Kasimir Kunnas

Behavioural Finance, Indexing and the Value Strategy

An Analysis on Market Behaviour and Approaches to Investing

Helsinki

Author(s) Title Number of Pages Date	Kasimir Kunnas Behavioural Finance, Indexing and the Value Strategy: An Analysis on Market Behaviour and Approaches to Investing 58 pages + 2 appendices 29 April 2017
Degree	Bachelor of Business Administration
Degree Programme	International Business & Logistics
Specialisation option	Finance
Instructor(s)	Kevin McIntire, Senior Lecturer

Research suggests that in the long run, stocks have provided a better return than real estate, gold, bonds, treasury notes or other forms of investments. Many, however, see stocks as risky, and assume that in order to generate higher returns, more risk has to be taken. Some people feel that the market is just a "play field" of the wealthy and the greed of a few can cause great harm to many. This might be true to a certain extent, but the author believes it is more complicated than that.

The purpose of this thesis is to examine how human behaviour affects the market, how over enthusiasm leads to bubbles and bursts and how individuals can participate in the market without the fear of permanent loss of capital. There are two methods to individual investing that are up for analysis: Indexing and Value Investing. To put it simply, Indexing only refers to "owning the entire market" and the returns it generates are usually held as comparison benchmarks to other forms of securities investments.

The author believes that Indexing is the wisest path for the absolute majority of individuals. It is a simple way to participate in the market without having to give it much thought. For those who are enthusiastic about finance and specifically, security analysis, the author examines Value Investing. Strong evidence suggests that in the long run this contrarian strategy has provided returns that are, to quote its founder Benjamin Graham: "Quite Satisfactory". Value Investing does not require a tremendous IQ or anything linked to this type of intelligence, but rather emotional stability (in times of strong market turbulence), patience, fundamental analysis and the willingness to "look foolish at times".

Whether one believes in the Efficient Market Hypothesis (EMH) or not is irrelevant. Both believers and non-believers alike can participate in the market and receive their share of it. The author believes that what matters is not trying to predict the future, but rather focus on "securing the downside" first. Psychological studies indicate that it is emotionally a much stronger sensation in losing money than any possible gain. The question of participating in the market is not so much about having the brains for it, but rather, having the stomach for it.

Keywords	Behavioural Finance, Bubbles and Bursts, Mean Reversion, NYSE, Indexing, Value Investing, Margin of Safety, Intrinsic Value, Discounted Cash Flows, Return on Invested Capital, P/E & P/B Multiples

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List of Abbreviations

DCA Dollar-Cost Averaging

DCF Discounted Cash Flow

DJIA Dow Jones Industrial Average

EMH Efficient Market Hypothesis

FCF Free Cash Flow

IPO Initial Public Offering

MF Magic Formula

NASDAQ – National Association of Securities Dealers Automated Quotations

NCAV Net Current Asset Value

NYSE New York Stock Exchange

P/B Price-to-Book

P/E Price-to-Earnings

ROA Return on Assets

ROE Return on Equity

ROIC Return on Invested Capital

SEC Securities and Exchange Commission

S&P 500 Standard and Poor's 500

TTM Trailing Twelve Months

US United States

1 Introduction

The allure of the stock market will always exist. Just as lottery tickets have been proven to be a profitable business in any country, the dream of becoming rich quick keeps people participating. Arguably, many people start doing individual stock picking believing that the stock will continue to go up (based on past performance) or it has been covered in a positive light in the news. When this type of behaviour occurs in the masses, we witness an inflated market, followed by an inevitable burst. This market behaviour is what causes people to think of equities as risky.

But how do we define risk? Is it solely volatility or something else? The global markets reached its post financial crisis low around March 2009. Looking at what happened since, the trend has been upward. This is known as mean reversion, and to put it simply it just implies that what has gone up will go down and what has been down will come up. Evidence suggests that investing during market lows proves to be profitable in the long run. The difficulty in doing this is obviously due to emotions on the economic environment.

The majority of professional money managers in general have a notoriously bad track record and analysts have been proven to be unable to predict market behaviour consistently. The reasons for this are up for examination in this thesis. Since there are different ways individuals and institutions invest the way they do, the author has narrowed down two strategies: Indexing and Value Investing. Today, Indexing is widely accepted (especially in large institutions) as the "safest" way to participate in the market. The evidence (pioneered by John C. Bogle) suggests that this is the only way individuals can be certain to receive the returns of the general market. The author believes that this is also the best method for the vast majority of individuals who want a piece of the returns the market generates.

Value Investing may take on slightly differing forms, but a few key concepts remain unanimous between its advocates: A stocks price does not always reflect its underlying value, the market is inefficient at times and higher returns do not necessarily require taking higher risk. This is obviously completely contrarian to the academic world, that widely teaches the Efficient Market Hypothesis (EMH). Value Investors do not view

volatility (I.e. Beta) as risk factors, since they believe in fundamental analysis. The mind-set is also to think of stocks as ownership of individual businesses and not just a price next to its ticker that the market sets. Understanding market behaviour and the fact that buying or selling a stock is an arrogant act is key. The reason it is an arrogant act is that a stock needs a buyer and a seller, and each party believes that the stock is going to do well or that it is going to do poorly. In a sense, a buyer believes he/she knows more than the seller and vice versa.

1.1   Objectives

When navigating through the world of security analysis and investing, the sheer amount of information may seem overwhelming. This thesis aims to give the reader an idea in what to look for when evaluating stocks (from a conservative point of view) as well as give a good understanding of how the best known indices in the world work and how they have performed over time. Three main topics are up for analysis: Behavioural Finance, Indexing and Value Investing. Value investing acknowledges the importance of Behavioural Finance, since understanding this field is key if one wishes to do value investing. Not everyone is interested in analysing companies for individual stock picking, and there is nothing wrong with this. The author believes that it is still wise for individuals to participate in the market through index funds. This thesis also aims to make readers think about risk other than in a traditional (volatility) sense. This study can provide a platform for further research, for example in arguments against the Efficient Market Hypothesis (EMH), the significance of Loss Aversion and why not listening to crowds is important. The focus will be almost exclusively on the United States, since access to information regarding these topics is so widely available. Bonds are not analysed in this thesis.

1.2   Research Question

The goal of the research is to look at how the (US) stock market has performed over long periods of time, why indexing is only way to guarantee in receiving the overall market return, and, if one wishes to do individual stock-picking, Value Investing could be a viable strategy. The reason for having value investing (instead of other strategies) is because it exploits market anomalies (something institutions may not be able to do), relies on fundamental company specific analysis and most importantly places signifi-

cant emphasis on avoiding permanent loss of capital (Margin of Safety). The first chapter serves as an introduction. Chapter 2 is divided into three parts: Defining investing, the role of human behaviour and bubbles and bursts. This chapter will have the core research on behavioural finance. The chapter serves as an introduction in understanding chapter 3, which analyses the performance of professional money managers (notorious for their underperformance). Chapter 4 looks into the two best-known indices, the S&P 500 and Dow Jones Industrial Average (DJIA), how they are composed and how they have performed over long periods of time. Chapter 5 will dive into value investing. Here the author will demonstrate how to value businesses, what attributes are considered important in fundamental analysis and why this contrarian strategy persist despite it being over 80 years old. The research question is: **How should individuals participate in a game that so many of us think to be risk-fuelled?** This research will show how psychological factors dictate our behaviour in the markets and how one can avoid the siren songs of easy money. A series of sub questions will serve as guidance to help answer the main research question:

- Why do people behave irrationally when it comes to money and what are the main behavioural traits to consider?
- Why are professional money managers underperforming in a field where they ought to be the "experts"?
- Why should most people put their money in an index fund?
- What causes value investing to persist and why it will never receive the recognition of the masses?

There is no way to give a 100% accurate, guaranteed-to-work investment strategy. If something like this would surface, obviously it would attract others and if everyone is doing it, it will not work. The idea of this thesis is to give a general idea on some common sense approaches and keys to avoiding "dumb" mistakes.

1.3   Methodology

The thesis will be based solely on secondary research. It is collected mainly from books written by known experts in their field (both academic and professional). Many of these experts have been doing their own research for years to reach the conclusions they arrived at. Newspaper articles and journals serve mainly as back-up evidence for sepa-

rate arguments. Tables, graphs and charts are based on historical information, show-ing particular information from that period of time. The structure is composed of com-bining written information with a visual representation of the same subject. This is so that the reader can have a better picture of what the author wants to point out and minimise the possibility of misunderstanding.

1.4   Limitations

As written earlier, this thesis will not conclude with a final answer on what is the best way to invest in stocks. Indices may change over time as companies drop from it and are added to it. Value investing may come up in different forms, and its practitioners may have their own unique flavours to it. But at its core it remains the same as it has been since its creation: Trying to find "a dollar for fifty cents". Primary research to test out value investing would have been highly interesting to the author, but due to time constraints this is simply not possible. Even if it would have shown to work in a positive light, it may take years for undervaluation to reach intrinsic value. Also, the author as a bachelor's student is short on capital and lacks the funds to carry out this type of re-search.

2   Definitions, Human Behaviour and Bubbles

2.1   Defining Investing

There are differences of opinion when we define investing. The author will give examples of what many consider investments, and what he feels is the term that makes the most sense.

Possibly the most common forms of investing to most people are the following: Stocks, bonds, real estate, precious metals or in rarer cases, art. Burton G. Malkiel, a proponent of the efficient-market hypothesis (EMH), defines investing as follows:

"I view investing as a method of purchasing assets to gain profit in the form of a reasonably predictable income (dividends, interest or rentals) and/or appreciation over the long term. A speculator buys stocks hoping for a short-term gain over the next days or weeks…Remember, just to stay even, your investments have to produce a rate of return equal to inflation" (Malkiel 2012: 28).

Malkiel is a firm believer and opinion leader in the EMH. Therefore, it is not surprising that the above definition seems reasonable, yet uninspiring. The author will next provide a definition from Benjamin Graham, the father of value investing.

"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: 2006: 18).

The author would like to point out the main differences in the two differing definitions. The first assumes that an individual does not really have any chance of receiving better than average returns. The second mentions terms such as "Thorough Analysis", "Safety of Principal" and "Adequate Return". These suggest that individuals who do their research and stick to certain disciplines (explained in more detail in chapter 5, "Value Investing") could have above index returns. The author believe that if individuals do choose to invest, perhaps the most important aspect would be to avoid permanent loss of capital and prioritise safety of principal. In 1979, two notable psychologists and behavioural economic theorists, Amos Tversky and Daniel Kahneman (1979) stated:

"Losses loom larger than gains". It is thought that the pain of losing is psychologically about twice as powerful as the pleasure of gaining.

2.2   Behavioural Finance

"Behavioural finance is the study of the influence of psychology on the behaviour of financial practitioners and the subsequent effect on markets. Behavioural finance is of interest because it helps explain why and how markets might be inefficient" (Sewell 2010: 1)

Judging from human nature, it is safe to suggest that people behave irrationally at times. Sometimes, this behaviour reflects in the stock market, which has shown to have its share of bubbles and busts. Burton G. Malkiel (2012: 235, 237) writes on the subject of behavioural finance as follows: "Behavioralists believe that many (Perhaps even most) stock-market investors are far from fully rational. Efficient market theory, modern portfolio theory and various asset-pricing relationships between risk and return all are built on the premise that stock-market investors are rational. Basically, there are four factors that create irrational behaviour: overconfidence, biased judgements, herd mentality and loss aversion". These four factors are closely linked together, but the ones up for closer examination in upcoming subchapters are: Overconfidence biased judgements and loss aversion.

2.2.1   Overconfidence

Thomas Peters and Robert Waterman (2004: 56, 57) state the following: "In a recent psychological study when a random sample of male adults were asked to rank themselves on "the ability to get along with others," *all* subjects, 100 percent, put themselves in the top half of the population. Sixty percent rated themselves in the top 10 percent of the population, and a full 25 percent ever so humbly thought they were in the top 1 percent of the population…We all think we're tops. We're exuberantly, wildly irrational about ourselves".

The overconfidence factor is prevalent in the finance sector. In his survey sample of 300 fund managers, researcher James Montier (2006: 3) came to the following conclusion: "The most common bias we come across is over-optimism. That is people's ten-

dency to exaggerate their own abilities. That is particularly likely when people suffer the illusion of control (they think they can influence the outcome) or the illusion of knowledge (they think they know more than everyone else). The results show **that some 74% of our sample thought themselves above average at their jobs.** Many wrote comments along the lones if "I know everyone says they are, but I really am"! Of the remaining 26% most thought they were average, but very few, if any, said they were below average!".

The author believes that this can translate into investment mistakes. Including:

- Buying risky investments because they believe they aren't really risky
- Trading too much because they believe they can successfully time the market
- Using active fund managers because they believe they can identify the few future outperformers

(Swedroe 2013)

2.2.2 Biased Judgements

Humans have a manner of different biases. The author will look into three common cognitive biases found in the investment (and surrounding) world: Confirmation bias, gambler's fallacy and the bandwagon effect. Shahram Heshmat (2015) Ph.D. defines the first bias in *Psychology Today*:

> "Confirmation bias occurs from the direct influence of desire on beliefs. When people would like a certain idea/concept to be true, they end up believing it to be true. They are motivated by wishful thinking. This error leads the individual to stop gathering information when the evidence gathered so far confirms the views (prejudices) one would like to be true. Once we have formed a view, we embrace information that confirms that view while ignoring, or rejecting, information that casts doubt on it. Confirmation bias suggests that we don't perceive circumstances objectively. We pick up those bits of data that makes us feel good because they confirm our prejudices. This, we may become prisoners of our own assumptions".

This bias may occur in the investment world. Investors may tend to seek information that supports their decision and avoids/ignores information that contradicts it. While doing research, investors often find all sorts of positives while glossing over the red flags in trying to "confirm" the return potential of the investment. Another example is an investor that only invests in companies that pay dividends. This investor associates

non-dividend paying stocks as unsafe or unprofitable investments, but ignores the economic reality that a high-yielding stock may be a sign of trouble. In disregarding all stocks that do not pay dividends, the investor also may miss out on companies that trade at better values and run businesses with superior competitive advantages (Lazaroff 2016).

The second bias, gambler's fallacy, is when assumptions of the future can be made based on the outcomes of the past. The most common example is in coin flipping. Lets assume a coin as been tossed and it has landed 10 times with the "tails" side up. Under gamblers fallacy, the next toss must be "heads" side up, since "tails" has already happened so many times. The truth is that each coin toss is an individual event, and the odds are 50/50 for each toss. When this is put into an investment perspective, Albert Phung (2017) of *Investopedia* writes the following: "It's not hard to imagine that under certain circumstances, investors or traders can easily fall prey to the gambler's fallacy. For example, some investors believe that they should liquidate a position after it has gone up in a series of subsequent trading sessions because they do not believe that the position is likely to continue going up. Conversely, other investors might hold on to a stock that has fallen in multiple sessions because they view further decline as "improbable". Just because a stock has gone up on six consecutive trading sessions does not mean that it is less likely to go up on [sic] during the next session".

The third bias, the bandwagon effect, can be defined as follows: "A psychological theory where individuals are doing it, regardless of their own beliefs, which they will ignore or override. This effect has the capability to produce wide implications, but is most often seen in the areas of politics as well as in consumer behaviour" (Business Dictionary 2017). The author provides an illustration of this in figure 2.1 below.

