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AUDIT FIRM AFFILIATIONS WITH COMPANIES BACKDATING EXECUTIVE STOCK OPTION TRANSACTIONS

STEPHEN WHEELER, GERALD POST, AND ERIC TYPPO

ABSTRACT: Several reports during 2005 -2007 questioned how over one-hundred publicly-traded companies had apparently backdated stock-option grants beginning in the 1990s. An analysis of the external audit firms affiliated with these companies revealed that these firms are dis-proportionally represented as compared to relative audit-market shares of all public companies. After controlling for industry-adjusted audit-market shares, statistically fewer backdating companies than expected used Arthur Andersen as their auditors. Overall, the results argue against the notion of audit firm involvement as a conduit for these transactions.

INTRODUCTION

In recent months, the Wall Street Journal has been reporting on the questionable practice of backdating stock options in order to artificially maximize the value of compensation for certain corporate employees. Erik Lie (2005) challenged corporate America with his detailed analysis of the timing of stock-option awards. His analysis revealed that several companies likely backdated stock option grants to executives. Specifically, he computed the probabilities as miniscule that a company could have randomly granted options on the day of the lowest stock price, thereby maximizing the values of the stock options to recipients. Heron and Lie (2006) further showed that following federal legislation requiring timely reporting of the terms of these option transactions, the backdating phenomenon essentially disappeared. The story was picked up by *The Wall Street Journal* in a series of articles (WSJ 2006b), including an ongoing summary listing of over one hundred companies under investigation or who have admitted backdating option grants (WSJ 2006a). In response, several governmental agencies also implemented detailed investigations, (Hechinger 2006).

At the time of these transactions, the timing of prices assigned to option grants, arguably, was neither explicitly prohibited by law, nor specifically disallowed by Generally Accepted Accounting Principles (GAAP). While not technically illegal or non-conforming, most, including the Securities and Exchange Commission (SEC), would argue that backdating is ethically questionable as evidenced by the recent SEC scrutiny of these companies. Indeed, some corporate executives have recently stepped down under the pressure caused by the controversy (Russell, 2006).

Since all of the companies under investigation are publicly traded and subject to annual audit, one question that has not yet been addressed is the involvement of the companies' audit firms. In particular, it is possible that the pattern of external auditor affiliations with the companies involved had some effect on backdating frequencies. At best, if certain external auditors were better or worse at recognizing potential backdat-

ing problems, auditors may have indirectly helped to enable the practice. At worst, it is possible that certain audit firms served as conduits, showing companies how to execute these transactions, similar to some of the tax shelter ideas of some firms in recent years. In any case, an important first step is to analyze the patterns of external auditor affiliations of companies that backdated stock options.

ACCOUNTING FOR STOCK OPTIONS

Valuing options is, at best, both complicated and subjective. In particular, prior to 2004, GAAP (FASB, 1995) allowed two methods to value the employee compensation expense created by these transactions. Under the intrinsic method, the recorded expense was the difference between the market price of the stock (at grant date) and the option's assigned exercise price. Therefore, if the option's exercise price was set at the grant-date market-price, there was no current value to the option and no compensation expense needed to be recorded. To backdate an option, the options were awarded, but no grant date was immediately set. Instead, over some predetermined period of time, the date of the lowest stock price was noted and that date was retroactively chosen as the grant date. As a result, the grantee and the grantor got the best of both worlds- no compensation expense recorded by the company and the maximum option exercise value given to the recipient. This creates potential financial reporting problems. Specifically, if no compensation expense is recorded for a transaction that clearly awards value to the employee, the company's earnings are overstated, potentially misleading investors.

Under the fair-value method, the recorded compensation expense was the difference between the exercise price and the estimated future value of the option. This normally involved a complicated estimate of projected future values of the associated stock underlying the option using an option pricing model. Understandably, due to complexity concerns and the lower compensation expense resulting from the intrinsic method, companies were slow to elect the fair-value method. Despite this, some companies voluntarily elected the fair value method as a signal to the market of their commitment to full disclosure practices (Spires, 2002). With the issuance of Statement of Financial Accounting Standards No.123 (R) (FASB, 2004) all companies are now required to use the fair-value method, making the backdating issue essentially moot.

