

INSIDER TRADING: NO LONGER ONLY FOR THE RICH AND FAMOUS

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The United States was the first, and for a long time the only, country to make trading on material non-public information illegal.¹ All three branches of the government have generally been in agreement that insider trading was harmful to the goal of having efficient public markets and eroded investors' trust in the system. The courts fashioned different theories explaining why insider trading was illegal, the Securities and Exchange Commission (the Commission) pushed for ever-increasing authority to pass regulations and to impose penalties on those who traded on non-public information and, after a public outcry over a few widely publicized cases in the 1980's, Congress passed two acts aimed at curbing egregious behavior among the Wall Street elite. Even so, after a few decades of trials and errors, the government has still failed to come up with a consistent theory explaining why insider trading is damaging to the markets, a statute defining what constitutes illegal trading and a reliable mechanism to enforce such a statute.

Over the years the government's efforts to come up with an overall regulatory scheme that is both internally consistent and practicable have focused on insider trading by the institutional elite – usually the executive officers of public companies and their Wall Street advisers. The measures incorporated into current laws and regulations were shaped to a large extent by the public prosecutions of high-profile cases involving such insiders – the most recent examples being Samuel Waksal and Martha Stuart. However, a review of the publicly available information with respect to actions brought by the Commission against insider traders, discussed in more detail in Part II of this paper, suggests that a relatively small percentage of insider trading (at least insider trading which was detected and prosecuted by the Commission) is conducted by officers of publicly traded corporations or their immediate advisers. Indeed, according to data derived from the Commission's prosecution filings the bulk of the insider trading cases involved individuals who were not employed by the issuer of the securities and engaged in actions that were far more egregious than those of Samuel Waksal and Martha

¹ Some of the most developed countries did not take steps to ban insider trading until recently. Japan, the world's second largest economy, did not aggressively prosecute insider trading until 1988 even though it had statutes forbidding trading on non-public information in place since 1948. *See* Tomoko Akashi, *Regulation of Insider Trading in Japan*, 89 Colum. L. Rev. 1296 (1989). Germany waited until 1994 to make insider trading a crime. *See* Daniel Standen, *Insider Trading Reforms Sweep Across German: Bracing for the Cold Winds of Change*, 36 Harv. Int'l L.J. 177 (1995). In contrast, the United States had laws prohibiting insider trading and short swing profits as early as 1934. *See, for example*, Securities Act of 1934 § 12(b), 15 U.S.C. §78l (2000) (corporate insiders and large shareholders must register with the SEC); Securities Act of 1934 §16(a)-(b), 15 U.S.C. §78p (2000) (registered insiders must disclose their trades to the SEC and pay short-swing profits back to the corporation).

Stuart – yet, those cases usually ended up with punishments that were nowhere as severe as the one imposed on Mr. Waksal.

This paper will argue that focusing predominantly on insider trading by the officers of an issuer is no longer productive and cannot be justified in the face of data showing that insider trading is primarily done by other players. It could be argued that the low levels of trading by corporate insiders reflect aggressive prosecution by the Commission and the goal of this paper is not to support or dispute this claim. However, the data reflects the reality that most insider trading is conducted not by a company's CEO or the company's legal or financial advisors, but by other participants in the market. As discussed below, the Court has noted the changing trends in the composition of insider traders and has attempted to address it by developing different theories reaching to individuals who do not have an insider status or a fiduciary relationship with respect to the issuer.

This paper will argue that the data collected in connection with recent prosecutions suggests that instead of viewing insider trading as conducted by "insiders" and "outsiders" (and focusing on the insiders) it is more useful and practical to distinguish between traders based on how egregious their conduct was. The model developed in this paper will show that there is sufficient evidence to argue that there are at least two distinct types of insiders who are motivated by different incentives and behave differently. The first group is composed primarily of risk-loving, highly sophisticated individuals who engage in insider trading in a regular and systematic way. The second group consists of traders who are primarily rank-and-file employees who engaged in insider trading largely as a result of a spur of the moment decision triggered by accidental disclosure of non-public information.

The establishment of distinct types of insider traders has two important implications. First, the analysis developed below will suggest that the government's approach to the regulation of insider trading, while an arguably effective deterrent in the case of highly compensated corporate insiders, has been quite ineffective in controlling insider trading by rank-and-file employees who generally belong to the risk loving group of traders. Second, the paper will argue that minor adjustments to the current regulatory scheme are unlikely to produce tangible results. An effective regulatory scheme would have to take into account the different types of insider traders and incorporate restraints and penalties that would be effective with respect to risk-loving insider traders.

Part I of this article offers a very brief review of the roles different public institutions have played in the regulation of insider trading. Part II describes the data set used to estimate the insider trading model developed in this paper. Part III describes the theory behind the model, estimates the coefficients of the model and analyzes their implications for insider trading regulation. Part IV summarizes and concludes.

I. THEORIES, STATUTES, REGULATIONS

The Securities Act of 1934 contained specific provisions governing corporate insiders, but it was the Court's expansive reading of SEC Rule 10b-5² that allowed the Commission to put pressure not only on corporate insiders, but on anyone else who might trade on non-public information.³

A. *The Courts*

The Second Circuit took the first step toward imposing limitations on insider trading when it created the disclose-or-abstain rule in order to deal with non-public information.⁴ Under this doctrine corporate insiders must disclose private information they possess before trading in the securities of the issuer or, if the disclosure would hurt the company, abstain from trading and tipping others. The rationale for reading a disclose-or-abstain requirement in Rule 10b-5 was the expectation that all investors trading on impersonal exchanges must have equal access to material information. Some commentators have argued that the creation of the disclose-or-abstain rule was the first step of a long and arduous journey in the wrong direction.⁵ The rule

² SEC Rule 10b-5, 17 C.F.R. §240.10b-5 (2000), was promulgated pursuant to the Commission's authority under §10(b) of the Securities Exchange Act of 1934. Rule 10b-5 states:

"It shall be unlawful for any person ... 1) to employ any device, scheme, or artifice to defraud 2) to make any untrue statement of a material fact or to omit to state a material fact necessary in order to make the statements made ... or 3) to engage in any act, practice, or course of business which operates or would operate as fraud or deceit upon any person, in connection with the purchase or sale of any security."

³ According to some commentators the courts have had a much stronger influence on limiting insider trading based on material non-public information than Congress or the Commission. See Seyhun, *The Effectiveness of the Insider Trading Sanctions*, 35 J.L. & Econ 149 (1992).

⁴ SEC v. Texas Gulf Sulphur Co., 401 F.2d 833 (1968), cert. den'd, 394 U.S. 976 (1969).

