

Is Warren Buffett's commentary on accounting, governance and investing practices reflected in the investment decisions and subsequent influence of Berkshire Hathaway?

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Abstract:

We examine (i) whether the business practices of Berkshire Hathaway investees are consistent with Warren Buffett's public statements on what constitutes good accounting, governance and investing practices, (ii) whether Berkshire's investment leads to subsequent improvement in these practices, and (iii) whether Berkshire itself, its investees, and a mimicking portfolio exhibit superior performance.

We find that BH investees are likely to follow Buffett's investment philosophy, somewhat likely to follow accounting and disclosure policies he prefers, but unlikely to follow governance practices that he espouses. Further, there is little evidence to indicate that investees change their management practices subsequent to Berkshire's initial investment, suggesting that Buffett is not especially active or influential in the decisions of BH investees. Finally, Berkshire itself, Berkshire investees and a portfolio of equity holdings that statistically mimics the attributes that Buffett favors generally beat the market but do not always outperform the four-factor model. However, our mimicking portfolio is able to identify firms that report improvements in operating performance up to five years out.

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1.0 Introduction

Powerful investors that have substantial investments and/or substantial credibility at stake should be more likely to (i) select firms with relatively “good” business practices and (ii) find it cost-effective to monitor management and ‘influence’ their decisions. Powerful investors include sovereign wealth funds, private equity funds, public pension funds such as the California Public Employees' Retirement System (CALPERS) and powerful individual investors such as Warren Buffett. Such investors are believed to generally eschew short-term pressures to boost stock price and earnings in favor of long-term performance.

The potential importance of powerful investors with longer investment horizons raises several questions about their actions and influence, including (i) What are the attributes of firms in the portfolios of powerful investors (hereafter labeled “investees”)? (ii) Do such investors influence their investees’ accounting, governance and investing practices? (iii) Do these investees outperform the market after controlling for other factors? (iv) Do these investees report superior subsequent operating performance? (v) Can the model of good governance espoused by these powerful investors enable us to identify other potential investment targets? We provide evidence on these questions to shed light on whether powerful investors serve as an effective monitoring mechanism and whether other investors can replicate their investment strategy.

In this study, we analyze the investments and influence of a powerful investor with a long investment horizon: Warren Buffett. Buffett is the Chairman and CEO of Berkshire Hathaway Inc. (BH), a former student of value investor Benjamin Graham, and is one of the most admired and successful investors in U.S. history. BH is one of the largest investment funds in the U.S. with a market value in April 2011 of over \$245 billion.¹

¹ In comparison, the market value of the California Public Employees’ Retirement System (CALPERS) funds stood at \$235 billion (source: <http://www.calpers.ca.gov/>).

We examine whether the accounting, governance and investing practices of BH investees are consistent with Buffett's public statements and whether BH's involvement leads to subsequent improvement in these practices. Although Buffett is a vocal proponent of conservative, transparent accounting and governance policies, there is anecdotal evidence that BH investees are not always admired on these dimensions. For example, BH is an important investor and Buffett serves as a director at Coca-Cola, a company that spun off its majority ownership of its U.S. bottling company, Coca-Cola Enterprises to outside shareholders in 1986 (a.k.a., the "49% solution") and in the process simultaneously managed its *reported* ROA (return of assets) upward and leverage downward (Atanasov, Black and Ciccotello 2007).² Further, in June 2008, the SEC asked BH to report "a more robust disclosure" of factors used to value derivative contracts on which there were billions of dollars of unrealized mark-to-market losses (Stempel 2008).

While it is interesting to observe whether Buffett invests in firms with relatively transparent reporting and good governance, it is also important to examine Buffett's subsequent influence (if any) on key decisions of investee managers. For example, critics have argued that, although BH owned a substantial stake in Moody's, Buffett did little to change Moody's alleged lax credit rating practices, which some believe contributed to the recent financial crisis (Segal 2009). Thus, it is an empirical question whether the reporting and governance practices of potential BH investees affect Buffett's investment strategy and his subsequent influence on those practices. In other words, does BH (i) invest in firms with relatively conservative transparent accounting and governance practices and/or (ii) invest for other business reasons and perhaps later work to influence their investees' business practices to better align with Buffett's publicly expressed views? Or are Buffett's statements about accounting, governance and investing practices unrelated to BH's investment decisions and subsequent actions, i.e., are they effectively "cheap talk"?

² Even though the bottler spinoff occurred in 1986, two years before Buffett's significant investment in Coca-Cola, equity-method accounting for the bottlers hinges on the definition of control. Coca-Cola's equity-method treatment has been labeled gimmickry and inappropriate given the strong tacit control Coca-Cola exerts over its minority-owned bottlers (Fink 2000; Foust 2004). Presumably, Buffett could have exerted influence on Coca-Cola to consolidate their bottlers despite Coca-Cola's minority ownership.

Finally, we investigate whether BH investees outperform the stock market in subsequent years and whether Buffett's investment strategy can successfully produce abnormal returns (operating performance and stock returns) when applied to a set of firms that statistically resemble BH's investment portfolio.

It is interesting to study Buffett and BH for at least three reasons. First, unlike other powerful and successful investors, Buffett's speeches and writings enable us to obtain an understanding of his accounting, governance and investing philosophy and to build econometric models that reflect such thinking. In contrast, most investors, whether powerful or not, tend to be secretive about their investment strategies. Second, Buffett, often described as the "oracle of Omaha," is a legendary investor and his influence on accounting, governance and investment practices are topics that are inherently worthy of academic attention. If an outspoken investor such as Buffett is effective at improving the accounting, governance and decision-making of BH investees, it suggests other powerful investors can also influence their investees. Third, there is incomplete consensus on what constitutes "good" accounting or governance practices. For example, governance scorecards produced by commercial governance rating agencies such as RiskMetrics appear to be uninformative and noisy (Daines et al. 2010). In contrast, Buffett's model of good governance has evolved over decades and flows from his investment philosophy and hence, should be a less "mechanistic" assessment of governance. Buffett's public statements give us an opportunity to model and evaluate what he considers to be good governance practices. Because of Buffett's statements, we are able to test his premise that powerful investors are a way to substantially improve corporate governance (Berkshire Hathaway Annual Report 2002).

We are able to identify and test a large number of Buffet's assertions on what constitutes good accounting, governance and investing practices. (See the Appendix for a summary of Buffet's assertions and our empirical findings.) Consistent with Buffett's writings about accounting and disclosure practices, our findings indicate that BH investees tend to follow more transparent accounting and disclosure strategies as measured by timely disclosure of both good and

bad news, lower absolute abnormal accruals, better mapping of accruals to cash flows, and lower assumed rates of return on pension assets. We also find that Berkshire investees are more likely to voluntarily expense stock options before the passage of FAS 123R. However, three findings seem inconsistent with Buffett's public statements in that Berkshire investees are as likely as the average control firm to (i) rely on pro-forma earnings; (ii) issue earnings guidance; and (iii) have annual reports that are relatively difficult to read.

With respect to governance practices, we find that CEOs at Berkshire investees are paid less and their pay is more sensitive to performance relative to their counterparts in the control sample. However, inconsistent with Buffett's writings, there is no difference between CEO pay at Berkshire investees and the average control firm with regard to (i) sensitivity of CEO pay to negative performance; (ii) the effect of market wide increases in stock prices on CEOs' compensation; (iii) reliance on stock options; (iv) sensitivity to earnings adjusted for the cost of capital; and (v) the tendency for the firm to boost CEO pay if that CEO's pay falls in the lower half of their industry peers in the previous year.

Related to board structure and external monitoring, of the four espoused practices that we are able to test, only one is consistent with Buffett's statements: BH investee's are less likely to have diverse boards, as proxied by directors of non-Caucasian descent. Inconsistent with Buffett's public statements, we find that BH investees have larger boards and are more likely to have female directors than the average control firm. Also inconsistent with Buffett's commentary, there is no statistical difference between Berkshire investees and the average control firm in the number of outside directors and the extent of stock owned by outside directors.

With respect to Buffett's investment philosophy, of the nine characteristics that we are able to test, seven are consistent with Buffett's public statements. Relative to the average control firm, Berkshire investments enjoy substantially higher rates of return on equity, longer periods when firms' sales growth and ROE (return on equity) growth outperform their industry, lower volatility in such rates of return, lower leverage and have stock prices that trade closer to their intrinsic

values. However, inconsistent with his statements, Buffett's investees do not differ from the average firm in terms of (i) pension and OPEB obligations; and (ii) number of stock splits.

Perhaps surprisingly, we find little evidence to suggest that the accounting, compensation and governance practices change after Berkshire buys stock in a company. This result suggests that Buffett, although powerful, (i) either picks stocks that already possess the attributes he advocates – rather than intervening to change his investees' practices after purchasing shares; or (ii) is relatively passive in influencing his investees – more so than the tone and breath of his public statements would suggest. As discussed below, this apparent passive behavior is inconsistent with Buffett's commentary on the potential for large investors to improve corporate governance and anecdotal evidence on the conduct of other large funds such as TIAA-CREF, CALPERS and Hermes.

Finally, we analyze the performance of BH and its investees. Consistent with Martin and Puthenpurackal (2008) we find that, BH has outperformed the stock market over the last three decades ending in 2006. However, BH does not outperform the four-factor Fama-French benchmark portfolios over the most recent decade (1997-2006), perhaps due to the increasingly difficult challenge of picking stocks that boost the value of a large portfolio in excess of already high expectations. Turning to BH's portfolio of publicly traded stocks, as opposed to BH itself, we find that BH investees also beat the market return and outperform the Fama-French four-factor model over the entire sample period (1980-2006) – but not over the last decade (1997-2006). Next, we create a mimicking portfolio of stocks that attempts to capture investing, accounting and governance attributes preferred by Buffett. Accordingly, our mimicking portfolio generates excess returns relative to the market portfolio but not the four-factor model.³ The lack of excess returns for the four-factor model is not surprising because, when forming the mimicking portfolio, we do not time the purchases in the same unique way that potentially generates superior returns for BH. However, our mimicking portfolio is able to identify firms that report improvements in operating

³ Further, our results of course do not generalize to the many small private companies that are part of BH's portfolio.

performance five years out suggesting that our statistical model designed to replicate Buffett's investing philosophy captures at least some of Buffett's key principles related to securing an enduring competitive advantage.

The remainder of the paper is organized as follows. In section 2 we discuss prior literature and provide background information on Buffett's views on what constitutes good governance and his philosophy of identifying investment opportunities. We describe the sample in section 3. In sections 4, 5 and 6 we discuss the specific accounting, governance and investing principles that Buffett espouses, present our empirical proxies and report results on whether BH's investees reflect these principles. In section 7 we provide evidence on whether BH's investment changes the accounting, governance and investing decisions of investee firms. Section 8 explores whether applying Buffett's investing and governance philosophy can identify other mispriced target firms. Section 9 concludes.

2.0 Prior literature and Buffett's philosophies

2.1 Prior literature

2.1.1 Models of accounting, governance and investing practices

The finance, accounting and economic literature has not resolved important questions such as: (i) what are good accounting and disclosure practices? (ii) what is good governance? and (iii) what are good investing practices? The literature has generally relied on statistical and economic models to address each question (e.g., see cites in Fields, Lys and Vincent 2001; Gompers, Ishii Metrick 2007; Bebchuk, Cohen and Ferrell 2009). Such empirical models tend to favor external over internal validity and are fraught with conceptual and specification problems and often yield mixed results. We do not discount the value of this approach but, in this paper, we take an alternative perspective that favors internal over external validity. We investigate the actions of a successful investor who has spent his career studying these issues and has invested billions of dollars implementing trading strategies at least partially influenced by his model of accounting, governance and investing practices. He has massive 'skin in the game.' By studying the practices

of BH investees, we hope to gain increased internal consistency (one overall model) at the potential loss of generalizability. Martin and Puthenpurackal (2008) report abnormal returns of 4% soon after BH invests in a stock, consistent with Buffett having unusually good insights in his investment decisions and being important to the economy in his own right.⁴ In our view, studying Buffett's actions and the practices of his investees is an important addition to the literature.

2.1.2 Influential investors and activism

Research in finance has examined the role of influential investors such as pension funds in the U.S. capital markets. In particular, researchers have studied the kinds of investments that CALPERS and TIAA-CREF make, the types of firms that such funds target for improvement in governance and whether pension fund actions affect subsequent operating and stock return performance of the targeted firms (Carleton, Nelson and Weisbach 1998; Smith 1996; Prevost and Rao 1996). However, such investor activism encounters several limitations in that pension funds (i) themselves suffer from agency problems with respect to their beneficiaries (Coffee 1991); (ii) churn their portfolios too often and can sell their holdings in a poorly governed firm rather than stay and fix governance problems (Porter 1992; Bhidé 1993); (iii) lack long-term stable relationships with their investee firms to make credible governance changes, unlike in Japan (Kojima 1997), and (iv) may have less consistent, more statistics-based investing models over time relative to Buffett.⁵ BH arguably suffers fewer agency problems with its investees due to Buffett's reputation as a trustworthy steward. For example, he is known for his long-term and stable relationships with investees (e.g., his investment in the Washington Post Company dates back to 1973). By linking Buffett's strong public statements to the accounting, governance and investing

⁴ Buffett is admired not only for his comments about his investment philosophies, but also for his comments on current and future macro-economic conditions.

⁵ "Investors should be skeptical of history-based models. Constructed by a nerdy-sounding priesthood using esoteric terms such as beta, gamma, sigma and the like, these models tend to look impressive. Too often, though, investors forget to examine the assumptions behind the symbols. Our advice: Beware of geeks bearing formulas." (Buffett's letter to Berkshire Hathaway shareholders, 2/27/09)

practices of BH investees, we learn about the behavior and influence of Warren Buffett, one of the most well-regarded investors in history.

2.1.3 Experts on detecting earnings quality or investing leads

Academic research has long been interested in understanding whether certain experts can detect red flags in accounting quality or identify superior investments before the average market participant. For instance, Foster (1979) investigates the market reaction to new articles written in Barron's by Abe Briloff, a renowned commentator on accounting gimmickry, and found a negative return of 8% around the days when the article appeared. Desai and Jain (2004) researched all of the articles Briloff wrote for Barron's prior to the year 2000 and found that the negative stock market reaction to a Briloff article persisted even after one year had elapsed and might carry forward over a two-year period.

In the investing domain, several papers have studied the nature of Value Line's stock picks and whether such stock picks can time the market (e.g., Shelton 1967; Black 1973, Stickel 1985; Huberman and Kandel 1990). Other papers in this genre include studies of stock picks and market timing by investment newsletters (e.g., Graham and Harvey 1996, 1998, Graham 1999, Metrick 1999), expert equity recommendations (Barber and Loeffler 1993) and superstar money managers in Barron's (Desai and Jain 1995). Warren Buffett is more open with his opinions and is often regarded as more knowledgeable on accounting, governance and investing matters than many of the commentators already studied in the academic literature. Hence, we believe that an investigation into his stated "best practices" in the areas of accounting, governance and investing practices is overdue.

2.2 Accounting, Governance and Investing Principles

We have compiled Buffett's views on accounting, governance and investing from his public statements, some of which have been previously summarized by Cunningham (2001, 2007). For expositional ease, we have organized his views into three areas that can be empirically tested:

(a) accounting and disclosure; (b) governance, and (c) investing and financing decisions. We reproduce excerpts from his speeches and writings to support each research hypothesis.

2.2.1 Accounting and disclosure practices

Buffett prefers that firms make transparent accounting and disclosure decisions.

“As a corollary, we tell them (the CEOs) that they should not let any of their decisions be affected even slightly by accounting considerations. We want our managers to think about what counts, not how it will be counted.” (Berkshire Hathaway Annual Report, 1998)

“It’s only when the tide goes out that you learn who’s been swimming naked.” (Berkshire Hathaway Annual Report, 1993)

In addition, Buffett (2000) supported former SEC Chairman Levitt’s work in cracking down on selective disclosure. Buffett’s public statements lead to our first main cross-sectional hypothesis (H1a).

H1a: BH investees make relatively transparent accounting and disclosure decisions.

In addition to the hypothesis that Buffett prefers investing in companies with transparent accounting and disclosure practices (selection hypothesis), it is plausible that Buffett may either implicitly or explicitly promote his views and preferences on accounting and disclosure practices to investee companies subsequent to BH’s initial investment (activism hypothesis). Given Buffett’s generally long term investment horizon, it is likely that the expected benefits to BH investees from following his preferred accounting and disclosure practices are greater than the costs of changing the practice(s). Therefore, the activism hypothesis predicts the accounting and disclosure practices of BH investees will change over time in the direction of Buffett’s publicly stated preferences.

