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# **The Effect of the Options Backdating Scandal on the Stock-Price Performance of 110 Accused Companies**

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**THE EFFECT OF THE OPTIONS BACKDATING SCANDAL ON THE STOCK-  
PRICE PERFORMANCE OF 110 ACCUSED COMPANIES.**

December 21, 2006

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## **Abstract**

Since academic scholars and the Wall Street Journal reported widespread evidence indicating that option grants to executives were backdated, an avalanche of news stories followed documenting this ever-widening corporate scandal. In this study we ask: “How do disclosures of backdating affect shareholder value?” We closely examine 110 companies listed in the Wall Street Journal’s Perfect Payday webpage, collecting all news stories related to options backdating. We find that shareholders of these 110 companies suffer significant stock-price declines, ranging between 20% and 50% on average. Moreover, these losses do not seem to be due to temporary overreactions (at least so far). The negative 20% abnormal return translates into total dollar losses of well over \$100 billion. The negative 50% abnormal return translates to approximately one-quarter trillion dollars of lost shareholder value. There is no evidence that this decline is driven by temporary overreaction, judging by the average performance of these 110 companies over a nearly 2 year period. We are aware of no analysts, scholars or commentators predicting that such massive losses in shareholder value would result from options backdating problems.

## Introduction

Since academic scholars and the Wall Street Journal reported widespread evidence indicating that option grants to executives were backdated, an avalanche of news stories followed documenting this ever-widening corporate scandal. The option-backdating scandal is remarkable for several reasons.

First, option backdating is plainly unethical corporate behavior, whereby executives secretly backdate option grants to obtain a lower exercise price making their options more valuable when exercised in the future. There can be no legitimate reason for such practice.

Second, this shockingly self-interested conduct is attributable to top executives, including CEOs, CFOs, general counsels and sometimes directors. These are the very people responsible for conducting the company's most important affairs.

Third, this growing scandal has implicated over 115 publicly-traded companies, including large and small, high-tech and low-tech, and has been going on since at least 1995 in many cases. The scandal truly reveals an epidemic of abuse by top managers.

Also, the backdating scandal is most ironic, because stock options have become popular relatively recently, and have attracted much criticism for the huge headline-grabbing financial windfalls they often generate for top executives. These windfall gains have been vigorously defended by executives and academics as being the best way to align the incentives of executives with those of shareholders.

How ironic, therefore, that these purportedly incentive-aligning grants have long been so widely (and secretly) abused so as to generate even larger financial windfalls when exercised. Apparently, options do not always work to perfectly align incentives for all executives. Instead, options have provided the means for many unscrupulous executives to steal millions of dollars from their shareholders.

The avalanche of stories has been led by the Wall Street Journal, which keeps a running tally companies that, due to their option grants practices, are either under SEC and/or DOJ investigations, have restated earnings or admitted that a restatement will be

necessary, and/or have had executives or directors depart.<sup>1</sup> These stories have provided readers with all kinds of timely and factual information related to options backdating, including the effects of backdating on accounting earnings, SEC filings, tax payments and penalties, civil and criminal litigation, as well as the reported costs for the hundreds of lawyers and accountants working on the scandal.

What is missing, however, is a study of the effects of the backdating scandal on the stock prices of the affected firms. We are aware of no systematic study measuring the effects of these backdating disclosures on shareholder wealth. Some analysts have speculated that the stock-price impact of option-backdating news is not expected to be significantly negative, and that any observed declines are likely the result of temporary overreaction by uninformed investors. Although the fallout from options backdating often involves restating earnings downward, these analysts note that the effect on cash flows should be small relative to the dollar value of the company's equity. Unlike conventional stock fraud, where much of the reported earnings and cash flows turn out to be artificial, options backdating would seem to usually result in accounting restatements involving a relatively insignificant negative effect on actual cash flows.

We decided to test directly whether the stock-price impact of options backdating disclosures is insignificant and/or temporary. In this study we ask: "How do disclosures of backdating affect shareholder value?" We closely examine 110 companies listed by the Wall Street Journal's Perfect Payday webpage as of September 30, 2006, collecting all news stories related to options backdating through November 15, 2006. We then measure the stock price movements (risk-adjusted, net of the market) for the firms' stocks in two ways. First, we measure the risk-adjusted, net-of-market movement of stock prices on days immediately surrounding the disclosure dates for these various events.

