

White Paper:

**Examining Berkshire Hathaway's
1995 Purchase of GEICO Insurance**

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Executive Summary

In 1995, Berkshire Hathaway purchased GEICO insurance for a 25% premium over its traded share price. Many investors, including major brokerage houses and financial reporters, questioned the wisdom of such an investment, especially since Berkshire Hathaway with its near mythical chairman, Warren Buffett, was involved.

After reviewing the history of GEICO, Berkshire Hathaway, and the investing philosophy of Warren Buffett, this paper reviews and evaluates the purchase of GEICO. This paper examines two primary tools available for analyzing possible investments. The first is the dividend growth model, which examines how a stock can be valued through examining the dividend cash flow. The second examines the time value of money, through the assumption that future dividends will flow directly to Berkshire Hathaway.

Additionally, the paper evaluates the profitability of the purchase of GEICO after a five year period, assuming that all profits flowed to Berkshire. This five year window was selected since financial data on GEICO is reported through the Berkshire Hathaway annual report for the period 1995 to 2000. Finally, a discussion of the limitations and assumptions associated with the time value of money analyses is explored.

“What we’ve got here is a highly unusual combination of a very profitable operating company--insurance in a big way, plus a crazy quilt of other businesses--and a CEO, now 70, who invests its money and who, in that department, has a strong, long-standing claim to being the best in the world”¹.

Introduction

In this time of unpredictable economic turns, upswings, economic retractions, changing interest rates and inflation, painful shortages followed by gluts, and extremes of optimism and pessimism, the chief financial officer protects a firm’s financial integrity. As financial markets become increasingly global, the financial officer must bring a global perspective to his role.

This paper reviews the case of Berkshire Hathaway’s 1995 purchase of GEICO insurance. This purchase will be evaluated using discounted cash flow analysis, and internal rate of return analysis, to identify whether or not it was a sound financial purchase in the first place. Following the case review, a review of common finance topics and an examination of several common methods for evaluating financial investments from the firm’s perspectives are explored. Finally, the paper will examine many of the criticisms and shortcomings of traditional discounted cash flow analysis.

All figures in this paper are in US dollars.

Review of the case: Berkshire Hathaway purchasing GEICO²

In August 1995, Warren Buffet, the CEO of Berkshire Hathaway, announced that his firm would acquire the 50% of GEICO Corporation that it did not already own, for \$2.3 billion. The deal would give GEICO shareholders \$70.00 per share, up from the \$55.75 market price before the announcement. Some observers were astonished at the 25% premium paid for the shares, and questioned the wisdom of the purchase.

The investment history of Berkshire Hathaway is astonishing. In 1977, the firm’s year-end closing price was \$89.00. The stock (NYSE:BRKa) closed at \$68200 on August 3rd, 2001³. Except for a brief overvaluation of the NASDAQ market in the fall of 1999, caused by rampant speculation in tech stocks, Berkshire Hathaway has consistently outperformed the major indices (Dow Jones, NASDAQ and Standard and Poors) as illustrated in the graph below⁴:

¹ Loomis, Carol, “The Value Machine”, Fortune, February 19, 2001.

² Bruner, Robert F, “Warren Buffett, 1995”, Case UVA-F-1160, Graduate School of Business Administration, University of Virginia, May 1998.

³ Yahoo finance

⁴ Yahoo Finance



Berkshire Hathaway, in 1994, described itself as a holding company owning subsidiaries engaged in a number of diverse business activities⁵. In the 2000 annual report, the company listed the following investments in excess of \$1 billion in market value:

Company	% of ownership in the company
American Express	11%
Coca-Cola	8%
Gillette	9%
Washington Post	18%
Wells Fargo	3%

In addition, the firm holds equity in Executive Jet, Helzberg Diamond Shop, Ben Bridge Jeweler, Nebraska Furniture Mart, Buffalo News, Dexter shoes, Dairy Queen, Benjamin Moore Paints, GEICO insurance, and many others (certainly an eclectic grouping of companies!)