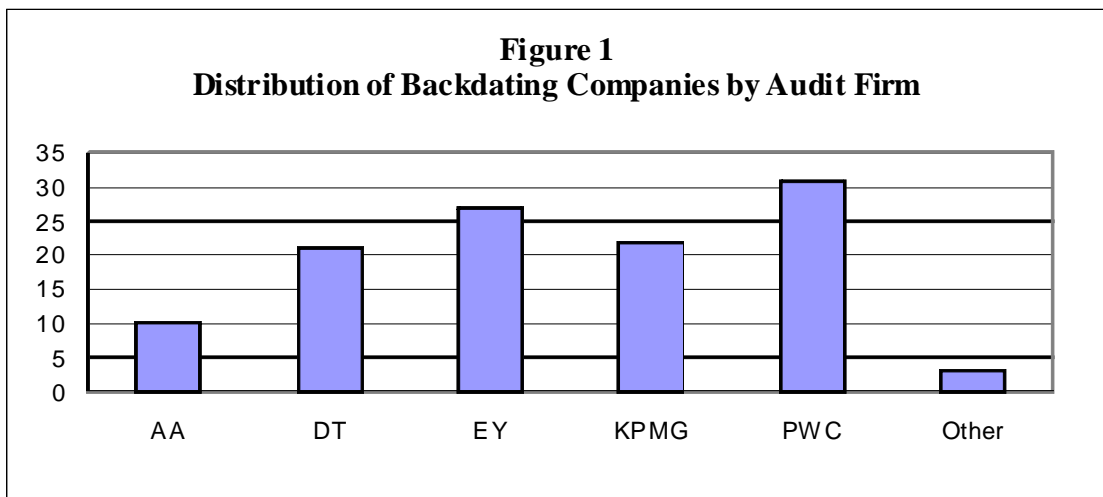
There are also potential income tax issues relating to these transactions. Under Section 422 of the Internal Revenue Code, for qualified incentive stock options, the grantee is allowed to exercise the option and buy the stock with no taxable income arising until that stock is subsequently sold. Depending on the holding periods (one year for the option and two years for the stock), the gain could be afforded favorable capital gains treatment as well. Hence, by backdating the option, the company foregoes its ability to receive a tax deduction and, hence, increases corporate tax responsibility. Therefore, these transactions effectively transferred the bulk of the tax burden of the employee compensation from the employee to the company's shareholders (Eakin, 2006).

Today, backdating options to any great degree would be very difficult. The Sarbanes-Oxley Act of 2002 (SOx) requires that all option grants be recorded with the SEC within two days of the grant. In many ways, the SOx requirement solves most of the problem—although it is still important for auditors to carefully scrutinize recorded dates

and prices. Regarding the audit perspective, George Anders (Anders 2006) observed that popular software for tracking options (such as EquityEdge) did not have controls for tracking changes. In fact, he noted that many companies were having problems just getting options data recorded at all.

RESEARCH QUESTION

What is missing from the discussions of these recent transactions is an analysis of whether these companies' audit firms played a part in the spread of backdated options among the companies involved. At best, the failure to flag the transactions as questionable may promote their proliferation. At worst, it is possible that the audit firms may have participated, much as Arthur Andersen was alleged to have aided in promoting the use of Special Purpose Entities (now termed Variable Interest Entities) by Enron. Therefore, the primary research question addressed in this study is, "Do the audit firms associated with companies that executed backdated stock option transactions appear in different proportions than what would be expected across a base of all audit clients?" Basically: we ask whether there is some systematic auditor association pattern among the clients using backdated employee stock options.