Figure 2.1:   The Bandwagon

(Source unknown)

John Manning (2016) of *International Banking* describes the bandwagon effect in relation to investment decision making as follows:

> "Trading and investment psychology is significantly influenced by the bandwagon effect. An investor will feel more reassured if he knows that he is making the same trading decision as many others. Often a stock will be rising gradually over a period of time before suddenly skyrocketing, with little to fundamentally explain such a steep trajectory. The bandwagon effect, however, can often be the underlying reason. Investors fear being left out of the stock as they see it rise; instead of examining the fundamentals of the company, they start buying the stock as they believe everyone else is doing the same. Indeed, anyone who has invested in a "hot stock" because it was popular is effectively being influenced by the bandwagon effect. Much of the time such stocks will reap positive returns, but for those who consistently invest based on only the actions of others, a nasty loss awaits them".

Initial Public Offerings (IPO) are known to be events where the offering party will (understandably) attempt to convince the prospective buyers that their company is of high value. Manning (2016) writes that investors must be aware of its possible pitfalls: "IPO's are notable examples of the bandwagon effect in practice. The offering announcement often generates much publicity, and if investors suspect that the stock is likely to rise from the beginning of the floatation, there is likely to be an overenthusiastic rush on the first day of trading. Once some solid analysis on the stock is performed, however, the stock may just begin to reverse some of those unsustainable gains".

2.2.3 Loss Aversion

The author wrote earlier how the psychological impact of losing money is stronger than gaining. Loss aversion can be observed in the investment world in different ways. Loss aversion is explained in a thorough manner in the quote below:

> "It's no secret, for example that many investors will focus obsessively on one investment that's losing money, even if the rest of their portfolio is in the black. Investors have been

> shown to be more likely to sell winning stocks in an effort to "take some profits", while at the same time not wanting to accept defeat in the case of the losers. Regret also comes into play with loss aversion. It may lead us to be unable to distinguish between a bad decision and a bad outcome. We regret a bad outcome, such as a stretch of weak performance from a given stock, even if we chose the investment for all the right reasons. In this case, regret can lead us to make a bad sell decision, such as selling a solid company at the bottom instead of buying more."

<div align="right">(Morningstar, 2015)</div>

The author would like to conclude these three psychological factors in investing that for individuals, it is best to make investment decision with thorough research and leave emotions out of the equation.

2.3 The Efficient Market Hypothesis (EMH)

In the 1970's a new financial theory started to gain foothold in the academic world: The efficient market hypothesis (EMH). This theory suggests that all stocks are priced efficiently and according to all available information. Therefore, the theory suggests that it is impossible to "beat the market". The father of this theory is considered to be Eugene F. Fama (1970), who states the following regarding information flow in the stock market: "Informational efficiency is a natural consequence of competition, relatively free entry, and low costs of information. If there is a signal, not incorporated in market prices, that future values will be high, competitive traders will buy on that signal. In doing so, they bid the price up, until it fully reflects the information in the signal".

The author wants to point out that the above statement suggests that the markets react positively or negatively depending on the news that a company releases, which we know to be true for the most part. A reasonable follow-up question would be: "Does reported bad or good news really reflect the reality of the underlying business?" Hypothetically speaking, if a company gives a negative outlook in a quarterly report, making the market react accordingly, has the underlying earnings power of the assets gone down? The author believes that while the markets may be "efficient" for the most part, anomalies do occur and stock market behaviour shouldn't be taken as automatic gospel for truth.

One of the theory's most famous proponents, Burton G. Malkiel (2012: 30, 76, 124) states the following: "It (investing) is a gamble whose success depends on an ability to predict the future". The author wants to point out that while Malkiel makes sound ar-

guments, some points in his writing are contrary to his defence for the EMH: "Investors should be very wary of purchasing today's hot 'new issue.'" He is referring here to the aftermaths of historical speculative bubbles, which is hard to argue against. In regards to individual stock picking, Malkiel states the following: "Growth rates are general rather than gospel truths. And this brings us to the first fundamental rule for evaluating securities: "Rule 1: A rational investor should be willing to pay a higher price for a share the larger the growth rate of dividends and earnings". The author wants to point out that while he uses the world "rational investor", history has proven that we as humans have a tendency to perform irrationally and reversion to the mean does occur. Would Malkiel approve of his "rule" if a company is a rapid grower with a high P/E multiple, but revenues are largely dependent from one source? Also, Malkiel does not mention when it is appropriate to sell this type of security. There is no real way to ever know how long a stock will be rising due to our inability to predict the future.

While the argument if markets are efficient or not may go on forever, Van Bergen (2011) sums up a witty statement:

> "The efficient market hypothesis assumes that all investors perceive all available information in precisely the same manner. If one investor looks for undervalued market opportunities while another investor evaluates a stock on the basis of its growth potential, these two investors will already arrive at different assessment of the stock's fair market value. Therefore, one argument against the EMH points out that, since investors value stocks differently, it is impossible to ascertain what a stock should be worth under an efficient market. According to the EMH, if one investor is profitable, it means the entire universe of investors is profitable. In reality, this is not necessarily the case. Despite the increasing use of computers, however, most decision-making is still done by human beings and is therefore subject to human error. Even at an institutional level, the use of analytical machines is anything but universal".

2.4   The Dot-com Bubble

Historically, we have had several booms and busts. The Dutch tulip mania of the 17th century is considered by some to be the very first recorded economic bubble of the western world. The author will, however, analyse the dot-com bubble as it is relatively fresh in our minds and might even resonate with possible younger audiences reading this thesis.

The author will phrase Burton G. Malkiel (2012: 80, 81) in introducing the dot-com bubble: "Most bubbles have been associated with some new technology or with some

new business opportunity (as when the opening of profitable new trade opportunities spawned the South Sea Bubble). The internet was associated with both: it represented a new technology, and it offered new business opportunities that promised to revolutionize the way we obtain information and purchase goods and services. The promise of the internet spawned the largest creation and largest destruction of stock market wealth of all time".

Even though investors should look to the past in order to learn from it, our human nature has a tendency to get depressed or "irrationally exuberant" (to quote former chairman of the Fed, Alan Greenspan). The era of the dot-com bubble was also known as the "New Economy" and people succumbed to herd mentality telling each other: "This time its different!".

> The dotcom bubble started growing in the late '90s, as access to the internet expanded and computing took on an increasingly important part in people's daily lives. Online retailing was one of the biggest drivers of this growth, and with the investment and excitement, stock values grew. The value of the NASDAQ, home to many of the biggest tech stocks, grew from around 1,000 points in 1995 to more than 5,000 in 2000. Companies were going to market with IPO's fetching huge prices, with stocks sometimes doubling the first day. It was a seeming wonderland where anyone with an idea could start making money.
>
> (Geier, 2015)

Companies not directly involved in technology or the rise of the internet understandably wanted a piece of the gains these "New Economy" companies were making.

> Dozens of companies changed their name to include Web-oriented designations such as dot-com, dotnet or Internet. Three researchers from Purdue University, M. Cooper, D. Dimitrov, and P. R. Rau, studied sixty-three companies that changed their names in 1998 and 1999 to include some Web orientation. Measuring the price change of the companies from five days prior to name change (when word of the change began to leak out) to five days after the change was announced, they confirmed a remarkable effect. Companies that changed their names enjoyed an increase in price during that ten-day period that was 125 percent greater than that of their peers. The price increase occurred even when the company's core business had nothing whatsoever to do with the Net.
>
> (Malkiel 2012: 83, 84)

Below in table 2.2 is an illustration of the irrational exuberance and crash experienced by different technology firms during the dot-com bubble. Shown in chart 2.3 is a comparison of two indices and their performance during the dot-com bubble, the Nasdaq-100 and the S&P 500. As the reader may notice from the table, a few of the surviving companies have grown to become household names in the industry. We can of course

assume that some people might have bought in right after the crash, or cashed out in time, but investing can viewed as a zero-sum game and separating (at the time) the winners from the losers was probably a fools endeavour.

Table 2.2:   Irrational Exuberance

Stock	High 2000	Low 2001-2002	Percentage (%) Decline
Amazon.com	75,25	5,51	98,7
Cisco Systems	82	11,04	86,5
Corning	113,33	2,8	99
JDS Uniphase	297,34	2,24	99,5
Lucent Technologies	74,93	1,36	98,3
Nortel Networks	143,62	0,76	99,7
Priceline.com	165	1,8	99,4
Yahoo.com	238	8,02	96,4
(Prices in $)			(Malkiel 2010: 84)

Chart 2.3:   The Madness of Crowds

**NASDAQ Composite vs S&P 500
Jan 1994 to Dec 2001**
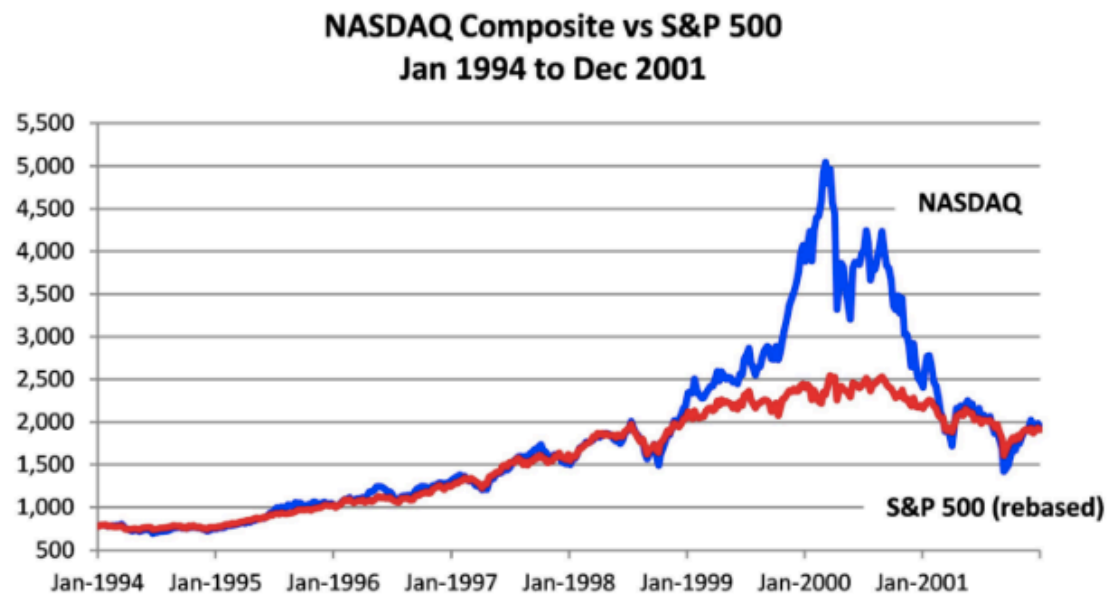
(Moya 2014)

Eventually (like in all historic bubbles and bursts) people came to their senses, realised that many of these dot-com companies didn't have any real underlying earnings, combined with confusing business models and unsustainable future outlooks. When the dust settled and euphoria turned to sobriety, many firms of the era turned out to be

completely worthless. As a wrap up for the dot-com bubble, Kalen Smith (2012) states pleasingly: "On the whole, in the mid- to late- '90's, society's expectations of what the Internet could offer were unrealistic. From individual dreamers to major corporations, Internet entrepreneurs were enamored with dreams of becoming dot-com millionaires (or billionaires). By and large, these entrepreneurs were inspired by companies like Amazon, eBay and Kozmo. Of course, for every company that grew to be a multi-million dollar business, hundreds of others failed".

3 Institutional Investors and Performance of Professional Money Managers

3.1 Rise of Institutional Investors

The transfer of ownership in public companies has steadily increased in increments from individuals to institutions. The author will use the United States as an example. At mid-century, institutional investors held only 8% of the stock of the nation's largest companies. By 1988, they owned 45% of the shares in the 100 largest companies and that proportion was still increasing (Durr, K., Colby, R. 2014). In 2009 institutional investors owned in the aggregate 73% of the outstanding equity in the 1,000 largest U.S. corporations (Aguilar 2013).

Institutional investors have the resources and specialized knowledge for extensively researching a variety of investment options not open to retail investors[1]. Because institutions are the largest force behind supply and demand in the securities markets, they perform the majority of trades on major exchanges and greatly influence the price of securities. Retail investors buy and sell stocks in round lots of 100 shares or more; institutional investors buy and sell in block trades of 10,000 shares or more. Because of the larger trade volumes, institutional investors avoid buying stocks of smaller companies and acquiring a high percentage of company ownership (Investopedia 2017).

This raises the question: How can an individual investor "play the field" against these institutions? The author believes that the answer might partly lie in the above quote: "…Institutional investors avoid buying stocks of smaller companies". This will be exam-

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[1] Retail investor is synonymous with individual investor.

ined more closely in the value investing section of this thesis. The author also wants to point out that even though the above quotation suggests buying behaviour of individual investors, the truth may vary depending on the individual.

3.2   Performance of Professional Money Managers

The author will demonstrate in this subchapter how over time, a great number of professional money managers do a lousy job with their clients money. It is clear that these professionals have all the intelligence needed to make wise investment decisions, but the factors driving their behaviour are in many cases out of their own control. The author will provide a list of these factors below:

- With billions of dollars under management, they must gravitate towards the biggest stocks – the only ones they can buy in the multimillion-dollar quantities they need to fill their portfolios. Thus many funds end up owning the same few overpriced giants.
- Investors tend to pour more money into funds as the market rises. The managers use that new cash to buy more of the stocks they already own, driving prices to even more dangerous heights.
- If fund investors ask for their money back when the market drops, the managers may need to sell stocks to cash them out. Just as the funds are forced to buy stocks at inflated prices in a rising market, they become forced sellers as stocks get cheap again.
- Many portfolio managers get bonuses for beating the market, so they obsessively measure their returns against benchmarks like the S&P 500 index. If a company gets added to an index, hundreds of funds compulsively buy it. (If they do not, and that stock then does well, the managers will look foolish; on the other hand, if they buy and it does poorly, no one will blame them.)
- Increasingly, fund managers are expected to specialize. Just as in medicine the general practitioner has given way to the pediatric allergist and the geriatric otolaryngologist, fund managers must buy only "small growth" stocks, or only "mid-sized value" stocks, or nothing but "large blend" stocks.[2] If a company gets too

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[2] Never mind what these terms mean, or are supposed to mean. While in public these classifications are treated with the utmost respect, in private most people in the investment business regard them with the contempt normally reserved for jokes that aren't funny (Graham, Zweig 2006: 218).

big, or too small, or too cheap, or an itty bit too expensive, the fund has to sell it – even if the manager loves the stock.

(Graham, Zweig 2006: 218)

The vast majority of fund managers that do active trading underperform greatly in the long run. Yes, it is possible that some might beat the market from time to time, but consistent winning is near impossible. Like they say, today's stars are tomorrows losers and todays losers are tomorrow's winners. Reversion to the mean seems to happen eventually, and Jason Zweig (2013) defines it as follows: "From financial history and from my own experience, I long ago concluded that regression to the mean is the most powerful law in financial physics: Periods of above-average performance are inevitably followed by below-average returns, and bad times inevitably set the stage for surprisingly good performance".

If one chooses to hire a professional to handle ones money, active trading might be a fool's endeavour. Commission fees will start adding up, and always chasing the new hot stock can cost the investor dearly. Almost every actively managed equity fund in Europe investing in global, emerging and US markets have failed to beat its market benchmark over the past decade, raising more questions about the value stockpicking [sic] managers add. The findings pile further pressure on active fund managers, who have come under repeated attack from academics and consumer groups for charging high fees for poor performance (Marriage 2016). Graph 3.1 shows this underperformance.

