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WARREN BUFFETT'S INVESTMENT APPROACH AND ITS NEXUS TO
ECONOMIC THOUGHT

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I would like to express my great thanks to my family – first and foremost to my mother, and to my friends for their support.

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IV. ACRONYMS AND ABBREVIATIONS

BG	Benjamin Graham
BH	Berkshire Hathaway
B/M	Book-to-market ratio
D/P	Dividend yield
EMH	Efficient market hypothesis
E/P	Earnings yield
MOS	Margin of safety
PF	Phillip A. Fisher
RBV	Resource-based view of the firm
SCPP	Structure-conduct-performance paradigm
VP	Value premium
WB	Warren Buffett

1 INTRODUCTION

1.1 THE ORACLE OF OMAHA

Warren Buffett (WB) turned Berkshire Hathaway (BH), a textile manufacturer with \$28 million worth of assets in 1965, the year in which he had gained effective control (Schroeder, 2008, p. 276), into one of the biggest and most respected American companies (FORTUNE on CNNMoney.com), having assets worth \$267 billion in 2008, encompassing more than 50 subsidiaries in industries as diverse as chocolate production (See's Candies), insurance underwriting (GEICO, General RE) and fractional jet ownership (Netjets) ("Links to Berkshire Hathaway subs," 2012).

When WB took effective control of BH and was elected as a director on the board, he was only 35 years old. He would later say, that buying it was a mistake (Schroeder, 2008, p. 277), even if today his success story is inseparably linked to BH.

Before 1969, WB managed his own partnerships, which he put up with the help and the money from friends and acquaintances, who were mostly from his hometown Omaha. They existed for 12 years and returned on average 31% per year (Schroeder, 2008, p. 334). Needless to say, he outperformed the major U.S. stock indices by far. Though it seemed he had other plans, his professional life was dedicated ever since to his lifework – BH.

Apart from his success as a capital allocator (*see figure 1*), WB became famous for his way of life and his leadership style. He is known to be the “burger chomping billionaire next door, who drove an eight-year-old Cadillac, lived in his original \$31,500 house, and possessed few of the tokens of the rich and famous” (Schroeder, 2008, p. 543).

As a leader, his management style is best characterized by decentralization, where managers have freedom to lead their respective

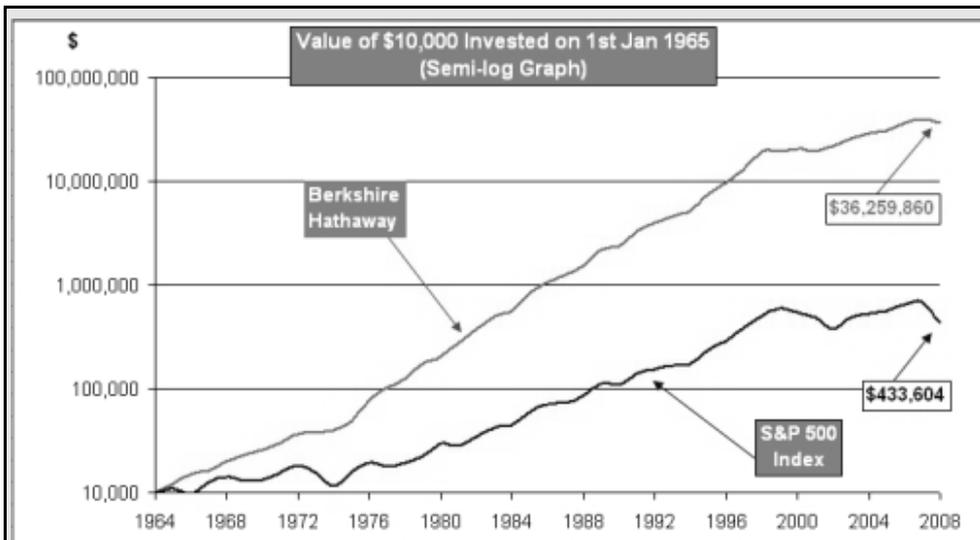


Figure 1. Berkshire Hathaway versus S&P 500 Index. This chart shows the growth of 10,000 \$ invested on 1st January 1965 in Berkshire Hathaway and the S&P 500 Index.

businesses; by his “Carnegizing”¹ (Schroeder, 2008, p. 479) methods of giving attention and admiration; his independent thinking; his stern discipline to stay in his circle of competence; his engagement for good corporate governance (such as his fight for treating stock-options as an expense); and by his deep care for his personal as well as BH's reputation (Schroeder, 2008, pp. 604; 682; 829; 480; 347). Charlie Munger, his long-term partner and vice president of BH, often attributes a major part of WB's success to the fact that he is a “learning machine” (Schroeder, 2008, p. 632). Over more than 40 years, BH has become bigger and more complex, but as all the free cash flow² from the subsidiaries is sent to the holding company, WB is essentially responsible for the same task as ever: to select possible investments.

With more than a half of a century of work experience, having bought his first stock at the age of 11 (Schroeder, 2008, p. 65), his knowledge and wisdom on investing is without a doubt enormous. His investment style has evolved through the years, but the cornerstone of his philosophy can be traced back to his student years at the Columbia Business School, where he attended an investment class held by Benjamin Graham (BG).

1 The expression *Carnegizing* stems from Dale Carnegie – a famous American writer

2 Cash available for investments, share buybacks or payments

His teacher was known for two masterpieces, *The Intelligent Investor* (Graham & Zweig, 2003) and *Security Analysis* (Graham & Dodd, 1996), which turned quickly into classic investment text books, and for the small, but well-known Graham-Newman Corporation that applied the investment techniques he taught (Kahn & Milne, 1977, p. 1; Schroeder, 2008, pp. 139–150).

Today BG is referred to be the “father of financial analysis” (Kahn & Milne, 1977, p. 1), having “first proposed the need for a rating designation for financial analysts in 1942” (“CFA Program History”). BG's writings and teachings laid the philosophical ground for the value investing approach, which disciples like Bill Ruane, Walter Schloss, Tom Knapp and WB have all applied successfully (Buffett, 1984b, pp. 7–15). Even if WB refers to *The Intelligent Investor* as “by far the best book on investing ever written” (Graham & Zweig, 2003, p. ix), his own investment approach has evolved over time. Another influence was Phillip A. Fisher's (2003) (PF) book *Common Stocks and Uncommon Profits*, which in contrast to BG's approach, stressed the importance of buying into outstanding businesses for the long term and of abstaining from over-diversification (Bierig, 2000, p. 36).

WB's incredible success, did not only earn him a lot of regard from his partners and BH stockholders, but also the curiosity of the investment community and the press. From the *Fortune* story published in the fall of 1969 entitled “How Omaha Beats Wall Street” (Schroeder, 2008, p. 334), to the BH shareholder meeting turning into the *Woodstock of capitalism*; WB has gradually become a celebrity, known to be one of the most successful investors of all time.

His investment decisions are closely followed by the business media; his opinions and reflections on the economy and on business are highly regarded. CNBC's “Warren Buffett Watch – The Billionaire Next Door” (“Warren Buffett Watch - CNBC”) website evidences the intense interest in his person.

1.2 PURPOSE AND STRUCTURE OF THIS THESIS

The aim of this thesis is to evaluate WB's investment philosophy and investment decisions in light of academic knowledge.

This paper's intent is not to be a biography of WB, or merely to present a general overview of his investment philosophy, since already a lot has been written about these subjects.

The main questions this thesis wants to answer are the following:

- What are the main influences of BG and PF on WB?
- How is the investment philosophy of WB, BG and PF related to academic theory?
- Are WB investments consistent with his teachers and his own statements about investing?
- Does a stock-picking formula based on the above findings outperform the market?

In the first part, the paper introduces the reader to the ideas of the investors who have greatly influenced WB's style of investing. WB's own style of investing will also be presented. Mostly primary literature will be used to distill the main ideas of BG and PF. Then, the famous *Letter to Berkshire Shareholders*, interviews and other public appearances of WB will be used to depict and describe the man's own investment philosophy and how it is linked to the approaches of his mentors.

In the second and third part, we present academic theories that are related to WB's, BG's and PF's investment beliefs. On one hand, the presented insights will cover capital markets research on the value premium (VP); its risk-based and behavioral finance based explanation. On the other hand, we will discuss academic findings on competitive advantage, covering the persistence-of-profits literature, the structure-conduct-performance paradigm (SCPP) and the resource-based view of the firm (RBV).

The third part of the paper deals with the major stock investments of WB.

Here we test the different investments for factors identified in the previous chapters. We examine if WB investments are consistent with his teachers' as well as his own statements on investing, or if they display contradictory features. Finally, based on the findings, we construct an investment strategy and back-test it for market over-performance (*see figure 2*).

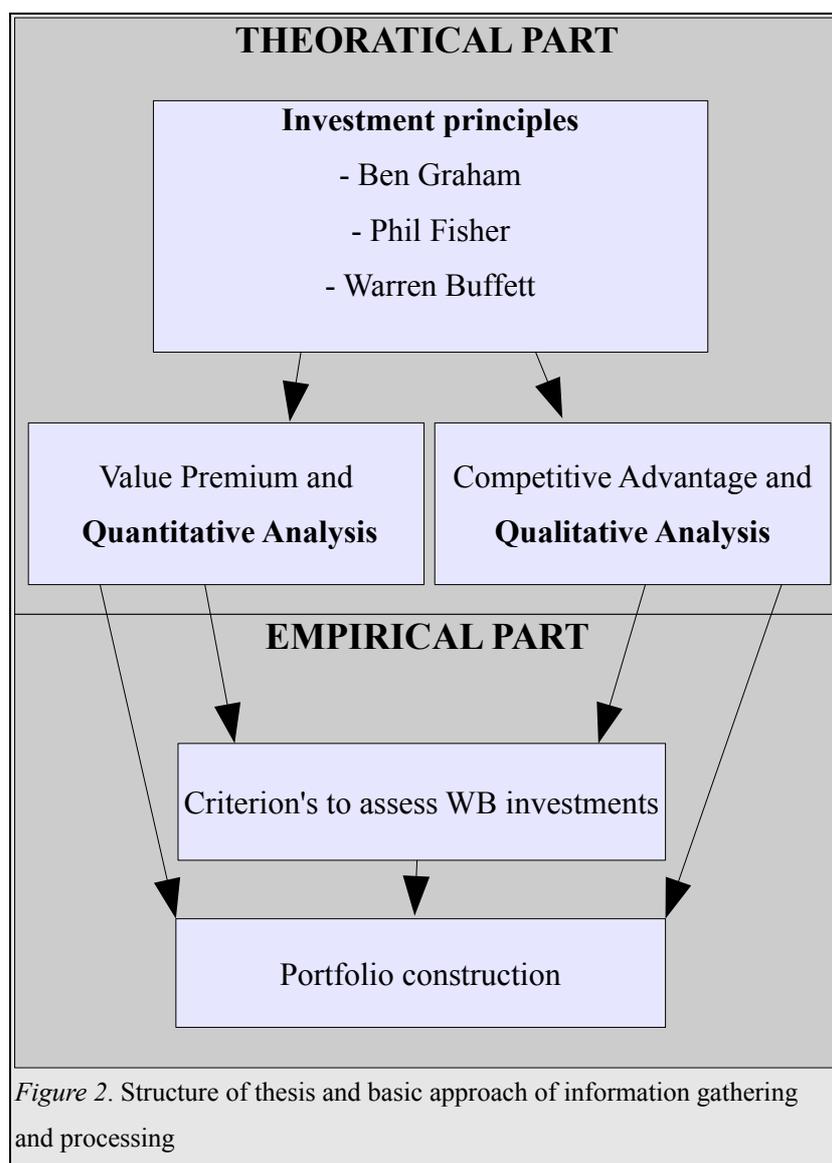


Figure 2. Structure of thesis and basic approach of information gathering and processing

1.3 LITERATURE OVERVIEW

It should be noted that there are 47 books in print, according to *Books in Print*, that carry WB's name in the title (Jones, 2008).

Alice Schroeder's (2008) *The Snowball – Warren Buffett and The Business of Life* is the official biography and it covers almost every little aspect of his private and professional life. Other biographies have been published, such as Roger Lowenstein's (2008) *Buffett: The Making of an American Capitalist* or Andrew Kilpatrick's (2000) *Of Permanent Value: The Story of Warren Buffett*.

Books with less biographical character are Robert Hagstrom's (1995) *The Warren Buffet Way* and *The Warren Buffett Portfolio* (Hagstrom & Rudnicki, 2007) or Marry Buffett's and David Clark's (2008) *Buffettology*. They basically describe his investment philosophy, his education and his management style.

Robert F. Bierig's (2000) paper “The Evolution of the Idea of 'Value Investing' From Benjamin Graham to Warren Buffett” gives an overview on the development of BG's and WB's thoughts on investment.

When searching for academic papers dealing with the examination of successful investors, the results are moderate:

- **“Imitation Is the Sincerest Form of Flattery: Warren Buffett and Berkshire Hathaway”** (Martin & Puthenpurackal, 2008)

Gerald S. Martin's and John Puthenpurackal's paper entitled is worth singling out. This paper deals with BH investments on an aggregated level and puts his track-record in context to the efficient market hypothesis (EMH). It studies the portfolio's market out-performance and its statistical significance. Further the portfolio's characteristics, such as diversification, volatility and asset allocation are examined. The major findings are that BH invests in large-cap growth, rather than in value stocks. Further the authors find that the market under-reacts to the news of a BH stock investment and that BH's portfolio out-performance cannot be explained by luck.

- **“Overconfidence, Under-Reaction, And Warren Buffett's Investments”** (Hughes, Liu, & Zhang, 2010)

This paper examines stock market participants reaction to BH's quarterly published holdings report. The authors find that even though prices are reacting, the reaction is not complete, since a mimicking portfolio displays abnormal returns. Moreover there is a tendency for analysts to downgrade stocks after BH reveals an increased stake. This paper also shortly assesses whether BH's portfolio performance can be explained by stock market anomalies.

- **“Fundamental Analysis, Fixed Effect Valuation and the Relative Strength of Operating Margins by Economic Sector. And Keynes, The Investment Manager”** (Voit, 2004)

This dissertations reasons that the selection criteria of well-known investors such as WB, John Neff or Peter Lynch lead them into specific economic sectors, since financial ratios are not homogeneous across sectors. Therefore whether a given price-ratio is deemed high or low should be evaluated in light of the industry or sector to which the company belongs. The findings also suggest that the relation between fundamental analysis and security returns is different across economic sectors. Further the author suggest that the relative strength of operating margins is useful for fundamental analysis.

- **“Investing With Ben Graham: An Ex Ante Test of The Efficient Markets Hypothesis”** (Oppenheimer & Schlarbaum, 1981)

This paper uses stock selection criteria proposed by BG in his book *The Intelligent Investor* in order to construct a portfolio and to test it for positive risk-adjusted rates of return. The result shows that an investor could have outperformed the market by 2% to 2.5% during the period 1956 through 1975 only by using publicly available information. These findings are put forward against the semi-strong form of the efficient market hypothesis.

- **“Buffett in Foresight And Hindsight”** (Statman & Scheid, 2002)

This paper deals with the success of BH and concludes that market participants did not foresee WB's capability to beat the market constantly. The authors then present other fund managers which also have outperformed the market, such as Peter Lynch, Robert Sanborn or William Ruane. Finally they argue that even if WB has still the ability to beat the stock market, the information about his superior stock picking abilities could already be discounted into BH stock price.

2 ANALYSIS OF INVESTMENT PRINCIPLES

2.1 INTRODUCTION

Having already bought his first stock at the age of 11 (Schroeder, 2008, p. 65), WB began his investment career very early. As one could imagine, his investment approach at that time was not very elaborate. To gain more knowledge on the subject of investing, he started reading books that deal mostly with technical analysis. But things changed when, at the age of 19, he discovered BG's *The Intelligent Investor*, and subsequently enrolled at the Columbia University, where BG himself taught an investment class (Schroeder, 2008, pp. 127–128).

Later in the 1960s, WB was also influenced by another investor and author, namely PF (Bierig, 2000, p. 35). WB has stated that PF readings have been enormously rewarding to him; that if the influences on his investment philosophy could be quantified, 15% may be attributed to Fisher and 85% to Graham (Buffett & Jaffe, 1987, pp. 40–45). He also considers Fisher a “giant” (Buffett & Jaffe, 1987, pp. 40–45).

WB (1967b) argued that there were two approaches to investing: “Buy the right company and the price will take care of itself” (p. 2), and “buy at the right price and the company will take care of itself” (p. 2). These are the qualitative and the quantitative approaches, influenced respectively by PF and BG.

In this chapter we will distill the major investment advices of BG and PF, and compare them with WB's writings on investment in order to get a preliminary understanding of the extent in which he has been influenced by either author.

The results from this chapter will subsequently be used to compare them to the characteristics of WB's actual equity investments.

2.2 BENJAMIN GRAHAM

2.2.1 INVESTMENT PHILOSOPHY

In the first chapter of his most famous book *The Intelligent Investor* BG stresses the difference between the speculator and the investor by stating: “An investment operation is one which, upon thorough analysis promises safety of principal and an adequate return. Operations not meeting these requirements are speculative” (Graham & Dodd, 1996, p. 54). The notion of safety is crucial when distinguishing between investment and speculation. Safety must be detected and determined by using specified and well-established standards (Graham & Dodd, 1996, pp. 53–54). Ultimately the most intelligent investment is the one that is most businesslike (Graham & Zweig, 2003, p. 523).

Regarding security analysis, BG differentiates between two approaches. On the one hand there is the qualitative approach, which is more based on prediction and stresses factors such as management, prospects, and other intangible factors. On the other hand there is the quantitative approach, favored by BG, which is based on protection and stresses measurable factors such as earnings yield (E/P), price to book ratio (P/B), and dividend yield (Graham & Zweig, 2003, p. 365). But nonetheless, an investment appraisal based on quantitative factors is only useful, when accompanied by a qualitative inquiry (Graham & Dodd, 1996, p. 430).

As opposed to the mainstream view, BG highlights that a common stock is not risky because of the existence of price fluctuations. Of course there are risks inherent in investment, such as

a loss of value which either is realized through actual sale, or is caused by a significant deterioration in the company's position – or, more frequently perhaps, is the result of the payment of an excessive price in relation to the intrinsic worth of the security. (Graham & Zweig, 2003, p. 122)

The biggest risk is paying an excessively high price for a low-quality stock during a business expansion. As the quality of the recent earnings is overrated, this would result in an overvaluation (Graham & Zweig, 2003, p. 516).

In the last chapter of *The Intelligent Investor* BG describes the “Margin of Safety” (Graham & Zweig, 2003, p. 512) (MOS) as the central concept of sound investment. It should ensure that the investor only buys securities at prices where, even during adverse developments, the investment turns out to make a profit. He writes that demanding a MOS based on past data makes an exact estimate of the future dispensable (Graham & Zweig, 2003, p. 513). For common stocks this margin should be given if they are “selling for less than the amount of bonds that could safely be issued against its property and earning power” (Graham & Zweig, 2003, p. 513).

When it comes to diversification, BG writes that for the *defensive* investor, there should be “adequate though not excessive diversification” (Graham & Zweig, 2003, p. 114). The number of securities should range from a minimum of 10 to a maximum of 30 for the defensive investor, since he is only investing in well entrenched companies (Graham & Zweig, 2003, p. 114). For the *enterprising* investor, he recommends being broadly diversified: He gives the example of his own investment firm portfolio, which carried at least 100 different securities (Graham & Zweig, 2003, p. 381).

BG reasons that the concept of MOS and diversification are interrelated, since the first ensures that the expected outcome is a profit and the second makes sure that the expectation will also materialize (Graham & Zweig, 2003, p. 518). In his point of view, only a diversified commitment can be labeled as investment, whereas highly concentrated portfolios are of speculative nature (Graham & Dodd, 1996, p. 320).

Even though BG acknowledges the fact that it would be intelligent to invest only in those stocks for which one has a reliable prognosis, he has a very skeptical view towards ones ability to differentiate between “those individual forecasts which can be relied upon and those which are subject to

large chance of error” (Graham & Zweig, 2003, p. 290). This attitude is one that stresses protection more strongly than prediction.

BG writes that security analysis should not be based on market forecasts, since history has showed that these forecasts often turn out to be wrong. He also refuses the idea of easily followable trading strategies, which could give the investor an above average return: “There is no basis either in logic or in experience for assuming that any typical or average investor can anticipate market movements more successfully than the general public, of which he is himself a part” (Graham & Zweig, 2003, p. 190).

Moreover market analysis has several disadvantages compared to security analysis: trading costs are higher, the universe of securities is smaller, and competition is fiercer since traders try to outguess each other (Graham & Dodd, 1996, p. 613).

BG argues that the investor should instead concentrate on what one can intelligently assume. He proposes to focus on pricing: that is “to buy stocks when they are quoted below their fair value” (Graham & Zweig, 2003, p. 189); rather than on timing, which is the “endeavor to anticipate the action of the market” (Graham & Zweig, 2003, p. 189). One recommendation that BG gives to investors pertaining to the issue of timing is, to never sell a stock after a significant decline and never buy one after a significant rise (Graham & Zweig, 2003, p. 206).

Finally BG gives us a last business rule on which we should act:

'Have the courage of your knowledge and experience. If you have formed a conclusion from the facts and if you know your judgment is sound, act on it- even though other hesitate or differ.' [...]

Similarly, in the world of securities, courage becomes the supreme virtue after adequate knowledge and a tested judgment are at hand. (Graham & Zweig, 2003, p. 524)

2.2.2 STOCK SELECTION

BG advises the investor to be very careful when it comes to a growth stock. He defines it as “one which has increased its per-share earnings in the past at well above the rate for common stocks generally and is expected to continue to do so in the future” (Graham & Zweig, 2003, p. 115). The risk of these issues is twofold: On one hand, highly profitable growth companies are facing the risk of increasing competition and diminishing returns on investment (Graham & Dodd, 1996, p. 433). Thus the analyst may, on the basis of extrapolating the latest trend, overestimate the future course of business. On the other hand, even if ones forecast turns out to be accurate, this may already be discounted into the company's stock price (Graham & Zweig, 2003, p. 158).

Even though BG acknowledges the fact that “the really big fortunes from common stocks have been garnered by those who made a substantial commitment in the early years of a company in whose future they had great confidence” (Graham & Zweig, 2003, p. 160), he also writes that these people had “a close relationship with the particular company” (Graham & Zweig, 2003, p. 162).

Another matter of concern is that the price of successful companies, which tend to have higher price to book values, will depend more “on the moods and measurements of the stock market” (Graham & Zweig, 2003, p. 198). This could impede the investors ability to asses his investments with the necessary calm and detached view of stock-market fluctuations (Graham & Zweig, 2003, p. 200).

Another field of suspicion is new issues. The rationale behind this is that in the first place new issues are promoted by salesmen, so they require a “special degree of sales resistance” (Graham & Zweig, 2003, p. 139). Additionally the typical initial public offering is being implemented during “favorable market conditions' - which means favorable for the seller and consequently less favorable for the buyer” (Graham & Zweig, 2003, p. 139).

BG distinguishes between investments suitable for the defensive and the enterprising investor. He also notes that the investor or analyst can only aim at appraising the approximate value or attractiveness of some securities, but certainly not of all (Graham & Dodd, 1996, p. 299).

The defensive investor should concentrate his stock investments into “large, prominent, and conservatively financed” (Graham & Zweig, 2003, p. 114) companies. Furthermore a company should be able to demonstrate a track-record of 20 years of consecutive dividend payments. Also the price shouldn't exceed 25 times 7-year average or 20 times last twelve-month earnings (Graham & Zweig, 2003, pp. 114–115).

For the enterprising investor BG recommends three different approaches, each of them being “different from the policy followed by most investors or speculators” (Graham & Zweig, 2003, p. 162) and satisfying an “objective or rational test of underlying soundness” (Graham & Zweig, 2003, p. 162).

The first approach consists in investing in relatively unpopular large companies. The underlying thought is that if the market overvalues companies showing excellent growth, that he will tend to undervalue companies “that are out of favor because of unsatisfactory developments of a temporary nature” (Graham & Zweig, 2003, p. 163). The reason behind selecting large companies is on the one hand because of their “resources in capital and brain power” (Graham & Zweig, 2003, p. 163), they have the means to withstand economic hardship. And on the other hand it is because the market will probably react quicker to improvements than if the company would have been small and unknown (Graham & Zweig, 2003, p. 163).

The second approach is the investment into bargain issues, more precisely issues with a value of not less than 50% more than the current price (Graham & Zweig, 2003, p. 166). The value can be either assessed through the multiplication of future earnings by a factor suitable to the specific issue, or by calculating the “realizable value of the assets, with particular emphasis on the net current assets or working capital” (Graham & Zweig, 2003, p. 166).