⁵ Scholars who believe that the market can price the threat of insider trading and that firms would respond to that threat by creating mechanisms to deter insider trading have argued against government regulation. See Dennis Carlton & Daniel Fischel, *The Regulation of Insider Trading*, 35 Stan. L. Rev. 857 (1983). For a mathematical model that is compatible with Carlton and Fischel's theory, see Jean-Charles Rochet and Jean-Luc Vila, *Insider Trading Without Normality*, 61 Rev. Econ. Stud. 131 (1994). Rochet and Vila offer a rational expectations model in which an informed insider trades on non-public information in a semi-strongly efficient market. The market maker in that model is aware of the fact that some of his clients are trading on insider information and incorporates that knowledge in his pricing decisions. Kose John and Larry Lang offered another model incorporating Carlton and Fischel's view. See Kose John and Larry Lang, *Insider Trading around Dividend Announcements: Theory and Evidence*, 46 J. Fin. 1361 (1991). John and Lang showed that the announcements of high dividends preceded by selling by corporate insiders lower the stock price. The authors argued that the change in the stock price implies that the market interpreted the insiders' sales as a more credible signal about the company's future than dividend

limits the flow of information to the market, leads to inefficient pricing and, at least in its original form, was perceived as overly broad. The Court attempted to limit its breadth by requiring scienter⁶, actual trading⁷, and the existence of a fiduciary relationship between the corporation and the accused insider⁸. The goal of the extra requirements was to harness the conduct diagnosed as wrong into the realm of common law fraud - an area in which the Court had significant expertise.⁹ In order to qualify as fraud, insider trading had to be characterized as a breach of a relationship of trust, so the Court created the misappropriation theory.¹⁰

In order to develop the misappropriation theory, the Court replaced the traditional fiduciary relationship between the issuing corporation and the trader with the

announcements. For the pro-regulation view, see Joel Seligman, *The Reformation of Federal Securities Law Concerning Nonpublic Information*, 73 Geo. L.J. 1083 (1985) and for an empirical study offering some support to the pro-regulation view, see Branford Cornell and Erik Sirri, *The Reaction of Investors and Stock Prices to Insider Trading*, 47 J. Fin. 1031 (1992). Some commentators have taken middle-of-the-road approach by agreeing with Carlton and Fischel that insider trading does not harm the company which issued the underlying securities, but still supporting regulation based on divergent private and social costs. In those models the costs imposed by insider trading on the shareholders of a corporation are smaller than those levied on society at large and hence regulation could be socially optimal even if it is not advantageous for the shareholders. See Naveen Khanna and Steve Slezak, *Insider Trading, Outside Search, and Resource Allocation: Why Firms and Society May Disagree on Insider Trading Restrictions*, 7 Rev. Fin. Stud. 575 (1994).

⁶ *Ernst & Ernst v. Hochfelder*, 425 U.S. 185 (1976), held that liability for issuance of a false or misleading statement requires proof of intent to deceive, manipulate or defraud. Although the Court in *Hochfelder* did not address the question of recklessness, in subsequent decisions, the Court has held that recklessness would be sufficient.

⁷ *Blue Chip Stamps v. Manor Drug Stores*, 421 U.S. 723 (1975), held that only plaintiffs who have bought or sold shares have a cause of action for liability under SEC Rule 10b for material misstatements or omissions.

⁸ In *Chiarella v. United States*, 445 U.S. 222 (1980), the Court held that an employee of a financial printer who was convicted on criminal charges owed no fiduciary duty to the issuer of securities in which he traded and hence could not be prosecuted for insider trading. The employee had used information submitted to his employer to figure out who the target of a tender offer was and traded in the target's securities.

⁹ Justice White lamented the Court's lack of economic expertise in his dissent in *Basic, Inc. v. Levinson*, 485 U.S. 224 (1988) (White, J., dissenting), see *infra* note 13.

¹⁰ In *United States v. O'Hagan*, 521 U.S. 642 (1997), the Court practically reversed its earlier decision in *Chiarella*, see *supra* note 8, and adopted the misappropriation theory suggested by Chief Justice Burger's dissent in that case.

relationship between the trader and the source of his information, which may or may not be the issuer. Also, under the misappropriation theory, the “victim” of the fraudulent conduct turned out to be the party that was the source of the information, not the party on the other side of the securities transaction or the issuing corporation.¹¹ According to the Court, the wrongful act was the theft of information, not the purchase or sale of securities.¹² Some observers found this interpretation to be at odds with traditional understanding that the injury from insider trading, if any, was inflicted only on the investor who was on the uninformed side of the illegal transaction.

The misappropriation theory not only suffered from intellectual infirmities, but also could not accommodate the broad spectrum of cases in which there was no actual “misappropriation” of information. In order to address these problems, the Court had to open the door to the fraud-on-the-market theory.¹³ The reasoning behind that theory is both simple and more intellectually appealing than that behind the misappropriation theory - any information or action that would distort a security’s price perpetrates a fraud on all the participants in the market. Here the victims are the buyers and sellers of a security. Although the Court did not address that question, it would appear that if an insider trades while in possession of material information, the fraudulent action would be the actual purchase or sale of the security. Therefore, the fraud-on-the-market theory has the advantage of correctly labeling both the victims and the wrongful conduct. The Court’s movement toward accepting the fraud-on-the-market theory embraced the efficient market hypothesis and faced immediate criticisms.¹⁴

¹¹ An application of the misappropriation theory to Chiarella, *supra* note 7, would imply that Chiarella breached his duty to the financial printer. His “victim” was the company that employed him, not the person from whom he bought the securities.

¹² The Court in *O’Hagan* struggled to establish why the misappropriation theory fit within the “in connection with” language of SEC Rule 10b-5. Justice Ginsburg wrote that even though there was no harm to the purchaser or the seller of the securities, the trading inflicted harm on other investors. *See O’Hagan*, 521 U.S. at 656. However, Justice Ginsburg did not point out what the harm was and how the direct injury to *O’Hagan*’s law firm and the firm’s client extended to non-traders.

¹³ *Basic, Inc. v. Levinson*, 485 U.S. 224 (1988).

¹⁴ *See id.* (White, J., dissenting). Justice White pointed out that, among other things, most people buy stock because they believe it is underpriced. Hence, the central claim of the fraud-on-the-market theory, that traders rely on the market price to reflect the true value of the firm, is preposterous. A counter argument to Justice White’s point is that the stock price is the expected value of a company and may at any time differ from the true value of that company. Given that the expectations is formed over the changing beliefs of all the participants in the market, it would be surprising if the expected value and the actual value were equal at all times. However, given a large number of informed traders, the expected value will never be very far from the true value and that is all that is required for the fraud-on-the-market theory to hold.

As pointed by Justice White¹⁵, part of the problem was the fact that the Court was poorly equipped to handle an issue that was quite complex and required narrow expertise. The Commission and Congress, on the other hand, had both the tools and the expertise to address the insider-trading problem and during the 1980's were under growing public pressure to design a solution.¹⁶

B. Legislative and Agency Actions

Congress took the first step with the Insider Trading Sanctions Act of 1984 (the 1984 Act) which allowed the Commission to seek civil penalties of up to three times the insider's illegal gains and raised the maximum criminal fines from \$10,000 to 100,000.¹⁷ The Congressional response to a series of insider trading scandals was to further stiffen the criminal penalties and fines with the Insider Trading and Securities Fraud Enforcement Act of 1988 (the 1988 Act).¹⁸ Probably the most notable difference between the two acts was the extension of civil liability to the firm employing the person who traded on insider information and the requirement that securities firms set up procedures to prevent insider trading by their employees. The 1988 Act increased the criminal penalties to \$1,000,000 and 10 years in jail on top of the treble damages and disgorgement already in existence. The 1988 Act was the embodiment of a perception that insider trading was rampant at among corporate executives and securities, law and accounting firms that advised public companies.¹⁹ The Acts were the Congressional response to pressure from the public and the Commission to deal with insiders like Ivan Boesky and Dennis Levine.²⁰

¹⁵ *Id.*

¹⁶ Although Congress acted directly against insider trading for a first time in the 1980's, insider trading had been going on for a long time before that. For a study documenting significant evidence of insider trading surrounding the time of merger announcements during the 1970's, see Arthur J. Keown and John M. Pinkerton, *Merger Announcements and Insider Trading Activity: An Empirical Investigation*, 36 J. of Fin. 855 (1981).