Graph 3.1:   Active Funds Underperformance

Percentage of active equity funds that failed to beat their benchmark
2015 (%)

Legend: Denmark, France, Netherlands, Spain, Switzerland

X-axis: Investment timeline (years) — 1, 3, 5, 10
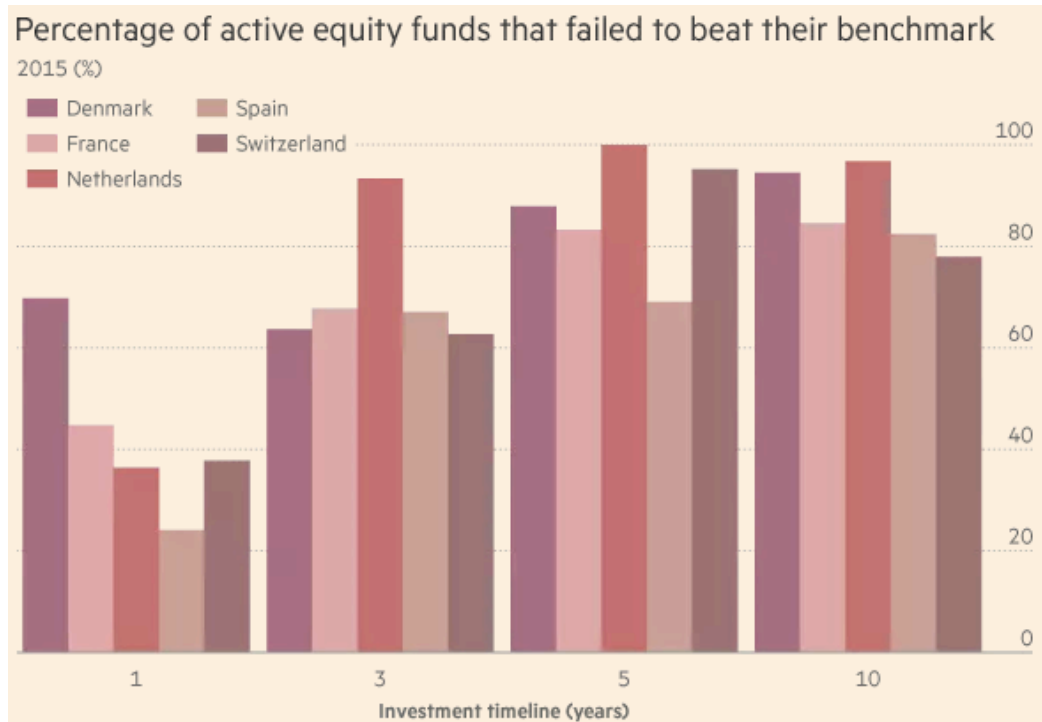
(Marriage, Financial Times 2016)

Across the Atlantic Ocean finance professionals have failed dreadfully in trying to fore-cast the market. There are 22 "chief market strategists" at Wall Street's biggest banks and investment firms. They work at storied firms such as **Goldman Sachs** and **Morgan Stanley**. They have access to the best information, the smartest economists, and teams of brilliant analysts. They talk to the largest investors in the world. One of their most important – and certainly highest-profile – jobs is forecasting what the stock market will do over the next year. Strategists do this every January by predicting where the S&P 500 will close on Dec. 31 (Housel 2015). Graph 3.2 shows these strategists predictions (arguably speculations) versus the real performance of the S&P 500 in a 14-year period from 2000 onwards.

Graph 3.2:   Speculation of Professionals

Wall Street Strategists S&P 500 Forecast

■ Forecast Gain   ■ Actual Gain
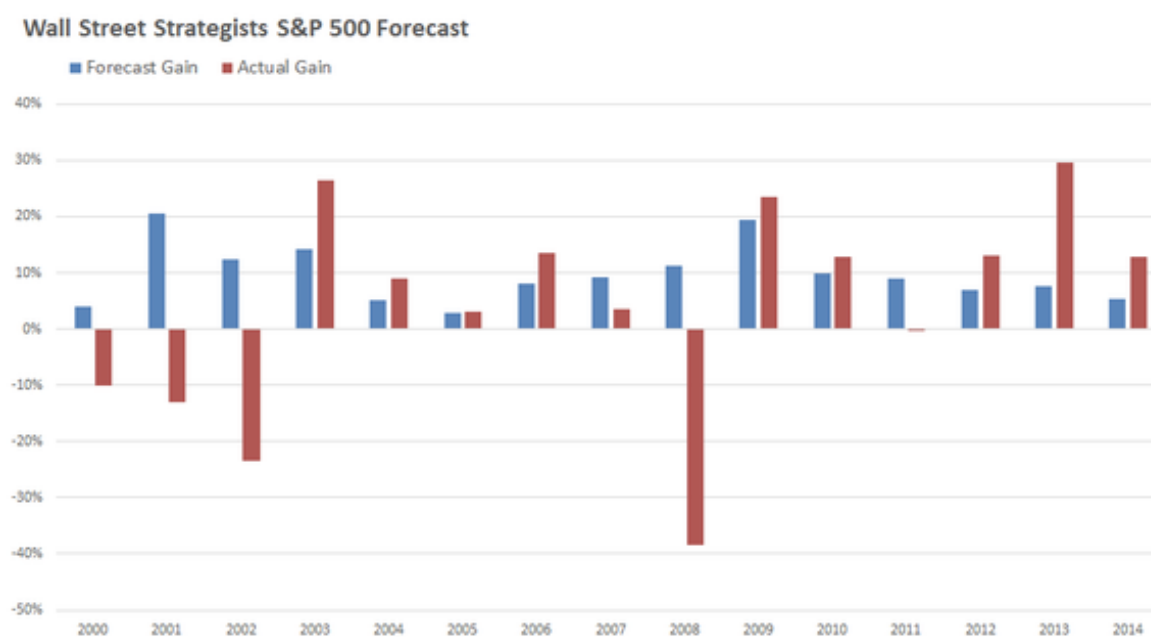
(Housel, The Motley Fool 2015)

The author wants to point out that while some years may have been relatively close to actual performance, the majority of the years differ with a drastic margin; most notably the great market plunges. The graph (3.2) also shows the earlier discussed irrational exuberance as well as pessimistic years that turned out to be better than the forecasts. Though stocks are traded daily in massive volumes and at lightning speeds, with assumptions that the professionals have the best knowledge first-hand, the graph clearly shows the human, emotionally driven side of the market.

> Some academicians have gone so far as to suggest that a blindfolded monkey throwing darts at the stock listings can select stocks with as much success as professional portfolio managers. There are five factors that help explain why security analysts have such difficulty in predicting the future. These are (1) the influence of random events, (2) the production of dubious reported earnings through "creative" accounting procedures, (3) errors made by the analysts themselves, (4) the loss of the best analysts to the sales desk or to portfolio management, and (5) the conflicts of interest facing securities analysts at firms with large investment banking operations. A remarkable large body of evidence suggests that professional investment managers are not able to outperform index funds that simply buy and hold the broad stock-market portfolio. While the index may not win in every single year, decade after decade two-thirds or more of professionally managed funds are beaten by index funds.
>
> (Malkiel 2012: 164, 168-169, 292).

If an individual chooses to trust their money to a non-index fund or professional money manager, it is wise to consider certain aspects. Some questions that would require answering might be:

- On what basis does the professional buy or sell a stock?
- Does the professional invest in companies that are high in debt? (Perhaps a red flag if yes)
- Is the professional's money invested in the same assets as their clients?
- What is the average holding period for securities and what are the justifications for their commission fees?

The above questions are only a few examples of what could be many. While certain returns might be tempting, protection of capital should be prioritised as well as minimizing possible conflicts of interest between the professional and the client. Benjamin Graham (2006: 275) provides excellent "words of warning", money manager language that should raise red flags. Some examples include: "The opportunity of a lifetime", "Guaranteed", "We can beat the market", "It's a sure thing", "You should focus on performance, not fees", "Monthly returns" and "Active asset-allocation strategy".

Now that the reader has digested all of the above, in the upcoming chapter the author will propose a compelling reasoned argument why indexing is the wisest choice for the majority of individual investors.

4   Investing in an Index Fund

4.1   A Winning Strategy for the Majority

When studying historical market bubbles and the unavoidable bursts that follow, how is the individual supposed to get their fair share of the returns that seems lucrative, but risk filled? With all these institutional investors and professionals being first to act on any news released by a public firm there seems to be no chance. Investing is a zero-sum game, so who are the guaranteed real winners? The answer is the people in the middle. This means brokers, investment banks, professional commissioned money managers etc. Examples outside the investment world are: In the casino the house

always wins, in a lottery the lottery firm wins and in a horse racing competition, the race arranger wins.

John C. Bogle is the founder of the Vanguard Group the man behind the first index mutual fund in North America founded in 1975. In his senior thesis at Princeton University, Bogle touched on a subject that according him, no one had written about in an academic paper. The research was on the mutual fund industry and concluded with suggestions that "the industry's future growth could be maximised by a reduction of sales loads and management fees." And "Management should make no claim for superiority over the market averages" (Bogle 2006). We can sense here the birth of indexing and there is strong evidence to support the claim that it is the best way for the majority of individuals to invest.

Bogle (2010: 24) states the following: "As a group, investors earn less because the market return is inevitably reduced by the cost of investing. In the mutual fund industry, the range of investment costs is extremely wide. In an aggressively managed small-cap equity fund, total asset-related charges, including operating expenses and transaction costs, might be as high as 3 percent. The lowest range is set by a market index fund, a passively managed fund that simply buys and holds the stocks in a particular index. Because it entails no advisory fees or transaction costs and only minimal operating expenses, costs can be held to 0.20 percent of assets or even less."

Indeed, putting ones money into a low cost index fund and not paying attention to it is a simple but effective strategy. The lure of individual stock selection can succumb even the most rational individual who believes they can time the market. Based on significant evidence, attempting to time the market is indeed a fool's endeavour, as the reader will soon observe. The idea of market timing can be seen as inherently flawed, because it assumes that we are able to predict the future. The author attempted to find evidence in defence of market timing, but was convinced that most of the available information on the subject are people's personal blogs, day trading tips that suggest to "ride a stocks momentum" or the like.

Paul A. Merriman (2013) writes: "I don't think more than perhaps one in 100 investors will be successful using timing. Mechanical timing does not rely on predictions, which

are only opinions. They rely on documented trends, which are facts. This means a "sell" signal does not result from somebody's fear or belief that the market is about to take a nose dive. Instead, such a signal results from actual price declines that the system regards as strong enough to be likely to continue. Buying signals on the upside work similarly." Merriman claims to be an expert on the subject of market timing, and the above quote seems to suggest that there is a working strategy for it. However, he continues the above with: "But that's a bit like saying: "In theory, you're guaranteed to get from point A to point B if I strap you onto the back of a starving bucking bronco that's hellbent on getting to food." You may get there but you wouldn't like the journey." Note he uses the word "may", not "will".

Evidence suggests that while markets may be efficient most of the time, fear and greed still have their say, which is why market timing fails. This is depicted in the simple, but truthful figure 4.1 of people's typical market behaviour.

Figure 4.1:   (Repeat until broke[3])
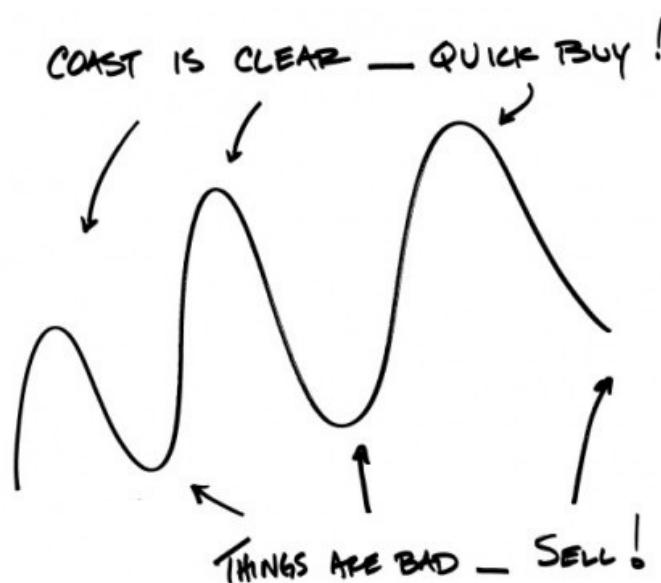
(MCLean 2017)

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[3] The author does not recommend doing this. To state the obvious, its written as satire.

McLean (2017) writes:

> "Can the cost of trying to time the market make a big difference in your returns? You bet it can. Investors are notoriously bad at picking the right time to enter or exit investments; by the time most investors feel the time is right to invest, many times the investment is at or near its peak. Corrections are a normal part of market cycles and periods of high growth often occur very closely to major pullbacks. Investors who sell during the bad times frequently miss out on the best days of performance. If you're not in the stock when it moves, you may miss out on the whole play."

To further illustrate this, Graph 4.2 shows what the cost of missing some of the best days of the S&P 500 returns would look like. It shows the hypothetical value of a $10,000 investment between 1994 and 2014. Note that possible transaction costs and management fees are excluded.

Graph 4.2:   Maintaining Course During Headwinds
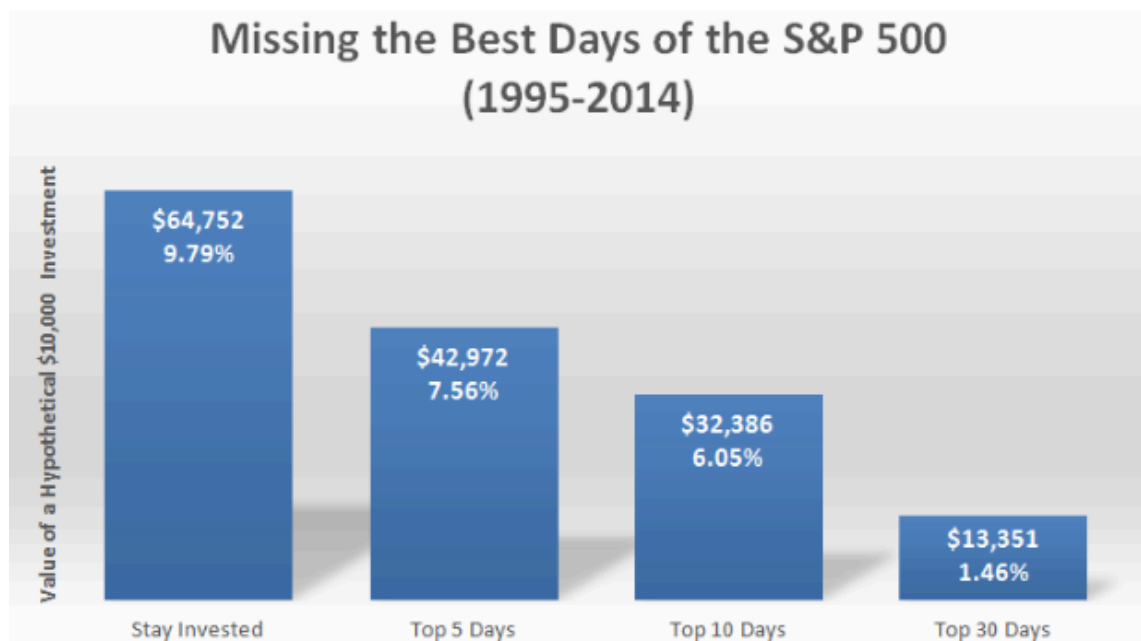
(McLean 2017)

Most sources and evidence point to the same conclusion. Brett Arends (2010) of the *Wall Street Journal* writes:

> "The best long-term study relating to this topic (market timing) was conducted a few years ago by Javier Estrada, a finance professor at the IESE Business School at the University of Navarra in Spain. Estrada looked at nearly a century's

worth of day-to-day moves on Wall Street and 14 other stock markets around the world, from England to Japan to Australia. He found that if you missed the 10 best days you missed out on a lot of the gains. But he also found that if you managed to be out of the market on the 10 worst days, your profits went through the roof. Mr. Estrada's conclusion is that a small number of big days, in both directions, account for the most of the stock market's price performance. Trying to catch the 10 biggest jumps, or avoid 10 bug tumbles, is almost certainly a fool's errand. Hardly anyone can do this sort of thing successfully. Even most professional's can't."

