Accruals Quality at Firms Accused of Backdating Stock Options

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ABSTRACT

This study examines accruals quality at firms accused of backdating stock options. Our measure of accruals quality is absolute prediction errors from the McNichols (2002) version of the Dechow and Dichev (2002) model. Our empirical method uses two distinct sets of control firms – size-matched firms and size and ROA combined-matched firms – and the regression model controls for fundamental determinants of accruals quality. The results indicate that accruals quality is inferior at backdating firms. Our evidence is consistent with "contagion in corruption" at the implicated firms and suggests that backdating is attributable to the poor ethics and loose corporate culture prevalent at certain firms.

Keywords: Options backdating, accrual quality, contagion, corporate culture

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INTRODUCTION

This paper examines the accruals quality of firms accused of backdating stock options (we refer to these firms as “backdating firms”). Options backdating refers to the manipulation of reported option grant dates by corporate executives who, with the benefit of hindsight, select historical dates that coincide with low points for their firm’s stock. Since the exercise price on executive options is typically the market price on the reported grant date, backdated options are significantly in-the-money when actually awarded to the executives. The practice of backdating was widely publicized in a series of *Wall Street Journal* articles by Charles Forelle and James Bandler (e.g., Forelle and Bandler, 2006a; 2006b).

Forelle and Bandler (2006a) describe the seemingly fortuitous timing of stock options granted to certain corporate executives. Specifically, the options grants are dated just prior to sharp increases in the firms’ stock prices. Forelle and Bandler (2006a) point out that the probability of the repeated occurrence of such favorable grants is extremely low (for example, one in 300 billion for the grant dates reported by one investigated company, Affiliated Computer Services, Inc.). They conclude that a plausible explanation for their findings is grant date manipulation by corporate executives.

Researchers and practitioners hold mixed views on why backdating occurs, as discussed below. Some characterize backdating as a rational compensation mechanism, while others contend that backdating is attributable to poor ethics. We address this debate by examining the accruals quality at backdating firms, since ethical weaknesses, if any, at backdating firms should also manifest themselves in firms’ financial reporting. Our results indicate that accruals quality is indeed inferior at backdating firms, consistent with the view that backdating is symptomatic of broader cultural and ethical weaknesses at these firms.

Our evidence of contagion in corporate policies also contributes to the growing literature on corporate culture. Corporate culture has been defined as common knowledge and/or established shared beliefs held by employees in an organization (e.g., Kreps, 1990; Crémer, 1993). Prior research suggests that these shared beliefs exert substantial influence on corporate policies and practice. For example, Bertrand and Schoar (2003) find that managerial fixed effects are an important determinant of firms’ investment, financial, and organizational policies. In the corporate finance literature, Lemmon, Roberts, and Zender (2008) analyze firms’ capital structure choices and find that the inclusion of firm-specific effects significantly enhances the explanatory power of their models. Cronqvist, Low, and Nilsson (2009) find that the investment and financial policies of spin-off firms are similar to those of their parent firms rather than those of their own peer firms. Finally, a concurrent study by Frank, Lynch, and Rego (2009) finds that firms with aggressive financial and tax reporting policies are more leveraged and have higher capital expenditures, lower discretionary expenses, and higher total CEO compensation compared with average firms. Our study extends this research by demonstrating that firms that manipulate options grant dates also likely manage their accounting numbers.

BACKGROUND LITERATURE

In the academic literature, Yermack (1997) is the earliest to document positive abnormal stock returns following managerial options grants. He also finds that the abnormal stock price behavior is attributable to the release of favorable corporate news subsequent to the options awards. In a related study, Aboody and Kasznik (2000) find that managers' bad news disclosures tend to precede scheduled options awards, but their good news releases typically lag such awards, suggesting that managers time their disclosures to maximize the value of their options. While these early studies conclude that managers time their options grants and disclosure decisions strategically, Lie (2005) and Narayanan and Seyhun (2005) are the first to suggest that some managers might be manipulating grant dates ex-post. These studies find evidence of negative (positive) stock price performance in the pre-grant (post-grant) period. Narayanan and Seyhun (2005) also find that the probability of stock price reversal around the grant date is positively associated with the lag between the grant date and the date on which the grant was reported to the SEC. Finally, Heron and Lie (2007) find that the post-grant stock price behavior is weaker since the August 2002 implementation of an SEC rule that requires firms to report grants within two days of the award.

Although extant research and anecdotal evidence both highlight the prevalence of backdating, there are conflicting theories on why backdating occurs (Armstrong and Larcker, 2009). Under one theory, backdating is attributable to weak corporate governance and controls and is thus symptomatic of a "loose corporate culture" (Fleischer, 2006). Consistent with this explanation, Fleischer (2006) argues that backdating firms are typically small and operate in high-tech industries where innovation and growth may be emphasized over legal compliance. Collins, Gong, and Li (2009) and Bebchuk, Grinstein, and Peyer (2010) find that boards of directors are relatively less independent at backdating firms. Lee, Mande, and Son (2010) find a greater likelihood of backdating at firms with weaker corporate governance. Studies have also found that shareholders of firms implicated in the *Wall Street Journal* reports suffer significant losses upon publication of the reports: Narayanan, Schipani, and Seyhun (2007) find mean market-adjusted returns of -8% over a 20-day event window, and Bernile and Jarrell (2009) find mean four-factor model excess returns of -3% over a three-day event window.