BG writes that two main reasons for undervaluation are “(1) currently

disappointing results and (2) protracted neglect or unpopularity” (Graham & Zweig, 2003, p. 167).

When calculating the conservative value of a company as a going concern, BG advocates the use of average past earnings (Graham & Dodd, 1996, p. 452). As opposed to current earnings, average earnings have the benefit of averaging out results stemming from unusual business conditions, exceptional events, and the business cycle (Graham & Dodd, 1996, p. 429). That is why a long and continued track record of good results is always more impressive and has more explanatory power than a single observation (Graham & Dodd, 1996, p. 429).

BG warns against extrapolating past trends into the future. He argues that over time, “diminishing returns and increasing competition” (Graham & Dodd, 1996, p. 314) amongst other forces “are usually set in motion which tend to restore profits where they have disappeared, or to reduce them where they are excessive in relation to capital” (Graham & Dodd, 1996, p. 35). Furthermore an average that is the result of little swings in earnings is of greater informative value than if it were calculated with wildly fluctuating earnings (Graham & Dodd, 1996, p. 429). Even if average earnings are not always a good indicator on an individual level, on a diversified basis they are related to future earnings: “Capital, experience, reputation, trade contracts, and all the other factors which contributed to past earning power, are bound to exert a considerable influence upon the future” (Graham & Dodd, 1996, p. 319).

If the company is currently having a setback, the analyst must assure himself that the setback is of a transitory nature. In general he should look for companies with relatively stable earnings over the last 10 years or more with no negative earnings, as well as the size and financial strength to endure adversity in the future (Graham & Zweig, 2003, p. 168).

To assess the stability of a given company, it is not only necessary to study its past financial data, but more importantly, to examine the qualitative aspects of a business. Only if a company has both good statistical showing and favorable qualitative factors is the investor unlikely to be upset by

unforeseen events (Graham & Dodd, 1996, p. 430, Graham & Dodd, 1996, p. 38).

The third approach is the participation in special situations. Takeovers of promising young companies by larger companies sometimes necessitate high premiums over the current share price. Additionally, the occurrence of bankruptcies, break-ups, and lawsuits tend to repel risk-averse investors, thereby creating profitable opportunities for the enterprising investor (Graham & Zweig, 2003, pp. 174–175).

2.3 PHILIP FISHER

2.3.1 INVESTMENT PHILOSOPHY

In PF's view, the person wanting to invest in stocks should purchase stakes in companies that have a well-thought plan for attaining spectacular long-term growth in earnings and some special attributes shielding them from new entrants (Fisher, 2003, p. 275). PF is therefore clearly an investor focused on the long term and is someone who stresses the need for competitive advantage. Even though he recognizes the usefulness of past fundamental financial data, for example past E/P, he also strongly emphasizes that the future business performance is what will drive the stock price (Fisher, 2003, p. 149). Hence a detailed understanding of the main drivers of the given business is what is needed to deliver great results. This also explains why past stock price trends aren't a good indicator for investment decisions, as they don't reflect the changes which have taken place in the meantime (Fisher, 2003, p. 148).

For PF, the risk an investor faces when buying common stocks are more related to the characteristics of the business than to the purchase price or price fluctuation. As long as a company can show a good rating with respect to fundamental qualitative requirements, the investor is only running the risk of a temporarily lower stock price (Fisher, 2003, p. 211). The highest risk one can incur is buying into securities of low quality at a high price due to the current enthusiasm of the financial community (Fisher, 2003, p. 211). According to PF, even companies of inferior quality, which have a stock price that is adequate or even lower than their characteristics might suggest, are not appropriate for the careful investor (Fisher, 2003, p. 211).

He also states that being insufficiently informed about a given investment, is almost as unsafe as being inadequately diversified. (Fisher, 2003, p. 135)

When it comes to diversification PF (2003) writes that “ a very long list of securities is not a sign of the brilliant investor, but of one who is unsure of himself” (p. 144). The amount of diversification an investor needs is related to different factors, such as the size of the companies the investments are made in, the diversification already achieved within the firms, and the cyclicity of the industries.

PF advises to have at least 5 different stocks when investing in large established firms, 20 when investing in small, young, high-risk companies, and 10 when investing in stocks that rank halfway (Fisher, 2003, pp. 135–144).

PF recognizes that even if the hard task of picking out the right securities is done successfully, and they generate some profit after being kept for a long period of time, it is still necessary to give some consideration and effort to timing in order to pursue even larger profits. (Fisher, 2003, p. 89).

Predicting the short-term development of the stock market is almost impossible. Even if in the nineteenth century and in the beginning of the twentieth century, men with good connections to the banking sector, which regularly went through boom and bust cycles, could earn tremendous wealth with their insider information, these opportunities were becoming very scarce with the establishment of the Federal Reserve System in 1913 (Fisher, 2003, p. 35).

The investor should therefore rather concentrate on company specific events or developments. In this manner, the investor will be acting on information he knows, rather than on market forecasts, which are, in PF eyes, as reliable as “the science of chemistry during the days of alchemy in the Middle Ages” (Fisher, 2003, p. 90).

PF further describes two special opportunities for the investor to make his purchase of growth companies. The first occurs when the stock price falls due to reduced earnings, which are caused by trouble arising from starting the first full-scale commercial plant and other special sales expenses (Fisher, 2003, p. 93). The second arises in a situation where the stock price

doesn't reflect the possible increase in earnings occurring from additional investments one or two years after a plant is in full-scale operation. These investments result in higher sales per additional capital and only little extra operational expenses lead to an improved profit margin (Fisher, 2003, p. 101). Another extraordinary buying possibility is the fear of an international crisis, which pushes the prices of stocks downwards (Fisher, 2003, p. 145).

In general the investor should be aware of the financial communities' appraisal of the industry in which he is interested. Sometimes terrific opportunities spring up when an old overoptimistic valuation bubble bursts and "under the emotional pressure of falling prices, the negative is overemphasized" (Fisher, 2003, p. 210).

When it comes to selling, there are only a couple of reasons, for example if there has been a significant change in the underlying fundamentals; or if the company has attained a level where it cannot grow faster than the general economy (Fisher, 2003, p. 107). If another security which appears even more attractive is found, the selling of the old position could be warranted as well (Fisher, 2003, p. 108).

PF gives us also a few common fallacious selling motives, like the fear of a general market downturn, or the argument that the stock is currently overvalued. In PF's opinion, the exact value of a stock cannot be determined with a very high degree of precision, therefore to sell a seemingly overvalued position in a great company with good growth prospects in the future might lead to missing out a profitable opportunity (Fisher, 2003, p. 110). Lastly the most foolish reason to sell a stock is the statement that it has gone up more than other stocks, since this argument would imply that all companies are of the same quality (Fisher, 2003, p. 111).

PF also discusses the need for the investor to bring certain personal traits to the job of managing stock investments. First he refuses the idea that a successful investor should be a "scholastic-like investment expert" type (Fisher, 2003, p. 79) who would "sit all day in undisturbed isolation poring over vast quantities of balance sheets, corporate earnings statements, and

trade statistics” (Fisher, 2003, p. 79). Therefore even if intelligence and hard work are important attributes, other qualities are also necessary. In PF's view the successful investor is rather an independent minded person, fascinated with business problems, who cultivates a healthy skepticism towards current market beliefs (Fisher, 2003, p. 277). Further he argues that the investor should avoid situations where he has only little background knowledge and focus on the companies and industries which he feels most comfortable with (Fisher, 2003, p. 260).

Finally in the conclusion of his celebrated book *Common Stocks and Uncommon Profits*, PF writes that one of the most capable investment professionals he had ever met told him that a good nervous system is the most crucial virtue in investing (Fisher, 2003, p. 173).

2.3.2 STOCK SELECTION

PF is clearly a growth stock investor. He writes that, given his experience, the return that an investor is earning over a five year period with bargain stocks, is only a small fraction of what can be achieved by investing into superbly managed growth companies (Fisher, 2003, p. 80).

For him, the issue of dividends is of little concern. He argues that in order to grow in size, a company has to invest its earnings in projects with high returns. If earnings were to be paid out as dividends, then the company would not be able to profit from such beneficial opportunities (Fisher, 2003, p. 114). Fisher admits that not all retained earnings lead to increased profits. If the management is investing in subnormal projects, then the relinquishment of dividends fail to increase the company's worth (Fisher, 2003, p. 115). Another example of investment that fails to increase the company's worth is if the management is forced to buy assets which all other competitors are also purchasing. These investments are only beneficial to the consumer, but fail to give a single company a competitive advantage (Fisher, 2003, p. 116).

The good thing about a high percentage of earnings being retained is that the investor is delegating the process of capital allocation to the management of

the company. If the management is one of great competence and ability, they will tend to find better ways to use the capital in their diverse business fields than the investor is able to do on the stock market (Fisher, 2003, p. 119).

PF is likewise advising to keep away from young promotional companies. Even though great money can be made if the right one is selected, he believes a company should have at least “two or three years of commercial operation and one year of operating profit” (Fisher, 2003, p. 123) in order for the investor to be capable of making an informed appraisal. He suggests that these kinds of investments should be carried out by specialized groups who can not only contribute financially, but also bring in management skills that are strongly needed for the probable future expansion (Fisher, 2003, pp. 123–124).

In his book *Common Stocks and Uncommon Profits* PF (2003) is citing fifteen points to look for in a common stock.

The first two points deal with the growth possibilities of a company. First it is important to know if the company has products or services that have a meaningful market potential in order to make ample growth in sales attainable for the next few years. It is important to keep in mind that growth does not occur in a linear fashion. The standard complexities of commercial research, the challenges of bringing new products to the market and the business cycle are causing the sales growth to occur in “irregular series of uneven spurts” (Fisher, 2003, p. 48).

Secondly, it is essential to find out if the management has the determination to further develop products or processes that will still make growth possible after the old product's potential is exhausted (Fisher, 2003, p. 53).

The third point deals with the effectiveness of the company's research and development efforts. In a first step, the investor should compare the research and development (R&D) expenditures with the company's sales. This ratio can give him some insights when comparing it to those of other competitors (Fisher, 2003, p. 54). However, the numbers are to be considered with caution and skepticism, since the accounting of R&D expenditures is subject to great divergences between companies (Fisher, 2003, p. 55). In a second

step, the investor should be able to assess the benefits from these expenditures. PF stresses that in order to have effective R&D efforts it is necessary to have good researchers, but also outstanding leaders who coordinate a team of people. It is essential to have people from the production side working closely with people from the sales side to get the maximum outcome from the capital invested (Fisher, 2003, p. 55). In order to assess the effectiveness of R&D, it is helpful to look at the proportion of new products in total sales (Fisher, 2003, p. 59).

The fourth point is about the sales organization. PF stresses that even a company with the best research and the most appealing products will not be a good investment if its sales organization is not excellent, since it is immensely important to make the customer conscious about the different benefits of a product in order to sell it (Fisher, 2003, p. 61).

The two following points deal with the profit margin as sales growth will not bring significant benefits if there is no worthwhile profit margin. It is necessary to compare profit margins in an industry for a series of years to find the really great companies. A low profit margin isn't always a sign of a marginal company, it can also be caused by increased investments to further spur growth (Fisher, 2003, p. 63). However, it is essential to assess whether these additional expenditures will ultimately lead to an above average growth rate. If not, the investor should shun these marginal low-profit-margin companies. It is also crucial to evaluate where the above-average profit margin comes from. If demand increases and competitive products become less appealing, then companies are able to increase prices (Fisher, 2003, p. 64). The problem is that after some time additional production capacities will emerge and profit margins will shrink as prices tend to fall. A sustainable profit margin should be the result of a constant review of "procedures and methods to see where economies can be brought about" (Fisher, 2003, p. 65).

In his seventh point, PF emphasizes the need to have good labor relations. A sign of good relations is, for example, having low labor turnover and low unionization (Fisher, 2003, p. 66). Another example may also be the waiting

list of job applicants. If there is no general surplus of labor, a long list of job applications is a positive indication of how appealing a company is. Finally, high wages coupled with good profit margins is normally a sign of good labor relations (Fisher, 2003, p. 67).

An aspect of great importance in investing is the management of a company. PF devotes four points to this subject. First of all it is indispensable to have good executive relations and a good working climate. To achieve good relations it is important to promote people based on their ability and achievements and not on factionalism (Fisher, 2003, p. 68). It is absolutely necessary for a management to sieve out and coach competent and driven juniors for future succession (Fisher, 2003, p. 188). Outsiders should only be brought in if there is no other existing person able to do the job (Fisher, 2003, p. 68).

Secondly, salaries should be in line with industry norms and should be adjusted regularly. Also the difference between the compensation of the top manager and next two or three shouldn't be excessively large (Fisher, 2003, p. 189).

Moreover if a company is growing in size it is essential to delegate authority. If this is not the case, top management will be overloaded with work and lower management won't develop the necessary skills. Long term growth in sales can't be achieved without giving people the chance to grow their own competence (Fisher, 2003, p. 69).

Lastly a good working climate does include employees at every level. If top management can convey the feeling that it is working hard to create a conducive and pleasant working climate, this can lead to significant productivity gains and cost savings (Fisher, 2003, p. 193).

The two other points concerning management are about candor and integrity. PF stresses the importance of good communication between the investors and the management team. The concealment of negative information may indicate that the management has not “an adequate sense of responsibility” (Fisher, 2003, p. 77) or that it has not done enough to solve the problem.

Finally, it is vital to have a management of indubitable integrity to minimize the possibility of misusing the companies' assets for their personal gain (Fisher, 2003, p. 77).

The other remaining points are dealing with diverse subjects. For example, PF accentuates the need to have good cost analysis and accounting controls, but he acknowledges also the limitations to making a worthwhile appraisal of it (Fisher, 2003, p. 70). He also points out that the investor should investigate if the company has enough financial strength in order not to use equity financing: this would dilute existing shareholders ownership (Fisher, 2003, p. 74).

Apart from the aforementioned points, PF deems good “investment characteristics” (Fisher, 2003, p. 198) as important. This concept is closely related to what is currently called competitive advantage. One competitive advantage that PF mentions is “economies of scale” (Fisher, 2003, p. 200), which enables big firms to have a cost advantage. In PF's point of view, investors should invest in the leader of a given industry, since most of the time they have been able to defend their positions (Fisher, 2003, p. 201). However, one of the dangers of large firms is the loss of efficiency, because of too many levels of management, in-transparency and inflexibility. Another competitive advantage is a “well-recognized trade name” (Fisher, 2003, p. 202) that will set a psychological barrier for consumers when thinking of switching producer. Another one is to have a production that “depends on not one scientific discipline but the interplay of two or preferably several quite different disciplines” (Fisher, 2003, p. 203).

2.4 WARREN BUFFETT

2.4.1 INVESTMENT PHILOSOPHY

WB does not consider himself as a pursuer of either a *value* or a *growth* investment strategy, since in his opinion, the classical distinction between these two strategies is superfluous. In his *Letter to Berkshire Shareholders* in 1992 he states: “What is investing if it is not the act of seeking value at least sufficient to justify the amount paid?” He argues that growth is a component of value, so the two are not mutually exclusive.

Like BG, WB negates the academics view that risk conforms to price volatility. For him, when investing in marketable securities, one should assess risk as a private owner would do. More precisely, the factors that should be evaluated are the following (Buffett, 1993):

- the certainty with which the long-term economic characteristic of the business can be evaluated
- the certainty with which the quality of the management can be evaluated
- the certainty that management is shareholder friendly
- the purchase price
- the level of inflation and taxation.

Risk is thus minimized if the investor chooses “easy-to-understand cases” (Buffett, 1993), where the accuracy of his judgment is maximized. This means investing in companies that have an understandable business model and are operating in stable business environments. These two characteristics are needed to evaluate future cash-flows (Buffett, 1993). WB's strategy is to avoid risk when purchasing an interest in a business. However, he welcomes price fluctuation as these market swings create extremely depressed prices which are needed to purchase stakes in extraordinary business at good or even bargain prices (Buffett, 1992,

Buffett, 1993, Buffett, 1997).

Volatility in turn is only a risk if the investor “is forced, by either financial or psychological pressures, to sell at untoward times” (Buffett, 1987).

An important point in assessing risk is inevitably the purchase price. Even for an excellent business, there is some risk of overpayment (Buffett, 1996). One of the cornerstones of WB's investment philosophy is: “Never count on making a good sale. Have the purchase price be so attractive that even a mediocre sale gives good results” (Buffett, 1963).

WB follows a strategy of concentrating his holdings (Buffett, 1966, p. 10). His prime goal is to maximize the expected return of the investment portfolio, regardless of how much prices are fluctuating, as long as there is no long-term risk of losing money. Given his goal of maximizing the expected return, he concentrates on the most attractive investment opportunities. As manager of the Buffett Partnerships, the maximum that WB was willing to put into one security was 40%. In theory, it would be great to have a large number of different investment ideas with the same expected return, which are not inter-correlated, but in practice this simply cannot be done (Buffett, 1966, p. 10).

Further, the more securities you own, the less you can know about each of them, which in WB's view, will increase risk (Buffett, 1993). Nonetheless, with some strategies diversification is essential. For example arbitrage commitments require wider diversification (Buffett, 1993).

In WB's opinion, it is impossible and dangerous to predict the short term outlook of the stock market. (Buffett, 1992) He advises the investor to concentrate on finding the right price, rather than the right time of a purchase. Investment decisions should be made by carefully evaluating facts, instead of trying to predict the unknowable (Buffett, 1994).

Even if they cannot be foreseen, sometimes macroeconomic uncertainties and other short-term worries lead to a climate of fear. This often creates promising opportunities to buy into great businesses whose long-term future are predictable. WB states that he neither tries to predict nor to profit from such events. However, he made his best purchases during such periods. At

other times, a special investment opportunity comes about when a company faces a large, single, but solvable problem, as was the case with GEICO and American Express. Even so, WB states that he has “done better by avoiding dragons than by slaying them” (Buffett, 1989).

WB is a long-term investor, who is willing “to hold any security indefinitely, so long as the prospective return on capital of the underlying business is satisfactory, management is competent and honest, and the market does not overvalue the business” (Buffett, 1987).

In addition, WB says that selling a security is appropriate if the funds can be re-invested in even more undervalued or more understandable businesses (Buffett, 1987).

2.4.2 STOCK SELECTION

When managing his partnership, WB had 3 distinctive investment categories, which he explained in his letters.

The first category are the “Generals”. These are undervalued securities for which no special interest exists, mostly because there is no known catalyst that is expected to lead to a quick price appreciation at the time of purchase. The undervaluation is determined by quantitative factors, although qualitative factors, such as good management and a good industry, play a considerable role. In this category, WB distinguishes between “Generals-Private Owner Basis” and “Generals-Relatively Undervalued”. For the former, an investment is made if the price is below the value a private owner would attach to it. The latter corresponds to securities which are undervalued compared to their peer group. Here, WB uses a long-short strategy³ to reduce the risk from a general market downturn (Buffett, 1962; 1963; 1964; 1966; 1967a).

The second category are the “Work-outs”. In contrast to the “Generals”, there is a catalyst that eventually leads to a price appreciation in the short-term. These are corporate events such as mergers, acquisitions,

³ A long/short equity strategy consists in buying certain equities and selling others (market portfolio, peer group) to hedge the position against certain risks.

liquidations, reorganizations, spin-offs or self-tenders. Investment actions are only taken when the company has officially announced the corporate event. The advantage from this category is the predictability of investment results and the short-term holding period (Buffett, 1962; 1963; 1964; 1966; 1967a).

To appraise a typical “Work-out“ situation four questions have to be answered:

(1) How likely is it that the promised event will indeed occur? (2) How long will your money be tied up? (3) What chance is there that something still better will transpire – for example, a competing takeover bid? and (4) What will happen if the event does not take place because of anti-trust action, financing glitches, etc.? (Buffett, 1988)

The third investment category is called “Control”. Often control investments begin as “Generals”, where the price doesn't appreciate for such a long time, that the partnership is able to acquire a significant position. Sometimes, when the management or the future of the business is suboptimal, the partnership tries to influence the company in order to unlock value (Buffett, 1962; 1963; 1964; 1966; 1967a).

These three categories largely remain in place. Only the “Generals-relatively undervalued” subcategory has been abandoned after the closure of the partnership.

Apart for the “Work-outs” portfolio holdings, WB is searching for companies with long term sustainable competitive advantages, who are operating in attractive industries, and are run by able, honest, and shareholder friendly management. Attractive industries are often characterized by stability because this creates an optimal environment for companies to build competitive advantage (Buffett, 2007).

The reason for a company to create competitive advantage is to be able to earn high returns on its invested capital. If there were no barriers for other competitors to pass over, these returns would get competed away (Buffett,

2007). This is the case for “commodity businesses” (Buffett, 1982) where products are not differentiated. Companies operating such businesses can only expect to earn a good return on invested capital if current supply cannot meet current demand. Such situations won't last long, because additional productive capacity will be installed. Only if actual growth outperforms consistently predicted growth, or if “adding capacities requires very long lead times because of complicated manufacturing facilities” (Buffett, 1982), can a “capacity-tight” (Buffett, 1982) situation persist for an extended period of time. The only way to be able to earn high returns is to be the low-cost operator with an cost advantage that cannot be replicated easily (Buffett, 1982).

In contrast to those “commodity businesses” (Buffett, 1982), WB writes that there are “franchises” (Buffett, 1991a). They are characterized by producing a good that is seen to be a necessity, that has no close substitute, and that is not affected by price regulation. This gives a company the means to price its product aggressively and thus to earn high returns (Buffett, 1991a).

Therefore, the best business is one that can grow by deploying huge amounts of capital at very attractive returns. Unfortunately, however, most wonderful businesses are simply not able to reinvest all of their profits at such attractive returns. In these cases, capital should be returned to owners, either through dividends or through stock repurchases (Buffett, 1978, Buffett, 1984a, Buffett, 1992, Buffett, 2007).

In WB's opinion, it is better to buy such wonderful businesses at fair prices, than to buy poor ones at bargain prices. When buying poor companies at bargain prices, there is commonly “a hiccup in the fortune of the business” (Buffett, 1989) that will allow the investor to sell its holding at a profit. However to achieve a good return, it is necessary for the hiccup to occur early. If it does not, the investor is stuck in a business that reinvests its earnings in low-yielding undertakings. Through time, this will severely limit the investment's pay-off: “Time is the friend of the wonderful business, the enemy of the mediocre” (Buffett, 1989). But even for a great business a too-high price “can undo the effects of a subsequent decade of favorable

business developments” (Buffett, 1982).

To determine if one gets enough value, WB states that earnings yields, price to book ratios or dividend yields, are not good enough indicators (Buffett, 1989): The value of an investment is determined by discounting the future cash inflows and outflows (Buffett, 1992).

According to WB, after assessing the business, the second most important task when investing in companies is to evaluate the management. The demands that WB makes toward the management of a company is to resist the so-called “institutional imperative”. Management is responsible for creating a company that, even if it becomes larger, stays flexible and adaptable to market conditions. It is also responsible to foster a culture of candor and honesty. Further, management is accountable for capital allocation and should resist investing available funds into suboptimal projects. The primary goal of management should be to achieve high returns on equity and not growth at all cost (Buffett, 1979). They should think independently and not mindlessly reproduce the strategy of their peers. Nevertheless, despite being endowed with wonderful capabilities, a management cannot fulfill wonders if a business has bad economics (Buffett, 1989).

