$\begin{aligned} \text{Gender} \times \Pr(\text{Corner}): \log(1 + \text{Length of Bar}_{ijt}) = & \beta_0 + \beta_1 \text{Female}_{ijt} + \beta_2 \Pr(\text{Not barred})_{ijt} + & (31) \\ & \beta_3 \Pr(\text{No Money Penalty})_{ijt} + \beta_4 \text{Female}_{ijt} \cdot \Pr(\text{Not barred})_{ijt} + \\ & \beta_5 \text{Female}_{ijt} \cdot \Pr(\text{No Money Penalty})_{ijt} + \beta_6' \mathbf{X}_{ijt} + \varepsilon_{ijt}. \end{aligned}$$

In our third specification we proxy for the heterogeneity in λ with a full set of the defendant and case characteristics, \mathbf{X}_{ijt} :

$$\begin{aligned} \text{Gender} \times \text{Controls: } \log(1 + \text{Length of Bar}_{ijt}) = & \beta_0 + \beta_1 \text{Female}_{ijt} + & (32) \\ & \beta_2' \text{Female}_{ijt} \cdot \mathbf{X}_{ijt} + \beta_3' \mathbf{X}_{ijt} + \varepsilon_{ijt}. \end{aligned}$$

Finally, we utilize the hand-collected etymology of defender’s name as a proxy for λ in our fourth specification:

$$\begin{aligned} \text{Gender} \times \text{Etymology: } \log(1 + \text{Length of Bar}_{ijt}) = & \beta_0 + \beta_1 \text{Female}_{ijt} + \beta_2 \text{Etymology}_{ijt} + \\ & \beta_3 \text{Female}_{ijt} \cdot \text{Etymology}_{ijt} + \beta_4' \mathbf{X}_{ijt} + \varepsilon_{ijt}. \end{aligned} \quad (33)$$

Since our data lack the direct information about the defendant’s ethnicity, we classify the defendant’s name according to its origin and most common use into five regions: North America (424, 78.37%), Asia (48, 8.87%), EMEA (38, 7.02%), India (15, 2.77%), South America (16, 2.96%).

Table 10 reports our results for specifications (30)–(33). The coefficient on Female_{ijt} is not statistically significant in two specifications, 1 and 2. It is negative and statistically significant at 1% level in specification 3, and positive in specification 4. Overall, these results support our prior that the defendant’s gender alone is a weak instrument.

Specification 1, using dummies for the corner punishment bundles without either professional bars or money penalties, has the highest R^2 equal to 81%. The regression coefficient on the Not barred_{ijt} dummy, -0.68, is statistically significant at 1% and indicates that after controlling for a variety of characteristics the average bar length for barred defendants is approximately one year. The regression coefficient on the $\text{No Money Penalty}_{ijt}$ dummy, 0.11, is also statistically significant at 1% and indicates that defendants without money penalty receive, on average, 1.32 extra months longer professional bars. Both coefficients on the interaction terms between gender and corner dummies are not statistically significant.

When we use fitted probabilities for the corner punishment bundles instead of the dummies in Specification 2, the R^2 declines to 45%, which is the lowest among all specifications. The regression coefficient on $\text{Pr}(\text{Not barred})_{ijt}$ is equal to -1.07 and it is significant at 1% level, while the regression coefficient on the other probability, $\text{Pr}(\text{Not barred})_{ijt}$, is not statistically significant. The regression coefficient on the interaction term $\text{Female}_{ijt} \cdot \text{Pr}(\text{No Money Penalty})_{ijt}$ is positive and statistically significant at 5%, while the regression coefficient on the second interaction term is not statistically significant.

Specification 3 yields an R^2 equal to 55%. It has several regression coefficients on interaction terms that are statistically significant at 1% or 5% levels. Specification 4 uses defendant’s name etymology and its interaction with the defendant’s gender and has an R^2 equal to 51%. The regression coefficients on most etymology dummies are not statistically significant. However, the regression coefficients on interaction terms show that the US and Asian female defendants receive, on average, shorter professional bars than other defendants.

Table 10: IV first stage

The table documents the estimates from the first stage of the IV approach. The dependent variable is $\log(\text{Length of bar})$. Across columns, the specifications control for fixed effects from the 8 allegation types, 27 violations alleged, 13 job positions, 37 court districts, and 10 defendant counts described in Appendix A. Standard errors are robust to clustering at the case level. Significance levels are indicated by * (10%), ** (5%), *** (1%).