By contrast, other researchers and practitioners argue that that backdating facilitates contracting between firms and their officers by removing exercise price uncertainty during compensation negotiations (Jenkins, 2006). In support of this viewpoint, Jenkins (2007) cites a study by Devers, Wiseman, and Holmes (2007), who contend that executives equate options with wealth. In an Academy of Management press release related to the study ("Executives overvalue their stock options," 2007), Professor Wiseman opines that equating options with wealth causes the psychological impact of in-the-money options to be substantially greater than that of at-the money options. Jenkins (2009) contends that "… people overvalue a seeming bird in the hand."

Similarly, Wu (2008) argues that backdating is a rational response to stock price volatility, and her study also finds no evidence of managerial entrenchment or underperformance at backdating firms. Finally, also consistent with the notion that backdating is a benign human resource practice, Narayanan et al. (2007) estimate that the excess compensation resulting from backdating is negligible – for example the average benefit to executives is approximately 2-6% of the value of the grant in the pre-SOX period.

Armstrong and Larcker (2009) suggest that one way for researchers to evaluate the two alternative theories is to investigate other corporate practices at backdating firms in order to identify evidence of "contagion in corruption." Such corroborative evidence, including instances of securities litigation, labor strife, regulatory actions, or financial misreporting, would strongly support the notion that backdating is a manifestation of poor ethical norms, lax controls, and loose corporate cultures at affected firms. Accordingly, we analyze accruals quality at backdating firms. Prior research indicates that accruals quality not only is an appropriate measure of accounting quality (Dechow and Dichev, 2002), but is also a reliable indicator of earnings management and financial misreporting (Jones, Krishnan, and Melendrez, 2008). The remainder of this paper is organized as follows. Section III contains the research method, including sample details. Section IV presents empirical results, and Section V concludes the paper.

METHODOLOGY

In this section, we first discuss sample sources and describe the initial sample of backdating firms. We next discuss our measure of accruals quality and our process for matching sample firm-years with controls. Finally, we discuss our empirical model.

Initial Sample of Backdating Firms

The *Wall Street Journal* followed up its options backdating reports (Forelle and Bandler 2006a, 2006b) by posting on its website a list of firms suspected of backdating. The current version of the backdating-related website ("Options scorecard," 2007) indicates that the list of suspected companies was last updated in September, 2007. This most recent list is our source for an initial sample of 140 backdating firms.

We first examine the characteristics of the backdating firms. We perform this examination using Compustat data for the fiscal year 2005, the year preceding the publication of the *Wall Street Journal* news reports. Table 1, Panel A presents the industry classification of backdating firms. Manufacturing (SIC codes 2000-3999) and service (SIC codes 7000-7999) firms are over-represented in the sample, relative to the Compustat population. The service industry includes high-tech and software firms, which are known to extensively rely on options-based compensation for their employees. Table 1, Panel A also indicates that finance, insurance, and real estate firms (SIC codes 6000-6999) are underrepresented in the sample. These firms comprise only 4% of the backdating sample, but 24% of the Compustat population.

Table 1, Panel B reports select financial characteristics of sample firms. We compare median sample firm characteristics with the corresponding median characteristics for all Compustat firms. This comparison indicates that the average backdating firm is larger (in both assets and sales) than the average Compustat firm. Backdating firms are also valued relatively high, since median market-to-book and price-earnings ratios for these firms exceed those for the Compustat firms. Consistent with the high valuations, profitability (as measured by return on sales) and sales growth (compounded over three years) are both relatively high for the sample firms.

Table 1: Sample Description

Panel A: Industry Classification of Backdating Firms

	Sample		**Compustat**	
SIC	**Frequency**	**Percent**	**Frequency**	**Percent**
0-999	0	0.0	72	0.3
1000-1999	3	2.1	1,418	6.3
2000-2999	10	7.1	2,669	11.8
3000-3999	55	39.3	4,763	21.0
4000-4999	6	4.3	2,046	9.0
5000-5999	13	9.3	2,000	8.8
6000-6999	6	4.3	5,356	23.7
7000-7999	37	26.4	3,115	13.8
8000-8999	6	4.3	865	3.8
9000-9999	0	0.0	329	1.5
Missing	4	2.9	-	0.0
Total	140	100.0	22,633	100.0

The Compustat data are for the fiscal year 2005.

Panel B: Backdating Firm Characteristics (fiscal year 2005)

	Sample Median	**Compustat Median**
Assets ($ million)	929.563	277.036
Sales ($ million)	767.498	126.617
Market-to-Book	2.822	1.965
Debt-to-Equity	0.554	0.955
Price-to-Earnings	20.157	12.905
Return on Sales %	6.322	4.110
3-Year Sales Growth %	48.423	32.097

The number of observations is 118 for the sample and ranges from 6,381 to 7,890 for Compustat. All sample medians are significantly different from the corresponding Compustat median at the 1% level.

Accruals Model

Our measure of accruals quality is the cross-sectional version of the Dechow-Dichev (2002) measure as modified by McNichols (2002). Dechow and Dichev (2002) propose an empirical measure of the quality of earnings and accruals: the residual from a regression of working capital changes on lagged, concurrent, and leading cash flow from operations. Their evidence indicates that this measure is correlated with earnings persistence. McNichols (2002) expands the Dechow and Dichev (2002) model by including two determinants of nondiscretionary accruals, namely, the change in sales and property, plant, and equipment. Her results indicate that the explanatory power of the accruals model is significantly enhanced by the inclusion of the two additional regressors. Accordingly, several recent studies of accruals/earnings quality (e.g., Francis, Lafond, Olsson, and Schipper, 2005; Doyle, Ge, and McVay, 2007) use the residual from a cross-sectional estimation of the McNichols (2002) modified model as their variable of interest.