Audit firm abbreviations:

- AA Arthur Andersen
- DT Deloitte Touche Tohmatsu
- EY Ernst & Young
- KPMG KPMG International
- PWC PriceWaterhouseCoopers
- Other All Other Audit Firms

METHODOLOGY

By the end of September 2006, *The Wall Street Journal* had identified 114 companies that were involved in the issue of backdated stock-option grants. Note that some of them had admitted problems and restated their earnings, while some were being in-

vestigated by the SEC. More details about the companies and the claims can be obtained in *The Wall Street Journal* summaries. Clearly, involvement or being listed does not imply guilt on the part of these companies. Using the Wall Street Journal list and, the SEC's *Edgar* database, we obtained the audit firms associated with each company by examining appropriate 10K filings during the late 1990's and early 2000's. Table 1 shows the list of companies, as well as their ticker codes, Standard Industry Codes (SIC), and audit firms. Glancing through the list of firms and their auditors in Table 1, it is clear that some audit firms appear more often than others. Figure 1 shows the distribution of companies by audit firm. Apparent in Figure 1 is the relatively large proportion of companies audited by Price Waterhouse Coopers and Ernst & Young, and the relatively small proportions audited by Arthur Andersen and non Big-5 firms.

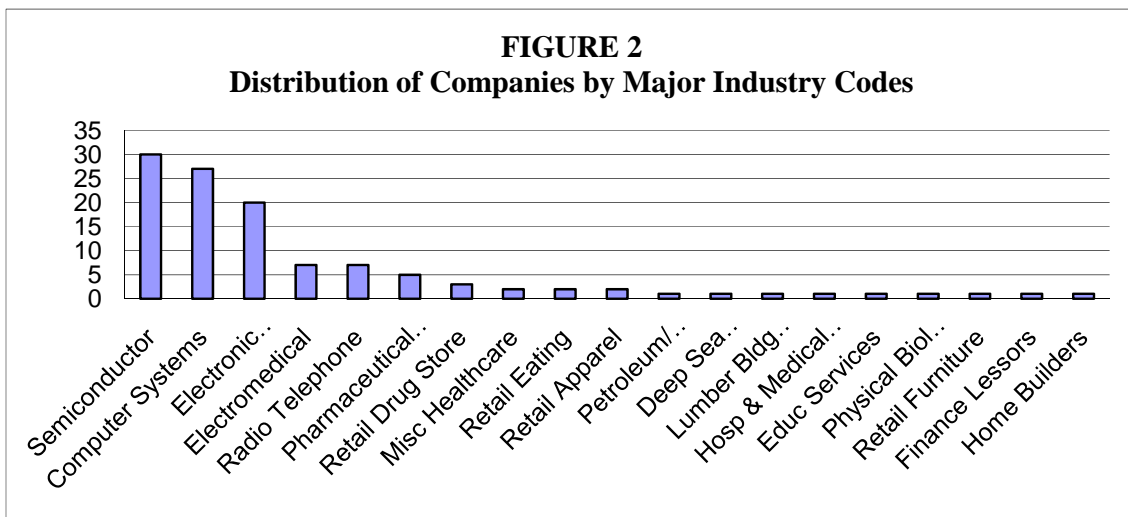
TABLE 1
Companies Facing Questions about Backdated Stock-Options Grants.

Company	Symbol	Auditor	SIC Code
Activision	ATVI	PWC	7389
Affiliated Computer Services	ACS	PWC	7374
Affymetrix	AFFX	EY	3826
Alkermes	ALKS	DT	2834
Altera	ALTR	PWC	3674
American Tower Corp	AMT	DT	4899
Amkor Technology	AMCR	PWC	3990
Analog Devices	ADI	EY	3674
Apollo Group	APOL	PWC	8200
Apple Computer	AAPL	KPMG	3579
Applied Micro Circuits	AMCC	EY	3674
ArthroCare	ARTC	PWC	3845
Aspen Technology	AZPN	DT	7371
Asyst Technologies	ASYT	PWC	3559
Atmel	ATM	PWC	3674
Autodesk	ADSK	EY	7372
Barnes & Noble	BKS	Other	5940
BEA Systems	BEAS	EY	7372
Blue Coat Systems	BCSI	EY	3572
Boston Communications Group	BCGI	EY	4812
Broadcom	BRCM	EY	3674
Brocade Communications Systems	BRCD	KPMG	3576
Brooks Automation	BRKS	PWC	3559
CA	CA	KPMG	7372
Cablevision	CVC	KPMG	4841
Caremark Rx.	CMX	KPMG	5912
CEC Entertainment	SHBZ	DT	5812
Ceradyne	CRDN	AA	3990
The Cheesecake Factory	CAKE	PWC	5812

