CEO Compensation and Board Structure – There is an Effect After All*

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ABSTRACT

Chhaochharia and Grinstein (2009) show that the SEC requirements to enhance board oversight affected CEO compensation decisions. This result is criticized by Guthrie, Sokolowsky, and Wan (2012), as driven by outliers, in particular the Apple Company. We show that once we systematically control for outliers and erratic compensation patterns in the sample, the SEC requirements do have a significant effect on CEO compensation. We further show that Apple is a prime example of the strong relation between compensation practices and board structure, and therefore should not be ignored. Our results suggest that the SEC board requirements did affect CEO compensation decisions.

* Vidhi Chhaochharia is with University of Miami and Yaniv Grinstein is with Cornell University. This reply is based on our discussion of the paper "CEO Compensation and Board Structure Revisited" by Guthrie, Sokolowsky, and Wan in the FMA 2010 meeting in New York City. We thank Lucian Bebchuk, Alon Brav, Rick Green, Roni Michaely, and Maureen O'Hara for helpful discussions.

Chhaochharia and Grinstein (2009) (henceforth CG) show that the new board requirements of the stock exchanges, instituted by the Securities and Exchange Commission (SEC) in 2003, affected CEO compensation decisions. Using a difference-in-difference approach, the study finds that firms that were not compliant with the board requirements saw a significantly larger decrease in CEO compensation after the rule compared to compliant firms.

These results were criticized by Guthrie, Sokolowsky, and Wan (2012) (henceforth GSW). The main criticism is that the decrease in CEO compensation in noncomplying firms is driven by a few outliers.[1] In particular, the large decrease in the compensation of Steve Jobs from Apple after 2002 drives more than 60% of the regression coefficient. According to GSW, Apple should not have been included in the sample because the change in compensation to Steve Jobs was due to special circumstances not related to the rule.

In this manuscript we examine GSW's critique. We show that the rule did have a material effect on CEO compensation, even after controlling for outliers. When we improve the model specification to systematically account for erratic compensation behavior (basically relying on the tests in CG), we find that our results become stronger and hence are robust to the exclusion of outliers. We further show that Apple is a prime example of the strong relation between compensation practices and board structure, and therefore it should not be ignored. Our evidence stands in sharp contrast to the claim that board structure does not have an effect on CEO compensation.

[1] GSW also criticize CG's data collection procedure and definition of variables. In response, we rewrote the SAS code for the analysis. We provide the data collection procedure and the SAS code for retrieving the data in a supplementary appendix (available on The Journal of Finance website at http://www.afajof.org/supplements.asp) so that researchers can replicate the results in this study.

We first examine the sensitivity of our results to outliers. We run a residual analysis of the model specification and show that there are two types of outliers in the sample. The first type is driven by symbolically low compensation (such as $1 compensation). The second type is driven by large and erratic option grants.

We control for these two types of outliers in several ways. First, we increase the horizon of the panel. A longer panel better captures average compensation policies before the rule and is less likely to be swayed by erratic option grants in any particular year. We find that the reduction in compensation to noncomplying firms is economically and statistically significant in this longer panel. The result remains statistically significant and economically large after excluding outliers, after winsorizing symbolically low compensation, and when using median regression instead of standard OLS regression.

Second, we examine the effect of the new rule on CEO compensation net of option grants. To the extent that erratic option grants lead to biased estimates, we can better capture the effect of the rule on CEO compensation when examining changes in the part of compensation that is not erratic. Indeed, the tests in CG (Tables III and IV in the original study) show that the decrease in compensation to noncomplying firms comes from the non-option part of compensation. We show that noncomplying firms observed statistically and economically significant declines in the non-option part of compensation compared to complying firms. The result remains statistically and economically significant after excluding outliers and after winsorizing symbolically low compensation. As before, the result holds when using median regression instead of the standard OLS regression.

Third, we examine the effect of the rule on noncomplying firms that do not pay option compensation. Even though the sample size is small, decreasing statistical power, we still observe an economically larger decrease in compensation to noncomplying firms than to complying firms within this subsample.

We note that these above tests are not ad-hoc tests. These tests (examining a longer panel, examining different components of compensation, and examining firms that do not pay with options) are based on the tests reported in CG. Together, our results point to a significant effect of the new exchange rules on noncomplying firms.

Finally, we examine the case of Apple, the main outlier. We show that Steve Jobs had a strong influence over the nomination of the board members and that Apple's board was not independent of Jobs. We further show that the compensation to Jobs before the rule far exceeded compensation to CEOs in peer firms and that the options to Jobs were backdated, leading to much larger compensation to Jobs than what was communicated to shareholders. Importantly, we show that Apple's board made significant changes to Jobs's equity compensation *as part of its governance plan to comply with the exchange regulations*. These changes were communicated to Apple's shareholders in a press release titled "Apple Enhances Corporate Governance."[2] Therefore, the case of Apple points to a strong effect of the rule on noncomplying firms, and ignoring Apple would likely lead to underestimation of the actual effect of the rule on noncomplying firms.

The rest of our discussion continues as follows. Section I examines the robustness of our results after controlling for outliers. In Section II we discuss the case of Apple. Section III concludes. In an Internet Appendix we show our data collection procedure and

[2] Available online at **http://www.apple.com/pr/library/2003/mar/20governance.html**.

provide our SAS code for retrieving the data (available on The Journal of Finance website at **http://www.afajof.org/supplements.asp**).

I. Compensation, Board Structure, and Outliers

The specification in CG examines patterns in the flow of compensation over a relatively short window, regressing log compensation on size and lagged performance. As GSW point out, erratic compensation behavior not captured by the empirical model, such as deferred compensation for prior performance or compensation paid in lieu of out-of-the-money options, could lead to model misspecification and to biased results. A common way to examine this potential bias is to analyze the residuals from the model specification.[3]

We run the original panel regression in CG,

$\text{Log}(\text{Compensation}_{it}) = a_0 + a_1 * \text{Dummy}(\text{Noncompliant '02})_i * \text{Dummy}(\text{'03-'05})_t + [\text{CONTROLS}_{it}] + \text{Firm_Effects}_i + \varepsilon_{I\,t}$,

and then sum the absolute values of the residuals from the panel regression over the years for each firm in the panel.[4] Table I Panel A presents the firms with the largest deviations from the model specifications. The table shows that Apple deviates the most from the model specification. The firm with the second largest deviation is Gateway, followed by Oracle and Fossil.

[Place Table I here]

[3] CG also examined extreme changes in compensation in non complying firms. However, their focus was on changes in compensation between 2002 (the year before the rule) and 2003 (the first year after the rule). The outliers identified by GSW did not have a large change in compensation between these two years and therefore they were not detected by CG.