Moreover, a recent study by Jones, Krishnan, and Melendrez (2008) finds that the cross-sectional Dechow and Dichev (2002) and McNichols (2002) measures of accruals quality perform best (among ten different measures, including several discretionary accrual measures) at identifying the incidence of earnings management. Specifically, the accrual estimation errors have the highest associations with the existence of both fraud and non-fraud restatements as well as the magnitude of the fraud.

Following prior studies, we estimate the following model by industry (two-digit SIC) and year:

$$Change\_WC_t = \alpha_0 + \alpha_1 CFO_{t-1} + \alpha_2 CFO_t + \alpha_3 CFO_{t+1} + \alpha_4 Change\_Sales_t + \alpha_5 PPE_t + e_t \qquad (1)$$

where, *Change_WC* is the change in working capital from the cash flow statement and equals the increase in accounts receivable (Compustat #302) plus the increase in inventory (#303) plus the decrease in accounts payable and accrued liabilities (#304) plus decrease in taxes accrued (#305) plus the increase (decrease) in other current assets (liabilities); *CFO* is cash flow from operations; *Change_Sales* is the annual change in sales; *PPE* is property, plant and equipment. All variables are deflated by beginning total assets and truncated at the first and ninety-ninth percentiles. We also require a minimum of 20 observations per industry-year to estimate the model.

Since we need our accruals quality measure by firm-year, we use the absolute value of the residual from equation (1) as in Srinidhi and Gul (2007). Thus, the accruals quality measure is computed as follows:

$$AQ = |Change\_WC - Predicted\_Change\_WC| \qquad (2)$$

A high value of *AQ* implies a large estimation error and hence is indicative of poor accruals quality.

Control Samples

Francis et al. (2005) discuss the distinction between innate and discretionary accruals quality. Innate accruals quality is a function of the nature of the firm’s business and of its operating environment. Discretionary accruals quality, on the other hand, is driven by managerial accounting choices and errors. Since our objective in this study is to assess "discretionary" accruals quality at backdating firms, we implement two levels of controls for the fundamental determinants of accruals quality. First, we match each sample firm-year with a control firm-year, as discussed below. Second, we include several innate determinants of accruals quality, identified by Francis et al. (2005), as control variables in our regressions.

Table 2: Sample Sizes

Panel A. Number of firm-years when using combined ROA-size match

	Backdating Firms	Control Firms
Initial sample firm-years (1988-2006)	912	
Less: Sample firm-years not covered on Compustat	-25	
Less: Sample firm-years with unavailable matches	-70	
Matched Sample (max. observations for descriptive statistics in Table 3)	817	817
Less: Firm-years with missing accruals model coefficients	-93	-93
Less: Firm-years with missing data on accruals quality or control variables	-454	-497
Number of firm-years used in the regression	270	227
Total number of firm-years used in the regression: 497		

Panel B. Number of firm-years when using size match alone

	Backdating Firms	Control Firms
Initial sample firm-years (1988-2006)	912	
Less: Sample firm-years not covered on Compustat	-25	
Less: Sample firm-years with unavailable matches	-58	
Matched Sample (max. observations for descriptive statistics in Table 3)	829	829
Less: Firm-years with missing accruals model coefficients	-105	-105
Less: Firm-years with missing data on accruals quality or control variables	-454	-510
Number of firm-years used in the regression	270	214
Total number of firm-years used in the regression: 484		

For each backdating firm, we use the Options Scorecard provided by the *Wall Street Journal* to ascertain the period over which backdating occurred. This process yields our initial sample of backdated firm-years. For each backdating firm-year, we pick two matches and consequently, we report our empirical results in the next section for two distinct matched samples. For one match, our criteria are year, industry (two-digit SIC code), and size (as measured by total assets). Several prior studies investigating financial misreporting (e.g., Agrawal and Chadha, 2005) use industry/size-based matches. Second, Kothari, Leone, and Wasley (2004) find that discretionary accruals computed from the modified-Jones model are correlated with firm performance, and hence they recommend return on assets-based (ROA-based) matching in earnings management studies. Although this prescription does not extend to Dechow and Dichev (2002) estimation errors, we nevertheless assemble a second set of matches using year, industry, and a combination of ROA and size. Within each industry/year, the matched firm-year is the one whose ROA is closest to the sample firm-year's ROA, but whose assets are within 30% of the sample firm-year's assets.

Table 2 reports the sample sizes used in our analysis for each matched sample set. Panel A indicates the number of available firm-years when we match based on a combination of ROA and size, whereas Panel B reports these details for a matched sample based purely on size. As described in Table 3, we start with an initial sample of 912 backdated firm-years for the 140 backdating firms. We delete firm-years not covered on Compustat and firm-years with unavailable matches. All remaining sample firm-years are matched with a control firm-year. This matching process yields 817 matched pairs with the combined ROA-size match and 829 matched pairs based on size alone; these are the maximum observations for the descriptive statistics in Table 4. We next delete any sample and control firm-years for which accruals model coefficients are not available or for which data on the regression variables are not available. Thus our final regression sample sizes are 497 for the combined ROA-size matched set and 484 for the size-matched set. We note that our final samples are not fully matched with an equal number of treatment and matched firms. However, such samples are common in the literature (e.g., Dechow, Sweeney, and Sloan, 1996). Moreover, we explicitly control for the two matching criteria – ROA and size – in our regressions.