Company	Symbol	Auditor	SIC Code
Children's Place	PLCE	AA	5651
Chordiant Software	CHOR	PWC	7372
Clorox	CLX	EY	2842
CNET Networks	CNET	KPMG	7389
Computer Sciences	CSC	DT	7373
Comverse Technology	ULCM	DT	3667
Corinthian Colleges	COCO	EY	8200
Crown Castle International	CCI	KPMG	4899
Cyberonics	CYBX	KPMG	3865
Delta Petroleum	DPTR	KPMG	1311
Dot Hill Systems	HIL	AA	3572
Electronic Arts	ERTS	KPMG	7372
Endocare	ENDO	KPMG	3845
Engineered Support Systems	DRS	PWC	3585
EPlus	PLUS	DT	6172
Equinix	EQIX	PWC	4813
Extreme Networks	EXTR	EY	3576
Foundry Networks	FDRY	EY	3576
F5 Networks	FFIV	PWC	3576
Gap	GPS	EY	5411
HealthSouth	HRC	EY	8093
Home Depot	HD	KPMG	5211
Intuit	INTU	EY	7372
J2 Global	JCOM	KPMG	4822
Jabil Circuit	JBL	KPMG	3672
Juniper Networks	JNPR	EY	3576
KB Home	KBH	EY	1531
Keithley	KEI	PWC	3825
KLA-Tencor	KLAC	PWC	3827
KOS Pharmaceuticals	KOSP	AA	2834
Linear Technology	LLTC	EY	3674
L-3 Communications Holdings	LLL	PWC	3663
Macrovision	MVSN	KPMG	7373
Marvell Technology Group	MRVL	PWC	3674
Maxim Integrated Products	MXIM	EY	3674
McAfee Inc.	MCAF	PWC	7372
Meade Instruments	MEAD	PWC	3872
Medarex	MEDX	EY	8731
Mercury Interactive	MERQ	PWC	7372
Michaels Stores	MIKE	EY	5945
Microsoft	MSFT	DT	7372
Microtune	TUNE	EY	3674
Mips Technology	MIPS	EY	3674
Molex	MOL	KPMG	3678
Monster Worldwide	MNST	Other	7311

Company	Symbol	Auditor	SIC Code
M-Systems Flash Disk Pioneers	FLSH	EY	3572
Newpark Resources	NR	AA	3533
Novell	NOVL	EY	7372
Novellus Systems	NVLS	EY	3559
Nvidia	NVD	KPMG	2834
Nyfix	NYFX	DT	7373
Openwave Systems	OPWV	KPMG	7372
PMC-Sierra	PMCS	DT	3674
Power Integrations	POWI	AA	3674
Progress Software	PRGS	DT	7372
Quest Software	QSFT	DT	7372
QuickLogic	QUIK	PWC	3674
Rambus	RMBS	PWC	3674
Redback Networks	RBAK	PWC	7373
Renal Care	RCGI	EY	8090
Restoration Hardware	RSTO	DT	5712
RSA Security	RSAS	DT	3577
SafeNet	SFNT	EY	3633
Sanmina-SCI	SANM	AA	3672
Semtech	SMTC	AA	3674
Sepracor	SEPR	PWC	2834
Sharper Image	SHRP	DT	5940
Sigma Designs	SIGM	DT	3577
Stolt-Nielsen	SNSA	AA	4412
Sunrise Telecom	SRTI	KPMG	4813
Sycamore Networks	SCMR	PWC	3661
Sysview Technologies	SYVT	Other	7372
Take-Two Interactive Software	TTWO	PWC	7372
THQ	THQI	DT	7372
Trident Microsystems	TRID	PWC	3674
Ulticom	ULC	DT	3661
UnitedHealth	UNH	AA	6324
Valeant Pharmaceuticals	VRX	PWC	2834
Verint	VRNT	DT	7373
VeriSign	VRSN	KPMG	7371
Vitesse Semiconductor	VTSS	KPMG	3674
Western Digital	WDC	KPMG	3572
Wind River	WIND	PWC	7371
Witness Systems	WITS	KPMG	7372
Xilinx	XLNX	EY	3674
Zoran	ZRAN	PWC	3674

Also apparent in Table 1 is the clustering of many of the companies in certain industries. Particularly, industries with SIC codes beginning in 35, 36, or 73 dominate the list. Figure 2 graphically depicts the industry makeup of the group.



