DO THEY DO IT FOR THE MONEY?[*]

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Abstract

Using a sample of all top management who were indicted for illegal insider trading in the United States for trades during the period 1989-2002, we explore the economic rationality of this white-collar crime. If this crime is an economically rational activity in the sense of Becker (1968), where a crime is committed if its expected benefits exceed its expected costs, "poorer" top management should be doing the most illegal insider trading. This is because the "poor" have more to gain (an extra dollar means more to them) and less to lose (present value of foregone future compensation if caught is lower for them.) We find in the data, however, that indictments are concentrated in the "richer" strata after we control for firm size, industry, firm growth opportunities, executive age, the opportunity to commit illegal insider trading, and the possibility that regulators target the "richer" strata. We thus rule out the economic motive for this white-collar crime, and leave open the possibility of, though we do not formally test, psychological motives (like hubris) or sociological motives (like company culture) behind this white-collar crime.

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1. Introduction

On August 7, 2006, Martha Stewart, the CEO of Martha Stewart Living Omnimedia Inc. (MSO), settled her civil insider trading case by agreeing to pay $195,081. This included $45,673, the amount of losses she avoided from her insider trading in ImClone Systems Inc. in December 2001, plus $12,389 in interest, plus the maximum civil penalty of $137,019, which is three times the amount of losses avoided.[1] This suggests that the benefit that Martha Stewart would have received from her alleged insider trading if she was not caught, $45,673, was a *paltry* 1.7% of her $2,704,403 legal compensation from (MSO) in 2001, and a *miniscule* 0.007% of her $650 million net worth in 2001. If we factor in the probability of being caught and the monetary penalties incurred after being caught (the civil penalty given above, the costs of jail time, and the drop in value of her stock holdings[2]), her percentage net expected benefit from insider trading was much lower, and probably even negative.[3]

Was it worth it?

This paper explores the economic rationality of illegal insider trading using a sample of all top management who were indicted for insider trading in the United States for trades during the period 1989-2002. The null hypothesis is that the act of committing this white-collar crime is a rational economic decision, where the perpetrator has considered the costs and benefits of committing the crime, and has decided to commit the crime because the expected benefits from committing the crime have exceeded the

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[1] Associated Press, Monday, August 7, 2006. Martha Stewart's civil trial was for insider trading. The allegation was that Martha Stewart had sold ImClone's stock after she learned that one of its products, Erbitux, was not approved by the FDA. She had allegedly learned this before the notification was made public.

[2] The news of the scandal, first reported June 7th, 2002, made MSO stock plunge from $19.86 on May 23rd, 2002 to $7.25 by July 26th, 2002. As Martha Stewart was the owner of approximately 60% of MSO's common A-class stock and 100% of MSO's B-class stock (which has a 10-to-1 voting-to-cash flow rights,) she bore the brunt of the losses in MSO's market value.

[3] Martha Stewart's criminal trial was for perjury. She was convicted, and she went to jail for five months. The real irony is that Erbitux was approved by the FDA in 2004, and has become a highly successful weapon in fighting cancer. The stock, after falling from $63.62 on December 26th, 2001 to $6.52 on July 10th, 2002, reached an all-time high of $86.79 on July 1st, 2004.
(http://www.usatoday.com/money/industries/health/drugs/2006-09-14-imclone-usat_x.htm)

expected costs of committing the crime. This view was first propounded by Becker (1968). Instead of regarding criminal activity as irrational behavior associated with the specific psychological and social status of an offender, Becker analyzed criminality as rational behavior under uncertainty.[4] The ideas propounded by Becker (1968) and some other scholars have now become the intellectual foundation of the law and economics literature.

The alternative hypotheses, and there are many of them, are the non-economic motives for white-collar crime. One motive is sociological. The phrase "white-collar crime" was first coined in 1939 during a presidential address given by Edwin Sutherland to the American Sociological Society. Sutherland defined the term as "crime committed by a person of respectability and high social status in the course of his occupation." Sutherland (1949) devoted a whole book to this topic. Sutherland believed that criminal behavior is learned from interpersonal interaction with others. White-collar crimes exist because there is much opportunity to commit crimes like fraud, bribery, insider trading, embezzlement, forgery, computer crime, etc. in complex white-collar professions.[5] Modern criminology has expanded Sutherland's (1949) view of white-collar crime, and does not define it solely by who committed the offense.

Another motive is psychological. The psychological motives for crime have been studied by a huge and growing literature. Hollin (1989) is an excellent general text covering the range of contributions psychology has made both to understanding crime and responding to it. Theories of crime range from psychobiological (genetic transmission), biochemical and neurological theories (effect of certain drugs), psychoanalytic and psychodynamic theories (inner processes like ego, and other inner conflicts), learning theories (crime learned from others; this borrows from the sociology literature) and cognitive theories (crime based on reasoning; Becker's (1968) analysis is an extreme example of this.)

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[4] Gary S. Becker won the Sveriges Riksbank Prize in the Economic Sciences in Memory of Alfred Nobel in 1992 "for having extended the domain of microeconomic analysis to a wide range of human behaviour and interaction, including nonmarket behaviour."

[5] The terms "blue-collar crime" and "white-collar crime" refer to police slang. Blue-collar crimes involve local police wearing blue, whereas white-collar crimes involve Federal agents wearing white shirts (Wikipedia).

If white-collar crime is a rational activity based on pure economic reasoning in the sense of Becker (1968), where the potential offender considers the costs and the benefits before committing the crime, the testable implication is that we should see "poorer" top management committing more white-collar crime.[6] Why? The next section explains in detail why our null hypothesis leads to this testable implication. The primary reason is that the "poor" have more to gain (an extra dollar means more to them) and less to lose (present value of foregone future compensation if caught is lower for them.)

We use a sample of all top management who were indicted for insider trading in the United States for trades during the period 1989-2002 to test the above hypothesis. Why, of all possible white-collar crimes that we can possibly examine, do we choose illegal insider trading? There are four reasons. First, the data are publicly available. Second, the data allow us to estimate expected profits from illegal insider trading, and this is very useful when we have to control for the opportunities available for this crime. Third, as we discuss later, the self-selection bias of this sample is small. Fourth, and perhaps the most important, is that our priors lead us to believe that the economic motive behind this crime may be very strong. Why else would managers trade on inside information, if not to make money or avoid losses? The results from our tests, however, reject our priors, and so come as a surprise to us.

These are our results. When we analyze by firm-specific variables, we find that firms in which insiders have been indicted are similar to all firms in the Compustat database with respect to size, profitability and leverage. There is no unusual industry concentration. However, firms in which insiders have been indicted do have higher growth options (as measured by market to book.)

When we analyze by compensation variables, we find that top management insiders who have been indicted have higher compensation than a matched sample of top management insiders in the Compustat database. The match is by year, industry, size and management title. This result is true whether we define compensation as cash pay or cash pay plus all other grants like stock options.