	Gender × Corner (1)	Gender × Pr(Corner) (2)	Gender × Controls (3)	Gender × Etymology (4)
<i>Female</i>	-0.06	-0.29	-1.33***	0.46**
<i>Female</i> × Not barred	-0.00			
<i>Female</i> × No money penalty	0.15			
<i>Female</i> × Pr(Not barred)		0.17		
<i>Female</i> × Pr(No money penalty)		0.53**		
<i>Female</i> × Alleg IssuerReportingDisclosure			1.75***	
<i>Female</i> × Alleg BrokerDealerTrading			1.48**	
<i>Female</i> × Alleg InvestmentAdvisory			1.25*	
<i>Female</i> × Alleg SecuritiesOffering			3.31***	
<i>Female</i> × Alleg MarketManipulation			1.17	
<i>Female</i> × Alleg FCPAct			0.00	
<i>Female</i> × Alleg MunisPublicPension			0.00	
<i>Female</i> × Alleg Other			0.00	
<i>Female</i> × ExchangeAct Rule13a1			0.04	
<i>Female</i> × ExchangeAct Rule14a9			0.28	
<i>Female</i> × ExchangeAct Sec10bRule10b5			0.88***	
<i>Female</i> × ExchangeAct Sec13b2A			-1.84***	
<i>Female</i> × ExchangeAct Sec13b5			-0.70**	
<i>Female</i> × SecuritiesAct Sec17a			-1.21**	
<i>Female</i> × SecuritiesAct Sec17a1			-1.73**	
<i>Female</i> × SecuritiesAct Sec17a2			-2.60***	
<i>Female</i> × SecuritiesAct Sec17a3			3.18***	
<i>Female</i> × SecuritiesAct Sec5			1.32*	
<i>Female</i> × OtherActs			0.12	
<i>Female</i> × Job FounderOwner			-1.37**	
<i>Female</i> × Job CEO			-0.32	
<i>Female</i> × Job CFO			-0.05	
<i>Female</i> × Job Chief			0.08	
<i>Female</i> × Job DirectorChairman			1.56***	
<i>Female</i> × Job Director			0.04	
<i>Female</i> × Job Head			-2.35***	
<i>Female</i> × Job Controller			-0.37	
<i>Female</i> × Job Manager			0.06	
<i>Female</i> × Job President			-0.04	
<i>Female</i> × Job VicePresident			-0.05	
<i>Female</i> × Job BrokerTraderSpecialist			0.24**	
<i>Female</i> × No. of defendants=2			-0.63***	
<i>Female</i> × No. of defendants=3			-0.54	
<i>Female</i> × No. of defendants=4			0.00	
<i>Female</i> × No. of defendants=5			-0.02	

Continued on next page.

Table 10: IV first stage—*Continued*

	Gender× Corner (1)	Gender× Pr(Corner) (2)	Gender× Controls (3)	Gender× Etymology (4)
<i>Female</i> × No. of defendants=6			0.00	
<i>Female</i> × No. of defendants=7			-1.06**	
<i>Female</i> × No. of defendants=8			0.00	
<i>Female</i> × No. of defendants=9			0.00	
<i>Female</i> × Court DC			-0.00	
<i>Female</i> × Court Florida Southern			-0.35	
<i>Female</i> × Court Illinois Northern			-0.03	
<i>Female</i> × Court Indiana Northern			-0.30**	
<i>Female</i> × Court New Jersey			-2.38***	
<i>Female</i> × Court New York Southern			-0.62	
<i>Female</i> × Court North Carolina Western			0.98*	
<i>Female</i> × Court Ohio Northern			0.21	
<i>Female</i> × Court Pennsylvania Western			0.20	
<i>Female</i> × Court Wisconsin Eastern			-0.02	
Not barred	-0.68***			
No money penalty	0.11***			
Pr(Not barred)		-1.07***		
Pr(No money penalty)		0.41		
Etymology US				-0.19
Etymology Asia				-0.15
Etymology EMEA				-0.29*
Etymology India				-0.19
<i>Female</i> × Etymology US				-0.55**
<i>Female</i> × Etymology Asia				-0.47*
<i>Female</i> × Etymology EMEA				0.00
<i>Female</i> × Etymology India				0.00
Fixed effects	Y	Y	Y	Y
R ²	0.81	0.45	0.55	0.51

Second stage: In the second stage IV implementation, we estimate the elasticity of substitution between money penalties and professional bars, g^* , as:

$$\log(\$1 + \text{Money Penalty}_{ijt}) = \beta_0 + \beta_1 * \overbrace{\log(1 + \text{Length of Bar}_{ijt})} + \beta_2' \mathbf{X}_{ijt} + \varepsilon_{ijt}, \quad (34)$$

where $g^* = -\beta_1$ and $\overbrace{\log(1 + \text{Length of Bar}_{ijt})}$ is the predicted professional bar length from the first-stage regressions (30)–(33). We eliminate all cases with zero total punishment, which leaves 541 out of 648 defendants. Specification (34) controls in \mathbf{X}_{ijt} for fixed effects from the 8 allegation types, 27 violations alleged, 13 job positions, 37 court districts, and 10 defendant counts described in Appendix A. Standard errors are robust to clustering at the case level and reported in parenthesis.

Table 11 reports the second-stage IV results. Columns 2 through 5 report estimates for four

Table 11: IV estimates of g^*

The table documents the estimates from the second stage of the IV approach. The dependent variable is $\log(\$1 + \text{Money Penalty}_{ijt})$ and G^* is the coefficient on $\log(1 + \text{Length of Bar}_{ijt})$. Across columns, the specifications control for fixed effects from the 8 allegation types, 27 violations alleged, 13 job positions, 37 court districts, and 10 defendant counts described in Appendix A. Standard errors are robust to clustering at the case level and reported in parenthesis. Significance levels are indicated by * (10%), ** (5%), *** (1%).