4.2 Compound Interest and Dollar-Cost Averaging

Albert Einstein is quoted to have said: "Compound interest is the most powerful force in the world[4]. To define it simply, "When you invest money you earn interest on your capita. The next year you earn interest on both your original capital and the interest from the first year. In the third year you earn interest on your capital and the first two years interest. It is a snowball effect, where as your capital rolls down the hill it becomes bigger and bigger. Even if you start with a small snowball, given enough time, you can end up with an extremely large snowball indeed (Motley Fool 2017)."

Time horizon matters when saving for the long term. Evans (2014) states: "The one who saves for 10 years will be wealthier in retirement than another person who saves for 30 years." The key here is starting early, and Evans continues: "Having 10 extra years for compound interest to work its magic has the same result as all those years of extra contributions. A simple illustration is to ask how long it takes to double your money if you make compounded returns of 10% a year. The intuitive answer is "10 years" but it actually takes just seven. In fact, to double your money in 10 years requires a compound return of only 7% a year." The author acknowledges that some people might be sceptical when hearing about this. Joanne Cleaver (2015) writes critically of the idea: "The compound interest equation is simultaneously eroded by five factors: fees, inflation, taxes, market performance and the other ways you could spend your money." She interviews Mark Calabria, director of financial regulation studies for the Cato Institute who states: "The typical person can probably save a million dollars over their lifetime, but they'll be unhappy doing it. Think about experiences, education and just plain having fun. Are you willing to forfeit them today so you can have a pile of money, hopefully, in a few decades?"

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[4] This quote comes in different forms such as: "Eighth wonder of the world", "Greatest mathematical discovery of all time" etc.

The author agrees that the above-mentioned factors may have their effect while compounding is doing its job. The key to avoid these troubles is finding a low cost index fund, and minimizing all possible fees. The author believes that individuals can enjoy their lives while saving, what matters is consistency and staying the path. Besides discipline, the ability to delay gratification is crucial.

To ease an individual investor's stress on market fluctuation, a wise idea to combine with indexing is dollar-cost averaging (DCA). DCA is commitment to investing a fixed dollar amount each month. Each month the fixed amount buys shares at market prices. As the share prices decline, the fixed amount buys a higher number of shares; when prices increase, the fixed amount buys fewer shares. Additionally, this removes the speculation when to be in the market and when to be out (Investopedia 2017). To further illustrate the benefits, a contributor to Nasdaq (2014) writes the following: "With DCA, you take a lot of the emotion and fear out of investing because where the market goes in the short-term is far less important to you, as long as you stick to a regular investment plan. If a recession hits the economy and your investment falls in value, you'd just end up buying more shares at a lower price." An example of this is provided in table 4.3[5]. It depicts a hypothetical investment of $25,000 invested quarterly in a year.

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[5] The example is on an investment on an individual stock. The method can be copied to an index fund.

Table 4.3:   Dollar-Cost Averaging

	Amount	Price	Shares
Q1	$25,000	$100	250
Q2	$25,000	$90	277.7
Q3	$25,000	$70	357.14
Q4	$25,000	$90	277.7

Total shares purchased: 1,162
End price: $90
Market value: $104,580.

(Nasdaq 2014)

Since there are so many indices to choose from, the author will analyse some of the most known ones in the upcoming subchapter.

4.3   The Standard and Poor's 500 (S&P 500)

The S&P 500 is perhaps the most well known index in the world. It contains 500 of the largest companies by market capitalisation listed on the New York Stock Exchange (NYSE) or Nasdaq. It is widely used as a benchmark for performance and is considered a general representation of the US economy. It is the default vehicle for passive investors who want exposure to the US economy via index funds. Since 1957, the S&P 500 has performed remarkably, outpacing other major asset classes such as bonds or commodities (Investopedia 2017).

The S&P 500 Index value is measured in points. At the time of writing (9.2) it is valued at 2294 points. The number comes from the Indices float-adjusted market capitalisation[6] divided an index divisor number (an arbitrary number as set by a committee of Standard and Poor's). As a company (by market cap.) is added to and another drops

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[6] Also known as Free-float methodology. It is calculated by taking the equity's price and multiplying it by the number of shares available in the market. The method excludes locked in shares such as those held by, insiders, promoters and governments (Investopedia 2017).

from the index, the divisor is adjusted so that the value of the S&P 500 remains constant. All divisor adjustments are made after the close of trading and after the calculation of the closing value of the index (Wikinvest 2017). The author illustrates a calculation example of the S&P 500 value in points in table 4.4.

Table 4.4:   The Index Divisor

S&P 500	
Date	31.12.2016
Index M.cap (Float-adjusted)	19267961,6 (USD M)
Divisor number	8606,26
Calculation:	
19267961,6 / 8606,26	
Index valued in points =	2238,8

(Source: Ycharts & Siblis Research)

Having a large market cap is not the only criteria for a company to be added to the index. Below is a list of criteria that a company must meet in ordered to be on the S&P 500. Note that the index committee attempts to minimise unnecessary turnover in index membership, meaning that existing companies do not have to diligently maintain these conditions to remain in the index. However, companies that substantially violate one or more of these criteria are removed from the index and replaced by a new company. As a result, on a year-to-year basis, the composition of the index only changes slightly (Wikinvest 2017).

- **Must be a "US Company".** This is determined by looking at location of a company's operations, its corporate structure and its exchange listing.
- **Must have minimum $5 Billion market capitalization.** The minimum is reviewed occasionally to ensure that it takes into account market conditions.
- **Must have a minimum public float of 50%**, which means that at least half of the company's shares must be publicly traded.
- **Must be financially viable.** Companies are expected to have at least four consecutive quarters of positive reported earnings.
- **Must be operating companies.** Close-end funds, holding companies, partnerships, investment vehicles and royalty trusts are not eligible while Real Estate

Investment Trusts (REITs) and business development companies (BDCs) are eligible for inclusion to the index.

- **Should have adequate liquidity and moderate price per share.** The ratio of annual dollar value traded to market capitalisation for the company should be 0.30 or greater. Very low or extremely high priced shares are also considered to be illiquid.

- **The index must remain reflective of the various sectors in the US economy.** This signifies that even if a company has all the qualifying characteristics, it may not be selected if the sector it operates in is already accounted for in the index.

(Wikinvest 2017)

By now, the reader might be convinced that the S&P 500 is a worthy index for a fund to track. The author would like to point out some flaws it's considered to have. Armstrong (2011) writes the following: "The index becomes vulnerable to concentration. As a company increases in value, so, too, does its weight in the index. This in turn, means the index's performance is more greatly influenced by this stock. Another problem is that an index can become susceptible to sectors that are growing in value." Roth (2010) states:

> "It suffers from what I call the *Google effect*. On March 23, 2006, Standard & Poor's announced Google was being admitted to the S&P 500 index. The announcement was made after the market had closed that day. Now, just because the stock market is closed doesn't mean people can't trade stocks. Thanks to a Wall Street invention called *after-hours trading*, it's possible to buy and sell stocks after the market closes. And in after-hours trading, Google went up a whopping 7.3% that night. That's because investors knew that all of the many large S&P 500 index finds had to go out and buy Google pronto. Demand for the stock drove the price higher."

Sector division of the index may change over time. Below in Chart 4.5 the author provides the S&P 500 sector breakdown as of Jan 31 2017.

Chart 4.5:   S&P 500 Sector Breakdown

Legend:
- Information Technology 21.3%
- Financials 14.6%
- Health Care 13.7%
- Consumer Discretionary 12.3%
- Industrials 10.2%
- Consumer Staples 9.3%
- Energy 7.2%
- Utilities 3.2%
- Materials 2.9%
- Real Estate 2.8%
- Telecommunication Services 2.5%
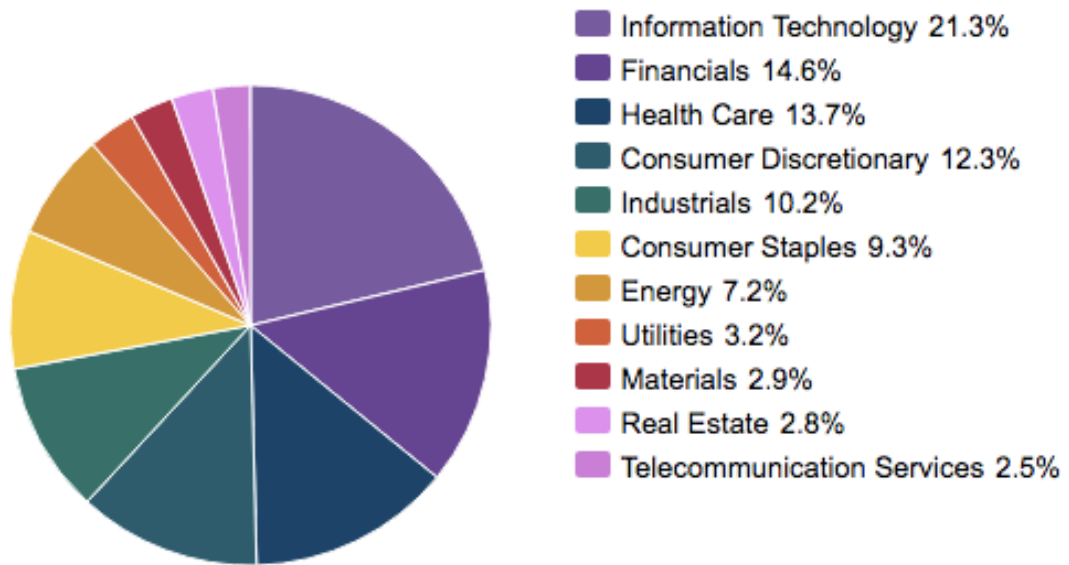
(Source: S&P Dow Jones Indices)

Despite certain Industries taking up a large portion of the sector pie chart, the author wants to point out that the index is a representation of the prevailing US economy. As society advances, technology and services have an ever-increasing competitive role compared to e.g. industrials or utilities. An index with the S&P 500 standards in a less developed nation might have a very different sector breakdown. The index may have fluctuations in the short run that are based on speculations instead of real return. In the long run, these fluctuations between speculative and real return will experience a reversion to the mean and should not be of major concern to an individual index fund investor.

John C. Bogle (2007: 17), arguably the most famous proponent of S&P 500 index, writes the following: "Speculative return has added just 0.1 percentage points to the annual investment return earned by our businesses over the long term." This is shown in exhibit 4.6 below from his book *The Little Book of Common Sense Investing*.

Exhibit 4.6: Total Stock Return by the Decade (Percentage/Year)
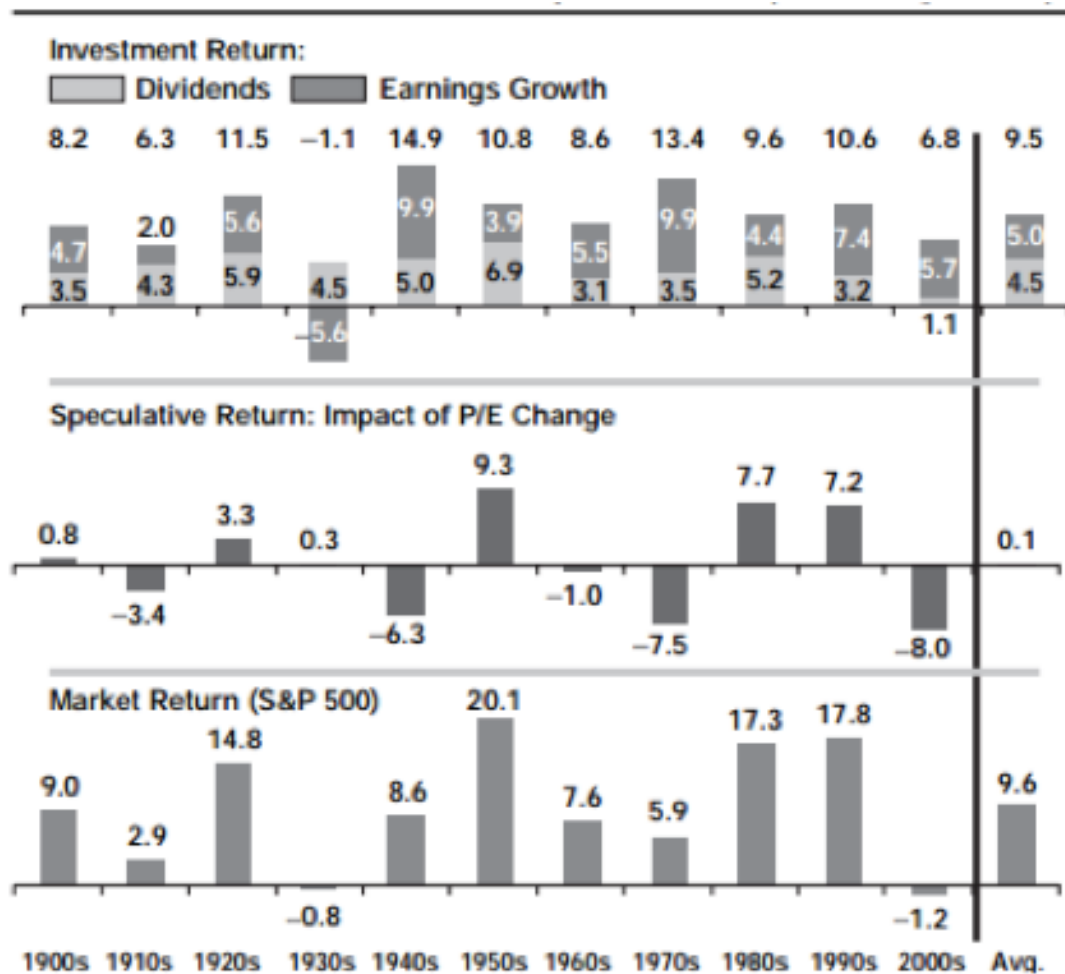
(Bogle 2007)

Chart 4.7 will provide a view of the S&P 500 index performance between 1977 and beginning of 2017. While an individual may get terrified during dips, it is good to re-member that historically, crashes are followed by surges. Fluctuations are an inevitable part of the market. Though it may seem challenging, ignoring panics in market crashes is wise. Historically, buying during panics can turn out to be quite profitable.