Buffett’s Investment Philosophy:

Buffett’s approach to investing is heavily influenced by his business professor, Benjamin Graham, from Columbia University, where Buffett received an MBA. Graham co-authored *Security Analysis*, and developed a method of identifying undervalued stocks, which later became the foundation to the modern approach of “value investing”. This approach focused on the value of assets such as cash, networking capital, and physical assets. Buffett modified this approach to concentrate also on valuable franchises that were not recognized as such by the market.

Buffett communicated his investment strategies in his CEO’s letter of the shareholders in Berkshire Hathaway’s annual report. The letters emphasized the following⁶:

⁵ Berkshire Hathaway Inc., Annual Report, 1994. pp. 1

1. **Economic reality, not accounting reality:** Financial statements prepared by accountants conform to rules that may not adequately represent the economic realities of a business. Economic realities include items such as trademarks, brand equity, patents etc.
2. **The cost of lost opportunity:** Buffet compares an investment opportunity against the next best alternative, the so called “lost opportunity”. Therefore, an important standard of comparison in testing the attractiveness of an opportunity is the rate of potential return from investing in the stock market, or in other companies.
3. **Value creation:** Time is money: Buffett stresses the importance of intrinsic value as the present value of expected future performance. Further, he defines intrinsic value as “the discounted value of cash that can be taken out of a business during its remaining life”.⁷ See Appendix A for an example of value creation.
4. **Performance:** Measure performance by gain in intrinsic value, not accounting profit;
5. **Risk and discount rates:** Conventional thinking believes that the more risk one assumes, the more one should get paid. Academics compute the beta of a stock – its past volatility – and then build capital allocation theories around this principal. Buffett does not incorporate a risk factor into his investments, and instead evaluates them against 30 year treasury bonds; he defends this argument by stating that he avoids risk, and therefore should use a risk free discount rate.
6. **Diversification:** Buffett disagrees with the conventional wisdom that investors should place money in a variety of investments that are unrelated. Rather he feels investors should identify businesses they understand and concentrate on them.
7. **Decisions:** Investment decisions should be driven by information, analysis, and self-discipline, not by hunch or emotion.

GEICO Corporation

Berkshire Hathaway has invested in GEICO since 1976. By August 1995, the initial investment of \$45.7 million (controlling 50.4% of the company) had grown to \$1.9 billion. Until this point, GEICO paid an increasing dividend each year, and from 1976 to 1994, the average annual total return on company stocks was 13.5%.

Some analysts sought to test the suitability of this investment. On July 7, 1995, Value Line Investment Survey published a forecast of GEICO’s dividends and future stock prices:

⁶ As summarized from the case, except where noted.

⁷ Berkshire Hathaway, Annual Report, 1994, pp. 7.

		Low end of range	High end of range
Forecasted Dividends	1996	\$1.16	\$1.16
	1997	\$1.25	\$1.34
	1998	\$1.34	\$1.55
	1999	\$1.44	\$1.79
	2000	\$1.55	\$2.07
Forecasted Stock Price in 2000		\$90.00	\$125.00

Reproduced from the case

Value Line also stated that the cost of equity for GEICO is 11% and the corporation has outstanding 67,889,574 shares as of April 30, 1995. The beta was estimated at 0.75 (compared to 0.95 for Berkshire Hathaway), the equity market risk premium was about 5.5%, and the risk free rate estimated by the yield on the 30 year US Treasury bond was 6.86%.

Strategic Outcome

Buffett stated that it is the firm's goal to meet a 15 percent annual growth rate in intrinsic value.

The remaining sections of this paper will examine:

- Will the GEICO acquisition serve the long term goals of Berkshire Hathaway?
- Was the bid price appropriate?
- What are the problems associated with examining investments, accounting for the time value of money?

Finance

The field of finance is closely related to economics and accounting. Economics provides a framework for understanding risk analysis, price theory through supply and demand relationships, comparative return analysis, and a general understanding of the economic environment in response to which a firm's managers must continually adjust the firm's corporate strategy. On the other hand, accounting is sometimes referred to as the language of finance because it provides financial data in income statements, balance sheets, and statement of cash flows.