Another notable common factor among the companies from Table 1 is that a large number of them are listed on the NASDAQ exchange, as denoted by a four-digit ticker symbol. Many of them are technology firms, which tend to be more frequently listed on NASDAQ.

Expectations

The number of client companies facing options issues constitutes a distribution across the list of audit firms. However, because some audit firms are substantially larger than others, we computed a baseline expectation of the number of companies audited by each audit firm in two different ways. First, over the ten year period 1992-2001, we divided a given firm’s audit clients by the sum of all public companies listed in the Compustat database to form estimated market shares by audit firm (Big 5 plus Other). We then applied the market share percentages to the actual number of backdated stock-option companies to compute the expected number of audit clients for each audit firm category. Note, based on the *Wall Street Journal* tally, almost all of these transactions occurred during this period. Also, with the introduction of SOx in 2002, backdating essentially ceased. Due to the large representation of NASDAQ listed companies in the group, we also computed market shares using only NASDAQ companies. Also, because the number of companies on Compustat was slightly different than the total number of public companies identified in Who Audits America, we computed market shares manually using two issues of Who Audits America within the range of years and compared results to the Compustat results, noting substantial agreement. Market shares and subsequent statistical analyses did not differ substantially under any of these alternative measures.

Second, because of the disproportional industry representation of the companies seen in Figure 2, we computed “industry-specific” audit-firm market shares for the three largest major industry groups and for the rest of the companies not in these three industries as one group. For example, the firm market shares for major industry 35XX were multiplied by the actual number of backdated companies in industry 35XX. This process was repeated for industries 36XX and 73XX. For all other industries, the expectations using market shares for all industries other than 35XX, 36XX, and 73XX were si-

milarly computed. The sum of the four "industry-specific" expectations by audit firm formed the total expected number of clients.

TABLE 2
Distribution of Clients by Audit Firm - Actual vs. Expected Using Total Market Shares

Auditor	Total Market Share	All Firms Ex-pected No. of Clients	Total Market Share- Big 5 Firms Only	Big-5 only Ex-pected No. of Clients	Actual No. Back-dated-Option Com-panies
AA	16.6%	19	20.7%	23	10**
DT	12.6%	14	15.7%	17	21
EY	18.3%	21	22.7%	26	27
KPMG	15.2%	17	18.8%	21	22
PWC	17.6%	20	21.9%	24	31*
Other	19.7%	22			3
Total	100%	114	100%	111	114

Chi Square Using All Firms (5 d.f.) = 16.99 p < .01

Chi Square Using Big-5 Firms (4 d.f.) = 10.53 p < .012

*** Binomial probability of observing 31 or more, given market share, is .08**

**** Binomial probability of observing 10 or less, given market share, is .001**

Audit firm abbreviations:

AA	Arthur Andersen
DT	Deloitte Touche Tohmatsu
EY	Ernst & Young
KPMG	KPMG International
PWC	PriceWaterhouseCoopers
Other	All Other Audit Firms

Results

The goal of our research question is to determine if the audit firms are equally (randomly) represented in the list of companies engaged in backdating stock options. The first two columns of Table 2 present the relative market shares of the six audit-firm categories (Big-5 plus other) and the resulting expected number of clients in the 114 backdating companies. The last column shows the actual number of backdating clients by auditor. A Chi-square test (16.99 with 5 d.f.) of the homogeneity of these actual vs. expected numbers was significant at $p < .01$. A large factor causing this significance is that, while non Big-5 firms represent almost a 20% market share of public companies, only 3 (2.6%) of the backdating clients were audited by these firms. Clearly, backdating was overwhelmingly a large firm issue. Therefore, columns 3 and 4 of Table 2 show the analysis using only Big 5 auditors. The corresponding Chi square test (10.53 with 4 d.f.) is significant at $p < .05$. At the firm level, Arthur Andersen's actual number is significantly less ($p < .001$) than expected (10 vs. 23) and that PriceWaterhouseCoopers actual number of clients is significantly higher ($p < .08$) than expected (31 vs. 24) using binomial tests. None of the other firm differences were significant. Therefore, the initial answer to our research question is that the distribution of audit-firms for backdating companies is not consistent with overall market shares of all public companies.