Chart 4.7 S&P 500 Index Performance 1977 - 2017

Warren Buffett, One of the world's most famous investors, also agrees that low-cost indexing is wise for the majority of the public. In his 1996 letter to shareholders he writes the following: "Most investors, both institutional and individual, will find that the best way to own common stocks is through an index fund that charges minimal fees. Those following this path are sure to beat the net result (after fees and expenses) delivered by the great majority of investment professionals".

4.4 The Dow Jones Industrial Average

Along with the S&P 500, the Dow Jones Industrial Average (DJIA) is one of the most well-known and followed stock market indices. The DJIA is composed of the 30 largest stocks listed on the NYSE and Nasdaq weighted by price. In 1884 Charles Dow began publishing his index average. In its early days, it was composed of 12 stocks, 10 of which were railroads (Armstrong Economics 2017). In the late 19th century, the US economy looked very different from today, the largest economic drivers at the time were oil, steel and railroads (reflecting the 'industrial' in DJIA).

Regarding the evolution curve of the Dow, Schoen (2014) writes:

> "The roster continues to reflect the ongoing evolution of the American economy. From a developing economy that drew heavily on commodity production and extraction – American Sugar, Standard Oil and U.S. Steel – The Dow 30 membership tracked the rise of manufacturing through the middle of the last century – Goodyear, Boeing, General Motors – and the more recent emergence of an economy driven by information, finance and service industries: Visa Microsoft and Verizon. If past is prologue, the Dow roster will look very different in 25 years. Of the 30 current stocks, fewer than half were members in 1989. Only five have maintained membership for 50 years, and only one – General Electric – has been a Dow stock since the index expanded to 30 companies on Oct. 1, 1928. By 2039 some of today's iconic companies will likely have faded away like an old Kodak photo, or closed up shop like a Woolworth's lunch counter".

Similarly to the S&P 500, the Dow is measured in points. The points come from the sum of all stock prices in the index, divided by the 'Dow Divisor', as set by McGraw Hill Financial, who own the Dow. The divisor changes over time, to adjust changing with stock splits and dividends. Chart 4.8 shows the advancement of the Dow since 1977 to spring 2017.

Chart 4.8 DJIA Index Performance 1977 - 2017

The advancement of the DJIA and S&P 500 go very closely to each other. This is main-ly because both indices consist of similar blue-chip companies. Chart 4.9 shows a comparison of the two in a 10-year period from 2007 to 2017. Wells (2013) compares the two as follows: "The Dow is an aircraft carrier, the S&P is the entire fleet".

Chart 4.9:   DJIA and S&P 500 Comparison 2007 - 2017

The media tends to report more of the advancement of the Dow than of the S&P 500 even though the indices compare very closely. While the author found no real reason-

ing behind this, it is safe to assume this is due to the Dow consisting of "famous and interesting" companies such as Apple, Coca Cola, Disney, IBM etc. The names on the index are what many consider to be at the "heart" of American industry.

5 Value Investing

5.1 Benjamin Graham, Mr. Market & Net-Net-Net Stocks

To put it simply, value investing is the process of finding cheap stocks relative to their underlying business value. Benjamin Graham (1894 – 1976) was an investor and professor at Columbia Business School and he is known as "the father of value investing". What he essentially taught, was that it is possible to be a successful investor without having to take on (unnecessary) added risk. This was (and still is) completely counter-intuitive, since many of us assume that greater risk is required for greater reward. Myers (2007) states the following: "He's (Graham) been credited as the creator of the security analysis profession and was instrumental in drafting many elements of the 'Securities Act of 1933', which, among other things, required companies to provide financial statements certified by independent accountants. He lost most of his money in the stock market crash of 1929 and the subsequent Great Depression. After learning a hard lesson about risk, he wrote 'Security Analysis' (published in 1934), which chronicled Graham's methods to analyse and value securities".

Graham's most notable book is 'The Intelligent Investor' (first published in 1949, with many new editions to follow). The book introduces the reader to a fellow named Mr. Market (a humorous metaphor for the stock market). Mr. Market will show up at your door every day, offering deals (stocks) at different prices. In order for the reader to get a grasp of this fellow, let's put it in Graham's (2006: 204-205) own words: "Imagine that in some private business you own a small share that cost you $1,000. One of your partners, named Mr. Market, is very obliged indeed. Every day he tells you what he thinks your interest is worth and furthermore offers either to buy you out or to sell you an additional interest on that basis. Sometimes his idea of value appears plausible and justified by business developments and prospects as you know them. Often, on the other hand, Mr. Market lets his enthusiasm or his fears run away with him, and the value he proposes seems to you a little short of silly."

The above quote is agreeably a great way to express short-term market volatility, emotions and behavioural finance coined long before it became a studied subject. Graham continues as follows with his Mr. Market metaphor: "If you are a prudent investor or a sensible businessman, will you let Mr. Market's daily communication determine your view of the value of a $1,000 interest in the enterprise? Only in case you agree with him, or in case you want to trade with him. You may be happy to sell out to him when he quotes you a ridiculously high price, and equally happy to buy from him when his price is low. But the rest of the time you will be wiser to form your own ideas of the value of your holdings, based on full reports from the company about its operations and financial position".

Graham had a few famous techniques to value companies: Net Net's (aka) NCAV (Net Current Asset Value) per share. When people discuss either two, they are usually referring to the same thing. The NCAV formula is: '(Current Assets − Total liabilities) / Shares outstanding'. The idea is that an investor should look for companies with prices below the NCAV value. This difference between price and NCAV is known as 'margin of safety'. To further clarify the idea, finding companies trading below their liquidation price can prove to be profitable. Warren Buffett called this 'Cigar Butt Investing'; There may be an almost completely smoked cigar butt on the street, with only a few puffs left, but those puffs are pure profit.

Jun (2014) writes the following on NCAV's: "The reason to buy them is that they are very easy to value, there is a solid floor, most are simple businesses to understand, nobody wants it, they are usually small and microcaps and trade in low volume. Assuming you found a good one, your downside is protected by the liquid assets and you are buying with a huge margin of safety. If the company has other long-term assets like buildings or cash overseas, that's an included bonus if it can get unlocked."

The author wants to point out that while the strategy seems very simple, individuals need to be very aware of exact reasons why a stock is cheap. NCAV's are relatively rare, and most of them are real garbage. Reasons for a stock being cheap may include: Rapidly decreasing earnings, cooking the books, loss of major customer, re-

structurings, dividend slash etc. Jun (2014) continues with some criteria to consider when screening for NCAV's:

1. **Stay Within Circle of Competence.** It's a cliché but its true. Although you only have to focus on the business itself, you are looking at a company that has a lot of troubles. So its easy to stick with what you know.

2. **No Chinese stocks.** Unless it's Alibaba, most Chinese stocks are still very shady. Especially the smaller ones. High chance of fraud so why risk it. The idea is to buy cheap net nets that will lower risk. Not to find ones that you think will go up by 1,000%.

3. **Has a Valid Operating Business.** Stay away from net nets where their business model is totally outdated as the value will erode, A company could have a solid balance sheet, but if it's main business is photo printing or backup data with CD's, run away.

4. **Low Cash Burn.** Make sure the company has enough money to last for several years even if it keeps loosing money. Get the TTM (Trailing Twelve Months) FCF (Free Cash Flow) or last year numbers and divide it by how much money they have on the balance sheet. A low cash burn is your safety net. A lot of value is tied up in cash, so if the burn rate is high, you will be fighting against time as you see the NCAV value drop.

5. **No Debt or Very Easily Manageable.** Looking for safe net nets is key and debt is a killer for most small businesses. Since net nets are struggling with their main operating business or are losing money, the last thing you want is debt crushing them further.

6. **No Insider Selling.** I want to see insiders committed to saving the company, looking for ways to sell it or just extract value out of it. Insider selling when the stock is at its lowest price point is a sign that management does not care about anything other than filling up their pockets before the company rolls over dead.

7. **Signs of Buybacks.** The opposite of #6. If management understands that the sticker price on their company is ridiculous, they can continue to buy up shares to increase the value of each share.

Pilots and surgeons use checklists in their line of work, since the human mind has its limit on what it can remember. It is wise for an investor who wishes to do their own

stock-picking to have a checklist of their own. To continue the above criteria checklist Bleker (2014) adds the following:

8. **Adequate Past Earnings or Catalyst[7].** I want to invest in firms that have run into major, yet solvable, problems. Companies with a history of barely scraping by could stay valued below NCAV for a very long time. Obviously this does not matter if there's a catalyst on the horizon that will either move the stock price or increase profitability.

7. **Past Price Above NCAV or Catalyst.** This is a good way to tell whether you're buying into a perennial net net or not. I want to see a company that has traded above its NCAV sometime in its recent history, sometime in the past 5 years. The same catalyst clause applies here, as well.

8. **Large Current Ratio.** A larger current ratio (Current Assets / Current Liabilities) is an insolvency buffer. I want the firms I invest in to be able to cover their current liabilities as easily as possible. A larger current ratio also means that the firm's balance sheet can erode to a greater degree without having a large impact on the firm's NCAV.

9. **Low Price to Net Cash.** I like situations where the firm is trading below net cash (cash less ALL liabilities) since these firms are paying me to buy stock. The value of cash is also highly certain since $1 usually equals $1 while other assets might be worth more or less than stated value.

The author will now look into performance of NCAV's. It turns out that several studies indicate NCAV outperformance of indices by a healthy margin (See table 5.1. Details of study in Appendix 1). Following the reference trail for the studies proved somewhat difficult, since most of the studies need to be paid a hefty sum to view (or bibliography is difficult to obtain). However, the author wants to point out that denying their truthfulness is silly, since the authors behind the studies are known people in the investment world. Particularly Joel Greenblatt and Tobias Carlisle. Both of these formulas are extensions of the NCAV model and will be analysed later in this thesis.

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[7] In Value Investing terminology, a Catalyst is an event that will trigger an undervalued stock to revert back to its intrinsic value. This may be a boost in earnings, market correction, regulatory changes etc.

Table 5.1:   Performance of NCAV's

Study	NCAV Portfolio Annual Return in Study	Stock Market Index Annual Return Over Same Time Period	Stock Filter Used	Time Period Studied
Net Current Asset Value Study[1]	27.10%	1.30%	Stock Price/NCAV < 0.85	4/1972 - 4/1978
Net Current Asset Value Study[2]	38.50%	32.10%	Stock Price/NCAV < 1.0	4/1977 - 12/1984
Net Current Asset Value Study[3]	24.75%	19.48%	Stock Price/NCAV < 0.667	12/1949 -12/1976
Net Current Asset Value Study[4]	33.70%	12.15%	Stock Price/NCAV < 0.667	12/1970 - 12/1983
Net Current Asset Value Study[5]	35.28%	10.69%	Stock Price/NCAV < 0.667	12/1982 -12/2007
Net Current Asset Value Study[6]	19.89%	10.67%	Stock Price/NCAV < 0.75	12/1951 - 12/2009

reenblatt, Joel M., Richard Pzena, and Bruce L. Newberg. "How the small investor can beat the market by buying stocks that are selling belo
ir   liquidation value." *Journal of Portfolio Management* (Summer 1981): 48-52.

ı, Joseph D. "An Empirical Analysis of Ben Graham's Net Current Asset Value Rules." Financial Review 23, no. 2 (1988): 215-225.

ppenheimer, Henry R. "Common Stock Selection: An Analysis of Benjamin Graham's "Intelligent Investor" Approach." Ann Arbor: UMI
search Press, 1981.

ppenheimer, Henry R. "Ben Graham's Net Current Asset Values: A Performance Update." Financial Analysts Journal (November-December
86): 40-47.

arlisle, Tobias, Sunil Mohanty, and Jeffrey Oxman. "Ben Graham's Net Nets: Seventy-Five Years Old and Outperforming." February, 2010.
cessed February 16, 2015. http://csinvesting.org/wp-content/uploads/2015/01/Benjamin-Graham-s-Net-Nets-Seventy-Five-Years-Old-and-
tperforming1.pdf

/endl, Victor J. "The Net Current Asset Value Approach to Stock Investing." Wendl Financial, Inc., 2013.

(Data Source: Value Walk 2015)

The sheer amount of financial ratios can seriously confuse an individual who is trying to figure out if a security is a good buy. Graham had the following criteria: Low P/E (under 15), Low Price to Book (under 1.5) and preferably a high Current Ratio (over 2.0). He was known to screen stocks with his own formula of: (P/E x P/B). This number should be no greater than 22.5 (15 x 1.5). If the number was well below his number, the stock was up for further investigation. This is the same technique that Warren Buffet (his best known disciple) used in his early days as an investor.

5.2 Valuing Businesses: Discounted Cash Flows and the Magic Formula

In his 1938 book, 'The Theory of Investment Value', the economist John Burr Williams defined value as follows: "The value of any stock, bond or business today is determined by the cash inflows and outflows – discounted at an appropriate rate – that can be expected to occur during the remaining lifetime of the asset". This is known today as discounted cash flow. The name 'discounted' comes from the assumption that a dollar today is worth more than a dollar tomorrow.

For individual investors today, most corporate financial ratios are conveniently available online. For the sake of demonstration, the author will provide an example of the above quoted business valuation. In traditional value investing, the Discounted Cash Flow (DCF) method goes as follows: First find a company's Free Cash Flow (FCF) (Operating Cash Flow – Capital Expenditures) from the most recent to 5 years back. Next, calculate an average of these (Sum of FCF's / no. of years).

For example, lets say you come up with an average FCF of $100,000 p.a. Now we need to discount it, and the most common rate of discount is usually 10%. The calculation goes as follows: $100,000 / (1+0,1)^1$. For the next years, the calculation stays the same, but the exponents change according to year (y2: ^{2}...y3: ^{3}...y4: ^{4}...y5: ^{5}). The author composed a DCF analysis of $100,000 as shown in table 5.2.

Table 5.2:   DCF Analysis

	Average FCF	DCF
Year 1	100000	90909,1
Year 2	100000	82644,6
Year 3	100000	75131,5
Year 4	100000	68301,3
Year 5	100000	62092,1
	Total	379078,7

Since a businesses future is somewhat unpredictable, the DCF method is the closest we can get in our assumptions. Reality is often more complicated, but models and theories help us interpret complexities. The DCF only gives us cash inflows. In order to get

a better picture of a business' intrinsic value, next we should assume that all of its debt is paid and assets sold (after 5 years). The (sum of the sold assets + DCF's) / Shares Outstanding can point to the direction of a shares intrinsic value. If there is a deep discount (margin of safety) between that price and a shares quoted price today, it might be undervalued. The valuation of assets can be more difficult. Value investors tend to prefer businesses which assets can more easily be valued (e.g. Real estate, land, factories, patents, cash etc.). Intangible assets or goodwill can be much more difficult to value.

Mohnish Pabrai (2007: 35-46, 59), is famous for following in the footsteps of Warren Buffett, and prefers to invest only in businesses that are simple and easy to under-stand. He writes: "Efficient market theorists (EMTs) tell us that all known information about a given publicly traded business is reflected in its stock price. Thus, they pro-claim that there isn't much to be gained by being a securities analyst and trying to fig-ure out the intrinsic value of a given business. And with frictional costs thrown in, the EMTs believe stock picking is not just a zero-sum game, but rather a negative-sum game" Pabrai summarizes his investment philosophy in the following points:

- **Invest in existing businesses.** Buying an existing business with a well-defined business model and one with a long history of operations is easier to analyze and way less risky than doing a startup.