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<sup>1</sup> The academic community has admirably led the way in uncovering this scandal using ingenious statistical tests on data made available by SEC disclosure rules for public companies. Professor Erik Lie of the University of Iowa published a now-famous paper in May 2005 for *Management Science*, and more recently has published a follow-up paper in the *Journal of Financial Economics*. This is not the first time academic scholars have uncovered shocking conduct that had escaped detection by their regulators. Shultz's famous study on the absence of odd-eighths using NASDAQ data on bid-ask spreads in 1991 for the 50 largest companies set in motion events that eventually led to a total overhaul of the regulation of NASDAQ, a multi-billion dollar payment by Wall Street market making firms and the rapid movement to pricing in decimals of hundredths rather than the odd-eighths that traders had been gaming for their profit.

Second, we measure the risk-adjusted, net-of-market movement of stock prices from May 16, 2005, the date Erik Lie's research was published, through November 15, 2006.<sup>2</sup>

We find that shareholders of these 110 companies suffer significant stock-price declines of between 20% and 50%. Moreover, there is no evidence that the stock price declines recover, at least so far. So, evidently these declines are not due to temporary investors' overreactions. By our first measure, the average cumulative risk-adjusted, net-of-market decline exceeds 20%, averaged over the 110 companies measured over at least 40 days. By the second measure, which spans a longer period of time, the average cumulative risk-adjusted, net-of-market decline is over 50% through November 15, 2006.

These are huge shareholder wealth losses. The 20% loss translates to total dollar losses of well over \$100 billion. The 50% loss translates to approximately one-quarter trillion dollars of lost shareholder value. There is no evidence that this decline is a temporary overreaction, judging by the average performance of these 110 companies over a nearly 2 year period. We are aware of no analysts, scholars or commentators predicting that such massive losses in shareholder value would result from options backdating problems.

In the following section, we explain in detail some of the analysis that we have performed so far. We document the stock-price declines and attempt to shed light on the possible causes for these surprisingly large wealth effects. We conclude by discussing the additional research that we are currently conducting, as we struggle to understand what accounts for these large stock-price declines.

### Stock-Price Study

First, for the 110 companies reported in the Wall Street Journal's Perfect Payday webpage as of September 30, 2006, we attempt to gather pre-2005 option grant data from SEC filings in compliance with Section 16(a) requirements.<sup>3,4</sup> These data contain option

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<sup>2</sup> Professor Lie's article appeared in the May 2005 issue of *Management Science*. We arbitrarily use May 16, 2005 as our event date. However, our results are robust, and could use the first or last trading day during that same month.

<sup>3</sup> There are 115 firms listed in Perfect Payday as of September 30, 2006. We discarded 2 firms that were owned by foreign companies, 2 firms with no stock price data, and 1 firm for which we found no news.

grants to officers and directors of publicly traded firms. We restrict our attention to options whose *stated* grant date is prior to January 1, 2005. The sample is limited to grants where the insider position (CEO, CFO, etc.) is reported. The final sample contains a total of 103 firms. Then, as shown in Table 1, we independently gather news stories in which these 103 companies disclose that: 1) the company has initiated internal reviews (90 companies); 2) the SEC (81 companies) and/or the Department of Justice (48 companies) has initiated an investigation of options granting practices; 3) the company's directors and management have been sued over option granting practices by class-action shareholder lawyers (67 companies); 4) the company will have to restate past earnings reports due to backdated options (67 companies); 5) the company received a delisting notice or warning from its trading exchange because scheduled earnings reports have been excessively delayed due to options backdating problems (48 companies); and/or 6) executives have been forced out of the company due to their alleged involvement in back dating option grants (31 companies).

For all 110 companies, we first compute the daily risk-adjusted, net-of-market returns, which is the difference between the actual return and the return that would be expected given that day's market return. The expected return is calculated based on the historical, statistical relation between the company's daily return and the stock market return. Thus, the net-of-market return measures the performance of the company after deducting the effects of the contemporaneous movement in the general stock market.