¹⁷ Insider Trading Sanctions Act of 1984 Aug. 10, 1984, P.L. 98-376 (codified in scattered sections of 15 U.S.C. (2003)).

¹⁸ Insider Trading and Securities Fraud Enforcement Act of 1988, Nov. 19, 1988, P.L. 100-704 (codified in scattered sections of 15 U.S.C. (2003)).

¹⁹ For more on the view that the rich and powerful are the main beneficiaries of insider trading and that insider trading regulation was created not based on the need to protect market participants, but in order to propagate the notion of fairness and protection of the public, see Langevoort, *supra* note 1, at 1328.

²⁰ See, for example, Nathaniel C. Nash, *An Insider Scheme is Put in Millions*, N.Y. Times, May 13, 1986, at A1 (discussing the effect Dennis Levine's arrest would have on public trust in investment professionals) and James Sterngold, *From Legend to Inside Trader*, N.Y. Times, Nov. 15, 1986, at A37 (describing the rise and fall of Ivan Boesky).

The Commission put intense pressure on Congress to pass both acts, but has resisted calls to streamline its own regulations. The Commission has declined invitations to define the standards for insider trading liability and has addressed arising issues on a case-by-case basis. The Commission's lack of enthusiasm can be explained by its unwillingness to create what has been termed a "blueprint for fraud." Some commentators have argued that good rules are not so hard to draft, but are unlikely to be approved in their most expansive form due to political pressures and the Commission is not willing to take that chance.²¹

Despite all the legislative and agency activity during the 1980's, it is not at all clear that the government has gotten an upper hand in its struggle against insider trading.²² The number of insider trading cases brought by the Commission, as well as the profits earned by the insiders, have increased over the years following the passage of the

²¹ See Langevoort, *supra* note 1, at 1337. For a historical review of attempts to codify a definition of insider trading written by partners in a prominent Washington, D.C. firm see John F. Olson, John H. Sturc and Gerald T. Lins, *Recent Insider Trading Developments: The Search for Clarity*, 85 Nw. U.L. Rev. 715 (1991).

²² Some authors have interpreted the sharp drop in pre-merger stock price run-ups following the passage of the acts as a sign that the Commission has gained ground in the fight against insider trading. See Anthony Boardman, Z. Stuart Liu, Marshall Sarnat and Ilan Vertinsky, *The Effectiveness of Tightening Illegal Insider Trading Regulation: The Case of Corporate Takeovers*, 8 App. Fin. Econ. 519 (1998). Even ignoring sample selection problems, which abandon in that study, it is not clear that the drop in the pre-announcement price run-up is a sign of a decline in insider trading. Other studies have found that tighter regulations were not effective and that insider trading actually increased following the passage of the Acts. See Seyhun, *supra* note 14. The Seyhun study draws its conclusions from data on legal trading by corporate insiders as reported to the government, so both the data set and the method of analysis are very different from those employed by Boardman, *et al.* My paper offers one way to reconcile the contradictory results of these studies. The one-shot insiders do not have the means to cause a substantial pre-announcement run-up. Serial insiders have the means but would prefer to limit their profits in any particular transaction in order to avoid detection and trade again in the future. In both cases, insider trading would not trigger a pre-announcement price run-up. At the same time, as the data shows, there is no shortage of people who are willing to trade on insider information and a sufficient volume of trades would affect the stock price.

Acts.²³ In order to understand the reasons for that trend and to introduce the theory behind the model developed in this paper, it would be useful to compare situations in which the sanctions imposed by the Acts would be a sufficient deterrent with situations where that would not be the case.

Suppose that a risk-neutral individual is faced with the choice of receiving \$1 or playing a game with an uncertain outcome.²⁴ If he chose to play the game, he has 80% chance of getting \$5 and a 20% chance of losing \$15. Therefore, the expected value of the game is \$1. By definition, a risk neutral individual would be indifferent between playing the game and receiving the certain outcome. A risk-loving individual would choose to play, while a risk averse one would not agree to participate in the game. Consider the following two versions of this game. First, suppose that the rules of the game are changed so that the favorable outcome occurs 85% of the time. Now a risk-neutral player and players with relatively low risk aversion would like to play the game. For the second variation, suppose that when the unfavorable outcome occurs, the player also has to spend one day in jail. A risk neutral player would abandon the game, but a risk-loving individual might still be interested in playing it.

The games described above were chosen to reflect the choice faced by traders considering whether to trade on non-public information. The outcomes of the game suggest a few conclusions. If the chance that an insider will be caught were sufficiently small, most risk neutral people would engage in insider trading. The risk of criminal sanctions will deter some people, but if criminal charges were brought up very rarely, the threat would be insufficient to deter a person who is moderately risk loving.

²³ The Commission detected 183 episodes of insider trading between 1974 and 1989. The median profit in those cases was \$24,673 and the standard deviation was \$2,286,736. See Lisa K. Meulbroek, *An Empirical Analysis of Illegal Insider Trading*, 47 J. Fin. 1661 (1992). In contrast, the data set used in this paper shows that over the period 1/1/97-12/31/99 the Commission brought charges in 81 cases of insider trading. This likely underestimates the true number of cases actually brought because I included only cases that did not include accounting fraud or release of false information. The median profits per person were \$40,600 (\$1,191,415) for participants in the one-shot trading rings and \$130,629 (\$654,897) for the serial trading groups. Discounting those numbers for inflation would decrease the differential, but they remain above those reported in the Meulbroek study. Part II presents more details about the data set used in this paper.

²⁴ The economics profession has assumed that all investors are risk neutral or risk averse and as a result there are no articles that model risk-loving investor behavior explicitly and apply it to data. However, it has been recognized that a player who has a smaller degree of risk aversion than the average investor can realize abnormal profits even if he is not in possession of material non-public information. See Franklin Allen and Douglas Gale, *Stock Price Manipulation*, 5 Rev. Fin. Stud. 503 (1992). The intuition behind the result is simple enough - more risk-averse investors require higher risk premiums in order to undertake a given investment. Therefore, an investor who is less risk averse will be able to take advantage of opportunities that the more risk-averse player would forego.