		Benjamin Graham	Philip A. Fisher	Warren E. Buffett
General	Risk	<ul style="list-style-type: none"> • High price for low-quality stock during business expansion • Deterioration of a company's position • Forced sell of security 	<ul style="list-style-type: none"> • High price because enthusiasm of financial community • Insufficient information on businesses • Inferior business irrespective of price 	<ul style="list-style-type: none"> • Certainty of forecast of long-term economics of business, management quality and integrity • Purchase price • Forced to sell
	Diversification	<ul style="list-style-type: none"> • 10 to 30 stocks for defensive investor • Wide diversification (at least 100) for enterprising investor • Concentration deemed speculation 	<ul style="list-style-type: none"> • Excess diversification is sign of incompetence (5 to 20 issues) • Dependent on cyclicity of business and within company diversification 	<ul style="list-style-type: none"> • 5 to 10 business is enough • Concentrate in the most promising
	Timing	<ul style="list-style-type: none"> • Market forecast and trading not profitable • Not sell after significant decline and buy after significant rise 	<ul style="list-style-type: none"> • Market forecast not possible • Not sell because significant rise • Sell because other opportunities and/or lack of growth 	<ul style="list-style-type: none"> • Market's are unpredictable

Stock Selection	Negative	<ul style="list-style-type: none"> • Growth stocks risk facing increasing competition and lower ROI • New issues are pushed and promoted 	<ul style="list-style-type: none"> • Bargain issues • Young promotional companies because appraisal not possible 	
	Positive	<ul style="list-style-type: none"> • Defensive investor – large, prominent and conservatively financed • Enterprising investor – bargain issues based on net current asset value or earnings multiplication 	<ul style="list-style-type: none"> • Growth stocks 	<ul style="list-style-type: none"> • Undervalued issues • Work-outs
	Catalyst	<ul style="list-style-type: none"> • Unsatisfactory temporary developments, disappointing results • Protracted neglect or unpopularity 	<ul style="list-style-type: none"> • Enthusiasm for new plant decreases after short-term problems • Neglect of possible additional business from add-on investments • Fear of international crisis or valuation bubble bursts 	<ul style="list-style-type: none"> • Macroeconomic uncertainties • Large single, but solvable problem
	Valuation	<ul style="list-style-type: none"> • Net current asset value • Average earnings • Stable earnings • No negative earnings • Dividend continuity • Size and financial strength • Qualitative aspect of the business 	<ul style="list-style-type: none"> • Barriers to entry: cost leadership, trade name, complex production technique • Growth possibilities • Sales organization • R&D efforts • Profit margin • Financial strength • Management quality • Information policy 	<ul style="list-style-type: none"> • Sustained competitive advantage: differentiation or cost leadership • High returns on investment

Table 1. Summary of investment approaches

2.5 SUMMARY

2.5.1 INVESTMENT PHILOSOPHY

When arguing that growth is a component of value, WB is connecting PF and BG approaches to investing. In fact, BG does not negate the importance of taking into account qualitative factors and growth prospects when investing. Additionally, PF does not deny the value of studying past financial data. Thus, the investment approaches are certainly not diametrically contrary to each other. Both can be characterized as a *fundamental analysis* approach to investing, as opposed to *technical analysis*. Hence, WB is first and foremost a fundamental type of investor.

When assessing risk, both BG and PF state the importance of not focusing on stock price movements, but on fundamental factors of the investment target. The biggest risk for BG is paying more for a business than it is intrinsically worth. PF associates risk less with the price than with the fundamental quality of a business and the degree to which an investor can fully understand and evaluate it. Both views are shared by WB.

“The Margin of Safety” is the cornerstone of BG's notion of risk. BG has stated that at the heart of the concept is the idea of paying such a low price that exact forecasting of the future becomes unnecessary. WB's own concept seems to be less geared to paying a low price but more towards searching for investments that are in one's “circle of competence”.

WB's concept of risk is thus more related to PF's, with the difference that good business characteristics per se do not minimize risk, but instead the degree in which an investor can evaluate their long-term nature. This is the rational motive behind WB's focus on businesses in stable industries.

From the point of view of diversification, WB ideas match more with those of PF. Both investors argue that good investment opportunities are scarce, therefore only a concentrated portfolio makes sense. Moreover, too many stocks in the portfolio can inhibit the investors ability to follow them sufficiently: this in turn would increase risk.

As opposed to WB and PF, BG advocates wide diversification. He admits that having only “one stock which you know is going to prove highly profitable” (Graham & Zweig, 2003, p. 290) is the ideal, but his viewpoint is that a normal investor does not have such reliable forecasting skills. WB's concept of “the circle of competence” (1996) and his focus on stable companies with an understandable business model addresses this concern.

BG and PF are very skeptical towards one's ability to accurately forecast the business cycle and short-term market fluctuations. Both state that an investor should focus on the particular stock rather than on the general market. Eventually, he should then be able to identify stocks which are mispriced because of short-term surmountable problems or a lack of coverage. This reasoning is followed by WB.

However, even if BG and PF refute the usefulness of economic forecasts and market outlooks, they indicate that “in times of stress and uncertainty, they may not be ignored” (Graham & Dodd, 1996, p. 39). Investment actions should then be postponed (Fisher, 2003, p. 102; Graham & Zweig, 2003, p. 206).

2.5.2 STOCK SELECTION

When selecting stocks, PF only focuses on the long-term, as opposed to BG and WB. The two also have an investment category called “work-outs”, which focuses on short-term investment opportunities.

BG is more interested in net-current-asset bargains (Graham & Zweig, 2003, p. 391), whereas PF is exclusively interested in high quality companies, which he tries to identify through his “scuttlebutt” (Fisher, 2003, p. 44) method. WB statements about investment suggest that he favors the second approach more and that he identifies time as a major risk factor when investing in poor companies at bargain prices.

A point that connects WB and BG selection criterion's, is the emphasis on stability. BG approaches stability from the perspective of its worth to valuing a security on the basis of its past earnings. Earnings are deemed to

be stable if they don't fluctuate wildly around average earnings and are considered more reliable depending on the qualitative characteristics of a business. WB seems not only to ask for a stable business environment in order to increase the dependability of past financial data, but also because it allows companies to build sustainable competitive advantages.

WB stresses the importance of a company having competitive advantage, which shields its business from other competitors. This will enable it to earn high-returns on invested capital, a criterion often cited by WB. His concept of a franchise is closely related to what PF calls good “inherent characteristics that make possible an above-average profitability for as long as can be foreseen into the future” (Fisher, 2003, p. 198).

3 INVESTMENT PRINCIPLES IN THE CONTEXT OF ECONOMIC SCIENCE

3.1 INTRODUCTION

As we have seen in the previous chapter, the basis of WB's investment decision is fundamental analysis. Through fundamental analysis, both qualitative and quantitative factors are considered. This chapter will cover these two factors.

There is no clear-cut distinction between qualitative and quantitative aspects. For example measuring the return on equity of a firm requires only readily available financial data, thus making it a quantitative factor.

However, it simultaneously measures a qualitative aspect of a business: how efficiently capital is used. Thus the classification is ambiguous.

To simplify, quantitative factors in this thesis are those where the purchase price plays a role, whereas qualitative factors are independent of the purchase price.

The investment philosophy, that fundamental research and simple valuation ratios can produce above-average investment returns, leads to the research on market efficiency and the VP.

Additionally, the stock selection process of searching and acquiring companies of good quality leads to the research in industrial organization on competitive advantage and industry evolution.

3.2 THE VALUE PREMIUM AND QUANTITATIVE ANALYSIS

3.2.1 INTRODUCTION

The pillars of the efficient market theory can be traced back to the sixteenth century to Girolam Cardano, a well-known mathematician. Later research done by botanist Robert Brown, physicist Lord Rayleigh or mathematician Louis Bachelier paved the way for the upcoming efficient market hypothesis (EMH). Many other authors in the twentieth century contributed significantly to the research done on this topic, such as Mandelbrot, Friedman, Harry, Samuelson, Working and Osborne. Fama's (1970) paper entitled "Efficient Capital Markets: A Review of Theory and Empirical Work" is the "definitive paper on the efficient market hypothesis" (Sewell, 2011, p. 4). He states that "a market in which prices always 'fully reflect' available information is called 'efficient'" (Fama, 1970, p. 383). In this paper Fama defines the three forms of market efficiency⁴ and conceptualizes methods to test them. Furthermore, he uses Sharpe's work on the capital asset pricing model⁵ to calculate expected returns.

Even before the theory of efficient capital markets permeated academia, economists such as J.M. Keynes questioned the rationality of stock market investors' decision making processes (Sewell, 2011, p. 3). Later in the 1970s studies began to question the validity of the EMH. As Jensen formulated it in 1978, "pieces of evidence begin to stack up in a manner which make a much stronger case for the necessity to carefully review both our acceptance of the efficient market theory and our

4 There are three forms of market efficiency: weak, semistrong and strong. In the case of weak efficiency, only information contained in past stock prices is incorporated into current stock prices. If markets are semistrongly market efficient, prices also reflect all other published information. And finally the strong form of efficiency is when prices reflect all information, published or unpublished.

5 Sharpe's capital asset pricing model is based on the idea that the risk of a stock can be measured by its sensitivity (beta-factor) to the general stock market. The higher the beta-factor, the higher the required return.

methodological procedures” (Jensen, 1978, p. 95).

In the 1980s and 1990s further research was done to test the EMH. These studies focused on observed anomalies such as stock market bubbles (Shiller, 2000), momentum strategies (Lo & MacKinlay, 1999), long-run return reversals (de Bondt & Thaler, 1985), post-earnings announcement drift (Bernard & Thomas, 1989), small-firm effect (Lustig & Leinbach, 1983) and the value effect (La Porta, Lakonishok, Shleifer, & Vishny, 1997). Not only does WB's investment success contrast against the claims of EMH, but he himself has occasionally argued that markets aren't always efficient. In his *Letter to Berkshire Shareholders* of 1988 he cites the profitability of the arbitrage strategy carried out at the Graham-Newman Corporation, at the Buffett Partnerships, and at BH, as evidence contrary to the EMH. It earned above-average returns and used only “highly-publicized events” (Buffett, 1988). Also in his article *The Superinvestors of Graham-And-Doddsville*, WB bids defiance to the proponents of the EMH by presenting nine different investment track records of money managers which were influenced by BG: Each one of them has outperformed the market for a significant time period (Buffett, 1984b). In addition, the 47-year long investment success of Walter Schloss, one of the previously mentioned money managers, was stressed by WB in his 2006 *Letter to Berkshire Shareholders*. Once more he argues that this achievement cannot be explained by chance. In reference to the EMH being taught at all major business schools, WB sarcastically writes: “Maybe it was a good thing for investors that Walter didn't go to college” (Buffett, 2006, p. 21).

In the following chapter we will present an overview of capital markets research related to fundamental analysis and tests of market efficiency. The selected research findings will be related to the statements of WB and BG. In a first part we will introduce the reader to selected findings questioning the validity of the efficient market. In the second part we will present the main arguments, despite those findings, in favor of efficient markets. The third part will present an alternative view that claims market participants aren't always behaving rationally.

3.2.2 THE VALUE PREMIUM AND MARKET OVERREACTION

This section will begin by briefly defining how the value of a company is calculated. Subsequently, we will present three important and popular price-ratios: the dividend-yield (D/P), the earnings-yield (E/P) and the book-to-market ratio (B/M). Finally, we summarize the main findings of selected academic papers that have analyzed the relationship between price-ratios and investment performance of equity securities.

The value of a company is calculated by discounting its future free cash flows. Thus it is given by 3 different variables: following year's expected free cash flow, the growth rate of free cash flows and the appropriate discount rate:

$$P_0 = \frac{\text{Expected FCFE}_1}{\text{Cost of Equity} - \text{Stable Growth Rate}}$$

This valuation approach goes back to the original work of J. B. Williams (1938) entitled *The Theory of Investment Value* and has been cited by WB in his 1992 *Letter to Berkshire Shareholders*.

The value of a common stock, when one assumes that all free cash flows are paid out, can also be calculated by discounting dividends instead of free cash flows.

$$\text{Value of Stock} = \frac{\text{Expected Dividends next period}}{(\text{Cost of equity} - \text{Expected growth rate in perpetuity})}$$

It is common to assess a stock's attractiveness by comparing its price to dividends, earnings or book value. On the basis that earnings are related to dividends through the payout-ratio and book value is connected to earnings through return on equity, the use of these ratios can be justified (Damodaran, 2005).

The following popular price-ratios can thus be formed:

- **D/P**
- **E/P**
- **B/M**

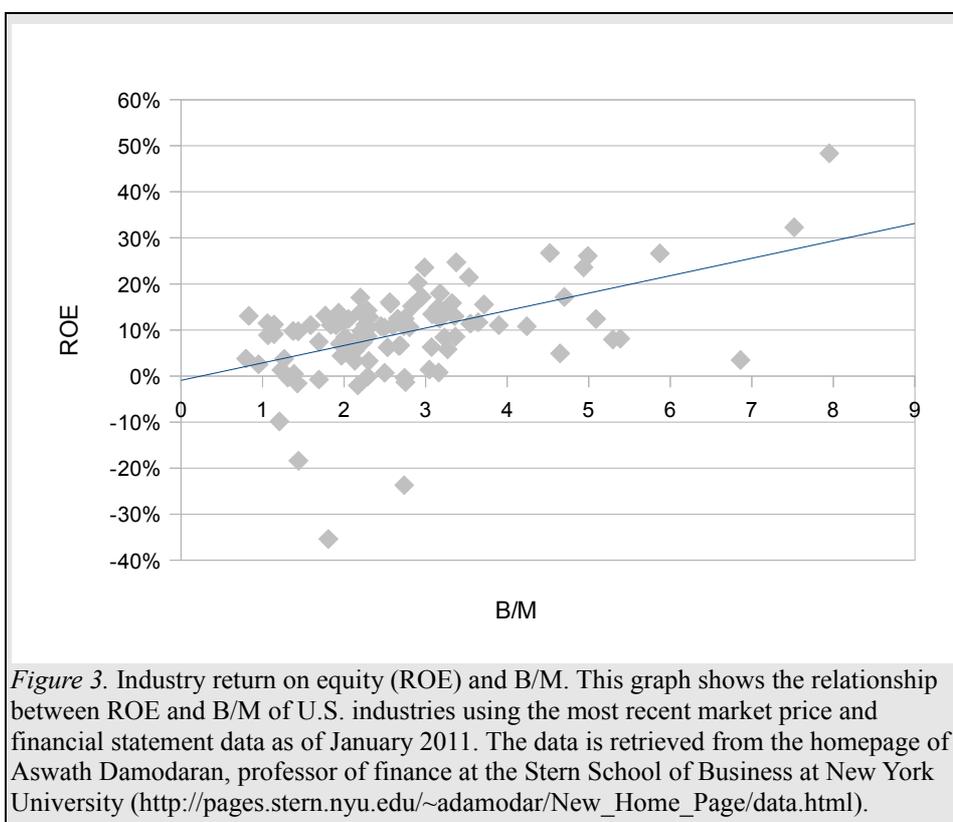
Before presenting some interesting research findings, let us briefly critically evaluate the three ratios.

The problem with the D/P is that it merely measures this year's (or sometimes next year's) dividend in relation to the actual price. Thus it contains no information about the growth rate of dividends. Growth can occur if earnings rise and the payout-ratio stays stable, if the payout-ratio is decreased by the management, or by a combination of both. For example a company can have nonexistent dividends, such as Berkshire Hathaway or Google, and its stock doesn't necessarily need to be expensive.

The critique of the E/P is that it also doesn't include some kind of adjustment for growth. Additionally, earnings are more volatile than dividends. The business cycle can cause the demand for the product of a firm to be at unsustainable levels in the long term. It is also not unusual that one-time charges, such as restructuring charges, asset write-downs or profits related to the sale of a discontinued business, render current earnings useless for valuation purposes. Hence the informativeness of the E/P may sometimes be very limited.

Compared to earnings, book-value is more stable. Only in very limited cases, such as a massive payout of dividends or a huge stock-repurchase program, will book value fluctuate more than earnings. The difficulty with the B/M is that most businesses are going-concerns and not in the process of liquidations. So the stated value of assets on the balance sheet is not of primary importance. What is of importance is the cash flows that can be generated through their ownership. Return on equity, which is the relationship between earnings and book value, measures how profitable assets in place are used.

One important reason why businesses sell at different book-to-market ratios, is that there are fluctuations in profitability (*see figure 3*).



Even if WB has stated:

Whether appropriate or not, the term 'value investing' is widely used. Typically, it connotes the purchase of stocks having attributes such as a low ratio of price to book value, a low price earnings ratio, or a high dividend yield. Unfortunately, such characteristics, even if they appear in combination, are far from determinative as to whether an investor is indeed buying something for what it is worth and is therefore truly operating on the principle of obtaining value in his investments. Correspondingly, opposite characteristics - a high ratio of price to book value, a high price-earnings ratio, and a low dividend yield - are in no way inconsistent with a 'value' purchase. (Buffett, 1992)

We still present findings related to the E/P and B/M because there are similarities to the methods that WB and his teacher BG have successfully applied in the past.

One of the first studies measuring the stock performance of companies having low vs. high price-ratios, is done by BG and published in *The Intelligent Investor*. He compares the average annual return from 1937 to 1969 of companies in the Dow Jones Industrial Average having the highest and the lowest E/P. The results reveal that cheap (high earnings-yield) stocks outperformed the more popular (low earnings-yield) securities and also the Dow Jones Industrial Average (Graham & Zweig, 2003, pp. 163–164).

Another early study is entitled “Investment Performance of Common Stocks in Relation to Their Price-Earnings Ratios: A Test of The Efficient Market Hypothesis”. Written by Sanjoy Basu (1977), this paper also deals with the relationship between E/P and the price performance of stocks. Compared to the study of BG, this paper covers a shorter time frame, 1957-1971, but its sample includes 753 firms. The study simulated a one-year buy and hold strategy, forming five portfolios with different E/P classes. The main findings are that portfolios with high E/P have higher average annual returns. Since they don't display higher systematic risk, as measured by the beta-factor⁶, their risk adjusted returns are also superior. The spread in risk-adjusted returns leads Basu (1977) to state: “These results suggest a violation in the joint hypothesis that (i) the asset pricing models employed in this paper have descriptive validity and (ii) security price behavior is consistent with the efficient market hypothesis” (p. 680).

Academic researchers have tried to answer this problem either by conceiving a new model to measure risk or by asserting that markets behave irrationally. These two positions are at the core of the VP debate.

The next study also evaluates the significance of the E/P effect. But compared to Basu's previously mentioned paper, “Earnings Yields, Market

⁶ The beta-factor measures the sensitivity of a stock to the general stock market.

Values, And Stock Returns” goes one step further by adding the firm size and the January effect⁷ into the study. Jeffrey Jaffe, Donald B. Keim and Randolph Westerfield (Jaffe, Keim, & Westerfield, 1989) attempt to enhance prior work by Reingaum (1981), Basu (1977), Cook and Rozeff (1984), and Banz and Breen (1986) on the relation between the E/P effect and the firm size effect.⁸

Stocks are ranked both by size and E/P with a sample period from 1951 to 1986. One of the observations is that companies with high E/P have typically lower market-values and vice versa, and the portfolio with the highest E/P has the lowest beta-factor and the highest return. Finally the regression of stock performance on E/P and size shows that both effects are significant.

As mentioned earlier, not only the E/P, but also the B/M has been used to classify stocks as either *value* or *glamor*. Prior research by Rosenberg, Reid and Landstein (1985), Fama and French (1995), and Lakonishok, Shleifer and Vishny (1994) has confirmed abnormal returns of high book-to-market portfolios.

In 2000 Joseph D. Piotroski published “Value Investing: The Use of Historical Financial Statement Information to Separate Winners from Losers”. From the observation “that less than 44% of all high BM [book-to-market] firms earn positive market-adjusted returns” (Piotroski, 2000, p. 3), he developed a method to discern between weak and strong firms. However, unlike the other studies presented earlier, this paper uses fundamental analysis.

In the tradition of BG and David Durand (Durand, 1957), Piotroski argues that high B/M companies are more susceptible to financial statement analysis, since their values aren't so dependent on future growth opportunities. He uses fundamental factors that inform about the profitability, the financial flexibility and the operating efficiency of a firm,

7 The January effect is a stock market phenomenon which is characterized by abnormal prices increases during the first month of the year.

8 The firm size effect, which says that low market value enterprises have abnormal high risk-adjusted returns, can be traced back to Rolf W. Banz Banz (1981).

to form a composite score. The fundamental strategy is able to sort out weak companies from the high B/M portfolio and substantially increase the return. Joseph D. Piotroski's method of selecting companies is reminiscent of what BG writes in the chapter *Stock Selection for the Defensive Investor* in the II. The investor should:

apply a set of standards to each purchase, to make sure that he obtains (1) a minimum of quality in the past performance and current financial position of the company, and also (2) a minimum of quantity in terms of earnings and assets per dollar of price. (Graham & Zweig, 2003, pp. 347–348)

Another principle of BG is the use of average earnings instead of current earnings to measure the attractiveness of a stock. This approach was followed by Keith Anderson and Chris Brooks (2006) in their paper entitled “The Long-Term Price-Earnings Ratio”. Having observed that past studies only use the traditional E/P, the authors perform a regression of United Kingdom listed companies' stock performance on various earnings-yield statistics.

They form 8 different E/P statistics: the first is calculated taking only current earnings and the last using the average earnings of the last 8 years. All portfolios having the highest earnings-yield perform better than their low earnings-yield counterpart, independent of which earnings-yield statistic is employed. Although it isn't increasing monotonically, the gap widens with the usage of earnings-yield statistics where more past earnings are taken into account.

The authors use two different samples: one with all available data and another where only companies having eight years of positive earnings are considered. They observe that stock returns for the companies in the highest E/P portfolio increase if the investor requires eight years of positive earnings. That criteria is similar to what BG refers to, when he insists the enterprising investor should require a company to have gone ten years without experiencing negative earnings (Graham & Zweig, 2003, p. 168). After testing other E/P statistics, the study finds that the one which worked

best in the 1975 to 2003 period is calculated by taking the average earnings of the present, as well as that of 8 years ago.

This paper shows that the employment of average earnings might be superior to the use of current earnings.

The studies presented above deal with the return predictability of price-ratios. Even if this approach yields better results for smaller companies, the E/P and B/M effect are nevertheless also significant after controlling for the market value of firms. Additionally the last two papers show that an increase in average returns can be achieved by adding fundamental analysis and average earnings to the stock screening process.

Before proceeding to the next section, a last paper is introduced. Unlike the previous ones Werner F. M. De Bondt and Richard Thaler (1985) don't use price-ratios in their study. In "Does the Stock Market Overreact" the authors examine the investment performance of portfolios composed of price winners and price losers during variable time periods before portfolio formation. "Never buy a stock immediately after a substantial rise or sell one immediately after a substantial drop" (Graham & Zweig, 2003, p. 206) reads a motto of BG in *The Intelligent Investor*. Congruently in this study the portfolio that composed of prior losers displays higher returns than the one composed of winners.

After this introduction of the so-called VP, the next chapter deals with the explanation of this phenomenon.

3.2.3 A RISK BASED EXPLANATION

In 1992 Eugene F. Fama and Kenneth R. French (1992b), two professors from the University of Chicago, published one of the most influential papers in finance. In "The Cross-Section of Expected Stock Returns" they perform a cross-sectional regression of equity returns on variables that have been found to be relevant in prior studies.

Starting from the observation that the beta-factor from the traditional capital asset pricing model didn't explain very well past returns, they

attempt to pick out variables with higher explanatory power. The variables tested are market capitalization, B/M, E/P and leverage. Ultimately for the 1963 – 1990 period, the B/M and the size factor subsume the information of the two other variables.

In a later paper entitled “Common Risk Factors in The Returns on Stocks And Bonds” Fama and French (1992a) introduce the three-factor pricing model⁹. The model has R^2 ¹⁰ close to one, thus explaining a high percentage of the common variation in stock returns.

The SMB (small minus big) factor captures the size premium. It is calculated by taking the average return of small stocks and subtracting the average return of the biggest stocks. The two portfolios are constructed so as to be free of any influence caused by the B/M effect.

The HML (high minus low) factor captures the B/M premium and is similarly constructed as the SMB factor.

The intuition behind the model is that the SMB and HML portfolios are loading on risk factors that are not accounted for in the traditional capital asset pricing model. Based on this model, a stock having a *low* B/M could also theoretically be *positively* influenced by the HML factor. The reason is that its return is not based on its characteristic (B/M or firm size), but on its sensitivity to the SMB and HML factor.

But what is the economic logic behind this model? What risks are SMB and HML capturing?

In the inter-temporal models of Merton (1973) and Breeden (1979) the market return does not fully capture all the risks a stock is exposed to. Given the high explanatory power of the Fama-French model and assuming the market is efficient, the SMB and HML factors should capture the risks not accounted for in the traditional capital asset pricing model.

9 The three-factor model: Expected (return of security A) = (risk-free return) + (beta-factor)*(expected (return of general market) – risk-free return) + (size-factor)*SMB + (value factor)*HML. It is an extension of the capital asset pricing formula.

10 R^2 , also called the coefficient of determination, measures the goodness of fit of a tested model. It is the ratio of explained variation to total variation and is such that $0 \leq R^2 \leq 1$.

K. C. Chan and Nai-Fu Chen (1991) argue in their paper “Structural and Return Characteristics of Small and Large Firms” that smaller firms “are less efficiently run and have higher financial leverage,” which possibly leads to a “difference in accessibility to external financing.” They also drastically cut dividends more often than large companies. The authors argue that smaller firms are therefore qualitatively marginal firms. It should be noted that this conclusion is only drawn for stocks quoted on the New York stock exchange. Similarly Fama and French (1995) observe that high B/M and small companies are less profitable.