	OLS	IV estimate for g^*			
	(1)	Gender× Corner (2)	Gender× Pr(Corner) (3)	Gender× Controls (4)	Gender× Etymology (5)
g^*	-0.72*** (0.14)	-1.33*** (0.14)	-1.97*** (0.52)	-0.80*** (0.30)	-1.99*** (0.77)
IV statistics:					
Weak instrument test		265.40 [0.00]	10.76 [0.00]	9.22 [0.00]	2.64 [0.01]
Underidentification test		121.00 [0.00]	17.97 [0.00]	42.91 [0.48]	6.79 [0.45]
Overidentification test		229.92 [0.00]	9.22 [0.00]	11.08 [0.00]	2.34 [0.02]
Weak identification stat		136.61	5.75	20.80	1.02

different instruments from the first stage. The OLS estimate from (14), -0.72, is reported in Column 1 for reference. For each instrument specification, we perform a weak instrument test, underidentification test, overidentification test, and weak identification test. For our weak-instrument-robust inference statistic we use the Anderson-Rubin (1949) test. The null hypothesis tested is that g^* (that is, the coefficient of the endogenous regressor in the structural equation) is equal to zero: $H_0 : g^* = 0$ and, in addition, that the overidentifying restrictions are valid. The test is robust to the presence of weak instruments and is equivalent to estimating the reduced form of the equation with the full set of instruments as regressors and testing that the coefficients of the excluded instruments are jointly equal to zero. Our underidentification test is the Anderson canonical correlation LM test of whether the equation is identified, i.e., that the excluded instruments are relevant, meaning correlated with the endogenous regressors.²¹ Our overidentification test is the Sargan-Hansen J -test of overidentifying restrictions. The joint null hypothesis is that the instruments are valid instruments, i.e., uncorrelated with the error term, and that the excluded instruments are correctly excluded from the estimated equation. Under the null, the test statistic is distributed as chi-squared in the number of (L-K) overidentifying restrictions. Our weak identification test is the Kleibergen-Paap (2006) rk

²¹The test is essentially the test of the rank of a matrix: under the null hypothesis that the equation is underidentified, the matrix of reduced form coefficients on the L1 excluded instruments has rank = K1-1 where K1 = number of endogenous regressors. Under the null, the statistic is distributed as chi-squared with degrees of freedom = L1-K1+1. A rejection of the null indicates that the matrix is full column rank, i.e., the model is identified.

Wald test, which is a cluster-robust F -statistic version of the Cragg-Donald Wald statistic. Weak identification arises when the excluded instruments are correlated with the endogenous regressors, but only weakly. Estimators can perform poorly when instruments are weak; see, e.g., Stock and Yogo (2002, 2005) for further discussion. The Kleibergen-Paap (2006) rk statistic is distributed as chi-squared with $L1-K1+1$ degrees of freedom. Stock and Yogo (2005) have compiled critical values.

All IV estimates are significant at 1%. IV estimates of g^* range between -0.80 and -1.99, and, therefore are all greater in absolute value than the OLS estimate of -0.72. The specification with gender interacted with bar and money corners performs best on the identification tests and is, therefore, our preferred specification.²² It estimates $g^* = -1.33$ ($t = -10.89$). Economically, for an offender with a 5-year bar and a \$1million money penalty, this elasticity implies a 1-year reduction in bar length increases the money penalty by \$266,000.

5 Conclusion

This paper examines the time versus money tradeoff at the core of the economic approach to criminal punishment. SEC enforcement targets major financial crimes through administrative or civil court proceedings that impose punishments consisting of money penalties and professional bars. For SEC enforcement cases, we study whether monetary fines and bars are substitutes (Becker (1968)), whether the SEC’s punishments are gender neutral (Becker (1957)), and whether the mix of punishment varies by gender. We find that monetary fines and bars are substitutes and that female and male defendants receive comparable total punishment for the same type of misconduct. However, women receive longer bars and smaller money penalties. Moreover, women exclusively receive either money penalties or professional bars while some men receive both penalties. This evidence is consistent with a model of enforcement where money and bar are complements for defendants and admitting guilt through accepting a professional bar entails social stigma.

We use the variation in the realized composition of punishment due to gender to identify the SEC’s tradeoff in time versus money. Consistent with Becker (1968), all IV estimates of the elasticity of substitution between money and bars are negative with magnitudes ranging from -0.80 to -1.99, and larger in absolute value than the OLS estimate of -0.72. Our preferred IV specification using gender interacted with money and bar corner yields an estimated elasticity of -1.33. Economically, for an offender with a 5-year bar and a \$1million money penalty, this elasticity implies a 1-year reduction in bar increases the money penalty by \$266,000.