The broader field of finance typically has three key interrelated areas:

Money and capital markets. Money markets are the markets for debt securities that must be paid within one year. Capital markets are the markets for debt securities that repay beyond one year, and for equity shares.

Investment: Equity shares can be one of two types: preferred stock or common stock. Common stock is a financial entity that represents ownership in a corporation. Investors holding common stock are entitled to dividends and other distribution of corporate earnings of assets only after all other capital claimants have been paid. Preferred stock is

a hybrid security; a combination of debt and common stock. It rewards its investors with a fixed return (much like debt repayment), but the shareholders do not have an ownership interest in the firm; instead, they have a priority claim over dividends superior to those of the common share holder.

Financial management: Describes the actual management of the firm. Financial managers are important because their decisions influence the value of a firm. Value is increased in three ways:

- Capital budgeting decision: an investigation into which long term investments a firm undertakes
- Financing decision: raising the money needed to finance the investment projects
- Net working capital and cash management decision: Managing the firms cash position

Time Value of Money

The process of evaluating streams of future cash flow is called Discounted Cash Flow Analysis. The fundamental underlying rationale for discounted cash flow analysis is the time value of money. Discounted cash flow and internal rate of return analysis, the two principal tools of evaluation, are instrumental in helping the researcher reach a value conclusion.

The process of performing a discounted cash flow analysis can be broken down into four steps⁸:

- Estimate the future cash flows
- Assess the riskiness of the flows
- Incorporate risk assessment into the analysis
- Find the present value of the flows.

If the discounted cash flow analysis produces a positive number (after accounting for the initial investment), the investment is considered worthwhile. Conversely, if the discounted cash flow analysis produces a negative number, the investment is not considered to be wise.

Assessment of the GEICO purchase

The Capital Asset Pricing Model (CAPM) presents a method for calculating the required return on common stock. Under this model, the required return for an investment can be described by the following formula⁹:

$$K_j = R_f + \beta (K_m - R_f) \quad (1)$$

⁸ Argenti, Paul A., "The Fast Forward MBA", John Wiley and Sons, New York, 1997.

⁹ Block, Stanley, Geoffrey Hirt, H. Allan Conway, J. Douglas Short, "Foundations of Financial Management", Second Canadian Edition, Irwin, Homewood, IL, 1991.

where

K_j	= Required return on common stock
R_f	= Risk free rate of return
β	= Beta coefficient
K_m	= Return in the market

therefore,

$$K_j = 6.86 + 0.75 ((6.86 + 5.50) - 6.86)$$

$$K_j = 10.99$$

Dividend Growth Model

A stock can be valued by examining the dividend cash flow. Consider the following model¹⁰:

$$VPS = D / (K - g) \quad (2)$$

where

VPS	= Value per share
D	= Annual dividend per share
K	= Required rate of return (using K_j from equation 1 above)
g	= annual dividend growth rate

This model is typically used in mature industries, where the expected dividend rate is stable.

The model will be calculated in two ways. Firstly, utilizing historical dividend growth rates (for the time period 1980 to 1990, the information provided), and secondly utilizing forecasted dividend growth rates, as provided by Value Line. The annual dividend per share will be calculated as the highest value over the time period examined.

Historical dividend growth: Examining the GEICO dividend rate per share from 1980 to 1990, annual dividends have risen from \$0.09/share to \$0.40/share over this time period. This represents a total change of 344.44% increase, and a yearly change as illustrated in the table below¹¹:

¹⁰ Ross, Stephen, "Corporate Finance", McGraw Hill, Toronto, 1999.