Maria Vassalou and Yuhang Xing (2004) notice that the size and the B/M characteristic are connected to the risk of default. Their findings suggest that the size and the B/M effect is only existent for firms that are subject to a high risk of default. They also notice that stocks subject to default risk only earn higher returns than their low risk counterparts, if they display the appropriate B/M and size characteristics.

Additional to this distress risk, Kevin Aretz, Söhnke M. Bartram and Peter F. Pope (Aretz, Bartram, & Pope, 2010) identify other macroeconomic factors related to HML and SMB factors. They indicate that HML serves as proxy for changes in GDP growth expectation, unexpected inflation, the slope and the average level of the term structure of interest rates, and the exchange rate. SMB captures information related to the previously mentioned default risk, level and slope of the term structure, and the exchange rate.

Since the Fama-French model received a lot of attention from financial researchers in the early 1990s, it has earned not only praises, but also criticism.

Kothari, Shanken and Sloan (1995) attack the findings on various grounds:

- **Data mining or data snooping:** which states that the relationship is due to chance
- **Survivorship Bias:** which argues that the used data is biased toward surviving firms

- **Beta estimation problem:** which says that the use of annual instead of monthly betas would be more suited

The attacks are subsequently refuted. Fama and French (1998) found evidence of the B/M effect in other developed countries as well as in several emerging countries. This study serves as out-of-sample proof of the value effect. And Chan, Jegadeesh and Lakonishok (1995) rebut the survivorship bias argument by constructing a revised data sample.

Another noteworthy critics comes from Kent Daniel and Sheridan Titman (1997). In contrast to Kothari, Shanken, and Sloan (1995) they don't challenge the VP, but the factor model developed by Fama and French. Their findings suggest that the average investment returns are better explained by directly linking them to the firms B/M and its size, since after controlling for the two parameter values, the exposure to the SMB and HML factors is modest.

This section presented the risk-based explanation of the value effect. The Fama-French model was briefly explained and different possible risk factors introduced. The next section introduces a different set of explanations. These come from the field of behavioral finance and argue that investors' decision errors have a causal relation to stock market anomalies.

3.2.4 A BEHAVIORAL EXPLANATION

This section deals with explanations for the VP based on behavioral finance findings. The section starts with a brief introduction to the field of behavioral finance.

The field of Behavioral Finance is popular since the 1990s, but its origins can be traced back to the nineteenth century: Gustav le Bon (1896), a French psychologist, and Charles Mackay (1956), a Scottish journalist, publish two books on the psychology of crowds. At the beginning of the twentieth century George Charles Selden (1965) writes *Psychology of The Stock Market* where he connects finance, sociology and psychology.

Behavioral finance is an extension of the classical approach to financial market theory. In contrast to the former, where economic agents are assumed to be rational individuals, the field of behavioral finance introduces cognitive and social psychologists findings on bounded rationality. The famous *homo-economicus* is replaced by a more-realistic individual whose judgments, beliefs and decisions are biased.

Richard Thaler and Nicholas Barberis (2002) identify two broad research categories of behavioral finance: psychology and limits to arbitrage.

Daniel Kahneman and Amon Tversky, two Israeli psychologists are at the forefront of the new field of behavioral economics, to which behavioral finance belongs. Together with other researchers they identify a wide range of cognitive biases, such as:

- **Overconfidence:** people overestimate their abilities
- **Framing:** how a situation is presented influences peoples decision
- **Heuristics:** the use of rule of thumb or intuition to solve a problem
 - **Representativeness:** people do not judge based on probabilities, but on stereotypes
 - **Availability:** people use mostly information that comes easily to mind
 - **Anchoring:** people start from an anchor and this influences their decision (Hirshleifer, 2001)

Given these cognitive biases, irrational market participants drive prices away from their fundamental value. In the tradition of Milton Friedman (1953), advocates of the EMH argue that these deviations are corrected by rational traders. Yet studies show that there are instances where irrational prices can be sustained for a prolonged time. The reasons that circumvent arbitrage traders to bring prices back to their fair value are:

- **Risk:**
 - **Fundamental risk:** there is no substitute security to hedge the

position, and if there is one, the arbitrageur still faces the risk of company specific shocks

- **Noise trader risk:** the mispricing becomes more severe and the arbitrageur has to prematurely close his position at a loss
- **Costs:**
 - **Trading costs:** Commissions, bid-ask spread and price impact lowers the expected return
 - **Short-sale constraints:** legal constraints prohibit certain fund managers from short-selling or a security is too costly to borrow or simply not available
 - **Other costs:** costs of identifying and exploiting a mispriced security (Barberis & Thaler, 2002)

So, if the VP is due to mispricing, Phalippou (2008) in line with Barberis and Thaler (2002), Shleifer and Vishny (1997), and Shleifer (2000) argues that two questions have to be answered. To begin with, there must be an explanation why prices have deviated from their fundamental value in the first place. Secondly, there must be a reason why arbitrage traders did not correct the mispricing promptly.

Starting from the assumption that market participants extrapolate past growth into the future, Lakonishok, Shleifer, and Vishny (1994) form two set of stocks: value and glamor.

Glamor stocks are those with *high past sales growth and with high expected future growth* as measured by the cash flow to price multiple. A value stock is the opposite: *low sales growth in the past and also low growth expectations for the future*. They contrast this method to the classic B/M classification, where the reliance on a single ratio doesn't produce a clear-cut differentiation between value and glamor stocks.¹¹

This *contrarian* strategy has a better performance than the classic value

¹¹ For example, if extraordinary costs diminish earnings substantially, the earnings yield can be temporarily low. Thus when only using a single ratio, the stock would be wrongly classified as glamour.

strategies based on single valuation metrics. The authors notice that prices of glamor stocks, for which investors anticipate high future growth, are too optimistic based on the actual observed growth rates. Similarly La Porta (1996) shows that a portfolio of stocks in which analysts expect high earnings growth, actually performs worse than one with low expected growth.

This is one reason for the success of the *extrapolation model*. As BG writes in *The Intelligent Investor*:

Unusually rapid growth cannot keep up forever; when a company has already registered a brilliant expansion, its very increase in size makes a repetition of its achievement more difficult. At some point the growth curve flattens out, and in many cases it turns downward. (Graham & Zweig, 2003, p. 158)

This finding suggests that value strategies perform above-average, because investors make biased growth forecasts. Barberis, Shleifer, and Vishny (1997) put forward the explanation that investors are victims of two information updating biases: *conservatism* and *representativeness*.

For value firms, good news isn't sufficiently incorporated into future cash-flow forecasts. Due to conservatism, investors expect earnings to be more mean-reverting than is warranted.

Contrariwise for growth firms, a sequence of good news is the catalyst for an excessively rosy forecast. Here investors, due to representativeness, wrongly assume that earnings are trending, whereas in actuality, the process is better described by a random-walk¹².

A second potential reason is that private investors are more interested in glamor stocks, because they hope for large gains in a short period of time, something the value strategy's few extra percentage points of return cannot provide.

Institutional investors might as well be irrationally inclined toward buying glamor stocks. The fear of losing one's credibility and reputation could lead them to buy mostly securities that are in vogue. As John Maynard Keynes

¹² A random-walk is a process of successive uncorrelated steps.

put it: “Worldly wisdom teaches that it is better for reputation to fail conventionally than to succeed unconventionally.”

After observing that the difference in beta-factors cannot explain the difference in return, to evaluate whether this contrarian strategy is risky, Lakonishok et al. (1994) study the periods of under-performance. Among other results, they found that, over an interval of five years, it constantly outperforms the market. Further, they find no evidence that value stocks under-perform glamor stocks in “bad” states of the world: neither during recessions nor during periods with the worst stock market performance. This strengthens the claim that the contrarian strategy earns additional returns without assuming more risk.

Further evidence for the extrapolative bias is given by Chan, Karceski and Lakonishok (2003). In their paper the authors study “The Level and Persistence of Growth Rates.” The data suggests that firms with persistent above earnings growth rates are very rare. As one would commonly assume, persistent sales growth is found more often: the authors reason that sales growth is achieved more easily, because product price decreases or production capacity enlargements can increase sales, but the repercussion on profitability is ambiguous.

Akin to these results, the authors find that on one hand high past sales growth heralds above average sales growth in the future, but that on the other hand past earnings growth isn't a good indicator for good future earnings performance. Valuation ratios are also not a good indicator for future earnings growth; they actually reflect past growth rates. Furthermore, analysts' long-term growth estimates tend to exhibit a lack of predictive power.

All in all, persistent earnings growth is very rare and neither past growth rates, valuation ratios, nor analysts forecasts are good predictors.

To cast even more doubt on the risk-based explanation for the VP, using the same classification criteria for value and glamor stocks as in Lakonishok et al. (1994), La Porta, Lakonishok, Shleifer, and Vishny (1997) study the returns of portfolios around earnings announcement dates. Value stocks have

higher event returns than nonevent returns. This possibly indicates that the market is positively surprised. Likewise it could be that if “a high fraction of the annual uncertainty about a stock is realized around quarterly earnings announcements, then perhaps a disproportionate share of the risk premium is as well” (La Porta et al., 1997, p. 870). The result is therefore inconclusive.

Yet in contrast to value stocks, glamor stocks not only display lower event returns than nonevent returns, event returns are even negative. The aforementioned risk premium hypothesis (higher event returns than nonevent returns for value stocks) predicts otherwise. Thus the authors argue that the negative returns of glamor stocks around earnings announcement dates are due to the correction of the markets optimistic earnings expectations.

Conservatism, representativeness, herd behaviour, and other cognitive biases seem to be the reason for the success of contrarian strategies. Ludovic Phalippou (2008) furnishes further evidence for the extrapolation bias, as well as results that detect limits to arbitrage as a cause for the VP. Instead of taking size as a second independent variable, the author uses institutional ownership. The reasons are twofold: firstly, institutional ownership should be negatively correlated with the extrapolation bias, since institutional managers have better informational resources and are more skilled than private investors. Secondly, the costs of arbitrage are lower for stocks with high institutional ownership, since these stocks tend to be more liquid and are more widely available for short-sellers.

The results are intriguing. From 1980 to 2001 the VP is only present in the low institutional ownership segment, which represents only 7% of total market capitalization. Additionally, the VP is concentrated in the largest stocks in the low institutional ownership segment and the “size has no marginal explanatory power over ownership in explaining the performance of growth versus value stocks” (Phalippou, 2008).

Thus, by employing findings from psychology and sociology, we are able to better explain and understand stock returns. In this case, investors cognitive

biases and the limits to arbitrage form two well-documented explanations.

3.2.5 SUMMARY

“Observing correctly that the market was frequently efficient, they went on to conclude incorrectly that it was always efficient. The difference between these propositions is night and day” (Buffett, 1988).

As summarized in the second chapter, BG, PF and WB state that fundamental research and analysis can lead to above-average investment returns. PF favors research that is more skewed toward qualitative factors, whereas BG's focus lies more on quantitative factors.

BG has produced one of the first studies on investment returns based on fundamental research, showing that stocks with high E/P outperform stocks having low E/P.

Subsequent studies showed that stocks earn higher returns if amongst other things, they have high average E/P, low institutional ownership, low past and anticipated growth, no analysts following them, and are financially strong.

The capital asset pricing model and its beta-factor which in theory captures risk, can't explain the out-performance of most value strategies. Hence there is either a problem with the CAPM model or markets aren't efficient at all times.

Some academic researchers attribute the out-performance of the so-called value stocks to their riskiness. They find that value stocks face higher distress risk, are of marginal profitability, and cut dividends more often. They may also have higher risk exposure to changes in macroeconomic variables such as growth and inflation expectation, or the level and slope of the interest curve. This reasoning essentially argues that markets are efficient, but that the capital asset pricing model is misstated.

Other scholars suggest that market anomalies are due to investors cognitive biases and limits to arbitrage. Investors are bad at updating their beliefs. They suffer from conservatism and representativeness. Additionally risk

and cost factors prevent arbitrageurs from correcting prices. These are the sources of contrarian strategies superior returns.

The connection of BG's approach, namely buying companies with prices lower than the net asset value, to the other univariate indicators of mispricing is evident. In contrast, WB's strategy is more complex because it doesn't rest on a single indicator of value. His investment philosophy contains lessons from behavioral finance; he is willing to buy during times of elevated pessimism and prepared to make contrarian investments.

The most common cause of low prices is pessimism - some times pervasive, some times specific to a company or industry. We want to do business in such an environment, not because we like pessimism but because we like the prices it produces. It's optimism that is the enemy of the rational buyer. (Buffett, 1990)

3.3 COMPETITIVE ADVANTAGE AND QUALITATIVE ANALYSIS

3.3.1 INTRODUCTION

The concept of competition is central to the field of economics and business. Although Adam Smith is thought to have introduced it to the field of economics, other authors such as Becher, Boisguillebert, Cantillon, Turgot or Steuart had already addressed it by the time the *Wealth of Nations* was written. Competition was then associated with rivalry and bargaining, where price was a variable component. It assured the “allocative efficiency in resource use” (McNulty, 1967, p. 397) and was elevated “to the level of a general organizing principle of economic society” (McNulty, 1967, p. 396), replacing “ethically and politically oriented price administration as the focus of economic analysis” (McNulty, 1967, p. 396).

Later the mathematical economists of the nineteenth and twentieth century, such as Edgeworth, Jevons, Clark, Cournot or Knight took a different approach. In contrast to Smith, who saw competition as a dynamic process and a business behaviour, Cournot's static approach was all about the result – an equilibrium state of the world were “competition in the Smithian sense, was ruled out by definition” (McNulty, 1967, p. 398). This situation, or rather market structure is called *perfect competition*.

In capitalistic economies such as those prevalent in the United States, Germany or Japan, most markets aren't perfectly competitive. The properties of a pure and perfect market, such as infinite buyers and sellers, no barriers to entry or exit, and homogeneous products, are seldom achieved. One can cite the world commodity market as coming close to being perfectly competitive (Bannock, Baxter, & Davis, 2003, p. 295).

But even if markets aren't perfect and firms temporarily earn abnormal profits, profit seeking entrepreneurs or managers, by allocating resources away from loss-generating activities to more promising and lucrative

endeavours, should bring these returns back to their long-run competitive level. However, these competitive levels of profits are seldom reached as new innovations arise in the field of production processes or product development, and changing consumer tastes or supply and demand shocks appear repeatedly.

This is the dynamic of *creative destruction* as described by Schumpeter., where the outlook for healthy profits leads to new innovations which in turn make older investments obsolete. Only the innovator can reap a short-lived gain, before a flock of imitators enter the market and trample down his carefully cultured profit plant (Roberts, 2001).

Research by strategic management scholars and industrial organization economists has highlighted the functioning of this dynamic competitive process by studying the persistence of companies profits and the sources of firm profit differences. Bain (1956) and Mann (1966) focused on industry profitability, whereas later researchers such as Mueller (1977) and Yurtoglu (2004) put individual firm profit persistence at the center of attention. At the same time, people such as Porter (1985) and Peteraf (1993), among others, searched for factors that provide a company with competitive advantage in order to earn continual abnormal profits.

WB has stated that “long-term competitive advantage in a stable industry is what we seek in business” (Buffett, 2007, p. 6). He did not always have this principle. In the past he practiced the so-called “cigar butt” (Buffett, 1989) approach to investing: This involved buying companies with non-compelling long-term profitability prospects but at such a bargain price that, sooner or later, the investor is able to sell them at a reasonable profit: “A cigar butt found on the street that has only one puff left in it may not offer much of a smoke, but the 'bargain purchase' will make that puff all profit” (Buffett, 1989).

The problem with this approach is that, if the share price doesn't increase sooner, but rather later, the investor is stuck with a business where profits, that are not payed out in the form of dividends or share buybacks, are reinvested at very low rates of investment. BH, back then a textile

manufacturer competing with foreign low-cost producers, was such a cigar butt found on the street (Buffett, 1989).

Influenced by PF and Charles Munger, WB later changed his investment approach and now searches for high-quality companies that have high returns on investment. But since “high profit margins may be compared to an open jar of honey owned by the prospering company. The honey will inevitably attract a swarm of hungry insects bent on devouring it” (Fisher, 2003, p. 200). So in order to keep competitors at bay, WB requires companies to have an “enduring 'moat'” protecting the “business 'castle'” (Buffett, 2007, p. 5).

In this chapter we will deal with the research on competitive advantage. The findings will be linked to statements of WB and PF. In the first part we will present findings of the persistence of profits literature. In the second part we will cover strategies and factors identified by researchers that lead to sustainable competitive advantages. The third part will deal with industry evolution and technological change.

3.3.2 THE PERSISTENCE OF PROFIT RATES

As indicated in the introduction to this chapter, the examination of profit rates at both firm and industry level is crucial towards understanding the dynamic of market economies. Even though “the theory of profit has remained one of the most unsatisfactory and controversial divisions of economic doctrine” (Knight, 1921, p. 12), the different economic schools agree to a certain extent that competition should guide profits to competitive levels, where there is no profit in the long run (Knight, 1921, p. 12). The neoclassical approach is static, whereas the classical as well as the *Austrian* approach is dynamic (Cable & Mueller, 2008).

McNulty (1968) elegantly compares these two concepts to principles one can encounter in physical science. The dynamic process of competition is analogous to the force of gravitation, where “resources 'gravitate' toward their most productive uses” (p. 643). The static situation is comparable “to the

idea of a perfect vacuum; it is not an 'ordering force' but rather an assumed 'state of affairs' - one which, although an 'unrealistic', - indeed, unrealizable, - abstraction, is nonetheless a useful analytical device” (p. 643).

The static view of competition and its reasoning is at the center of Bain's research on inter-industry performance differentials. His seminal work contributed immensely to the creation and propagation of the SCPP and the field of modern industrial organization (IO) (Sutton, 2007). Influenced by the writings on *perfect competition*, as well as on *imperfect competition* by Chamberlin (1933) and Robinson (1933), Bain (1951) analyzes the relationship between industry structure (concentration) and performance (profitability) (Mosca, 2009). He reasons that in the presence of entry barriers, collusion between incumbent industry members is facilitated. They are then able to “persistently raise their price above a competitive level without attracting new firms to enter the industry” (Bain, 1956, p. 3).

Nevertheless, as argued Mueller (1977), in a world where products and processes within industries are not homogeneous, the definition of an industry and its structure turns out to be a difficult task.

Mueller and Raunig (1998) found that where companies are heterogeneous within an industry, the traditional reasoning of the SCPP, that industry concentration enhances profitability, fits badly.

Driven by the pursuit of profits, firms constantly innovate products and processes and try to differentiate themselves from one-another. In this Schumpeterian like scenario comparing firm profits is more reasonable (Cable & Mueller, 2008).

Clearly WB pays attention to both inter- and intra-industry profitability. On one hand he mentions TV stations or the breakfast cereal industry as being industries with good economics, whereas he regards the textile or the airline industry as being poor performers (Buffett, 1979). “A horse that can count to ten is a remarkable horse – not a remarkable mathematician.’ Likewise, a textile company that allocates capital brilliantly

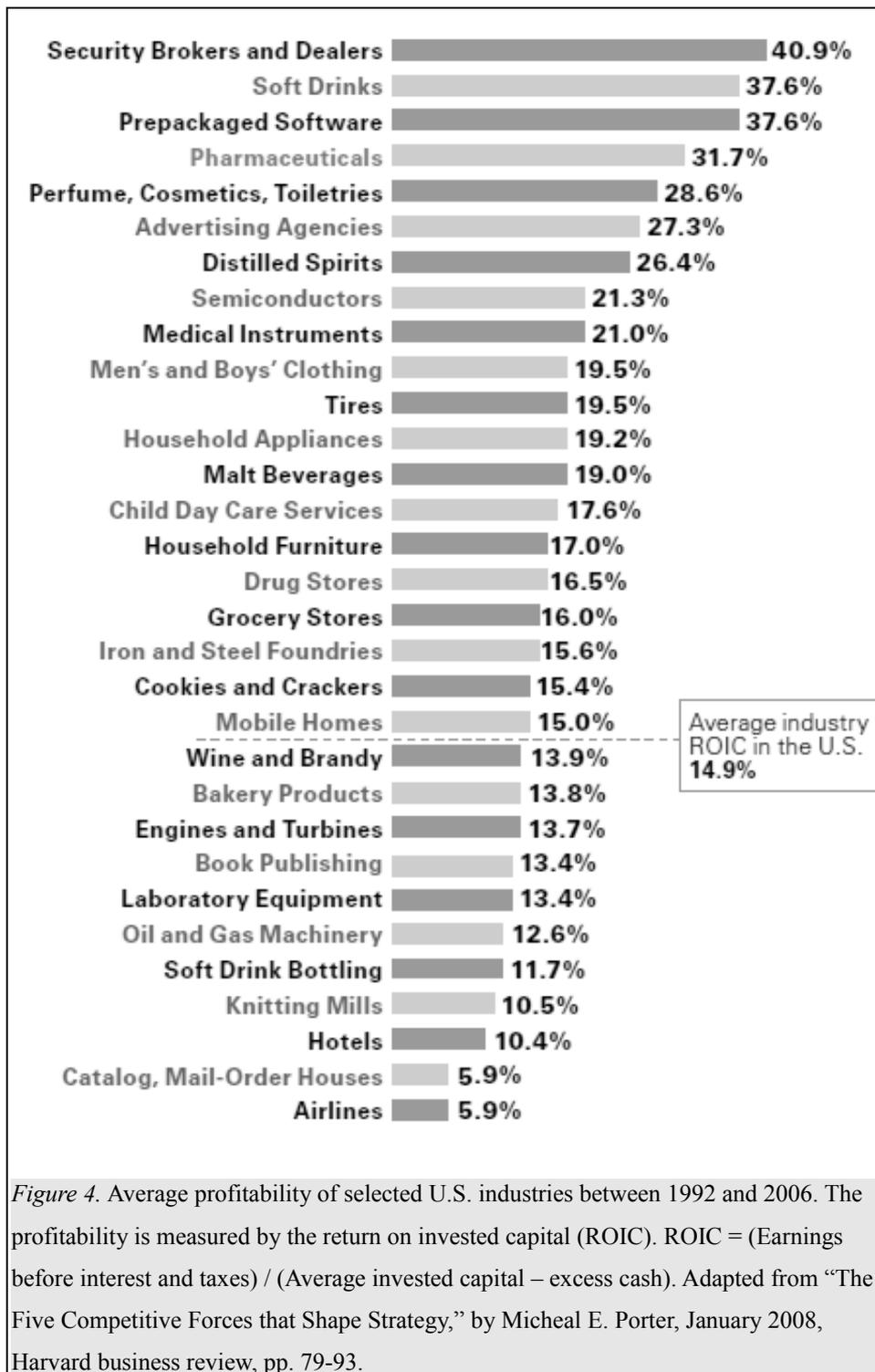
within its industry is a remarkable textile company – but not a remarkable business” (Buffett, 1985).

The difference in average profitability of selected U.S. industries between 1992 and 2006 depicts this phenomenon (see Figure 4). Also Kessides (1990) finds strong evidence for permanent U.S. industry profitability differences during the period 1967-82. Other studies dealing with industry profitability generally found that no long-run equalization tendency can be detected (Schohl, 1992).

On the other hand WB also emphasizes that firms, by following certain strategies, can produce healthy profits in very competitive environments. He characterizes GEICO, by following a low-cost strategy in the very competitive auto-insurance industry, as being such an outstanding company. This persistent intra-industry profitability difference has been shown by Mueller (Mueller, 1986; Mueller & Cubbin, 1990; Mueller & Raunig, 1998), Waring (Waring, 1996) or Porter (Porter, 1979b).

Since WB's investment approach consists of investing in firms that are able to sustain their competitive advantages and thus their abnormal profits in the long run, the main focus of attention is on the *time dependency* of firm profits. The static observation that profitability differs between firms or industries does lead one to dismiss the perfect vacuum idea. Also cross-sectional studies can lead to insights on the influence of firm- or industry-specific variables on firm profitability.

However to check the validity of the Schumpeterian competitive scenario and to determine whether firms achieve sustainable superior performance and to gain insights on its origin, studies on profit persistence have to be consulted.



The general finding of empirical studies in this branch of research, including Mueller (1986), Geroski and Jacquemin (1988), Droucopoulos and Lianos (1993), Goddard and Wilson (1995), and Yurtoglu (2004) is that some firms

do earn above normal profits, but that generally a process of convergence takes place. However the characteristics of this convergence process shed some doubt over the theories of the neoclassical and Austrian school of economics or D'Aveni's (1994) model of hypercompetition (Wiggins & Ruefli, 2002).