An implication of our findings is that social norms may continue affecting females who have

²²The IV specifications with money and bar corner, predicted money and bar corner, and filing type all reject the nulls for the weak-instrument test, underidentification test, and overidentification test. The weak identification test statistic is the largest for gender interacted with money and bar corner. The other IV specifications fail to reject at least one of the tests. Gender interacted with All controls fail the underidentification and overidentification tests but passes the weak identification test. Gender interacted with a subset of the controls and gender interacted with etymology formally fail to reject the underidentification, overidentification, and weak identification tests.

succeeded in braking the “glass ceiling” in the corporate world. The majority of female white-collar professionals, including those at the very top of the corporate ladder, who have violated the U.S. securities laws elect to permanently leave their employment field in favor of other opportunities, while comparable in every dimension male offenders elect to stay. In addition, potential entrants into male-dominated fields, like finance, or/and executive-level positions can be discouraged to enter due to perceived over-enforcement of gender-specific norms and stereotypes on them. This further increases gender imbalance in already male-dominated professions.

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Appendix

A.1 How SEC Enforcement Works

Both the Securities and Exchange Commission (SEC) and the Federal Bureau of Investigation (FBI) have a law enforcement function. The SEC is focused on securities law violations and can trigger civil and administrative actions, while the FBI has a broader scope on a variety of violations and can bring criminal as well as civil and administrative action against offenders. The SEC conducts all investigations privately. It cooperates with the FBI and other federal agencies depending on the case. For instance, as the SEC has no actual law enforcement authority, they inform the FBI if an offender needs to be retained. A special division of the SEC, the Enforcement Division (ED), conducts all investigations. ED obtains evidence from market surveillance activities, investor tips and complaints, other divisions and offices of the SEC, the self-regulatory organizations and other securities industry sources, and media reports. With a formal order of investigation, the ED's staff compels witnesses by subpoena to testify and produce records.¹

Laws and Rules enforced by the SEC: The main laws that the SEC enforces are governed by the Securities Act of 1933, the Exchange Act of 1934, Investment advisors Act of 1940, The Investment Company Act of 1940, Sarbanes-Oxley Act of 2002, and Dodd-Frank Act of 2010. The SEC either directly uses these acts or develops its own rules under the umbrella of these acts for adjudicating misconduct. Laws, rules, and regulations enforced by the SEC can be roughly split into three main categories: (i) Regulation of broker-dealer, investment advisors, and other individuals involved in securities transactions; (ii) Sales and distribution of securities; (iii) Everything related to financial reporting and other informational releases. Here we briefly cover laws and rules applicable to most frequent violations found in our data.

Broker-dealer misconduct is litigated according to Sections 15b-4 and -6, as well as Sections 15a and 19h of the 1934 Act. Disciplinary proceedings concerning investment advisors and persons associated with investment advisors are adjudicated in accordance to Sections 203(e) and 206 of the advisors Act. Disciplinary proceedings and other adjudications concerning investment companies and persons associated therewith are adjudicated pursuant to Sections 8, 9, and 41 of the 1940 Act. The SEC adjudicates administrative disciplinary proceedings pursuant to Rule 2e of the SEC's Rules of Practice against attorneys, accountants, engineers, and other similar professionals who practice before the Commission or who may have some degree of involvement in securities transactions. Bribery in transacting of foreign and domestic securities is adjudicated in accordance to Section 30A of the Exchange Act. Finally, Section 20 of the Exchange Act of 1934 and Section 15b of the Securities Act of 1933 provide that a person controlling any person liable for misconduct may be liable jointly and severally and to the same extent as its controlled person.

¹More details can be found at <https://www.sec.gov/enforce/how-investigations-work.html>.

Sales and distribution of securities are mostly governed by the Securities Act of 1933. Section 17a of this act generally prohibits fraud and misrepresentation in the offer or sale of securities. Sections 11 and 12 of the same act impose liability for any material misstatements or omissions made in connection with registered offerings. Section 5b-1 of the Securities Act prohibits the use of any prospectus that does not satisfy SEC requirements. In addition, Section 5b-2 of the same act prohibits any registered sale of a security unless the security is preceded or accompanied by a prospectus that satisfies SEC requirements. Finally, suspensions of over-the-counter or exchange trading of a security are imposed by the SEC under sections 12k and 15c-5 of the 1934 Act.

Requirement to disclose all material information is covered by Rule 12b-20 of the Exchange Act of 1934. Section 18 of the Exchange Act imposes liability for false and misleading statements in documents filed with the SEC. Any information releases, not just filed with the SEC, are covered by Exchange Act Section 10b and Rule 10b-5. These provisions broadly prohibit fraudulent and deceptive practices and untrue statements or omissions of material facts in connection with the purchase or sale of any security. Section 13a of the Exchange Act establishes the reporting requirements for securities registered in accordance to Section 12 of the same act. SEC rules based on Section 13a are, for instance, Rule 13a-1 and 13a-13 which applies to quarterly (Form 10-Q), Rules 13a-1 and 13a-11 which apply to periodic (Form 8-K) reports, Rule 13a-2 which applies to annual report (Form 10-K), Rule 13a-14 which applies to certification of disclosure in annual and quarterly reports, and Rule 13a-15 which applies to overall controls and procedures. The proxy communication machinery of the SEC is based on Section 14a of the 1934 Act. For example, Rule 14a-1 specifies the information to be part of proxy communication, while Rule 14a-8 establishes a procedure through which shareholders can force management to include in its proxy materials their own proposals and one hundred word statements in support of such proposals. Misconduct involving certain types of defective 1934 Act reports or filings is adjudicated in accordance to section 15c-4 of the 1934 Act. These reports must be filed in accordance to sections 13 and 15 of the 1934 Act, such as annual or periodic reports or registration statements covering over-the-counter or exchange trading.