Table 3: Accruals Model Estimation Results

$$Change\_WC_t = \alpha_0 + \alpha_1\, CFO_{t-1} + \alpha_2\, CFO_t + \alpha_3\, CFO_{t+1} + \alpha_4 Change\_Sales_t + \alpha_5\, PPE_t + e_t$$

Variable	**Mean Estimate**	**Median Estimate**	**Standard Deviation**
Intercept	0.0157	0.0136	0.0408
CFO_{t-1}	0.1600	0.1405	0.1987
CFO_t	-0.4042	-0.3872	0.2691
CFO_{t+1}	0.1652	0.1382	0.2811
$Change\_Sales_t$	0.0891	0.0914	0.1115
PPE_t	-0.0136	-0.0072	0.1077
Number of industry-years	529		

The table presents summary statistics for accruals model coefficients estimated by industry and year. We require a minimum of 20 observations to estimate the model for an industry-year. We use a total of 48,674 firm-year observations with available Compustat data. The sample period is 1981-2006. All variables, defined in the appendix, are scaled by beginning total assets.

Table 4: Descriptive Statistics

	Backdating Firms			ROA-Size Matched Firms			Size Matched Firms		
Variable	**N**	**Mean**	**Median**	**N**	**Mean**	**Median**	**N**	**Mean**	**Median**
AQ	339	0.0875	0.0461	298	0.7137	0.0361***	289	0.3508	0.0308***
Size	748	6.2131	6.1621	748	6.17	6.0935	748	6.213	6.1607
Std Dev CFO	635	0.1713	0.0923	562	0.46	0.0670***	540	0.5546	0.0713***
Std Dev Sales	643	0.7722	0.3431	582	1.457	0.2275***	560	1.8719	0.2527***
Operating Cycle	728	4.5818	4.5935	710	4.7146***	4.7361***	692	4.7065***	4.7344***
Neg Earn	748	0.3203	0.2	748	0.3297	0.2	748	0.3944***	0.4000***
ROA	748	0.0128	0.0583	748	0.0161	0.0557	748	- 0.0159**	0.0234***
Leverage	738	0.0983	0.0051	744	0.1344***	0.0678***	744	0.1634***	0.0975***
MB	747	1.2763	1.2093	698	1.0080***	0.9777***	669	0.8273***	0.7819***
Growth	746	10.5251	-0.0151	748	1.4933	0.1181***	748	2.0028	0.0956***
Auditor	700	0.9914	1	672	0.9390***	1.0000***	669	0.9372***	1.0000***

All variables are defined in the appendix. ***, **, * indicate that the matched-firm statistic is significantly different from the sample firm statistic at the 1%, 5%, 10% level, respectively.

Empirical Model

Our empirical model tests whether the accruals quality of backdating firms is poor relative to the matched firms. Francis et al. (2005) identify several innate determinants of accruals quality, which reflect the firm's business environment. These innate variables include firm size, operating environment uncertainty proxied by the length of the operating cycle, the standard deviation of cash flows, and the standard deviation of sales, and the frequency of negative earnings. Small firms and firms operating in complex and uncertain operating environments are likely to have poor accruals quality. Accordingly, we include the innate determinants of accruals quality as control variables in our empirical model.

We also include several other financial variables –ROA, leverage, market-to-book ratio (MB), and sales growth – as explanatory variables in our model. First the evidence in Table 1 indicates that these features of backdating firms are relatively unusual. Second, these characteristics are also likely associated with accruals and accrual estimation errors. For example, discretionary accruals are likely to be influenced by debt covenants associated with leverage as well as by working capital buildup related to growth. Moreover, the inclusion of size and ROA as control variables also compensates for any imperfect matching when we pick our control firm-years. Our final control variable is a proxy for the firm's audit quality and is measured as whether the firm is audited by a Big-N auditor, where Big-N refers to the Big-4 and their predecessors, the Big-6. Accruals management is presumably impeded by the high-quality audits provided by a major audit firm (Becker, DeFond, Jiambalvo, and Subramanyam, 1998)

Based on the discussion above, our empirical model is as follows:

$$AQ = \beta_0 + \beta_1 \, Backdate + \beta_2 \, Size + \beta_3 \, Std\ Dev\ CFO + \beta_4 \, Std\ Dev\ Sales + \beta_5 \, Operating\ Cycle + \beta_6 \, NegEarn + \beta_7 \, ROA + \beta_8 \, Leverage + B_9 \, MB + \beta_{10} \, Growth + \beta_{11} \, Auditor + \varepsilon \quad (3)$$

where, *AQ*, accruals quality, equals the absolute value of the accruals estimation error (equations 1 and 2); *Backdate* is coded 1 for backdating firm-years and 0 for control firm-years; *Size* equals the natural log of average total assets; *Std Dev CFO* equals the standard deviation of cash flow from operations scaled by beginning assets; *Std Dev Sales* equals the standard deviation of sales scaled by beginning total assets; *Operating Cycle* equals the natural log of operating cycle where the operating cycle is calculated as 360/(Sales/Average Receivables) + 360/(Cost of Goods Sold/Average Inventory); *NegEarn* equals the proportion of annual earnings over a five-year period that are negative; *ROA* equals return on assets; *Leverage* equals the ratio of long-term debt to total assets; *MB* is the natural log of the ratio of market value of equity to book value of equity; *Growth* equals the percentage sales growth for the year; *Auditor* equals one if the firm is audited by a Big-N auditor, else equals zero.

A high value of *AQ* is indicative of a large estimation error and thus corresponds to poor accruals quality. If accruals quality is relatively poor at backdating firms, we expect relatively high values of *AQ* for such firms resulting in a positive coefficient on *Backdate*.