Wiggins and Ruefli (2002) analyzed 6772 firms in 40 industries over 25 years and found that in 18 industries there were at least one firm achieving superior performance for *20 or more years*. Members of this outstanding group of companies are familiar names such as *McDonald's Corp*, *Hewlett-Packard Co.*, *United Parcel Service AM Inc.*, *Hilton Hotels Corp*. or *Rubbermaid*. Acquired by BH in 2001, *Benjamin Moore*, a paint and allied products manufacturer, also belongs to this group. Furthermore 350 companies, representing 5% of the sample, delivered *10 or more years* of persistent above-average profits. Worth singling out are *American Home Products*, *Eli Lilly & Co.* and *Minnesota Mining and Manufacturing Company*, which have sustained almost *50 years* of excellent performance.

Mueller (1986) in his study of 600 large U.S. industrial firms over the period 1950 to 1972, finds that the process of converging back to competitive levels is not complete. Not only do companies converge to different long-run profit levels, the convergence speed is also dissimilar. Firms that were in the best-performing group at the beginning of the 1950s had not only higher long-run predicted profitability levels, but were also experiencing a slower convergence to this level. Also some firms in the top-group had growing earnings. Companies that had projected long-run above-normal profits in this study were among others, *Coca-Cola*, *Gillette*, *Procter & Gamble*, *R.J. Reynolds* or *Wrigley*: all names that later figured on Berkshire Hathaway's investment portfolio.

Yamawaki's (1989) study of both Japanese and U.S. firms shows that the convergence speed to the long-run predicted profit rate differs depending on the industry affiliation of the particular firm. Further, Waring (1996) finds that the differences in convergence rate of inter-industry profitability varies from industry to industry.

The permanence of profits is also observed in countries such as the United Kingdom, France and Germany (Geroski & Jacquemin, 1988), Japan (Odagiri & Yamawaki, 1990), Canada (Khemani & Shapiro, 1990) or Turkey (Yurtoglu, 2004).

Apart from detecting persistent profits, Mueller (1983, 1986, 1990) finds that long-run profit rates and market shares are positively correlated. Also he states that the study's results suggest that "the more profitable firms are those that succeed in differentiating their products in industries in which product differentiation is important" (Mueller, 1990, p. 44).

WB investment strategy aims at identifying companies that can earn above-average returns for an extended period of time. He searches, as he labels it, for valuable castles with a moat around. The literature on the persistence of profits shows that these valuable castles exist. A group of first class businesses is able to earn substantially abnormal earnings and is projected to persistently do so. High market shares in industries where product differentiation is possible is an indication for sustainable above average profitability. In the next section we will deal with the moat surrounding the castle: sustainable competitive advantage.

3.3.3 SUSTAINABLE COMPETITIVE ADVANTAGE

What is sustainable competitive advantage? Some argue that competitive advantage is equivalent to above-normal profits, others define it as a set of different strategies and resources, with certain attributes or characteristics, that enable above average financial performance. We follow the second line of reasoning, where financial performance stems from and is driven by competitive advantage. A firm has a sustainable competitive advantage if, as Barney (1991) states: "it is implementing a value creating strategy that is not simultaneously being used by any current or potential competitors and when these other firms are unable to duplicate the benefits of this strategy" (p. 102).

The creation of sustainable competitive advantage is at the core of the

research in strategy management. Learned, Christensen, Andrews, and Guth (LCAG) (Andrews, Christensen, Guth, & Learned, 1969) have defined four key elements of effective strategy formulation. In the SWOT (strength, weaknesses, opportunities and threats) framework two key elements of the LCAG framework, *company strengths and weaknesses*, and *personal values of key implementers* are grouped together in the *internal analysis* quadrant. The other two elements, *industry economic & technical opportunities, threats* and *broader societal expectations* are found inside of the second quadrant: *external analysis* (see Figure 5).

The research on competitive advantage by Porter (1984, 1985) which is rooted in IO and the SCPP, emphasizes more the external analysis quadrant. The aim is to identify industries and strategic groups where opportunities are great and threats are low (Barney, 1991).

On the other hand, the *resource-based view* (RBV) of competitive advantage is concerned with the *internal analysis* of the SWOT framework, and where the main focus lies on the internal resources and capabilities of companies and on their necessary characteristics to achieve a competitive advantage (Barney, 1991).

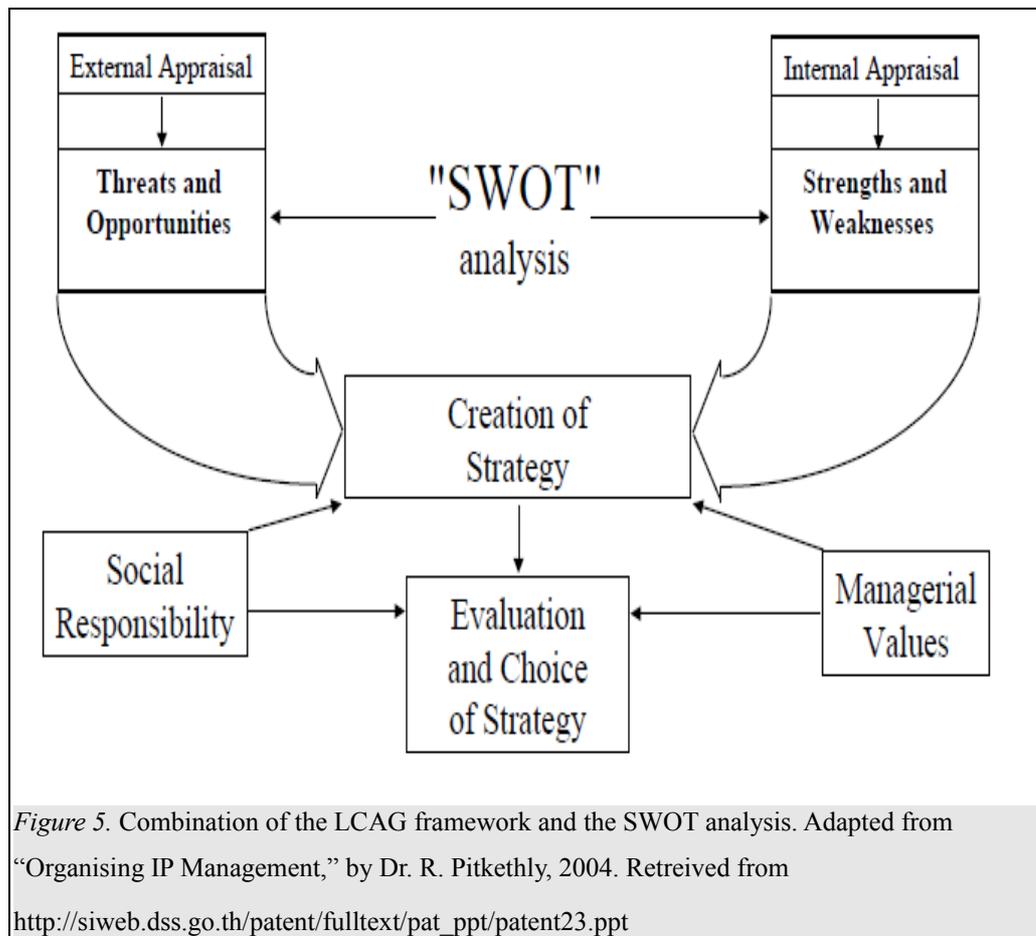


Figure 5. Combination of the LCAG framework and the SWOT analysis. Adapted from "Organising IP Management," by Dr. R. Pitkethly, 2004. Retrieved from http://siweb.dss.go.th/patent/fulltext/pat_ppt/patent23.ppt

The SCPP states that industry structure determines conduct and that conduct consequently determines performance. This causal relationship enables one to solely explain performance by the industry structure. The factors considered essential to explain performance are “barriers to entry [Bain, 1972], the number and size distribution of firms, product differentiation, and the overall elasticity of demand [Bain, 1968]” (Porter, 1981, p. 611).

Later, Porter (1979a) identified five forces governing competition in an industry and thereby contributed greatly to clarifying the concept of industry structure. The five forces in his analysis are “threat of new entrants”, “bargaining power of customers”, “bargaining power of suppliers”, “threat of substitute products or services” and “jockeying for position among current competitors”.

If we look at PF's example of a firm that has the potential for high levels of

sustained profitability, we can identify six sources that are critical to the strength of the company, which is also in line with Porter's forces.

“An example is a company that has created in its customers the habit of almost automatically specifying its products for reorder in a way that makes it rather uneconomical for a competitor to attempt to displace them. [...]First, the company must build up a reputation for quality and reliability in a product (a) that the customer recognizes is very important for the proper conduct of his activities, (b) where an inferior or malfunctioning product would cause serious problems, (c) where no competitor is serving more than a minor segment of the market so that the dominant company is nearly synonymous in the public mind with the source of supply, and yet (d) the cost of the product is only quite small part of the customer's total cost of operations. [...] Second, it must have a product sold to many small customers rather than a few large ones.[...]They constitute a market in which, as long as the dominant company maintains the quality of its product and the adequacy of its service, it can be displaced only by informed salesman making individual calls. Yet the size of each customer's orders make such a selling effort totally uneconomical!” (Fisher, 2003, p. 205)

The sources are high capital requirements and differentiation in the eyes of the customer (“threat of new entrants”) - fragmented customer base, importance of the product's quality for the buyer, and price being a small fraction of total costs of the buyer (“bargaining power of customers”) - substantially smaller competitors (“jockeying for position among current competitors”).

In the 1970s, where research in IO started to move its focus also on firm analysis, rather than only on industry analysis, Porter and Caves (1977) added the concept of mobility barriers. In contrast to entry barriers, which shields an entire industry, mobility barriers protect only the members of a certain strategic group within an industry.

The term strategic group was coined by Hunt (1972) in a study of the U.S. home appliance industry. Although he found that industry concentration was high, profitability was cheerless. Hunt reasoned that since firms were pursuing different strategies, market power could not be exercised.

According to Porter (1979b), a strategic group is a group of firms within an industry that follow similar strategies along dimensions such as their degree of vertical integration, diversification, breadth of product line, the extent to which they advertise and brand their product, distribution arrangements, or whether they operate regionally, nationally or multinationally.

Porter (1979b) uses the SCPP, which aims at explaining industry profitability, and extends it in order to explain firm profitability by using Hunt's (1972) notion of strategic groups and introducing barriers to mobility. When WB states that Richard Branson, a marketing genius, entered the soft drink market with Virgin Coke, but couldn't knock off Coca-Cola, he alludes to the mobility barriers within the soft drink industry: "The might of their brand names, the attributes of their products, and the strength of their distribution systems" (Buffett, 1993) are the factors that shield Coke (and Gillette) from entrants within and outside the industry.

These mobility barriers are what WB terms *moat*. Likewise Cool and Dierickx (1993) view them as walls protecting a medieval city.

WB offers two paths to become a truly great business, two ways to build a robust and solid city wall:

The dynamics of capitalism guarantee that competitors will repeatedly assault any business "castle" that is earning high returns. Therefore a formidable barrier such as a company being the low-cost producer (GEICO, Costco) or possessing a powerful world-wide brand (Coca-Cola, Gillette, American Express) is essential for sustained success. (Buffett, 2007, p. 5)

Similarly, Porter (1984) defines three generic competitive strategies: *cost leadership, differentiation and focus*.

The first strategy, cost leadership, aims at being the most efficient producer

in the industry. This shields the company from the five industry forces, because buyers can only lower prices to the level of the second most efficient firm, the company is making profits even under intense rivalry between competitors, factors that enable low costs often create entry barriers while low prices enable the company to better cope with substitutes. To be the cost leader in an industry calls for the buildup of production capacities of efficient scale and the rigorous control of costs. Companies should concentrate on a simple production process, where costs can be spread over a large line of homogeneous products and on a large number of customers. In many industries to gain a relative large market share is crucial to achieve cost leadership. The access to cheap commodities is also a possible avenue.

In PF's (2003) opinion "to be a truly conservative investment a company [...] must be the lowest-cost producer or about as low a cost producer as any competitor" (p. 180). The company is then able to survive and even thrive during rough economic seas, where high-cost competitors have run aground and their markets can be seized.

WB acknowledges that being the low-cost operator is one path to exceptional profitability. But in contrast to PF, he favors the second strategy: differentiation. The major risk in investing in cost-leaders is that they need highly able leaders in order to navigate them through the constant canon fire of competition. But sooner or later mismanagement will take place and this could lead to perdition.

Hence the constant struggle of every vendor to establish and emphasize special qualities of product or service. This works with candy bars (customers buy by brand name, not by asking for a "two-ounce candy bar") but doesn't work with sugar (how often do you hear, "I'll have a cup of coffee with cream and C & H sugar, please"). (Buffett, 1982)

This brings us to the second strategy: differentiation. The goal of this strategy is to make the product or service unique in the eyes of the customers. This shields the company from the bargaining power of

customers, since differentiation leads to less price sensitivity. The uniqueness of the product and the customer loyalty create significant entry barriers for competitors and lessen the threat of substitutes. Differentiation entails significant investments in research and development, design, advertising, customer service or high quality materials.

A company that can truly differentiate what it has to offer from its competitors is in WB opinion a *franchise*; its product or service is needed or desired, it has no close substitute in the eye of the customer, and it isn't subject to governmental price regulation. The presence of an economic franchise is evidenced by the company's ability to price its offer aggressively (Buffett, 1991a): “The ability to raise prices – the ability to differentiate yourself in a real way, and a real way means you can charge a different price – that makes a great business“ (Buffett, 1991b, p. 2).

The third and last strategy is focus. Here the company aims at concentrating its efforts to a well-defined buying group, geographical market or product offering. It is a hybrid strategy, were cost leadership and differentiation are applied to a definite strategic target.

As Porter (1981) writes, the formulation of the concept of strategic groups and mobility barriers was a step toward the analysis of a company's weaknesses and strengths. Rumelt (1984) developed this further by formulating the idea of *isolating mechanism*. In his opinion there is no reason to limit barriers to entry to an industry or a strategic group. Individual companies from the same strategic group can also own heterogeneous and immobile resources that prevent returns to even out. The concept that firms are endowed with heterogeneous and immobile resources is a central assumption of the RBV of the firm, whose beginnings can be traced back to Chamberlain (1933), Penrose (1959), and Wernerfelt (1984).

According to Wernerfelt (1984) two categories of resources exist: tangible and intangible. Tangible resources are the physical assets a company possesses, such as buildings, machinery, financial or human resources. Intangible resources are intellectual and technological resources, as well as

reputation. Possible examples could be brand names, patents, copyrights, as well as relationships with customers and suppliers.

The RBV aims at identifying internal resources and capabilities of a firm that are strategic in achieving sustainable competitive advantage. For a resource to be able to establish and sustain competitive advantage, various criteria have to be met. Based on the criteria specified by Barney (1991), Grant (1991) and Peteraf (1993), the following properties have to be fulfilled.

A company can *establish* competitive advantage if the resources are:

- **Heterogeneous:** First the resource has to be rare, so that only a small number of companies can implement the same strategy. A rule of thumb is that the number of companies must be smaller than the number which forms the basis for perfect competition. Second, it has to be valuable and relevant, meaning that the resource has to be strong enough to neutralize threats or exploit opportunities.

A company can *sustain* the competitive advantage if there are:

- **Ex post limits to competition:** If the valuable and scarce resource should create competitive advantage in the long-run, there ought to be barriers to substitution, imitation and mobility. Clearly if a resource can be substituted or traded, then a company cannot harvest the fruits of its labor. Dierickx and Cool (1989) have pointed out that nontradable assets are candidates for sustainable competitive advantage generating resources. WB gives the example of imitable capital investments in the textile industry that don't create sustainable competitive advantage:

But the promised benefits from these textile investments were illusory. Many of our competitors, both domestic and foreign, were stepping up to the same kind of expenditures and, once enough companies did so, their reduced costs became the baseline for reduced prices industrywide. Viewed individually, each company's capital investment decision appeared

costeffective and rational; viewed collectively, the decisions neutralized each other and were irrational (just as happens when each person watching a parade decides he can see a little better if he stands on tiptoes). After each round of investment, all the players had more money in the game and returns remained anemic. (Buffett, 1985)

According to Dierickx and Cool (1989) “imitability depends on the extent to which asset accumulation processes exhibit the following properties: time compression diseconomies, asset mass efficiencies, interconnectedness, asset erosion, and causal ambiguity“ (p. 1510). PF incorporates the idea of interconnectedness and causal ambiguity when he writes:

Another [investment factor] which we believe is of particular interest is the difficulty of competing with a highly successful, established producer in a technological area where the technology depends on not one scientific discipline but the interplay of two or preferably several quite different disciplines. (Fisher, 2003, p. 203)

A company can *appropriate* the returns of its resources if there are:

- **Ex ante limits to competition:** If the cost of implementing a strategy is equal to its benefits, then a company can't achieve superior financial performance. The ex ante perceived value of a resource must be different across firms.
- **Appropriating barriers:** In addition to Porter's bargaining power of suppliers and buyers, there is the bargaining power of employees. In many businesses, such as investment banking, sports or advertising agencies, human resources are crucial for success. If the employee is mobile and the contribution of his skill is both identifiable and transferable to other firms, he is in a good position to appropriate most, if not all of his contribution to the firms profit.

Creating competitive advantage and thus earning above-normal profits is the goal of profit-oriented companies. To attain this, a strategy which incorporates all the critical factors has to be formulated. The SWOT-analysis differentiates between external and internal analysis. IO and Porter's five forces offer valuable tools to screen for possible opportunities and threats, whereas the RBV of the firm is useful to identify firm resources that could be possible strengths or weaknesses. WB's and PF's investment approach consists in searching companies with sustainable competitive advantage and their writings show similarities to the concepts mentioned above. In the next section we will deal with the relation between competitive advantage, technological change and industry evolution.

3.3.4 COMPETITIVE ADVANTAGE AND INDUSTRY EVOLUTION

As opposed to the scholars of the neoclassical approach, Schumpeter, an Austrian economist of the twentieth century and short-time Austrian Minister of Finance rejected the idea of the existence of an state of equilibrium that would be reached, if external disruptive factors wouldn't prevent it.

Schumpeter's theory of *creative destruction* builds upon the idea that economic development depends on endogenous factors, which throw the economy constantly out of equilibrium. He identifies the production-side as the driving force for economic development, where the entrepreneur introduces new innovations that have a major impact on the economy. Interestingly, Schumpeter's early work emphasizes the importance of the entrepreneur as an individual possessing superior personality traits, such as intuition and assertiveness. Here, newly created companies enter the industry and oust incumbents. Later, as large companies expanded their R&D efforts and the process of innovation was professionalized, Schumpeter's work dealt with the advantages of established firms (Tripsas, 1997).

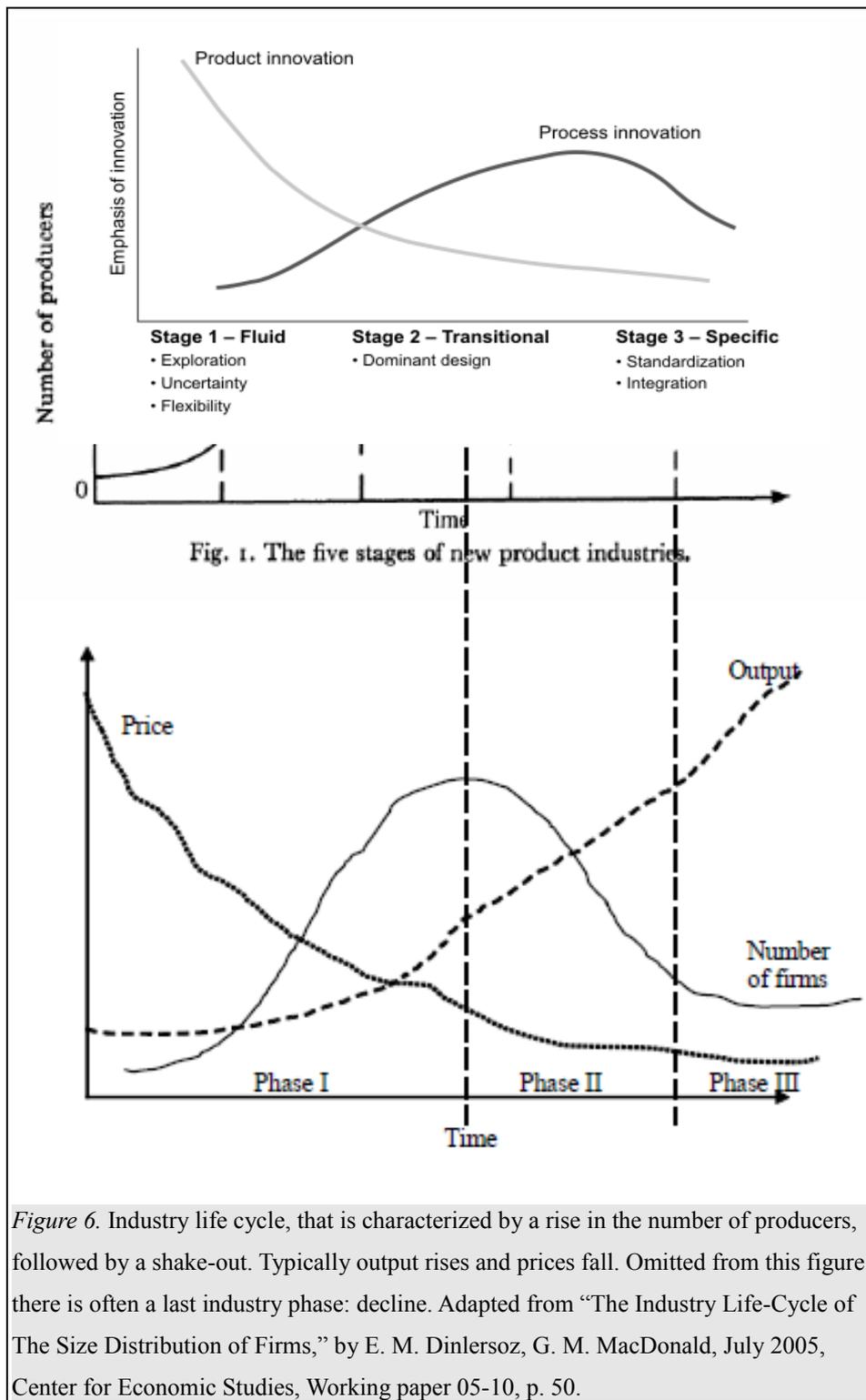
In both cases, the reward for an innovation is the corporate profit. However, it is only a temporary reward since the mechanism of competition will gradually erode it. Other firms will imitate the production- or process innovation of the pioneer and put pressure on prices (Schohl, 1992): In a study, Levin et al. (1987) observed that patented new products in 76 of 129 lines of business could be copied within three years. Only in 7 cases was the duplication not feasible.

Based on the product life cycle theory popularized by Vernon (1966), Dean (1964), or Cox (1967), the dynamic evolution of industries was the subject of many studies.

Williamson (1975) depicted an industry as going through three different stages: a formative, a development and a mature stage. First an industry is characterized by high uncertainty, products of primitive design, low productivity and low sales volume. Then in the development stage production processes are enhanced and sales grow quickly. In the mature stage “management, manufacturing, and marketing techniques all reach a relatively advanced degree of refinement” (p. 216).

Technological progress plays a major role in the evolution of industries. Clark (1985), based on models developed by James M. Utterback, describes two technological states that an industry goes through (*see figure 6*). The *fluid* state is where fundamental product innovations are rapidly succeeding each-other. Market shares are also unstable, as newcomers displace incumbents. The *specific* state is reached after a technology has gained dominance and the production process lays at the center of attention, where “work flow is rationalized, integrated and linear; unlike the fluid and flexible job shop of the early period.” As opposed to the more fundamental character in the fluid state, the incremental dimension of innovations in the specific state assure that market shares are stabilized.

In an empirical study of 46 major new products, Gort and Klepper (1982) and Klepper and Graddy (1990) distilled three different stages along factors such as output, prices, number of firms, number of entrants, and



exists (*see figure 7*). In the first stage the number of firms grows. The second stage is characterized by a *shake-out*, where the number of firms decline. In their sample, Klepper and Graddy (1990) find that relatively to the peak number of firms, on average 52% and in some industries more than

80% of firms disappear. The third stage is marked by a more stable number of firms. In all three stages output grows and prices fall, albeit at a decreasing percentage rate through time.

In the first stage of the industry life cycle hypothesized by Klepper and Graddy (1990), they find that, according to the fluid state depicted by Clark (1985), the greatest number of fundamental innovations occur and these break-throughs are disproportionately made by newcomers.