Types of SEC enforcements: If the SEC initiates charges against the firm, individual, or both, it can choose to bring an administrative proceeding or civil litigation, or both. In a civil action, the SEC files a complaint with a U.S. District Court and asks the court for a punishment or remedy. Administrative proceedings differ from civil court actions *prima facie* in that they are heard by an administrative law judge (ALJ) who is independent of the SEC. In an administrative action, the ALJ presides over a hearing and considers the evidence presented by the ED staff, as well as any evidence submitted by the subject of the proceeding. Following the hearing the ALJ issues an initial decision that includes findings of fact and legal conclusions. The initial decision also contains a recommended punishment. Both the ED staff and the defendant may appeal all or any portion of the initial decision. The SEC may affirm the decision of the ALJ, reverse the decision, or remand it for additional hearings. The choice of administrative proceedings or civil litigation depends on

the type of punishment being sought. For instance, the SEC may bar someone from the brokerage industry in an administrative proceeding, but an order barring someone from acting as a corporate officer or director must be obtained in a federal court. When the misconduct warrants it, the SEC might bring both types of proceedings. The SEC can also refer the case to the Department of Justice (DOJ) for criminal proceedings, which is usually reserved for cases of severe misconduct.

While they have started as a means to oversee regulated entities, administrative proceedings have gradually taken over the field of securities law. Congress has repeatedly expanded the authority of the SEC to pursue violations of securities laws in proceedings adjudicated by the SEC's own ALJs, most recently through the Dodd-Frank Act. The SEC is now allowed to impose civil penalties through its own administrative proceedings on essentially anyone it finds to have violated the federal securities laws. As a result, there has been a decline in the number of court cases and a corresponding increase in the number of administrative proceedings post-Dodd-Frank (see Choi and Pritchard, 2017), a period covering most of our sample.

In the majority of SEC enforcement actions, a consent settlement is the most effective disposition for the clients involved.² Settling the enforcement action provides the SEC, as well as the defendant(s), maximum flexibility in tailoring an appropriate punishment to fit the peculiarities of a particular case. In a seminal work on litigation and settlement of SEC enforcement actions Mathews (1980, *Catholic University Law Review*) points out on p. 274 that “since an injunction may trigger a host of direct and indirect statutory disqualifications, defense counsel may find it advantageous to negotiate a consent settlement in an administrative disciplinary proceeding rather than risk litigation of a civil injunctive action.” Of course, the SEC counsel has the final say on whether to settle the case or move on with the litigation.

In many cases, the decision to settle hinges on the degree of cooperation from the defendant(s) and can be viewed as a reward for “good behavior.” Settlement proposal is also more likely to be accepted if the defendant agrees to adopt new procedures designed to help prevent a recurrence of the violations charges. Since before 2013 the SEC has used a no-admit/no-deny policy for consent settlements, defendants with high disutility to public guilt admittance may find the consent settlements advantageous to trial litigation. The high-profile cases where the SEC and/or the defendant do not settle without trial are particularly interesting. Detailed public records exist for the cases that went to trial. In addition to any explicit punishments, these cases are associated with public shaming and stigma. They can be viewed as the most extreme cases of securities law

²See Mathews, *Effective Defense of SEC Investigations: Laying the Foundation for Successful Disposition of Subsequent Civil, Administrative and Criminal Proceedings*, 24 *EMORY L.J.* 567 (1975). “In representing witnesses in SEC investigations, and particularly in attempting to bring an investigation to a timely conclusion by negotiating a consent settlement in some type of formal enforcement action to be instituted, counsel must be cautious to maintain that important sense of credibility with the SEC and its Staff. Vigorous, alert representation of a client in the investigatory stage, including preparation of a forceful Wells Committee Submission, coupled with astute negotiations in an atmosphere of complete credibility, should, in the view of the writer, lead to a satisfactory settlement of the overwhelming majority of a securities attorney's enforcement cases, rather than pursuit of lengthy, expensive, arduous and usually harmful litigation.”

violations that got caught and successfully prosecuted.