H1b: BH investees accounting and disclosure practices become more transparent subsequent to BH’s initial investment.

2.2.2 Governance practices

Buffett advocates good corporate governance in three areas: executive compensation, board of director composition, and monitoring by outside investors. Examples of his writings in these areas include:

On executive compensation: “It has become fashionable at public companies to describe almost every compensation plan as aligning the interests of management with those of shareholders. In our book, alignment means being a partner in both directions, not just on the upside. Many “alignment” plans flunk this basic test, being artful forms of “heads I win, tails you lose.”” (Berkshire Hathaway Annual Report, 1994)

On directors’ responsibilities to govern executive pay, and their failings to act independently in representing the shareholders: “This costly charade should cease. Directors should not serve on compensation committees unless they are themselves capable of negotiating on behalf of owners. They should explain both how they think about pay and how they measure performance. Dealing with shareholders’ money, moreover, they should behave as they would were it their own.” (Berkshire Hathaway Annual Report, 2002)

On the ability of powerful outside investors to improve corporate governance: “Twenty, or even fewer, of the largest institutions, acting together, could effectively reform corporate governance at a given company, simply by withholding their votes for directors who were tolerating odious behavior. In my view, this kind of concerted action is the only way that corporate stewardship can be meaningfully improved.” (Berkshire Hathaway Annual Report, 2002)

These statements suggest our second main hypothesis in cross-sectional (selection hypothesis, H2a) and time-series (activism hypothesis, H2b) versions:

H2a: BH investees exhibit relatively good corporate governance (as specified by Buffett).

H2b: BH investees exhibit improved corporate governance (as specified by Buffett) subsequent to BH’s initial investment.

2.2.3 Investing and financing practices

We also examine Buffett’s views of good corporate investing and financing practices. We test whether BH selects investees that employ the investing and financing principles he espouses, e.g.,

“The primary test of managerial economic performance is the achievement of a high earnings rate on equity capital employed (without undue leverage, accounting gimmickry, etc.) and not the achievement of consistent gains in earnings per share.” (Berkshire Hathaway Annual Report, 1979)

This leads to our third main hypothesis in cross-sectional (selection hypothesis, H3a) and time-series (activism hypothesis, H3b) versions:

H3a: BH investees make relatively good investment and financing decisions (as specified by Buffett).

H3b: BH investees exhibit improved investment and financing decisions (as specified by Buffett) subsequent to BH’s initial investment.

3.0 Sample

We obtain a list of Berkshire's holdings every calendar quarter during the period 1980 to 2006 from the CDA/Spectrum Institutional Money Manager Holdings database, which is based on Form 13F filings with the SEC. Institutional investment managers are required to file a 13F if their aggregate investments (publicly traded equity, in our case) at the end of a calendar month exceed \$100 million. The reporting requirement mandates that all securities with 10,000 shares or an aggregate fair market value of \$200,000 be filed with the SEC. However, institutional investment managers may request confidential treatment of certain securities ordinarily reported on Form 13F and Berkshire is known to have asked for such privilege. The CDA/Spectrum database does not backfill data on delayed investment disclosure due to the confidentiality treatment and such delayed disclosure is likely to be more typical for Berkshire's acquisition of well publicized companies. Hence, our sample is likely to be skewed in favor of less publicized Berkshire holdings.

We initially identify a sample of 624 firm-year observations (and 206 unique firms) representing Berkshire Holdings between 1980 and 2006. We restrict our focus to years up to 2006 because we require data to assess future stock return and operating performance for a period of up to five years following the investment by BH. Table 1 presents information about the sample by year. The average number of Berkshire holdings per year is 23 (column 2) while the median holding is 14 stocks. The discrepancy between the average and median holding is influenced by 1980 where Berkshire held 112 stocks. However, when we restrict our attention to investments in which Berkshire held at least 5% of the target firm's equity, the number of 1980 holdings falls to 13, suggesting that most of the 112 stocks in 1980 represented small investments. We report results in the paper for the complete sample. We have replicated all the regressions reported in the paper for holdings representing 5% or more of the target firm's equity and find our inferences are unchanged. For parsimony, we do not tabulate these results.

Our control sample is comprised of all available firms in the Compustat universe during the same time period. To be clear, proxies for the accounting, governance and investing principles for

Berkshire investees are examined for all available years during the period Berkshire invests (or retains its investment) in the target firm. We have ensured that the holding company Berkshire Hathaway has been deleted from the sample. We discuss cross-sectional evidence on accounting, governance and investing practices related to selection hypotheses H1a, H2a and H3a in sections 4, 5 and 6, respectively. We discuss time-series evidence in section 7 related to activism hypotheses H1b, H2b and H3b, which assess whether investee business practices change after BH's initial investment.

4.0 Empirical Method and Results – Accounting and Disclosure Practices

In this section, we identify Buffett's public statements on accounting and disclosure practices, describe our empirical measurement of these practices and report on results for BH investees versus a control group.

4.1 Buffett's statements on Accounting and Disclosure Practices

To clarify which specific accounting practices Buffett favors, we create a taxonomy of his comments on accounting and disclosure practices. In particular, we list the principle he espouses and follow that with a quote and the source.

A1: Firms should place less emphasis on EBITDA and pro forma earnings.

A2: Firms should report relatively high earnings quality.

"References to EBITDA make us shudder. Why exclude depreciation from earnings? These are real costs that a company incurs." (Berkshire Hathaway Annual Report, 2000)

"Bad terminology is the enemy of good thinking. When companies or investment professionals use terms such as "EBITDA" and "pro forma," they want you to unthinkingly accept concepts that are dangerously flawed." (Berkshire Hathaway Annual Report, 2001)

"Trumpeting EBITDA is a particularly pernicious practice. Doing so implies that depreciation is not truly an expense, given that it is a 'non-cash' charge. That's nonsense. In truth, depreciation is a particularly unattractive expense because the cash outlay it represents is paid up front, before the asset acquired has delivered any benefits to the business." (Berkshire Hathaway Annual Report, 2002)

A3: Firms should abstain from a) making earnings and growth forecasts and b) trying to meet/beat these forecasts.

“... be suspicious of companies that trumpet earnings projections and growth expectations. Businesses seldom operate in a tranquil, no-surprise environment, and earnings simply don’t advance smoothly (except, of course, in the offering books of investment bankers).” (Berkshire Hathaway Annual Report, 2002)

“Charlie and I think it is both deceptive and dangerous for CEOs to predict growth rates for their companies.” “Charlie and I tend to be leery of companies run by CEOs who woo investors with fancy predictions. A few of these managers will prove prophetic – but others will turn out to be congenital optimists, or even charlatans.”⁶ (Berkshire Hathaway Annual Report, 2000)

“Charlie and I not only don’t know today what our businesses will earn next year – we don’t even know what they will earn next quarter. We are suspicious of those CEOs who regularly claim they do know the future – and we become downright incredulous if they consistently reach their declared targets. Managers that always promise to “make the numbers” will at some point be tempted to make up the numbers.” (Berkshire Hathaway Annual Report, 2002)

A4: Firms should avoid using restructuring charges to manage earnings.

A5: Firms should expense stock option costs before FAS 123-R was enacted.

Too long to quote here, Buffett states his opinions in his 1998 letter to BH shareholders on option expensing, earnings management, and the use of restructuring charges to manage earnings. Buffett strongly opposes each of these actions. As an example, Buffett makes a downward adjustment to reported earnings for option expense before making any investment decision.

A6: Firms should use relatively conservative pension assumptions.

“... a company still does not expense options, or if its pension assumptions are fanciful, watch out. When managements take the low road in aspects that are visible, it is likely they are following a similar path behind the scenes. There is seldom just one cockroach in the kitchen.” (Berkshire Hathaway Annual Report, 2002)

A7: Firms should use relatively clear and simple explanations in their footnotes.

“... suggestions for investors: ... unintelligible footnotes usually indicate untrustworthy management. If you can’t understand a footnote or other managerial explanation, it’s usually because the CEO doesn’t want you to.” (Berkshire Hathaway Annual Report, 2002)

We present univariate comparisons in panel A of Table 2 on the accounting and disclosure practices espoused by Buffett. To confirm these univariate results, we estimate a multivariate regression of each accounting practice variable on an intercept, BERK and year and industry fixed effects (based on two-digit SIC codes). We cluster the standard errors by firm to account for any serial correlation in error terms. We tabulate the coefficient on BERK in panel B of Table 2.

⁶ Charlie Munger is Vice Chairman of BH and chairman of Wesco Financial Corporation, a majority-owned subsidiary of Berkshire Hathaway. Munger serves on numerous boards representing BH. Buffett characterizes Munger as his business partner.

Because of the numerous analyses in the paper, we summarize our findings in the Appendix, where panel A reports on accounting and disclosure practices of BH investees, panel B reports on compensation and governance practices, and panel C reports on investing practices and subsequent performance.

4.1.1 Timely reporting (overall test of H1a):

One way to examine the overall transparency of accounting and disclosure practices is to test for the timely disclosure of good news and bad news. Our empirical proxies for reporting timeliness are: i) the firm-specific measure of the timeliness of reporting bad news relative to good news (CSCORE) and ii) timeliness of good news (GSCORE), proposed by Khan and Watts (2007). Khan and Watts rewrite the standard Basu (1997) regression specification to allow coefficients to vary across firms and over time:

$$X_{i,t}/P_{i,t-1} = \beta_{1,t} + \beta_{2,t} D_{i,t} + \beta_{3,i,t} R_{i,t} + \beta_{4,i,t} D_{i,t} R_{i,t} + e_{i,t} \quad (1)$$

where i and t are firm and time subscripts, X is earnings, P is market value of equity, R is returns (measuring news), D is an indicator variable equal to 1 when $R < 0$ and equal to 0 otherwise, and e is the residual. The firm-year good news timeliness measure is $\beta_{3,i,t}$. The measure of incremental timeliness for bad news relative to good news (i.e., asymmetric timeliness) or firm-year conservatism is $\beta_{4,i,t}$. To estimate the timeliness with which accounting reflects both good news and conservatism, Khan and Watts (2007) specify that both the timeliness of good news and the incremental timeliness of bad news are linear functions of time-varying firm-specific characteristics:

$$\text{GSCORE } (\beta_{3,i,t}) = \mu_{1,t} + \mu_{2,t} \text{Size}_{i,t} + \mu_{3,t} \text{M/B}_{i,t} + \mu_{4,t} \text{Lev}_{i,t} \quad (2)$$

$$\text{CSCORE } (\beta_{4,i,t}) = \lambda_{1,t} + \lambda_{2,t} \text{Size}_{i,t} + \lambda_{3,t} \text{M/B}_{i,t} + \lambda_{4,t} \text{Lev}_{i,t} \quad (3)$$

Empirical estimators of λ_i and μ_i , $i=1$ to 4, are constant across firms, but vary over time.

Substituting equations (2) and (3) into regression equation (1), yields equation (4) below.

CSCORE is the firm-year measure of conservatism, while GSCORE is the firm-year measure of good news timeliness. To compute the CSCORE and GSCORE, we first estimate the following

empirical model in annual cross-sections to get coefficient estimates for μ_i s and λ_i s, where $i = 1$ to 4, from the following model:

$$\begin{aligned} X_{i,t}/P_{i,t-1} = & \beta_1 + \beta_2 D_{i,t} + R_{i,t} (\mu_1 + \mu_2 \text{Size}_{i,t} + \mu_3 M/B_{i,t} + \mu_4 \text{Lev}_{i,t}) + \\ & D_{i,t} R_{i,t} (\lambda_1 + \lambda_2 \text{Size}_{i,t} + \lambda_3 M/B_{i,t} + \lambda_4 \text{Lev}_{i,t}) + \varepsilon_{i,t} \end{aligned} \quad (4)$$

where, X is measured as net income before extraordinary items; P is market value of equity at the end of the prior fiscal year; R is annual returns obtained by cumulating monthly returns starting from the fourth month after the firm's fiscal year end; Size is measured as natural log of market value of equity; M/B is market value of equity divided by the book value of equity; and Lev is long-term debt and debt in current liabilities, deflated by market value of equity, all measured at the end of the year. Khan and Watts (2007) find that firms with higher CSCORE (GSCORE) are also more likely to disclose bad (good) news early as measured by the Basu (1997) asymmetric timeliness metric.⁷ We expect Berkshire investees to be more conservative (higher CSCORE) and also be more timely with disclosing good news (higher GSCORE).

Panel A of Table 2 reports statistically higher GSCORE and CSCORE measures (0.051 and 0.601, respectively) for BH investees relative to our control sample (0.029 and 0.370, respectively) suggesting that Berkshire investees report both good and bad news earlier than the average firm (t-statistics of 10.92 and 14.97, respectively). Multivariate results in panel B are similar; coefficients on GSCORE and CSCORE are positive and significant (t-statistics of 14.52 and 5.23, respectively). As predicted, BH investees appear to be more transparent in their financial reporting.

4.1.2 Pro-forma reporting (for A1)

Following Doyle et al. (2003), we measure GAAP earnings as earnings per share before extraordinary items and discontinued operations, using either basic or diluted, depending on the I/B/E/S primary and diluted indicator (PDI). Again following Doyle et al. (2003), we use I/B/E/S reported actual earnings per share, unadjusted for stock splits and dividends, as our measure of

⁷ As in Khan and Watts (2007) we also consider an alternate measure for CSCORE and GSCORE after incorporating the main effects (i.e., Size , M/B and Lev) in equation (4). Our inferences are unchanged.

“Street” earnings. The gap between I/B/E/S earnings and GAAP earnings (PRO_FORMA GAP) is scaled by split-adjusted stock price at the beginning of the quarter. Firms that report a greater difference between the I/B/E/S income measure and the GAAP income measure are deemed to rely more heavily on pro forma type income measures. We expect Berkshire firms to report a smaller PRO_FORMA GAP.

We find no statistical difference between Berkshire investees and the average control firm for PRO_FORMA GAP (t-statistic = -1.08 in panel A of Table 2; t-statistic = -0.50 in panel B). This is somewhat surprising given Buffett’s strong statements against reliance on EBITDA and other non-GAAP earnings measures. However, we acknowledge that we rely on a proxy for pro-forma earnings (I/B/E/S street earnings) as opposed to an actual measure of pro-forma earnings itself (as in Bhattacharya et al. 2003) because these data are too costly to hand collect.

4.1.3 Earnings quality (for A2):

Our first measure of earnings quality is based on an approach proposed by Dechow and Dichev (2002). The principal idea behind Dechow and Dichev (2002) is that earnings quality is higher when accruals capture more of the variation in current, past and future cash flows. Dechow and Dichev (2002), supplemented by modifications proposed by Francis et al. (2005) and McNichols (2002), model the relation between accruals and cash flows as follows:

$$TCA_{it} = \varphi_0 + \varphi_1 CFO_{it-1} + \varphi_2 CFO_{it} + \varphi_3 CFO_{it+1} + \varphi_4 \Delta REV_{it} + \varphi_5 PPE_{it} + v_{it} \quad (5)$$

where all variables including the intercept are scaled by average total assets. TCA is total current accruals calculated as $\Delta CA - \Delta CL - \Delta Cash + \Delta STDEBT$; ΔCA is change in current assets; ΔCL is change in current liabilities; $\Delta Cash$ is change in cash; and $\Delta STDEBT$ is change in debt in current liabilities. CFO is cash flow from operations computed as $IBEX - TCA + DEPN$, where $IBEX$ is net income before extra-ordinary items; and $DEPN$ is depreciation and amortization expense. For years subsequent to 1987, CFO is obtained from the cash flow statements reported under FAS 95

and TCA is computed as $IBEX - CFO + DEPN$. ΔREV is change in revenue. PPE is gross value of property, plant and equipment. Subscripts i and t are firm and time subscripts, respectively.

We estimate equation (5) for every firm-year in each two-digit SIC code that has at least 20 firms in year t .⁹ For firms in the two-digit SIC codes without enough observations, we estimate equation (5) with observations in one-digit SIC codes. If there are not enough observations within the one-digit sic code we use the entire sample to estimate the parameters. Under equation (5), higher accrual quality implies that accruals capture more of the variation in current, past and future cash flows and, as a consequence, the firm-specific residual, v_{it} , forms the basis of the earnings quality proxy used in the study. Specifically, the earnings quality (DD_{it}) metric is defined as the standard deviation of firm i 's residuals, calculated over years $t-4$ through t i.e., $DD_{it} = \sigma(v_{it-4,t})$. We interpret larger (smaller) DD as an indication of poor (good) earnings quality.

