

## **RESUMO**

Este estudo é baseado numa pesquisa profunda às raízes e princípios de Value Investing – Valor Intrínseco. Toda esta filosofia irá assentar no simples conceito de Margin-of-Safety desenvolvido por Benjamin Graham.

À medida que este conceito vai sendo desenvolvido, irão ser abordados os pontos mais importantes da estratégia salientando forças e fraquezas da mesma. Irão ser estudados os mercados financeiros bem como as tendências dos investidores e demonstrado que Value Investing não se baseia em tendências nem em previsões. Irá também ser mostrado que as variáveis preço e valor das acções são as mais importantes na tarefa de tomar decisões de investimento e que os comportamentos disciplinados e rigorosos de um investidor são importantes.

Será demonstrada a diferença entre mercados eficientes e ineficientes e concluído que Value Investing é uma forma de investimento a longo prazo baseada na teoria de mercados ineficientes.

Os limites de Value Investing vão também ser abordados no projecto. A obtenção de lucros nos mercados financeiros nem sempre é possível e depende de inúmeros factores, de qualquer modo, investidores devem ser defensivos, conservadores, rigorosos e disciplinados.

Por fim, será revelada uma opinião pessoal em relação aos mais importantes passos a tomar para obter boas decisões financeiras e serão analisados os relatórios de contas da Caterpillar dos últimos 5 anos. Esta análise terá como base o método de Value Investing focando em seis fundamentais tipos de rácios financeiros (indicadores – chave, indicadores de curto prazo, indicadores de longo prazo, indicadores de lucro, indicadores de liquidez e múltiplos de preços).

Palavras-chave: Value Investing, Margin of Safety, Intrinsic Value, Caterpillar financial analysis, Benjamin Graham, Warren Buffet.

JEL Classification: D46 G11

## **ABSTRACT**

The following study is based on a deep research into the roots of value investing and its essences – Intrinsic Value. The entire philosophy will be based in the simple concept of Margin of Safety developed by Benjamin Graham. During the development of this concept there will be presented the most important concepts of this strategy.

Throughout this study, it will also be analysed the market as well as investors' tendencies and demonstrated that value investing is not based on tendencies and predictions. It will show that Price and Value of securities are the most important variables in taking investment decisions and also study the good investor behaviour and its importance in investing.

It will be established the difference between efficient and inefficient markets and concluded that value investing is a long term investment based on inefficient markets theory.

The limits of value investing will also be approached in this study. To get profit from the market is not always possible and it depends a lot from many factors, either way, an investor should be defensive, conservative, not greedy and finally, rigorous and disciplined.

Finally, this study will reveal a personal view on the most important steps in order to make good financial decisions and examine and analyse Caterpillar's five years financial statements through the Value Investing method, focusing on six kinds of financial ratios (key indicators, short term indicators, long term indicators, profitability indicators, liquidity indicators and price multiples).

**Keywords:** Value Investing, Margin of Safety, Intrinsic Value, Caterpillar financial analysis, Benjamin Graham, Warren Buffet.

**JEL Classification:** D46 G11

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## INTRODUCTION

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The main objective of this project is to show how equity investors can use their money in an intelligent and safe way, for that, it will be made a comparison between one investment philosophy and some others which follow less correct strategies and a less disciplined way of looking at the economics and corporate finance principles (example: speculation). The philosophy that will mostly be studied and presented is called Value Investing, previously approached by various notorious investors such as Warren Buffet, Benjamin Graham, David Dodd, William Ruane, Seth Klarman, Tom Knapp, John Neff and others who year after year beaten the Standard & Poor's 500 stock index. Value Investing is the art of buying stocks at less than their intrinsic value or, in other words, buying securities that are underpriced. The difference between the market price and the intrinsic value (company's real value) was named by Benjamin Graham as Margin of Safety, which investors must establish to have good results. To sustain these concepts it will be established the difference between efficient and inefficient markets and analyzed the controversy between them, the difference between technical and fundamental analysis (involves analyzing a business financial statements and health, its management and competitive advantages, and its competitors and markets) and also the difference between a Value Investor and a speculator (a person that "flip coins" trough the stock market, who sees stocks as pieces of tradable papers) This second type of investors will be throughout this project encouraged to change their informal and not respectful way of looking at stocks.

"The real challenge in value investing is yourself (Klarman 1991)" and for that there will be presented some good practices like being disciplined, rigorous and patient. The safety of an investment process depends on how much information an investor can gather, the more he knows about a company the more chances he has to take a good decision. But, is there a limit to know everything? Of course there is. No one, looking from the outside can know everything, there may be unknown processes and off balance sheet records which can incur in too expensive costs by trying to find them. The truth is that all information an investor can gather, even little, is better than knowing nothing. Also, this theory does not discuss measures of volatility of future returns as Beta, Alpha, and Covariance do; the main Value Investing question is: Do prices completely reflect available information? If so, there would be no undervalued stocks and Value Investors

would be gone. But how is it possible that there are people who beat the market? This controversy will be discussed with some examples and it will be explained why there are undervalued stocks.