Then, we form an equally-weighted portfolio where each firm's returns are referenced to day 0, which is the date of the first disclosure about options backdating. We then go back 60 days before day 0, and cumulate the average risk-adjusted, net-of-market returns over the next 140 trading days, through 80 days after day 0. Chart 1 shows the results. The cumulative net-of-market average return is negative 15.7% as of day 0, and declines further to negative 25.9% by day +80.

We also hypothetically invest \$100 in an equally-weighted portfolio which earns the average risk-adjusted, net-of-market return for these 110 companies starting 60 days prior to day 0. Then, we measure how well the portfolio performs over 140 days through

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<sup>4</sup> We have included all Form 4 and Form 3 filings available through Thompson Financial Insider Filings.



day +80. Chart 2 shows what happens to our \$100 investment. Starting at day -60, the value of our portfolio declines to about \$94 as of day -20. It further declines to about \$85 by the day after the first disclosure. Moreover, the portfolio continues to decline as more options related news is disclosed for most of the companies, so that by day +80, the portfolio has declined to \$77.14, having lost almost \$23.

Chart 2 also shows that more than half of the total \$23 decline has already occurred by day 0. This is a striking example of “market anticipation.” Day 0 for this study is generally the first announcement by the company that it had options backdating issues. By this time, however, the market already anticipated that the company would likely lose significant shareholder value.

This highlights the importance of the statistical evidence put forth by the academic scholars showing how unlikely it was that many companies were playing by the rules when granting options. This evidence permitted market analysts to anticipate with remarkable accuracy exactly which companies would later prove to have deep legal problems regarding options. Although many companies so identified initially denied or downplayed the severity of these problems, the efficient market obviously was not so easily dissuaded. The companies we study had, on average, already experienced a decline of more than 15% during the three calendar months (approximately 60 trading days) prior to the company’s day 0 disclosure in this study.<sup>5</sup>

We decided to test further the extent of this apparent market anticipation. We calculated the risk-adjusted, net-of-market cumulative stock returns, averaged over all 110 firms, over a period starting 100 days prior to May 16, 2005, the day Erik Lie’s empirical study was published in *Management Science*, and ending on November 15, 2006. This period captures all of the events that comprised the event study that we discussed above. But, this time period also includes stock movements on all the non-disclosure days for these 110 firms.

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<sup>5</sup> Currently, we are researching the incidence of disclosures contained in analyst reports, both before and after a firm is publicly implicated. Analyst reports that warn investors of suspicious option grant dates before the firm publicly announces its complicity in the scandal, or is investigated by a regulatory authority, may explain that the market’s apparent early reaction.

Chart 3 shows that the average cumulative abnormal return averaged over the 110 companies begins to decline immediately, and continues to decline until it reaches negative 54.14% on November 15, 2006. Chart 4 shows the results of hypothetically investing \$100 in an equally-weighted portfolio of the 110 companies as of 100 days prior to May 16, 2005, and holding this portfolio through November 15, 2006. Chart 4 shows that our \$100 portfolio begins to decline immediately. Over the next 18 months, the \$100 initial investment sinks to \$57.77.

Therefore, the decline in value in Charts 1 and 2 of more than 15% by day 0 is clearly a result of market anticipation. The efficient market correctly anticipated which firms had a high likelihood of being identified for option backdating, so that by the time they entered the Wall Street Journal's Perfect Payday list, their stock prices had already declined about 15% on average. Moreover, Charts 3 and 4 confirm that there is no evidence that these stock-price declines are temporary. The evidence indicates that these declines of 25% by Charts 1 and 2, and 50% by Charts 2 and 3, represent permanent losses in shareholder value.

We also calculated the cumulative risk-adjusted, net-of-market return around each of the 409 unique disclosures for the 110 companies. We include 20 days before and after each news disclosure, in light of the evidence of pervasive market anticipation. If the disclosures are close enough to cause the event windows to overlap, we shorten the windows just enough to eliminate any overlapping days. The risk-adjusted, net-of-market return for each firm is then multiplied by the company's market value of equity prior to the first disclosure to obtain the measure of the total dollar loss in shareholder value, net of general market movements, attributable to the options related news disclosures for that company. We did this for all 110 companies in our own study.

The average cumulative risk-adjusted, net-of-market return is negative 20%, and the median cumulative return is negative 18.3%. These percentage declines translate into dollar losses averaging \$1 billion per company. In total, the risk-adjusted, net-of-market shareholder losses over these 110 companies exceed \$100 billion.