The main result of our paper is based on a probit test as well as a rare event logit test, which tries to find out whether compensation of the top management affects the probability of being indicted as an

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[6] We do see this in blue-collar crime. More poor people than rich people are in jail for blue-collar crimes. Blue-collar crimes increase during recessions.

illegal insider trader. We find that compensation of top management positively affects the probability of being indicted as an insider trader, after we control for year, industry, size, growth opportunities, and executive age. We use these controls because compensation differs across industries (Murphy (2003)), compensation is higher in bigger firms (Murphy (1999)), compensation may differ between value and growth firms, and incentives to do illegal insider trading during various age points may be different. Our results imply that if we define a cohort as top management of the same age in the same firm size category in the same industry which has similar growth opportunity, the "richer" top management in a cohort is more likely to be indicted for illegal insider trading.

But does everyone in the cohort also have the same opportunities for illegal insider trading, as is the implicit assumption in the above tests? We do two controls for this. First, in all our tests, we insert a dummy for CEO as another independent variable. This controls for the possibility that only the CEO may have access to inside information. Second, to explicitly control for the expected benefits of insider trading, we next narrow our sample to mergers and acquisitions. As M&A negotiations take time, we assume that the price of the target firm is known at least a month in advance. This implies that the return in the target price from a month before the announcement to the day of the announcement is the private information of insiders. This return is the temptation, the expected benefit, of illegal insider trading of buying the target stock a month before the announcement and selling it the day after the announcement. We find that our result – compensation is positively linked to the probability of being indicted as an illegal insider trader – remains if we control for this expected benefit.

A legitimate concern in interpreting our results is the selection bias inherent in our sample. We have a sample of indicted insiders. These are the top management insiders who committed illegal insider trading and got caught. The top managers that are not in our sample, which is our benchmark in all the tests above, are insiders who did not do illegal insider trading as well as insiders who did illegal insider trading but did not get caught. All of our results, therefore, are biased by how the regulators detect and prosecute insider trading. For example, if regulators, for a demonstration effect, focus on richer top management to catch, then compensation and indictments are positively correlated not because the

4

wealthier top management chose to do illegal insider trading, but because the regulators chose to catch the wealthier top management.

The only way to fully address this selection bias is to model the regulator's decision variable and the potential perpetrator's decision variable explicitly, and then solve it as a Nash equilibrium or as a Stackelberg equilibrium. Graetz, Reinganum and Wilde (1986), among many interesting papers in this genre, do just this for tax compliance. Feinstein (1990, 1991), using these ideas, posits an empirical specification of the Internal Revenue Services' decision variable on who to catch, and the potential tax cheater's decision variable on whether to cheat, to estimate how many people are cheating on their taxes. These sophisticated approaches, unfortunately, are not possible in our paper: we do not have data on audit trails of insider investigations.

Meulbroek (1992) is the classic paper that analyzes illegal insider trading data from the Securities and Exchange Commission (SEC.) She finds that illegal insider trading is very informative because there is an abnormal return on the days there is illegal insider trades. She addresses the selection bias criticism of her finding – was there abnormal return because of illegal insider trades, or was there abnormal return because the SEC catches insiders based on abnormal returns – by exploring how the SEC actually detects illegal insider trading. She then conducts appropriate robustness tests. Her discussion tells us that the SEC initiates insider trading cases largely because of public complaints (sometimes from ex-wives) or exchange referrals (which may happen because of unusual price or volume moves.) The income or the wealth of the perpetrator does not seem to appear in her list of eight reasons for initiating insider trading cases. In our particular sample, we find that for half the cases, individual insider trading indictments came after the firm was investigated for fraud. This suggests that the regulators did not target top management because of their wealth or income, but because the firm itself was involved in fraudulent accounting reports.

Selection bias may still exist. We address this directly in the paper by using an instrumental variable. Our instrument is the compensation of the subordinate in the same firm in the same year. This is a good instrument for two reasons. First, the compensation of the subordinate is likely to be highly

5

correlated with the compensation of the executive above him. Depending on how compensation is defined, correlations in our sample range from 0.67 to 0.83. Second, it is unlikely that regulators target an executive because his subordinate is being paid too much. The results of our paper remain after this instrumental variables test. This test also tells us that endogeneity is not much of a concern in our tests.[7]

It is important to mention here that the modest objective of our paper is to examine the following null hypothesis: is the economic motive for a white-collar crime like illegal insider trading strong? Our answer is no. So we reject the null hypothesis. As the alternate hypotheses – psychological motives (like hubris) or sociological motives (like company culture) behind this white-collar crime – are numerous, the formal examination of these hypotheses is beyond the scope of the paper. We leave that for future research.[8]

The paper is organized as follows. The null hypothesis is developed in section 2. The data are described in Section 3. Section 4 contains the results. We conclude in section 5.

2. Development of Hypothesis

The benefit of illegal insider trading is the potential profit that can be made by such trading. This only depends on the differential information of the insider – how much does he know that the market does not. The differential information that is available to the insider is dependent on how high up he is in the firm. This is why we examine a sample of only top management – top management defined as the top

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[7] It could be argued that we are getting a positive relationship between compensation and indictments because indictments mostly occur in firms also being investigated by fraud, and highly paid executives with unrestricted stockholdings tend to commit fraud (Johnson, Ryan and Tian (2009)). That could be true, but our positive relationship exists for all measures of compensation, not just stock compensation. Also, formal tests which are not reported but are available from the authors, show that our result holds for executives whose firms do commit fraud as well as for executives whose firms do not engage in fraud. It could also be argued that we are getting a positive relationship between compensation and indictments because highly paid executives also have more inside information. That could also be true, but our positive relationship exists even in the M&A sub-sample, where we explicitly control for the quantity of inside information available.

[8] Chapter 1 in *Freakonomics* (2005) discusses the motivations for cheating and, like this paper, is skeptical about the economic motive for cheating. The thoughts of a bagel man are illuminating: "He also says he believes that employees further up the corporate ladder cheat more than those down below. He reached this conclusion in part after delivering for years to one company spread out over three floors -- an executive floor on top and two lower floors with sales, service and administrative employees. Maybe, he says, the executives stole bagels out of a sense of entitlement. (Or maybe cheating is how they got to be executives.) His biggest surprise? 'I had idly assumed that in places where security clearance was required for an individual to have a job, the employees would be more honest than elsewhere. That hasn't turned out to be true.'"

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five officers in the corporation – and, within this sample, we control for the possibility that the insider is a CEO. This controls for the likelihood that the CEO has the most inside information. The differential information of the insider is also event-specific. Inside information is highest just before big value-changing events. Therefore, in a further test, we narrow our sample to M&A, and control for the inside information available before the announcement.

Given the classic assumption of concave utility, it is apparent that the marginal gain from an extra dollar of illegal insider trading profits would be higher for "poorer" top management than for "richer" top management.[9] Therefore, everything else the same, especially after controlling for the variables described in the previous paragraph, the benefit of illegal insider trading is higher for "poorer" top management than for "richer" top management.

The cost of illegal insider trading is the cost of being caught. The cost of insider trading is the sum of the direct penalty and the indirect costs incurred if an insider is caught. Our data tell us that the direct penalty imposed on the insider by the SEC is related to the benefits that the insider received. In many cases, it is simply two or three times that benefit. So it seems that the direct penalty, at least in our data, is not linked to anything else. We do not have data on the indirect costs of being caught. Indirect costs are reputation costs and costs that arise because of career demotions and, in rare cases, the opportunity costs of jail time. Agrawal, Jaffe and Karpoff (1999) find career demotions in the case of fraud, Agrawal and Cooper (2007) find career demotions in the case of accounting scandals, and Karpoff, Lee and Martin (2008) document that private lawsuits are related to the defendant's ability to pay in the case of financial misrepresentation.