EMPIRICAL RESULTS

In this section, we first present our results for the accruals model estimations, followed by descriptive statistics on the regression variables and estimation results for the main empirical model. The section concludes with sensitivity tests.

Accruals Model Estimations

Table 3 presents summary results for our accruas model (equation 1) estimations. As described in the previous section, we estimate these models separately for each industry-year, and hence Table 3 reports the cross-sectional mean, median, and standard deviation for each estimated coefficient. We use a total of 48,674 observations for 529 industry-years over the period 1981-2006. The results indicate that accruals are, on average, negatively correlated with concurrent cash flows, but positively correlated with lagged and next-period cash flows, consistent with Dechow and Dichev (2002) and McNichols (2002). Similarly, accruals are positively associated with the change in sales, and negatively associated with property, plant, and equipment, consistent with McNichols (2002). We use these coefficient estimates to compute our measure of accruals quality – absolute prediction errors (equation 2 above) – for each sample firm-year.

Descriptive Statistics

Table 4 presents the means and medians of the regression variables separately for the backdating firm-years and the two sets of control firm-years. We also test whether these averages are different for the backdating firm-years relative to the matched firm-years. The median value of *AQ* is significantly greater for the backdating firm-years (0.046) than for both the ROA-Size matched firm-years (0.036) and the size matched firm-years (0.031). Since *AQ* is an inverse measure of accruals quality, our univariate comparison indicates that accruals quality is relatively poor at backdating firms. The backdating and matched firms are of similar size, and the ROA comparison indicates that the backdating and ROA-size matched firms are similarly profitable, suggesting that our matching procedure has worked reasonably well.

Table 4 also indicates that the average values of the innate and other control variables are statistically different for the backdating and control firm-years. Specifically, the backdating firms have more volatile cash flows and revenues, shorter operating cycles (approximately 98 days compared with around 110 days for the matches), less leverage, and higher market-to-book ratios relative to the matches. In addition, a relatively high proportion of the backdating firms are audited by a Big-N auditor. These results underscore the need for the inclusion of the innate variables as regressors in the empirical model.

Table 5: Regression Results

$$AQ = \beta_0 + \beta_1 \textit{Backdate} + \beta_2 \textit{Size} + \beta_3 \textit{Std Dev CFO} + \beta_4 \textit{Std Dev Sales} + \beta_5 \textit{Operating Cycle} + \beta_6 \textit{NegEarn} + \beta_7 \textit{ROA} + \beta_8 \textit{Leverage} + B_9 \textit{MB} + \beta_{10} \textit{Growth} + \beta_{11} \textit{Auditor} + \varepsilon$$

Variable	ROA-Size Combined Match [p-value]	Size Match [p-value]
Intercept	-0.003	0.0296
	[.962]	[.647]
Backdate	0.0268**	0.0347***
	[.028]	[.007]
Size	-0.004	-0.0038
	[.362]	[.402]
Std Dev CFO	0.0765***	0.1308***
	[.004]	[.000]
Std Dev Sales	0.0430***	-0.0014
	[.000]	[.832]
Operating Cycle	0.0053	0.0049
	[.522]	[.567]
NegEarn	0.0454*	0.0477**
	[.057]	[.045]
ROA	0.1939***	0.1264***
	[<.000]	[.000]
Leverage	0.014	0.0199
	[.736]	[.612]
MB	0.0036	0.0061
	[.578]	[.3927]
Growth	0.0037	0.0193*
	[.788]	[.100]
Auditor	-0.0043	-0.0321
	[.912]	[.456]
Number of Observations	497	484
Adjusted R-square	12.50%	11.35%

The variables are defined in the appendix. ***, **, * indicate significance at the 1%, 5%, 10% level, respectively.

Regression Results

Our empirical model investigates differences in the accruals quality of backdating and matched firms, after controlling for other determinants of accruals quality. Table 5 reports the results of regressions of *AQ*, absolute accruals prediction errors, on a backdating firm-year indicator, innate variables, and other controls. Results are reported for samples based on a ROA-size combined match and a size match. We obtain qualitatively similar results for both samples.

Consistent with Dechow and Dichev (2002), we find that accruals prediction errors are positively associated with the volatility of both cash flows and sales and also with the frequent reporting of negative earnings. Accruals estimation errors are also positively associated with firm profitability, consistent with Kothari et al. (2004). Finally, the coefficient on sales growth is positive marginally significant (p-value 0.10) for the size-matched sample, suggesting that accruals prediction errors are high for growth firms.

Table 6: Sensitivity Analysis: Control for SOX

$$AQ = \beta_0 + \beta_1\,Backdate + \beta_2\,Size + \beta_3\,Std\ Dev\ CFO + \beta_4\,Std\ Dev\ Sales + \beta_5\,Operating\ Cycle + \beta_6\,NegEarn + \beta_7\,ROA + \beta_8\,Leverage + B_9\,MB + \beta_{10}\,Growth + \beta_{11}\,Auditor + \beta_{12} SOX + \beta_{13}\,(SOX * Backdate) + \varepsilon$$

Variable	ROA-Size Combined Match [p-value]	Size Match [p-value]
Intercept	-0.0043	0.0349
	[.945]	[.591]
Backdate	0.0278**	0.0330**
	[.052]	[.029]
Size	-0.0023	-0.0015
	[.611]	[.744]
Std Dev CFO	0.0756***	0.1281***
	[.005]	[.000]
Std Dev Sales	0.0424***	-0.0012
	[.000]	[.859]
Operating Cycle	0.0044	0.0044
	[.595]	[.611]
NegEarn	0.0522**	0.0543**
	[.032]	[.024]
ROA	0.1994***	0.1344***
	[.000]	[.000]
Leverage	0.0059	0.0118
	[.888]	[.765]
MB	0.0028	0.0059
	[.674]	[.414]
Growth	0.0040**	0.0186
	[.014]	[.113]
Auditor	-0.0038	-0.0418
	[.922]	[.338]
SOX	-0.0160	-0.0238
	[.396]	[.232]
*SOX * Backdate*	-0.0127	-0.0049
	[.637]	[.859]
Number of Observations	497	484
Adjusted R-square	12.99%	11.99%

The variables are defined in the appendix. ***, **, * indicate significance at the 1%, 5%, 10% level, respectively.