Moreover, the evidence indicates that this \$100 billion write-down of the market value of these firms is a lower-bound measure that focuses on the returns around the 409

news stories about option granting problems. Charts 3 and 4 indicate that this \$100 billion total is conservative. If we base losses on a 50% average loss, then the total shareholder losses will exceed one-quarter trillion dollars. This larger figure is probably closer to the true cost to shareholders, but we can conservatively conclude that losses are *at least* \$100 billion.

### What Accounts For The Large Stock-Price Declines?

It is important to note that this \$100 billion capital loss attributable to the option-backdating scandal cannot be accounted for by the ill-gotten gains to the beneficiaries of the backdated options. First, the market value of all executive options of these 110 firms is only 2% to 3% of the market value of the typical company. So even if all of the 2% to 3% represents ill-gotten gains, the 20% to 50% average net-of-market decline in share value is larger by several orders of magnitude. Moreover, the actual ill-gotten gains are only a relatively small fraction of the 2 to 3%, so the stock price declines are perhaps 50 times even the most generous estimates of ill-gotten gains.

Second, the practice of option backdating involves a fictitious grant date, but the actual exercise price is disclosed in the company's SEC filings. Therefore, investors have sufficient information to calculate the actual value of backdated options. The fraud occurs because firms misreport the actual grant date. Given the reported exercise price and ignoring the tax-related consequences of backdating, however, the value of the backdated grants is always public information for these 110 companies.

Clearly, accounting earnings are overstated by treating in-the-money options at grant as if they were at-the-money, because firms do not have to recognize any option-related charges. However, absent taxes, the actual cash value of the executive options is always verifiable, whether the options have been backdated or not. Presumably, in an efficient market, the stock prices of these 110 firms reflect the actual value of executive options despite having been ignorant about any backdating. Moreover, because many executives have reimbursed their companies for ill-gotten gains from backdated options, the cash flow implications related to ill-gotten gains are further reduced. So, ill-gotten gains cannot explain hardly any of this \$100 billion aggregate loss.

Nor can this \$100 billion shareholder loss be explained by out-of-pocket costs to these companies in the form of additional tax payments, or the cost of lawyers, accountants, and consultants that these companies must pay as a result of option backdating investigations, restatements, and litigation. While it is reasonable to project that these would be in the tens of millions of dollars, as they often are, our research shows that the aggregate losses in shareholder value are a substantial multiple of even the most generous high-end estimates of the costs of the additional taxes and services attributable to backdating of options.

Although we cannot point to any obvious *direct* cash flow effect that would justify the huge capital losses suffered by shareholders, our analysis of the sample of 103 backdating firms described earlier does show that some news events are associated with larger *total* shareholder losses than are other news events (see Table 1). The 67 companies announcing that earnings must be restated suffered 26.9% net-of-market shareholder loss, compared with an 11.4% shareholder loss for the 36 companies not announcing that earnings must be restated.

The largest differential, however, comes from the 31 companies that fired top executives, which lost 33.7% compared with a 16.2% average loss over the 72 companies not announcing any executive firings. Once again, controlling for endogeneity, we find that firms are significantly more likely to have at least one officer or director depart due to backdating when they experience larger percentage losses, whereas the latter do not depend significantly on whether an officer or director leaves the company.

Companies announcing a Department of Justice investigation are associated with a greater loss to shareholders than are companies announcing SEC investigations. Also, not surprisingly, the 67 companies hit with shareholder lawsuits have larger shareholder losses than do the 36 companies that have not been sued so far.

Although none of these differentials can be used to support the direction of any hypothesized causation, the large differences indicate that the market is impounding important information through most of the 409 news stories in this study.

Although, we continue to investigate the various potential cash flow explanations for these large losses, it appears unlikely that these large losses will be found to reflect

declines in expected future cash flows. Rather, we hypothesize that the large shareholder losses largely reflect increased agency costs, which Jensen and Meckling posited as the total cost to shareholders of controlling their agents (management), plus the loss in residual value due to any remaining misalignment of management-shareholder incentives.<sup>6</sup> We theorize that the options backdating scandal presents researchers with an ideal laboratory experiment on the magnitude of agency costs when the current system, whereby shareholders attempt to control management, is shown to be ineffective.