[4] Unlike CG, we do not include the tenure variable in the specification. The reason is to allow a comparison to the sampling procedure of GSW, which did not include the tenure variable.

Panel A also shows that many firms deviate from the model specification in addition to the four firms above. To illustrate the magnitude of the deviations in these firms, consider an average annual residual of one (sum of six over the six years). This deviation corresponds to the 16th firm in Table I. This sum-deviation suggests that, on average, log compensation deviates from the model specification by one annually or that compensation deviates from the model by a factor of roughly exp(1) = 2.78. In other words, on average, actual compensation is almost three times larger (or smaller) than what the model would predict.

Panel B shows that two main compensation arrangements lead to the large residuals. The first is large fluctuations in option grants. Firms in the panel gave large grants in some years but no grants in other years. Six of the firms gave grants in only three or fewer years out of the six years in the panel. The sporadic pattern of option grants leads to large deviations from the model specification. The second feature is very low compensation in some years in companies such as Apple, Fossil, and Gateway. This evidence suggests that option grants and extremely low compensation arrangements lead to large deviations from the model specification.[5]

To account for symbolically low compensation, we winsorize CEO compensation at the 1% level. To account for erratic option compensation, we perform several tests, described below. These tests are all based on robustness tests performed in CG.

[5] We also ran a regression on the absolute residuals where the control variables are a dummy for $1 compensation, and the values of option compensation, stock compensation, bonus, and salary. The coefficients on option compensation and the $1 salary dummy are significantly positive, and the coefficients on the other components of compensation are significantly negative.

A. Test 1: Examining a Longer Panel of Data

Averaging the value of large and sporadic option grants over a longer horizon is likely to more accurately capture the average level of CEO compensation. We therefore repeat the robustness test in CG by extending the sample to a period of 10 years (1996 to 2005) and performing the analysis over that period of time.[6] We report the results in Table II. To ensure the robustness of the results, we also provide the results after winsorizing the left tail (1%) and after excluding Apple from the sample. (Fossil does not have 10 years of data and therefore is omitted as well.)

Panel A of Table II reports results for the regression in which the independent variable is board compliance. The panel shows that the point estimate is on the order of 8% to 10% and is statistically significant even after excluding Apple and even after winsorizing compensation.

[Place Table II here]

Table II Panel B further shows that noncompliance with the nominating committee independence requirement has a negative effect on compensation. The coefficient on nominating committee independence is on the order of -5% to -10% across specifications and is statistically significant. These results are consistent with the notion that less compliant firms saw a larger decrease in compensation compared to more compliant firms. Panel C shows that the coefficient on the compensation committee independence requirement is not significant.

[6] We increase the number of years before the rule but not after the rule because compensation reporting changed significantly in 2006 and the numbers provided by Execucomp post 2006 are not comparable to those before 2006. In addition, option grants were much more prevalent in the period before the rule.

B. Test 2: Examining the Effect of the Rule on Compensation Net of Options

A different way to reduce the effect of the erratic pattern of option compensation in the sample is to examine changes in the portion of compensation that is not given in the form of options. Indeed, CG show that the decrease in compensation in noncomplying firms does not come from the option part of compensation (Tables III and IV in the original study). We therefore rerun the original specification in CG, but instead of using the variable ln(*tdc1*) as the dependent variable, we use ln(*tdc1-options*+1), which is the natural log of compensation to the CEO net of options. We present the results in Table III.[7]

[Place Table III here]

Table III shows that the portion of compensation not in the form of options decreased after the rule in noncomplying firms compared to complying firms. The decrease is between 7.5% and 12.5%, depending on the model specification, and is significant at the 5% level. The effect is both statistically and economically significant regardless of whether we include or exclude Apple.

Table IV repeats the regressions in Tables II and III, but using a median regression instead of an OLS regression.[8] The first column shows a statistically significant decrease in CEO compensation to noncomplying firms in the extended sample (1996 to 2005), consistent with the results in Table II. The second column shows a statistically significant decrease in CEO non-option-based compensation to noncomplying firms in the 2000 to

[7] CG examined each of the compensation components separately. We note that the number of observations in our sample (876) is slightly smaller than the number of observations in GSW (906). We attribute this difference to differences in the versions of the databases. Our version (bought from IRRC in 2006), is based roughly on the S&P1500 and includes 1373 firms in 2000, 1374 in 2001, 1439 in 2002, 1472 in 2003, 1475 in 2004, and 1443 firms in 2005. The WRDS version of the database has added firms in 2000-2001 beyond the S&P 1500 (1759 firms in 2000 and 1800 in 2001), while leaving later years intact.

[8] Explanation of the procedure used to run the median regression appears in the internet Appendix.

2005 period. Both results are consistent with the OLS regression results and further ensure that the results in the OLS regressions are not driven by outliers.

[Place Table IV here]

C. Test 3: Analyzing Firms Whose Main Mode of Compensation Is Not Options

Another way to control for model misspecification is to focus on firms whose mode of compensation is not options. These firms are less likely to experience erratic option compensation patterns. There are 366 firm-year observations in our sample of firms that did not issue any grants to their CEOs in the 2000 to 2002 period. Of this sample, 156 firm-year observations correspond to firms that were not complying with the requirements of the rule (about 20% of the noncomplying firms in the original sample). Table V shows the regression results. Column 1 is a replication of our original specification in CG. Column 2 excludes both Apple and Fossil from the sample. Column 3 includes Apple but winsorizes the left-hand side of the distribution at the 1% level. The results show that firms that did not pay with options and that did not have a majority of independent directors decreased their compensation by 37% to 16% compared to complying firms. The results are economically significant but statistically significant from zero for the original specification only.

[Place Table V Here]

Taken together, the results point to an economically significant effect of the rule on non complying firms even after excluding outliers from the sample, and when using median regressions rather than OLS regressions. These results are consistent with the conclusion of CG that board structure had a significant effect on CEO compensation.

II. Analysis of Apple's Board Structure and Compensation Practices

Bebchuk and Fried (2003, 2004) argue that CEOs in public U.S. firms have great influence over their compensation arrangements. The reason is that CEOs control the nomination of new directors, and directors who are nominated by the CEO feel obligated to the CEO. Furthermore, directors typically have little time to monitor managers effectively, and in many cases have little stake in the corporation and thus low incentive to care about the shareholders. According to Bebchuk and Fried, the board of directors becomes captured by the CEO and is likely to cater to the CEO's wishes by overcompensating the CEO.