Moreover, the combination of monetary damages (smaller than three times the profits of a successful gamble) with a tiny chance of criminal prosecution would encourage risk-neutral and even moderately risk-averse people to join the game. Therefore, the measures created by the Acts are guaranteed to deter only people who are sufficiently risk-averse. Depending on the mix of monetary and criminal penalties, the measures might deter risk-neutral and moderately risk-averse investors. The Acts are all but guaranteed not to deter risk-loving investors.²⁵

II. THE DATA

The data sample used in this paper is derived from SEC Litigation Releases issued between January 1, 1998 and June 1, 2000. When the release was a follow-up to an already initiated action, the data set included information from prior litigation releases relating to the subject action. As a result, the complaints which were the source of data included in this paper were filed between December 30, 1986 and June 15, 2000. I omitted cases in which the insider trading was accompanied by accounting fraud. For example, the data does not include cases in which the officers of a corporation intentionally misrepresented the financial situation of the company and bought or sold shares before the misstatements were uncovered. The sample data set was constructed to reflect the most common situation where an insider learns material non-public information and then trades on it and/or tips others. The analysis would have produced misleading results if the data set included cases in which the trader contributed to the creation of the material information. Data on stock prices and volumes came from CRSP and the Quote database on Lexis-Nexis.²⁶ The options data was derived from the Wall Street Journal. The litigation releases did not contain sufficient information for some of the cases and I had to omit those from the sample used in the estimation part.²⁷ Table 1 contains some summary statistics for the sample.

Insider trading cases can be loosely grouped in two categories depending on whether the insiders used non-public information on a single occasion or on numerous occasions before being caught. I will call the first group one-shot traders and the second one serial traders.

²⁵ Some of these criticisms were raised as early as 1984. See S.B., *A Critique of the Insider of the Insider Trading Sanction Act of 1984*, Note, 71 Va. L. Rev. 455 (1984).

²⁶ I would like to thank Collin Carr from the IT department at the Yale School of Management and Meredith Shuman, the Lexis-Nexis representative at the Yale Law School for their help in securing access and using these databases.

²⁷ I was able to recover missing information about cases filed in New York from complaints filed in the Southern District of New York and those are included in the estimation sample.

Table 1

	Serial Insider Trading	One Shot Insider Trading
Instances of Insider Trading	72	75
Groups of insiders	18	75
Transactions preceding mergers	60 (83%)	44 (59%)
More than one insider trading rings	7 (10%)	25 (33%)
Single tier of insiders	5 (28%)	31 (41%)
Two tiers	6 (34%)	18 (24%)
Three and more tiers	5 (28%)	26 (35%)
Single insider	8 (11%)	24 (32%)
2,3 or 4 insiders	40 (56%)	26 (35%)
5 and more insiders	24 (33%)	25 (33%)
Median Total Profits (σ)	\$480,853 (2,898,900)	\$118,577 (1,753,290)
Average profits at first tier per transaction (σ)	\$111,670 (172,346)	\$474,619 (1,472,624)
Average profits at second tier per transaction (σ)	\$511,643 (1,326,181)	\$173,638 (664,645)
Average profits at third tier and above per transaction (σ)	\$130,155 (195,972)	\$91,733 (326,457)
Average profits per insider per transaction (σ)	\$80,718 (205,878)	\$110,716 (205,132)
Cases in which insiders traded in options	11 (18%)	17 (23%)
Average number of days between the end of illegal trading and the filing of charges	883 (658)	790 (524)
Average holding period in days (σ)	10 (24)	11 (16)
Criminal charges	7 (41%)	8 (11%)
Cases filed less than one year after insider trading ²⁸	3 (17%)	13 (17%)

²⁸ I averaged the number of days for each insider trading group over all the instances in which it engaged in insider trading in order to get a single number for each group.

Cases filed between one and three years after insider trading	8 (44%)	37 (50%)
Cases filed more than three years after insider trading	7 (39%)	25 (33%)
Civil penalty equal to or less than illegal profits	17 (94%)	66 (88%)
Waivers of disgorgement and/or penalties	12 (67%)	13 (17%)

Serial traders account for less than a fifth of the cases brought by the Commission, but make almost half of the instances of trading. Most of the defendants in that category are well educated and have been actively trading in securities before engaging in insider trading.²⁹ The one-shot insiders are usually people who do not trade actively in securities and came across non-public information accidentally.³⁰ Both groups exhibit a strong preference for trading prior to merger announcements, but that trend is more pronounced for the serial traders. One explanation of this observation is the fact that most one-shot traders were employed by the issuer of the stock in which they traded. In many cases that information related to a future favorable or unfavorable announcement of earnings of their employer. The tippers in most serial trading rings were employed by firms servicing potential acquirers and targets. While they may have had access to earnings information, the profits from trading ahead of a merger or acquisition were significantly higher.

²⁹ See, for example, SEC v. Arjun Sekhri, et. al., Litigation Release No. 15,691, 1998 SEC Lexis 585 (April 1, 1998). Sekhri, an investment banker at Salomon Smith Barney, Inc., together with members of his family and close friends traded on non-public information on at least six occasions netting a total of \$1.8 million. Another typical complaint can be found in SEC v. Richard H. Ference and Kevin J. Kirkbride, Litigation Release No. 16,173, 1999 SEC Lexis 1107 (June 3, 1999). Ference, the Vice President in the New York office of the Bank of Tokyo-Mitsubishi Trust Company received tips from Kirkbride who was employed at Salomon Smith Barney and the two shared Ference's profits. The scheme was in place for at least two years and the profits exceeded \$500,000.

³⁰ See, for example, SEC v. Lorraine K. Cassano, et. al., Litigation Release No. 16,161, 1999 SEC Lexis 1063 (May 26, 1999). Cassano, a secretary at IBM, tipped her husband about IBM's impending acquisition of Lotus Development Corp. Her husband tipped two of his friends, who tipped others and eventually the insider-trading ring included 25 people and at least 6 tiers of tippees. Everyone purchased stocks or options on the last business day before the public announcement and total profits exceeded \$1.3 million. The Cassanos' profits were only \$7,500. Another example is SEC v. Rangarao Panguluri, et. al., Litigation Release No. 15,905, 1998 SEC Lexis 2038 (Sept. 24, 1998). In that case a university researcher tipped a group of his fellow doctors about negative results from the clinical trials of a new drug developed by Alpha 1 Biomedicals, Inc. The total profits for the group were \$137,256 but the tipper did not receive any of the money. His motivation for giving the tip was that the tippees might hire him following completion of his fellowship.

A single insider has complete control over how many securities he buys and whether to do so on a single day or to stretch his purchases over a period of time. However, he has little control over other factors influencing detection. For example, there is no way for him to know if another trader is also engaging in insider trading. As Table 1 shows, one-shot insiders are more than three times more likely to trade at a time when others trade illegally on the same non-public information. One explanation is the lack of effective control mechanisms by the corporations employing the one-shot insiders. In quite a few cases, many of the employees knew what the earnings announcement for the quarter would be and decided to take advantage of that knowledge at the same time others were trading on that information. Some serial insiders worked for brokers, investment banks and law firms that have in place more stringent controls against such behavior and only those who were willing to break those controls (and take the accompanying increased risk) traded on the non-public information.