### Conclusion

We find that the 409 options backdating news stories are associated with net-of-market stock returns of negative 20% to 25%, averaged over the 110 companies identified in the Wall Street Journal's Perfect Payday webpage as of September 30, 2006. When we measure the net-of-market stock returns of these 110 companies over the period starting 100 days prior to March 15, 2005 (when Erik Lie's option backdating research paper was published) through November 15, 2006, the evidence indicates losses of 40% to 50% of market value of equity.

In dollar terms, we estimate based on this study of 110 firms that \$100 billion to \$250 billion of shareholder value has been wiped out due to events connected to options backdating. These losses are much larger than have been predicted by commentators. The losses are much larger than any cash flow oriented explanation that we have reviewed so far. For example, ill-gotten gains would account for less than 2% of the \$100 billion losses estimate. Although many companies must restate earnings downward, the cash flow revisions, which are mainly due to additional taxes and penalties, plus the costs of consultants and lawyers, are small compared to the \$100 billion loss.

Because options backdating is so blatantly wrong and corrupt, and the practice usually involves the company's top executives and even directors, the agency costs of a publicly traded company increases dramatically on any news of such a scandal.

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<sup>6</sup> "We define agency costs as the sum of: (1) the monitoring expenditures by the principal, (2) the bonding expenditures by the agent, (3) the residual loss." Jensen, Michael C., and Meckling, William H., "Theory of the Firm: Managerial Behavior, Agency costs and Ownership Structure," *Journal of Financial Economics*, Volume 3, No. 4, October 1976, page 308.

Increased agency costs means that the cost of equity capital will increase significantly, as the marketplace discounts the increased riskiness of investing in the stock of afflicted firms. This would explain why stock prices decline so much even though future cash flows are not much affected by options backdating. Agency costs reduce stock prices by causing discount rates to increase, rather than affecting future cash flows from operations. We are working on tests of this agency cost explanation, and plan to present a more comprehensive study in the near future.

## About the Authors

### Gennaro Bernile

Professor Bernile recently obtained his Ph.D. in Finance from the William E. Simon Graduate School of Business Administration at the University of Rochester. He has been an Assistant Professor of Finance at the University of Miami's School of Business Administration since 2005.

### Gregg Jarrell

Professor Jarrell is a former Chief Economist of the U.S. Securities and Exchange Commission in Washington, D.C. (1983 – 1986). He has been Professor of Economics and Finance at the William E. Simon Graduate School of Business Administration at the University of Rochester since 1989. Professor Jarrell has testified in hundreds of cases as an expert witness in financial-economics and regulatory issues and cases.

### Howard Mulcahey

Mr. Mulcahey received his M.B.A in Finance from the William E. Simon Graduate School of Business Administration at the University of Rochester in 1994. He has over 24 years of experience in finance and business management, having served as CFO and in other senior management positions. He is Vice President of Forensic Economics, Inc., where he has been an economics and finance consultant since 2001. Mr. Mulcahey has worked on dozens of cases with Professor Jarrell and other experts, and has served as the expert.

**TABLE 1**

**Comparing Net-of-Market Returns for Sub-Samples  
of the 103 Companies, Broken Down by Seven Kinds of Events**

		<b>Internal Review</b>	<b>Financial Restatement</b>	<b>Shareholder Lawsuit</b>	<b>Executives Fired</b>	<b>Company Delisted</b>	<b>DOJ Investigation</b>	<b>SEC Investigation</b>
<b>Yes</b>	<b>CAR</b>	-20.5%	-26.9%	-25.9%	-33.7%	-28.0%	-29.3%	-23.4%
	<b>N</b>	90	67	67	31	48	48	81
<b>No</b>	<b>CAR</b>	-28.7%	-11.4%	-13.3%	-16.2%	-15.8%	-14.7%	-14.6%
	<b>N</b>	13	36	36	72	55	55	22
<b>Yes - No</b>	<b>Diff</b>	8.2%	-15.5%	-12.6%	-17.5%	-12.2%	-14.6%	-8.8%