According to WB, a very important lesson of the industry life cycle is that picking an over-performing company or even a survivor at an early stage is tremendously difficult. Even if new products and production processes lead to economic development and to more material prosperity, growth industries are inherently unstable and difficult to forecast:

If you'd look at the 1930s, nobody could have predicted how much the automobile and airplane would transform the world. There were 2000 car companies, but now only 3 left in the US and they are hanging on barely. It was tremendous for society, but horrible for investors. Investors would have had to not only identify the right companies, but also identify the right time. The net wealth creation in airlines since Orville Wright has been next to zero. If a capitalist had been at Kitty Hawk and shot him down, it would have done us a huge favor. Or look at TV manufacturers. There are hundreds of millions of TV's, RCA & GE used to produce them, but now there are no American manufacturers left. (Buffett, 2008)

Numerous other examples exist, where the shake-out phase was extremely severe and only a handful of companies survived.

During 1956 until 1990, when the rigid disk drive industry matured from a research project in the San Jose laboratories of IBM, Inc. to a multi-billion dollar industry, 109 of the 138 entrants disappeared (Christensen, 1993). The same destiny did befall to the majority of entrants into the computerized tomography scanner market, where after a decade only 5 or 6 out of nearly 30 companies survived. Including on the list of dropouts, were such prominent names as Pfizer, Searle or industry pioneer EMI (Aaker & Day,

1986). Another example, mentioned by WB, is the television industry: The number of U.S. producers reached 89 in 1951, now none of them are left (Klepper, 1997).

Barney (1991) argues that a major threat to sustainable competitive advantage are unanticipated “structural revolutions in an industry – called ‘Schumpeterian Shocks’” (p. 102). These changes in technology can undermine previously relevant strategic resources. Therefore WB (2007) shuns unstable industries:

Our criterion of 'enduring' causes us to rule out companies in industries prone to rapid and continuous change. Though capitalism's 'creative destruction' is highly beneficial for society, it precludes investment certainty. A moat that must be continuously rebuilt will eventually be no moat at all. (p. 5)

As emphasized in Schumpeter's early work, newcomers often spearhead new developments in the early stage of industry evolution. Scholars have found several causes for this phenomenon.

Gilbert and Newberry (1982) and Reinganum (1983) find that incumbents have less incentive to invest when technological changes are radical rather than incremental, because of the risk of reducing sales of existing products. Cooper and Schendel (1976), as well as Foster (1986), have found that companies often intensify their improvement efforts in the old technology currently used by their customers when faced by the threat of new technologies. Christensen and Bower (1996) in a study of the world disk drive industry, argue that the inappropriate resource allocation of incumbent firms is due to the fact that initially, the new technology can only be sold to new customers in an emerging market segment; but the influence of traditional customers' needs and demands inhibits a firm's organization to allocate adequate resources to the new technology.

Adner and Snow (2009) put this into perspective by arguing that companies have sometimes consciously missed out new technologies. New technologies “reveal significant underlying heterogeneity in the old technology's broader demand environment” (p. 1) and this in turn creates

market segments where the old technology can be sold. For example Pelikan and Waterman still produce fountain pens even after the invention of the ball point pen; or Continental still produce piston aircraft engines, long after the emergence of turbine engines (Adner & Snow, 2009).

Hence the inability to strategically and organizationally adapt to new technologies can be a source of trouble. In “The Dynamics of Standing Still: Firestone Tire & Rubber And The Radial Revolution” Donald N. Sull (1999) depicts how one of the most successful American tire companies teetered on the brink of bankruptcy due to “managers' existing strategic frames and values, and the company's processes and longstanding relationships with customers and employees” (p. 430). WB labels this problem the *institutional imperative*.

My most surprising discovery: the overwhelming importance in business of an unseen force that we might call "the institutional imperative." In business school, I was given no hint of the imperative's existence and I did not intuitively understand it when I entered the business world. I thought then that decent, intelligent, and experienced managers would automatically make rational business decisions. But I learned over time that that isn't so. Instead, rationality frequently wilts when the institutional imperative comes into play. (Buffett, 1989)

Nonetheless, even with rationally managed organizations, radical technological change can cause serious challenges. As established companies have forged specific capabilities, procedures, and routines during times of incremental technological change, Tushman and Anderson (1986) argue that they are less flexible during periods of radical change. Core competencies can become “core rigidities” (Leonard-Barton, 1992), leading to products of incumbents that are introduced later than and/or technically outclassed by those developed by newcomers.

This has been observed among others for typesetters (Tripsas, 1997), electronic calculators (Majumdar, 1982), reduced instruction set computer technologies (Afuah, 1994), and the semiconductor photolithographic alignment equipment industry (Henderson & Clark, 1990).

The fluid state of industry evolution, which is accompanied by new technologies and high-growth markets are not only full of opportunities but also threats. The prospect of high sales growth attracts many entrants, although often the market can't support them, leading to a shake-out phase. Also, potential survivors are difficult to detect since “key success factors or technologies change” (Aaker & Day, 1986, p. 419).

This is in line with arguments made by BG to not invest in growth-stocks (Graham & Zweig, 2003, p. 116) and by WB to not to invest in rapidly changing businesses environments (Buffett, 2007, p. 5).

Even though early market leaders were sometimes challenged by technological changes or foreign competition, Alfred DuPont Chandler, Jr., a graduate of Harvard College and later professor of business history at Harvard Business School, noticed that they sustained their position longer than economic theory would forebode (Teece, 1993).

Innovations made by newcomers don't always constitute a threat to incumbents. Companies can possess certain assets that shield them from the threat of new technologies: Teece (1986) determines *complementary assets*, such as “specialized manufacturing capability, access to distribution channels, service networks and complementary technologies” (Tripsas, 1997, p. 122), as assets that essentially enable a company to secure the value of its product.

For the medical diagnostic imaging and for the typesetter industry, Mitchell (1989) and Tripsas (1997) respectively found that even when the newcomers develop technologically superior products, the sales/service relationships of established leaders constitute barriers to entry. Other examples where the innovator lost to the imitator are RC Cola, which invented Diet cola and ultimately lost the fight against Coca-Cola and Pepsi. Or DeHavilland, which invented the commercial jet, lost against Boeing (Teece, 1986).

Of course even complementary assets can become obsolete, as was the case in the transition from electromechanical to electronic calculators:

Sales/service relationships became unimportant as the reliability of calculators increased, rendering office equipment dealers a possible distribution alternative (Majumdar, 1982).

Grant (1991) states that consumer brands and corporate reputation, in a time where “technological change is shortening the useful life-spans of most capital equipment and technological resources” (p. 124), seem to be the most durable and less costly competitive advantage to replace.

Further, Agarwal and Gort (2002) find that technology-intensive industries have lower survival probabilities for firms. Furthermore, Reed and Defillippi (1990) suggest that a “gradually evolving industry environment” (p. 94) makes barriers to imitation more valuable. This corresponds to WB line of argumentation:

Experience, however, indicates that the best business returns are usually achieved by companies that are doing something quite similar today to what they were doing five or ten years ago. That is no argument for managerial complacency. Businesses always have opportunities to improve service, product lines, manufacturing techniques, and the like, and obviously these opportunities should be seized. But a business that constantly encounters major change also encounters many chances for major error. Furthermore, economic terrain that is forever shifting violently is ground on which it is difficult to build a fortress-like business franchise. Such a franchise is usually the key to sustained high returns. (Buffett, 1987, p. 13)

Confirming WB's statement, Mueller (1986) finds that industries with high growth rates and rapid change in concentration levels have higher leadership turnover rates than slow-growing industries marked by stable concentration levels.

Industries tend to evolve through different stages. The birth phase is often characterized by many entrants, radical innovations, volatile market

shares and an increasing number of competing firms. As the industry matures, products and companies become more entrenched, innovation tends to be less radical and more focused on process optimization. Market shares also tend to become more stable. During this transition from the fluid to the specific state many companies that can't compete leave the market. Surviving companies protect their slice of the cake against newcomers through their ownership of complementary assets, such as distribution channels or corporate reputation.

3.3.5 SUMMARY

Besides buying at a good price, WB and PF, by focusing more on qualitative factors, aim to buy the *right company*. The right company is a profitable business. However, a good business isn't simply one that achieves record earnings each year, since “an earn-more-by-putting-up-more record is no great managerial achievement” (Buffett, 1985)¹³. A great business has to earn a good return on its invested capital for a sustained time by having competitive advantage.

For the classical, the neoclassical or the Austrian school of economics, above-normal profits are either non-existent or temporary. Contrary to this however, studies have shown that inter- and intra-industry profitability differences do subsist. The literature on the persistence of profits has proved in numerous studies that companies with superior economic performance do exist.

Competitive advantage constitutes the *moat* around the *valuable castles*. WB's distinction between more and less promising industries as well as between low-cost and differentiation strategies can be found in the positioning school of strategic management, which dates back to Sun Tzu's writings on military strategy (Mintzberg, Ahlstrand, & Lampel, 1999). More recent work can be found in IO theories and in Micheal Porter's work on competitive advantage.

¹³ With positive interest rates and no drawings, even a bank account will produce record profits each year.

The RBV focuses on internal strength and weaknesses and on the characteristics that a firm's internal resource should have in order to create sustainable competitive advantage. WB's thoughts on durable, non-imitable or path-dependent resources, such as brand image and consumer reputation, are close connection with this concept.

Technology and industry evolution have a major impact on the creation of sustainable competitive advantage. Industries, before they mature, are often characterized by many entrants, radical innovations, volatile market shares and an increasing number of competing firms. Eventually products and companies become more entrenched, innovation less radical and more focused on process optimization, and market shares more stable. The ownership of complementary assets, such as distribution channels or corporate reputation, create additional barriers against possible competitive assaults. Nevertheless, companies, due to managerial incompetence or social change are still at risk of losing their competitive advantage.

Both WB and PF search for sustainable competitive advantages that create superior economic performance. However, unlike WB, PF only searches for growth stocks. Even if some companies do have dynamic capabilities (Teece, Pisano, & Shuen, 1997) and organizational cultures (Peters & Waterman, 1982) that shield them from technological change, such as Motorola (which PF owned for more than 25 years) (Fisher, 2003), WB avoids fast changing industries.

4 ANALYSIS OF WB'S INVESTMENTS AND BACKTESTING OF STOCK PICKING FORMULA

4.1 INTRODUCTION

After studying WB's, BG's and PF's investment philosophies and stock selection criteria, after having put them in context with academic findings, the next chapter covers the empirical study.

In a first part, to answer the questions concerning the consistency between WB's statements and actual investment actions, data covering his equity investments is collected. In a second part, this data is used to construct a stock picking formula.

4.2 ANALYSIS OF WB'S MAJOR STOCK MARKET INVESTMENTS

4.2.1 INTRODUCTION

WB successfully managed for 12 years what today would be called a hedge fund, and during that time acquired a majority stake in BH. In 1965 he was appointed Chairman of the board and later became Chief Executive Officer. At that time, nearly all the capital of BH was tied up in the subnormal profitable textile business.

In the coming years and decades, WB allocated capital away from BH's traditional business field, into more promising endeavors. Very early on WB concentrated his investments into the insurance industry and during the 1970's put together a diverse aggregation of insurance companies. Even today, as BH became a widely diversified company, property and casualty insurance remains a major business segment.

Managing a hedge fund and a insurance company are certainly two different tasks, but there are also similarities. In both businesses the management of clients money is involved.

For a hedge fund the reason is straightforward: it invests clients savings and earns fees. An insurance company manages the *float*. Float arises, because insurance premiums are paid upfront and loss events (such as car accidents or hurricane destruction) come up later and payment of claims occur even later (Buffett, 2005). If it has an underwriting profit all the gains from the investment of the float flow directly to the insurance company.

Thus the investment pool WB has to manage, does not only become larger, because subsidiaries and other investments send dividends to the holding company, but also because the float grows larger and larger. Actually it grew from \$20 million in 1967 to \$49 billion in 2005 (Buffet, 2005).

Besides investments into fixed-income securities and the purchase of

privately held companies, WB also purchased shares of publicly traded companies. The latter are the subject of this analysis.

The first two sections of this chapter will deal with the data set that is being used and the variables that are being studied. Then WB investments will be analyzed to give an overview over aspects such as growth, profitability or market share. Then in the last two parts I will use these findings to construct a stock selection approach

4.2.2 THE DATA SET

The sources for collecting BH's stock market investments are filings required by the Security and Exchange Commission, BH's annual reports, WB's Letters to Berkshire Shareholders and news releases from BH.

Security and Exchange Commission forms that convey information about stock market holdings include the following:

- 10K: Annual report
- SC 13D: Form required to be filed if a person or group of persons hold more than 5% of a voting class of a company's equity securities
- 13F: Quarterly holdings report filed by institutional managers
- SC 13G: Similar to SC 13D, but less information requirements
- 3,4,5: Forms required to be filed by corporate insiders and/or persons owning more than 10% revealing their ownership level.

The trouble with these forms is that the purchase price data misses. Fortunately this data can be found for a selected group of companies on WB's Letters to Berkshire Shareholders.

These letters are published yearly since 1971, when WB became chairman of the board of BH. And since 1977, they contain a list summarizing the

equity holdings as of the end of the business year. The list contains information about companies names, the number of shares owned, the cost and the market value of those shares. The criteria for inclusion of a given investment in these letters is the market value. In the letter covering the business-year 1976 all “equity holdings with a market value of over \$3 million” (Buffett, 1976) were listed. In 2008 the threshold was raised to \$500 million per investment position (Buffett, 2008). Thus not all equity holdings for a given year are included.

As mentioned at the beginning of this thesis, BH has made more than 335 equity investments. But because of the aforementioned lack of purchase cost data, we limit our analysis to a small sample of different equity investments. On one hand these are equity holdings covered by WB's Letters to Berkshire shareholders and on the other hand public companies that were taken private by BH. For the latter offer prices are found in the respective press release on BH's internet homepage.

Since “the top five holdings [of BH's portfolio account on average for] 73% of the portfolio value” (Martin & Puthenpurackal, 2008) and the list on WB's Letters to Berkshire shareholders covers on average more than 5 investment positions, the data sample should be satisfactorily.

Securities obtained because of a merger, an acquisition or a spin-off are not included in the study. This is for example the case for Procter&Gamble, since those shares were obtained by BH because of Procter&Gamble's acquisition of Gillette in 2005. Or for example shares of Ameriprise Financial, because it is a spin-out of American Express also in 2005. The reason is that we only want to include companies that were chosen directly by WB as investment targets.

The investments in M&T Bank, Gillette, American Express, GEICO and Alcoa have all been made, either fully or partially, by purchasing hybrid securities. These securities had both equity and debt features.

The initial investments in American Express, GEICO and Alcoa through hybrid securities are accompanied by common stock purchases. These stock acquisitions are used for our study.

Investments solely through preferred shares in M&T Bank and Gillette have known conversion dates. The common stock closing price at the day of conversion is used as purchase price.

After having defined the investments to analyze, the next step is to collect financial data. I used the "Industrial Annual" file from the COMPUSTAT database, which is composed of 26,945 different companies and covering years from 1950 to 2006 ("Compustat North America"). Historical information about the companies is collected from their respective annual reports or from the International Directory of Company Histories. Finally news articles relating to company events are searched in ABI/Proquest and LexisNexis Academic databases. If the purchase year of an investment was for example 1980, we assumed that financial results for 1979 were available. For some investments not all data was obtainable, so the data set is not complete.

4.2.3 THE VARIABLES

In this section the variables that are being studied will be presented (*see table 6*).

Sales Growth measures the growth in sales during the last ten years.

Capital growth measures the growth in capital during the last ten years.

Earnings growth measures the growth in earnings during the last ten years.

Payout ratio measures the share of distributed earnings during the last ten years.

Interest coverage measures the how many times interest expenses are covered by EBIT

Market share measures the share of sales a company has in a given industry (only calculated if the industry has more than 3 members).

Market share change measures the percentage of market share gain or loss in the last ten years.

Market share stability measures the sum of market share changes in an industry during the last ten years.

ROC deviation measures the variability of return on invested capital rates during the last ten years.

ROE deviation measures the variability of return on equity rates during the last ten years.

Negative earnings is the sum of years with negative earnings during the last ten years.

ROE measures the average return on equity during the last ten years.

ROC measures the average return on invested capital during the last ten years.

Operating margin measures the share of sales a company earns as profits before interest and tax expenses.

SGA margin measures the share of sales a company spends for sales, general and administrative expenses.

Gross margin measures the share of sales a company earns after paying cost of goods sold.

Asset turnover measures the amount of sale achieved per capital invested.

P/E measures stock price in relation to earnings per share.

P/E-10 measures the stock price in relation to average earnings per share during the last ten years.

PE/PE-average measures the change in average P/E during the last ten years.

P/B measures the stock price in relation to book per share

The DVI indicator shows the degree of under- or overpricing based on the Gordon growth model developed by Gordon and Shapiro in 1956 (CFA 295), which calculates the value of a company based on three inputs: the

required rate of return (r), growth (g) and the current dividend amount (D).

$$V_o = \frac{D_1}{r - g}$$

The formula is:

$$Growth = (1 - Payout) * ROE$$

The dividend model is suited to value companies that are in a stable growth phase and pay out dividends, in line with the stock selection criterion that are used in this study.

The growth rate is calculated using the average payout ratio and the average return on equity of the last ten years.

The average instead of the current rates are used in agreement with BG's advice (*refer to section 2.2.2*).

$$DVI = \frac{V_o}{Price_0}$$

The DVI is calculated using a required rate of return (r) of 15%. It is higher than the average historical return on stocks of 10.2% (Damodaran, 2012) in order to assure an adequate safety margin. The thereby estimated value is compared to the price of a stock.

The MOI is calculated according to the concept BG lays out in the II. He reasons that a stock is cheap if it is “selling for less than the amount of bonds that could safely be issued against its property and earning power” (Graham & Zweig, 2003, p. 513). Thus I calculate the interest expense that an investor would have to pay if he would buy the entire company using only debt. I assume that the interest rate is equal to the Moody BAA rates. This interest cost plus the original interest expense is then compared to the operating profit after depreciation in order to calculate a hypothetical interest coverage ratio.

$$MOI = \frac{(ROC * Invested\ Capital)}{(Market\ capitalization * MoodyBAA) + Interest\ expense}$$

The aforementioned past return deviation measures (ROC and ROE deviation) are added, because even though historical profitability is a good estimator for future profitability (*see figure 8*), stability has a major impact on the forecast accuracy.

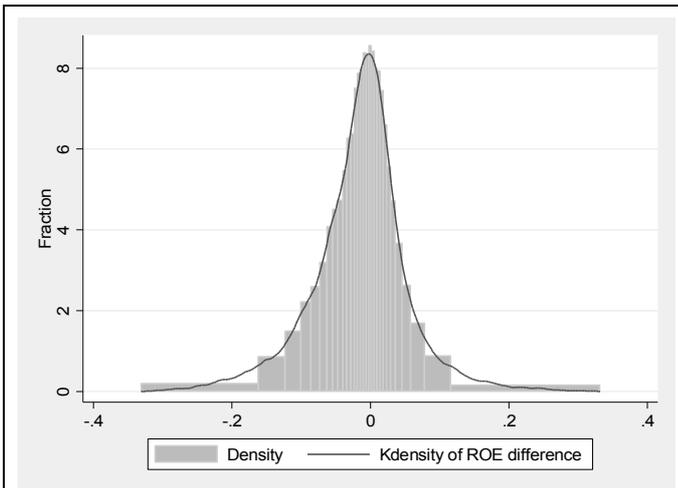


Figure 8. Distribution of ROE forecast residuals using historical average ROE as predictor

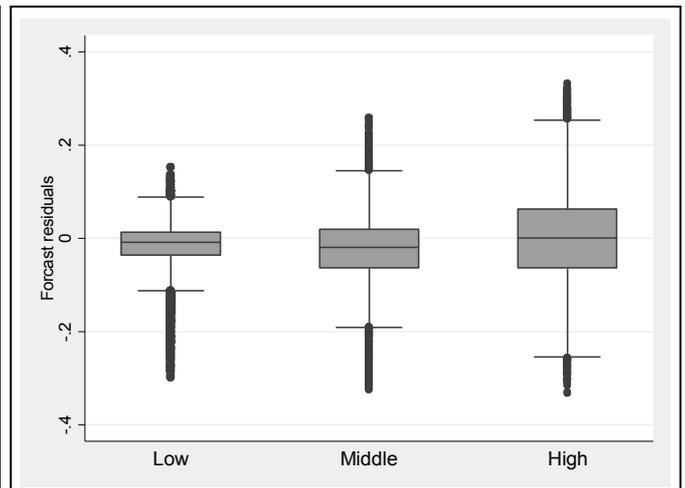


Figure 9. Box plot of Forecast Errors, grouped by past ROE fluctuation

When we rank companies according to their past earnings steadiness, we can clearly see that average ROE becomes a better predictor the less it fluctuated in the past (*see figure 9*). Thus even though outliers still exist, the risk of having future returns that are significantly less than past one's is becoming smaller when an investor concentrates his endeavors on *statistically stable* companies.

4.2.4 CHARACTERISTICS OF WARREN BUFFETT'S

INVESTMENTS

In this part I will study the sample of WB investments. The analysis is structured in eight parts, each of them illuminating an investment aspect. The different sections are the following: growth, distribution to shareholders, financial responsibility, market share, stability of returns, profitability, operating performance and pricing.

For all companies in the data set the metrics presented above are calculated. Then, given each statistic, depending how they performed, companies are assigned to ten different groups with equal number of companies (deciles)¹⁴. This procedure is performed on three levels: a company is measured against all companies of the same year, then against all companies of the same year and industry, and finally the industry to which a company belongs to is compared to other industries of the same year. Firms in the data set are assigned to different industries using four digit SIC codes. Industry metrics are calculated by taking the median of member companies if there are at least three members. The median is chosen instead of the mean in order to give less weight to outlying observations.

With this data, histograms are constructed, where each histogram shows the fraction of WB investments belonging to a given decile, helping to detect if the sample companies show similar characteristics along the variables studied.

GROWTH

BG writes that investors should stay away from growth companies, since their valuation are often too lofty (*refer to section 2.2.2*). As noted in section 3.2.4 these valuation errors may be due to representativeness.

In the same tone WB writes that picking the right company in a growth industry is tremendously difficult, given their inherent economic instability (*refer to section 3.3.4*). This contrasts with PH investment philosophy of picking companies with high earnings growth potential (*refer to section 2.3.2*).

Even though sales, capital or earnings growth rates of the sample companies show no clear tendency at first glance, there are some modest hints. First, when looking at industry growth rates, the histograms are skewed to the right, which might indicate that WB prefers growing industries. But at the same time quasi no company's industry belongs to the tenth decile, the highest growing group. This could be interpreted as a sign that he keeps

¹⁴ Deciles are similar to quantiles, but they differ from each-other, since deciles divide a sample into ten equally numerous subsets, whereas quantiles are composed of four groups.