Another factor outside of the control of a tipper is the number of tiers of insider trading. He may ask his tippers not to tell anyone, but there is no way to assure their compliance. The conventional wisdom is that the more people trade, the harder it would be to spot one person doing something illegal. However, excess trading can increase trading volume or change the price of a security materially and, in the absence of corporate news that would account for the fluctuations, the increased activity would attract the attention of the SRO supervising the exchange.³¹ Again, as Table 1 shows, one shot traders are more likely to tip others of the non-public information.

One interesting observation from Table 1 is that most serial traders managed to limit the tiers to two and preferred working in a group of between two and four people. Sometimes that was necessary because the tipper did not want to trade in his name and profited by receiving kickbacks from the tippers. In other cases that arrangement was necessary because all participants were insiders at different companies and traded tips. The small group also allowed better chances of avoiding detection. On the other hand, it appears that a typical one-shot insider either traded by himself, or tipped a sufficient number of people to guarantee that the information will spread around.

While it is hard to identify a group of factors that triggers an investigation by the Commission, it is fair to say that most traders, both one-shot and serial, got caught when they got too greedy. As Table 1 shows, the total profits for the serial traders far outpace the profits for the one-shot insiders. The profits at the first tier of serial traders was estimated by taking the average of the profits for the tippers *when* they traded themselves and do not include kickbacks from other insiders. In many serial insider cases the tippers did not trade at all, but received kickbacks from second tier insiders. I used this method for estimating the profits at first tier because I wanted the data to reflect the situation as it would appear to an outside observer, e.g. the Commission. The Commission does not have a mechanism for detecting profit sharing arrangements between insiders, but they do observe the trades and profits of different traders. The first

³¹ Meulbroek, *supra* note 23, found evidence that insider trading affects the stock price and argued that the market detects the trading by informed insiders and incorporates the new information into the price.

tier profits were much smaller for serial traders than for one-shot insiders. That could be explained with the expectation of kickbacks from tippees, but it also reflects the fact that a serial insider spreads his profits over a few transactions. A one shot trader who does not have an expectation that he would receive material non-public information again in the future would attempt to realize significant profits over a short period of time.

The profits of the insiders at the second tier are significantly higher than those at the first level for serial insiders. In part, that is due to the fact that in many cases there are a few insiders at the second tier, while there is usually only one at the first level. However, the standard deviations show that the profits at the first serial trader tier vary relatively little in comparison to the second tier. The larger size of the average profits at the second tier, coupled with the larger standard deviation, suggests that tippees' profits significantly exceed the profits of the tipper.

This pattern is not present in the case of one-shot traders. The tippers in one-shot cases usually do not have profit-sharing arrangements in place with the tippees and have to take care of themselves. Hence, the profits at the first tier are much larger. The tippees do not have to pay kickbacks and that keeps the profits at the higher tiers down.

Successful option trading has long been viewed as inherently suspicious, but that did not prevent both types of insiders from trading in options about 20% of the time.

The Commission has been far more aggressive in pursuing serial trading rings than people engaged in a single act of insider trading. The data summarized in Table 1 shows that serial insider traders are four times more likely to be the target of criminal charges than the one-shot insiders.

The data in Table 1 also raises a few issues of concern with respect to the Commission's policies and ability to enforce insider trading regulations. First, most cases are filed well after a year from the time of insider trading and it takes even longer to reach a settlement or obtain a judgment. The additional time, especially the period between the time the insider trader obtains his profits and the time an action is brought, allows the trader to hide assets and/or engage in additional violations.

Second, even though the Acts gave the Commission the authority to impose a stiff civil penalties of up to three times the amount of illicit profits, the data in Table 1 suggests that the imposed penalty rarely exceeds the amount of illegal profits. The obvious argument against this critique is that the Commission uses the threat of a large penalty as a bargaining chip. However, data on penalties imposed prior to the passage of the 1984 Act shows that the Commission imposed penalties that were equal to

the amount of the illegal profits.³² Therefore, it cannot be argued that the Commission increased the amount of the penalties after the adoption of the Acts.

Third, the Commission has also waived penalties and the disgorgement of illegal profits in whole or in part on the basis of a defendant's sworn affidavit that he or she is unable to pay. The practice is questionable for at least two reasons. The defendants in insider trading cases are hardly trustworthy enough to confess having sufficient funds to pay the disgorgement and/or penalties. Moreover, given that litigation is usually brought at least one year after they obtained their illicit profits, they had a few years to rearrange and hide their assets in a way that would make them very hard to detect.³³

More importantly, the policy of requiring insiders who preserved to profits to pay and grant a waiver to those who squandered them away encourages risky investments by traders. If a trader realizes that there is some chance that she will be caught (and required to disgorge her profits and pay a penalty), she could reasonably decide that her best policy would be to invest all of her assets in high risk, high payoff securities, for example, call options. If the investment pays off, she will have enough to pay the government and can keep the difference. If the investment fails, she can sign an affidavit attesting to her inability to pay. Given sufficient profits from insider trading and some luck, an insider can use the years until a judgment is entered to make a tidy profit.

III. THE MODEL

A. *Theory*

The model presented below assumes that the insiders receive some satisfaction from tipping others. On the one hand, tippers hope that trading by others would cover up their own illegal acts. On the other hand, very often the tippers are family members, close personal friends and business associates, so the tipper gets some satisfaction from helping them. In many situations the tippers also expect kickbacks or non-monetary compensation from the tippers.

At the same time, the insider would do her best to avoid detection. The Commission will not file a case unless it is reasonably certain that it will prevail at trial. Let Δ be the difficulty level at which the Commission is indifferent between prosecuting

³² More than 66% of the cases analyzed by Meulbroek, *supra* note 23, occurred between 1981 and 1985 and she estimated that for her sample the median of the penalty/profits ratio was 1 and the standard deviation was 0.95.

³³ *See, for example*, SEC v. Environmental Chemicals Group, Inc., Litigation Release No. 15,643, 1998 SEC Lexis 263 (Feb. 18, 1998). One of the defendants in that litigation alleged that he was financially incapable of paying the disgorgement and civil penalties imposed by the Commission to which he had agreed in a settlement. The Commission later discovered that he owned a ranch in Texas valued at \$773,000. The Commission initiated the case in 1995 for fraudulent actions that took place in 1992-93, but as of February 18, 1998 it had not collected any amount from the defendant.

the case and letting it go. That is, if a case would be just a little bit harder to prove in court than Δ , the Commission would not file a complaint. Conversely, if it were just a little easier than Δ , the Commission would file charges. One way to think of Δ is to let it represent the number of days it takes the Commission to file a complaint. On average it took the Commission 824 days to file a complaint following illegal trading. The longest delay before filing was 3176 days, while the shortest was only 4 days. Therefore, it could be argued that if the Commission anticipates that a case would take more than ten years of investigations, it would not dedicate the resources necessary to prosecute it.