**Notes:**

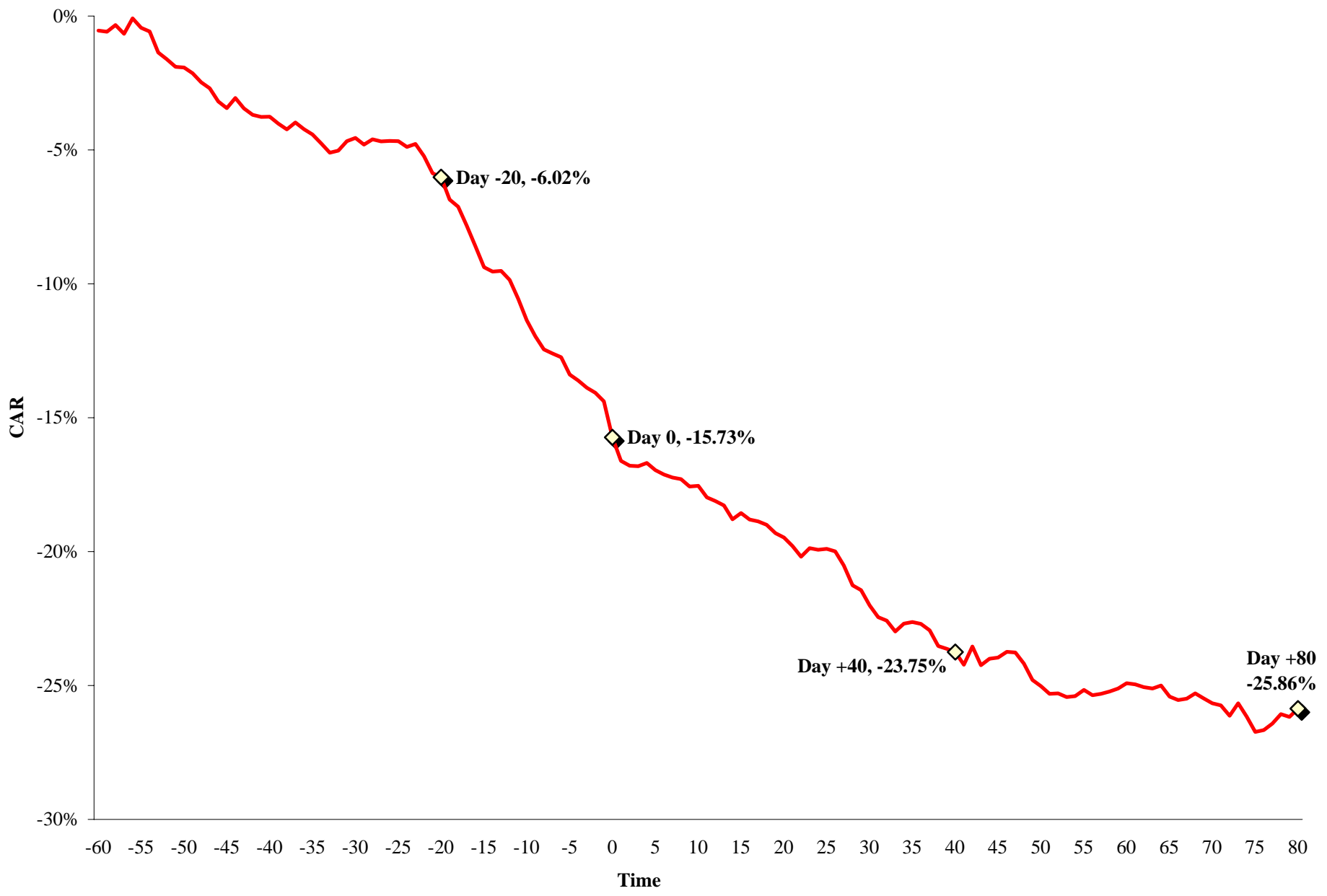
CAR = Cumulative Abnormal Return over -20 to +20 for all news events.

N = Number of companies "Yes" or "No".