Hermalin and Weisbach (1998) provide a more refined model of managerial power, where the ability of the manager to control the board is endogenized. When CEO perceived talent is high, the CEO has more influence over board structure. Combining this argument with the arguments of Bebchuk and Fried (2003), CEOs with higher perceived talent will capture a larger fraction of the rents from the corporate pie.

Below we show that Apple's board is the archetypical example of a board that is captured by the CEO, and is perhaps the best example that fits the Hermalin and Weisbach (1998) model. Apple CEO Steve Jobs's perceived talent was so high, that he was able to hand-pick the board of directors and he had almost full control over the board. Jobs's compensation before the rule far exceeded compensation of other CEOs and was much higher than what was communicated to shareholders. Importantly, we show that compensation arrangements for Jobs changed significantly in response to the new exchange rules.

A. Steve Jobs and Apple—Background[9]

Steve Jobs was co-founder of the Apple company. Along with Steve Wozniak, Jobs invented the Apple computer, one of the first commercially successful personal computers. Jobs resigned from Apple in 1985 after losing a power struggle with the board of directors. Shortly thereafter, Jobs founded NeXT, a computer platform development company specializing in the higher education and business markets. In 1986, he acquired the computer graphics division of Lucasfilm Ltd., which was spun off as Pixar Animation Studios.

After Jobs left Apple, the company had an initial period of success, but by the mid-1990s it was struggling. In February 1996, Gil Amelio, at that time the former CEO of National Semiconductor, became CEO of Apple. Amelio decided that as part of his new strategy to make Apple more successful, Apple should buy NeXT. The deal was announced in November 1996 and finalized in February 1997. Once NeXT became part of Apple, Jobs became an advisor to Apple's board.

Apple's performance under Amelio was poor. In July of 1997, Apple's board decided to oust Amelio and replace him with Jobs as interim CEO. Jobs served as interim CEO until January of 2000. He then became Apple's CEO, a position that he held for more than 11 years. Jobs oversaw the development of the iMac, iTunes, iPod, iPhone, and iPad and on the services side, the company's Apple Retail Stores, iTune Store, and the App Store. The success of these products and services, providing several years of stable financial returns, propelled Apple to become the world's most valuable publicly traded company in 2011. In August 2011 Jobs stepped down as Apple's CEO due to

[9] Data source: Wikepedia at http://en.wikipedia.org/wiki/Steve_Jobs

health problems. Jobs continued his role as the chairman of Apple's board until his death in October 2011.

B. Jobs's Influence over the Board of Directors

Jobs's return to Apple started when he sold NeXT Company to Apple at the end of 1996. As part of the deal, Amelio asked Jobs to work under him, but Jobs refused. Instead, Jobs agreed to become an advisor to the chairman of Apple's board, giving Jobs direct access to the board. As a result of the deal, 300 of Jobs's employees from NeXT began to work at Apple, establishing a strong toehold of his own people in the organization. Jobs received 1.5 million shares of Apple as part of the deal but sold them shortly thereafter as a vote of no confidence in Amelio's strategy.[10]

Within six months of signing the deal, Apple's board fired Amelio. During that time Jobs was negotiating his return to Apple's board. Jobs required that, along with him, two other new members join the board: Bill Campbell and Larry Ellison.

Tables VI Panels A and B show the structure of Apple's board in 1996, before Amelio's resignation, and in 1997, after Amelio's resignation.[11] The panels reflect a substantial change in Apple's board between the two years. In particular, the board had three new board members: Campbell, Jobs, and Ellison.

The personal relationships between Jobs, Campbell, and Ellison were strong. Campbell was a former employee of Apple from the time that Jobs worked there and was also his neighbor.[12] Ellison had been CEO of Oracle and had strong personal ties with Jobs. In fact, in a 2001 interview, Ellison said that he considered Jobs to be his "best

[10] *Fortune Magazine*, March 5, 2008, "The Trouble with Steve Jobs."
[11] Apple's proxy statements 1996, 1997.
[12] *Fortune Magazine*, March 5, 2008, "The Trouble with Steve Jobs."

friend."[13] With only six people on the board, Jobs, Ellison, and Campbell together held 50% of the board's seats.

Table VI

Apple's Board Structure: 1996 vs. 1997

Panel A: 1996 – Before Amelio's Resignation

Name	Position	Age	Year Became Director
Gilbert F. Amelio	Director and CEO	53	1994
Gareth C. C. Chang	Director	53	1996
Katherine Hudson	Director	49	1994
Bernard Goldstein	Director	66	1991
Delano E. Lewis	Director	58	1994
A. C. Markkula	Director	54	1977
Edgar S. Woolard	Director	62	1996

Panel B: 1997—After Amelio's resignation

Name	Position	Age	Year Became Director
Steven P. Jobs	Director and Interim CEO	43	1997
Lawrence J. Ellison	Director	53	1997
Gareth C. C. Chang	Director	53	1996
Edgar S. Woolard	Director	62	1996
William V. Campbell	Director	57	1997
Jerome B. York	Director	59	1997

[13] *San Jose Mercury News*, June 10, 2001 "Larry Ellison Discusses Steve Jobs in Interview".

Jobs entered Apple's board in 1997 as interim CEO. Two-and-a-half years later, in January 2000, Jobs became Apple's official CEO. At that time, the board consisted almost entirely of directors who were appointed by Jobs, Campbell, and Ellison. The only director who entered the board before Jobs's entry was Gareth Chang, who left Apple in 2002.

The above description suggests that Steve Jobs had a strong influence over Apple's board structure and board decisions. Indeed, Apple's board has drawn criticism from governance experts. For example, in his 2002 book, *Take On the Street*, former SEC chairman Arthur Levitt complained that Apple's governing body failed to meet "good governance litmus tests." Levitt wrote, "It's plain to me that Apple's board is not designed to act independently of the CEO."[14]

C. Analysis of Jobs's Compensation Package over the Period 2000 to 2005

When he returned to Apple in September 1997, Jobs received $1 per year for his services as interim CEO. This amount seems quite low and might suggest that Jobs did not really draw any compensation from the company prior to becoming its official CEO in 2000. However, this interpretation is incorrect, because he received hefty compensation *for his services as interim CEO* in January 2000 (as disclosed in the proxy statement), when he became the formal CEO. The compensation was in the form of a private jet, worth approximately $90 million (including the tax reimbursement from the company), as a token for his services as interim CEO.

[14] Levitt, Arthur, and Paula Dowyer, 2002, Take on the Street: What Wall Street and Corporate America Don't Want You to Know; What you Can Do to Fight Back, (Pantheon Publishing).