- **Buy simple businesses in industries with an ultra-slow rate of change.** E.g. As long as humans travel long distances and have a need to sleep and refresh themselves, there will always be a need for motels and hotels.

- **Buy distressed businesses in distressed industries.** As an example, in the early 1970's with the oil embargo, deep recession, and reduction in the con-sumer's discretionary spending, highway motels were suffering. They were be-ing sold at very cheap prices – all based on their pathetic near-term prospects.

- **Buy businesses with a durable competitive advantage – The Moat.** Low cost is one if Pabrai's favourite in simple business models.

- **Bet heavily when the odds are overwhelmingly in your favour.** Pabrai lays out options of possible outcomes and divides them in percentages (e.g. 70% chance that market will correct and received return of say 80%. 20% chance of small correction or earnings boost, giving a return of 40%. 10% chance of price remaining unchanged or making a slight loss).

- **Focus on arbitrage.** Arbitrage is classically defined as an attempt to profit by exploiting price differences in identical or similar financial instruments. For example, if gold is trading in London at $550 per ounce and in New York at $560 per ounce, assuming low frictional costs, an arbitrageur can buy gold in London and immediately sell it in New York, pocketing the difference. While arbitrage spreads are small and sometimes only available for fleeting moments, they are virtually risk free and it is free money while it lasts. Anytime you're playing an arbitrage game, you end up getting something for nothing.

- **Buy businesses at big discounts to their underlying intrinsic value.** If you buy an asset at a steep discount to its underlying value, even if the future unfolds worse than expected, the odds of a permanent loss of capital are low.

> "The function of the margin of safety is, in essence, that of rendering unnecessary an accurate estimate of the future." –Benjamin Graham

- **Look for low risk, high uncertainty businesses.** Low risk and high uncertainty is a wonderful combination. Pabrai refers here to businesses that have been hit by an event that in the near term might impact a business negatively, but will work out in the long run. Things that could effect (near-term) operations might be gas prices, legislative speculation or global crises.

- **It's better to be a copycat than an innovator.** Look for paths that are proven to be successful. Innovators need to be constantly ahead of their game, while copycats can follow and be profitable. Obviously industry needs to be taken into account when looking for these copycats.

The author wrote earlier in the thesis on how emotions may control investor behaviour. Table 5.3 shows several world events, their effects on the DJIA and subsequent recovery.

Table 5.3:   Historical DJIA Losses and Subsequent Percentage Gains

		DJIA Loss	DJIA Percentage Gain		
			Days after Reaction Dates		
Event	Reaction Dates	Gain/Loss (%)	22	63	126
Fall of France	09.05.1940 - 22.06.1940	-17.1	-0,5	8,4	7,0
Korean War	23.06.1950 - 13.07.1950	-12.0	9,1	15,3	19,2
US bombs Cambodia	29.04.1970 - 26.05.1970	-14.4	9,9	20,3	20,7
Arab oil embargo	18.10.1973 - 05.12.1973	-17.9	9,3	10,2	7,2
Nixon Resigns	09.08.1974 - 29.08.1974	-15.5	-7,9	-5,7	12,5
Hunt silver crisis	13.02.1980 - 27.03.1980	-15.9	6,7	16,2	25,8
Financial panic 1987	02.10.1987 - 19.10.1987	-34.2	11,5	11,4	15,0
Asian stock market crisis	07.10.1997 - 27.10.1997	-12.4	8,8	10,5	25,0
Russian LTCM crisis	18.08.1998 - 08.10.1998	-11.3	15,1	24,7	33,7
Mean		**-16.7**	**6,9**	**12,4**	**18,5**
Median		**-15.5**	**9,1**	**11,4**	**19,2**

(Source: Pabrai 2007: 78)

If one does find a suitable company to invest in, how much capital should one put to work? There is no 'correct' answer here, but the author would like to mention the Kelly Formula. Kuepper (2017) writes: "John Kelly, who worked for AT&T's Bell Laboratory, originally developed the Kelly Criterion to assist AT&T with its long distance telephone signal noise issues. Soon after the method was published in a 1956 journal. However, the gambling community got wind of it and realized its potential as an optimal betting system in horse racing. It enabled gamblers to maximize the size of their bankroll over the long term. Today, many people use it as a general money management system for not only gambling but also stock investing."

Simply put, the formula goes: Edge / Odds = Fraction of your bankroll you should bet each time.

Assume you're offered a coin toss where heads means you get $2 and tails costs you $1. How much of your bankroll should you bet if you're offered these odds? According

to the Kelly Formula, the edge is $0,50 [(0.5 x $2) + (0.5 x -$1]. The odds are what you win, if you win, or $2. So the Kelly Formula suggests you bet 25 percent ($0.50 / $2.00) each time (Pabrai 2007: 72). The author wants to point out that the Kelly Formula might be considered for use once odds are stacked significantly in the individual's favour. It is good to remember that the formula was used in gambling before investing and we as individuals want to keep the two as far separated from each other as possible.

Before analyzing the 'Magic Formula' in regards to value investing, there are two concepts that need to be covered: Earnings Yield and Return on Capital (ROC). Kennon (2010) writes: "The earnings yield ratio basically tells you, 'if this stock were a bond, how much would it earn as a percentage of my investment based on *this year's* after-tax profits?' it is the inverse of the P/E ratio." There are two ways to calculate the earnings yield ratio, but the simple on is: Earnings Yield = 1 / P/E ratio of stock. To give an example, if a stock's P/E is 9, the earnings yield would be 11% (1 / 9).

The Earnings Yield in Joel Greenblatt's 'Magic Formula' is slightly different. In his book (The Little Book That Beats the Market), the earnings yield is: Operating Earnings / Enterprise Value. Using enterprise value penalizes companies that carry a lot of debt and little cash, and rewards firms with a lot of cash and little if any debt – a useful distinction not reflected in the P/E ratio. Enterprise value is lower than market cap when a firm carries more cash then [Sic] it has in debt, and higher than market cap when the debt burden is higher than cash, meaning earnings yield will be higher in the former case, given a constant value for operating earnings (Magic Diligence 2009). Enterprise value is described as follows in the 'Magic Formula':

Enterprise Value = Market Cap + Debt – Excess Cash

The author has written an example of 'Magic Formula (MF)' earnings yield in in table 5.4 below.

Table 5.4:   Example Company With Earnings Yield

Example Company Inc.	$ Millions
Mcap	$140,0
Total Debt	$40,0
Cash on Balance Sheet	$15,0
Revenue	$20,0
COGS	$4,0
Operating Costs	$2,0
Operating Earnings (EBIT):	$14,0
Enterprise value:	$165,0
MF Earnings Yield	8,48%

A traditional way to calculate Return on Invested Capital (ROIC) would be the following: Net Income – Dividends / Total Capital (Debt & Equity). If we come up with a ratio of for example 20%, this means that for every dollar invested, 20 cents is generated in income. The Magic Formula (MF) ROIC created by Greenblatt has some differences. The differing ROIC is calculated as follows: EBIT / (Working Capital + Net Fixed Assets[8]). Greenblatt (2006: 138-141) explains the reasoning behind these metrics as follows: "Using EBIT allowed us to view and compare the operating earnings of different companies without the distortion arising from differences in tax rates and debt levels. Working Capital + Net Fixed Assets (or tangible capital employed) was used in place of *total assets* (used in an ROA calculation) or *equity* (used in an ROE calculation). The idea here was to figure out how much capital is actually needed to conduct the company's business. In addition to working capital requirement, a company must also fund the purchase of fixed assets necessary to conduct its business such as real estate, plant and equipment."

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[8] Net Fixed Assets: Fixed assets less all liabilities associated with them such as depreciation.

To put the above quote in more layman terms, Greenblatt attempts to find out 'real' numbers in return percentages. The author believes that doing a ROIC calculation with the above metrics might also help in screening out companies that might be manipulating returns.

The whole idea behind the Magic Formula is to screen companies that are "high quality" and "cheap". The high quality in this case is measured as having a high rate on ROIC and Earnings Yield. When screening, the companies with the highest numbers on ROIC and Earnings Yield combined can be considered good investments. Greenblatt conducted a performance study where he screened companies that would rank in the top 30 and top 1,000 of US stocks based on the Magic Formula (both out of 3,500 US listed companies). The returns are based on if an investor would have held a portfolio of the corresponding amounts. The results do show quite satisfactory results. The 30 stock portfolio (table 5.5) can be seen as the portfolio of an individual investor and the 1,000 stock portfolio (table 5.6) as one of an institution.

Table 5.5:   The 30 Stock Portfolio

	Magic Formula	Market Average*	S&P 500
1988	27.1%	24.8%	16.6%
1989	44.6	18.0	31.7
1990	1.7	(16.1)	(3.1)
1991	70.6	45.6	30.5
1992	32.4	11.4	7.6
1993	17.2	15.9	10.1
1994	22.0	(4.5)	1.3
1995	34.0	29.1	37.6
1996	17.3	14.9	23.0
1997	40.4	16.8	33.4
1998	25.5	(2.0)	28.6
1999	53.0	36.1	21.0
2000	7.9	(16.8)	(9.1)
2001	69.6	11.5	(11.9)
2002	(4.0)	(24.2)	(22.1)
2003	79.9	68.8	28.7
2004	19.3	17.8	10.9
	30.8%	**12.3%**	**12.4%**

(Greenblatt 2006: 56)

Table 5.6:   The 1000 Stock Portfolio

	Magic Formula	Market Average*	S&P 500
1988	29.4%	19.6%	16.6%
1989	30.0	27.6	31.7
1990	(6.0)	(7.1)	(3.1)
1991	51.5	34.4	30.5
1992	16.4	10.3	7.6
1993	0.5	14.4	10.1
1994	15.3	0.5	1.3
1995	55.9	31.4	37.6
1996	37.4	16.2	23.0
1997	41.0	19.6	33.4
1998	32.6	9.9	28.6
1999	14.4	35.1	21.0
2000	12.8	(14.5)	(9.1)
2001	38.2	(9.2)	(11.9)
2002	(25.3)	(22.7)	(22.1)
2003	50.5	41.4	28.7
2004	27.6	17.3	10.9
	22.9%	**11.7%**	**12.4%**

(Greenblatt 2006: 61)

Greenblatt (2006: 59, 69, 73) does however recognise the shortcomings of his formula:

> "There's often a problem when looking back and making assumptions about what could have been accomplished in the past. While a computer stock-picking formula may appear to have generated spectacular theoretical returns, duplicating those results in the real world may be quite difficult. For instance, the magic formula may be picking companies that are so small that few people can really buy them. Often, small companies have very few shares available for purchase, and even a small amount of demand for those shares can push share prices higher. If that's the case, the formula may look great on paper, but in the real world, the fantastic results can't be replicated. As it turns out, there are plenty of times when the magic formula doesn't work at all! In fact, on average, in five months out of each year, the magic formula portfolio does worse than the overall market. So what's the point? The point is that if the magic formula worked all the time, everyone would probably use it. If everyone used it, it would probably stop working. That's why were so lucky the magic formula isn't that great. It doesn't work all the time. In fact, it might not work for years. Most people won't wait that long. Their investment time horizon is too short. If a strategy works in the long run (meaning it sometimes takes three, four, or

even five years to show its stuff), mot people won't stick with it. After a year or two of per-
forming worse than the market averages (or earning lower returns than their friends),
most people look for a new strategy – usually one that *has* done well over the past few
years."

Since the Magic Formula has grabbed a lot of attention in the Value Community, it has
been up for study. Notable value investor Tobias Carlisle and researcher Wes Gray
conducted a study on how the MF would have performed in a period between 1964 –
2011, a timeframe considerably longer than Greenblatt's initial study. The original
Greenblatt study has been criticised for being "too simple". The new study only looked
at the performance of companies in the S&P 500. Regarding the findings, Carlisle
(2014: 58) writes:

> "For context, the smallest company in the S&P 500 Index in January 2014 is $3.4 billion,
> the median market capitalization is $16.5 billion, and the average is $35 billion. These are
> very large companies. We also weighted the remaining stocks by market capitalization to
> make the portfolios comparable to the S&P 500 Index, which is market-capitalization
> weighted, to adjust for any bias to small capitalization stocks. We found that, even under
> these arduous conditions, Greenblatt's Magic Formula outperformed the S&P 500 Total
> Return Index (which includes dividends, as does the Magic Formula) over the full sample,
> returning on average 13.9 percent annually compared to 10.5 percent for the market over
> the same period. 330 basis points – 3.3 percent yearly – might not look like a big edge,
> but compounded over the full period, it means that the Magic Formula earned almost six
> times the market's return. $10,000 invested in the Magic Formula grew to $12.2 million,
> while the same amount invested in the market grew to just $2.1 million. The Magic For-
> mula's performance was also quite reliable through the full period, beating the market in
> 85 percent of rolling 5-year periods and 97 percent of rolling 10-year periods."

The results of the study are provided in chart 5.7 below.

Chart 5.7:   MF vs. S&P 500 1964 - 2011
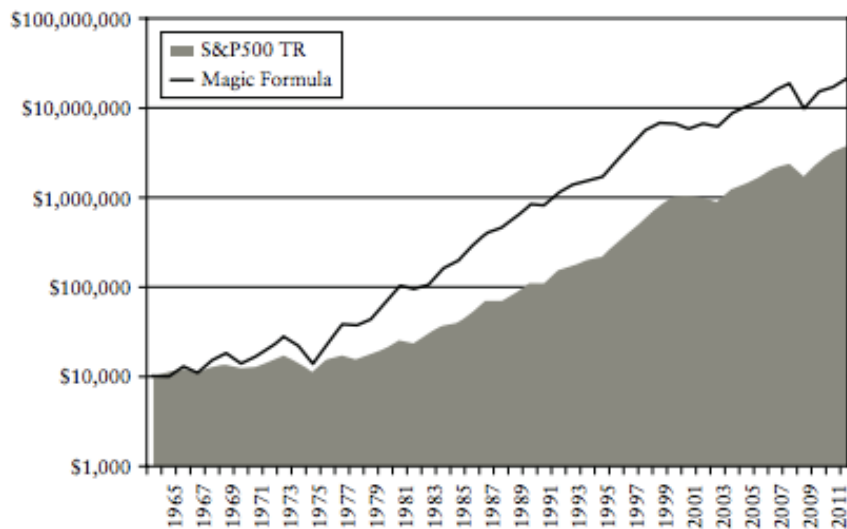
Carlisle and Gray wanted to find out what really drove the MF to outperform. To get a better understanding, they examined hypothetical returns by splitting the MF returns into its two ratios, the Earnings Yield and ROIC. What they found was that Earnings Yield alone performed better than ROIC, and the MF itself is between these two. These results are shown in chart 5.8.