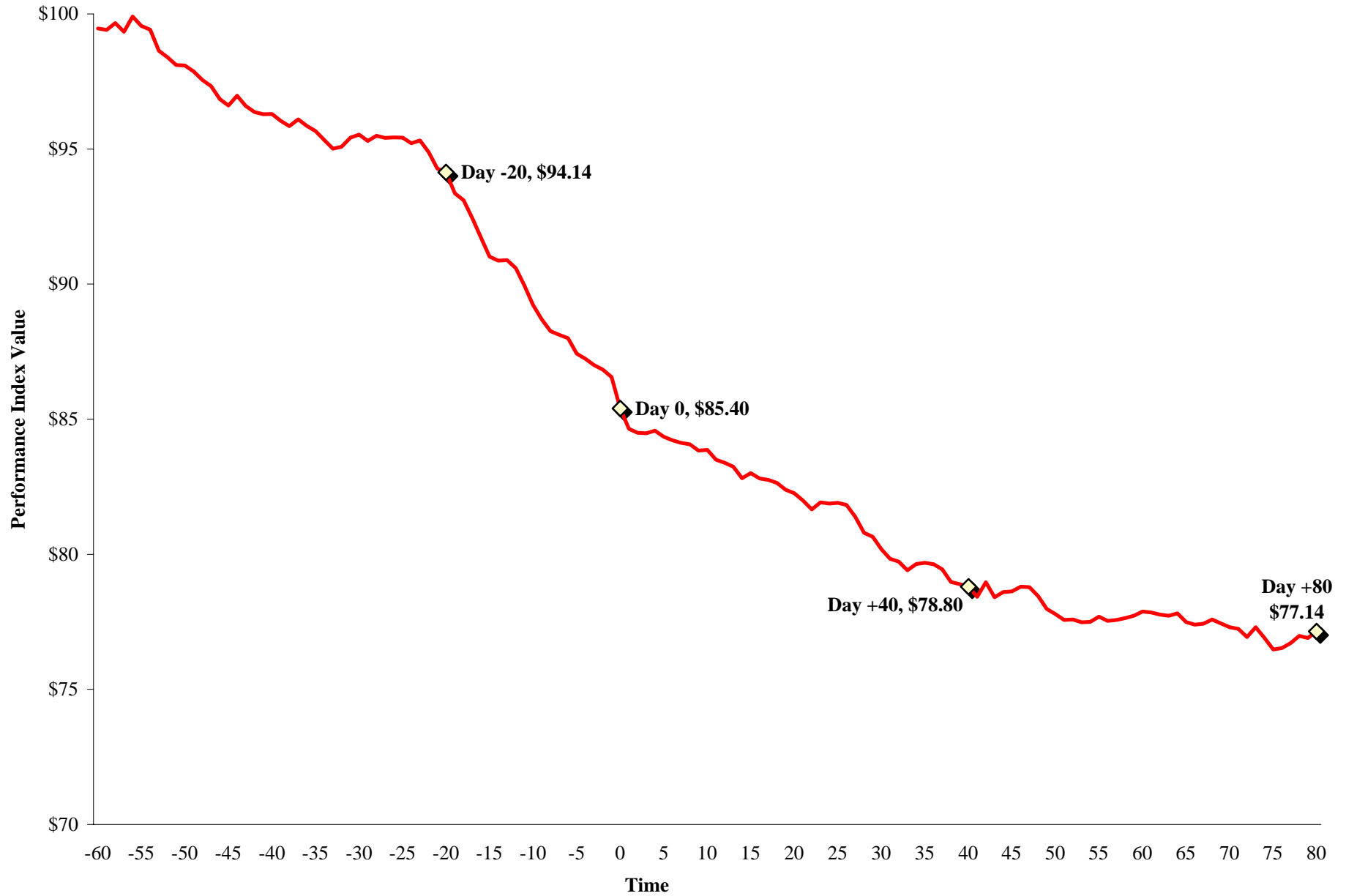
Diff = CAR average for "Yes" companies minus CAR average for "No" companies.