This evidence suggests that Jobs did not receive $1 a year for his services in the company, but instead was offered a contingent claim that matured after two-and-a-half years on the job. It is possible that Jobs received at least part of this compensation for his performance, but if this is the case, this contingent claim was never disclosed to shareholders in 1997.

One might argue that Jobs should have received this compensation because he increased shareholders' return in Apple during his time as interim CEO. The return to Apple's shareholders during that period was indeed high, amounting to approximately 487%.

To gauge how high Jobs's compensation was for his services, we picked three high-tech firms that also performed well during the same period: Cisco, which delivered return to shareholders of 505% during that period; Dell, which increased in value by about 577% during the same period; and Yahoo, which saw one the highest increases in shareholder value during that period at 4495%. Dell and Cisco were more than 10 times larger than Apple during that time, and so we should expect Jobs's compensation to be much lower than that to any of their CEOs.

Figure 1 shows the direct compensation (salary, bonus, and other compensation) that the CEOs in each of the above companies received during the 1997 to 2000 period.[15] Total direct compensation is simply the accumulation of the direct compensation components over the four years.[16]

[15] In this section we do not attempt to make a full-blown analysis of the differences between Jobs's compensation and that of his peers. Since Jobs's compensation is so large, a back-of-the-envelope calculation is enough to illustrate the point.

[16] We include four years of observations rather than two and a half to ensure that we do not exclude subperiods due to differences in fiscal year-ends. This is therefore an overestimation of the compensation to peer firms for the same period. Since this is only a rough evaluation of the differences between Jobs's compensation and that of peers, we also do not discount cash flows.

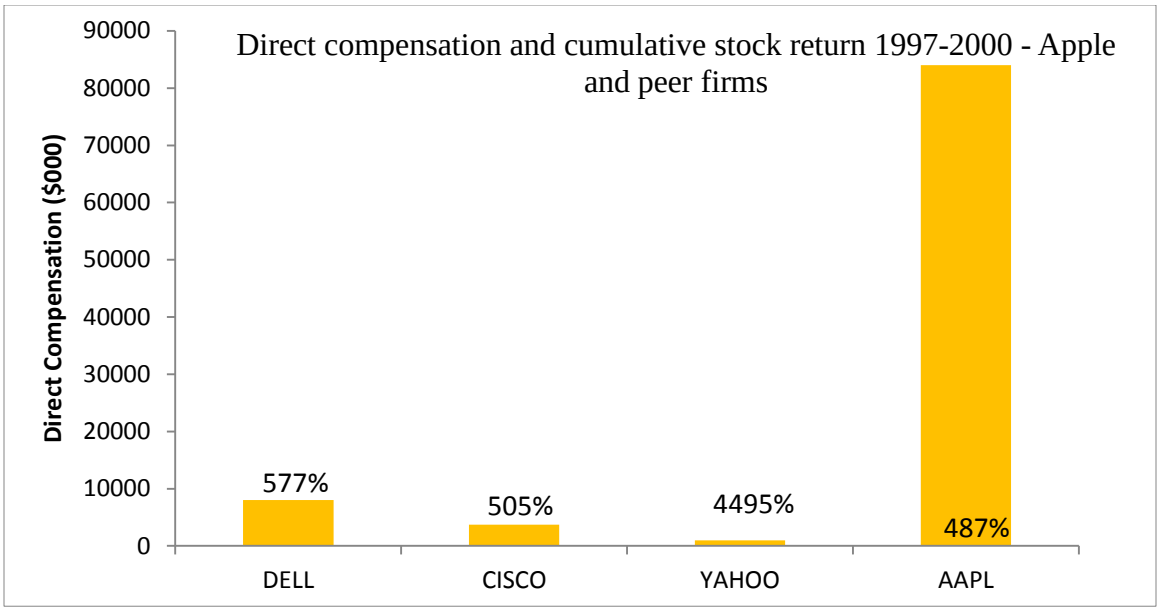

Figure 1. Cumulative direct compensation (salary, bonus, and other compensation) in Apple and peer firms during the 1997 to 2000 period.

The figure shows that the direct compensation to Jobs, in the form of a private jet, was far larger than the direct compensation of the CEOs of Dell, Cisco, and Yahoo, even though the stock performance of each of these firms during that period was better than that of Apple and even though Dell and Cisco were more than 10 times larger than Apple. The direct compensation to Jobs was more than 10 times larger than the compensation to the CEOs of any of the peer firms.

Still, one could argue that most of the compensation at high-tech firms in the late 1990s was in the form of stocks and options. It is therefore plausible that the comparison should be between the total compensation to the CEOs of Dell, Cisco, and Yahoo versus that of Steve Jobs. Accordingly, we plot the total compensation (including the Black-Scholes value of the option grants) of Apple's CEO and the CEOs of the peer firms over the 1997 to 2000 period.

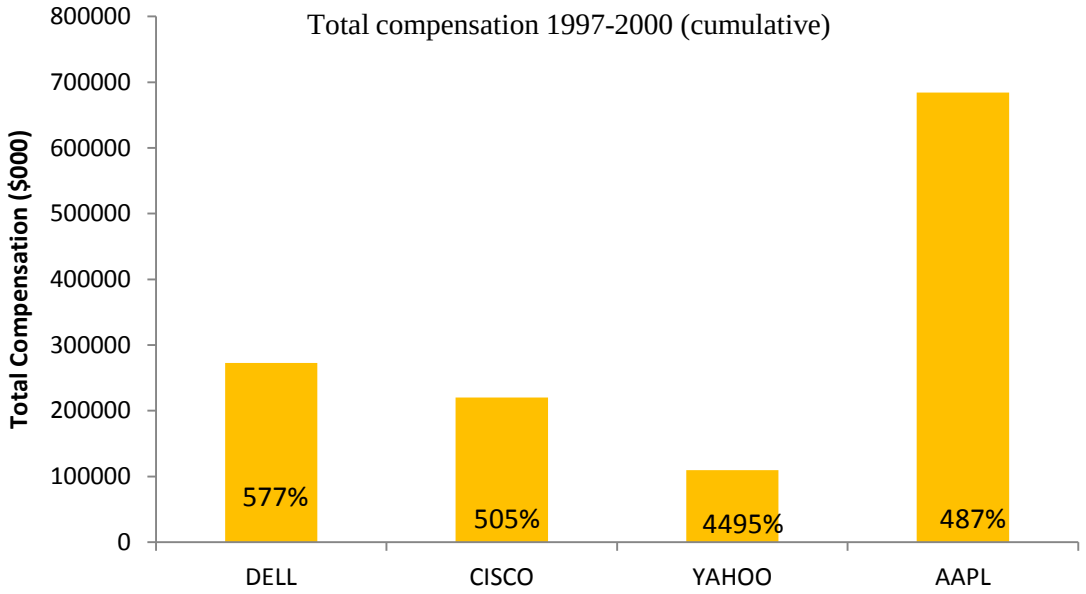

Figure 2. Total CEO compensation 1997 to 2000 (cumulative).