The indirect pecuniary cost of insider trading is the present value of foregone future compensation if caught doing insider trading. This is what Fama (1980) calls "full ex-post settling up." In Fama's model, the valuation impact of a manager's activities is internalized via future pay. It could be argued that this is lower for "poorer" top management. They make less, and their future earnings stream

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[9] It may be argued that top managers are different. Their utility functions are convex: as they become richer, an extra dollar means more to them. For the purpose of this paper, we would classify this type of utility function as an abnormal psychological trait.

is expected to be less than "richer" top management. They also have less reputation (a non-pecuniary cost) to lose than "richer" top management. On the other hand, it could also be argued that "poorer" top management lose more in terms of indirect pecuniary costs if they are caught doing insider trading. This is because lower-paid managers are striving to reach the top, and/or they might have more years of potential earnings benefits. Perhaps they are relatively young, and anything they do now will affect a longer stream of future pay. The only way to resolve this argument is to control for career position and age. We control for career position by having a dummy for CEO, and we control for age. Therefore, controlling for career position and age, the indirect cost of illegal insider trading is lower for "poorer" top management than for "richer" top management.

To summarize the above arguments, if the decision to do illegal insider trading is an economic consideration in the sense of Becker (1968), "poorer" top management is tempted to do illegal insider trading more than "richer" top management, if we hold everything else constant. This is because the "poor" have more to gain (an extra dollar means more to them) and less to lose (present value of foregone future compensation if caught is lower for them.) So the null hypothesis of our paper is: illegal insider trading is higher for "poorer" top management than for "richer" top management, holding everything else constant. If this hypothesis does not hold against evidence, we should conclude that the decision to commit illegal insider trading is not economically rational in the Becker (1968) sense.

What would be everything else that is held constant? As discussed above, we should control for size, industry and growth opportunities of a firm, and control for opportunities for illegal insider trading (CEO title and profits to be made) and executive age.

3. Data

The sample of indicted insider traders was collected from SEC Litigation Releases available from the SEC webpage (http://www.sec.gov/litigation/litreleases.shtml.) We look at releases from September 1995 through December 2004. From these releases we choose only those individuals that are classified as top executives. Top executives are defined as any insider trader who is among the top five paid executives within the firm.

These indicted top executives had to act as a tipper of inside information meaning they discovered the inside information and decided to pass the information along to a second party, or had to trade on the information themselves, or do both. For each individual we gather information about the company employing them during the trading period as well as the company whose stock they illegally traded (which in most cases are their own companies.) We collect the trading profits or losses avoided as the benefits of the illegal insider trading earned by all parties involved in the transaction. We also collect the monetary costs in the form of disgorgement of profits, monetary penalties, and jail time for all parties involved in the insider trading scheme. We further classify the type of insider trading as relating to information about a merger or acquisition, about a fraudulent accounting practice, or about other events such as news and earnings announcements. Finally, we look at the outcome of the indictment. In our sample period, most cases were settled (75%), and the rest led to convictions or admissions of guilt (25%).[10]

The SEC litigation release dates are often several years after the insider trading periods. Our insider trading periods range from January 1989 through December 2002. Our sample consists of 52 top executives who were indicted for insider trading. They represent 41 firms.

Table 1 compares our firms with other firms in Compustat. To construct this table, we try to match our executive insider trading sample to Compustat based on Gvkey or CIK. We require the Compustat information to be from the fiscal year ending just prior to the insider trading year. The benchmark sample of Compustat firms that we use includes all firms from Compustat over the period 1989 through 2002 that were not associated with illegal insider trading, and which do not have missing information for assets or sales. Further, all firm variables from Compustat are windsorized at the 1% level and the 99% level to remove severe outliers and obvious data errors. This yields 169,825 firm-year observations in our benchmark sample. The trading periods span July 1990 through May 2002. 22 of the

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[10] As expected, we find that the total monetary penalty is higher for those who settle than those who are convicted. More importantly for our paper, the executive compensation across the two groups is similar, suggesting that richer top management do not avoid convictions by hiring top lawyers.

52 top executives are CEOs during the insider trading period. The 52 top executives/41 firms sample and the 169,825 firm-year benchmark sample from Compustat are used in Table 1.

Table 2 compares the compensation of our indicted executives with the compensation of a matched sample of non-indicted executives. To construct this table, we try to match our 52 indicted executives to similar executives from Compustat firms that were not involved with illegal insider trading. We match our 41 firms to Compustat firms based on year, two-digit SIC code, and size (we chose the next largest firm as measured by assets.)[11] CEOs were matched to CEOs and other top executives were matched based on title. Three of our executives could not be matched to an executive in the Compustat sample leaving 49 matched executives. These 49 pairs, an indicted executive and the matched non-indicted executive, are our sample in Table 2.

We then obtain compensation information for all 52 indicted executives and the 49 matches by searching SEC Edgar for proxy statements and 10-Ks which contain compensation information for the top five paid executives within the firm. Whenever possible, we hand-collect up to three years of complete compensation information for the three year fiscal period ending just prior to the trading year of that particular insider. We take the average of these three years to smooth the occurrence of option grants and options exercised. This is because these options are usually not a part of an executive's compensation every year. This gives us a more stable measure of the level of annual compensation prior to the insider trading.

We collect salary, total cash compensation consisting of salary plus bonus, and ex ante total compensation (TDC1) consisting of salary, bonus, other annual compensation, the total value of restricted stock grants, long term incentive payouts, all other compensation, and the total value of stock option grants (measured by the company). The measure of TDC1 provided by Execucomp uses the Black and Scholes method to value option grants. We replaced Black and Scholes with the value of option grants as measured by the company. This is because the Black and Scholes value was not available for many firms in our sample, but the value of option grants as measured by the company was available for all firms. We

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[11] As compensation increases as size increases, choosing a match that has a higher size biases against finding our results.

also compute an ex post measure of total compensation (TDC2), which is the same as TDC1 except for replacing option grants with the value of options exercised.

The above measures are for income. We also try to measure wealth, albeit crudely. It is the level of executive wealth defined as the value of their share of beneficial ownership in the firm plus the value of unexercised options that are exercisable and unexercised options that are unexercisable at the end of the fiscal year.[12]

The database Execucomp covers the top five executives of all firms in the S&P 1500. We keep one observation per year per individual for every firm that was not involved with illegal insider trading. This gives us our benchmark control sample. This sample has 122,273 individual-firm-years. All compensation and wealth variables for this benchmark sample in Execucomp are collected in the same way as we did for our sample of indicted executives. We delete firms with missing Total Cash Pay, TDC1, and TDC2 resulting in a final benchmark sample of 122,262 individual-firm-years. Further, we use each executive's age and we note whether they are a CEO. This benchmark sample of 122,262 individual-firm-years from Execucomp, along with the 52 indicted executives/41 firm sample with compensation data described previously, are used in Tables 3 and 4.[13]

In Table 5, we instrument compensation/wealth of the executive with the compensation/wealth of his or her subordinate. If the executive himself was the lowest paid executive as given in the proxy statements, we choose as an instrumental variable the compensation of his superior. Due to missing data, the regressions with Total Cash Pay have 48 indicted executives with an instrument (of which 8 use the next highest,) the regressions with TDC1 have 45 indicted executives with an instrument (of which 7 use the next highest,) the regressions with TDC2 have 47 indicted executives with an instrument (of which 10

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[12] Due to a lack of complete compensation information being available because of executive turnover and missing SEC filings, we were able to collect the three year period ending at t-1 for 19 indicted individuals, a three year period ending in year t for 21 indicted individuals, and a three year period ending in year t+1 or t+2 for the last 12 indicted individuals. The wealth measure is collected for the one year period ending at t-1 or earlier for 27 indicted individuals, ending at year t for 11 indicted individuals, and ending at year t+1 or later for 11 indicted individuals. Here t is the insider trading year.