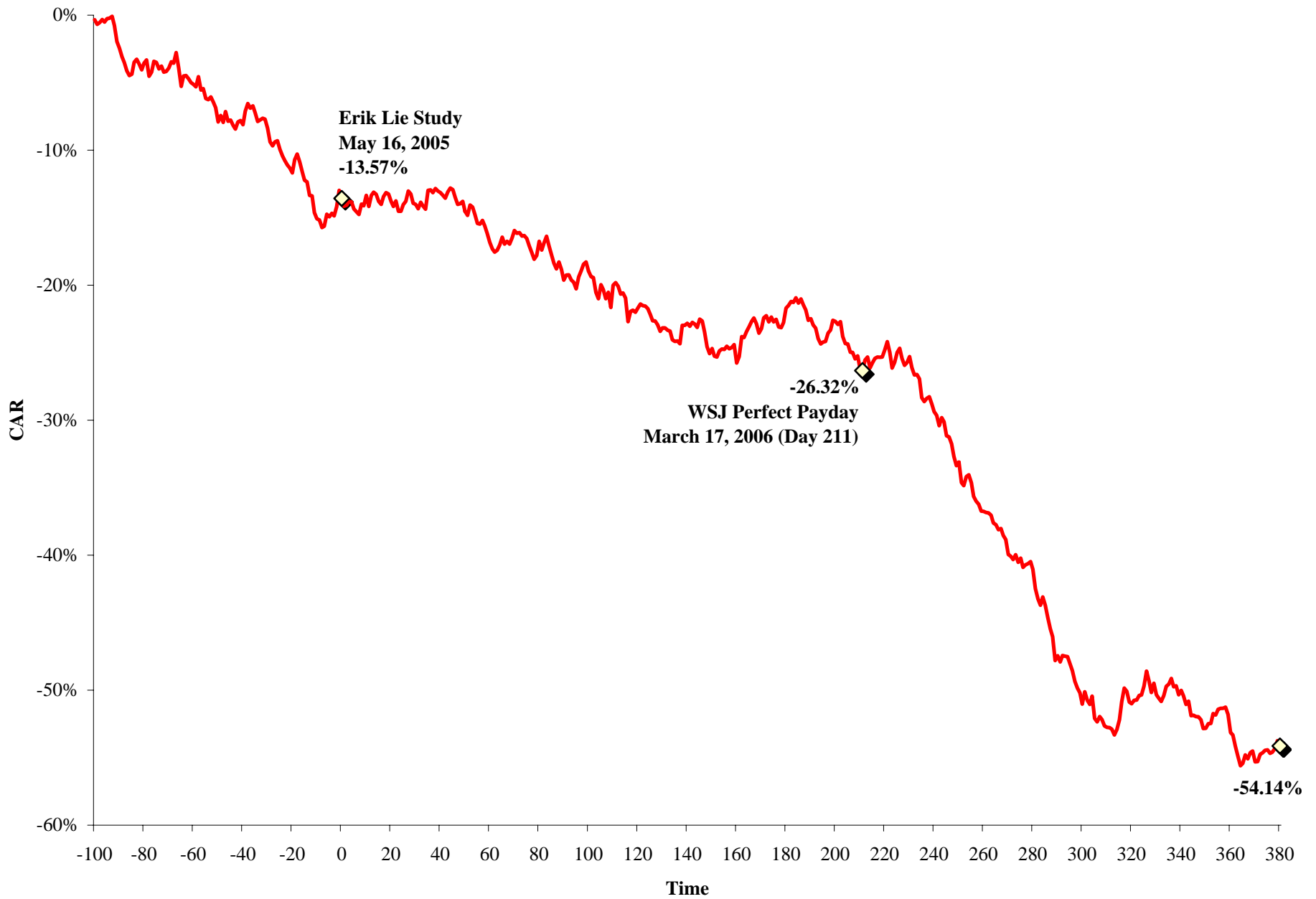
**Chart 1**  
**Cumulative Abnormal Return for 110 Companies,**  
**Where Day 0 is the First Company Disclosure about Option-Backdating for the Period -60 to +80 Trading Days**



**Chart 2**  
**Performance Index for \$100 Invested in Portfolio Of 110 Equally-Weighted Companys,**  
**Where Day 0 is the First Company Disclosure about Option-Backdating, for the Period -60 to +80 Trading**  
**Days**



**Chart 3**  
**Cumulative Abnormal Return (CAR) for 110 Companies,**  
**Where Day 0 is May 16, 2005, for the Period -100 to +380 (November 15, 2006)**



**Chart 4**  
**Performance Index of \$100 Invested in Portfolio of 110 Equally-Weighted Companies,**  
**Where Day 0 is May 16, 2005, for the Period -100 to +380 (November 15, 2006)**