As an alternative measure of earnings quality, we consider the absolute value of the firm's abnormal accruals. This measure relies on the idea that changes in a firm's accruals are primarily determined by changes in firm fundamentals and in particular changes in revenues and changes in property, plant and equipment. If a firm's accruals deviate significantly from the level determined by changes in firm fundamentals, then such deviations are deemed abnormal and such abnormal accruals are assumed to reduce the quality of earnings.

To determine our second measure of earnings quality, the absolute value of abnormal accruals ($|ABACC|$), we apply the modified Jones' (1991) model, and estimate the following regression for each of the years using a similar procedure described above (all variables including the intercept are scaled by average assets).

$$VC_{it} = \delta_2 + \delta_3 * \Delta TGX_{it} - \Delta CT_{it} + \delta_4 RRG_{it} + \eta_{it} \quad (6)$$

⁹ Consistent with Francis et al. (2005), we winsorize the extreme values of the distribution of the dependent and the independent variables to the 1st and 99th percentiles.

where TA = firm i 's total accruals, computed as $TCA-DEPN$ and AR is accounts receivable.¹⁰ The other terms have been defined before. The industry- and year-specific parameter estimates obtained from equation (6) are used to estimate firm-specific “normal” accruals (as a percent of average total assets):

$$PC_{kv} = \delta_2^* + \delta_3^* \Delta TGX_{kv} - \Delta CT_{kv} + \delta_4^* RRG_{kv} \quad (7)$$

where NA refers to “normal” accruals. We calculate abnormal accruals, $ABACC$, in year t as $TA_{it} - NA_{it}$ and treat the absolute value of $ABACC$ as our second proxy for earnings quality. We interpret higher (lower) values of $|ABACC|$ as measures of lower (higher) earnings quality.

Univariate data in panel A of Table 2 indicate that Berkshire investees have relatively higher quality earnings as the DD measure is 0.025 relative to 0.049 for the average control firm (t-statistic = 11.04).¹¹ Similarly, the absolute value of abnormal accruals for Berkshire investments is considerably smaller at 0.032 relative to 0.068 for the average firm (t-statistic = 10.18). The multivariate results reported in panel B are consistent with the univariate results.

4.1.4 Earnings guidance and propensity to meet or beat analyst forecasts (for A3)

Our proxy for earnings guidance, whether a firm provides a quarterly earnings forecast, is obtained from the First Call database. We code $GUIDANCE$ as the number of times per year that a firm provides an earnings forecast.

To determine manager's success in meeting or beating forecasts, we measure the proportion of quarters in a year that a firm meets or beats the analyst consensus forecast obtained just before the earnings announcement ($MEET_BEAT$). Because it is difficult to disentangle superior performance from expectations or earnings management, we conduct an additional analysis where we determine manager's propensity to meet or beat expectations by a very small margin, a penny per share. That is, we compute the proportion of quarters in which firms manage

¹⁰ Kothari, Leone and Wasley (2005) suggest that adjusting for firm performance is important when determining the abnormal levels of accruals. In sensitivity analysis (unreported) we estimate equation (6) after controlling for firm performance proxied by return on assets. Our inferences are unaffected when we conduct analyses using the accruals obtained by using a modified equation (6).

¹¹ Recall that lower values of both the DD and $|ABACC|$ measures suggest higher quality earnings.

to exactly meet the analyst consensus forecast or beat it by a penny per share (SMALL_BEAT). To ensure reliable measurement, we restrict the sample to firms that have available data on at least three quarters during a year. We expect Berkshire firms to have smaller coefficients on GUIDANCE, MEET_BEAT, and SMALL_BEAT.

Inconsistent with Buffett's public statements, univariate data in panel A of Table 2 suggest that Berkshire investees provide guidance more (not less) often than the average control firm (about 4 times a year for Berkshire firms versus 2.6 times a year for the control firms). The multivariate test reported in panel B confirms the univariate finding. It is noteworthy that, despite Buffett's distaste for earnings guidance, his investees appear to guide more often than control firms. Also inconsistent with Buffett's statements, Berkshire firms are more likely to meet or beat the analyst consensus estimate (70.74% relative to 63.17% for MEET_BEATS). While the proportion of SMALL_BEATS was greater for BH investees (18.98% versus 17.17%), the difference was not statistically significant. This suggests that at least some of Berkshire investees' propensity to beat earnings estimates may be attributable to superior performance, as opposed to earnings or expectations management.

4.1.5 Restructuring charges (for A4)

Tracking restructuring charges and their reversals is not immediately feasible from large machine-readable databases. Hence, we do not implement A4. We include propositions in the paper that we cannot test to provide the reader with a comprehensive list of Buffett's principles.

4.1.6 Voluntary expensing of stock options (for A5)

We ascertain whether a firm voluntarily expenses the fair value of stock as per FAS 123 by looking for the inclusion of the firm's name in a 12/14/2004 Bear Stearns report identifying such firms (EXPENSER). We expect Berkshire firms to have a larger coefficient on EXPENSER.

The univariate data in panel A indicate that Berkshire investees are more likely to voluntarily expense options (43.3% versus 31.3%) although the multivariate results reported in

panel B are weaker as the coefficient on EXPENSER is 0.030 (t-statistic = 1.32, p-value = 0.09, one-tailed).

4.1.7 Conservative pension assumptions (for A6)

A manager of a firm with relatively large pension assets has an opportunity to manipulate reported earnings. Accordingly, our first measure of pension sensitivity is the ratio of the income statement effect of pension assets (i.e., assumed rate of return on pension plan assets multiplied by pension assets) to operating earnings (PENSENS). This measure implicitly captures the extent to which managements' assumption about the expected rate of return on pension plan assets can be used as a lever to manage earnings.

An alternative way to measure the extent to which managers are aggressive with the assumed rate of return on pension assets is to perform a regression analysis suggested by Bergstresser, Desai and Rauh (2006). Specifically, we estimate a regression of the assumed rate of return on pension assets on the log of the ratio of pension assets to operating income, BERK and an interaction term (BERK * log ratio of pension assets to operating income). The variable, "log ratio of pension assets to operating income," captures the extent to which the pension rate of return assumption influences reported earnings. Therefore, a positive coefficient on this variable suggests a greater likelihood that the pension rate of return assumption is opportunistic. Consistent with Bergstresser et al. (2006), we predict the coefficient on log ratio of pension assets to operating income to be positive. If Berkshire investees use more conservative pension rate of return assumptions, the coefficient on the interaction term should be negative.

Pension sensitivity (PENSENS), i.e., the proportion of income effect from pension assumptions relative to operating income, is significantly lower for Berkshire investees in both table 2, panel A (11.9% versus 22.2% for control firms) and in panel B where the coefficient on PENSENS is -0.085 (t-statistic = -2.72). This is consistent with less opportunistic manipulation of pension rate of return assumptions by Berkshire investees. Results in Panel C corroborate this finding. The coefficient on the Log (Pension assets/operating income)*BERK is negative (-0.173)

and marginally significant (t-statistic = -1.59, p-value = 0.06, one-tailed) suggesting that the sensitivity of operating income to changes in the assumed rates of return is smaller for Berkshire firms and hence less susceptible to upward earnings management via increases in assumed rate of return on pension assets.

4.1.8 Readability of Financial Statements (for A7)

To evaluate the readability of financial statements, we follow Li (2008) and compute the FOG INDEX for the text that appears in the annual report of a firm as (words per sentence plus the percentage of complex words) * 0.4. The intuition, drawn from computational linguistics based on syntactical textual features, is that all else equal, more syllables per word or more words per sentence make it more difficult to read and interpret the financial statements. Relative to the average control firm, we expect Berkshire investees' financial statements to be easier to read and thus to have a lower coefficient on the FOG INDEX.

In terms of linguistic transparency in financial statements, we find no statistical difference in Table 2 between the readability of Berkshire investee annual reports compared to the average control firm as measured by the FOG INDEX.

In summary, we conduct an overall test of the timeliness of reporting good and bad news, and six tests of Buffett's specific statements on accounting and disclosure practices. We find that BH investee practices are consistent with our predictions in four of seven areas considered. While, on balance, our evidence suggests that Berkshire investees often make relatively transparent and conservative disclosures as Buffett would prefer, there are notable exceptions including the tendency to provide more guidance than control firms and to produce financial statements that are no more readable than control firms.

5.0 Empirical Methods - Compensation and Board Composition practices

In section 5.1, we identify Buffett's public statements on senior executive compensation, describe our empirical measurement of these statements and report on results for BH investees

versus a control group. In section 5.2, we identify Buffett's public statements on governance practices embodied in board structure choices, describe our empirical measurement of these practices and report on results for BH investees versus a control group.

5.1 Senior Management Compensation

In this section, we identify six principles that Buffett advocates related to compensation for senior executives.

B1: Senior executives should not be "excessively" compensated.

B2: Pay for executives ought to be characterized by greater pay-for-performance sensitivity.

B3: Pay for executives should be less subject to overall upward creep (Lake Wobegone effect).¹²

"The deck is stacked against investors when it comes to the CEO's pay. Outlandish 'goodies' are showered upon CEOs simply because of a corporate version of the argument we all used when children: 'But, Mom, all the other kids have one.'" (Berkshire Hathaway Annual Report, 2006)

"The upshot is that a mediocre-or-worse CEO – aided by his handpicked VP of human relations and a consultant from the ever-accommodating firm of Ratchet, Ratchet and Bingo – all too often receives gobs of money from an ill-designed compensation arrangement." (Berkshire Hathaway Annual Report, 2006)

B4: Pay for executives ought to be more sensitive to negative performance

"If able but greedy managers over-reach and try to dip too deeply into shareholders' pockets, directors must slap their hand." (Berkshire Hathaway Annual Report, 2002)

On directors' responsibilities to govern executive pay and their failings to act independently in representing the shareholders: "This costly charade should cease. Directors should not serve on compensation committees unless they are themselves capable of negotiating on behalf of owners. They should explain both how they think about pay and how they measure performance. Dealing with shareholders' money, moreover, they should behave as they would were it their own." (Berkshire Hathaway Annual Report, 1993)

"Directors should stop such piracy. There's nothing wrong with paying well for truly exceptional business performance. But, for anything short of that, it's time for directors to shout 'Less!' It would be a travesty if the bloated pay of recent years became a baseline for future compensation. Compensation committees should go back to the drawing boards." (Berkshire Hathaway Annual Report, 2002)

"It has become fashionable at public companies to describe almost every compensation plan as aligning the interests of management with those of shareholders. In our book, alignment means

¹² Lake Wobegone is the fictional Minnesota town in the radio series *A Prairie Home Companion* by Garrison Keillor, where "all the women are strong, all the men are good-looking, and all the children are above average." Applied in this context, escalation in executive compensation occurs because even mediocre executives tend to be evaluated as "above-average," especially when they have below-average pay.

being a partner in both directions, not just on the upside. Many “alignment” plans flunk this basic test, being artful forms of “heads I win, tails you lose.” (Berkshire Hathaway Annual Report, 2002)

B5: Pay ought to be more sensitive to earnings net of cost of capital.

A common form of misalignment occurs in the typical stock option arrangement, which does not periodically increase the option price to compensate for the fact that retained earnings are building up the wealth of the company. Indeed, the combination of a ten-year option, a low dividend payout, and compound interest can provide lush gains to a manager who has done no more than tread water in his job. A cynic might even note that when payments to owners are held down, the profit to the option-holding manager increases.” (Berkshire Hathaway Annual Report, 1994)

As Buffett explains, however, simply by retaining and reinvesting earnings, managers can report annual earnings increases without so much as lifting a finger to improve real returns on capital (Cunningham SSRN, page 6).

Buffett emphasizes that performance should be the basis for executive pay decisions. Executive performance should be measured by profitability, after profits are reduced by a charge for the capital employed in the relevant business or earnings retained by it. (Cunningham SSRN, page 6)

B6: Firms ought to rely less on stock options to pay executives

“Better yet, as at Berkshire, stock options should simply not be part of an executive's compensation.” (Cunningham SSRN, page 6)

5.1.1 CEO excess compensation (for B1)

“Excess” compensation is notoriously difficult to measure. However, we attempt to measure abnormal compensation after accounting for several economic determinants of compensation. In particular, we regress the natural logarithm of annual compensation, defined as the sum of salary, actual bonus, target long-term incentive plan payments, pension contributions and other perquisites, the Black-Scholes value of stock option grants, and the market value of restricted and unrestricted stock grants, on several economic determinants such as firm size (using the natural logarithm of market capitalization), stock return performance of the firm (Returns-firm) and the overall market (Returns-market), operating performance (return on assets), investment opportunity set (market-to-book), risk (measured as the log of the standard deviation of returns), leverage, CEO's age, CEO tenure with the firm, new CEO indicator variable, the existing portfolio of stock and options measured as the natural logarithm of one plus the intrinsic value of the CEO's equity portfolio of stock, restricted stock, and option holdings (both vested and unvested), along

with industry and year fixed effects to control for differences in pay levels across industries and time (Murphy 1999). NEGDUM is an indicator variable set to one if the Returns-firm is negative in that year and is set to zero, otherwise. We also insert an indicator variable, BERK, set to one if the firm is a BH investee in that firm-year and zero otherwise. In particular, we employ the following parsimonious specification to investigate other compensation related propositions in the paper:

$$\begin{aligned} \text{Ln (annual compensation)}_{jt} = & \beta_0 + \beta_1 \text{Returns-firm}_{it} + \beta_2 \text{Returns-market}_t + \beta_3 \text{BERK}_{jt} \\ & + \beta_4 \text{Returns-firm}_{it} * \text{BERK}_{jt} + \beta_5 \text{Returns-market}_t * \text{BERK}_{jt} + \beta_6 \text{Negdum}_{jt} \\ & + \beta_7 \text{Negdum}_{jt} * \text{BERK}_{jt} + \beta_8 \text{Ln Market Cap}_{jt} + \beta_9 \text{ROA}_{it} + \beta_{10} \text{Market-to-book}_{it} \\ & + \beta_{11} \text{Ln standard deviation of returns}_{it} + \beta_{12} \text{Leverage}_{it} + \beta_{13} \text{CEO age}_{it} \\ & + \beta_{14} \text{CEO tenure}_{jt} + \beta_{15} \text{New CEO}_{jt} + \beta_{16} \text{Ln (CEO's stock and option portfolio)}_{jt} \\ & + \kappa \text{Industry}_j + \lambda \text{Year}_t + \text{error}_{jt}. \end{aligned} \quad (8)$$

A negative coefficient, β_3 , on BERK in equation (8) would suggest that CEOs at BH investees draw relatively less “excessive” compensation, after accounting for economic factors and executive specific variables known to affect annual compensation. To estimate regression model (8), we obtain data from the Execucomp database.

We find that, although the overall annual compensation levels are much higher at BH investees on a univariate basis (\$9.5 million versus \$4.5 million; results not tabled), multivariate results reported in Table 3 show that the coefficient on BERK is negative and significant (-0.301, t-statistic = -2.32). That is, consistent with Buffett’s statements, CEOs of BH investees are paid less than the average control firm after controlling for several factors known to affect compensation levels.

5.1.2 Greater pay-for-performance sensitivity (for B2)

In equation (8) above, β_2 captures pay-for-performance sensitivity (PPS) for the sample as a whole whereas coefficient β_4 , on the interaction term Returns-firm*BERK, represents the PPS for the Berkshire investee sample. We expect β_4 to be positive, consistent with CEO compensation for Berkshire firms being relatively more sensitive to firm performance.

We find that, consistent with Buffett's statements, BH investees report significantly higher pay-for-performance sensitivity, as evidenced by the positive and significant coefficient of 0.446 (t-statistic = 2.25) on Returns-firm*BERK in Table 3.¹³

5.1.3 Smaller Lake Woebegone effect (for B3)

We test for the Lake Woebegone effect, i.e., that firms increase CEO compensation merely to compensate for below average salary, in two ways. First, we use equation (8) to evaluate the coefficient β_5 on Returns-market*BERK, which captures the sensitivity of annual compensation to overall market wide performance for BH investees. A non-positive coefficient on Returns-market*BERK is consistent with Berkshire investees not incrementally rewarding CEOs for a market wide increase in stock prices.

Coefficients in Table 3 on Returns-market and Returns-market*BERK are non-positive (negative and insignificant) indicating that neither control firms nor BH investees respond to market wide increases in stock prices by increasing their CEOs' compensation.