[13] Out of the 52 insiders, 10 of them are also in Execucomp during the three year period prior to the insider trading period.

use the next highest), and the regressions with Wealth have 47 indicted executives with an instrument (of which 10 use the next highest).

In Tables 6 and 7, the sample is reduced to all indicted executives with the three year average of compensation available, who also committed illegal insider trading by trading on information regarding a merger or acquisition. There are 9 top executives in our sample who traded on inside information about a merger or acquisition before the public announcement of the event. Likewise, the benchmark control group consists of all executives in Execucomp whose firm was either a target or the acquirer involved in a merger or acquisition found in SDC's M&A database and whose firm was not associated with illegal insider trading. This benchmark group has 101,188 individual/firm/year observations. These individuals had the opportunity to trade on M&A information. They either did not do illegal trades, or they did illegal trades but were not caught. We estimate the cumulative abnormal return over the trading period (-30,+1) for all target firms, whether they were involved in insider trading or they were not. Here day 0 represents the public announcement date of the merger or acquisition. The estimation period is 241 trading days ending at least 61 days prior to the announcement date.

4. Results

A. Comparison of firms

Do top managers who have been indicted for insider trading come from a particular type of firm? Table 1 tries to answer this question using the 41 firms in which top management have been indicted.

We select a firm in which an insider was indicted for illegal insider trading and compare this firm with the entire benchmark sample of Compustat firms in that year. We then assign a percentile rank to a variable of this firm compared to the same variable in the benchmark firms. If year t is the insider trading year, we choose the variable in year t-1 in both our samples. We find the percentile rank for all the firms in our sample, and compute the mean, the median and the standard deviation of these percentile ranks. If this firm was like any other firm, the percentile rank should be 50.

If we measure the size of the firm in assets, Panel A in Table 1 documents that firms with indicted insider traders are of the same size as the firms in Compustat in which no insiders were indicted. The

mean (median) percentile rank is 54.24 (58.00). A means T-Test or medians Signed-Test tells us that these numbers are not statistically different from 50. If we measure the size of the firm in volume of sales, Panel A in Table 1 documents that firms with indicted insider traders are of the same size as the firms in which no insiders were indicted. The mean (median) percentile rank is 56.29 (63.00). A means T-Test or medians Signed-Test tells us that these numbers are not statistically different from 50. So firms with indicted insider traders are similar in size to firms in which no insiders were indicted.

If we measure the profitability of the firm by Return on Equity, Panel A in Table 1 documents that firms with indicted insider traders seem to be equally profitable as firms in which no insiders were indicted. The mean (median) percentile rank is 48.24 (44.00). However, a means T-Test or medians Signed-Test tells us that these numbers are not statistically different from 50. If we measure the profitability of the firm by Return on Assets, Panel A in Table 1 documents that firms with indicted insider traders seem to be equally profitable as firms in which no insiders were indicted. The mean (median) percentile rank is 53.41 (56.00). However, a means T-Test or medians Signed-Test tells us that these numbers are not statistically different from 50. So firms with indicted insider traders have similar profitability as firms in which no insiders were indicted.

Panel A in Table 1 also documents that firms with indicted insider traders have similar levels of leverage as firms in which no insiders were indicted. The mean (median) percentile rank is 55.41 (61.00). However, a means T-Test or medians Signed-Test tells us that these numbers are not statistically different from 50.

Panel B in Table 1 documents that firms in which insiders have been indicted seem to be somewhat concentrated in some industries like the business services industry. A formal test, however, reveals that these industry concentrations are not statistically significant.

The above results are interesting. If the decision to do illegal insider trading was economically rational in the Becker (1968) sense, we should see more insiders being indicted from smaller firms (as compensation in smaller firms is lower, the insiders have much to gain and little to lose in these firms.) We do not see that in Panel A in Table 1. We should also see more insiders being indicted from

distressed firms, where distress is measured by lower profitability and/or high leverage (insiders have much to gain and little to lose in distressed firms.) We do not see that in Panel A in Table 1.

An interesting difference we observe in Panel A in Table 1 is in growth opportunities, as measured by the Market to Book ratio. We find that firms with indicted insider traders have more growth opportunities than firms in which no insiders were indicted. The mean (median) percentile rank is 63.32 (72.00). A means T-Test or medians Signed-Test tells us that these numbers are statistically different from 50.

B. Comparison of insiders to matched sample

Is the compensation of top management indicted for insider trading different from the compensation of other top management? Table 2 tries to answer this question using the 52 indicted top management insiders for which we have compensation data and a matched sample of non-indicted top management in the Compustat database. As explained before, the match is done by year, industry, size, and title.

If we measure compensation as base salary, we find that indicted top management seem to be paid about the same as non-indicted top management. If we measure compensation as total cash pay, we find that indicted top management seemed to be paid higher than non-indicted top management. If we measure compensation as TDC1, we find that indicted top management seemed to be paid higher than non-indicted top management. Finally, if we measure compensation as TDC2, we find that indicted top management seemed to be paid higher than non-indicted top management.

The conclusion from Table 2 is that indicted top management have equal or higher compensation than other top management, irrespective of how you measure compensation.

Table 2 shows the results of an unconditional test. An unconditional test has one advantage in the context of our paper. In the null hypothesis expounded in our paper, "poor" and "rich" are defined in terms of income or wealth, and not "poor" or "rich" conditional on their firm's characteristics. So this unconditional test is a good test. Unconditional tests, however, have some disadvantages. Their

conclusions may be deceptive. We need to control for many things that explain compensation and the potential for illegal insider trading profits. This is what we do next.

Tables 3 and 4 show the main results of the paper. Table 3 gives the results of a probit regression, whereas Table 4 gives the results of a rare events logit regression. In both regressions, the dependent variable is 1 if a top executive has been indicted for insider trading, and is 0 if a top executive has not been indicted for insider trading.

We use a probit regression in Table 3 because the method is standard, and instrumental variable adaptations of probit, which we will do later in Table 5, are well-developed. However, as explained by King and Zeng (1999a), in binary dependent variable models like probit or logit, the probability of rare events is underestimated. We have a rare events case in our data, because there are only about 50 ones, and more than 100,000 zeros. So we use a rare events logit regression in Table 4. We obtained this methodology from King, Tomz and Zeng (1999) and King and Zeng (1999a, 199b). Unfortunately, instrumental variable adaptations of the rare events logit test are not yet developed. All the regressions in Tables 3 and 4 are corrected for clustered errors at the firm level (see Petersen (2008).)