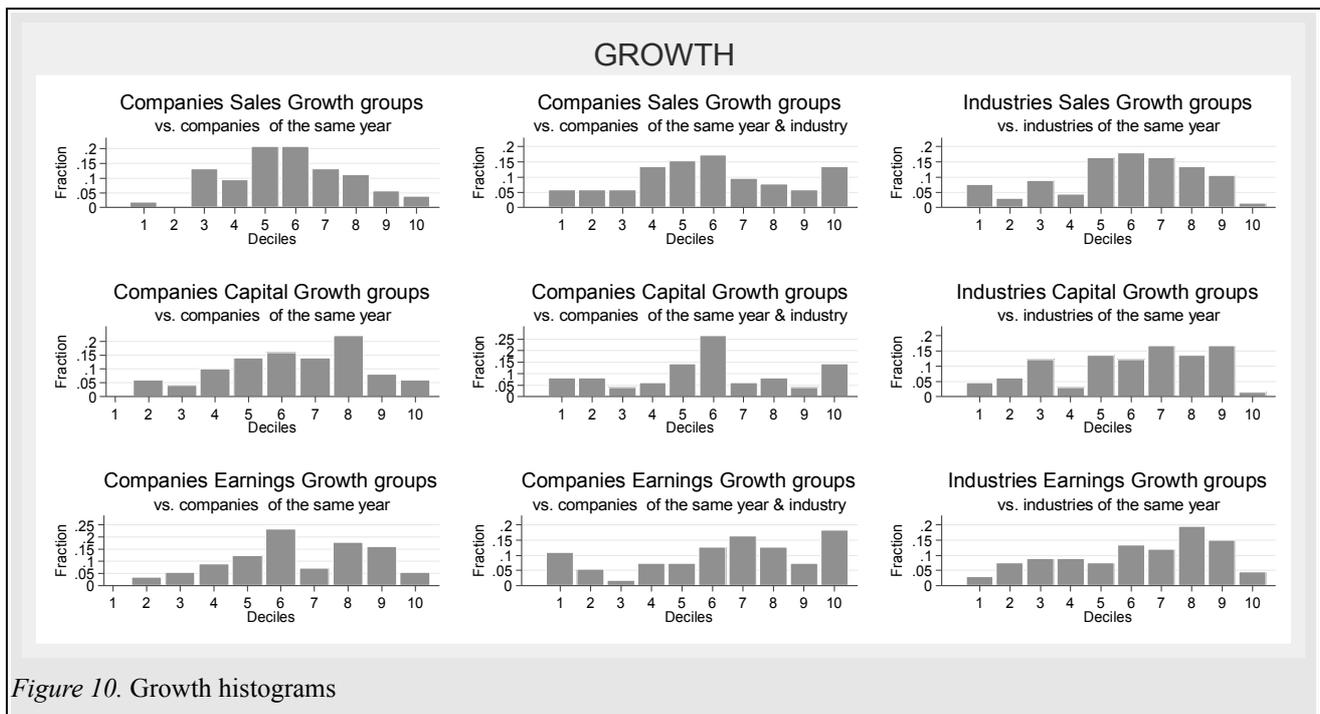


Figure 10. Growth histograms

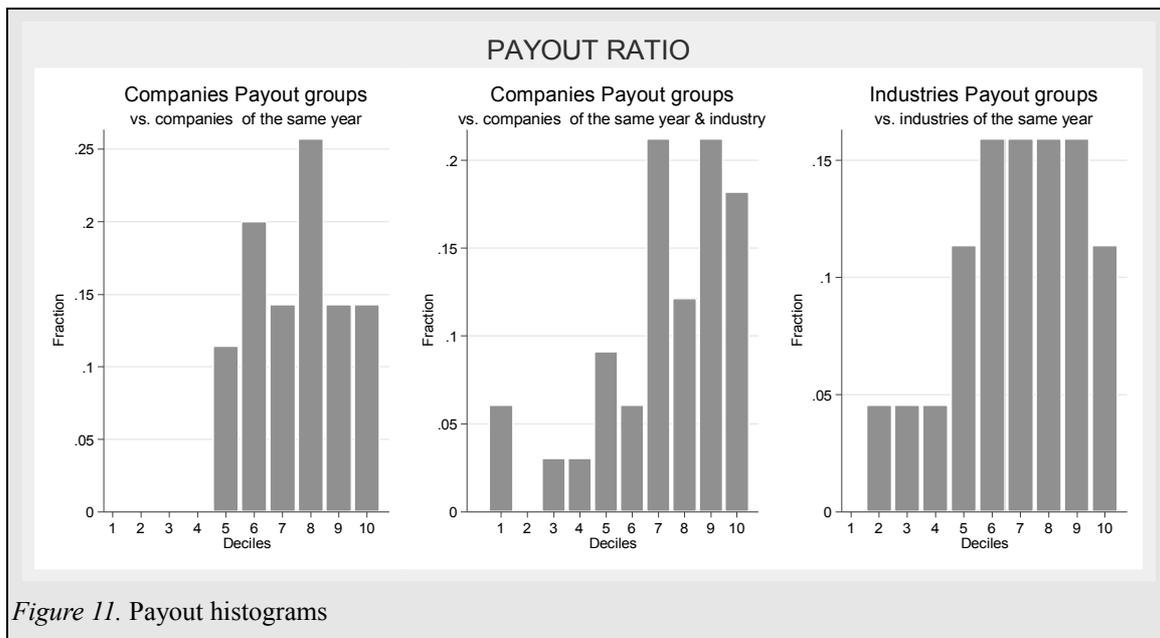
away from the cigar but investments favored by him in the past and focusing his investments more toward promising companies, but at the same time following BG advice of not investing in the fastest growing and thus riskiest companies (refer to section 2.2.1 and 2.4.1). Of course there are exceptions, such as high growing companies like *ConocoPhillips* (10 year average revenue growth of 28%) or *HCA* (38%) and slow growing firms as *Anheuser-Busch* (2%) or *Russell* (2%).

The earnings growth rates supports this interpretation, and also indicates that WB values earnings growth more than sales or capital growth, since the earnings growth histogram is more skewed toward the right side. This could be sign that WB invests in companies that improve profit margins or asset turnover rates.

Connected with growth rates are distribution to shareholders, since most of the time growth necessitates capital investments, which are often financed with undistributed profits.

DISTRIBUTION TO SHAREHOLDERS

BG valued dividend payments more than PF. WB simply stated that if cash can not be invested profitable, then it should be returned to owners



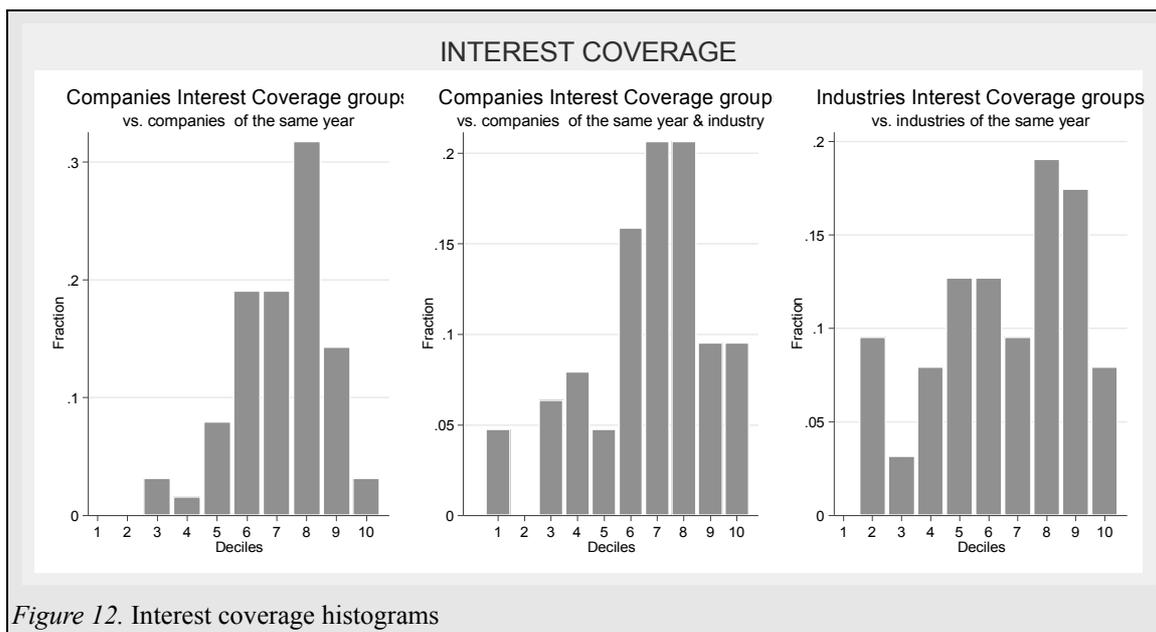
(refer to section 2.4). Payout ratios can thus show how reluctant management is to distribute cash and/or in what stage the industry is. The companies WB invests in distribute a high proportion of their earnings to stockholders either through dividend payments or stock repurchases. Not only do they have high payout ratios compared to all firms in the data set, but also to peer companies (*Coca-Cola, H&R Block*). The fact that the companies operate in industries where dividends and stock repurchases are high is another piece of evidence that WB invests in mature industries (*Food and Kindred Products, Malt Beverages or Paints, Varnishes & Lacquers*). Additionally the presence of dividends facilitates and adds more reliability to the valuation process.

FINANCIAL STRENGTH

WB, BG and PF have stated that they are searching for companies which are not using excessive leverage.

The data confirms this attitude toward risk, since more than 80% of his investments have above average interest coverage ratios. This is due to the fact that WB chooses financially strong companies when compared to peer companies¹⁵.

¹⁵ The interest coverage is a good measure of financial strength, since it indirectly takes into account how efficiently companies are putting their capital to work.



MARKET SHARE AND STABILITY

One often cited aspect of WB stock selection is his focus on successful companies with the potential to earn sustainable above-average profits. As shown in section 3.3.2 high market shares and the potential to earn long-run profits above the norm are often linked. Apart from high market shares, the degree of stability of market shares within an industry carries information about the industry stage, and thus about the degree of competition (*see section 3.3.3*).

The investments in the sample show unambiguous tendency of having high market shares in their industry. More than 60% of companies belong to the top two deciles. These are familiar names such as *Interpublic Group*, *Times Mirror* or *Wal-Mart*. Even when market shares are compared to all other companies - not only to competitors, they are higher than average.

WB has also a disposition of investing in companies with stable market shares. The histogram dealing with industry market fluctuation indicates that WB also invests in very unstable industries, which is something not expected¹⁶.

¹⁶ The measure of market share change should be taken with caution, since IPO and delistings of companies can strongly affect it, even when no real changes took place.

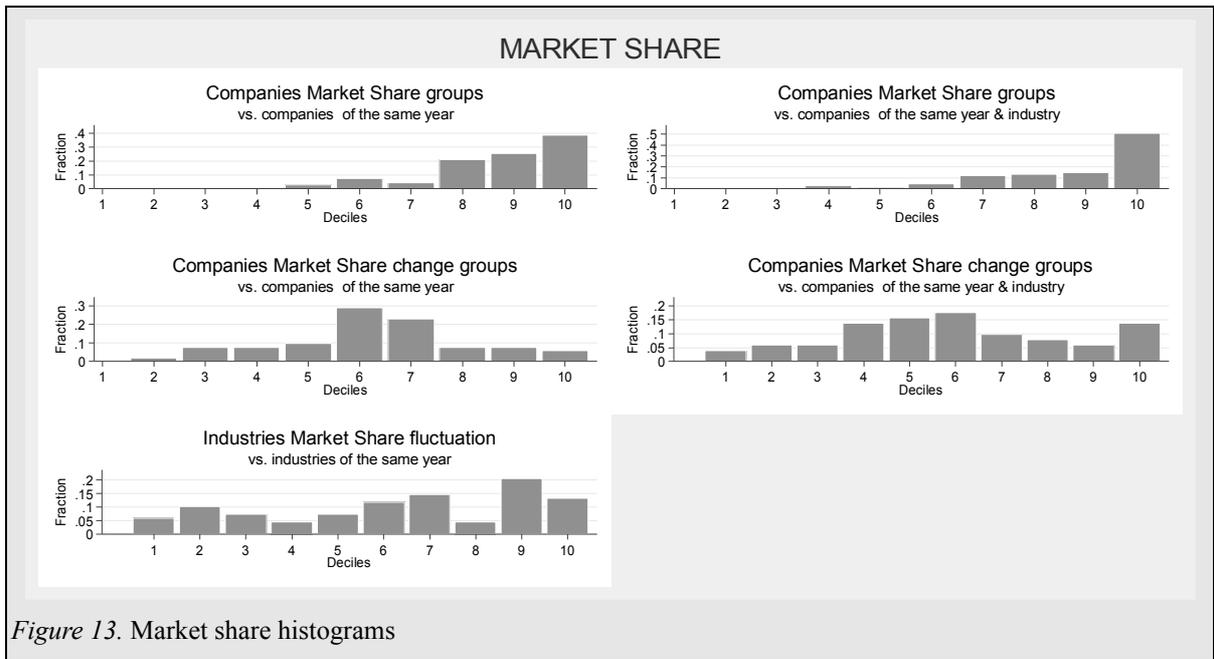


Figure 13. Market share histograms

STABILITY OF RETURNS

To see whether WB searches for companies that have stable returns on capital or equity I studied the dispersion of returns. There is clear-cut evidence in favor of this hypothesis. This characteristic is most visible when return dispersion of the investments is compared to peer companies. But also when measured against the whole universe of companies or when industries are studied the returns tend to be stable.

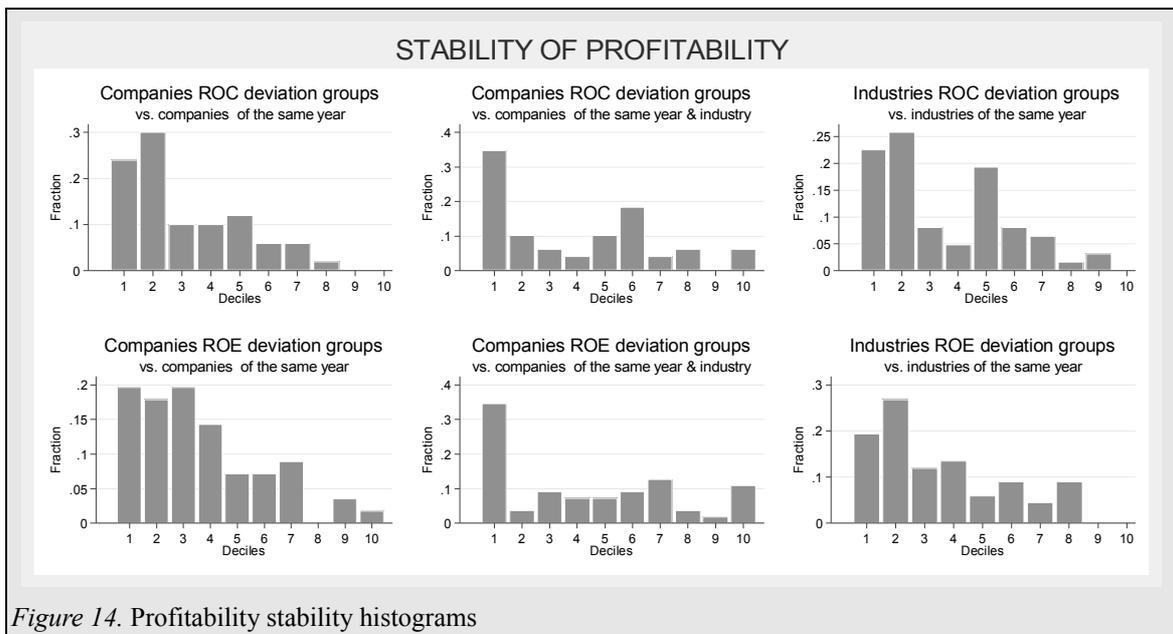
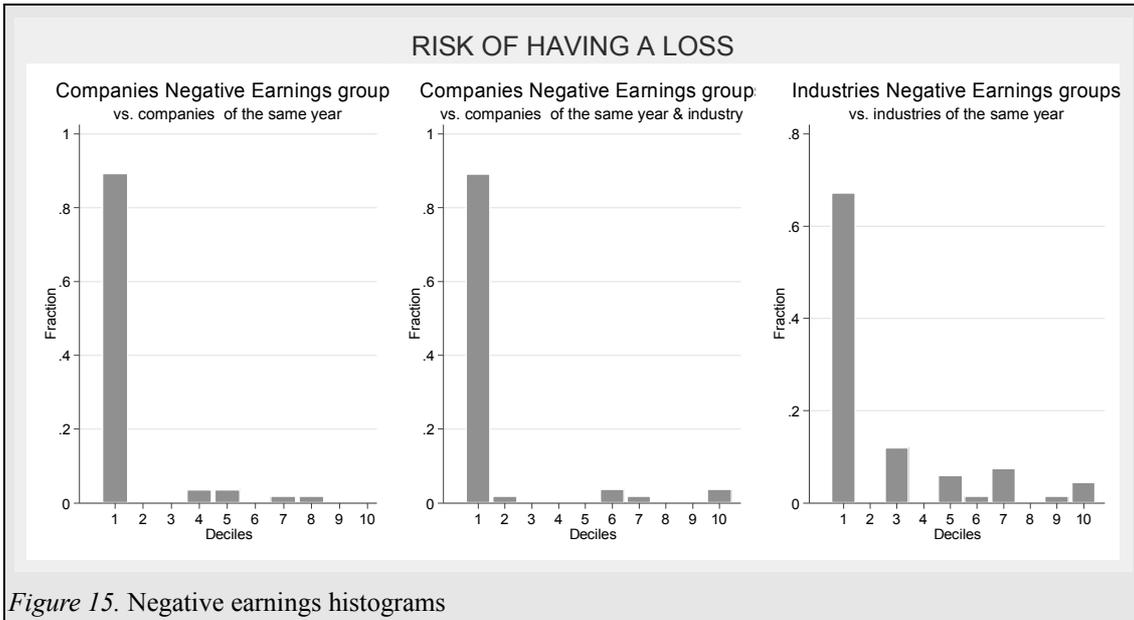


Figure 14. Profitability stability histograms



When measuring stability by a more simple and straightforward way, namely the number of negative earnings during the last ten years, the evidence is as well overwhelming. There is crystal clear evidence that WB shuns companies and industries that had negative earnings in the past. Of course there are exceptions such as *USG*, which WB bought when it was at the brink of bankruptcy due to asbestos related personal injury costs. Another famous case is WB's investment in *GEICO* during 1976, when the auto insurer was forced to sell common and preferred stock to ensure its survival.

PROFITABILITY

WB has often stated that the main requirement a business has to satisfy in order for him to consider an investment, is to use its assets efficiently and have high profitability rates (*refer to section 2.4.2*). It is no surprise to see that most of his investments and their respective industries belong to the above average performing deciles, independently of the return measure or peer group considered. There are companies that operate in top performing industries and are as well performing greatly such as *Dun & Bradstreet (Credit Reporting Agencies)*, but also great companies earning well in below average industries (*Clayton Homes in the Mobile Homes industry*).

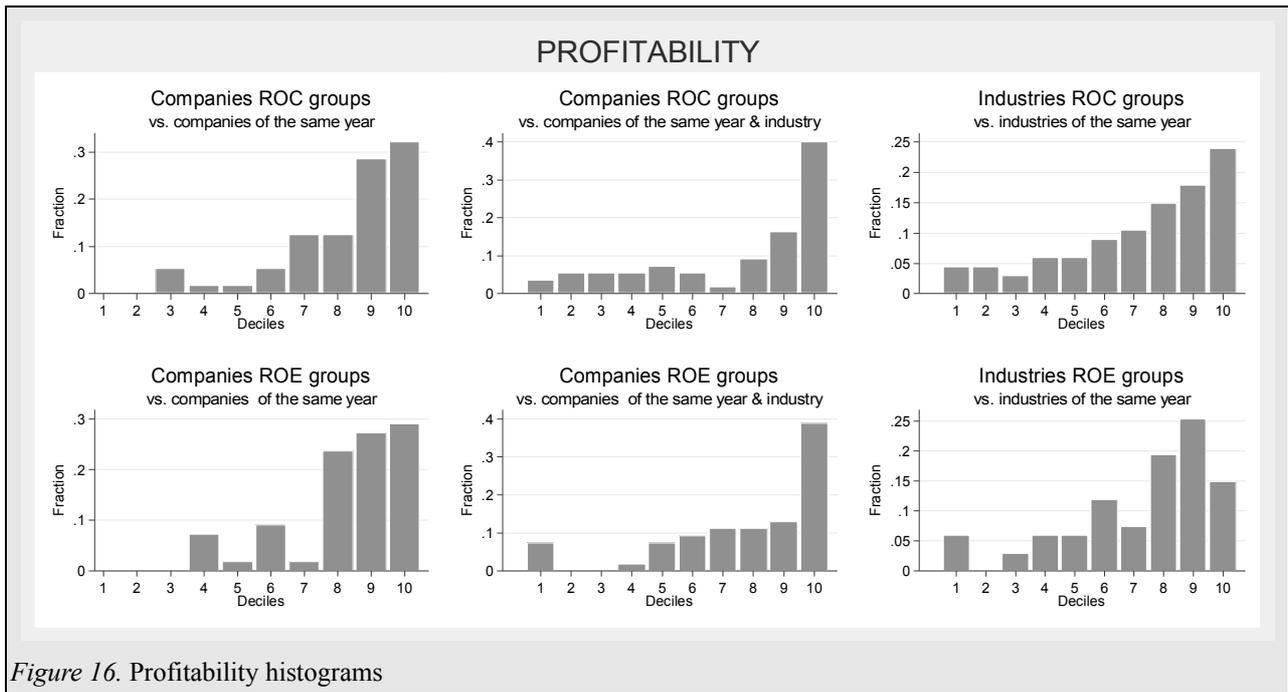
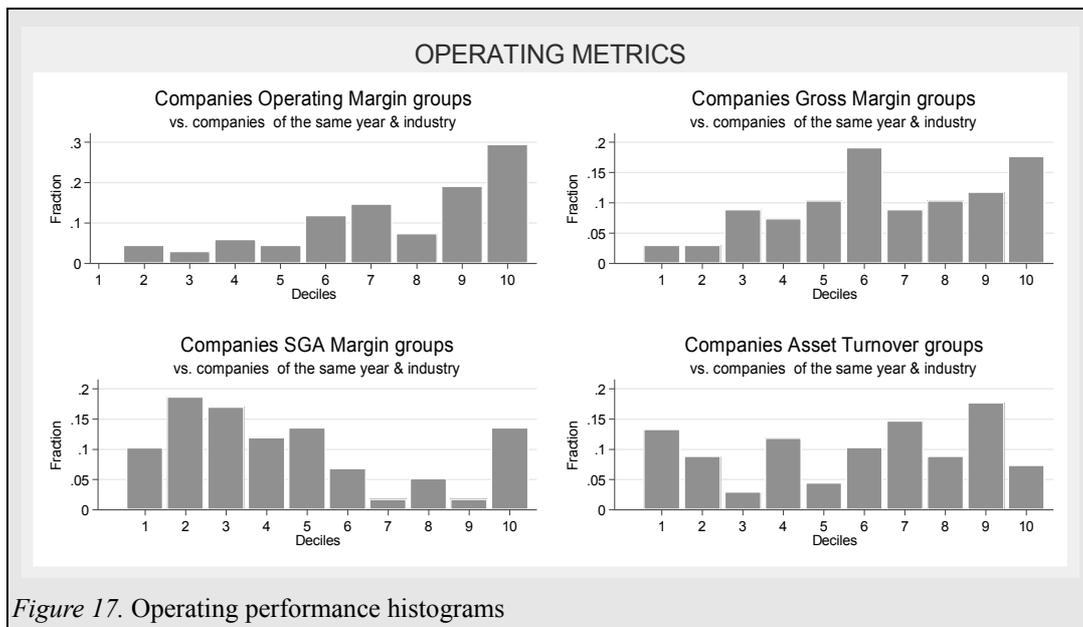


Figure 16. Profitability histograms

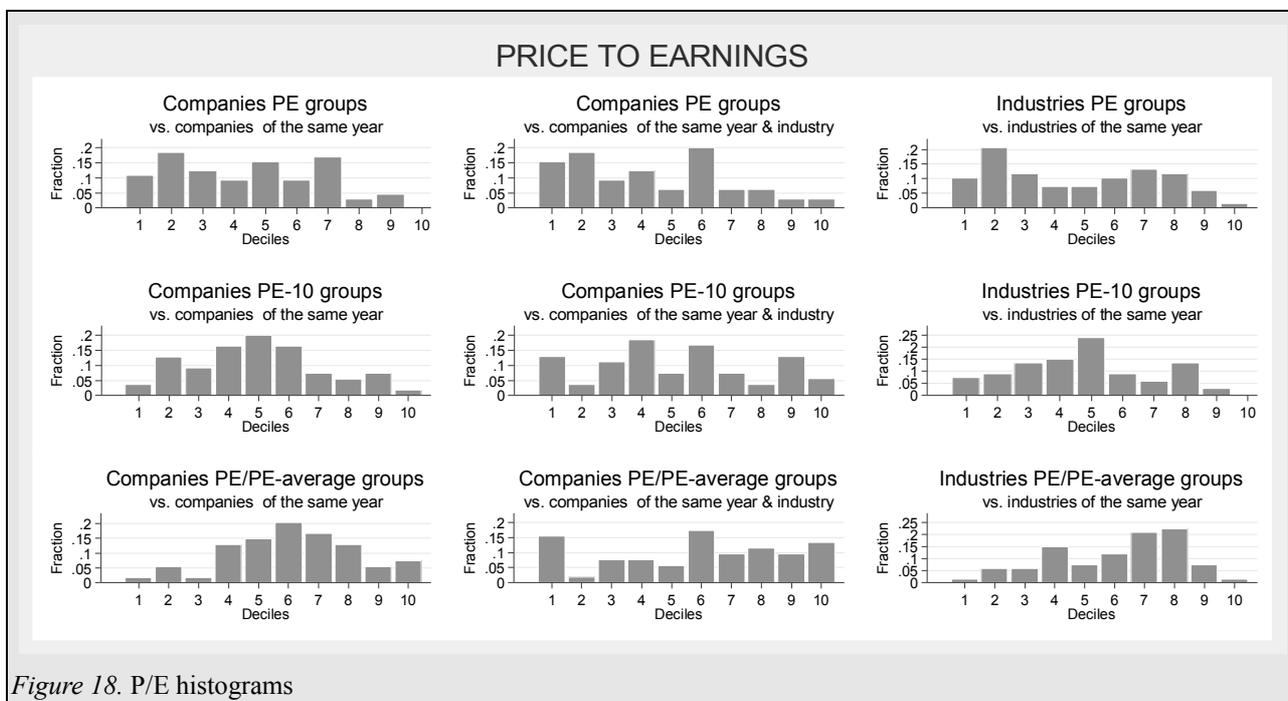
OPERATING PERFORMANCE

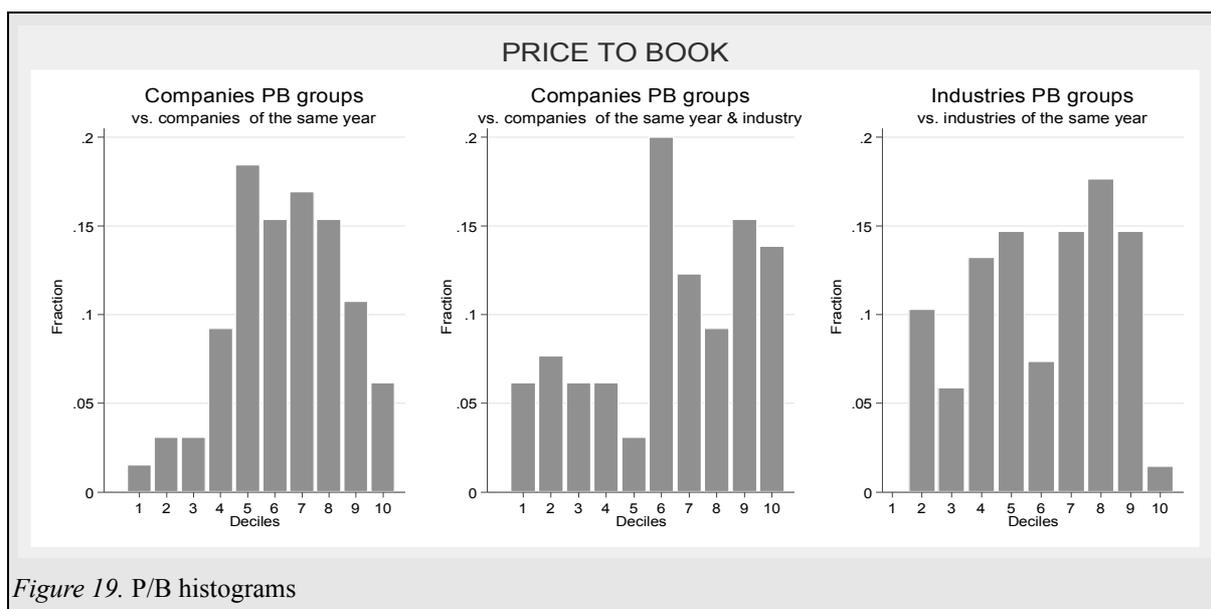
Most firms have better operating performance than their peer companies. This is reflected in the histogram dealing with SGA (selling, general and administrative) expenses, which is skewed to the left (low SGA expenses relative to revenues) and the histograms dealing with operating margins and gross margins, which are skewed to the right. A company that belongs to the top performers when measured by SGA expenses and that has often been cited by WB for its superb management is *Capital Cities*. We can see that margins more than asset turnover rates are responsible for the excellent profitability of WB investments.