¹¹ Reproduced from the case

Year	GEICO Dividend (in \$)	% change from previous year
1980	0.09	--
1981	0.10	11.11
1982	0.11	10.00
1983	0.14	27.27
1984	0.18	28.57
1985	0.20	11.11
1986	0.22	10.00
1987	0.27	22.73
1988	0.33	22.22
1989	0.36	9.09
1990	0.40	11.11

Although there are clearly some cyclical patterns in the dividend change from previous years (notably caused by economic downturns and possibly higher accident rates between 1985 and 1986), and undoubtedly a more precise method of evaluating the average change per year (for example using regression analysis) is available, the mean dividend per share-change from previous years is 16.32%.

Turning to the dividend growth model for 1990, we see the VPS is:

$$\text{VPS} = \$0.40 / (0.1099 - 0.1632)$$

$$\text{VPS} = \$7.50$$

Forecasted Growth: Turning to the forecasted GEICO dividend rate per share from 1996 to 2000, as provided by Value Line, the average change in dividend is calculated both using the low end range and the high end range¹²:

Year	Low End of Range		High End of Range	
	GEICO Dividend (in \$)	% change from previous year	GEICO Dividend (in \$)	% change from previous year
1996	1.16	--	1.16	--
1997	1.25	7.76	1.34	15.52
1998	1.34	7.20	1.55	15.67
1999	1.44	7.46	1.79	15.48
2000	1.55	7.64	2.07	15.64

The mean percentage change in dividend offered per year for the low range is 7.52% and for the high end of the range is 15.58%.

¹² Reproduced from the case

Turning to the dividend growth model for this period over the low end of range, we see the VPS is:

$$\begin{aligned} \text{VPS} &= \$1.55 / (0.1099 - 0.0752) \\ \text{VPS} &= \$44.67 \end{aligned}$$

and for the high end of the range over the same period:

$$\begin{aligned} \text{VPS} &= \$2.07 / (0.1099 - 0.1558) \\ \text{VPS} &= \$-45.10 \text{ (assume this becomes } \$45.10) \end{aligned}$$

Both of these dividends are closer to the per share market price of \$55.75 (before the announced acquisition) than the \$70.00 share price that Berkshire Hathaway paid. Berkshire Hathaway must have valued the company's assets and future earnings as well.

Time value of money

The evaluation of any project can be valued using the time value of money, and depends on the magnitude of the cash flows, the timing, and the discount rate used. This analysis examines the forecasted dividend and forecasted stock price based on the value line information provided in the case. Further, it assumes that 67.889 million shares of GEICO were outstanding as of April 30, 1995, and that Berkshire Hathaway already owned 50.4% or 34.22 million shares; implying 33.67 million shares were purchased at \$70.00 each for a total price of \$2.3 billion.

Over the years, as Berkshire Hathaway accumulated shares of GEICO, its investment of \$45.7 million has grown in value to \$1.9 billion; clearly an acceptable return on investment. Consequently, this analysis will only examine the purchase of the additional 33.67 million shares (or 49.6%) of GEICO. Further, this analysis assumes a five year window only, that Berkshire Hathaway divests itself of GEICO in 2000, and that dividends are still issued from GEICO to Berkshire Hathaway.

Low range

Utilizing a discount rate of 6.86%, reflecting the 30 year US Treasury Bond rate, on 33.67 million shares

	Cash	Discount factor	NPV Today
Year 0 - 1995 (purchase)	(\$2,300)	1	(\$2,300)
Year 1 - 1996 (dividend of \$1.16)	\$39.06	0.94	\$36.72
Year 2 - 1997 (dividend of \$1.25)	\$42.09	0.88	\$37.04
Year 3 - 1998 (dividend of \$1.34)	\$45.12	0.82	\$37.00
Year 4 - 1999 (dividend of \$1.44)	\$48.48	0.77	\$37.33
Year 5 - 2000 (dividend of \$1.55)	\$52.19	0.72	\$37.58
Year 5 - 2000 (share price \$90)	\$3,030	0.72	\$2,174
Net Present Value			\$59.67

(all dollars, except dividend issued, in million of dollars)

High range

Utilizing a discount rate of 6.86%, reflecting the 30 year US Treasury Bond rate, on 33.67 million shares