The independent variables of interest in Tables 3 and 4 are our compensation variables of interest. Income is measured three ways: Total Cash Pay, TDC1 and TDC2. As in Table 2, if t is the insider trading year, all compensation variables are the average value of t-1, t-2 and t-3. We take the average to smooth out these variables. Total Cash Pay does not require smoothing, but TDC1 and TDC2, since they contain volatile option grants and option values, do require smoothing out. Wealth is measured for only one year ending at t-1 depending on data availability. Other controls used in Tables 3 and 4 are the log of asset size in year t-1, industry indicator in year t-1, the market-to-book ratio in year t-1, a CEO dummy, executive age, and an indicator to control for the year the illegal insider trading occurred.

Both Table 3 (probit regression) and Table 4 (rare events logit regression) reveal that the probability of being an indicted top management insider increases with compensation and wealth, whether compensation is defined as total cash pay, TDC1 or TDC2. Except for the coefficient for total cash pay in

15

Table 3, all coefficients of the other compensation and wealth variables are statistically significant in both the tables.

The coefficient on the CEO dummy is positive and significant in both tables 3 and 4 in columns 1 through 4, meaning thereby that CEOs tend to be indicted more. This could be because CEOs make more money, or CEOs have more opportunities for illegal insider trading as they may be the only ones privy to inside information, or that regulators target CEOs more. Whatever the interpretation, this result does tell us that that the probability of being an indicted top management insider increases with compensation, irrespective of whether you have the opportunities of a CEO or not.

According to the economic interpretation of crime, the probability of doing a criminal act decreases with the cost of getting caught. As one cost of getting caught is lost income and lost reputation, the young have more to lose in terms of income and, perhaps, reputation. We rerun the regressions in Tables 3 and 4 after including the executive's age. The results are shown in column 5 in both tables. We do not include the age variable in columns 1 through 4 in the two tables because, as only 34% of our control group in Execucomp had this variable, we did not want to lose sample size in these columns. Results from column 5 in both tables 3 and 4 show that age is negative and significant, meaning that younger executives tend to be indicted for insider trading more often. The CEO indicator loses significance. However, our main results with respect to income or wealth remain. (In column 5, we show only the results with respect to TDC1 because of lack of space; the results with respect to the other income or wealth variables remain the same as well.)

Table 5 is an instrumental variables version of Table 3. As explained before, we instrument compensation or wealth of the top executive with compensation or wealth of the subordinate. If the executive himself was the lowest paid executive as given in the proxy statements, we choose as instrumental variable the compensation or wealth of the superior. This instrument is good because the correlations are high: in our Execucomp database, the correlation between compensation of two executives next to each other in the corporate hierarchy is 0.83 for total cash pay, 0.67 for TDC1, 0.68 for TDC2, and .40 for Wealth. All these correlations are significant at the 1% level. As a matter of fact, in

16

the first stage in the IV estimation, we discover that a subordinate's income or wealth has significant explanatory power over and beyond other explanatory variables in explaining an executive's income or wealth. This instrument is also good because it is unlikely that regulators target top management because their colleagues are making a lot of money or are wealthy.

The IV Probit test is estimated using Newey's efficient two-step estimator (Newey (1987).) In the first step, we regress the compensation or wealth of the executive against the instrumental variable and other exogenous variables such as market to book, size, industry indicators, CEO dummy and year indicators. In the second-step, we use the predicted values of compensation or wealth obtained from the first step as an independent variable. The IV Probit provides a convenient standard error correction but does not allow clustering for panel data. The dependent variable, as in Table 3, is 1 if a top executive has been indicted for insider trading, and is 0 if a top executive has not been indicted for insider trading. The other independent variables are the same as in Table 3.

The results of this IV Probit test are given in Table 5. As can be seen, our results are stronger than the results in Table 3 for compensation. The probability of being an indicted top management insider increases with compensation, whether compensation is defined as total cash pay, TDC1 or TDC2. The results for wealth, however, become insignificant.

Another important result from Table 5, as given by the Wald Test of Exogeneity, is that the endogeneity problem in our data may not be severe. Two of our four variables – Total Cash Pay and Wealth – do not have an endogeneity problem, though TDC1 and TDC2 do have a potential endogeneity problem. This confirms our previous discussion on how the regulators actually detect insider trading; they are unlikely to look at a person's income or wealth when it comes to detecting insider trading. This is good news for our rare events logit test; we have not been able to find and neither were we able to devise a suitable IV version of this test.

Tables 3 and 4, which document the main result of our paper – indicted insider traders are more likely to be "richer" top management – do not control for the expected benefits of illegal insider trading. We need to do this, because the economic analysis of crime suggests that illegal insider trading increases

with the expected benefits of illegal insider trading. To explicitly control for the expected benefits of insider trading, we narrow our sample to mergers and acquisitions. As M&A negotiations take time, we assume that the price of a target is known at least a month in advance. This implies that the return in the target price from a month before the announcement to the day after the announcement is the private information of insiders. This return is the temptation, the expected benefit, of illegal insider trading of buying the target stock a month before the announcement and selling it the day after the announcement. We estimate this return as the cumulative abnormal return (CAR) of the target firm from day -30 to day +1, where day 0 is the announcement date. We analyze all target firms, whether they are involved in the indictments or they are not.

Table 6 shows the results of the same set of probit regressions found in Table 3 with the CAR computed above as an additional control variable. We find that our big result from Table 3 – compensation and wealth is positively linked to the probability of being indicted as an illegal insider trader – disappears after we control for this expected benefit and the other control variables used in Table 3. We suspect the reason for no statistical significance in our probit test in Table 6 is our small sample size of 9, and the fact that probit underestimates rare events. To rectify this, Table 7 estimates the same set of rare events logit regressions found in Table 4 with the CAR computed above as an additional control variable. We find that our big result from Table 4 – compensation and wealth is positively linked to the probability of being indicted as an illegal insider trader – reappears. Only in column (5), it does not reappear, but that is probably because of a very small sample size (only 7 of our executives in the M&A sample who have been indicted for insider trading had an age variable.)

In both tables 6 and 7, we notice that the probability of being indicted as an illegal insider trader increases with CAR. This is evidence in support of one testable hypothesis from the economic view of crime – illegal insider trading is more likely if, everything else constant, the benefit of insider trading increases.

Tables 3, 4 and 7, therefore, provide evidence against the main testable implication of this paper: if the decision to do illegal insider trading is economically rational in the Becker (1968) sense, we should

observe "poorer" top management being caught doing illegal insider trading more than "richer" top management, holding everything else constant. We actually observe the "richer" top management being caught doing illegal insider trading.

5. Conclusion

We explore the rationality of illegal insider trading as a white-collar crime in this paper. If white-collar crime is an economically rational activity in the sense of Becker (1968), where the potential offender computes the costs and the benefits before committing the crime, we should see "poorer" top management committing the most insider trading crimes. This is because their benefits are higher (an extra dollar means more to them) and their costs (present value of foregone future compensation if caught is lower for them) are lower than "richer" top management.