Let D be an insider's noisy estimate of Δ . The estimate is noisy because the Commission has avoided disclosing what triggers an investigation and what would be considered sufficient evidence to press charges. However, there are a number of factors that are likely to attract the Commission's attention. An extraordinary amount of profits reaped by a small group of traders all of whom traded in the stock of the same company would probably warrant a closer examination. Also, if the trading volume increased significantly before a public announcement or the price of shares increased significantly shortly after a purchase, the Commission is likely to suspect that illegal trading has taken place. To put it in a nutshell, most actions that would increase an insider's profits or satisfaction from tipping others would also send a signal to the Commission. With this in mind, consider a model of insider trading in which the insider solves:

$$\begin{aligned} & \text{Max } \pi^\alpha \tau^\beta \\ & \{\pi, \tau\} \\ & \text{s.t. } \gamma_0 + \gamma_1 \pi + \gamma_2 \tau + \gamma_3 o + \gamma_4 r + \varepsilon \geq D \end{aligned}$$

where:

π is the log of the amount of illegal profits

τ is the log of the number of tippees per insider trading ring

o is log of the total amount of options purchased by insiders

as percentage of the total amount of options contracts

traded from the beginning of insider trading till the date

of the public announcement of the non-public

information.³⁴

³⁴ I created a similar variable for stocks, but its coefficient did not come out significant. This may appear strange, after all, a synthetic call or put option can be created by buying and selling short stocks. Therefore, it would seem that option trading should not send any signal that could not be sent by stock trading.

However, it has been shown that, at least theoretically, option trading does send a richer set of signals to the marketplace than trading in the underlying stock. To see this, note that even if the underlying stock's value has a symmetric distribution, the purchase of calls sends a signal that the buyer places very high probability

r is the log of the number of insider trading rings
 ε is an i.i.d. log-normal error term that reflects the fact that
the insider observers only a noisy measure of Δ

One potential problem with this setup is the fact that the data set is based on information about people who were caught and that raises questions as to whether D is an unbiased estimator.³⁵ After all, if everyone were caught, then it would appear that all insiders in the sample underestimated Δ . If that is the case, any estimator based on the current data set will be biased. Although all traders in the data set were caught, not all of their illegal trades were detected. The serial traders were caught after having a few successful transactions and those are included in the dataset. The Commission has not disclosed which one of a series of illegal transactions triggered the investigation, but at least some of the trades went unnoticed. Moreover, some of the one-shot trader cases were also not detected by the Commission, since they were brought as a result of complaints from the general public.³⁶

The utility function is the standard Cobb-Douglas specification and its properties have been described in detail elsewhere.³⁷ One of its most attractive properties is the fact that it is relatively easy to determine whether an individual with this type of utility function is risk-averse. For example, if β is less than one, then the insider will be risk-averse with respect to the number of tippees. If it were equal to one, the investor would be risk-neutral and $\beta > 1$ would indicate a risk loving investor.

The constraint is additively separable in profits, tippees and options. This was necessary in order to provide for mathematical tractability of the model and obtain a closed form solution to the problem.

The first order conditions for the model are:

on a realization that would lie in the upper tail of the distribution. The signal sent by a stock purchase does not place as high a probability on the appreciation of stock. See Kerry Back, *Asymmetric Information and Options*, 6 Rev. Fin. Stud. 435 (1993). A trader would have to buy or sell a lot more shares in order to send a signal that is as strong as the one sent by trading in options. See David Easley and Maureen O'Hara, *Price, Trade Size, and Information in Securities Markets*, 19 J. Fin. Econ. 69 (1987) for an empirical analysis of the effects of block trades on stock prices.

³⁵ An estimator is unbiased if the expected value of the estimator is equal to the true value of the underlying variable. See William H. Greene, *ECONOMETRIC ANALYSIS*, ch. 4 (4th ed. 1999).

³⁶ Meulbroek estimated that 41% of all cases between 1974 and 1989 were triggered by a public complaint, 31% were referred by the stock exchanges and only 9% were initiated after a Commission investigation. See Meulbroek, *supra* note 23.

³⁷ See Greene, *supra* note 35, ch. 8.

$$(1) \quad \begin{aligned} [\alpha/(\alpha + \beta)]*(\mathbf{D} - \gamma_3\mathbf{O} - \varepsilon) / \gamma_1 &= \pi \\ [\beta/(\alpha + \beta)]*(\mathbf{D} - \gamma_3\mathbf{O} - \varepsilon) / \gamma_2 &= \tau \\ \gamma_0 + \gamma_1\pi + \gamma_2\tau + \gamma_3\mathbf{O} + \gamma_4r + \varepsilon &= \mathbf{D} \end{aligned}$$

There are a number of different ways to estimate the above system using the data set described in Part II. In order to accommodate differences in the way one-shot and serial traders perceive their expected profits, the model was estimated using three different specifications for the profit variable.

The first specification treats π as the profits at the first level of the insider-trading ring and adds the profits at the second level as an independent explanatory variable in the constraint. Therefore, the system of first order conditions for the first specification becomes:

$$(2) \quad \begin{aligned} [\alpha/(\alpha + \beta)]*(\mathbf{D} - \gamma_3\mathbf{O} - \gamma_4\pi_2 - \varepsilon) / \gamma_1 &= \pi_1 \\ [\beta/(\alpha + \beta)]*(\mathbf{D} - \gamma_3\mathbf{O} - \gamma_4\pi_2 - \varepsilon) / \gamma_2 &= \tau \\ \gamma_0 + \gamma_1\pi_1 + \gamma_2\tau + \gamma_3\mathbf{O} + \gamma_4r + \gamma_5\pi_2 + \varepsilon &= \mathbf{D} \end{aligned}$$

This setup would describe adequately situations where the first tier traders actively traded in their own accounts and did not rely on kickbacks from tippees. Hence, the specification is expected to work best with the one-shot trader data. On the other hand, if the first tier insider receives parts of the profits of her tippees, it would seem that the profits of the second tier insiders should be included in π . That is particularly true in the case of serial traders and it is likely that such setup will work best for that part of the data. Therefore, the system of equations for the second specification is exactly as in (1) with π estimated as the log of the sum of the profits at the first two tiers. Given that serial insider trading rings are usually limited to a few tiers and share profits, this specification is likely to describe those much better than the first one.

In an ideal setup, the first tipper controls both the number of people who receive the tip and the amount of profits realized by them. If that were the case, it would be appropriate to substitute the amount of profits for the entire ring in π and the total number of tippees for τ . I used this method in order to produce the last set of results. The assumptions underlying this setup are not likely to hold in the real world and therefore the specification is likely to produce poor results.

The system of equations is sufficient to identify the gamma coefficients, but it does not allow a complete determination of α and β . Therefore, it is not possible to state whether one or the other type of insiders is more or less absolutely risk averse. However, the first order conditions are sufficient to estimate the relationship between α and β and that would provide useful insights which are discussed below.

The results of estimating the model using the different specifications for the profit variable appear in *Table 2* below.