	Cash	Discount factor	NPV Today
Year 0 - 1995 (purchase)	(\$2,300)	1	(\$2,300)
Year 1 – 1996 (dividend of \$1.16)	\$39.06	0.94	\$36.72
Year 2 – 1997 (dividend of \$1.34)	\$45.12	0.88	\$39.70
Year 3 – 1998 (dividend of \$1.55)	\$52.19	0.82	\$42.79
Year 4 – 1999 (dividend of \$1.79)	\$60.27	0.77	\$46.41
Year 5 – 2000 (dividend of \$2.07)	\$69.70	0.72	\$50.18
Year 5 – 2000 (share price \$125)	\$4,209	0.72	\$3,021
Net Present Value			\$936.47

(all dollars, except dividend issued, in million of dollars)

Clearly, at either the low end of the range or the high end of the range, the investment is returning a positive net present value, and therefore indicates GEICO is a prudent investment. These calculations used the 6.86% discount rate. Recall, this is the same rate used by Mr. Buffett. However, not all investors have the risk tolerance of Mr. Buffett and Berkshire Hathaway (in fact, not many investors can even afford to purchase a single share in Berkshire Hathaway). Examining the same data, but with a discount rate of 15%, reflecting the cost of equity for GEICO of 10.99%, plus a margin for risk:

Low range

Utilizing a discount rate of 15%, on 33.67 million shares

	Cash	Discount factor	NPV Today
Year 0 - 1995 (purchase)	(\$2,300)	1	(\$2,300)
Year 1 – 1996 (dividend of \$1.16)	\$39.06	0.87	\$33.98
Year 2 – 1997 (dividend of \$1.25)	\$42.09	0.76	\$31.99
Year 3 – 1998 (dividend of \$1.34)	\$45.12	0.66	\$29.78
Year 4 – 1999 (dividend of \$1.44)	\$48.48	0.57	\$27.63
Year 5 – 2000 (dividend of \$1.55)	\$52.19	0.50	\$26.10
Year 5 – 2000 (share price \$90)	\$3,030	0.50	\$1,515
Net Present Value			(\$635.52)

(all dollars, except dividend issued, in million of dollars)

High range

Utilizing a discount rate of 15%, on 33.67 million shares

	Cash	Discount factor	NPV Today
Year 0 - 1995 (purchase)	(\$2,300)	1	(\$2,300)
Year 1 – 1996 (dividend of \$1.16)	\$39.06	0.87	\$33.98
Year 2 – 1997 (dividend of \$1.34)	\$45.12	0.76	\$34.29
Year 3 – 1998 (dividend of \$1.55)	\$52.19	0.66	\$34.45
Year 4 – 1999 (dividend of \$1.79)	\$60.27	0.57	\$34.35
Year 5 – 2000 (dividend of \$2.07)	\$69.70	0.50	\$34.85
Year 5 – 2000 (share price \$125)	\$4,209	0.50	\$2,105
Net Present Value			(\$23.09)

(all dollars, except dividend issued, in million of dollars)

Utilizing a higher discount rate, more in common with traditional discounted cash flow analysis, the acquisition of GEICO does not appear to be a wise decision, since the net present value, under both the low range estimate, and the high range estimate, is negative. Using a higher discount rate, say 20% to reflect a higher level of risk, would only serve to lower the overall net present value further.

An examination of the GEICO acquisition in hindsight

Fortunately, an opportunity exists to examine the GEICO acquisition in hindsight. The following table demonstrates the annual profit (loss) of GEICO as a subsidiary of Berkshire Hathaway for the period 1995 – 2000¹³.

Year	Gain (loss) of GEICO before tax (millions of dollars)
1996	\$171
1997	\$281
1998	\$269
1999	\$24
2000	(\$224)

Continuing with the evaluation of GEICO, by examining the value of these gains with perfect hindsight, and presenting this information to Berkshire Hathaway in 1995, the discounted cash flow analysis would look like:

¹³ Source: Berkshire Hathaway, Inc., Annual Reports, 1996 – 2000.