Using a sample of all top management who were indicted for insider trading in the United States for trades during the period 1989-2002, we find, however, that indictments are concentrated in the "richer" strata after we control for firm characteristics like size, industry and growth opportunities, executive age, control for the opportunities available for illegal insider trading, and control for the possibility that the regulators target the "richer" strata.

So, do they do it for the money? They may, but it does not seem to be the primary motive. Then why do they do it? Psychological motives (like hubris) or sociological motives (like company culture, or because others do it (see Cheng, 2009)) may lie behind the white-collar crime of insider trading. A deeper exploration of these motives is beyond the scope of this paper. We leave that for future research.

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Table 1

Firms with an indicted top manager versus all Compustat firms

Panel A: The sample consists of 41 firms which had a top executive indicted for insider trading for whom we have compensation measures. Top executives are defined as being one of the top five paid executives at their firm. The trading period for these insiders ranges from January 1989 through December 2002. The benchmark is all firms in Compustat from 1989 through 2002. All firm characteristics are measured as of the fiscal year end t-1, where year t is the year the executive illegally traded. The percentile rank is the rank of the sample firm in all firms in Compustat in that year. Assets (Data6) and Sales (Data12) are measured in millions of dollars. ROE (Data18/Data60) is the return on equity. ROA (Data18/Data6) is the return on assets. MTB (((Data25*Data199)+(Data6-Data60))/Data6) is the ratio of the market value of equity plus book value of debt divided by the book value of assets. Leverage ((Data9+Data34)/Data6) is long term debt plus current liabilities divided by assets. T-tests and Sign tests both test the null hypothesis that the percentile rank is equal to 50. P-Values are in parenthesis.

Panel A: Descriptive Statistics

Variable	Mean	Median	Std Dev	(Sample) (Sample/Benchmark)
Assets (millions)	2505.537	193.953	7431.759	41
Assets (Percentile Rank)	54.24	58.00	27.15	41/169,825
T-Test/Sign Test for Percentile Rank = 50	(0.3229)	(0.4296)		
Sales (millions)	1531.003	154.047	4270.281	41
Sales (Percentile Rank)	56.29	63.00	26.51	41/169,825
T-Test/Sign Test for Percentile Rank = 50	(0.1364)	(0.1173)		
ROE	0.104	0.069	1.041	41
ROE (Percentile Rank)	48.24	44.00	27.91	41/169,825
T-Test/Sign Test for Percentile Rank = 50	(0.6892)	(0.7552)		
ROA	-0.032	0.022	0.179	41
ROA (Percentile Rank)	53.41	56.00	29.07	41/169,825
T-Test/Sign Test for Percentile Rank = 50	(0.4564)	(0.7552)		
MTB	1.824	1.702	0.807	41
MTB (Percentile Rank)	63.32	72.00	26.37	41/169,825
T-Test/Sign Test for Percentile Rank = 50	(0.0024)	(0.0015)		
Leverage	0.310	0.277	0.263	41
Leverage (Percentile Rank)	55.41	61.00	29.17	41/169,825
T-Test/Sign Test for Percentile Rank = 50	(0.2417)	(0.3489)		

22

Panel B: The top ten two-digit SIC code categories are provided for the sample of 41 firms which had a top executive indicted for insider trading in the period 1989-2002. These same ten two-digit SIC codes are also provided for Compustat firms during 1989-2002. The difference in SIC code distribution is tested between the two groups using the Pearson's Chi-Square Test Statistic.

Panel B: Industry Composition
Inside Traders

Two-Digit SIC Code Description	SIC Code	% of Firms
Business Services	73	17.07%
Industrial Machinery and Equipment	35	12.20%
Chemicals and Allied Products	28	7.32%
Instruments and Related Products	38	4.88%
Rubber and Miscellaneous Plastic Products	30	4.88%
Non-Depository Institutions	61	4.88%
Communication	48	4.88%
Electric, Gas, and Sanitary Services	49	4.88%
Wholesale Trade - Durable Goods	50	4.88%
Miscellaneous Retail	59	4.88%
Number of Firms		41

Compustat

Two-Digit SIC Code Description	SIC Code	% of Firms
Business Services	73	9.57%
Industrial Machinery and Equipment	35	5.59%
Chemicals and Allied Products	28	6.00%
Instruments and Related Products	38	5.37%
Rubber and Miscellaneous Plastic Products	30	1.09%
Non-Depository Institutions	61	1.49%
Communication	48	3.59%
Electric, Gas, and Sanitary Services	49	4.58%
Wholesale Trade - Durable Goods	50	2.42%
Miscellaneous Retail	59	1.59%
Number of Firms		169,825

Chi-Square Test	Value	P-Value
	9.590	(0.3847)

Table 2
Matched Sample
Firms with an indicted top manager matched to a Compustat Firm

This sample consists of all indicted insider traders with compensation information who could be matched to an executive of a Compustat firm. These 49 executives are those that could be matched to a Compustat firm out of the original 52 executives. The indicted insider firm was matched to a Compustat firm based on year, two-digit Sic code, and size (measured by assets). The executive was then matched to an executive of the matching firm based on title. Salary is measured in thousands, total cash pay consists of salary plus bonus and is measured in thousands. TDC1 consists of salary, plus bonus, plus other annual compensation, plus the total value of restricted stock grants, plus long term incentive payouts, plus all other compensation, plus the total value of stock option grants (measured by the company). The measure of TDC1 provided by Execucomp used the Black-Scholes method to value option grants and we use the value of option grants as measured by the company. TDC2 is the same as TDC1 except for replacing option grants with the value of options exercised. P-values are in parenthesis.

Compensation Measure Insiders	Mean	Median	Std Dev	N
Salary ($ Thousands) Insiders	318.575	225.646	253.457	49
Salary ($ Thousands) Matched Sample	296.56	244.44	201.97	49
Salary Difference	22.0129			49
P-Value of Difference	(0.4395)			
Total Cash Pay ($ Thousands) Insiders	739.880	398.700	1,060.643	49
Total Cash Pay ($ Thousands) Matched Sample	514.81	303.00	539.51	49
Total Cash Pay Difference	225.0703			49
P-Value of Difference	(0.0527)			
TDC1 ($ Thousands) Insiders	3,109.234	892.761	5,751.568	49
TDC1 ($ Thousands) Matched Sample	1730.32	576.40	3966.83	49
TDC1 Difference	1378.9158			49
P-Value of Difference	(0.0470)			
TDC2 ($ Thousands) Insiders	4,081.499	658.175	12,463.518	49
TDC2 ($ Thousands) Matched Sample	873.57	473.57	1125.37	49
TDC2 Difference	3207.9322			49
P-Value of Difference	(0.0621)			

Table 3

Probit: Determinants of the probability of being indicted for illegal insider trading

The samples in these regressions consist of the top executives indicted for insider trading for which we were able to collect compensation information. There are 52 indicted executives in equations with Total Cash Pay, 50 indicted executives with TDC1, 51 indicted executives with TDC2, and 49 indicted executives with Wealth. The trading period for these insiders ranges from January 1989 through December 2002. The group of non indicted executives consists of all executives in Execucomp whose compensation has been averaged over three year periods to match the structure of the indicted executives' compensation. A probit specification is used in these regressions where the dependent variable is equal to 1 if the executive is an executive indicted for insider trading and 0 for all other executives. The compensation measures are computed as a three year average over the periods t-1, t-2, and t-3 where year t is the year in which the executive illegally traded. All compensation variables are measured in millions. Total cash pay consists of salary plus bonus. TDC1 consists of salary, plus bonus, plus other annual compensation, plus the total value of restricted stock grants, plus long term incentive payouts, plus all other compensation, plus the total value of stock option grants (measured by the company). The measure of TDC1 provided by Execucomp used the Black-Scholes method to value option grants and we use the value of option grants as measured by the company. TDC2 is the same as TDC1 except for replacing option grants with the value options exercised. Wealth is the value of beneficial shares owned, plus the value of unexercised options that are exercisable and unexercisable as of year t-1. Assets are measured in year t-1. CEO equals 1 if the executive is a CEO. Age is not available for all executives in Execucomp which is why the number of observations falls in specification 5. Standard Errors are clustered at the firm level. P-Values are in parenthesis.