The estimated coefficient for our variable of interest, *Backdate*, is positive and statistically significant in both samples. Thus accruals prediction errors are relatively high for backdating firms. Since these errors are inverse indicators of accruals quality, our results imply that accruals quality is poor at backdating firms, compared to two distinct sets of matched firms. Thus firms that manipulate their stock options grant dates also appear to manage their accounting numbers, consistent with the "contagion in corruption" theory. Our evidence thus lends credence to the contention that backdating is a manifestation of a loose corporate culture and lax ethical norms at certain firms, rather than being a benign contracting mechanism between these firms and their employees.

Sensitivity Test: Control for the Sarbanes-Oxley Act

Our first sensitivity test incorporates a control for the Sarbanes-Oxley Act of 2002 (SOX) into our model, because the enactment of SOX likely affected both options backdating and accruals quality. First, SOX has impacted potential backdating by imposing the requirement that all options grants should be reported to the Securities and Exchange Commission within two business days. Prior studies (Narayanan and Seyhun, 2006; Fried, 2008) find that this regulation has reduced, but not completely eliminated, backdating, possibly because some managers simply disregard the new rules. Second, Cohen, Dey, and Lys (2008) find that accruals-based earnings management has declined in the post-SOX period.

Accordingly, we include a dummy for the post-SOX period in our regression model, both independently and interactively with *Backdate*. The expanded model is as follows:

$$AQ = \beta_0 + \beta_1\,Backdate + \beta_2\,Size + \beta_3\,Std\ Dev\ CFO + \beta_4\,Std\ Dev\ Sales + \beta_5\,Operating\ Cycle + \beta_6\,NegEarn + \beta_7\,ROA + \beta_8\,Leverage + B_9\,MB + \beta_{10}\,Growth + \beta_{11}\,Auditor + \beta_{12}SOX + \beta_{13}\,(SOX * Backdate) + \varepsilon$$

where, *SOX* equals 1 for the post-Sarbanes-Oxley firm-years (2003 and later), else equals 0.

Table 6 presents estimation results for equation (4). The coefficient on *SOX*, although negative as expected, is statistically insignificant. The coefficient on the interaction term *SOX*Backdate* is insignificant as well. Moreover, the adjusted R^2s in Table 6 show negligible improvements relative to those reported in Table 5 for the base model. However, the coefficient on *Backdate* remains positive and statistically significant, indicating that accruals prediction errors are relatively high for backdating firms.

Sensitivity Test: Control for Options-Based Compensation

Baker, Collins, and Reitenga (2003) find that firms that compensate their CEOs using high proportions of stock options relative to other forms of pay are likely to manipulate discretionary accruals. We find that backdating firms report relatively poor quality accruals. Accordingly, one possible explanation for our finding is that backdating firms use relatively high levels of stock options compensation compared with the matched firms.

Table 7: Sensitivity Analysis - Control for Options-Based Compensation

AQ = $\beta_0 + \beta_1$ *Backdate* + β_2 *Size* + β_3 *Std Dev CFO*+β_4 *Std Dev Sales* + β_5 *Operating Cycle* + β_6 *NegEarn* + β_7 *ROA* + β_8 *Leverage* + B_9*MB* + β_{10} *Growth* + β_{11} *Auditor* + β_{12}*SOX* + β_{13} *(SOX * Backdate)* + β_{12}*OptRatio* + ε

Variable	ROA-Size Combined Match [p-value]	Size Match [p-value]
Intercept	-0.0340	-0.0534
	[.773]	[.671]
Backdate	0.0302	0.0339**
	[.138]	[.029]
Size	0.0026	0.0001
	[.680]	[.987]
Std Dev CFO	0.1794***	0.1654***
	[.000]	[.000]
Std Dev Sales	0.0245	0.0166
	[.146]	[.160]
Operating Cycle	0.0024	0.0045
	[.826]	[.663]
NegEarn	0.0637*	0.0714**
	[.053]	[.027]
ROA	0.2234***	0.2332***
	[<.000]	[.000]
Leverage	0.0162	0.0132
	[.770]	[.804]
MB	0.0005	0.0051
	[.948]	[.592]
Growth	0.0058	0.0000
	[.777]	[.999]
Auditor	-0.0046	0.0140
	[.958]	[.894]
SOX	-0.0068	-0.0184
	[.816]	[.542]
*SOX * Backdate*	-0.0270	-0.0124
	[.458]	[.736]
OptRatio	-0.0004	0.0000
	[.885]	[.998]
Observations used	382	376
R-square	14.13%	14.45%

OptRatio is the ratio of stock option-based compensation to salary, bonus, and options exercises. The other variables are defined in the appendix. ***, **, * indicate significance at the 1%, 5%, 10% level, respectively.