PRICING

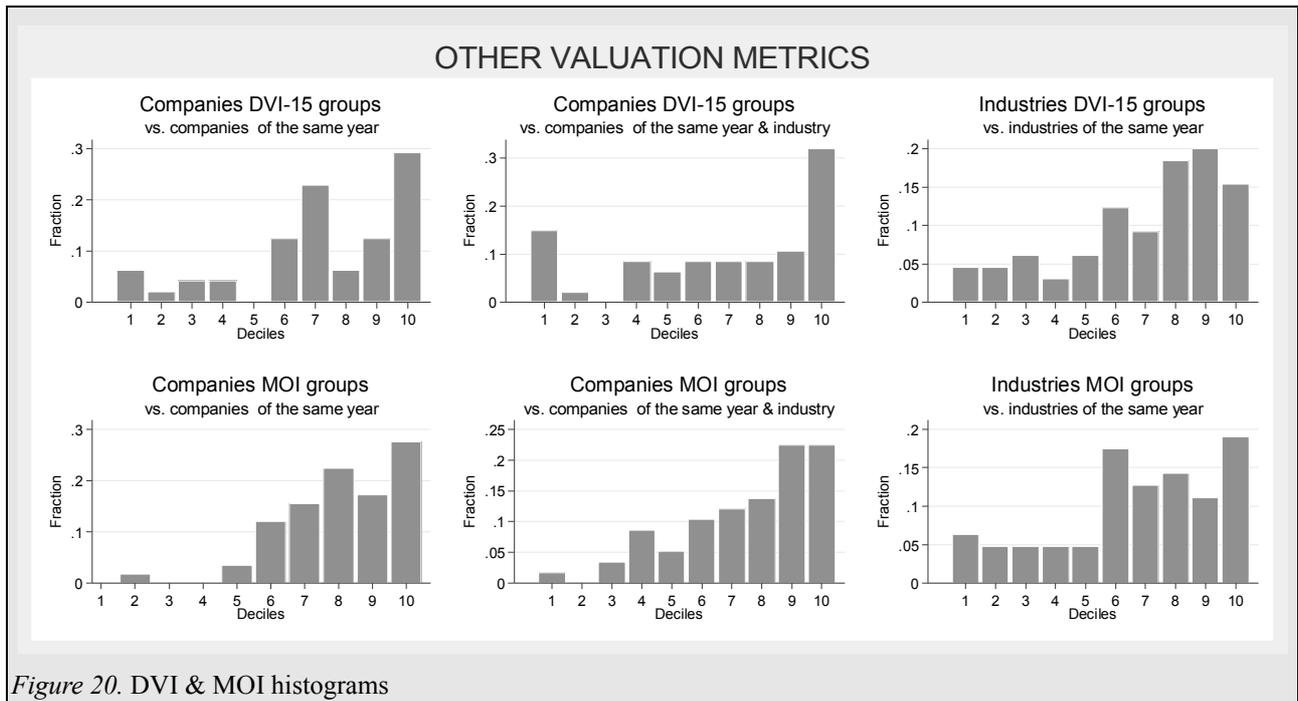
When looking at the P/E, the PE/PE-average or the P/B ratio, it becomes clear that WB doesn't only invest in companies which are cheap. Since his investments show above-average profitability, he also spends more than average per book value acquired. The P/E-10 histograms suggest that WB tendentially favors moderately priced industries.





The final set of valuation metrics are the MOI and the DVI. Both indicate that WB buys cheaply priced companies. This is related to the fact that the MOI favors conservatively financed companies and the DVI favors dividend paying companies.

Summing up, WB invest in companies that are market leaders and have high and stable market shares. They had averagely growing sales and capital, but slightly above average growing earnings. In addition to this, they are conservatively financed and had very low proportion of negative earnings in the past. They have high and stable returns on equity and capital, which is partially due to the low SGA expenses and high operating margins. All those aspects are no surprises, but are in accordance to WB statements. It is unexpected to see that WB invests also in high priced companies when measured by the P/E ratio. And it seems that the MOI and the DVI are better indicators to assess whether a security is a bargain in WB's opinion.



4.2.5 BUILDING A PORTFOLIO

In this section important factors to WB's investment approach are used to build a selection procedure, which identifies stocks with high future returns and low downside risk. The variables used are the companies MARKET SHARE rank, the NEGATIVE YEARS rank, the PAYOUT RATIO rank, past ROC FLUCTUATION rank, the ROC rank, the DVI and the MOI¹⁷.

I choose these variables, because they have been found to be important to WB's stock selection procedure.

I prioritize the valuation metrics MOI and DVI, in order to find statistically cheap companies, the PAYOUT RATIO, the ROC FLUCTUATION, as well as the NEGATIVE EARNINGS variable to find mature and stable companies. The MARKET SHARE and the ROC variable are used to select market leaders.

In a first step they are used to pick out stocks from the COMPUSTAT database in the period 1975 - 2011. Stocks are selected at the beginning of each year. The most recent financial data supposed to be available is that of

¹⁷ Only overall ranks (vs. all companies of the same year) are used. Also the MARKET SHARE rank used is the overall rank, since the companies picked should not only be market leaders, but also have high market shares.

the companies last accounting year ending before October of the selection year.

The selected stocks are then taken to build two portfolios with different allocation restrictions. The average return, the Sharpe-ratio¹⁸, the Sortino-ratio¹⁹, the maximum loss per year and the amount of years with negative returns are compared to those of the S&P500 index.

The exact stock selection criteria are:

- PAYOUT RATIO deciles > 4
- NEGATIVE EARNINGS decile = 1
- ROC FLUCTUATION deciles < 5
- MARKET SHARE deciles > 7
- ROC deciles >6

The cutoff values are chosen, so that at least three quarters of WB's investments fall into each bandwidth.

- DVI > 0.5
- MOI > 1.5

These variables are used in conjunction with the DVI and the MOI, where instead of selecting companies by their rank assignment, absolute values are used, because otherwise the strategy could eventually lead to buying the cheapest companies in a generally overvalued market.²⁰ The cutoff values used are the median values observed for WB investments. Demanding a DVI and a MOI higher than the observed median values, should increase the conservativeness of the stock picking approach.

There are 823 stocks that fulfill the requirements. The average one year

18 The Sharpe-ratio is a measure of performance, which relates average returns to risk incurred. Return is the annual stock price increase plus the dividend yield after subtracting the risk-free rate. Risk is measured by the standard deviation of returns.

19 The Sortino-ratio resembles the Sharpe-ratio, but on one hand the hurdle rate is not the risk-free rate, and on the other hand only returns below that hurdle-rate are taken for the calculation of risk.

20 Rank assignment are constructed by comparing companies in a given year. Thus being a member of the cheapest valuation decile, doesn't necessarily mean that a company is a bargain. It could be that all companies at that point in time were overvalued.

<i>Stock picking criterion</i>						
MOI	DVI-15	Payout decile	ROC fluctuation decile	Negative earnings decile	ROC decile	Marketshare decile
>1.5	0.5	>4	<5	=1	>6	>7

<i>Selected Statistics</i>								
	Return	P/E ratio		P/E-10 ratio		P/B ratio		Marketcap
	1 Year	Values	Rank	Values	Rank	Values	Rank	Rank
Mean	20.3%	8.6	5.4	9.8	5.0	1.4	5.9	8.7
P25	-0.3%	6.3	4	7.2	4	0.9	4	8
Median	14.5%	7.8	5	9.5	5	1.1	6	9
P75	36.1%	9.7	7	11.6	6	1.6	7	10

	Number of stocks selected	Number of negative Returns	Lowest Return
Amount	823	208	-93%

Table 2. Stock selection approach without market share & ROE

return of those stocks is 20% and the median return is 14%. Approximately one quarter has negative returns, with the lowest return being -93%.

The stocks average ranking by the other valuation ratios (P/E, P/E-10 and P/B) and the fact that the companies are all mostly large firms show that the strategy is different from traditional VP portfolios.

To compare the selected stocks to a recognized stock index such as the S&P500, two portfolios with different allocation restrictions are build. Both portfolios restrict the maximum allocation per stock to 20%, the second portfolio additionally restricts the minimum allocation per stock to 5%. Hence, if more then 20 stocks are picked in a given year, the 20 stocks with the highest *DVIxMOI* values are used to build the second portfolio. This is in line with PF's and WB's idea of abstaining from over-diversification. Both portfolios outperform the S&P500, have a lower number of negative return years and higher reward for variability, as indicated by the Sortino ratio²¹ and the Sharpe-ratio (*see table 3*).

When looking at the recent performance, the S&P500 performs better during the 1990's with a ten year average return of 18.8% vs. 11.3% for the stock picking strategy. During the bear market beginning in 2000, the selection approach outperforms the stock market by a wide margin and

²¹ The Sortino ratio is calculated with a 0% hurdle rate

Portfolios / Statistics	Arithmetic mean	Geometric mean	Sharpe ratio	Number of negative Years	Lowest Return	Sortino ratio
Portfolio	17.2%	15.2%	0.55	6	-41.3%	2.4
Portfolio with diversification restriction	18.6%	16.3%	0.56	6	-41.3%	2.6
S&P 500 Index	12.8%	11.5%	0.45	7	-36.6%	1.8

Table 3. Portfolio performance measured vs. S&P500

improves its ten year average return to 12%, whereas the S&P500 drops three years in a row and shows a ten year average return of 11% at the end of 2002. The worse period for the stock selection approach and for the S&P500 is from 1999-2008 with an average return of 7.7% for the two portfolios and 0.7% for the S&P500 (see table 5 in the appendix). Both the Dot-com bust and the Financial Crisis of the late 2000s occurred during this time period. As opposed to the bear market after the Dot-com bubble, where the portfolios achieve positive returns while the S&P500 dropped, during 2008, in the midst of the Financial Crisis, the stocks perform even worse than the S&P500. Still for the three years after the crash, the portfolios show excellent returns and make up for the previous losses.

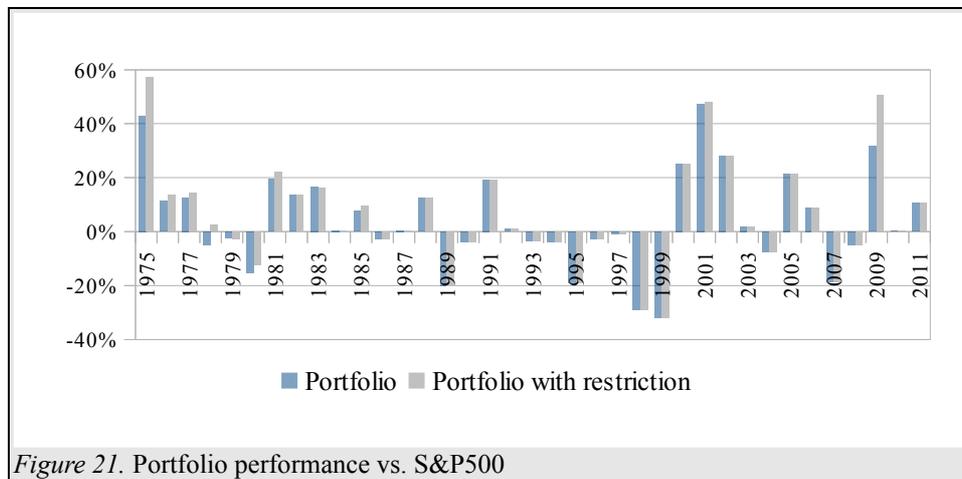


Figure 21. Portfolio performance vs. S&P500

4.2.6 SUMMARY

WB's investment approach is certainly too complex to model it with a few variables, maybe too complex to model it at all. Decades of investment experience, in depth knowledge spanning various classes of businesses, access to arguments and opinions of brilliant managers: one cannot hope to substitute this with easily available information.

An advice emphasized by WB is that an investor should stay in his circle of competence. The same holds for this stock selection approach, which competence is to find statistically cheap companies by focusing on dividend paying, market leading and financially strong companies: attributes that are observable for WB's own investments.

The literature on the VP proved that on aggregate stocks with low P/E or P/B ratios perform better than their counterparts. Thus screening the stock market for cheap companies based on these metrics provides an investor with a set of companies in which he can either invest in, or use as a starting point to do further research. On one hand the results of the screening approach developed in this thesis indicates that the pool of stocks selected also performs satisfactorily when measured against the S&P500, thus providing an investor with a further tool to locate promising investment opportunities. The greatest difference to previous VP portfolios is that the companies picked here are market leaders and thus mostly large companies. Another difference is the employment of two valuation metrics not used in the VP literature: the MOI and the DVI. On the other side studying the investments of other successful investors, such as Peter Lynch or Seth Klarman, might be a fertile ground for further stock screening approaches.

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APPENDIX

Profitability		Stability		Market position		Valuation		Growth	
Metric	Formula	Metric	Formula	Metric	Formula	Metric	Formula	Metric	Formula
Average return on capital last 10 years	$\frac{\sum_{t=9}^t EBIT}{\sum_{t=9}^t Invested\ capital}$	Coefficient of variation of return on capital	$\frac{Standard\ deviation\ (ROC)}{mean\ (ROC)}$	Market share	$\frac{Sales_t}{\sum_{company=1}^j Sales_{jt}}$	P/E	$\frac{Average\ price_t}{Earnings\ per\ share_t}$	Average capital growth last 10 years	$\left(\frac{Invested\ Capital_t}{Invested\ Capital_{t-5}}\right)^{(1/10)}$
Average return on equity last 10 years	$\frac{\sum_{t=9}^t Income\ before\ extraordinary\ items}{\sum_{t=9}^t Common\ equity}$	Coefficient of variation of return on equity	$\frac{Standard\ deviation\ (ROE)}{mean\ (ROE)}$	Market share change	$market\ share_t - market\ share_{t-10}$	Present to past P/E	$\frac{PE}{\left(\sum_{t=4}^t PE * \frac{1}{5}\right)}$	Average sales growth last 10 years	$\left(\frac{Sales_t}{Sales_{t-10}}\right)^{(1/10)}$
		Amount of negative years	$\sum_{t=9}^t \begin{matrix} negative\ year = 1\ if \\ Income\ before\ extraordinary\ item < 0 \\ negative\ year \end{matrix}$	Industry market share instability	$\sum_1^j \sum_{t=9}^t market\ share\ change_{jt}$	P/E-10	$\frac{Average\ price_t \times 10}{\sum_{t=9}^t (Earnings\ per\ share_t)}$	Average earnings growth	$\left(\frac{\sum_{t=2}^t Income\ before\ extraordinary\ items}{\sum_{t=7}^t Income\ before\ extraordinary\ items}\right)^{(1/7)}$
		Payout		Financial Strength					
		Metric	Formula	Metric	Formula				
		Payout ratio last 10 years	$\frac{\sum_{t=9}^t (Dividends + Share\ repurchase)}{\sum_{t=9}^t Income\ before\ extraordinary\ items}$	Interest coverage	$\frac{EBIT_t}{interest\ expense_t}$				

Table 4. Formulas

Year	Return – 1 year				Return – 10 year average		
	Portfolio	Portfolio with restriction	Number of stocks	S&P 500 total return	Portfolio	Portfolio with restriction	S&P 500 total return
1975	80.0%	94.1%	34	37.0%			
1976	35.1%	37.4%	27	23.8%			
1977	5.6%	7.2%	36	-7.0%			
1978	1.7%	9.0%	93	6.5%			
1979	16.0%	15.9%	104	18.5%			
1980	16.2%	19.4%	91	31.7%			
1981	14.9%	17.4%	45	-4.7%			
1982	34.0%	34.1%	27	20.4%			
1983	39.2%	38.5%	25	22.3%			
1984	6.7%	6.7%	11	6.1%	24.9%	28.0%	15.5%
1985	38.8%	40.8%	25	31.2%	20.8%	22.6%	14.9%
1986	15.7%	15.7%	13	18.5%	18.9%	20.5%	14.4%
1987	6.3%	6.3%	17	5.8%	19.0%	20.4%	15.7%
1988	29.0%	29.0%	14	16.5%	21.7%	22.4%	16.7%
1989	11.3%	11.3%	5	31.5%	21.2%	21.9%	17.9%
1990	-7.0%	-7.0%	8	-3.1%	18.9%	19.3%	14.5%
1991	49.6%	49.6%	12	30.2%	22.4%	22.5%	18.0%
1992	8.4%	8.4%	4	7.5%	19.8%	19.9%	16.7%
1993	6.3%	6.3%	4	10.0%	16.5%	16.7%	15.4%
1994	-2.7%	-2.7%	12	1.3%	15.6%	15.8%	15.0%
1995	18.2%	18.2%	6	37.2%	13.5%	13.5%	15.5%
1996	20.9%	20.9%	9	23.8%	14.0%	14.0%	16.1%
1997	31.0%	31.0%	4	31.9%	16.5%	16.5%	18.7%
1998	-0.6%	-0.6%	2	28.3%	13.6%	13.6%	19.9%
1999	-11.0%	-11.0%	9	20.9%	11.3%	11.3%	18.8%
2000	16.1%	16.1%	18	-9.0%	13.6%	13.6%	18.2%
2001	35.5%	36.2%	22	-11.8%	12.2%	12.3%	14.0%
2002	6.2%	6.2%	8	-22.0%	12.0%	12.1%	11.1%
2003	30.3%	30.3%	14	28.4%	14.4%	14.5%	12.9%
2004	3.3%	3.3%	6	10.7%	15.0%	15.1%	13.8%
2005	26.4%	26.4%	6	4.8%	15.8%	15.9%	10.6%
2006	24.5%	24.5%	9	15.6%	16.2%	16.2%	9.8%
2007	-13.3%	-13.3%	5	5.5%	11.7%	11.8%	7.1%
2008	-41.3%	-41.3%	17	-36.6%	7.7%	7.7%	0.7%
2009	57.6%	76.5%	44	25.9%	14.5%	16.5%	1.2%
2010	15.1%	15.1%	18	14.8%	14.4%	16.4%	3.5%
2011	12.6%	12.6%	18	2.1%	12.1%	14.0%	4.9%

Table 5. Portfolio and S&P500 returns

ABSTRACT

ENGLISH

This paper investigates Warren Buffett's investment philosophy by comparing it to the approaches of two personalities who have influenced him and by illuminating his investment principles in the context of economic science. Finally a sample of his investments is analyzed and the findings are used to construct a stock picking strategy.

Buffett has been most affected by the teachings of Philip Fisher and Benjamin Graham. The latter's *Margin of Safety* concept and the willingness to assess value independently from the whims of the stock market is central to Buffett's investment approach. His willingness to concentrate his investments in companies with excellent business characteristics is influenced by Fisher's advice.

The study of Buffett and his mentors leads to the research on market efficiency and on competitive advantage. One of the first contributors to the literature on the *Value Premium* is Graham in *The Intelligent Investor*, where he shows that cheap stocks, based on the E/P indicator, outperform the stock market.

Additionally Fisher's and Buffett's writings emphasize the necessity of a company to have a competitive advantage. The literature on the *Persistence of Profits* has proved the existence of long term over-performing firms, while researchers have identified factors that lead to competitive advantages.

The sample of companies studied show that Buffett is investing in companies that have above-average market shares, are financially strong, display excellent profitability and distribute a substantial portion of earnings to shareholders. The stock picking approach constructed with these findings indicates that investors can achieve superior investment results.

DEUTSCH

Diese Arbeit untersucht Warren Buffett's Investitions-Philosophie, einerseits indem sie mit dem Zugang zweier Persönlichkeiten verglichen wird, welche ihn stark geprägt haben und andererseits indem seine Investitions-Prinzipien mit wirtschaftswissenschaftlichen Erkenntnissen beleuchtet werden.

Schließlich wird eine Stichprobe seiner Investitionen analysiert und die Ergebnisse genutzt um ein Aktien-Auswahlverfahren zu konstruieren.

Buffett wurde am meisten durch die Lehren von Benjamin Graham, sowie von Philip Fisher geprägt. Die *Margin of Safety* und die Bereitschaft Wert unabhängig von den Launen des Aktienmarktes festzustellen, stehen im Mittelpunkt von Buffett's Zugang. Die Bereitwilligkeit seine Investitionen in Unternehmen, welche durch ihre exzellenten Geschäftscharakteristiken herausstechen, zu konzentrieren, ist von den Ratschlägen Fisher's geprägt.

Das Studium von Buffett's Investitionsansatz und der seiner Mentoren führt zu Forschungsarbeiten über die Effizienz der Wertpapiermärkte, sowie über Wettbewerbsvorteile. Graham war einer der ersten Mitwirkenden der *Value Premium* Literatur, da er in seinem Buch *The Intelligent Investor* zeigt, dass günstige Aktien, gemessen an der E/P Kennziffer, den Aktienmarkt schlagen.

Weiters weisen Fisher's und Buffett's Schriften darauf hin, dass es vorteilhaft ist in Unternehmen mit Wettbewerbsvorteilen zu investieren. Die *Persistence of Profits* Literatur hat bewiesen, dass es Unternehmen gibt, welche über lange Perioden hinweg überdurchschnittlich rentabel wirtschaften, während Forscher Faktoren identifiziert haben, welche zu Wettbewerbsvorteilen führen.

Die Stichprobe an Unternehmen in welche Buffett investiert hat, zeigt, dass er in finanziell starke und sehr rentable Marktführer investiert, die im Vergleich zu anderen Unternehmen einen großen Teil ihres Gewinns an die Aktionäre ausschütten. Das Aktien-Auswahlverfahren welches mit Hilfe dieser Ergebnisse konstruiert wurde, deutet an, dass Investoren überdurchschnittliche Ergebnisse erzielen können.

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