Chart 5.8:   Earnings Yield, ROIC & MF
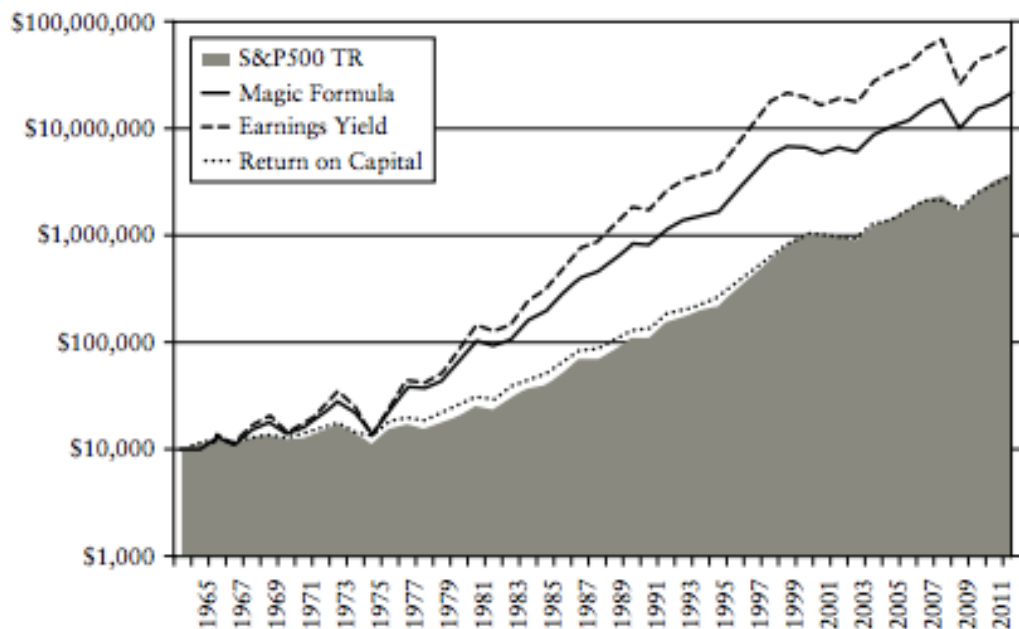
Since there seems to be strong evidence suggesting that value investing works, why isn't it more popular? One would believe that covering the downside (margin of safety) before making an investment decision sounds like a great idea. To shed some light on this, Kaissar (2017) writes:

> "Everyone knows that value stocks have outperformed growth stocks historically. The explosion of smart beta funds makes value investing cheaper and more widely available than ever before. Thus, investors will flock to value stocks and thereby squeeze away the value premium. The second problem is that value stocks aren't likely to appeal to every investor. They are more volatile than growth stocks. It stands to reason that investors who want a less bumpy ride will naturally prefer growth stocks."

The author believes that in the above quote, volatility is the key word for most individuals. Judging from the research on behavioural finance (discussed earlier in the thesis) this is probably the single most important factor of value investing's apparent unpopularity. It can be extremely hard to stay calm when the (paper) value of your holdings suddenly sinks with double digits. These are times when investors must look back at the reasons for buying the stock and review the fundamentals. Is the price dip due to real changes in the underlying business, or is Mr. Market overreacting, and perhaps giving a chance to buy something good at an even greater bargain? Academia plays its role in value investing not being popular, as Athanassakos (2014) puts it:

> "What value investors do is not well known or understood because universities accept the notion that markets are efficient, and, as a result, they focus on teaching and applying modern portfolio theory, which cannot be more different from value investing. Diversification does not matter much; the margin of safety, which helps identify a stock as truly undervalued, protects the downside and controls risk. As noted investor John Templeton said: 'It is impossible to produce a superior performance unless you do something different from the majority.' Which is precisely what value investors do. Again this goes against the teachings of modern portfolio theory, whose main tenets are that everyone holds a well-diversified portfolio and that the only risk that really matters is beta. Value investors do not believe that beta or standard deviation or volatility, the cornerstone of modern portfolio theory, are true measures of risk. Risk for value investors is the possibility of losing capital. If the evidence in favour of value investing is so overwhelming, why isn't everyone a value investor? This is because the driving forces behind the value premiums are human psychology and institutional biases. Individuals are subject to irrational behaviour and portfolio managers do not lack stock-picking abilities, but are subject to institutional factors that encourage them to over diversify to protect their jobs and assets under management."

Tweedy, Browne Company LLC is one of the most famous investment firms in the value community. They are known for looking for traditional Ben Graham stocks (low P/E and P/B ratios). In 2009 they revised their influential booklet titled: "What Has Worked in Investing". As written under its title, It is a collection of "studies of investment Approaches and Characteristics Associated with Exceptional Returns". These studies confirmed in long time periods, stocks bought with low ratios on P/B, P/E, Price to Cash Flow, Small Market Cap do very well (not just in the US but globally as well). The author believes that mean reversion plays a strong role in this; what goes up will come down, what is down will go up.

Roger Ibbotson, Professor in the Practice of Finance at Yale School of Management and President of Ibbotson Associates, Inc., a consulting firm specializing in economics, investments and finance, in "Decile Portfolios of the New York Stock Exchange, 1967 -

1984," Working Paper, Yale School of Management, 1986, studied the relationship between stock price as a percentage of book value and investment returns. To test this relationship, all stocks listed on the NYSE were ranked on December 31 of each year, according to stock price as a percentage of book value, and sorted into deciles. (A decile is 10% of the stocks listed on the NYSE.) The compound average annual returns were measured for each decile for the 18-year period, December 31, 1966 through December 31, 1984. (Browne et al. 2009: 3). Table 5.9 shows the results of this study and that stocks with a low P/B value ratio had significantly better investment returns over the 18-year period than stocks priced high as a percentage of book value.

Table 5.9:   Stock Price as a Percentage of Book Value, 1967 – 1984

Decile	Compound Annual Return	Value of $1.00 invested on 12/31/66 at 12/31/84
1 (Lowest price as % of book value)	14.36%	$12.80
2	14.40	12.88
3	14.39	12.87
4	12.43	9.26
5	8.82	4.98
6	8.36	4.60
7	7.69	4.09
8	5.63	2.83
9	5.26	2.65
10 (Highest price as % of book value)	6.06	3.06

(Source: Tweedy, Browne 2009: 3)

The same study provides evidence of buying earnings on the cheap does very well. This is demonstrated in table 5.9.1

Table 5.9.1: **Investment Results of NYSE Companies According to Price/Earnings Ratios, December 1966 – December 1984**

Decile	Compound Annual Return	Ending Value on 12/31/84 of $1.00 Invested on 12/31/66
1 (Lowest P/E ratio)	14.08%	$12.22
2	13.81	11.67
3	10.95	7.21
4	10.29	6.43
5	9.20	5.32
6	6.43	3.27
7	7.00	3.62
8	5.57	2.80
9	5.50	2.77
10 (Highest P/E ratio)	5.58	2.81

(Source: Tweedy, Browne 2009: 16)

For international perspective and low Price to Cash Flow, the study included the booklet of Tweedy, Browne (2009: 24) is one by A. Michael Keppler, which examined the relationship between price-to-cash flow ratios and investment returns for companies throughout the world in "Further Evidence on the Predictability of International Equity Returns: The Importance of Cash Flow in Country Selection" (1991). The study indicated that the most profitable strategy was investment in the lowest price-to-cash flow quartile. This strategy produced a 19.17% compound annual return in local currencies (and 20.32% in US dollars) in a period between 31 Jan 1970 – Dec 31 1989. The least profitable strategy was investment in the highest price-to-cash flow quartile. Further description on the study can be found in Appendix 1 (2). Table 5.9.2 shows the performance of NYSE listed companies (in a period of 22 years) by Holding Periods and Price to Cash Flow Ratios.

Table 5.9.2: Investment Returns in Relation to Price/Cash Flow Ratios for all NYSE Listed Companies, April 1968 – April 1990

Holding Period Following Portfolio Formation	Price/Cash Flow Ratio Decile									
	(High Price/Cash Flow Ratio)								(Low Price/Cash Flow Ratio)	
	1	2	3	4	5	6	7	8	9	10
1st Year	8.4%	12.4%	14.0%	14.0%	15.3%	14.8%	15.7%	17.8%	18.3%	18.3%
2nd Year	6.7	10.8	12.6	15.3	15.6	17.0	17.7	18.0	18.3	19.0
3rd Year	9.6	13.3	15.3	17.2	17.0	19.1	19.1	20.2	19.3	20.4
4th Year	9.8	11.1	14.6	15.9	16.6	17.2	18.2	19.2	22.3	21.8
5th Year	10.8	13.4	16.1	16.2	18.7	17.7	19.1	20.9	21.2	20.8
Average annual return over the 5-year period	9.1	12.2	14.5	15.7	16.6	17.1	18.0	19.2	19.9	20.1
Cumulative 5-year total return	54.3	77.9	96.9	107.4	115.8	120.6	128.3	140.6	147.6	149.4

(Source: Tweedy, Browne 2009: 26)

In regards to Market Cap and performance, Tweedy, Browne compared it with P/E and P/B ratios. The results are shown in tables 5.9.3 and 5.9.4 respectively. Details of the studies can be found in Appendix 2.

Table 5.9.3: July 1963 – December 1990 Annual Investment Returns for Low Versus High Price/Book Value Stocks According to Market Capitalization within Each P/B Category for NYSE and NASDAQ Listed Companies

| Market Capitalization Decile | Ratio of Price to Book Value Decile | | | | | | | | | |
| | (Highest Price/Book Value) | | | | | | | | (Lowest Price/Book Value) | |
	1	2	3	4	5	6	7	8	9	10
1 (Smallest market capitalzation)	8.4%	13.7%	14.4%	17.2%	18.7%	18.1%	20.4%	20.5%	21.8%	23.0%
2	5.2	12.6	11.5	14.3	16.0	14.3	19.0	15.4	17.2	21.5
3	6.7	10.6	14.8	11.4	16.3	15.6	15.6	16.8	18.5	19.2
4	4.7	8.6	12.7	16.3	13.6	14.5	16.1	19.1	18.1	17.6
5	10.6	7.8	13.0	17.6	13.6	17.2	17.3	15.1	18.2	17.9
6	8.4	11.8	13.7	14.8	11.3	15.2	14.3	14.3	14.9	18.0
7	11.4	12.0	11.9	10.0	11.9	13.6	11.9	13.9	13.2	17.6
8	7.9	13.6	10.9	11.4	11.9	12.1	13.8	12.6	15.5	18.6
9	5.3	10.7	11.0	12.0	12.6	11.2	9.8	13.3	12.5	14.6
10 (Largest market capitalzation)	11.2	10.6	10.1	8.5	9.5	10.0	9.7	11.5	11.6	14.2
All companies in each price/book value decile	7.7	11.8	12.7	14.0	14.9	15.1	16.7	16.8	18.0	19.6

(Source: Tweedy, Browne 2009: 8)

Table 5.9.4: 1963 Through 1980 Annual Investment Returns for Low versus High Price/Earnings Ratio Stocks According to Market Capitalization Within Each P/E Ratio Category for NYSE Listed Companies

| Market Capitalization Category | Price/Earnings Ratio Category | | | | |
	(Lowest P/E) 1	2	3	4	(Highest P/E) 5
1 (Smallest)	19.1%	16.3%	14.8%	11.6%	14.4%
2	18.1	14.5	9.5	8.2	9.8
3	17.2	13.2	9.6	7.6	6.1
4	15.5	13.3	10.3	7.8	6.6
5 (Largest)	13.1	10.8	7.9	6.6	6.4

(Source: Tweedy, Browne 2009: 19)

Conclusions and Recommendations

Institutions move the market with their buying and selling. And as long as humans run institutions, they are likewise prone to human error. They may dictate market directions in the short-term, but in the long-term, business fundamentals seem to be reflected in securities valuation. As the evidence suggests, anomalies do occur, but they are uncommon and require significant research into individual companies to be uncovered.

It is interesting to note that financial markets seem to be the one place where one needs to be skeptical towards its professionals. This might seem counter-intuitive, since as humans, we trust other professionals in their respective fields such as doctors, teachers or pilots. The evidence is clear that a vast majority underperform most known benchmarks such as the S&P 500, suggesting that individuals are in fact best off putting their money in low-cost index funds. The case for indexing has existed since John Bogle first introduced it, but it always seems to be challenged. At the start of 2008, Warren Buffett made a bet with the money management firm Protégé Partners. Buffett bet on an index fund that invests in the S&P 500 and that it would come out as a winner based on returns after 10 years. Protégé bet it could find five "funds of funds" that could do better (Lowenstein 2016). To those who have read this thesis, it should come as no surprise that Mr. Buffett is winning the bet. Lowenstein (2016) writes: "Warren's fund of choice, 'Vanguard 500 Index Fund Admiral Shares' is up 65.67%; Protégé's funds of funds – funds that own a portfolio of positions in a range of hedge funds – are up, on average, a paltry 21.87%. In order to win the bet, they would need a Herculean comeback. The answer to why this is the reality, is the hedge fund industry's fees, typically 2% plus an incentive, or 'carry' of 20% of the profits. The Admiral Shares, by contrast, charge expenses of only 0.05% a year". The fund management industry has its potential conflicts of interests with its clients, meaning individuals are wise to find out if a firm is about generating a real return, or just gathering assets.

The author recommends low-cost index funds for the overwhelming majority. Value investing requires a contrarian personality, a genuine real interest in finance, emotional stability, and a habit of constant learning and improvement. Charlie Munger (Warren Buffett's partner at Berkshire Hathaway) has said he does not know any successful

investor who is not an avid reader and learner. There is nothing wrong with individual stock picking, but one has to be in it for the right reasons. One of the main teachings of Benjamin Graham was to think of stocks as ownership of real companies, not just tickers and numbers. Successful value investors do exist, which also suggests that markets are irrational at times. It is also interesting to note that some of its proponents, such as Bruce Greenwald, are in academia (perhaps to the irritation of EMH theorists). The author believes that it is in the interest of the value investing community that EMH school of thought prevails. If the majority behaves in this matter, they are missing out on the opportunities that value investors hunt for, giving an edge to these contrarians.

Some might think of combining index investing with certain individual stock pickings. There is nothing wrong with this approach and the author has certain suggestions for individual picking. The first suggestion is circle of competence. This means that if you do not understand the business (how it makes money), you should stay away. The second is to look for companies with proven, stable earnings and those which core business is not drastically dependent on technology (simple businesses). The third is to avoid companies with high amounts of debt. Companies will inevitably at some point face headwinds, which is why not piling on debt is key to survival during rougher times. The fourth suggestion is to think of a company's *moat:* Does the firm have a durable competitive advantage such as pricing power, economies of scale, monopolistic traits in its industry etc. And finally, is the price you are paying justifiable? If the management seems to be talking on how they will dramatically change the future, be cautious. More money has been lost at the stroke of a pen than sheer theft. As Warren Buffett said there are two rules. One: Never lose money. Two: Remember rule number one.

References

Aguilar, L. (2013). *Institutional Investors: Power and Responsibility.* Available: https://www.sec.gov/news/speech/2013-spch041913laahtm. Last accessed 29th Mar 2017.

Arends, B. (2010). *The Market Timing Myth.* Available: https://www.wsj.com/articles/SB100014240527487034400045755482533403065 6. Last accessed 29th Mar 2017.

Armstrong Economics. (2017). *History of the Dow Jones Industrial Average.* Available: https://www.armstrongeconomics.com/research/history-of-the-dow-jones-industrial-average/. Last accessed 29th Mar 2017.

Athanassakos, G. (2014). *Value investing works. Why isn't it more popular?.* Available: http://www.theglobeandmail.com/globe-investor/investment-ideas/value-investing-works-why-isnt-it-more-popular/article17887820/. Last accessed 29th Mar 2017.

Business Dictionary. (2017). *Bandwagon Effect.* Available: http://www.businessdictionary.com/definition/bandwagon-effect.html. Last accessed 29th Mar 2017.

Bleker, E. (2014). *How 16 Benjamin Graham Inspired Rules Return 38% Annually.* Available: http://www.netnethunter.com/16-benjamin-graham-rules/. Last accessed 29th Mar 2017.