Figure 2 shows that Jobs's total compensation far exceeded that of any of the peer firms' CEOs. His total compensation amounted to almost $700 million, compared to between $100 and $300 million to peer CEOs.

Beyond the large compensation package to Jobs, Apple's compensation practices before the rule included option backdating. This fact is important because it implies that the compensation to Jobs far exceeded his reported compensation. In 2000, Jobs received a grant of 10 million options, half of which did not have any vesting requirements. Apple's proxy statement, issued on March 6, 2000, reported that these options were granted in January 2000, with a strike of $87.1875. Figure 3 depicts the price pattern around the grant date. The figure shows that the strike price coincides with the day of the lowest price in January. In fact, the grant was given at the lowest price over the December 1999 to March 2000 period. This evidence supports option backdating.

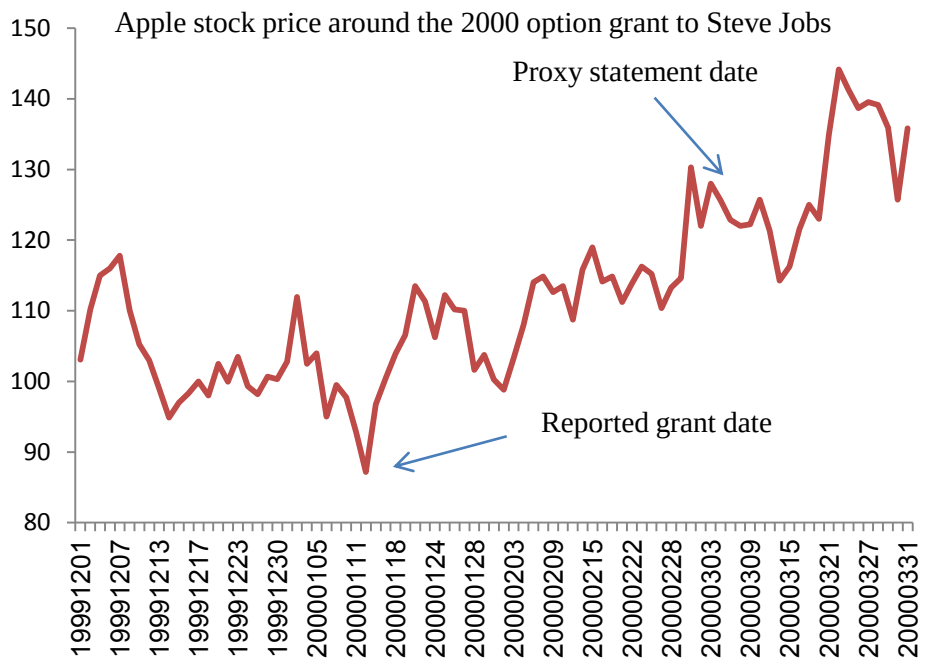

Figure 3. Apple stock price around the 2000 option grant to Steve Jobs.

The value of a backdated option grant is equivalent to the value of an in-the-money option where the actual grant date of the option is the date at which the board actually agreed to grant it. We cannot tell when exactly Jobs received the grant, but assuming that it was backdated and that it was actually given on March 3 (last business day before the proxy release), the Black-Scholes value of the grant (using the Execucomp methodology) was $905.4 million.[17] Using a more conservative assumption that the grant was issued on the last day of January (price of $103.75), the Black-Scholes value of the options becomes $742.7 million.

After Jobs received the year 2000 grant, Apple's stock price fell considerably. The grant became out of the money, and in 2001 the firm granted Jobs an additional 7.5

[17] Execucomp reports that Apple's stock volatility in 2000 was 66.4%, risk free-rate was 5.16%, and strike price was $87.125. The stock price on March 3 was $122 and time to maturity was seven years. These values imply an option value of $90.52, for a total grant value of $905.2 million. Assuming that the grants were given on January 31, (closing price of 103.75), the option value was 74.27 and the value of the entire grant was $742.7 million.

million options with a strike price of $18.30, but they were also backdated from their true grant date of December 18 2001 to October of 2001.

D. Did Apple's Board Change its Compensation Practices after 2002?

In March 2003, just before its annual meeting, Apple issued a press release "Apple Enhances Corporate Governance."[18] The press release declared the firm's activities as complying with the new governance requirements of NASDAQ and The Sarbanes-Oxley Act (SOX). These activities included plans to add two independent directors, to expand the role of the independent nominating committee, and to expand the role of the audit committee in accordance with SOX.

In addition, the release had an important clause regarding compensation:

"Apple's Board of Directors also approved two measures to reduce the Company's issued stock options as a percentage of total options and shares outstanding from the current level of 23 percent to 16 percent. The first measure is a voluntary employee stock option exchange program….. The second measure is for Apple CEO Steve Jobs to voluntarily exchange his 27.5 million stock options for a new grant of 5 million restricted shares that will vest on the third anniversary of the grant. Together these measures are expected to return a net total of over 32 million options back to the Company, which represent almost 7 percent of the total options and shares currently outstanding."

This is perhaps the most direct evidence that Jobs's change in compensation was a *governance* measure that the board took along with their activities to comply with the rules. This evidence contradicts GSW's argument that the change in Apple's

[18] **http://www.apple.com/pr/library/2003/mar/20governance.html**

compensation practices after the rule were simply because Jobs's options were underwater.

One might argue that the large stock grant (valued at around $75 million) that replaced Jobs's old options was a deal swap that had no real effect on Jobs's compensation. This argument is incorrect for two main reasons. First, this stock grant had the lowest value of the three grants that Jobs had received since 2000. Taking into account the fact that both the 2000 and the 2001 grants were backdated, the Black-Scholes values of these grants far exceeded the $600 million and $90 million reported by Execucomp. In fact, at the time of the exchange of Jobs's options with the new shares, the new shares had a cost that was only 46% of the at-the-time Black-Scholes value of the original options that Jobs had held.[19] In addition, the terms of the new restricted shares were more stringent than the terms of the previous grants. In particular, the vesting requirement of the stock grant was three years, which means that Jobs could not sell any of the shares until March of 2006. In contrast, Jobs could have exercised half of the year 2000 grant immediately, 25% within six months, and the rest within a year and a half. He could have also exercised 25% of the year 2001 grant immediately and 50% of the grant within a year. This difference implies tougher terms in Jobs's compensation contract beyond the lower value of the package.