Second, we adapt the specification in Bizjak et al. (2008) and regress change in annual compensation on several control variables, an indicator variable, LOWCOMP, that takes the value one if the CEO was below the median compensation of his peer group (i.e., below median compensation of his size and industry counterparts) for the previous year, and an interaction term LOWCOMP*BERK. Bizjak et al. (2008) find that CEOs whose compensation fall below their peer group in the previous year, receive a pay hike relative to their counterparts whose pay is above the peer group median, consistent with the Lake Woebegone effect. Using the specification employed by Bizjak et al. (2008), we expect a positive coefficient on LOWCOMP and a negative coefficient on LOWCOMP*BERK in equation (9):

$$\begin{aligned} \text{Log}(\text{annual compensation}_{it} / \text{annual compensation}_{it-1}) = & \beta_0 + \beta_1 \text{Returns-firm}_{it} + \beta_2 \text{Returns-market}_{it} \\ & + \beta_3 \text{BERK}_{it} + \beta_4 \text{LOWCOMP}_{it} + \beta_5 \text{LOWCOMP*BERK}_{it} + \beta_6 \text{Ln Market Cap}_{it} + \beta_7 \Delta \text{ROA}_{it} + \beta_8 \\ & \text{Log}(\text{Sales}_{it} / \text{Sales}_{it-1}) + \kappa \text{Industry}_j + \lambda \text{Year}_t + \text{error}_{jt} \end{aligned} \quad (9)$$

¹³ In untabulated results, we control for other forces that influence the pay-for-performance sensitivity by interacting returns with firm size and variability of returns in equation (8), consistent with Baker and Hall (2000) and Aggarwal and Samwick (1999). Our inferences remain unchanged.

Results in Table 4 indicate that, if the CEO belonged to the below-median firm in the control group in terms of pay, he/she is highly likely to get a pay hike in the following year (coefficient on LOWCOMP is 0.518, t-statistic = 32.27). Inconsistent with Buffett's statements, Berkshire firms are not less likely than control firms to exhibit a Lake Wobegone effect, i.e., the coefficient on LOWCOMP*BERK is positive and insignificant.

5.1.4 Sensitivity to negative stock market performance (for B4)

To explore the sensitivity of compensation to negative stock market performance, we include an indicator variable, Negdum, in equation (8) to identify cases where firms' stock returns are negative. The coefficient on this variable, β_6 , captures the sensitivity of compensation to negative stock returns and is predicted to be negative. The coefficient on the interaction of Negdum*BERK, β_7 , captures the incremental sensitivity of negative returns for Berkshire firms. Based on Buffett's statements, we expect β_7 to be negative. That is, we expect BH investees to be even more sensitive to negative stock market performance than are control firms.

Results in Table 3 indicate that CEO pay for the average control firm falls when stock returns turn negative (coefficient on Negdum in Table 3 is -0.152, t-statistic = -7.60). Inconsistent with Buffett's statements, CEOs at Berkshire firms do not appear to be incrementally negatively affected in downturns (coefficient on Negdum*BERK in Table 3 is weakly positive, t-statistic = 1.58).

5.1.5 Payout sensitivity to earnings net of cost of capital (for B5)

Following Frankel and Lee (1998), we measure earnings net of the cost of capital, i.e., "abnormal" earnings, as the difference between earnings per share scaled by the opening book value of equity ($\text{eps}/\text{bv}_{t-1}$) and the cost of capital defined as the two-digit industry-based discount rates computed by Fama and French (1997). We insert abnormal earnings as an additional independent variable in equation (8) and use the coefficient on this variable as a measure of the sensitivity of senior managers' pay to earnings that build wealth in excess of the cost of capital.

We expect the coefficient to be positive for control firms and incrementally positive for BH investees. Inconsistent with Buffett's statements, untabulated results indicate that compensation is not sensitive to abnormal earnings in the entire sample or for BH firms.¹⁴

5.1.6 Reliance on stock options (for B6)

We measure a firm's reliance on stock options in CEO compensation contracts as the ratio of the Black-Scholes value of annual option grants to annual compensation, which is measured as the sum of salary, actual bonus, target long-term incentive plan payments, pension contributions and other perquisites, the Black-Scholes value of stock option grants, and the market value of restricted and unrestricted stock grants (%OPTIONS) as per the EXECUCOMP database. Based on Buffett's statements, we expect the coefficient on %OPTIONS to be negative.

Inconsistent with Buffett's statements, untabulated results indicate that there is no statistical difference in the reliance on stock options as a proportion of the CEO's annual compensation (%OPTIONS) between control firms and BH investees.

In sum, although two of Berkshire investees' practices are consistent with Buffett's statements supporting lower "excess" pay and higher pay for performance, four of the nuanced compensation principles espoused by Buffett do not appear to be practiced at Berkshire firms.

5.2 Governance as embodied in Board Structure

In this section, we identify seven principles that Buffett advocates related to composition of the Board of Directors, four of which are not practical to test.

Internal monitoring-Board of directors

B7: Boards ought to be a) small in size and b) composed mostly of outside directors.

The most common situation, however, is a corporation without a controlling shareholder. This is where management problems are most acute, Buffett says. It would be helpful if directors could supply necessary discipline, but board congeniality usually prevents that. To maximize board effectiveness in this situation, Buffett believes the board should be small in size and composed mostly of outside directors. The strongest weapon a director can wield in these situations remains his or her threat to resign. (Cunningham SSRN, page 5)

¹⁴ However, to the extent that the industry fixed effects capture cost of capital differences, we would not expect to observe a relation between compensation and abnormal earnings.

B8: Firms ought to hold executive sessions with independent directors

“These social difficulties argue for outside directors regularly meeting without the CEO – a reform that is being instituted and that I enthusiastically endorse.” (Berkshire Hathaway Annual Report, 2002)

Holding regular meetings without the chief executive to review his or her performance would be a marked improvement in corporate governance (Cunningham SSRN, page 5).

B9: Directors ought to own more stock

“We now have eleven directors and each of them, combined with members of their families, owns more than \$4 million of Berkshire stock. In addition, director fees are nominal. Thus, the upside from Berkshire for all eleven is proportionately the same as the upside for any Berkshire shareholder. And it always will be. The bottom line for our directors: You win, they win big; you lose, they lose big. Our approach might be called owner-capitalism. We know of no better way to engender true independence.” (Berkshire Hathaway Annual Report, 2003)

B10: Directors' compensation ought to be less dependent on fees.

In general, Buffett feels there is an overall lack of board independence. Too often directors rely too heavily on board fees as a source of income. When this happens, directors are too worried about pleasing management so they can remain on the board and so they get a good reputation in the business community. This good reputation may lead to further board appointments, which is important to the director who relies on board fees as a material source of income. As a result, the main factor in determining director independence, in Buffett's opinion, is how much their board fees are, relative to other sources of income. (Cunningham, 2001)

External monitoring by block holders

B11: Buffett would prefer to see more coordinated institutional activism to improve corporate governance.

B12: Firms ought to pick CEOs that will perform capably regardless of weak structural restraints.

The best solution, Buffett instructs, is to take great care in identifying CEOs who will perform capably regardless of weak structural restraints. (Cunningham SSRN, page 4)

“When the manager cares deeply and the directors don't, what's needed is a powerful countervailing force – and that's the missing element in today's corporate governance. Getting rid of mediocre CEOs and eliminating overreaching by the able ones requires action by owners – big owners. The logistics aren't that tough: The ownership of stock has grown increasingly concentrated in recent decades, and today it would be easy for institutional managers to exert their will on problem situations. Twenty, or even fewer, of the largest institutions, acting together, could effectively reform corporate governance at a given company, simply by withholding their votes for directors who were tolerating odious behavior. In my view, this kind of concerted action is the only way that corporate stewardship can be meaningfully improved.” (Berkshire Hathaway Annual Report, 2002)

B13: Firms' directors ought to be chosen for their business savvy, their interest and owner-orientation and not necessarily for adding diversity or prominence to a board.

Outstanding CEOs do not need a lot of coaching from owners, although they can benefit from having a similarly outstanding board. Directors therefore must be chosen for their business savvy, their interest, and their owner-orientation. According to Buffett, one of the greatest problems among boards in corporate America is that members are selected for other reasons, such as adding diversity or prominence to a board. (Cunningham 2001, page 4)

5.2.1 Board size and outside directors (for B7)

We obtain data on board size (BOARD SIZE) and the proportion of directors that are outsiders (OUTSIDERS%) from the Directors data set compiled by IRRC (Investor Responsibility Research Center). Based on Buffett's statements, we predict BOARD SIZE to be smaller and OUTSIDER% to be larger for Berkshire investees.

Table 5 reports tests of board composition attributes for BH investees compared to control firms. Inconsistent with our prediction, Berkshire firms on average have 11.4 board members relative to 9.5 members for control firms (panel A). This result holds in the multivariate analysis in panel B (the coefficient on BOARD SIZE is 1.37, t-statistic = 3.18). While the percentage of outsiders on Berkshire firm boards (67.4%, panel A) was larger as predicted compared to control firms (64.3%), this difference was not statistically significant (the coefficient on %OUTSIDERS in panel B is 0.015, t-statistic = 0.87).

5.2.2 Executive sessions (for B8)

We do not test this hypothesis because we could not identify a machine-readable database to assess whether the board of a company holds executive sessions.

5.2.3 Stock held by directors (for B9)

We rely on the IRRC Directors database to compute the proportion of stock owned by directors (% DIRECTOR OWN). Based on Buffet's public statements, we expect % DIRECTOR OWN will be higher for BH investees compared to control firms.

Inconsistent with Buffet's statements, panel A of Table 5 reports that the proportion of stock owned by Berkshire firm board members, % DIRECTOR OWN, (6.4%) was smaller than for

control firms (6.8%), which of course is statistically insignificant in panel B (the coefficient on % DIRECTOR OWN is -0.013, t-statistic = -1.03).

5.2.4 Fee income for Board members (for B10)

We do not test Buffett's statements related to Board fees because data on directors' compensation is only available for three years in our sample period (2005, 2006 and 2007).

5.2.5 Coordinated activism and CEO selection (for B11 and B12)

We do not test Buffett's statements related to B11 and B12 because coordinated activism by institutional owners (B11) and CEO selection (B12) are relatively rare events in our sample.

5.2.6 Diverse or prominent board members (for B13)

To proxy for diversity in board membership, we use the percentage of females (%FEMALE) and the proportion of ethnic minorities of non-Caucasian descent on the board (%ETHNIC). Both variables are obtained from the IRRC Directors database. Given Buffett's statements, we predict both variables to be lower for Berkshire investees. Prominence of board membership is more difficult to obtain from machine-readable databases. Even if it was cost-effective to hand collect these data, the subjective nature of this variable would likely result in substantial measurement error.

In Table 5, we find mixed results on the diversity of BH investee boards. In panel A, Berkshire firms have more female board members (13.1%) compared to control firms (8.8%) but fewer ethnic members (54%) compared to control firms (67%). The results of multivariate tests in panel B of table 5 are similar to the univariate results – the coefficient on %FEMALE is 0.027 (t-statistic = 2.18), while the coefficient on %ETHNIC is -0.091 (t-statistic = -25.96).

None of Buffett's statements on governance (that we are able to test) are fully supported. Thus, despite Buffett's strong statements about what constitutes good governance, we find little evidence that the governance principles he advocates are practiced at Berkshire investees.

6.0 Investing Principles

In this section we examine statements underlying Buffett's investment philosophy. We categorize his principles into two broad categories. First, we focus on the specific financial and economic characteristics that Buffett considers important for an investment decision. Second, we consider the timing aspect of the investment decision.

6.1 Financial and Economic Characteristics

C1: BH investments provide consistent profits from stable uncomplicated businesses

"Severe change and exceptional returns usually don't mix" (**Berkshire Hathaway Annual Report**, 1987)

Buffett's approach is "very much profiting from lack of change. That's the kind of business I like." (Business Week July 5, 1999)

"Charlie and I have not learned how to solve difficult problems. What we have learned is to avoid them. To the extent that we have been successful, it is because we concentrated in identifying one-foot hurdles that we could step over rather than because we have acquired any ability to clear seven-footers." (Berkshire Hathaway Annual Report, 1989)

C2: BH prefers investments with enduring long-term competitive advantages

"We like stocks that generate high returns on invested capital where there is a strong likelihood that it will continue to do so." (Berkshire Hathaway Annual Report, 1995)

"I look at long-term competitive advantage and whether that's something that's enduring." (St. Petersburg Times, December 15, 1999)

"The key to investing is determining the competitive advantage of any given company and, above all, the durability of that advantage. The products or services that have wide, sustainable moats around them are the ones that deliver rewards to investors." (Fortune, November 22, 1999).

"Look for the durability of a franchise. The most important thing to me is figuring out how big a moat there is around the business. What I love, of course, is a big castle and a big moat with piranhas and crocodiles." (U.S. News and World Report, June 20, 1994).

"The definition of a great company is one that will be great for 25 or 30 years." (Berkshire Hathaway Annual Report, 1996).

C3: BH firms are characterized by higher "owner earnings" relative to comparable companies

'Owner earnings' is a measure Buffett uses for firm valuation, rather than GAAP figures. Owner earnings = (reported earnings) + (depreciation, depletion, and amortization) – (average annual amount of capitalized expenditures for plant and equipment, etc. that the business needs to fully maintain its long-term competitive position and unit volume). (Chapter 5, Cunningham 2001)

It is common on Wall Street to value businesses using a calculation of cash flows equal to (a) operating earnings plus (b) depreciation expense and other non-cash charges. Buffett regards that calculation as incomplete. After taking (a) operating earnings and adding back (b) non-cash charges, Buffett argues that you must then subtract something else: (c) required reinvestment in the business. Buffett defines (c) as "the average amount of capitalized expenditures for plant and equipment, etc., that the business requires to fully maintain its long-term competitive position and its unit volume." Buffett calls the result of (a) + (b) - (c) "owner earnings." (Cunningham SSRN article, page 16)

"Thus our first lesson: businesses logically are worth far more than net tangible assets when they can be expected to produce earnings on such assets considerable in excess of market rates of return. The capitalized value of this excess return is economic goodwill." (Chapter 5, Cunningham 2001)

C4: BH favors companies that, ceteris paribus, rely less on net tangible assets to produce earnings.

"Ultimately, business experience, direct and vicarious, produced my present strong preference for businesses that possess large amounts of enduring goodwill and that utilize a minimum of tangible assets." (Cunningham, 2001, Chapter 5)

In inflationary times, buying firms that rely on fewer net tangible assets to produce earnings is the best and cheapest way to grow. (Cunningham, 2001, Chapter 5)

C5: BH investments are characterized by consistently high return on equity capital employed after controlling for undue leverage and accounting gimmickry.

C6: BH investments are characterized by relatively low leverage.

"The primary test of managerial economic performance is the achievement of a high earnings rate on equity capital employed (without undue leverage, accounting gimmickry, etc.) and not the achievement of consistent gains in earnings per share (**Berkshire Hathaway Annual Report**, 1979).

C7: BH avoids investing in firms with high OPEB and pension liabilities.

"In making acquisitions, Charlie and I have tended to avoid companies with significant post-retirement liabilities. As a result, Berkshire's present liability and future costs for post-retirement health benefits – though we now have 22,000 employees – are inconsequential." (Cunningham, 2001, Chapter 5)

C8: BH firms are characterized by few stock splits.

"Berkshire's common stock was priced in the market at nearly \$50,000 per share and the company's book value, earnings, and intrinsic value have steadily increased well in excess of average annual rates. Yet the company has never effected a stock split, and has not paid a cash dividend in three decades." (Cunningham SSRN, page 13)

6.1.1 Consistent stable uncomplicated business (for C1, C2, C3 and C4)

We use the volatility in owners' earnings over the past five years (VOL_OWNER_RET) to proxy for the stability of the business (C1). Consistent with Buffett's statements, we compute

owner's earnings as reported earnings plus depreciation, depletion and amortization minus the average annual amount of capital expenditures over three past years.

As before we present both univariate and multivariate results in panels A and B of Table 6, respectively. Consistent with Buffett's desire to hold firms with a stable business (C1), the volatility of owner's return computed over a five-year period (VOL_OWNER_RET) is lower for Buffett's firms in panel A. Further, the coefficient on BERK in the VOL_OWNER_RET regression reported in panel B is negative and significant as predicted (t-statistic = -4.66).