Discounted Cash Flow, utilizing a discount factor of 6.86%:

	Gain (loss)	Discount factor	NPV Today
Year 0 - 1995 (purchase)	(\$2,300)	1	(\$2,300)
Year 1 - 1996	\$171	0.94	\$160.74
Year 2 - 1997	\$281	0.88	\$247.28
Year 3 - 1998	\$269	0.82	\$220.58
Year 4 - 1999	\$24	0.77	\$18.48
Year 5 - 2000	(\$224)	0.72	(\$161.28)
Year 5 - 2000 (sale at \$107.50)	\$3,620	0.72	\$2606.40
Net Present Value			\$792.20

(all dollars, except dividend issued, in million of dollars)

Note: For simplicity, the sale price at year 5 (2000), \$107.50, is the average of the low end range and the high end range, as provided by Value Line. Again, since the intention is to evaluate the wisdom of acquiring complete ownership in GEICO, the sale in 2000 is assumed to include only the additional 33.67 million shares as acquired in 1995.

Conversely, examining the same data utilizing a discount rate of 15%, the following table demonstrates the discounted cash flow analysis:

Discounted Cash Flow, utilizing a discount factor of 15%:

	Gain (loss)	Discount factor	NPV Today
Year 0 - 1995 (purchase)	(\$2,300)	1	(\$2,300)
Year 1 - 1996	\$171	0.87	\$148.77
Year 2 - 1997	\$281	0.76	\$213.56
Year 3 - 1998	\$269	0.66	\$177.54
Year 4 - 1999	\$24	0.57	\$13.68
Year 5 - 2000	(\$224)	0.50	(\$112.00)
Year 5 - 2000 (sale at \$107.50)	\$3,620	0.50	\$1,810
Net Present Value			(\$48.45)

In the first instance, utilizing the risk free discount rate, the investment returns a positive net present value, and therefore is considered a good investment. Alternatively, when the analysis is undertaken utilizing a higher discount factor, the net present value is negative, and therefore an unwise investment over this time period and under the assumptions identified above.

Limitations of Discounted Cash Flow

This paper has identified strategic limitations of discounted cash flow analysis, namely, the ultimate calculation of net present value, and therefore the ultimate determination of the value of the investment, is highly influenced by the discount rate used. The discount rate selected is highly subjective and influenced by the risk premium placed by the analyst. Alternatively, in the absence of risk, as evaluated by Mr. Buffett, the discount rate is simply equivalent to the long-term interest rate.

Despite the widespread use of discounted cash flow analysis, the process is not without critics. Sanders Kahn, a writer on valuation theory and practice, referred to DCF as “infernally rate of return” analysis¹⁴. The general critiques of DCF are that the selection of inappropriate yield rates and inflated assumptions generate incorrect conclusions. Critics of DCF focus on the results of the model, rather than on the fundamentals of the process itself¹⁵. Alternatively, other researchers remain bullish on the technique¹⁶.

Assuming that a proper assessment of risk is included in the analysis, discounted cash flow can provide a useful tool for managers evaluating the attractiveness of an investment. At times, the analysis will produce either a clearly positive or negative solution, indicating – almost without doubt – that a project should be considered viable or not. In other instances, perhaps in the majority of cases, DCF will produce marginal results; acceptable accounting for certain risk levels, while unacceptable using other levels. In these instances, a manager cannot rely solely on DCF for direction, and must look for support from other departments and personal experiences.

Alternative evaluation methods

There is a plethora of alternative evaluation methods cited in the academic literature. Two promising alternatives are examined here:

Monte Carlo Simulation: A MCS model, widely used in Economics, uses random variables for inputs. By randomly selecting inputs from probability distributions, the outcomes generated by the simulation are distributed about a mean so that instead of generating one return or net present value, a range of outcomes with standard deviations is provided¹⁷.