Table 2

	One-Shot Traders			Serial Traders			Entire Dataset		
coefficient (t-statistic)	Spec. 1	Spec. 2	Spec. 3	Spec. 1	Spec. 2	Spec.3	Spec. 1	Spec. 2	Spec. 3
<i>Profits</i>	-0.1392 (-1.716)	-0.2311 (-2.698)	-0.2907 (-3.351)	-0.0233 (-1.713)	0.0432 (1.834)	0.0880 (2.131)	-0.0162 (-1.936)	0.0249 (1.082)	0.0254 (0.658)
<i>Profits at 2nd Tier</i>	0.0122 (0.688)			0.0374 (2.193)			0.0195 (1.621)		
<i>Tippees</i>	0.3332 (2.081)	0.4656 (2.851)	0.5699 (3.389)	.5085 (2.178)	0.7728 (3.662)	0.6543 (3.019)	0.3074 (1.863)	0.4890 (3.893)	0.4708 (3.618)
<i>Options</i>	-0.0822 (-2.773)	-0.0764 (-2.642)	-0.0794 (-2.849)	-0.0796 (-2.213)	-0.0958 (-2.676)	-0.1000 (-2.818)	-0.0835 (-3.443)	-0.0914 (-3.803)	-0.0916 (-3.791)
<i>Rings</i>	-0.3049 (-0.974)	-0.2864 (-0.986)	-0.1970 (-0.683)	-0.0830 (-0.113)	-0.3784 (-0.507)	-0.5431 (-0.726)	-0.5282 (-1.803)	-0.417 (-1.605)	-0.4093 (-1.556)
<i>Constraint Constant</i>	6.5958 (6.186)	7.6373 (6.884)	8.2097 (7.617)	4.4392 (7.589)	3.7300 (6.138)	3.2701 (4.752)	5.1656 (15.312)	4.349 (9.884)	4.3402 (7.770)
$\alpha/(\alpha + \beta)$	0.0374 (1.962)	0.0680 (2.195)	0.0927 (2.350)	0.0696 (2.918)	0.0360 (1.581)	0.0689 (2.714)	0.0227 (1.929)		
$\beta/(\alpha + \beta)$	0.0435 (1.927)	0.0610 (1.933)	0.0746 (1.930)	0.1090 (3.411)	0.1874 (3.996)	0.1648 (4.004)	0.0343 (2.383)		
$\alpha : \beta$	1 : 1.1	1.1 : 1	1.2 : 1	1 : 1.6	1 : 5.2	1 : 2.4	1 : 1.5		

B. Results

Specification 1 is the only one that distinguished between the profits generated by the insiders at the first tier and those at the second tier. In all three data sets the coefficients multiplying the amount of profits for the first tier trader in the constraint came out negative and significant. This confirms the common wisdom that it is easier to detect illegal conduct if the first level trader, who is the source of the inside information, participates in the trading. For example, it would be easier for the Commission to bring a case against a corporate insider who trades in the corporation's securities before the public announcement of material information than it would be against a tippee who is not affiliated with the issuer.

At the same time, the coefficients multiplying the profits of the second tier insiders came out positive in all three partitions of the dataset, but were significant only in the sets including data for the serial traders. Most tippees are outsiders and the more

they trade, the more it would appear that many different people simply decided to trade on a given day and the harder it would be for the Commission to prove that they had a relationship with each other. At the same time, the π_2 coefficient estimated from the one-shot trader data came out insignificant. In this estimation π_2 was estimated as the residuals from the regression of π_2 on π_1 . This was necessary because π_1 and π_2 were highly correlated and that lead to multicollinearity. The fact that the coefficient is insignificant shows that the profits generated by the second tier insiders do not contribute anything to the signal sent by the first tier traders. This finding is consistent with the restriction imposed on one-shot traders, namely, that they have to generate all their profits by themselves and cannot rely on kickbacks from their tippees.

The profit coefficient in the second specification came out negative and highly significant in the one-shot dataset and positive and significant in the serial insider dataset. To reconcile these findings, note that π in this case is the log of the sum of the profits at the first and the second level. In both datasets trading by first tier insiders significantly increased the possibility of detection. However, very few of the first tier insiders in the serial trading cases actively participated in the trades, while the opposite is true for the one shot traders. In other words, the excessive trading by first level insiders dominates the π variable in the one-shot dataset and produces the negative coefficient. The trading done by second tier traders dominates the profits generated by the serial trading dataset and that gives rise to a positive coefficient.

These observations continue to be true in the third specification that extends π to include total profits. The first specification is the only one that produces significant coefficients when applied to the full dataset. Once π is set to include a more general measure of profits, as in the second and third specifications, the coefficients become insignificant. At first glance that would suggest that the size of illegal profits has no bearing on whether the Commission brings a case or how long it takes to file charges. The finding appears baffling particularly in light of the fact that most Commission litigation releases contain references to the extraordinary size of illegal profits. The most reasonable explanation for the insignificant coefficients is that the complete dataset is too rich to be described by a simple model and that some of the trends present in the data are cancelled by others. Splitting the dataset in two parts addresses that problem at least partially. Also, this finding would support the implication that the more people trade on the non-public information, the more garbled is the signal sent to the Commission.

The number of tippees has a positive and significant influence on the difficulty of the investigation in all of the specifications across all the data sets. The more people participate in a ring, the longer it takes the Commission to untangle the web and bring charges against the people involved. The fact that the τ coefficient in Specification 1 is uniformly smaller than the same coefficient in the other specifications is the result of the inclusion of π_2 as an extra explanatory variable. Notice that π_2 functions as a dummy signifying the presence of more than one insider and as such is correlated with the number of tippees. It is interesting to note that the coefficients estimated from the serial trader dataset are uniformly larger across specifications than those estimated from the one-shot dataset. This suggests that a serial insider-trading ring would be harder to crack than a one-shot insider-trading ring of the same size.

Trading in options appears to increase the likelihood of detection across data sets and specifications. Successful trading in options is likely to attract attention much faster than successful investments in stocks. One interesting observation is that the magnitude of the options coefficient remains roughly the same across all specifications and datasets. This seems to suggest that serial traders are not more apt than one-shot traders in covering up options trading or that it is impossible to disguise this type of trading.

The last variable reflects the number of insider trading rings operating during the same transaction. It is reasonable to expect that the presence of a second or third ring of insiders will significantly increase the chance of detection. The coefficients on the rings variables in the one-shot and serial trader datasets came out insignificant due to the small number of multiple-ring transactions in each of those subsets. Once the datasets are combined, the coefficient comes out negative and significant as expected.

The last interesting observation is based on the estimate for the constant in the constraint. Even though the average period for filing charges against a one-shot trader is shorter, the vertical intercept is much higher in that case. The implication is that the slope of the multidimensional plane showing the relationship between D and the explanatory variables is much steeper in the case of serial traders than it is in the case of one-shot traders. This implies that changes in any explanatory variables in the case of one-shot traders will have a significantly smaller effect on the difficulty of bringing charges than it would in the case of serial insiders. To put it simply, small changes in a serial trading scheme, for example, number of participants or trading in options, change the likelihood of being caught more than making the same changes in a one-shot trader ring.