To operationalize Buffett's desire for investing in firms with a long-term competitive advantage (C2), we compute multiple "runs" tests of superior performance. We follow Brealey (1983) and Chan, Karceski and Lakonishok (2003) and define consistency as achieving an annual growth rate above the median annual growth rate for a consecutive number of years relative to firms in the same two digit SIC code (labeled a "RUN"). We ensure that we have at least five firms in a two digit SIC code for this test. We report run statistics for four variables: (i) RUN-SALES; (ii) RUN-OWNERS' RETURN; (iii) operating income before interest and depreciation (RUN-OIBD); and (iv) income before extraordinary items (RUN-IBEX). At the end of each sample period, we calculate how many firms achieve runs over five years in the past. The median growth rate is computed for all growth rate observations available for that year, and, is hence, subject to survivorship bias.

Consistent with C2, controlling for industry and year fixed effects, the coefficient on BERK in each of the run regressions reported in panel B of Table 6 (i.e., RUN-SALES, RUN-OWNER's RETURN, RUN-OIBD and RUN-IBEX) is significant in one-tail tests at conventional levels. That is, Berkshire firms appear to enjoy somewhat longer average runs in years in which they outperform the industry median relative to the average control firm.

We would expect relatively stable businesses to deliver consistent operating profits over time (C3). Hence, we compute the annual growth and volatility in both return on equity (ROE) and owner earnings scaled by book value of equity (OWNER_RET).

Consistent with C3, owner's return and ROE are much higher for Berkshire firms than for the average control firm (in Table 6, panel A) and the coefficients on BERK in the OWNER_RET and ROE regressions reported in panel B are 0.117 and 0.114 (t-statistics = 76.23 and 7.66, respectively).

To assess whether BH investees rely less on intangible assets to produce earnings (C4), we compute a version of OWNER_RET where the scale variable is tangible book value of equity, computed as book value of equity minus intangible assets such as goodwill, patents and trademarks (OWNER_RET_TANGIBLE). To deal with outliers in observations related to returns, we winsorize return observations at -100% and 100%. We predict OWNER_RET_TANGIBLE will be higher for BH investees compared to control firms.

Consistent with C4, owner's return on tangible assets is much higher for Berkshire firms than for the average control firm (table 6, panel A) and the coefficient on BERK in the OWNER_RET_TANGIBLE regression reported in panel B is 0.146 (t-statistic = 3.18).

6.1.2 Consistent ROE after controlling for Leverage (for C5) and relatively low Leverage (for C6)

We measure leverage in two ways: i) ratio of book value of short-term debt and long-term debt to the book value of total assets (BLEV), and ii) ratio of book value of short term debt and long-term debt to market value of assets, defined as the market value of equity plus the book value of debt (MLEV). To address C6, we regress owners' return on an intercept, BERK, leverage and accrual quality (as defined before). We expect the coefficient on BERK to be positive and significant.

Consistent with C5, after controlling for leverage and accrual quality, the differential in owner's return is still high at 9.05% (t-statistic on BERK is 4.58; not tabled). Similar big advantages in ROE and owner's return on intangible assets are seen in Berkshire firms.

Consistent with C6, Berkshire firms have lower financial leverage (MLEV) than control firms (Table 6, panel A) and the coefficient on BERK in the MLEV regression reported in panel B is -0.0703 (t-statistic = -4.12).

6.1.3 Avoid high OPEB and pension liabilities (for C7) and stock splits (for C8)

Buffett's statements suggest that BH avoids investing in firms with high OPEB and pension liabilities (C7). We identify a firm's OPEB (OPEB) and pension liabilities (PENS_LIAB) from Compustat and scale such liabilities by total assets. We use the CRSP database to identify firms that have split their stock and count the number of times a firm has split its stock in the previous five years (SPLIT_#) for both BH investees and the control group.

Inconsistent with Buffett's statements, we find no evidence to suggest that Berkshire investees have smaller pension and OPEB obligations or fewer stock splits when compared to the average control firm as the coefficients on BERK for the PENS, OPEB and SPLIT# regressions are statistically insignificant in panel B of Table 6.

In summary, of eight specific firm characteristics that Buffett prefers in his target investment candidates, we find that BH investees have six. Again, the only notable exception is that Berkshire investees (i) have no smaller pension and OPEB obligations than control firms and (ii) appear to engage in stock splits just as often. Still, overall, Buffett clearly walks the talk in the area of investment criteria he cares about.

6.2 Investment Timing

C9: BH firms prefer stock prices to trade around their intrinsic value.

Unlike many CEOs, who desire their company's stock to trade at the highest possible prices in the market, Buffett prefers Berkshire stock to trade at or around its intrinsic value—neither materially higher nor lower. Such linkage means that business results during one period will benefit the people who owned the company during that period. Maintaining the linkage requires a shareholder group with a collective long-term, business-oriented investment philosophy, rather than a short-term, market-oriented strategy. (Cunningham SSRN, page 11).

C10: BH firms' share-purchases are made only when the prevailing stock price is lower than the intrinsic value per share.

"There are too many share repurchases these days, and sometimes for the wrong reasons. Managers often make repurchases in an effort to support the stock price, even when they are paying an amount in excess of the share's intrinsic value." (Berkshire Hathaway Annual Report, 1999)

Berkshire retains and reinvests earnings when doing so delivers at least proportional increases in per share market value over time. It uses debt sparingly and sells equity only when it receives as much in value as it gives. (Cunningham SSRN, page x)

C11: BH firms issue equity when the intrinsic value per share is at least as high as the offer price per share.

BH firms are involved in stock-for-stock mergers only when its stock price is greater than or equal to its intrinsic value.

BH prefers undervalued firms to repurchase shares rather than acquire companies

“If the worst thing to do with undervalued stock is to use it to pay for an acquisition, the best thing is to buy it back. Obviously, if a stock is selling in the market at half its intrinsic value, the company can buy \$2 in value by paying \$1 in cash. There would rarely be better uses of capital than that. Yet many more undervalued shares are paid to effect value-destroying stock acquisitions than are repurchased in value enhancing stock buy-backs.” (Cunningham SSRN, page 14).

6.2.1 Stock price around intrinsic value (for C10)

We use the intrinsic value to stock price (V/P) ratio to assess whether BH firms trade near their intrinsic values. At the end of every fiscal year, we compute the absolute value of the difference between V/P and one for each year for each firm ($|V/P-1|$).¹⁵ We expect BH firms to have smaller deviations from one than control firms. Following Frankel and Lee (1998), we compute intrinsic value as of the fiscal year end date using a finite three-period valuation model, outlined in equation (10), that includes a terminal value estimate and uses the latest observed historical ROE. Essentially, the terminal value is determined by assuming that the third period forecasted ROE is earned by the firm in perpetuity. We do not rely on analysts’ consensus earnings per share forecasts because limiting our sample to firms covered in I/B/E/S will unduly reduce our sample.

$$X_t = D_t + \sum_{k=3}^T \frac{1}{(1+r_e)^k} (E_{t+k} - E_t) + \frac{1}{(1+r_e)^T} \frac{E_t}{r_e} \quad (10)$$

In equation (10), B_t is the book value of equity per share at beginning of year t , X_t is net income, r_e is the cost of equity capital and T is horizon. TV is terminal value computed as the two year average expected earnings for the last two years of the horizon (T). We use a three-year time horizon for our empirical analyses. Forecasted values of B_t are derived from the clean surplus

¹⁵ We choose the end of the fiscal year to determine the ratio because we believe that any stock price effects due to time clustering and macro economic factors would be differenced away as we expect such forces to affect both the treatment and control sample equally.

equation, which specifies that the change in equity book value from period to period equals earnings minus dividends, i.e., $B_{t+1} = B_t + X_{t+1} - d_{t+1}$. Specifically, we use realized values of dividends to compute book values. The equity cost of capital estimate (r_e) is set to 10% as previous research finds that intrinsic value estimates are not sensitive to this parameter (Frankel and Lee 1998). Consistent with prior research we remove firms with stock prices less than \$1 and firms with negative intrinsic value that may be primarily due to negative book values and loss firms.

Consistent with Berkshire firms trading closer to their intrinsic value (C10), BH investees have smaller $|V/P-1|$ than control firms (table 6, panel A) and the coefficient on BERK in the $|V/P-1|$ regression reported in panel B is negative and significant as predicted (-0.333, t-statistic = -2.37).

6.1.7 Repurchases (C11)

The objective is to assess whether the average price paid for share repurchases by the firm is smaller or equal to the intrinsic value per share. Unfortunately, firms are not required to disclose the dates on which they buy back stock. Dates on which firms announce a buyback program can be collected but such dates are not useful for our purpose because companies that announce a buyback program may choose not to buyback shares. Hence, we do not pursue an empirical test of this principle.

6.1.8 SEOs and acquisitions involving stock (C12)

We evaluate whether the firm issues stock when its intrinsic value is above the stock price at which the firm trades before the SEO announcement (C12). We obtain all secondary offering data from Securities Data Company's (SDC) database during the period 1980-2006. For each fiscal year we compute the ratio of intrinsic value of share computed at the beginning of the fiscal year by the SEO offer price ($V/SEO\ PRICE$) and report (i) the proportion of cases where the firm issued equity at a price lower than the intrinsic value per share (GOOD SEO%); and (ii) the average of the ratio of $V/SEO\ PRICE$. We expect GOOD SEO% and $V/SEO\ PRICE$ to be greater for BH investees.

Inconsistent with Buffett's statements, the proportion of cases where the SEO offer price is larger than the intrinsic value computed at the beginning of the fiscal year (GOOD SEOS) is smaller for Berkshire firms in panel A of Table 6 and the coefficient on BERK in the GOOD SEO regressions in panel B is -0.2501 (t-statistic = -1.68). However, note that Berkshire firms had only 12 SEOs over the entire sample period. Although V/SEO PRICE is larger for Berkshire firms as predicted in panel A (t-statistic = 2.95), the coefficient on BERK in the V/SEO PRICE regression is only marginally significant in panel B (t-statistic = 1.24).

We also attempt to identify whether Berkshire firms are more likely to acquire targets at a time when its stock price exceeds the intrinsic value of the share as of the beginning of the fiscal year. The sample of acquisitions comes from the SDC U.S. Mergers and Acquisitions Database. We select acquisitions with announcement dates between 1980 and 2006. We scale the intrinsic value of the firm by stock price of the firm at the beginning of the fiscal year (V/P before Acq) and report (i) the proportion of cases where the firm issued equity at a price greater than the intrinsic value per share (GOOD ACQ%); and (ii) the average of the ratio of (V/P). We predict that GOOD ACQ% and V/P before Acquisition will be higher for BH investees.

Consistent with Buffett's statements (C11) and despite finding that only 15 acquisitions were made by Berkshire firms concurrent with Buffett's ownership, Table 6 reports (in both panels A and B) that Berkshire firms have a greater proportion of GOOD ACQs, defined as the proportion of cases where the firm issued equity at a price lower than the intrinsic value per share. Moreover, the V/P ratio prior to acquisition is statistically lower at Berkshire firms as the coefficient on BERK in the V/P before Acquisition regression in panel B is -0.157 (t-statistic = -1.92).

7.0 Selection or Activism?

In this section, we examine whether Buffett implicitly or explicitly exerts influence on BH investee's accounting, governance and investing practices. In other words, we examine whether powerful investors, such as Buffett, merely select stocks with the business practices they prefer (as outlined for Buffett above) or whether they intervene to "improve" the accounting and governance

characteristics of target firms. Hypotheses related to changes after BH's investments are posited in H1b, H2b and H3b. To give the activism hypothesis the best chance of success, we restrict the sample to firms where (i) BH has at least a 5% equity ownership; and (ii) at least one year of data are available before and after the ownership. However, restricting to stocks with ownership of at least 5% reduces the number of observations.

We conduct a regression of each of the firm characteristics investigated (e.g., earnings quality conservatism score) against BERK for a sample consisting of only BH investments. Recall that BERK is set to one only after BH invests in the firm's stock. Hence, the coefficient on BERK estimated for the sample of BH firms, would indicate whether the corporate practice under investigation changed after Buffett assumed a stake in the company.

Results reported in Table 7 indicate little evidence of activism by BH in the business practices of their investees. In general, we do not find statistically significant differences after BH's investments in the timeliness of reporting good and bad news (CSCORE and GSCORE in panel A) or in the extent of abnormal accruals. Surprisingly, we observe a decrease in the Dechow-Dichev (DD) measure of earnings quality after Buffett buys stock, but this finding should be interpreted with caution because DD is an average of five years of accrual and cash flow data. There is weak evidence to suggest that SMALL_BEATS fall after BH invests in a stock (coefficient on BERK in panel A is -0.041, t-statistic = -1.33, p-value = 0.09, one-tailed). Panel B reports that the assumed rate of return is lower but not significant after BH buys stock (coefficient on BERK is -0.171, t-statistic = -0.93), and the sensitivity of the pension rate of return to operating income is lower as predicted (coefficient on the interaction is -0.088, t = -1.49, p = 0.07, one tailed).

Turning to compensation, there is no evidence of any change in compensation practices tabled in panel C. Panel D suggests that "excess" pay at Berkshire investees falls after they obtain equity ownership (coefficient on BERK = -0.294, t-statistic = -2.94), but CEOs at such firms are

also more likely to get a pay hike if they were underpaid relative to their industry peers in the prior year. Hence, the results in panel D do not indicate a clear interpretation.

Turning to Board composition in panel E of Table 7, consistent with Buffett's statements, Board size appears to fall after BH buys stock in a company (coefficient on BERK in the Board Size regression is -1.072, t-statistic = -2.56). However, there are no other changes in board composition. Panel F suggests there is no noticeable change in owner's return, ROE or the volatility of owner's return after BH buys stock. Neither is there any change in leverage or in the volatility of the deviation of intrinsic values relative to stock prices.

In sum, there is little evidence to suggest that Buffett's involvement changes investees' accounting, governance and investing practices in a substantive manner. Out of 28 practices we are able to examine, only four indicate some weak evidence that Buffett has implicitly or explicitly influenced BH investees.

8.0 Can we mimic Berkshire Hathaway's performance?

8.1 Return Performance of Berkshire Hathaway

Before we embark on the process of finding stocks similar to BH investees, it is worthwhile to examine the performance over time of BH's stock itself and the equity investments held by BH. An obvious reason to consider the performance of both BH and its investees is that BH holds many assets beyond its public-company equity investments including stakes in private companies, convertible bonds and in-house insurance business. Table 8 presents results from a regression of monthly excess returns of BH stock and an equally weighted portfolio of BH investees on (i) monthly returns on the market factor; and (ii) monthly returns on the SMB, HML and UMD factors, data for which is obtained from Ken French's website. We limit our analysis to the period from January 1, 1977 to December 31, 2006 or 360 months of return data.

The results in panel A suggest that BH is able to beat both the market and the four-factor model over the entire sample period. This result is consistent with recent evidence in Martin and Puthenpurackal (2008). The alpha with respect to the market (four-factor) model is 1.4% (0.9%)

per month and the t-statistic is 3.88 (2.50). To evaluate whether there are inter-temporal differences in such alpha, we divide the sample period into three decades: (i) 1/77-12/86; (ii) 1/87-12/96; and (iii) 1/97-12/06. The results suggest that BH does not generate a statistically significant alpha in excess of returns to the four-factor model in the last period (0.14% per month, t-statistic = 0.24). However, BH's performance in the first two decades is strong as evidenced by alphas for four-factor model of 1.4% per month and 1.18% per month (t-statistics of 1.85 and 2.05 respectively). Turning to the coefficients on the other three factors in the regression, it is interesting to note that the coefficients on SMB and UMD are never statistically significant in the three sub-periods. However, the coefficient on HML is positive and is statistically significant in the first and the third decade. The positive coefficient suggests that BH follows a value-strategy of investing in high book-to-market stocks. Thus, one way to interpret the evidence in the last decade is that BH is unable to earn a premium above and beyond the "value" premium.

In panel B, we examine the stock return performance of an equally-weighted portfolio of BH investees. We form portfolios based on the quarterly 13-F filings. In particular, we form portfolios following the end of the calendar quarter for which BH files its 13-F report to ensure that our portfolio formation starts after the 45-day 13-F filing deadline. Similar to the analysis for Berkshire Hathaway stock, we present excess returns to both market model and a four-factor model. Results are weaker than those reported in panel A in that BH's stock portfolio produces alphas that are weakly significant in excess of the four factor model during the last two decades (t-statistics of 1.70 and 1.36, one-tailed p values are 0.05 and 0.08). Moreover, the magnitude of excess returns is about 30% to 50% smaller in comparison to that reported for Berkshire Hathaway stock in Panel A. We attribute the differential magnitude in excess returns to two plausible explanations. First, the timing of portfolio formation has implications for generating excess returns for Berkshire. Martin and Puthenpurackal (2008) find that there are significant returns (about 4%) to the announcement of a stock investment by Berkshire Hathaway. Thus, our portfolio formation ignores this uptick in announcement day returns. Second, and perhaps more important, Berkshire

Hathaway has many investments beyond publicly traded equity such as its stake in private companies, its insurance business and non-financial assets. Thus, the excess returns to Berkshire Hathaway stock likely reflect the market's assessment of Berkshire's entire investment portfolio.