In June 2013, the SEC made a major change to its policy regarding settlements: Instead of routinely settling matters on a no-admit/no-deny basis, the SEC began to require admissions from settling respondents and defendants in certain cases. This new policy has shifted some traditionally settled cases into trials. This was particularly acute in cases involving large financial institutions that were thought to have played a role in causing the financial crisis of 2008. In one prominent example involving Bank of America's acquisition of Merrill Lynch at the height of the financial crisis, Judge Jed Rakoff, of the Southern District of New York, rebuked the SEC and refused to approve a consent judgment in part because it did not contain any admissions of wrongdoing.³ Judge Rakoff set the case for trial. Cooperation and compliance with the SEC and admission of guilt are, as a result, important features to consider when comparing punishment outcomes.

For cases that have not been settled, defendants generally prefer to litigate in federal court because of the rights afforded there, including broad discovery procedures and an independent federal judge and jury to decide the case. The SEC prefers to seek most remedies in the administrative procedures, which involves a much more expedited proceeding that generally limits discovery by the parties to the evidence gathered during an investigation. Overall, the SEC defers more, at least lately, to administrative judges to develop the law as it prefers rather than using federal district judges, who may be less amenable to its arguments.

Types of SEC punishments: The SEC can seek a variety of punishments through the administrative proceeding process and in federal court. Disciplinary punishments come in two forms, civil money penalties as well as non-money penalties affecting defendant's professional standing. Civil money penalties are a punitive fine imposed by the SEC. They constitute the main direct money punishment imposed on a securities law offender. Civil money penalties are calculated based on an inflation-adjusted schedule.⁴ During much of our sample period, from March 2009 to March 2013, the civil money penalty for a natural person for fraud and substantial losses or risk of losses to others or gains to self ranged from \$7,500 to \$150,000 per violation count. The maximum per violation increased to \$160,000 in March 2013 and to \$173,437 in November 2015. Importantly, while the penalty per violation is set on a scale, the number of violations, that is, the scaling factor to compute the total punishment, is subject to judgment.

The type of the non-money penalty depends on the securities law. For instance, the disciplinary penalties that may be imposed against persons and entities in broker-dealer proceedings fall under the Exchange Act of 1934 and Advisors Act of 1940 and include: outright revocation of license (or denial of registration); bar from association with a broker-dealer; suspension of license or association; the placing of limitations on the activities or functions of a person or entity; or censure. Sanctions imposed under Rule 2e of the SEC's Rules of Practice, i.e., those applied to accountants, attorneys,

³See SEC v. Bank of Am. Corp., 653 F. Supp. 2d 507, 512 (S.D.N.Y. 2009).

⁴For more information please see <https://www.sec.gov/enforce/civil-penalties-inflation-adjustments.htm>

engineers, and other professionals, are limited to a suspension or bar from practice before the Commission.⁵ Professional bars are publicly disseminated and are monitored by the SEC. They can have long-lasting detrimental consequences for the offenders' labor market opportunities. Both administrative and court proceedings can impose punishments that are either civil money penalties or bars, or a combination of both types, and they can include multiple bars.

The SEC may also seek the return of illegal profits, so-called disgorgements, and prejudgment interest in addition to civil money penalties. Civil money penalties, disgorgements and prejudgment interest together constitute the total money penalty for an offender. The calculation of money penalties is important to whistleblowers. Under the Dodd-Frank Act's SEC Whistleblower Program, the SEC will issue an award to a whistleblower who provides original information that leads to a successful SEC enforcement action if the total money penalty exceed \$1million. A whistleblower may receive an award of between 10% and 30% of the total money penalties collected. In addition, the SEC often asks for a court order, called an injunction, that prohibits any further acts or practices that violate the law or SEC rules. An injunction can also require audits, accounting for frauds, or special supervisory arrangements. The court may also bar or suspend an individual from serving as a corporate officer or director. A person who violates the court's order may be found in contempt and be subject to additional fines or/and imprisonment.

Both types of money penalties, civil penalty and disgorgement/prejudgment interest, can be individual specific or shared between offenders. Our empirical analysis considers only recorded total punishment and disgorgement amounts for which defendants are individually liable, i.e., civil penalties, disgorgement amounts, prejudgment interest, and other penalty amounts explicitly reported as total amounts in the associated SEC document. If multiple amounts are reported for a defendant within the same action, i.e., in different SEC documents for the same action, the totals from the most recent SEC document are used.

A.2 Role of the judge

Here we examine the possibility that, all else being equal, female defendants are treated differently than male defendants by either administrative or federal judges, or both. It is quite likely that judge's gender strongly affects the type and severity of the punishment and even more so for female defendants. We, therefore, investigate the retrospective relationship between the judge's gender and punishment types. We estimate discrete choice regressions for punishment types using the following specification:

$$\begin{aligned}
 (\text{Punishment Type})_{ijt} = & \beta_1 \text{Defendant Female}_{ijt} + \beta_2 \text{Judge Female}_{ijt} \\
 & + \beta_3 (\text{Defendant Female \& Judge Female})_{ijt} + \beta_4 X_{ijt} + \varepsilon_{ijt}. \quad (\text{A.35})
 \end{aligned}$$

⁵17 C.F.R. § 201.2(e) (1979).