Following Baker et al. (2003), we use Execucomp data to compute the variable *OptRatio* as the ratio of stock options-based compensation to salary, bonus, and options exercises. Our univariate comparisons indicate no mean differences between the backdating and control firms; however, the median ratios for both the size-matched firm-years (0.656) and the combined ROA-size-matched firm-years (0.513) are *greater* (at the 0.01 level) than the median ratio for the backdating firm-years (0.213). Thus it appears unlikely that the inferior accruals quality at backdating firms is attributable to stock options-based compensation.

We nevertheless reestimate our regression with *OptRatio* as an additional control variable. These regression results are reported in Table 7. The sample sizes in Table 7 are smaller than those reported in Tables 5 and 6 due to Execucomp's limited coverage. For both matched samples, the coefficient on *OptRatio* is insignificant. The coefficient on *Backdate* retains its positive sign, although the estimate for the ROA-size-matched sample is no longer significant (p-value 0.13). The estimate for the size-matched sample remains statistically significant. The results for the control variables are similar to those reported in the preceding tables.

Overall, our sensitivity analyses are supportive of our main result. Accruals prediction errors are relatively high, and thus accruals quality is relatively poor, at backdating firms.

CONCLUSION

In this study, we examine the quality of accruals reported by firms accused of backdating stock options. Our proxy for accruals quality is prediction errors from the McNichols (2002) version of the Dechow and Dichev (2002) accruals model. Our research design incorporates two levels of controls for the fundamental determinants of accruals quality. First, we use two distinct sets of control firms matched on size and a combination of size and profitability. Second, we include several innate factors likely to influence accruals as control variables in our regression models. Our results indicate that accruals quality is inferior at backdating firms.

Some have argued that backdating is a benign mechanism that facilitates contracting between a firm and its employees. According to this theory, firms backdate options because the incentive effects of options are greater when the options are granted in-the-money rather that at-the-money. Others, by contrast, contend that backdating is indicative of the loose corporate culture and weak controls at certain firms. Our study contributes to this debate by demonstrating, as suggested by Armstrong and Larcker (2009), that backdating firms also have poor accounting quality. This evidence of "contagion in corruption" lends credence to the latter theory that backdating is symptomatic of a broader cultural and ethical weakness.

Our results are subject to several caveats. One caveat pertains to our use of the Dechow and Dichev (2002)/McNichols (2002) model to measure accruals quality. Although the model is widely accepted and endorsed in the accounting literature, any misspecification in the model limits the validity of our results. Second, we obtain our sample from the *Wall Street Journal's* options backdating reports. While we are not aware of any selection bias in the *Wall Street Journal's* options backdating coverage, any potential bias constrains the generalizability of our results. Finally, although we conclude that backdating is attributable to an underlying corporate culture, we concede that culture is a somewhat ambiguous concept that is not explicitly measured in our analysis. Rather, we base our conclusion on our observation of commonalities in managerial behavior at corporations. This is nevertheless consistent with how corporate culture is both defined (e.g., Kreps, 1990) and empirically analyzed (e.g., Bertrand and Schoar, 2003) in the literature. Future researchers could extend our study by searching for other corroborative evidence (e.g., excessive litigation or labor unrest) at backdating firms, as well as by similarly researching firms accused of other corporate misconduct.

REFERENCES

Aboody, D., & Kasznik, R. (2000). CEO stock option awards and the timing of corporate voluntary disclosures. *Journal of Accounting and Economics, 29,* 73-100.

Armstrong, C., & Larcker, D. (2009). Discussion of "The impact of the options backdating scandal on shareholders" and "Taxes and the backdating of stock option exercise dates." *Journal of Accounting and Economics, 47,* 50-58.

Agrawal, A., & Chadha, S. (2005). Corporate governance and accounting scandals. *Journal of Law and Economics, 48,* 371-406.

Baker, T., Collins, D. & Reitenga, A. (2003). Stock options compensation and earnings management incentives. *Journal of Accounting, Auditing and Finance, 18,* 557-582.

Bebchuk, L., Grinstein, Y., & Peyer, U. (2010). Lucky CEOs and lucky directors. *The Journal of Finance*, *65(6)*, 2363-2401.

Becker, C., DeFond, M., Jiambalvo, J. & Subramanyam, K. (1998). The effect of audit quality on earnings management. *Contemporary Accounting Research, 15,* 1-24.

Bernile, G., & Jarrell, G. (2009). The impact of the options backdating scandal on shareholders. *Journal of Accounting and Economics, 47,* 2-26.

Bertrand, M., & Schoar, A. (2003). Managing with style: The effect of managers on firm policies. *Quarterly Journal of Economics, 118,* 1169-1208.

Cohen, D., Dey, A. & Lys, T. (2008). Real and accrual-based earnings management in the pre- and post-Sarbanes-Oxley periods. *The Accounting Review, 83,* 757-787.

Collins, D., Gong, G. & Li, H. (2009). Corporate governance and the backdating of executive stock options. *Contemporary Accounting Research, 26(2),* 403-445.

Crémer, J. (1993). Corporate culture and shared knowledge. *Industrial and Corporate Change, 2,* 351-386.

Cronqvist, H., Low, A. & Nilsson, M. (2009). Persistence in firm policies, firm origin, and corporate culture: Evidence from corporate spin-offs. Working paper, Ohio State University.

Dechow, P., & Dichev, I. (2002). The quality of accruals and earnings: The role of estimation errors. *The Accounting Review* 77: 35-59.

Dechow, P., Sweeney, A. & Sloan, R. (1996). Causes and consequences of earnings manipulation: An analysis of firms subject to enforcement actions by the SEC. *Contemporary Accounting Research, 13,* 1-36.