Absence of a statistically significant alpha for BH in the last decade and weakly significant alphas for Berkshire's equity portfolio in the last two decades has important implications for our next analysis where we attempt to identify stocks that statistically resemble BH's investees. First, the appropriate benchmark for comparing returns for a mimicking portfolio that reflects Buffett's principles is the returns to Berkshire's equity portfolio. Second, although richer data on accounting, governance and investing practices has become available in the last decade, it may be difficult to identify firms that closely resemble the values espoused by Buffett (such as integrity of the management and boardroom atmosphere). Consequently, there is a distinct possibility that our mimicking portfolio might not earn abnormal returns.

8.2 Propensity score matched portfolio returns

In this section, we attempt to identify firms that statistically resemble characteristics of Berkshire's equity investees and examine whether excess returns can be earned for such a Berkshire-mimicking portfolio. We use a propensity score-matching procedure that matches BH investees with other firms along the accounting, governance and investing dimensions discussed in the preceding sections.¹⁶ The propensity score is essentially the probability estimate that a firm with given characteristics resembles the accounting, investing and governance attributes of a Berkshire investee firm. This matching procedure has gained popularity in both the accounting and finance literatures (e.g., Hillion and Vermaelen 2004; Armstrong, Jagolinzer and Larcker 2008) and involves three steps. We first obtain the propensity score for each of our treatment firms by using a

¹⁶ As noted in detail in the preceding section, BH's actual stock picks sometimes do not appear to reflect some of Buffett's principles. Hence, an alternative to the propensity score technique is to rank firms based on each of Buffett's principles and then average such ranks across all the principles discussed to derive a composite rank for each stock. Firms with the largest ranks would represent stocks that most closely reflect Buffett's principles. The downside to this strategy, unlike the propensity score method, is the equal weighting of each of Buffett's principles. Untabulated results indicate little change in inferences when this equal weighting procedure is followed.

logit estimation with the following explanatory variables: (i) accounting variables, CSCORE, GSCORE, PRO_FORMA GAP, DD, |ABACC|, EXPENSER, SMALL_BEATS, PENSENS, (ii) governance variables, BOARD SIZE, %OUTSIDERS, %DIRECTOR_OWN, %FEMALE, %ETHNIC, and (iii) investing variables, OWNER_RET, VOL_OWNER_RET, RUN-SALES, SPLIT#, PENS_LIAB, OPEB, MLEV. With respect to compensation variables, it is difficult to capture firm-specific pay for performance sensitivity and Lake-Woebegone effects because they represent a single parameter estimate across firms. Therefore, as an alternative proxy, we use excess compensation estimated as the residual from equation (8) without the BERK variable. We estimate equation (8) for each of the years and use the residual (EXCESSCOMP) as a proxy for excess compensation. A disadvantage of using the residual is that the excess compensation measure is likely to capture other unknown and uncontrolled for cross-sectional differences in firm characteristics. With respect to the investing variables, we are careful not to include variables that are likely to be very highly correlated and hence, redundant in an empirical specification. Specifically, we exclude ROE, OWNER_RET_TANGIBLE, RUN-OWNERSRETURN, RUN-OIBD and RUN-IBEX. We exclude SEO and acquisition related variables because of the limited sample size for which data are available. We also exclude intrinsic value variables because they are computed using information in future earnings, which would introduce look-ahead bias. Instead, we include the book to market ratio (BMRATIO) as a proxy for the intrinsic value measures. Finally, we include a size proxy, the natural logarithm of market value (LOGMVE) to control for size.

Note that we do not have data on certain key governance, and accounting variables for several of our sample firms. To avoid sample restrictions due to missing data, we include indicator variables that are set to one if a particular firm-year has missing data for a particular variable. For example, if BOARD SIZE is missing an indicator variable BOARD SIZE DUM is set to one for that firm-year. Correspondingly, the missing BOARD SIZE variable is set to zero for that firm-year. The advantage of including these indicator variables (also called zero-order regression) is

that we avoid deleting observations due to lack of data. The zero-order regression essentially replaces every missing observation with the mean of the variable that is missing. A downside of this approach is that it leads to biased coefficient estimates. We err on the side of a larger sample by incorporating such indicator variables in the logit estimation.

Our second step in implementing propensity matching is to use the coefficient estimates from the logit model and compute the conditional probability (p) that a firm given the identified characteristics (also called covariates) resembles the attributes of a BH investee. The propensity score is computed as $\ln((1-p)/p)$. We identify five firms (with replacement) whose propensity scores (the predicted probability of a Buffett stock) are the closest to the propensity score of each BH investee. We are careful to eliminate duplicate matching firms that are selected for different Berkshire investee firms. In the final step, we use the matched firms to form portfolios.

We estimate the logit model separately for each year from 1980 to 2006. We do not pool the observations across time for two reasons. First, year-by-year analysis avoids look-ahead bias when forming stock portfolios. Second, such analysis allows for different parameter estimates for each year thereby capturing potentially evolving philosophies underlying Berkshire strategies. Based on the parameter estimate each year, we obtain propensity scores and up to five matches for each of the firms in the Berkshire sample. We then form portfolios for each month from April 1981 to December 2006. To avoid look-ahead bias, we begin portfolio formation in April of the year following the propensity score estimation. That is, the composition of the portfolios is determined in April of each year based on the propensity scores that corresponds to the Berkshire portfolio for the previous calendar year. For example, in forming portfolios for April 2001 we use the propensity model estimation for year 2000. This ensures that we have all financial data prior to portfolio formation.

In computing portfolio returns, we rebalance the portfolios every April based on the new portfolio list generated by the propensity score estimation. In the event that a firm in the portfolio exits due to acquisition or delisting, we replace the returns for that firm with the risk free rate. As

before, we present results for monthly portfolio excess returns based on a market model and Fama-French four-factor model (see panel C of Table 8).

The propensity score matched sample beats the market but is unable to produce abnormal returns under the four-factor Fama-French model. We find that the alpha for a propensity score matched portfolio across the time-period 1981-2006 is approximately 50% of the alpha for Berkshire's equity portfolio (in Panel B of Table 8). Consistent with weakly significant alphas for the first two decades for Berkshire's equity portfolio using the four-factor model, the propensity matched portfolio also earns weakly significant abnormal returns (t-statistics of 1.37 and 1.67, one-tailed p-values of 0.08 and 0.05, respectively). Weaker results for the mimicking portfolio should not be surprising because we are unable to incorporate some of the important soft attributes of Buffett's investing philosophies such as honesty and integrity of management, and we do not have the benefit of Buffett's subjective intrinsic value estimates for his investments.¹⁷ Moreover, Buffett has the potential advantage of buying his targets at bargain prices when the stock price for the target is depressed. Our mechanical models accumulate returns based on stock prices as of July 1 of every year, as opposed to the bargain price at which Buffett might have purchased his target firm.

8.3 Does Buffett's model predict better operating performance?

A logical extension of the above analysis is to investigate whether the propensity score matched sample is associated with improvements in operating performance over future periods. We consider two measures of operating performance over five years into the future: (i) operating income before depreciation (OIBD) scaled by average total assets and; (ii) net income (NI) scaled by average total assets.

¹⁷ While we are unable to generate compelling returns to a portfolio that mimics Berkshire's strategies, the evidence presented here indicates that refining the portfolio may be a worthy endeavor. In particular, more timely incorporation of his evolving ideologies such as forming portfolios on a quarterly basis, keeping portfolio turnover low by retaining portfolios for a longer period, subjecting the portfolio to the same industry restrictions that Buffett imposes (e.g., avoiding technology stocks) could result in an improvement in the mimicking portfolio returns.

Panel A of Table 9 presents a univariate comparison of operating performance of BH investees relative to the rest of the sample. As expected, BH firms handily outperform the average firm in the sample. Panel B controls for mean reversion in operating performance and industry and time fixed effects. In particular, we regress one-year ahead operating performance on BERK, current period operating performance, industry and year fixed effects. The superior performance of BH investees continues to be economically and statistically significant although the impact is lower relative to the univariate comparisons in panel A. In particular, the coefficient on BERK in panel B for OIBD one year out is 0.0086 (t-statistic = 3.5) while the impact on OIBD five years out is 0.0134 (t-statistic = 2.29). Thus, BH investees experience improvements in OIBD between 0.86% and 1.34% more than the OIBD improvements for the average firm. Similar inferences hold for NI.

It is more interesting, however, to assess whether such improvements in operating performance can be observed for the propensity score matched sample. Data in panels C and D suggest that the answer to this question is yes. For the purposes of this analysis, we eliminate BH investees from the control sample of firms. The results suggest that the coefficient on PROP, an indicator variable indicating the propensity score matched sample identifier, in panel D for OIBD one year out is 0.0110 (t-statistic = 5.12) while the impact on OIBD five years out is 0.0161 (t-statistic = 3.98). Thus, a statistical model that attempts to mimic Buffett's principles identifies firms that earn OIBD improvements of 1.61% five years out when benchmarked against the improvements in OIBD for the average firm. Thus, the model is able to capture some of the enduring value generating characteristics identified by Buffett.

9. Conclusions

In this paper we examine whether powerful investors select firms based on their business practices and subsequently influence their investees to improve these practices. We rely on public statements of Warren Buffett to assess his views on “best practices” and examine whether his investment decisions through Berkshire Hathaway are consistent with these practices. In particular, we examine whether investees of Berkshire Hathaway exhibit more transparent accounting, better

disclosure, stronger governance, attractive characteristics to investors, and outperform the average control firm. We are among the first in the academic literature to provide evidence on Buffett's model of what constitutes a well-governed firm and a great stock pick.

We consider (i) whether Buffett's decision to select specific stocks is aligned with his public statements (selection hypotheses) and (ii) whether he subsequently intervenes to improve these practices (activism hypothesis). Our findings on the selection hypotheses are mixed. Not surprisingly, we find a strong indication that Buffett "walks the talk" with respect to his investment philosophy. BH investees have eight out of ten characteristics that Buffett prefers (from the set H3a: C1-C11). Buffett also appears to care about accounting and disclosure policies, as BH investees exhibit four of the seven practices that Buffett advocates (from the set H1a: A1-A7). However, only two out of six compensation practices (H2a: B1-B6) are consistent with Buffett's commentary; BH investees are more likely than control firms to have lower "excess" pay and link pay to performance. Least consistent with the selection hypothesis were board structure practices (H2a: B7-B13) – essentially none of Buffett's principles are practiced by BH investees.

Our findings on activism hypotheses H1b, H2b and H3b are relatively clear – there is little evidence of change in investees' practices subsequent to Berkshire's initial investment. Only four of the 28 practices we study indicate any evidence that Buffett has implicitly or explicitly influenced BH investees. This suggests that Buffett (i) either picks stocks that already possess the attributes he advocates – rather than intervening to change his investees' practices after purchasing shares, or (ii) is relatively passive in influencing his investees – more so than the tone and breath of his public statements would suggest. Given there is generally always room for firms to improve their business practices, we infer that Buffett is likely a relatively passive investor. This apparent passive behavior is inconsistent with Buffett's commentary on the potential for large investors to improve corporate governance and anecdotal reports of activism from other large funds such as TIAA-CREF, CALPERS and Hermes.

Our results on performance indicate that Berkshire's stock and a portfolio of Berkshire equity investees each outperform the Fama-French four-factor model over long periods. However, this superior performance is largely attributable to 1977-1996, as we observe no significant abnormal returns over the most recent decade (1997-2006). We also build a mimicking portfolio of firms that statistically resembles Buffett's equity picks, which generates abnormal returns of a smaller magnitude than those obtained for Berkshire's equity portfolio. Interestingly, our mimicking portfolio identifies firms that report significant improvements in operating performance five years out suggesting that Buffett's value generating principles capture enduring competitive advantage.

While our results suggest that Buffett is not an activist investor, Buffett appears to use many of the principles he advocates in selecting firms to invest in. Further, BH is unusually successful in its investment decisions as reflected in persistent abnormal stock returns and superior operating performance. Our study takes an important step towards characterizing the behavior of an important influential investor and the best practices espoused by him.

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Appendix
Summary of tests of Buffett's public statements on accounting, governance and investment practices

Panel A. Accounting and Disclosure Practices

	<i>Based on Buffett's public statements, BH investees tend to:</i> ^a	Data source	Test variable ^b	Selection Hypothesis ^c		Activism Hypothesis ^d	
				Table	Result	Table	Result
H1a	be relatively timely in reporting both good and bad news (overall test of H1a)	Compustat, CRSP	GSCORE; CSCORE	2, Panel B	***, ***	7, Panel A	NS; NS
A1	place less emphasis on EBITDA & pro forma earnings	Compustat; IBES	PRO_FORMA GAP	2, Panel B	NS	7, Panel A	NS
A2	have relatively high quality earnings	Compustat	DD; ABACC	2, Panel B	***, ***	7, Panel A	NS
A3	make fewer forecasts; meet/beat these forecasts	First Call; IBES	GUIDANCE; MEET_BEATS; SMALL_BEATS	2, Panel B	NS; NS; NS	7, Panel A	NS; NS; NS; *
A4	avoid using restructuring charges ^e	NA	NA	NA	NA	NA	NA
A5	voluntarily expense stock option costs	Bear Stearns	EXPENSER	2, Panel B	*	NA	NA
A6	use relatively conservative pension assumptions	Compustat	PENSENS; Log(Pension assets/operating income)*BERK	2, Panel B; 2, Panel C	***, *	NA; 7, Panel B	NA; *
A7	have relatively clear explanations in their footnotes	10-K; Li (2008)	FOG INDEX	2, Panel B	NS	7, Panel A	NS

Notes:

^a Each research question summarizes Buffett's public statements on a particular topic and tests whether the statements extrapolate to the practices of BH investees.

^b Test variables are defined in the respective tables.

^c The selection hypothesis is that BH tends to invest in firms that have the particular practice being tested.

^d The activism hypothesis is that BH influences its investees to adopt the particular practice being tested.

^e Not tested due to insufficient data.

All results are based on multivariate tests from the tables indicated.

*, **, *** represent significance at the 10%, 5%, and 1% level, one-tailed, respectively.

NS indicates not significant in predicted direction at conventional levels.

NA indicates not applicable.