The dependent variable $(\text{Punishment Type})_{ijt}$ is a dummy variable taking value of one if punishment for a proceeding i for defendant j at time t is equal to a given type, and zero otherwise. $\text{Type} \in \mathbb{S}$ is an element of a set of different punishments, \mathbb{S} . We start by considering a coarse set of four punishment bundles, $\mathbb{S} = \{\text{No penalty, Money only, Bar only, Money and Bar}\}$. The explanatory variables are the gender of the defendant, $\text{Defendant Female}_{ijt}$, the gender of the judge, $\text{Judge Female}_{ijt}$, and a dummy equal to one if both defendant and judge are female and zero otherwise, $(\text{Defendant Female} \& \text{Judge Female})_{ijt}$. To control for heterogeneity, we include in (A.35) the same fixed effects, except punishment type fixed effect, as used in specifications (20)–(22). We also cluster standard errors at the legal case level.

Table A.1 reports our findings. Columns correspond to different punishment bundle types, $\text{Type} \in \{\text{No penalty, Money only, Bar only, Money and Bar}\}$, and per each punishment type we report the estimate obtained without and with fixed effects. Panel A pools all proceedings and for results reported in this panel we add the filing format fixed effect to specification (A.35). Panels B and C limit our estimations to civil and administrative filings, respectively.

Results from all three panels confirm that female defendants receive both a money penalty and a professional bar less often than male defendants. They also confirm that female defendants are more likely to receive either a money-only or a professional bar-only penalty than male defendants. They further show that female judges are more likely to impose penalties than male judges. Female judges more often than male judges impose a money penalty only and more often impose a professional bar only, though the latter is not statistically significant. In turn, female judges less often than male judges impose both a money penalty and a professional bar. Female administrative and federal judges are more likely to impose the professional bars-only penalty than corresponding male judges, with female ALJs more so. Female administrative and federal judges are also more likely to impose the money-only penalty than corresponding male judges, with female federal judges more so. Female administrative and federal judges impose fewer money and bar penalties than male judges, with the smaller likelihood belonging to female ALJs.

When it comes to female judges imposing differential punishments on same gender defendants, the evidence is mixed. Female federal and administrative judges both impose significantly fewer money-only penalties on women compared to men. Both types of female judges impose, in turn, more bars on women compared to men, but the difference is not statistically significant and due to federal judges.

Overall, we do not find that male judges impose very different punishments on female than male defendants, at least when such punishments are coarsely defined. We do find that female judges impose different punishments than male judges, but do not find evidence of either discrimination or favoritism when both defendant and judge are female.

Next, we check whether our findings from Table A.1 are robust to more refined types of punishments. We drop the “Money and bar” type and add two extreme punishments to both money penalty, “Large money” and “Small money”, and administrative bars, “Long bar” and “Short

Table A.1: Sanctions and judges' gender

The table documents the determinants of the punishments imposed and how they depend on defendant gender and gender of the judge. Coefficient estimates are obtained from a Probit regression. Across columns, the specifications control for fixed effects from the 8 allegation types, 27 violations alleged, 13 job positions, 37 court districts, and 10 defendant counts described in Appendix A. Standard errors are clustered at the legal case. Significance levels are * 10%, ** 5%, *** 1%, # .1%.

	No penalty		Money only		Bar only		Money and bar	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Panel A: <i>All filings (probit)</i>								
<i>Defendant female</i>	0.02 (0.20)	0.27 (0.29)	0.16 (0.22)	0.32 (0.24)	0.16 (0.19)	0.07 (0.25)	-0.39* (0.21)	-0.39 (0.26)
<i>Judge female</i>	-0.82** (0.36)	-1.52*** (0.51)	0.53*** (0.21)	0.47* (0.24)	0.25 (0.22)	0.48* (0.29)	-0.52** (0.23)	-0.58** (0.27)
<i>Defendant and judge female</i>	0.43 (0.67)	1.35 (0.92)	-1.00* (0.54)	-0.96* (0.57)	0.56 (0.48)	-0.11 (0.60)	0.19 (0.58)	0.34 (0.58)
Pseudo R ²	0.021	0.362	0.015	0.298	0.011	0.282	0.017	0.231
Fixed Effects	N	Y	N	Y	N	Y	N	Y
N	648	519	648	567	648	474	648	567
Panel B: <i>Civil filings (probit)</i>								
<i>Defendant female</i>	-0.06 (0.28)	0.44 (0.45)	0.44 (0.30)	1.44*** (0.48)	0.21 (0.31)	0.40 (0.82)	-0.88** (0.38)	-3.53*** (1.08)
<i>Judge female</i>	-1.11** (0.48)	-2.49# (0.66)	0.74*** (0.28)	1.45# (0.43)	0.18 (0.38)	-0.25 (0.91)	-0.39 (0.27)	-0.93* (0.56)
<i>Defendant and judge female</i>	0.00 (.)	0.00 (.)	-1.53** (0.77)	-2.89# (0.85)	0.89 (0.70)	-2.00 (1.69)	1.03 (0.76)	4.31*** (1.50)
Pseudo R ²	0.048	0.440	0.040	0.479	0.020	0.532	0.028	0.591
Fixed Effects	N	Y	N	Y	N	Y	N	Y
N	295	183	300	219	300	98	300	218
Panel C: <i>Administrative filings (probit)</i>								
<i>Defendant female</i>	0.05 (0.29)	0.07 (0.46)	-0.16 (0.29)	-0.15 (0.35)	0.20 (0.25)	0.07 (0.31)	-0.09 (0.26)	0.04 (0.32)
<i>Judge female</i>	-0.53 (0.48)	-0.04 (0.36)	-0.04 (0.33)	-0.20 (0.44)	0.77** (0.33)	0.67 (0.42)	-0.80 (0.53)	-1.44** (0.65)
<i>Defendant and judge female</i>	0.80 (0.83)	1.20 (0.89)	-0.08 (0.77)	0.49 (0.84)	-0.17 (0.70)	-0.98 (0.86)	0.00 (.)	0.00 (.)
Pseudo R ²	0.007	0.366	0.001	0.320	0.022	0.344	0.013	0.270
Fixed Effects	N	Y	N	Y	N	Y	N	Y
N	348	275	348	309	348	289	343	311