Bogle, J. (2006). *The First Index Mutual Fund: A History of Vanguard Index Trust and the Vanguard Index Strategy.* Available: http://www.vanguard.com/bogle_site/lib/sp19970401.html. Last accessed 29th Mar 2017.

Bogle, J (2007). *The Little Book of Common Sense Investing*. New Jersey: Wiley. p17.

Bogle, J (2010). *Common Sense on Mutual Funds: Fully Updated 10th Anniversary Edition*. 2nd ed. New Jersey: Wiley. p24.

Buffett, W. (1996). *Chairmans Letter to the Shareholders of Berkshire Hathaway Inc.* Available: http://www.berkshirehathaway.com/letters/1996.html. Last accessed 29th Mar 2017.

Carlisle, T (2014). *Deep Value: Why Activist Investors Battle for Control of Losing Corporations*. New Jersey: Wiley. p58-59.

Cleaver, J. (2015). *5 Reasons Compound Interest Isn't What It's Cracked Up to Be.* Available: http://money.usnews.com/money/personal-finance/mutual-funds/articles/2015/10/19/5-reasons-compound-interest-isnt-what-its-cracked-up-to-be. Last accessed 29th Mar 2017.

Durr, K., Colby R. (2014). *The Deals Decade.* Available: http://www.sechistorical.org/museum/galleries/caq/caq04b_rise_of_institutional_investors.php. Last accessed 29th Mar 2017.

Evans, R. (2014). *When saving for 10 years pays more than saving for 40.* Available: http://www.telegraph.co.uk/finance/personalfinance/investing/10742396/When-saving-for-10-years-pays-more-than-saving-for-40.html. Last accessed 29th Mar 2017.

Fama, E. (2014). *Eugene F. Fama, efficient markets, and the Nobel Prize.* Available: http://review.chicagobooth.edu/magazine/winter-2013/eugene-fama-efficient-markets-and-the-nobel-prize. Last accessed 29th Mar 2017.

Geier, B. (2015). *What Did We Learn From the Dotcom Stock Bubble of 2000?.* Available: http://time.com/3741681/2000-dotcom-stock-bust/. Last accessed 29th Mar 2017.

Graham, B., Zweig, J. (2006). *The Intelligent Investor*. 4th ed. New York: Harper Collins. p18, 204-205, 218, 275.

Greenblatt, J (2006). *The Little Book That Beats the Market*. New Jersey: Wiley. p56, 59, 61, 69, 73, 138-141.

Heshmat, S. (2015). *What Is Confirmation Bias?.* Available: https://www.psychologytoday.com/blog/science-choice/201504/what-is-confirmation-bias. Last accessed 29th Mar 2017.

Housel, M. (2015). *The Blind Forecaster.* Available: https://www.fool.com/investing/general/2015/02/25/the-blind-forecaster.aspx. Last accessed 29th Mar 2017.

Investopedia. (2017). *Dollar-Cost Averaging.* Available: http://www.investopedia.com/terms/d/dollarcostaveraging.asp. Last accessed 29th Mar 2017.

Investopedia. (2017). *Free-Float Methodology.* Available: http://www.investopedia.com/terms/f/freefloatmethodology.asp. Last accessed 29th Mar 2017.

Investopedia. (2017). *Institutional Investor.* Available: http://www.investopedia.com/terms/i/institutionalinvestor.asp. Last accessed 29th Mar 2017.

Investopedia. (2017). *What is the history of the S&P 500?.* Available: http://www.investopedia.com/ask/answers/041015/what-history-sp-500.asp. Last accessed 29th Mar 2017.

Jun, J. (2014). *Ben Graham Net Net Stocks and a 7 Step Checklist to Make Money with Net Nets.* Available: https://www.oldschoolvalue.com/blog/valuation-methods/ben-graham-net-net-deep-value-stocks-checklist/. Last accessed 29th Mar 2017.

Kahneman, S., Tversky A.. (1979). *Loss Aversion.* Available:
https://www.behavioraleconomics.com/mini-encyclopedia-of-be/loss-aversion/.
Last accessed 29th Mar 2017.

Kaissar, N. (2017). *Value Investing Hits Back.* Available:
https://www.bloomberg.com/gadfly/articles/2017-01-06/value-investing-resurges-
after-being-knocked-down. Last accessed 29th Mar 2017.
Kennon, J. (2010). *Earnings Yield as a Value Investing Strategy.* Available:
http://www.joshuakennon.com/earnings-yield-as-a-value-investing-strategy/. Last
accessed 29th Mar 2017.

Kuepper, J.
(2017). *http://www.investopedia.com/articles/trading/04/091504.asp.* Available:
http://www.investopedia.com/articles/trading/04/091504.asp. Last accessed 29th
Mar 2017.

Lazaroff, P. (2016). *5 Biases That Hurt Investor Returns.* Available:
https://www.forbes.com/sites/peterlazaroff/2016/04/01/5-biases-that-hurt-
investor-returns/2/#4669893c7a2c. Last accessed 29th Mar 2017.

Lowenstein, R. (2016). *Why Buffett's Million-Dollar Bet Against Hedge Funds Was a
Slam Dunk.* Available: http://fortune.com/2016/05/11/warren-buffett-hedge-fund-
bet/. Last accessed 29th Mar 2017.

Magic Diligence. (2009). *Earnings Yield: Better than P/E for Valuing
Stocks.* Available: http://www.magicdiligence.com/earnings-yield-better-than-pe.
Last accessed 29th Mar 2017.

Malkiel, B (2012). *A Random Walk Down Wall Street*. 10th ed. New York: W. W.
Norton & Company. p28, 30, 76, 80-81, 83-84, 124, 164, 168-169, 235, 237, 292.

Manning, J. (2016). *Cognitive Bias in Investing: The Bandwagon Effect.* Available:
https://internationalbanker.com/brokerage/cognitive-bias-investing-bandwagon-
effect/. Last accessed 29th Mar 2017.

Marriage, M. (2016). *86% of active equity funds underperform.* Available:
https://www.ft.com/content/e555d83a-ed28-11e5-888e-2eadd5fbc4a4. Last ac-
cessed 29th Mar 2017.

McLean, S. (2017). *Why Market Timing Doesn't Work.* Available:
http://www.mcleantaxadvisory.com/blog/why-market-timing-doesnt-work. Last
accessed 29th Mar 2017.

Merriman, P. (2013). *Why market timing doesn't work.* Available:
http://www.marketwatch.com/story/why-market-timing-doesnt-work-2013-10-23.
Last accessed 29th Mar 2017.

Montier, J. (2006). *Global Equity Strategy: Behaving Badly.* p3. Available:
http://www.kellogg.northwestern.edu/faculty/weber/decs-452/behaving_badly.pdf.
Last accessed 29th Mar 2017.

Morningstar: Psychology and Investing. (2015). *Loss Aversion.* Available:
https://news.morningstar.com/classroom2/course.asp?docId=145104&page=5&CN
=. Last accessed 29th Mar 2017.

Motley Fool, The. (2017). *The Miracle Of Compound Returns.* Available: http://www.fool.co.uk/investing-basics/the-miracle-of-compound-returns/. Last accessed 29th Mar 2017.

Moya, R. (2014). *Case Study: Dot-com Bubble.* Available: https://greenmangotrading.wordpress.com/2014/12/14/case-study-dot-com-bubble/. Last accessed 29th Mar 2017.

Nasdaq. (2014). *Why Dollar Cost Averaging Is A Smart Investment Strategy.* Available: http://www.nasdaq.com/article/why-dollar-cost-averaging-is-a-smart-investment-strategy-cm354240. Last accessed 29th Mar 2017.

Pabrai, M (2007). *The Dhando Investor*. New Jersey: Wiley. p35-46, 59, 72, 78.

Peters, T., Waterman, R. (2004). *In Search of Excellence: Lessons From America's Best-Run Companies*. New York: Harper Collins. p56-57.

Phung, A. (2017). *Behavioral Finance: Key Concepts - Gambler's Fallacy.* Available: http://www.investopedia.com/university/behavioral_finance/behavioral7.asp. Last accessed 29th Mar 2017.

Roth, A. (2010). *The Case Against S&P 500 Index Funds.* Available: http://www.cbsnews.com/news/the-case-against-sp-500-index-funds/. Last accessed 29th Mar 2017.

Schoen, J. (2014). *Back to the future: A visual tour of the Dow 30 index.* Available: http://www.cnbc.com/2014/07/02/history-of-dow-30.html. Last accessed 29th Mar 2017.

Sewell, M. (2010). p1. *Behavioural Finance.* Available: http://www.behaviouralfinance.net/behavioural-finance.pdf. Last accessed 29th Mar 2017.

Siblis Research. (2017). *S&P 500 Historical Total Market Cap & Float Adjusted Cap.* Available: http://siblisresearch.com/data/total-market-cap-sp-500/. Last accessed 29th Mar 2017.

Smith, K. (2012). *History of the Dot-Com Bubble Burst and How to Avoid Another.* Available: http://www.moneycrashers.com/dot-com-bubble-burst/. Last accessed 29th Mar 2017.

Swedroe, L. (2013). *How overconfidence hurts investors.* Available: http://www.cbsnews.com/news/how-overconfidence-hurts-investors/. Last accessed 29th Mar 2017.

S&P Dow Jones Indices. (2017). *S&P 500.* Available: http://us.spindices.com/indices/equity/sp-500. Last accessed 29th Mar 2017.

Tweedy, Browne Company LLC. (2009). *What Has Worked in Investing.* Available: http://tweedy.com/resources/library_docs/papers/WhatHasWorkedFundOct14Web.pdf. Last accessed 29th Mar 2017.

ValueWalk. (2015). *A Performance Summary Of Previous Studies Analyzing Benjamin Graham's Net Current Asset Value Stock Selection Criterion.* Available: http://www.valuewalk.com/2015/02/benjamin-graham-ncav-returns/. Last accessed 29th Mar 2017.

Van Bergen, J. (2011). *Efficient Market Hypothesis: Is The Stock Market Efficient?.* Available: https://www.forbes.com/sites/investopedia/2011/01/12/efficient-market-hypothesis-is-the-stock-market-efficient/#68c28ede76a6. Last accessed 29th Mar 2017.

Wells, J. (2013). *Dow vs. S&P, Who's King of the Market?.* Available: http://www.cnbc.com/id/100549812. Last accessed 29th Mar 2017.

Wikinvest. (2017). *S&P 500.* Available: http://www.wikinvest.com/index/S%26P_500_(SPX). Last accessed 29th Mar 2017.

YCharts. (2017). *S&P 500 Divisor.* Available: https://ycharts.com/indicators/sandp_500_divisor. Last accessed 29th Mar 2017.

Net Current Asset Value Studies 1-6 (38: Table 5.1)

The table is a summary of various studies that analyzed the performance of Benjamin Graham's stock filtering criterion of purchasing stocks trading below net current asset value (NCAV). The calculation involves subtracting all liabilities, including preferred stock, from only the current assets on a company's balance sheet. The calculation is then converted to a per share figure by dividing this approximate measure of a company's liquidation value by the total number of common shares outstanding. The table picked through each study and pieced together a sampling of the performance data using the net current asset value criterion.

Each study summarized in the table varied in terms of the amount of historical stock data that were analyzed. The amount of data used across studies ranged from as little as five years to as long as 60 years. Some time periods resulted in a large number of NCAV stocks available for purchase; other times not so many. When few stocks could be found meeting Benjamin Graham's stock filtering criterion, there were variations in how idle funds were used when tabulating the portfolio return statistics. Some studies omitted years in which few stocks could be found; other studies assumed a portion of the portfolio sat idle at a zero percent interest rate or a low U.S. Treasury Bill rate of return. The stock filtering criterion used in the various research studies ranged from highly selective, using Benjamin Graham's original criterion of only choosing stocks trading at a price point below two-thirds of their NCAV to as high as parity with the trading price of a stock. There also were variations across each study in terms of how often new stocks could enter the value investing portfolio—from as often as every month to as infrequently as every five years. Timing the entry date when a new stock was included in the value portfolio varied across the research papers. Some studies assumed that new stocks entered the value portfolio at fiscal year-end, timing the purchase date to coincide with the exact same date when updated accounting data were available for review. Other studies assumed a lag time of as long as a year after the NCAV calculation was made before a new stock could enter the value portfolio. There also were differences across each study in terms of the length of time a deep value stock remained in the portfolio, ranging from as short as a few months based on the rate of return generated to as long as five years. Other distinctions across each study

included the particular stock database used and whether transaction fees and divi-dends were included in the net return calculation.

Five-Year Holding Period Year-by-Year Investment Returns for Low Price-to-Cash Flow Companies as Compared to High Price-to-Cash Flow Companies (51: Table 5.9.2)

Josef Lakonishok, Robert W. Vishny and Andrei Shleifer examined the effect of price/cash flow ratios on investment returns in "Contrarian Investment, Extrapolation and Risk," Working Paper No. 4360, National Bureau of Economic Research, May 1993. The professors ranked all companies listed on the NYSE and the AMEX according to price/cash flow of ratios and sorted the companies into deciles. Portfolios were initially formed on April 30, 1968, and new portfolios were formed on each subsequent April 30. The study period ended on April 30, 1990. The decile portfolios were held for five years, and the average annual year-by-year investment returns, the average annual five-year returns and the average cumulative total five-year returns were calculated. The investment returns were equal-weighted.

Small Market Capitalization Low Price-to-Book Value Companies as Compared to Large Capitalization Low Price-to-Book Value Companies (52: Table 5.9.3)

Eugene L. Fama and Kenneth R. French examined the effects of market capitalization and price as a percentage of book value on investment returns in "The Cross-Section of Expected Stock Returns," Working Paper 333, Graduate School of Business, University of Chicago, January 1992. All non-financial NYSE, AMEX and NASDAQ companies included in the Center for Research in Security Prices file for which data was also available in the Compustat database were ranked according to stock price as a percentage of book value and sorted into deciles. Then, each price/book value decile was ranked according to market capitalization and sorted into deciles. The study examined investment returns from July 1963 to December 1990. Average annual equal-weighted investment returns for each of the ten market capitalization deciles which comprised each of the ten price/book value deciles are presented in Table 6.2. As Table 6.2 indicates, smaller market capitalization companies at the lowest prices in relation to book value provided the best returns. Table 6 also shows that within every market capitalization category, the best returns were produced by stocks with low prices in relation to book value. In addition, the authors, through a regression analysis, examined the power of the following characteristics to predict future investment returns: market beta, market capitalization, price/earnings ratio, leverage and price-to-book value percentage. Their conclusion: priceto-book value "is consistently the most powerful for explaining the cross-section of average stock returns."

Small Market Capitalization Low Price/Earnings Ratio Companies as Compared to Large Market Capitalization Low Price/Earnings Ratio Companies (52: Table 5.9.4)

Sanjoy Basu examined the effects of market capitalization and price/earnings ratios on investment returns in "The Relationship Between Earnings Yield, Market Value and Return for NYSE Common Stocks," Journal of Financial Economics, December 1983. Professor Basu ranked all companies listed on the NYSE according to price/earnings ratios and sorted the companies into quintiles. Then, each quintile was ranked according to market capitalization and sorted into sub-quintiles within each of the price/earnings ratio groups. This process occurred as of each April 30 from 1963 through 1980 (a 17-year period ended April 30, 1980) and the annual investment returns were computed. Table 6.3 shows the results of the study.