Devers, C., Wiseman, R. & Holmes, R. (2007). The effects of endowment and loss aversion in managerial stock option valuation. *Academy of Management Journal, 50,* 191-208.

Doyle, J., Ge, W. & McVay, S. (2007). Accruals quality and internal control over financial reporting. *The Accounting Review, 82,* 1141-1170.

Executives overvalue their stock options, study suggests. (2007). Retrieved August 5, 2008, from http://aomonline.org/aom.asp?ID=251&page_ID=224&pr_id=335

Fleischer, V. (2006). Options backdating, tax shelters, and corporate culture. Working paper, University of Colorado Law School.

Forelle, C., & Bandler, J. (2006a, March 18). The perfect payday. *The Wall Street Journal*.

Forelle, C., & Bandler, J. (2006b, May 22). Matter of timing. *The Wall Street Journal*.

Francis, J., Lafond, R., Olsson, P. & Schipper, K. (2005). The market pricing of accruals quality. *Journal of Accounting and Economics, 39,* 295-327.

Frank, M., Lynch, L., & Rego, S. (2009). Are aggressive reporting practices associated with other aggressive corporate policies? Working paper, University of Virginia and University of Iowa.

Fried, J. (2008). Options backdating and its implications. *Washington and Lee Law Review, 65,* 853-886.

Heron, R., & Lie, E. (2007). Does backdating explain the stock price pattern around executive stock option grants? *Journal of Financial Economics, 83*, 271-295.

Jenkins, H. (2006, June 21). The "backdating" witch hunt. *The Wall Street Journal*.

Jenkins, H. (2007, March 7). The backdating molehill. *The Wall Street Journal*.

Jenkins, H. (2009, December 16). The backdating molehill revisited. *The Wall Street Journal*.

Jones, K., Krishnan, G., & Melendrez, K. (2008). Do models of discretionary accruals detect actual cases of fraudulent and restated earnings? An empirical analysis. *Contemporary Accounting Research, 25,* 499-531.

Kothari, S., Leone, A., & Wasley, C. (2004). Performance matched discretionary accrual measures. *Journal of Accounting and Economics, 39,* 163-197.

Kreps, D. (1990). Corporate culture and economic theory. In Alt, J. & Shepsle, K. (eds.) *Perspectives on positive political economy,* Cambridge, England: Cambridge University Press.

Lee, H., Mande, V., & Son, M.. (2010). Corporate governance characteristics of firms backdating stock options. *Quarterly Journal of Finance and Accounting*, *49(1)*, 39-60.

Lemmon, M., Roberts, M. & Zender, J. (2008). Back to the beginning: Persistence and the cross-section of corporate capital structure. *Journal of Finance, 63,* 1575-1608.

Lie, E. (2005). On the timing of CEO stock option awards. *Management Science, 51,* 802-812.

McNichols, M. (2002). Discussion of the quality of accruals and earnings: The role of estimation errors. *The Accounting Review, 77,* 61-69.

Narayanan, M., & Seyhun, H. (2005). Do managers influence their pay? Evidence from stock price reversals around executive stock option grants. Working paper, University of Michigan.

Narayanan, M., & Seyhun, H. (2006). Effect of the Sarbanes-Oxley Act on the influencing of executive compensation. Working paper, University of Michigan.

Narayanan, M., Schipani, C. & Seyhun, H. (2007). The economic impact of backdating of executive stock options. *Michigan Law Review, 105,* 1597-1642.

Options scorecard. (2007). Retrieved October 5, 2007, from http://online.wsj.com/public/resources/documents/info-optionsscore06-full.html

Srinidhi, N., & Gul, F. (2007). The differential effects of auditors' nonaudit and audit fees on accrual quality. *Contemporary Accounting Research, 24,* 595-629.

Wu, B. (2008). Is backdating vicious? An investigation on the rationale of backdating CEO stock options. Working paper, University of Amsterdam.

Yermack, D. (1997). Good timing: CEO stock option awards and company news announcements. *The Journal of Finance, 52,* 449-476.

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APPENDIX
Variable Definitions

AQ	Measure of accrual quality measured as the absolute value of the residual from a regression of change in working capital on cash flows from operations (for the previous year, the current year, and the next year), change in sales, and property plant and equipment. A smaller value of *AQ* indicates better accruals quality.
Change_WC	Change in working capital on the cash flow statement, equals the increase in accounts receivable (Compustat #302) plus the increase in inventory (#303) plus the decrease in accounts payable and accrued liabilities (#304) plus decrease in taxes accrued (#305) plus the increase (decrease) in other current assets (liabilities) (#307), all deflated by beginning total assets.
Assets	Total assets (#6)
Sales	Total sales (#12)
PPE	Property, Plant and Equipment (#8)
Size	Natural log of average assets
CFO	Cash flow from operations (#308)
Std Dev CFO	Standard deviation of cash flow from operations scaled by beginning assets
Std Dev Sales	Standard deviation of sales scaled by beginning assets
Leverage	Leverage defined as the ratio of long-term debt to total assets (#9 / #6)
Operating Cycle	Natural log of operating cycle where the operating cycle is calculated as 360/(Sales/Average Receivables) + 360/ (COGS/Average Inventory)
NegEarn	Proportion of earnings over a five-year period that are negative
ROA	Return on assets (#18/average assets)
SOX	Dummy variable coded 1 for post-SOX firm years, else 0
MB	Market to book ratio defined as the natural log of the ratio of market value (#25 x #24) to book value (#60)
Growth	Percentage sales growth for the year
Auditor	Dummy variable coded 1 for firms audited by a Big-N auditor, else 0