bar”, for a total 7 types of punishments, $\mathbb{S} = \{\text{No penalty, Money only, Large money, Small money, Bar only, Long bar, Short bar}\}$. We define large(small) money penalty if it is in the top(bottom) 25th percentile of the money penalties distribution. Long(short) bars are defined analogously. Since types of punishments available between federal and administrative venues do not overlap, we have that short bars are imposed exclusively in administrative proceedings, while large money penalties are imposed exclusively in the federal court.

Table A.2: Sanctions imposed by female versus male judges

The table documents the determinants of the punishments imposed. Coefficient estimates are obtained from a Probit regression. Across columns, the specifications control for fixed effects from the 8 allegation types, 27 violations alleged, 13 job positions, 37 court districts, and 10 defendant counts described in Appendix A. Standard errors are clustered at the legal case. Significance levels are * 10%, ** 5%, *** 1%, # .1%.

	(1) No penalty	(2) Money penalty	(3) Large money	(4) Small money	(5) Bar	(6) Long bar	(7) Short bar
Panel A: <i>All filings (probit)</i>							
<i>Defendant female</i>	0.27 (0.29)	-0.01 (0.21)	-1.25# (0.35)	0.45** (0.23)	-0.35* (0.21)	-0.52** (0.23)	0.11 (0.34)
<i>Judge female</i>	-1.52*** (0.51)	0.10 (0.26)	-0.44 (0.29)	0.33 (0.25)	-0.14 (0.24)	-0.26 (0.24)	0.45 (0.41)
<i>Defendant and judge female</i>	1.35 (0.92)	-0.70 (0.61)	0.00 (.)	-0.67 (0.64)	0.67 (0.50)	1.12** (0.55)	0.00 (.)
Pseudo R ²	0.362	0.242	0.297	0.202	0.255	0.255	0.304
Fixed Effects	Y	Y	Y	Y	Y	Y	Y
N	519	566	535	553	579	577	268
Panel B: <i>Civil filings (probit)</i>							
<i>Defendant female</i>	0.44 (0.45)	-0.18 (0.39)	-1.09** (0.47)	0.11 (0.50)	-2.08# (0.57)	-2.08# (0.57)	
<i>Judge female</i>	-2.49# (0.66)	1.11*** (0.41)	0.20 (0.42)	0.52 (0.39)	-0.69 (0.60)	-0.69 (0.60)	
<i>Defendant and judge female</i>	0.00 (.)	-1.45 (1.00)	0.00 (.)	1.69* (1.01)	3.42# (0.92)	3.42# (0.92)	
Pseudo R ²	0.440	0.402	0.368	0.399	0.556	0.556	
Fixed Effects	Y	Y	Y	Y	Y	Y	
N	183	217	196	199	243	243	
Panel C: <i>Administrative filings (probit)</i>							
<i>Defendant female</i>	0.07 (0.46)	0.04 (0.29)		0.32 (0.28)	0.25 (0.33)	-0.02 (0.30)	0.11 (0.34)
<i>Judge female</i>	-0.04 (0.36)	-0.87** (0.44)		-0.06 (0.41)	0.05 (0.41)	-0.26 (0.37)	0.45 (0.41)
<i>Defendant and judge female</i>	1.20 (0.89)	0.57 (0.91)		-0.39 (0.88)	-0.95 (0.77)	0.24 (0.79)	0.00 (.)
Pseudo R ²	0.366	0.293		0.186	0.259	0.219	0.304
Fixed Effects	Y	Y		Y	Y	Y	Y
N	275	324		320	310	316	268

Table A.2 reports our findings. It confirms that that male judges do not impose very different punishments on female than male defendants. The refined punishment splits show, however, that female judges impose significantly more long-term bars beyond two years on female than male defendants. In summary, we do not find conclusive evidence of discrimination against female defendant neither by federal nor administrative judges.