Because of the asymmetrical distribution of industries represented among the backdating companies (noted earlier in Figure 2), we conducted further industry-

adjusted analysis as presented in Table 3. Note that the market share percentages by firm are fairly stable and not too dissimilar to the overall market shares in Table 2. As a result, after controlling for market share differences in the largest 3 major industries, the expected number of backdating clients did not change greatly, except for PriceWaterhouseCoopers. While PWC's expected vs. actual difference (24 vs. 31) was significant at $p < .08$ in Table 2, its industry adjusted difference (27 vs. 31) was not statistically significant ($p < .32$). Therefore, industry-specific market shares did explain part of the distribution of audit firms among backdating companies. Industry effects do not, however, explain the significant under-representation of Arthur Andersen's among these companies.

TABLE 3
Distribution of Clients by Audit Firm - Actual vs. Expected Using
Average Industry-Adjusted Market Shares

Auditor	Market Share SIC 35XX	Market Share SIC 36XX	Market Share SIC 73XX	Market Share All Other SIC codes	Big-5 Only Expected No. of Clients	Actual No. of Clients
AA	20.2%	15.7%	20.1%	20.4%	22	10**
DT	14.6%	13.3%	14.4%	16.7%	17	21
EY	20.0%	24.7%	22.1%	20.6%	24	27
KPMG	18.6%	21.4%	17.4%	16.6%	20	22
PWC	26.6%	24.5%	25.8%	25.6%	28	31
Total	100%	100%	100%	100%	111	111

Chi Square Actual vs. Expected- Using Big-5 Firms (4 d.f.) = 8.38 $p < .08$

**** Binomial probability of observing 10 or less, given market share, is .001**

SUMMARY AND CONCLUSIONS

In this paper we address the audit firm affiliations for companies recently identified as having engaged in the questionable practice of backdating-stock-option transactions. The data and the statistical tests indicate that (1) backdating companies tended to be primarily NASDAQ-listed companies in three major industry groups that were audited by Big-5 firms (2) there were significant differences in the proportions of audit firms representing these companies as compared to overall market shares, and (3) industry differences partially, but not completely, explained these between-firm differences. Specifically, while differences in industry-specific audit-market shares helped explain PWC's initial significantly high representation, Arthur Andersen remained significantly underrepresented as auditors for backdating companies, after controlling for industry differences.

The first finding is understandable, given the dot-com expansion of that time period. Specifically, the incentive was there to use stock options to attract top talent by tweaking the option grants to gain as much value as possible.

The second and third findings argue against speculation that some audit firms may have played a role in either allowing or disallowing these questionable transactions. Specifically, the combination of a concentration of backdating companies in certain industries and a dominant audit firm within those industries could produce a "copy-cat" effect between the companies if facilitated by the auditor. The lack of a statistically do-

minant audit firm among the backdating companies does not support such a premise. The lower than expected representation by Arthur Andersen may suggest that the firm was either more active in detecting and preventing these transactions, or simply that AA audited fewer of these companies. Given that the backdating transactions occurred before the demise of Arthur Andersen as a firm, we can only speculate as to why. We did solicit feedback from the other, now Big-4, firms and two regional firms. Other than the possible industry-specific effects tested in this paper, no other plausible, regular explanations were offered. Understandably, due to the current regulatory scrutiny, these representatives asked not to be quoted, without permission.

Still the question remains unanswered--what, if anything, was the mechanism for the spread of these transactions among the involved companies. Our results suggest it was *not* the audit firms. Instead, Peter Lattman (WSJ October 20, 2006) recently offered another possible explanation. He noted that over 40% of the backdating companies have or had directors sitting on boards of other companies implicated in the scandal. He also suggested that the relationship between the backdating companies and their law firms may have fostered, "intertwined relationships" that may have contributed to the problem. In summary, he noted that, "none of the intertwined relationships are illegal and appear to be fully disclosed," but that they, "involve an ethical rather than legal dimension."

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