One might also argue that Apple's board structure did not really change significantly after the rule, and the change in compensation practices came before any

[19] Jobs's 20 million options (given in 2000 and adjusted for a 2:1 split) had a strike of $43.59, and his 7.5 million options (given in 2001) had a strike of $18.30. Assuming time to expiration of six years on the later options and four years on the original options, a stock volatility of 70%, an interest rate of 5%, and a stock price of 14.91 on March 20, 2003, the Black-Scholes value of the later call option is $9.35 and of the earlier call option is $4.60. The total cost to the firm is:$9.35*7.5=$70 million on the new options and 20*$4.60=$92 million on the old options, for a total of $162 million.

change was made to the structure of the board. One might therefore conclude that the change in compensation to Jobs was not because of the rule. We caution against drawing this conclusion. The reason is that the rule had several important requirements beyond independence (such as new procedures that committees must follow, stronger scrutiny of exchanges over directors, etc.), which changed the relationships between directors and CEOs, especially in firms that did not have an independent board before the rule.[20] Consistent with this interpretation, Apple's board made changes to Jobs's compensation in response to the rule even before bringing new directors to the board.

III. Conclusion

We show that the SEC requirements to enhance board oversight instituted in 2003 had a significant effect on CEO compensation in noncomplying firms. We show that Apple, the firm whose CEO saw the largest decrease in compensation after the rule, is a prime example of the significant impact of the rule on noncomplying firms. GSW's claim that Apple should not be in the sample because the large shifts in compensation to the CEO of Apple were because his options were simply underwater is therefore incorrect.

[20] This point was made repeatedly in CG's study. CG wrote "...To the extent that CEOs tend to handpick their directors, the legal requirements for independence might not lead to truly independent directors. We believe that the requirement for independent directors had a bite partly because of the additional requirements from boards. For example, the new nomination procedures have likely reduced reliance on the CEO in the nomination of directors and the newly elected directors are more likely to be truly independent. In addition, to the extent that directors in noncomplying firms had a weak bargaining position vis a vis the CEO, the new procedures may have given them a stronger bargaining position." (*Journal of Finance*, February 2009, page 232). "Firms that are less compliant with the independence requirements are potentially more affected by other requirements from the board, such as the requirement for a written charter to explain the compensation policy of the firm, the requirement for a performance evaluation for the committees, and the requirement for board sessions without management. In this study we do not attempt to distinguish between direct effects and indirect effects. A relation between our director independence measures and compensation can be attributed to either of these effects." (*Journal of Finance*, February 2009, page 237).

We further show that once we refine the regression specification to account for outliers (basically relying on the robustness tests in CG), there is a significant effect of the rule on noncomplying firms. This effect is both statistically and economically significant. Our evidence supports the argument that board structure and procedures do have an effect on CEO compensation practices.

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Table I

List of Firms with the Largest Deviation from the Model Specification

In Panel A we calculate the absolute values of the residuals from running regression (1) and sum them over the six years in the panel for each firm in the sample. The panel shows the 20 firms in the sample with the largest sums of absolute deviations. See the internet Appendix for details on the data collection procedure and definition of variables. In Panel B we provide total compensation (Execucomp variable TDC1) and option compensation (Execucomp variable option_awards_blk_value), adjusted for inflation, for each of the top 10 firms with the largest sums of absolute deviations.

Panel A: By sum residual

Rank	Gvkey	Company name	Board compliant (Maj. Independent)	Sum residuals
1	001690	APPLE INC	0	47.94
2	029345	GATEWAY INC	1	18.64
3	012142	ORACLE CORP	1	16.29
4	028118	FOSSIL INC	0	11.51
5	030990	CAPITAL ONE FINANCIAL CORP	1	11.31
6	004093	DUKE ENERGY CORP	1	8.05
7	022260	HCA INC	1	7.58
8	009248	ROSS STORES INC	1	7.15
9	009359	SAFEWAY INC	0	6.76
10	028924	BARNES & NOBLE INC	1	6.73
11	002184	BEST BUY CO INC	1	6.67
12	001279	ALLEGHENY ENERGY INC	1	6.56
13	029095	MERCURY INTERACTIVE CORP	1	6.42
14	002916	CHAMPION ENTERPRISES INC	1	6.36
15	003310	CA INC	1	6.32
16	064103	POWERWAVE TECHNOLOGIES INC	1	6.16
17	014225	FASTENAL CO	1	5.64
18	065009	EXTERRAN HOLDINGS INC	1	5.59
19	024186	OSI RESTAURANT PARTNERS INC	1	5.55
20	017245	TRUSTCO BANK CORP/NY	1	5.53

Panel B: Compensation patterns (2000-2005) among firms with the largest deviation