Variables	1	2	3	4	5
Intercept	-1.0633	-2.0145	-0.9056	-0.9024	-0.6315
	(0.1690)	(0.0010)	(0.1640)	(0.2820)	(0.3530)
Total Cash Pay	0.0187				
	(0.1110)				
TDC1		0.0037			0.0032
		(0.0010)			(0.0100)
TDC2			0.0096		
			(0.0001)		
Wealth				0.000031	
				(0.0020)	
Market-To-Book	0.0598	0.0741	0.0414	0.0422	0.0423
	(0.5510)	(0.4940)	(0.7090)	(0.7180)	(0.7280)
Size (LnAssets)	-0.2320	-0.2248	-0.2470	-0.2252	-0.2150
	(0.0001)	(0.0010)	(0.0001)	(0.0001)	(0.0030)
CEO	0.4738	0.4268	0.3706	0.3833	0.1579
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.2000)
Age					-0.0187
					(0.0050)
Industry	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
Clustered S.E.	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.1646	0.1566	0.1590	0.1490	0.1486
Individual-Firm-Year Observations	65,488	56,159	52,971	49,552	22,596

Table 4
Rare Events Logit: Determinants of the probability of being indicted for illegal insider trading

The samples in these regressions consist of the top executives indicted for insider trading for which we were able to collect compensation information. There are 52 indicted executives in equations with Total Cash Pay, 50 indicted executives with TDC1, 51 indicted executives with TDC2, and 49 indicted executives with Wealth. The trading period for these insiders ranges from January 1989 through December 2002. The group of non indicted executives consists of all executives in Execucomp whose compensation has been averaged over three year periods to match the structure of the indicted executives' compensation. The dependent variable is equal to 1 if the executive is an executive indicted for insider trading and 0 for all other executives. Since there are significantly more 0s than 1s in the sample, a rare events logit is estimated generating approximately unbiased and lower-variance estimates of the logit coefficients. The compensation measures are computed as a three year average over the periods t-1, t-2, and t-3 where year t is the year in which the executive illegally traded. All compensation variables are measured in millions. Total cash pay consists of salary plus bonus. TDC1 consists of salary, plus bonus, plus other annual compensation, plus the total value of restricted stock grants, plus long term incentive payouts, plus all other compensation, plus the total value of stock option grants (measured by the company). The measure of TDC1 provided by Execucomp used the Black-Scholes method to value option grants and we use the value of option grants as measured by the company. TDC2 is the same as TDC1 except for replacing option grants with the value options exercised. Wealth is the value of beneficial shares owned, plus the value of unexercised options that are exercisable and unexercisable as of year t-1. Assets are measured in year t-1. CEO equals 1 if the executive is a CEO. Age is not available for all executives in Execucomp which is why the number of observations falls in specification 5. Standard Errors are clustered at the firm level. P-Values are in parenthesis.

Variables	1	2	3	4	5
Intercept	0.2463	-2.2041	0.6477	0.6395	1.9487
	(0.9080)	(0.2760)	(0.7510)	(0.7930)	(0.3590)
Total Cash Pay	0.0584				
	(0.0240)				
TDC1		0.0127			0.0108
		(0.0001)			(0.0001)
TDC2			0.0291		
			(0.0001)		
Wealth				0.000181	
				(0.0001)	
Market-To-Book	0.1705	0.2045	0.0972	0.1010	0.0628
	(0.6380)	(0.6060)	(0.8090)	(0.0010)	(0.8790)
Size (LnAssets)	-0.8131	-0.7942	-0.8507	-0.7780	-0.7280
	(0.0001)	(0.0010)	(0.0001)	(0.0010)	(0.0040)
CEO	1.5209	1.3759	1.2105	1.2256	0.5771
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.1240)
Age					-0.0601
					(0.0040)
Industry	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
Clustered S.E.	Yes	Yes	Yes	Yes	Yes
Individual-Firm-Year Observations	65,488	56,159	52,971	49,552	22,596

Table 5

IVProbit: Determinants of the probability of being indicted for illegal insider trading using an instrumental variable for compensation

The samples in these regressions consist of the top executives indicted for insider trading for which we were able to collect compensation information and construct an instrumental variable. The instrumental variable was created as the next lowest paid executive in the same firm and year for each measure of compensation. Due to missing data, the regressions with Total Cash Pay have 48 indicted executives with an instrument (of which 8 use the next highest compensation,) the regressions with TDC1 have 45 indicted executives with an instrument (of which 7 use the next highest compensation,) the regressions with TDC2 have 47 indicted executives with an instrument (of which 10 use the next highest compensation), and the regressions with Wealth have 47 indicted executives with an instrument (of which 10 used the next highest compensation). These results are for the 2nd stage of an IVProbit where in the 1st stage the compensation measure is regressed on the instrumental variable and other exogenous variables (MTB, Size, Industry Dummies, Year Dummies) using OLS. The predicted values are then used in place of the actual compensation measure in the 2nd stage. The Wald Chi^2 test for exogeneity is reported at the bottom with the p-value where the null is that there is exogeneity or the error terms of the 1st and 2nd stage are not correlated. The trading period for the indicted insiders ranges from January 1989 through December 2002. The group of non indicted executives consists of all executives in Execucomp whose compensation has been averaged over three year periods to match the structure of the indicted executives' compensation measures. The dependent variable is equal to 1 if the executive is an executive indicted for insider trading and 0 for all other executives. The compensation measures are computed as a three year average over the periods t-1, t-2, and t-3 where year t is the year in which the executive illegally traded. All compensation variables are measured in millions. Total cash pay consists of salary plus bonus. TDC1 consists of salary, plus bonus, plus other annual compensation, plus the total value of restricted stock grants, plus long term incentive payouts, plus all other compensation, plus the total value of stock option grants (measured by the company). The measure of TDC1 provided by Execucomp used the Black-Scholes method to value option grants and we use the value of option grants as measured by the company. TDC2 is the same as TDC1 except for replacing option grants with the value options exercised. Wealth is the value of beneficial shares owned, plus the value of unexercised options that are exercisable and unexercisable as of year t-1. Assets are measured in year t-1. CEO equals 1 if the executive is a CEO. Age is not available for all executives in Execucomp which is why the number of observations falls in specification 5. P-Values are in parenthesis.