Appendix (continued)
Summary of tests of Buffett's public statements on accounting, governance and investment practices

Panel B. Governance Practices

			Selection		Activism		
		Data source	Test variable	Table	Result	Table	Result
Compensation							
<i>BH investees tend to:</i>							
B1	pay less “excess” compensation to the CEO	Compustat; Execucomp	BERK	3	***	7, panel C	NS
B2	exhibit greater pay-for-performance sensitivity	”	Returns-firm*BERK	3	***	7, panel C	NS
B3	have less upward creep in CEO pay	”	LOWCOMP*BERK	4	NS	7, panel D	NS
B4	have pay more sensitive to negative stock price performance	”	Negdum*BERK	3	NS	7, panel C	NS
B5	have pay more sensitive to earnings net of the cost of capital	”	Abnormal Earnings	NA	NS	NA	NS
B6	rely less on stock options	Execucomp	%OPTIONS	NA	NS	NA	NS
Board Structure							
<i>BH investees tend to:</i>							
B7	have i) smaller boards and ii) composed mostly of outside directors	IRRC	BOARD SIZE; %OUTSIDERS	5, panel B	NS; NS	7, panel E	NS; NS
B8	hold executive sessions with outside directors	NA	NA	NA	NA	NA	NA
B9	have directors that own more stock	Execucomp	%DIRECTORS_OWN	5, panel B	NS	7, panel E	NS
B10	have director compensation less dependent on fees	NA	NA	NA	NA	NA	NA
External Monitoring							
<i>BH investees tend to:</i>							
B11	experience coordinated institutional activism	NA	NA	NA	NA	NA	NA
B12	have CEOs that perform despite poor governance	NA	NA	NA	NA	NA	NA
B13	have board members chosen for savvy, not political correctness	IRRC	%FEMALE; %ETHNIC	5, panel B	NS; ***	7, panel E	NS; NS

Appendix (continued)
Summary of tests of Buffett's public statements on accounting, governance and investment practices

Panel C. Investing Practices

			Selection		Activism		
			Table	Result	Table	Result	
Firm Characteristics							
	<i>BH investees tend to:</i>						
C1	provide consistent profits from stable uncomplicated businesses	Compustat	VOL_OWNER_RET;	6, Panel B	***	7, Panel F	NS
C2	have enduring long term competitive advantages	Compustat	RUN-SALES; RUN-OWNER_RET; RUN-OIBD; RUN-IBEX	6, Panel B	***, **, **, *	NA	NA
C3	have higher 'owner earnings'	Compustat	OWNER_RET; ROE;	6, Panel B	***,***	7, Panel F	NS;NS
C4	rely less on net tangible assets to produce earnings	Compustat	OWN_RET_TANGIBLE	6, Panel B	***	7, Panel F	NS
C5	have high ROE after controlling for undue leverage and accounting gimmickry	Compustat	ROE (after controlling for MLEV, DD, ABDACC)	NA	***	NA	NS
C6	have low financial leverage	Compustat	MLEV	6, Panel B	***	7, Panel F	*
C7	have lower OPEB & pension liabilities	Compustat	OPEB; PENSION_LIAB	6, Panel B	NS; NS	7, Panel F	NA; NS
C8	have fewer stock splits	Compustat	SPLIT#	6, Panel B	NS	7, Panel F	NS
Intrinsic Value							
	<i>BH investees tend to:</i>						
C9	trade in the stock market around their intrinsic value		V/P-1	6, Panel B	**	7, Panel F	*
C10	repurchase shares only when the intrinsic value per share > stock price	SDC	NA	NA	NA	NA	NA
C11a	issue equity when the intrinsic value per share is less than stock price	SDC	GOOD SEO%;	6, Panel B	NS; NS	7, Panel F	NS
		Compustat	V/SEOPRICE				
C11b	engage in stock-based acquisitions only when its stock price > intrinsic value	SDC	GOOD ACQ%; ACQ	6, Panel B	**,**	7, Panel F	NS
		Compustat	STOCK PRICE/V				

Table 1
Berkshire Hathaway Holdings in our Sample

This table reports the number of Berkshire Hathaway equity investees sorted by year. Data on all equity investments (investments where Berkshire owns 5% or more of a target company) is reported in columns 2 (3) respectively, as obtained by the intersection of CDA/Spectrum and Compustat databases. Although CDA/Spectrum reports quarterly data on equity holdings, we have averaged these holdings based on the investee's fiscal year for the analyses in this paper.

Year	Number of firms	Number of firms where holding $\geq 5\%$
(1)	(2)	(3)
1980	112	13
1981	44	13
1982	24	10
1983	14	9
1984	19	8
1985	14	5
1986	11	6
1987	13	6
1988	17	6
1989	12	6
1990	12	8
1991	12	9
1992	12	10
1993	14	10
1994	12	11
1995	9	8
1996	9	8
1997	8	7
1998	8	7
1999	14	10
2000	33	17
2001	33	14
2002	30	13
2003	32	13
2004	30	12
2005	34	11
2006	42	11
Average	23.11	9.67
Median	14	10

Table 2
Accounting Practices of Berkshire Hathaway Investees

Panel A: Univariate Data on Accounting Practices of Berkshire Investees

This table compares the mean levels for various proxies for underlying accounting practices espoused by Warren Buffett for Berkshire Hathaway investees compared to a control sample. CSCORE and GSCORE represent the timeliness with which bad news and good news is disclosed by the firm to the market as specified in Khan and Watts (2008). PRO_FORMA GAP is the difference between GAAP earnings per share, defined as income before extraordinary items – available for common, adjusted for stock splits and dividends and I/B/E/S reported actual earnings, scaled by split-adjusted stock price at the beginning of the quarter. DD and |ABACC| are two proxies for the quality of earnings. DD is the standard deviation of the residual from a regression of current accruals for a year on operating cash flows for the last year, current year and the next year and control variables as per Dechow and Dichev (2002) and McNichols (2002). MEET_BEAT is the proportion of quarters in a year for which the firm manages to meet or beat the analyst consensus forecast just before the earnings announcement. SMALL_BEAT is the proportion of quarters in which firms manage to meet or beat the analyst consensus forecast exactly by a penny per share. GUIDANCE as the number of times per year when a firm provides a management forecast as per the First Call database. |ABACC| is the absolute value of abnormal accruals for a year as defined in the text. EXPENSER is set to one if a firm is identified as voluntarily expensing the fair value of stock as per SFAS 123 in the Bear Stearns report dated 12/14/2004. PENSENS is pension sensitivity measured as the ratio of the income statement effect of pension assets (i.e., assumed rate of return on pension plan assets multiplied by pension assets) to operating earnings. FOG INDEX is the (words per sentence + percent of complex words) * 0.4 as per Li (2008). BERK is set to one if Berkshire holds an investment in the firm during a year. Robust standard errors clustered at the firm level have been used to compute test statistics in panel B and C. The number of observations, reported in the last column of panel A and relevant to panel B, underlying these analyses varies depending on the availability of data.

Variable	Mean Berkshire firms	Mean Control Sample	t-statistic for difference	N Berkshire sample, Control sample
CSCORE	0.601	0.370	14.97	605, 140870
GSCORE	0.051	0.029	10.92	605, 140870
PRO_FORMA GAP	0.003	0.004	-1.08	332, 64596
DD	0.025	0.049	-11.04	457, 87945
ABACC	0.032	0.068	-10.18	478, 110487
GUIDANCE	3.993	2.645	6.55	144, 21561
MEET_BEATS	0.707	0.632	4.15	303, 52968
SMALL_BEATS	0.190	0.172	1.36	303, 52968
EXPENSER	0.433	0.313	2.43	90, 4562
PENSENS	0.119	0.222	-6.11	185,20438
FOG INDEX	19.348	19.400	-0.48	172, 49261

Table 2 (continued)
Accounting Practices of Berkshire Hathaway Investees

Panel B: Multivariate Analysis of the Accounting Practices of Berkshire Hathaway Investees

Accounting choice variable in column (1) = $f(\text{Intercept, BERK, industry and year fixed effects})$

Dependent variable	Coefficient on BERK	t-statistic	p-value
(1)	(2)	(3)	(4)
CSCORE	0.206	14.52	<0.01
GSCORE	0.008	5.23	<0.01
PRO_FORMA GAP	-0.001	-0.50	0.61
DD	-0.014	-6.30	<0.01
ABACC	-0.026	-9.35	<0.01
GUIDANCE	0.690	3.22	<0.01
MEET_BEATS	0.053	2.42	0.02
SMALL_BEATS	0.022	0.92	0.36
EXPENSER	0.030	1.32	0.19
PENSENS	-0.085	-2.72	<0.01
FOG INDEX	-0.009	-0.06	0.95

Panel C: Multivariate Analysis of Pension Rate Assumptions of Berkshire Hathaway Investees

*PENSION_RATE = $f(\text{Intercept, log ratio of pension assets to operating income, BERK, BERK *pension sensitivity, industry and year fixed effects})$*

Independent variable	Coefficient	t-statistic	p-value
(1)	(2)	(3)	(4)
Log (Pension assets/operating income)	0.068	10.49	<0.01
BERK	0.186	1.50	0.13
Log (Pension assets/operating income)*BERK	-0.173	-1.59	0.11
N	22470		

Note: Intercept, industry and year fixed effects are included in the regressions but not reported.

Table 3
Compensation Practices of Berkshire Hathaway Investees

The table presents results from estimating the following equation

$$\begin{aligned} \text{Ln (annual compensation)}_{jt} = & \beta_0 + \beta_1 \text{Returns-firm}_{it} + \beta_2 \text{Returns-market}_t + \beta_3 \text{BERK}_{jt} \\ & + \beta_4 \text{Returns-firm}_{it} * \text{BERK}_{jt} + \beta_5 \text{Returns-market}_t * \text{BERK}_{jt} + \beta_6 \text{Negdum}_{jt} \\ & + \beta_7 \text{Negdum}_{jt} * \text{BERK}_{jt} + \beta_8 \text{Ln Market Cap}_{jt} + \beta_9 \text{ROA}_{it} + \beta_{10} \text{Market-to-book}_{it} \\ & + \beta_{11} \text{Ln standard deviation of returns}_{it} + \beta_{12} \text{Leverage}_{it} + \beta_{13} \text{CEO age}_{it} \\ & + \beta_{14} \text{CEO tenure}_{jt} + \beta_{15} \text{New CEO}_{jt} + \beta_{16} \text{Ln (CEO's stock and option portfolio)}_{jt} \\ & + \kappa \text{Industry}_j + \lambda \text{Year}_t + \text{error}_{jt} \end{aligned} \quad (8)$$

Ln (annual compensation) is the natural logarithm of annual compensation, defined as the sum of salary, actual bonus, target long-term incentive plan payments, pension contributions and other perquisites, the Black-Scholes value of stock option grants, and the market value of restricted and unrestricted stock grants. Returns-firm is stock return performance of the firm and Returns-market is performance of the overall market. Economic determinants of compensation are firm size (using the natural logarithm of market capitalization), operating performance (return on assets), investment opportunity set (market-to-book), risk (measured as the log of the standard deviation of returns), leverage, CEO's age, CEO tenure with the firm, new CEO indicator variable, the existing portfolio of stock and options measured as the natural logarithm of one plus the intrinsic value of the CEO's equity portfolio of stock, restricted stock, and option holdings (both vested and unvested), along with industry and year fixed effects to control for differences in pay levels across industries and time. NEGDUM is an indicator variable set to one if the Returns-firm is negative in that year and is set to zero, otherwise. An indicator variable, BERK, set to one if the firm is a BH investee in that firm-year and zero otherwise. Robust standard errors clustered at the firm level have been used to compute t-statistics. Coefficients on the intercept, industry and year fixed effects have not been tabulated. t-statistics appear in parentheses.

Table 3
Compensation Practices of Berkshire Hathaway Investees (cont'd)

Dependent variable	Coefficient (t-statistic)
Returns-firm	0.177 (8.14)
Returns-market	-0.019 (-0.18)
BERK (excess pay hypothesis)	-0.301 (-2.32)
Returns-firm * BERK (PPS)	0.446 (2.25)
Returns-market*BERK	-0.141 (-0.42)
Negdum	-0.152 (-7.60)
Negdum*BERK (negative PPS)	0.246 (1.58)
Control variables	
Ln market cap	0.461 (39.93)
ROA	-0.059 (-0.53)
Book-to-market	-0.000 (-1.55)
Ln standard deviation of returns	0.258 (6.22)
Leverage	0.014 (1.31)
CEO age	-0.000 (-0.05)
CEO tenure	-0.005 (-1.90)
New CEO	0.093 (3.32)
Ln (existing portfolio)	0.012 (1.19)
N	20799

Table 4
Lake Woebegone Effect at Berkshire Hathaway Investees

The table presents results from estimating the following equation

$$\text{Log}(\text{annual compensation}_{it} / \text{annual compensation}_{it-1}) = \beta_0 + \beta_1 \text{Returns-firm}_{it} + \beta_2 \text{Returns-market}_t + \beta_3 \text{BERK}_{jt} + \beta_4 \text{LOWCOMP}_{it} + \beta_5 \text{LOWCOMP} * \text{BERK}_{it} + \beta_6 \text{Ln Market Cap}_{jt} + \beta_7 \lambda \text{ROA}_{it} + \beta_8 \log(\text{Sales}_{it} / \text{Sales}_{it-1}) + \kappa \text{Industry}_j + \lambda \text{Year}_t + \text{error}_{jt}. \quad (9)$$

LOWCOMP takes the value one if the CEO was below the median compensation of his peer group (i.e., below median compensation of his size and industry counterparts) for the previous year. Other variables defined in notes to Table 3. Robust standard errors clustered at the firm level have been used to compute t-statistics. Coefficients on the intercept, industry and year fixed effects have not been tabulated. t-statistics appear in parentheses.

Dependent variable	Coefficient (t-statistic)
Returns-firm	0.243 (13.07)
Returns-market	0.110 (0.67)
BERK	-0.155 (-2.23)
LOWCOMP (Lake Woebegone effect)	0.518 (32.27)
LOWCOMP* BERK (Lake Woebegone effect at Berkshire firms)	0.026 (0.28)
Control variables	
Ln market cap	0.049 (14.66)
λ ROA	0.012 (0.18)
$\log(\text{Sales}_{it} / \text{Sales}_{it-1})$	0.193 (6.25)
Number of firm-year observations	17326

Table 5
Board Composition of Berkshire Hathaway Investees

Panel A: Univariate Data on Board Composition of Berkshire Investees

This table compares the mean levels for various proxies for the composition of the board of directors for Berkshire investments compared to a control sample. BERK is set to one if Berkshire holds an investment in the firm during a year. Robust standard errors clustered at the firm level have been used to compute test statistics in panel B and C. The number of observations underlying these analyses varies depending on the availability of data.

Variable	Mean Berkshire firms	Mean Control Sample	t-statistic for difference	N Berkshire sample, Control sample
BOARD SIZE	11.442	9.519	9.85	231, 16347
%OUTSIDERS	0.674	0.643	2.61	231, 16347
% DIRECTOR_OWN	0.064	0.068	0.27	231, 16347
% FEMALE	0.131	0.088	7.13	224, 15001
% ETHNIC	0.540	0.670	5.28	231, 16347

Panel B: Multivariate Analysis of the Board Composition Practices of Berkshire Investees

Board choice variable in column (1) = $f(\text{Intercept, BERK, industry and year fixed effects})$

Dependent variable	Coefficient on BERK	t-statistic	p-value
(1)	(2)	(3)	(4)
BOARD SIZE	1.367	3.18	<0.01
%OUTSIDERS	0.015	0.87	0.38
% DIRECTOR_OWN	-0.013	1.03	0.31
% FEMALE	0.027	2.18	0.03
% ETHNIC	-0.091	25.96	<0.01

Table 6
Evidence on Investing Principles of Berkshire Hathaway Investees

Panel A: Univariate Data on Investing Principles of Berkshire Investees

This table compares the mean levels for various proxies for the investing principles underlying Berkshire investments compared to a control sample. BERK is set to one if Berkshire holds an investment in the firm during a year. Robust standard errors clustered at the firm level have been used to compute test statistics in panel B and C. The number of observations underlying these analyses varies depending on the availability of data.

Variable	Mean Berkshire firms	Mean Control Sample	t-statistic for difference	N Berkshire sample, Control sample
Investing principles				
OWNER_RET	0.276	0.068	12.51	454, 108637
ROE	0.178	0.011	12.16	478, 110166
VOL_OWNER_RET	0.118	0.329	13.91	486, 117953
OWNER_RET_TANGIBLE	0.292	0.085	10.31	454, 108637
RUN-SALES (years)	3.056	2.711	5.22	445, 80472
RUN-OWNERS RETURN (years)	3.036	3.092	1.10	445, 80472
RUN-OIBD (years)	3.034	2.794	0.83	445, 80472
RUN-IBEX (years)	2.964	2.819	2.84	445, 80472
BLEV	0.211	0.227	2.11	478, 110166
MLEV	0.210	0.248	4.24	478, 108637
PENS_LIAB	0.109	0.104	0.54	287, 39180
OPEB	0.020	0.029	2.94	57, 3087
SPLIT#	0.564	0.521	0.9	374, 85146
Intrinsic value				
V/P-1	0.478	0.757	2.59	474, 97652
GOOD SEO%	0.333	0.797	1.68	12, 5467
V/SEOPRICE	1.255	0.714	2.95	12, 5467
GOOD ACQ%	0.867	0.789	0.73	15, 3829
V/P before acquisition	0.693	0.681	0.08	15, 3829

Table 6 (continued)
Evidence on Investing Principles of Berkshire Hathaway Investees

Panel B: Analysis of the Investing Principles of Berkshire Investments

Dependent variable in column (1) = $f(\text{Intercept, BERK, industry and year fixed effects})$

T-statistic shown in parentheses.