Economic Value Added Analysis: EVA is an accounting-based measure of periodic operating performance, defined as the difference between accounting earnings and the cost of invested capital used to generate those earnings. Adjustments are made to earnings and invested capital to obtain true economic profits. Accordingly, EVA

¹⁴ Kahn, Sanders A., “Down to Earth: Selected Writing of Sanders Kahn, PhD”, Society of Real Estate Appraisers (now the Appraisal Institute), Chicago, 1985.

¹⁵ Willison Jr., Daniel L., “Toward a more reliable cash flow analysis”, *Appraisal Journal*, 67 (1), January 1999.

¹⁶ Bauer, Richard J., and Julie R. Dahlquist “Knowledge and the Firm”, *Managerial Finance*, v 67, November 2000.

¹⁷ Block, Stanley, Geoffrey Hirt, H. Allan Conway, J. Douglas Short, “Foundations of Financial Management”, Second Canadian Edition, Irwin, Homewood, IL, 1991.

represents residual income that is left after investors earn their required minimum rate of return which compensates them for the risk incurred by investing in the company¹⁸. The model can be defined as:

$$EVA = (RIC - WACC) IC$$

where:

- EVA = Economic value added
- RIC = Return on invested capital
- WACC = Weighted average cost of capital
- IC = Invested capital

Although not a new technique, EVA was created in the early 1980's by Stern Stewart & Company.

Limitations of this Analysis

There are several limitations with the type of analysis conducted in this paper:

- First, it assumes that GEICO continues to issue dividends to Berkshire Hathaway, and ignores any retained earnings held within the entity, and to which Berkshire Hathaway should have a claim.
- Second, it assumes that Berkshire Hathaway intends to sell GEICO after 5 years.
- Third, it analyzes the investment using a five year window only.
- Fourth, the analysis, in the second instance, assumed perfect hindsight.

Issues for subsequent research

Evaluate the purchase of GEICO without including the sale of 50% of assets in 2000; assume BH continues to hold, and receive, income in perpetuity.

Conclusions

Utilizing the discount rate equal to the 30 year Treasury bill rate, the investment in GEICO by Berkshire Hathaway returned a positive NPV, indicating that it was a wise investment. This discount rate was selected because it is the discount rate used by Warren Buffett, the Chairman of Berkshire Hathaway. Subsequent analysis, using higher discount rates, reveals negative NPV indicating that the investment is not financially viable.

There are several limitations with this type of analysis. These include:

- The assumptions about the timelines included in the analysis. In this case, the analysis is conducted using a five year window, but in actuality, it may take an investment 10 or 15 years to produce a positive returns. Should these longer term investments be ignored?
- The subjective selection of discount rate ultimately affects whether the investment should be considered or not. Although common management theory dictates that the discount rate should be the bank rate and also account for some measure of risk, this assessment can be quite arbitrary.

¹⁸ Kudla, Ronald J., and David Arendt, "Making EVA Work", AFP Exchange, 20 (4), Fall 2000.

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Appendix A – Hypothetical examples of value creation.

Example 1 – Value Creation

Assume:

- A 5 year investment horizon where you liquidate at book or accumulated investment value
- An initial investment of \$100 million
- No dividends are paid; all cash is reinvested
- ROE = 20%
- Cost of equity = 15%

Year	0	1	2	3	4	5
Investment or Book equity value	100	120	144	173	207	249

Market value (or Intrinsic Value) = PV @ 15% of \$249 million = \$123.80 million

Market / Book = \$123.80 / \$100 = 1.23

Value created: \$1.00 invested becomes \$1.23 in market value.

Example 2 – Value Destruction

Assume:

- A 5 year investment horizon where you liquidate at book or accumulated investment value
- An initial investment of \$100 million
- No dividends are paid; all cash is reinvested
- ROE = 10%
- Cost of equity = 15%

Year	0	1	2	3	4	5
Investment or Book equity value	100	110	121	133	146	161

Market value (or Intrinsic Value) = PV @ 10% of \$161 million = \$80.23 million

Market / Book = \$80.23 / \$100 = 0.80

Value destroyed: \$1.00 invested becomes \$0.80 in market value.