Year	Company name	Total compensation (in $000 adjusted for inflation)	Option compensation (in 000 adjusted for inflation)
2000	APPLE INC	627182.878	627182.877
2001	APPLE INC	85323.268	0.000
2002	APPLE INC	93016.179	89444.685
2003	APPLE INC	73568.951	0.000
2004	APPLE INC	0.001	0.000
2005	APPLE INC	0.001	0.000
2000	GATEWAY INC	30245.649	28216.282
2001	GATEWAY INC	25787.175	25765.697
2002	GATEWAY INC	15.871	0.000
2003	GATEWAY INC	14.181	0.000
2004	GATEWAY INC	46126.626	37064.674
2005	GATEWAY INC	6133.672	0.000
2000	ORACLE CORP	44.865	0.000
2001	ORACLE CORP	49.143	0.000
2002	ORACLE CORP	586.800	0.000
2003	ORACLE CORP	11705.026	7361.792
2004	ORACLE CORP	22820.545	14277.541
2005	ORACLE CORP	45974.009	37312.170
2000	FOSSIL INC	274.255	0.000
2001	FOSSIL INC	259.050	0.000
2002	FOSSIL INC	255.017	0.000
2003	FOSSIL INC	251.290	0.000
2004	FOSSIL INC	245.547	0.000
2005	FOSSIL INC	0.169	0.000
2000	CAPITAL ONE FINANCIAL CORP	1168.680	1168.680
2001	CAPITAL ONE FINANCIAL CORP	93771.834	93771.834
2002	CAPITAL ONE FINANCIAL CORP	103.808	0.000
2003	CAPITAL ONE FINANCIAL CORP	11498.709	11386.267
2004	CAPITAL ONE FINANCIAL CORP	24579.575	24359.104
2005	CAPITAL ONE FINANCIAL CORP	24221.739	24078.872
2000	DUKE ENERGY CORP	5605.252	2137.400
2001	DUKE ENERGY CORP	8766.706	3884.797
2002	DUKE ENERGY CORP	9549.931	3609.881
2003	DUKE ENERGY CORP	6616.079	1860.688
2004	DUKE ENERGY CORP	351.451	0.000
2005	DUKE ENERGY CORP	303.682	0.000
2000	HCA INC	44.518	0.000
2001	HCA INC	10032.896	7592.235
2002	HCA INC	7763.963	4312.107
2003	HCA INC	9264.820	5610.570
2004	HCA INC	9018.626	7141.323
2005	HCA INC	10235.722	5071.071
2000	ROSS STORES INC	1212.454	0.000
2001	ROSS STORES INC	11658.723	5180.502
2002	ROSS STORES INC	17530.777	7767.593
2003	ROSS STORES INC	1836.028	0.000
2004	ROSS STORES INC	1004.881	0.000
2005	ROSS STORES INC	15106.533	6073.735
2000	SAFEWAY INC	51232.553	48592.596
2001	SAFEWAY INC	2243.902	0.000
2002	SAFEWAY INC	1258.000	0.000
2003	SAFEWAY INC	984.200	0.000
2004	SAFEWAY INC	2203.209	0.000
2005	SAFEWAY INC	8593.383	5547.846
2000	BARNES & NOBLE INC	835.760	0.000
2001	BARNES & NOBLE INC	10503.294	9763.055
2002	BARNES & NOBLE INC	800.583	0.000
2003	BARNES & NOBLE INC	1033.938	0.000
2004	BARNES & NOBLE INC	20609.318	15287.975
2005	BARNES & NOBLE INC	2034.622	0.000

Table II

Replication of CG Results over a 10-year period (1996-2005)

The table shows the regression results of the original specification in Chhaochharia and Grinstein (2009) over a 10-year panel. Winsorized compensation is at the 1% and 99% levels. Left winsorized compensation is at the 1% level. See the internet Appendix for details on the data collection procedure and definition of variables.

Panel A: Board noncompliance

	Including Apple		Excluding Apple		Including Apple & winsorized com		Including Apple & left winsorized com		Excluding Apple & left winsorized com	
Dummy (majority independent noncompliant 2002) * Dummy (’03–’05)	-0.1587	**	-0.0835	*	-0.0984	**	-0.1017	**	-0.0822	*
	(0.077)		(0.049)		(0.046)		(0.048)		(0.045)	
Sales * Dummy (’00–‘02)	0.4912	***	0.4909	***	0.4022	***	0.4063	***	0.4086	***
	(0.082)		(0.081)		(0.035)		(0.037)		(0.037)	
Sales * Dummy (‘03–’05)	0.4682	***	0.4809	***	0.3913	***	0.3881	***	0.3938	***
	(0.083)		(0.081)		(0.036)		(0.037)		(0.037)	
ROA* Dummy (’00–‘02)	0.5864		0.3099		0.4606	*	0.5029	*	0.3864	*
	(0.442)		(0.252)		(0.239)		(0.268)		(0.231)	
ROA * Dummy (‘03–’05)	0.2449	*	0.1851		0.2119	*	0.2201	*	0.1992	*
	(0.141)		(0.114)		(0.112)		(0.116)		(0.107)	
Returns * Dummy (’00–‘02)	0.1309	***	0.1559	***	0.1473	***	0.1626	***	0.168	***
	(0.044)		(0.036)		(0.032)		(0.033)		(0.032)	
Returns * Dummy (‘03–’05)	0.3024	***	0.3392	***	0.3461	***	0.3443	***	0.3554	***
	(0.057)		(0.047)		(0.045)		(0.045)		(0.044)	
Firm fixed effect	+		+		+		+		+	
Industry year fixed effect	+		+		+		+		+	
N	6,860		6,850		6,860		6,860		6,850	
Adjusted R^2	33%		39%		43%		42%		44%	

Panel B: Nominating committee noncompliance										
	Including Apple		Excluding Apple		Including Apple & winsorized comp		Including Apple & left winsorized comp		Excluding Apple & left winsorized comp	
Dummy (nominating com. compliant 2002) * Dummy ('03–'05)	-0.0718	*	-0.0919	**	-0.0556	*	-0.0522	*	-0.0581	*
	(0.043)		(0.040)		(0.030)		(0.031)		(0.030)	
Sales * Dummy ('00–'02)	0.4845	***	0.4896	***	0.3985	***	0.4023	***	0.4059	***
	(0.082)		(0.081)		(0.035)		(0.037)		(0.036)	
Sales * Dummy ('03–'05)	0.4646	***	0.4777	***	0.3885	***	0.3855	***	0.3914	***
	(0.082)		(0.080)		(0.036)		(0.037)		(0.037)	
ROA* Dummy ('00–'02)	0.6049		0.3102		0.4698	**	0.5135	*	0.3932	*
	(0.444)		(0.252)		(0.239)		(0.268)		(0.230)	
ROA * Dummy ('03–'05)	0.2425	*	0.1940	*	0.2126	*	0.2198	*	0.2017	*
	(0.136)		(0.113)		(0.110)		(0.114)		(0.106)	
Returns * Dummy ('00–'02)	0.1310	***	0.1558	***	0.1474	***	0.1626	***	0.1680	***
	(0.044)		(0.036)		(0.032)		(0.033)		(0.032)	
Returns * Dummy ('03–'05)	0.2991	***	0.3364	***	0.3438	***	0.3420	***	0.3536	***
	(0.057)		(0.047)		(0.045)		(0.045)		(0.044)	
Firm fixed effect	+		+		+		+		+	
Industry year fixed effect	+		+		+		+		+	
N	6,860		6,850		6,860		6,860		6,850	
Adjusted R^2	34%		38%		44%		43%		43%	