Dependent variable	Coefficient on BERK
OWNER_RET	0.117 (76.23)
ROE	0.114 (7.66)
VOL_OWNER_RET	-0.136 (4.66)
OWNER_RET_TANGIBLE	0.146 (3.18)
RUN-SALES	0.092 (2.72)
RUN-OWNERS RETURN	0.046 (1.98)
RUN-OIBD	0.060 (2.42)
RUN-IBEX	0.033 (1.58)
MLEV	-0.070 (4.12)
PENS_LIAB	0.001 (0.06)
OPEB	-0.004 (-0.84)
SPLIT#	-0.040 (0.44)
V/P-1	-0.333 (2.37)
GOOD SEO%	-0.250 (1.68)
V/SEOPRICE	0.249 (1.24)
GOOD ACQ%	0.177 (2.33)
V/P before Acquisition	-0.157 (1.92)

Table 7
Selection or Intervention at Berkshire Hathaway Investees

We restrict the sample to firms here (i) BH has a 5% or more equity ownership; and (ii) BH has held the stock for at least one year during the sample period. We regress select firm characteristics (e.g., earnings quality conservatism score) against the BERK for a sample consisting of only BH investments. Certain characteristics such as EXPENSER are not considered due to very limited data. The BERK is set to one only when BH invests in the firm's stock. Hence, the coefficient on BERK would indicate whether the corporate practice under investigation changed after Buffett assumed a stake in the company.

Panel A: Multivariate Analysis of the Accounting Practices of Berkshire Hathaway Investees

Accounting choice variable in column (1) = $f(\text{Intercept, BERK, industry and year fixed effects})$

Dependent variable	Coefficient on BERK	t-statistic	p-value	N post-investment, N pre-investment
CSCORE	0.013	0.51	0.60	190, 447
GSCORE	-0.004	-1.58	0.11	190, 447
PRO_FORMA GAP	0.002	0.71	0.47	189, 224
DD	0.012	3.22	<0.01	195, 325
ABACC	0.006	1.13	0.26	204, 346
GUIDANCE	0.456	0.48	0.63	52, 36
MEET_BEATS	-0.043	-0.97	0.33	121, 196
SMALL_BEATS	-0.041	-1.33	0.18	121, 196
FOG INDEX	0.036	0.14	0.89	87, 67

Panel B: Multivariate Analysis of Pension Rate Assumptions of Berkshire Investees

*PENSION_RATE = $f(\text{Intercept, log ratio of pension assets to operating income, BERK, BERK*pension sensitivity, industry and year fixed effects})$*

Independent variable	Coefficient	T-statistic	p-value
(1)	(2)	(3)	(4)
Log (Pension assets/operating income)	0.057	1.36	0.17
BERK	-0.171	-0.93	0.35
Log (Pension assets/operating income)*BERK	-0.088	-1.49	0.13
Intercept, industry and year fixed effects included but not reported			
N	212		

Table 7 (continued)
Selection or Intervention at Berkshire Hathaway Investees

Panel C: Compensation Practices of Berkshire Investees

$$\begin{aligned} \text{Ln (annual compensation)}_{jt} = & \beta_0 + \beta_1 \text{Returns-firm}_{it} + \beta_2 \text{Returns-market}_t + \beta_3 \text{BERK}_{jt} \\ & + \beta_4 \text{Returns-firm}_{it} * \text{BERK}_{jt} + \beta_5 \text{Negdum}_{jt} + \beta_6 \text{Negdum}_{jt} * \text{BERK}_{jt} \\ & + \beta_7 \text{Ln Market Cap}_{jt} + \beta_8 \text{ROA}_{it} + \beta_9 \text{Market-to-book}_{it} \\ & + \beta_{10} \text{Ln standard deviation of returns}_{it} + \beta_{11} \text{CEO age}_{it} + \beta_{12} \text{CEO tenure}_{jt} \\ & + \beta_{13} \text{ln (existing portfolio)}_{jt} + \beta_{14} \text{Returns-firm}_{jt} * \text{Log Market Cap}_{it} \\ & + \beta_{15} \text{Returns-firm}_{jt} * \text{Ln Std. devn returns} + \kappa \text{Industry}_j + \lambda \text{Year}_t + \text{error}_{jt}. \end{aligned} \quad (8)$$

Robust standard errors clustered at the firm level have been used to compute t-statistics. Coefficients on the intercept, industry and year fixed effects have not been tabulated. t-statistics appear in parentheses. Only select coefficients are tabulated.

Dependent variable	Coefficient (t-statistic)
Returns-firm	0.259 (0.75)
Returns-market	0.669 (0.59)
BERK (excess pay hypothesis)	-0.171 (-1.22)
Returns-firm * BERK (PPS)	0.223 (0.54)
Returns-market*BERK	0.064 (0.16)
Negdum	0.117 (0.64)
Negdum*BERK (negative PPS)	-0.210 (-0.94)
Control variables	
Ln market cap	0.550 (12.42)
ROA	-1.048 (-1.39)
Book-to-market	0.012 (1.27)
Ln standard deviation of returns	0.552 (1.93)
Leverage	-0.079 (-4.62)
CEO age	-0.008 (-0.97)
CEO tenure	0.015 (1.39)
New CEO	0.343 (2.32)
Ln (existing portfolio)	-.031 (-1.23)
N	247

Table 7 (continued)
Selection or Intervention at Berkshire Hathaway Investees

Panel D: Lake Woebegone Effect at Berkshire Investees

The table presents results from estimating the following equation

$$\text{Log}(\text{annual compensation}_{it} / \text{annual compensation}_{it-1}) = \beta_0 + \beta_1 \text{Returns-firm}_{it} + \beta_2 \text{Returns-market}_t + \beta_3 \text{BERK}_{jt} + \beta_4 \text{LOWCOMP}_{it} + \beta_5 \text{LOWCOMP} * \text{BERK}_{it} + \beta_6 \text{Ln Market Cap}_{jt} + \beta_7 \lambda \text{ROA}_{it} + \beta_8 \log(\text{Sales}_{it} / \text{Sales}_{it-1}) + \kappa \text{Industry}_j + \lambda \text{Year}_t + \text{error}_{jt} \quad (9)$$

Robust standard errors clustered at the firm level have been used to compute t-statistics. Coefficients on the intercept, industry and year fixed effects have not been tabulated. t-statistics appear in parentheses. Only select coefficients are tabulated. N=217 firm-years.

Dependent variable	Coefficient (t-statistic)
Returns-firm	0.202 (1.38)
Returns-market	-1.417 (-1.18)
BERK	-0.294 (-2.94)
LOWCOMP (Lake Woebegone effect)	0.250 (2.09)
LOWCOMP* BERK (at Berkshire firms)	0.327 (2.32)
N	217

Panel E: Multivariate Analysis of the Board Composition of Berkshire Investees

Board choice variable in column (1) = f(Intercept, BERK, industry and year fixed effects)

Dependent variable	Coefficient on BERK	t-statistic	p-value	N Post investment, N pre-investment
(1)	(2)	(3)	(4)	
BOARD SIZE	-1.072	-2.56	0.01	104, 85
%OUTSIDERS	-0.018	-0.61	0.54	104, 85
% DIRECTOR_OWN	0.006	0.36	0.72	104, 85
% FEMALE	-0.003	-0.36	0.72	103, 73
% ETHNIC	0.022	0.71	0.48	104, 85

Table 7 (continued)
Selection or Intervention at Berkshire Hathaway Investees

Panel F: Investing principles

Dependent variable	Coefficient on BERK	t-statistic	p-value	N Post investment, N pre-investment
OWNER_RET	-0.002	-0.05	0.96	188, 334
ROE	-0.004	0.14	0.88	204, 346
VOL_OWNER_RET	-0.003	-0.09	0.93	208, 346
OWNER_RET_TANGIBLE	0.082	1.05	0.29	188, 334
MLEV	-0.038	-1.51	0.132	204, 345
PENS_LIAB	0.001	0.06	0.949	165, 183
SPLIT#	-0.089	-0.65	0.515	197, 238
V/P-1	-0.182	-1.36	0.174	203, 358

Table 8
Time-series Return Regressions of Berkshire Hathaway

We conduct Fama & French four-factor regressions of returns to (A) Berkshire Hathaway stock, (B) a portfolio of publicly traded stocks owned by Berkshire Hathaway, and (C) a propensity score matched portfolio over 1977 to 2006. For the portfolio of stocks owned by Berkshire Hathaway our return period starts from 1980 due to 13-F data availability. For the propensity score matching portfolio the return period starts from 1981 to avoid look-ahead bias. Portfolio returns for each month are regressed on the market factor and the additional three factors shown to explain returns in Fama and French (1993). The Fama/French factors are constructed using the six value-weight portfolios formed on size and book-to-market. Small-minus-big (SMB) is the average return on the three small market capitalization portfolios minus the average return on the three big market capitalization portfolios. High-minus-low (HML) is the average return on the two value portfolios (high book-to-market) minus the average return on the two growth (low book-to-market) portfolios. UMD is the momentum factor. Excess return on the market is the value-weight return on all NYSE, AMEX, and NASDAQ stocks (from CRSP) minus the one-month Treasury bill rate (from Ibbotson Associates). t-statistics are presented below coefficient estimates.

Panel A: Returns to Berkshire Hathaway stock

Variable	Intercept/ Alpha	Excess mkt return	SMB	HML	UMD	Adj R- square (%)	No. of months
1977-2006	0.0137 (3.88)	0.6868 (8.60)				16.89%	360
1977-2006	0.0090 (2.50)	0.9466 (10.44)	-0.0093 (-0.08)	0.7143 (5.33)	0.0258 (0.32)	22.78%	360
1977-1986	0.0209 (2.99)	0.8444 (5.36)				18.9%	120
1977-1986	0.0142 (1.85)	1.0048 (5.31)	0.3412 (1.14)	0.6936 (2.26)	0.0463 (0.23)	20.98%	120
1987-1996	0.0115 (2.24)	0.9435 (7.66)				32.66%	120
1987-1996	0.0118 (2.05)	0.9852 (7.03)	-0.1390 (-0.64)	0.0767 (0.31)	-0.0374 (-0.19)	31.26%	120
1997-2006	0.0074 (1.28)	0.3347 (8.69)				4.97%	120
1997-2006	0.0014 (0.24)	0.7522 (5.25)	-0.0403 (-0.31)	0.8594 (4.97)	-0.0512 (-0.55)	23.18%	120

Table 8 (continued)
Time-series Return Regressions of Berkshire Hathaway

Panel B: Returns to Berkshire Hathaway equity portfolio

Variable	Intercept/ Alpha	Excess mkt return	SMB	HML	UMD	Adj R- square (%)	No. of months
1980-2006	0.0064 (4.14)	0.7231 (20.72)				57.46%	319
1980-2006	0.0033 (2.27)	0.8979 (24.05)	0.0929 (2.11)	0.4748 (8.87)	-0.0445 (-1.39)	66.41%	319
1980-1986	0.0088 (3.78)	0.7594 (14.32)				72.4%	79
1980-1986	0.0043 (1.70)	0.8707 (13.14)	0.4045 (3.83)	0.3002 (2.86)	0.0887 (1.41)	76.58%	79
1987-1996	0.0036 (1.72)	0.8415 (16.74)				70.12%	120
1987-1996	0.0029 (1.36)	0.8465 (15.36)	0.2346 (2.74)	0.1888 (1.92)	0.0671 (0.86)	71.69%	120
1997-2006	0.0070 (2.26)	0.6092 (9.13)				40.89%	120
1997-2006	0.0025 (1.02)	0.9035 (14.35)	0.0412 (0.72)	0.6711 (8.83)	-0.1060 (-2.57)	67.84%	120

Panel C: Returns to a Propensity Score Matching Portfolio

Variable	Intercept/ Alpha	Excess mkt return	SMB	HML	UMD	Adj R- square (%)	No. of months
1980-2006	0.0034 (2.94)	0.894 (33.49)				78.44%	309
1980-2006	0.0013 (1.11)	0.9745 (32.01)	0.1081 (2.98)	0.2465 (5.56)	0.0243 (0.91)	80.37%	309
1980-1986	0.0021 (1.36)	0.989 (27.64)				91.82%	69
1980-1986	0.0024 (1.37)	0.9587 (22.19)	0.2088 (2.73)	-0.0613 (-0.82)	0.0522 (1.09)	93.07%	69
1987-1996	0.0020 (1.41)	1.0264 (29.65)				88.07%	120
1987-1996	0.0025 (1.67)	1.0191 (26.23)	0.0990 (1.64)	0.0037 (0.05)	-0.0428 (-0.78)	88.15%	120
1997-2006	0.0050 (2.13)	0.7415 (14.55)				63.89%	120
1997-2006	0.0013 (0.56)	0.9152 (15.66)	0.1119 (2.11)	0.3944 (5.59)	0.0150 (0.39)	70.98%	120

Table 9
Future Operating Performance of Berkshire Investees

Panel A: Univariate Data on Future Operating Performance of Berkshire Investees

This table compares the mean levels for future operating performance of Berkshire Hathaway investees compared to a control sample. OIBD is operating income before depreciation scaled by average total assets and NI is net income scaled by average total assets. BERK is set to one if Berkshire holds an investment in the firm during a year. PROP is set to one if the firm is a propensity matched control sample during a year, zero if the firm is any other firm excluding Berkshire Hathaway investees. Robust standard errors clustered at the firm level have been used to compute test statistics in panels B and C. The number of observations, reported in the last column of panel A and relevant to panels B and C, underlying these analyses varies depending on the availability of data.

Variable	Mean Berkshire firms	Mean Control Sample	t-statistic for difference	N Berkshire sample, Control sample
OIBD _{t+1}	0.1689	0.1098	13.13	416,115846
OIBD _{t+2}	0.1605	0.1146	10.15	375,101951
OIBD _{t+3}	0.1603	0.1180	9.19	342,90252
OIBD _{t+4}	0.1591	0.1209	8.09	311,80012
OIBD _{t+5}	0.1555	0.1233	6.20	276,70902
NI _{t+1}	0.0725	0.0134	18.47	429,116467
NI _{t+2}	0.0646	0.0188	12.89	375,101951
NI _{t+3}	0.0671	0.0229	12.87	342,90252
NI _{t+4}	0.0632	0.0263	9.50	311,80012
NI _{t+5}	0.0599	0.0294	7.15	276,70902

Panel B: Multivariate Analysis of the Operating Performance of Berkshire Hathaway Investees

Future Performance Variable in column (1) = f(Intercept, Current Performance, BERK, industry and year fixed effects)

Dependent variable	Coefficient on BERK	t-statistic	p-value
(1)	(2)	(3)	(4)
OIBD _{t+1}	0.0086	3.50	<0.01
OIBD _{t+2}	0.0110	2.87	<0.01
OIBD _{t+3}	0.0123	2.73	<0.01
OIBD _{t+4}	0.0119	2.30	=0.02
OIBD _{t+5}	0.0134	2.29	=0.02
NI _{t+1}	0.0173	5.09	<0.01
NI _{t+2}	0.0151	3.11	<0.01
NI _{t+3}	0.0163	3.07	<0.01
NI _{t+4}	0.0119	1.95	=0.05
NI _{t+5}	0.0118	1.80	=0.07

Table 9(continued)
Future Performance of Berkshire Investees

Panel C: Univariate Data on Future Performance of Propensity Score Match Sample

Variable	Mean Propensity Sample	Mean Control Sample	t-statistic for difference	N Propensity sample, Control sample
OIBD _{t+1}	0.1786	0.1089	20.05	1484,114344
OIBD _{t+2}	0.1731	0.1139	15.19	1327,100572
OIBD _{t+3}	0.1706	0.1174	10.75	1186,88982
OIBD _{t+4}	0.1700	0.1204	11.77	1052,78845
OIBD _{t+5}	0.1686	0.1229	7.68	933,69842
NI _{t+1}	0.0771	0.0126	20.38	1484,114344
NI _{t+2}	0.0735	0.0181	15.23	1327,100572
NI _{t+3}	0.0729	0.0222	10.66	1186,88982
NI _{t+4}	0.0717	0.0257	11.59	1052,78845
NI _{t+5}	0.0683	0.0289	6.62	933,69842

Panel D: Multivariate Analysis of the Operating Performance of Propensity Score Match Sample

Future Performance Variable in column (1) = $f(\text{Intercept, Current Performance, PROP, industry and year fixed effects})$

Dependent variable	Coefficient on PROP	t-statistic	p-value
(1)	(2)	(3)	(4)
OIBD _{t+1}	0.0110	5.12	<0.01
OIBD _{t+2}	0.0140	4.40	<0.01
OIBD _{t+3}	0.0134	4.22	<0.01
OIBD _{t+4}	0.0139	3.00	<0.01
OIBD _{t+5}	0.0161	3.98	<0.01
NI _{t+1}	0.0199	7.39	<0.01
NI _{t+2}	0.0221	6.59	<0.01
NI _{t+3}	0.0201	6.31	<0.01
NI _{t+4}	0.0197	4.55	<0.01
NI _{t+5}	0.0184	5.04	<0.01