Variables	1	2	3	4	5
Intercept	-5.6020	-5.9506	-0.9547	-5.1633	-4.5412
	(0.0001)	(0.0001)	(0.0220)	(0.0001)	(0.0001)
Total Cash Pay (Predicted)	0.0330				
	(0.0400)				
TDC1 (Predicted)		0.0159			0.0155
		(0.0010)			(0.0010)
TDC2 (Predicted)			0.0160		
			(0.0001)		
Wealth (Predicted)				0.000027	
				(0.3620)	
Market-To-Book	0.1305	0.1370	0.1257	0.0588	0.1134
	(0.0860)	(0.0910)	(0.1200)	(0.4540)	(0.2110)
Size (LnAssets)	-0.2145	-0.2252	-0.2407	-0.2122	-0.2141
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
CEO	0.3601	0.2394	0.2173	0.2558	-0.0065
	(0.0001)	(0.0260)	(0.0420)	(0.0130)	(0.9570)
Age					-0.0198
					(0.0090)
Industry	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
Clustered S.E.	No	No	No	No	No
Individual-Firm-Year Observations	54,767	44,965	41,943	35,128	20,341
Wald Test of Exogeneity					
Chi^2 (1)	0.65	3.50	4.87	0.04	3.12
Prob>Chi^2	(0.4210)	(0.0615)	(0.0274)	(0.8434)	(0.0774)

Table 6
Probit: Determinants of the probability of being indicted for illegal insider trading
in a merger and acquisition event

The samples in these regressions consist of the 9 top executives indicted for insider trading for which we were able to collect compensation information. These executives also traded on information relating to a merger or acquisition. The trading period for these insiders ranges from January 1989 through December 2002. The group of non indicted executives consists of all executives in Execucomp whose firm was involved in a merger or acquisition and whose compensation has been averaged over three year periods to match the structure of the indicted executives' compensation. A probit specification is used in these regressions where the dependent variable is equal to 1 if the executive is an executive indicted for insider trading and 0 for all other executives. The compensation measures are computed as a three year average over the periods t-1, t-2, and t-3 where year t is the year in which the executive illegally traded. All compensation variables are measured in millions. Total cash pay consists of salary plus bonus. TDC1 consists of salary, plus bonus, plus other annual compensation, plus the total value of restricted stock grants, plus long term incentive payouts, plus all other compensation, plus the total value of stock option grants (measured by the company). The measure of TDC1 provided by Execucomp used the Black-Scholes method to value option grants and we use the value of option grants as measured by the company. TDC2 is the same as TDC1 except for replacing option grants with the value options exercised. Wealth is the value of beneficial shares owned, plus the value of unexercised options that are exercisable and unexercisable as of year t-1. Assets are measured in year t-1. Target return is the cumulative abnormal return of the target firm from 30 days before the M&A event announcement to one day after the announcement. CEO equals 1 if the executive is a CEO. Age is not available for all executives in Execucomp which is why the number of observations falls in specification 5. Standard Errors are clustered at the firm level. P-Values are in parenthesis.

Variables	1	2	3	4	5
Intercept	-1.0670	-1.2560	-1.2208	-1.1019	-0.6107
	(0.2210)	(0.1410)	(0.2330)	(0.2190)	(0.6590)
Total Cash Pay	0.2478				
	(0.0010)				
TDC1		-0.0030			-0.0321
		(0.7780)			(0.2610)
TDC2			-0.0259		
			(0.5160)		
Wealth				0.000017	
				(0.1550)	
Target Return	2.5843	2.6344	2.6542	2.6390	3.4751
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
MTB	-0.4575	-0.4451	-0.4400	-0.4618	-0.5456
	(0.0490)	(0.0560)	(0.0640)	(0.0430)	(0.1330)
Size (LnAssets)	-0.3626	-0.3032	-0.2975	-0.3129	-0.3161
	(0.0001)	(0.0001)	(0.0001)	(0.0010)	(0.0030)
CEO	0.1952	0.2457	0.2331	0.1851	(0.3481)
	(0.4960)	(0.3640)	(0.4000)	(0.4850)	(0.2580)
Age					0.0099
					(0.5400)
Industry	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
Clustered S.E.	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.3883	0.3842	0.3874	0.3885	0.4505
Individual-Firm-Year Observations	14,240	12,077	11,369	10,706	4,892

Table 7

Rare Events Logit: Determinants of the probability of being indicted for illegal insider trading in a merger and acquisition event

The samples in these regressions consist of the 9 top executives indicted for insider trading for which we were able to collect compensation information. These executives also traded on information relating to a merger or acquisition. The trading period for these insiders ranges from January 1989 through December 2002. The group of non indicted executives consists of all executives in Execucomp whose firm was involved in a merger or acquisition and whose compensation has been averaged over three year periods to match the structure of the indicted executives' compensation. The dependent variable is equal to 1 if the executive is an executive indicted for insider trading and 0 for all other executives. Since there are significantly more 0s than 1s in the sample, a rare events logit is estimated generating approximately unbiased and lower-variance estimates of the logit coefficients. The compensation measures are computed as a three year average over the periods t-1, t-2, and t-3 where year t is the year in which the executive illegally traded. All compensation variables are measured in millions. Total cash pay consists of salary plus bonus. TDC1 consists of salary, plus bonus, plus other annual compensation, plus the total value of restricted stock grants, plus long term incentive payouts, plus all other compensation, plus the total value of stock option grants (measured by the company). The measure of TDC1 provided by Execucomp used the Black-Scholes method to value option grants and we use the value of option grants as measured by the company. TDC2 is the same as TDC1 except for replacing option grants with the value options exercised. Wealth is the value of beneficial shares owned, plus the value of unexercised options that are exercisable and unexercisable as of year t-1. Assets are measured in year t-1. Target return is the cumulative abnormal return of the target firm from 30 days before the M&A event announcement to one day after the announcement. CEO equals 1 if the executive is a CEO. Age is not available for all executives in Execucomp which is why the number of observations falls in specification 5. Standard Errors are clustered at the firm level. P-Values are in parenthesis.

Variables	1	2	3	4	5
Intercept	-0.6119	0.9303	-0.8631	-1.4080	-1.1964
	(0.8590)	(0.7840)	(0.8390)	(0.6850)	(0.7960)
Total Cash Pay	0.8994				
	(0.0010)				
TDC1		0.8051			0.1465
		(0.0001)			(0.1370)
TDC2			0.5796		
			(0.0001)		
Wealth				0.000315	
				(0.0001)	
Target Return	5.7092	5.4549	5.7471	5.6202	5.6222
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
MTB	-0.9441	-1.2513	-1.0546	-0.8545	-0.6578
	(0.2220)	(0.0850)	(0.1490)	(0.2190)	(0.6000)
Size (LnAssets)	-0.8163	-1.0027	-0.7427	-0.5875	-0.5094
	(0.0250)	(0.0030)	(0.0390)	(0.0920)	(0.0550)
CEO	0.5160	-0.4834	0.3870	0.6392	-0.6809
	(0.5490)	(0.5530)	(0.6440)	(0.4240)	(0.5110)
Age					0.0205
					(0.7040)
Industry	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
Clustered S.E.	Yes	Yes	Yes	Yes	Yes
Individual-Firm-Year Observations	14,240	12,077	11,369	10,706	4,892