Panel C: Compensation committee noncompliance										
	Including Apple		Excluding Apple		Including Apple & winsorized comp		Including Apple & left winsorized comp		Excluding Apple & left winsorized comp	
Dummy (Compensation com. noncompliant 2002) * Dummy (’03–’05)	-0.0724		-0.0258		0.0280		0.0287		0.0415	
	(0.076)		(0.067)		(0.038)		(0.039)		(0.038)	
Sales * Dummy (’00–‘02)	0.4857	***	0.4873	***	0.3947	***	0.3985	***	0.4013	***
	(0.084)		(0.083)		(0.036)		(0.037)		(0.037)	
Sales * Dummy (‘03–’05)	0.4691	***	0.4810	***	0.3889	***	0.3859	**	0.3915	***
	(0.084)		(0.082)		(0.036)		(0.037)		(0.037)	
ROA* Dummy (’00–‘02)	0.6073		0.3239		0.4859	**	0.5289	**	0.4125	*
	(0.443)		(0.253)		(0.239)		(0.268)		(0.231)	
ROA * Dummy (‘03–’05)	0.2322	*	0.1776		0.2004	*	0.2082	*	0.1883	*
	(0.135)		(0.111)		(0.109)		(0.112)		(0.105)	
Returns * Dummy (’00–‘02)	0.1313	***	0.1562	***	0.1477	***	0.1629	***	0.1684	***
	(0.044)		(0.036)		(0.032)		(0.033)		(0.032)	
Returns * Dummy (‘03–’05)	0.3003	***	0.3385	***	0.3458	***	0.3439	***	0.3559	***
	(0.058)		(0.047)		(0.045)		(0.045)		(0.044)	
Firm fixed effect	+		+		+		+		+	
Industry year fixed effect	+		+		+		+		+	
N	6,860		6,850		6,860		6,860		6,850	
Adjusted R^2	34%		36%		44%		43%		41%	

Table III

Effect of the Rule on Compensation (Excluding Options)

The table shows the regression results of the original specification in Chhaochharia and Grinstein (2009), but where the dependent variable is the natural log of one plus total compensation (Execucomp variable TDC1) minus the Black-Scholes value of the option grant (Execucomp variable option_awards_blk_value). See the internet Appendix for details on the data collection procedure and definition of variables.

	Including Apple & Fossil		Excluding Apple & Fossil		Left winsorized comp		Excluding Apple & Fossil & left winsorized comp	
Dummy (Majority ind. noncompliant 2002) * Dummy	-0.1231	***	-0.0825	**	-0.077	**	-0.0642	*
('03–'05)	(0.043)		(0.037)		(0.040)		(0.035)	
Sales * Dummy ('00–'02)	0.3623	***	0.4054	***	0.3427	***	0.3625	***
	(0.057)		(0.049)		(0.045)		(0.043)	
Sales * Dummy ('03–'05)	0.3975	***	0.4446	***	0.3765	***	0.3982	***
	(0.059)		(0.049)		(0.045)		(0.042)	
ROA* Dummy ('00–'02)	0.1467		0.053		0.0931		0.0550	
	(0.279)		(0.277)		(0.237)		(0.236)	
ROA * Dummy ('03–'05)	-0.1725		-0.2103		-0.2133	**	-0.2309	**
	(0.140)		(0.140)		(0.106)		(0.108)	
Returns * Dummy ('00–'02)	0.1208	***	0.1282	***	0.1199	***	0.1222	***
	(0.043)		(0.042)		(0.030)		(0.030)	
Returns * Dummy ('03–'05)	0.2035	***	0.2096	***	0.1988	***	0.2010	***
	(0.044)		(0.043)		(0.038)		(0.038)	
Firm fixed effect	+		+		+		+	
Industry year fixed effect	+		+		+		+	
N	5,256		5,244		5,256		5,244	
Adjusted R^2	34%		34%		41%		41%	

Table IV

Median Regressions

The table shows the results of median regressions on the extended sample, and on the 2000 to 2005 sample using the methodology in Guthrie, Sokolowsky, and Wan (2012). Standard errors are based on bootstrap. See the internet Appendix for details on the data collection procedure and definition of variables as well as for explanation of the procedure used to run the median regression.

	Extended sample (1996-2005) Dependent variable log (total compensation)		2000-2005 sample Dependent variable Log(non-option compensation)	
Dummy (Majority ind. noncompliant 2002) * Dummy (’03–’05)	-0.1135	**	-0.0784	**
	(0.0521)		(0.0354)	
Sales * Dummy (’00–‘02)	0.5945	***	0.4531	***
	(0.0304)		(0.0448)	
Sales * Dummy (‘03–’05)	0.5773	***	0.4922	***
	(0.0301)		(0.0449)	
ROA* Dummy (’00–‘02)	0.2896		0.4185	**
	(0.2205)		(0.1713)	
ROA * Dummy (‘03–’05)	0.1267		-0.1181	
	(0.1954)		(0.1227)	
Returns * Dummy (’00–‘02)	0.0941	***	0.1306	***
	(0.0243)		(0.0193)	
Returns * Dummy (‘03–’05)	0.2725	***	0.1916	***
	(0.0391)		(0.0312)	
N	6,860		5,256	
clusters	1,372		1,752	
Repetitions	1,000		1,000	

Table V

Examining Effect on Firms that Do Not Pay with Options

The table shows the regression results of the original specification in Chhaochharia and Grinstein (2009). No Options (00-02) is a dummy variable that equals one if the firm did not pay with options during the 2000 to 2002 period and zero otherwise. Left winsorizing is at the 1% level. See the internet Appendix for details on the data collection procedure and definition of variables.

			Excluding Apple and Fossil		Left winsorized comp	
No Options (00-02)* Dummy (Board noncompliant 2002) * Dummy (’03–’05)	-0.3782	**	-0.2494		-0.1724	
	(0.185)		(0.162)		(0.137)	
No Options (00-02) * Dummy (‘03–’05)	0.4787	***	0.4742	***	0.3753	***
	(0.150)		(0.149)		(0.122)	
Sales * Dummy (’00–‘02)	0.3197	***	0.3861	***	0.3560	***
	(0.073)		(0.051)		(0.052)	
Sales * Dummy (‘03–’05)	0.2935	***	0.3719	***	0.3352	***
	(0.078)		(0.050)		(0.052)	
ROA* Dummy (’00–‘02)	0.3181		0.1704		0.1853	
	(0.421)		(0.401)		(0.319)	
ROA * Dummy (‘03–’05)	0.2564		0.1913		0 .2145	*
	(0.158)		(0.126)		(0.112)	
Returns * Dummy (’00–‘02)	0.1209	***	0.1218	***	0.1281	***
	(0.036)		(0.036)		(0.034)	
Returns * Dummy (‘03–’05)	0.2641	***	0.2914	***	0.2823	***
	(0.051)		(0.047)		(0.042)	
Firm fixed effect	+		+		+	
Industry year fixed effect	+		+		+	
N	5,256		5,244		5,256	
Adjusted R^2	22%		24%		33%	