The preceding discussion did not address the utility functions of the insiders and concentrated on factors observed by the Commission and the probability of detection for the two types of insiders. As discussed above, the model does not identify α and β , but the systems of equations allow estimation of the ratio of these coefficients. As Table 2 shows, for one-shot traders α is roughly equal to β under all specifications. Therefore, traders of this type have the same preferences for risk in terms of increasing profits as they do for increasing the number of tippees. On the other hand, serial insiders' β 's seem to be uniformly higher than their α 's.

As discussed above the first specification is theoretically the best fit for the one-shot trading rings while the second one is the best one for the serial traders. The first specification offers, at least theoretically, a really poor description of the serial trading rings because it relies on the profits realized from trading by first level insiders whose profits are very often derived entirely from kickbacks and not from actual trading. On the other hand, a first tier trader in a one shot ring does not normally receive kickbacks and so it would not be appropriate to measure his profits the way that is done in the second specification.

A comparison of the α/β ratio estimated from the serial trader dataset using the second specification with the one estimated from the one-shot trader dataset

using the first specification makes the distinction between the two types of insiders particularly stark. The serial insiders' β is five times larger than their α , while the one-shot trader's β is roughly equal to their α . As discussed in the preceding part, if either α or β turned out larger than one, that would suggest risk-loving behavior by the traders. Note that even if we assume that $\alpha = 0.21$, a coefficient consistent with a very high degree of risk aversion with respect to profits, the second specification for serial traders suggests that $\beta = 1.05$ - a coefficient consistent with risk loving behavior with respect to the number of tippees. In all likelihood the true value of α is much higher than 0.21 - after all if serial insider traders disliked risk that much, they would not be engaging in criminal behavior. While the reasons for giving preference to the second specification are strictly theoretical and there is no way of knowing the true value of α , this result lends at least some support to the notion that serial insiders are indeed risk loving.

This section offered an insight into the behavior of different types of insiders. The analysis of the data offered support for the theory that there are two distinct types of insiders engaged in illegal trading and suggested that at least one of the types is risk loving.

C. Implications

The above discussion suggests that legislative and regulatory initiatives aimed at stemming the tide of illegal trading have failed for two reasons. First, the government's actions were aimed almost exclusively at the rich, well-educated corporate insiders, while ignoring the rank-and-file participants in the market. Second, the penalties imposed on insiders are based on the potentially flawed assumption of risk aversion or risk-neutrality of the traders.

Both legislative and regulatory efforts have been directed at eliminating insider trading by high rank fiduciaries - lawyers, investment bankers and corporate officers. Those are the people most likely to be the source of information for serial insider trading rings thanks to their continuous access to non-public information. However, less than half of the serial insider trading rings in this dataset revolved around an investment banker or a lawyer.³⁸ Hence, the traders who were the original target of the legislation are not the most likely perpetrators. In roughly one third of the cases the person who provided information to a trading ring was a member of the board of directors of an issuer and in another one third of the cases it was a low ranked employee of the issuer or the issuer's law firm or investment advisor.

The percentage of one-shot traders who are investment bankers or attorneys is even smaller. The vast number of people in the one-shot trader category are lower level employees who came across sensitive information and decided to trade illegally on a spur of the moment decisions.

³⁸ Only two of the serial trading rings used in the estimation dataset were centered around attorneys, while five were centered around investment bankers or financial analysts.

The natural question that arises is whether what worked in deterring CEOs, attorneys and investment bankers from insider trading would also work for other insiders. Based on the data set used in this study and the significant percentage of defendants who are not executive officers, attorneys or investment bankers, it would appear that that would not be the case. As discussed above, a significant subset of the traders are risk loving in at least some respects. Hence, when faced with a gamble that pays a significant amount of money on the upside in exchange for equally significant loss on the downside, they are likely to engage in insider trading.³⁹ The threat of criminal penalties might deter some traders but, as Table 1 shows, the likelihood of criminal sanctions is very small and therefore hardly a significant deterrent to a risk loving trader. The most likely reason investment bankers and lawyers stay away from insider trading is not a penalty imposed by the government, but the virtual certainty that they would lose their licenses and would never be able to work in their fields. Most highly placed corporate insiders would be deterred by the possibility of being fired and the difficulties associated with getting a high-ranking job at another company following an insider trading conviction.

That threat does not exist for low ranked corporate insiders or professionals who can switch easily to a different field. For example, a part-time worker's reputation is not a factor in securing employment after being fired for insider trading. Moreover, it is much easier for that type of personnel to switch occupations than it is for highly specialized professionals like investment bankers and lawyers. A computer programmer who is barred from the securities industry can work in any non-financial firm, while a lawyer who is disbarred would never practice any form of law. In addition, the downside from insider trading is very small for low-ranked personnel - most of whom do not have sufficient wealth to have to worry about treble damages and are not perceived as sufficiently dangerous by the Commission to warrant the pressing of criminal charges.

Table 1 shows that there has been a shift in the composition of insider traders toward a greater percentage of corporate rank-and-file personnel in lieu. The explosion in insider trading cases in the past few years reflects this tendency and the inability of regulators to deal with the rising tide under the current laws. The goal of this paper was to point out the problems faced by the Commission and the shortcomings of the existing measures. This paper did not attempt to offer a workable solutions to those problems, but the discussion above suggests one plausible approach. Congress could make criminal charges in insider trading cases mandatory and require that insiders actually serve at least some time in jail. Moreover, people convicted of insider trading could be banned from taking on positions in which there is even a small likelihood of obtaining confidential information for some period of time. This measure is tantamount to taking away their license to practice their current job or any similar job and virtually guarantees that they would have to take on a lower paying position. In addition, the

³⁹ Even if the loss is three times the illegal profits, and as shown in Table 1 that is rarely the case, an insider can avoid paying anything and under some circumstances can come ahead of the game even after being caught, as discussed in Part II.

Commission could require companies to educate their employees better about the consequences of insider trading. There are relatively few cases involving lawyers and brokers in part because every lawyer or broker is aware of the few cases that have been prosecuted. Most of the rank-and-file employees believe that they are not likely to be caught since the Commission would not bother with someone who is not highly placed.

Also, the Commission should discontinue its practice of waiving penalties for demonstrated inability to pay. Even if an insider does not have the means to meet her obligations at the moment that does not mean that she will not acquire sufficient funds in the future. So far the Commission requires disgorgement of profits plus interest at the rate charged by the Internal Revenue Service. As discussed previously, this practice encourages risky investments and allows a guilty party to realize profits even after being caught. The Commission can change that by requiring the disgorgement not only of all the profits, but also of all the money that was generated by investments of the profits while the action was pending.

IV. CONCLUSION

This paper described a model explaining why the solutions that looked great twelve years ago have not been as effective in recent years. The data analyzed above offers support to the theory that there are two types of people engaged in insider trading and that at least some of them are risk loving. That analysis suggests that given the small downside and the significant upside of insider trading to corporate rank-and-file workers who comprise the bulk of one-shot traders, the temptation to engage in illegal behavior proves too strong in many cases. To the extent existing laws and regulations have deterred illegal trading, that was due mostly to the threat to the future job prospects of a potential violator than to the threat of monetary or criminal penalties. This would suggest that tougher laws requiring mandatory criminal penalties and affecting significantly the future of potential insiders are likely to lead to better results.