*”If a business is worth a dollar and I can buy it for 40 cents,  
something good may happen to me.”*

(Buffett 1984)

If one is a rational thinker and feels attracted by money, this is a great motivation. In fact, if a person accepts and understands this sentence automatically it’s possible that he has a value investor thinking. The most important thing that a reader can take from this study is that an investor cannot decide to think harder in order to achieve higher returns, all he can do is follow a consistently disciplined and rigorous approach; sooner or later, the returns will show up.

## 1. BACKGROUND ON INVESTING

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The question of whether markets are efficient, and if not, where the inefficiencies lie, is central to choosing an investment philosophy. If markets are, in fact, efficient, the market price provides the best estimate of value, and the process of valuation becomes one of justifying the market price. An investor would not then try to pick under or overvalued stocks or to guess what the market would do next. Instead, he would diversify across a broad group of stocks and not trade very often. If markets are not efficient, the market price may in fact be wrong, and which investment philosophy an investor picks will depend upon why he believes markets make mistakes and how they correct them. Those investors who can pinpoint these wrongly valued stocks will then be able to make higher returns than other investors, thus accomplishing the very difficult task of beating the market. But what if markets are really efficient and someone mistakenly pick stocks, thinking they are inefficient? He will bear both the cost of the resources he spent (in terms of time and money) in picking stocks and the additional transaction costs and taxes of the strategy. Consequently, he will end up with a far lower return than that earned by other investors who invested their wealth in an index fund<sup>1</sup>.

Examining where and when there are market inefficiencies can also help in the task of picking investment strategies. A Value Investor, for example, may have to decide between low price earnings ratio companies and low price to book value stocks. The evidence may yield a clue as to which strategy is more effective at highlighting undervalued stocks. In addition, market inefficiencies can provide the basis for screening the universe of stocks to come up with a sub-sample that is more likely to include undervalued stocks. Given the number of stocks to pick from, this not only saves time for any investor but increases significantly the odds of finding undervalued stocks. For instance, some efficiency studies (*figure 1*) suggest that stocks that are ignored by institutional investors are more likely to undervalued and provide great returns. A strategy that screens firms for low institutional investment (as a percentage of the outstanding stock) may yield a sub-sample of neglected firms, which can then be analyzed to arrive at a portfolio of undervalued firms. If the research is correct, the odds of finding undervalued firms should increase in this sub-sample.

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<sup>1</sup> Form of passive investing constructed to match or track the components of a market index.



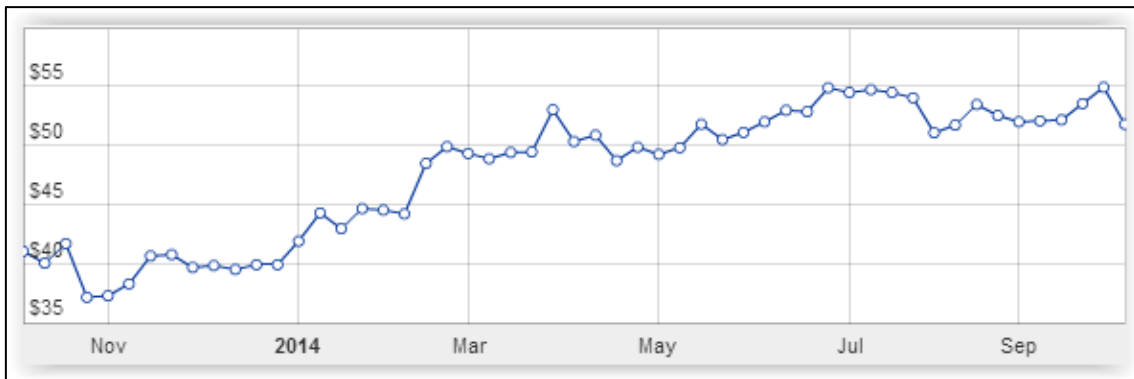


Figure 1 - Teva Pharmaceutical Industries Stock Price Movement

An efficient market is one where the market price is an unbiased estimate of the true value of a company. It is extremely unlikely that all markets are efficient to all investor at all times, but is entirely possible that a particular market is efficient with respect to the average investor. It is also possible that some markets are efficient while others are not, and that a market is efficient to some investors and not to others. The definition of an efficient market also implies that all information, public as well as private, is reflected in market prices which would imply that even investors with precise inside information will be unable to beat the market. An immediate and direct implication of an efficient market is that no group of investors should be able to consistently beat the market using a common investment strategy. An efficient market would also carry very negative implications for all investors:

- Equity research and valuation would be a costly task that provided no benefits. The odds of finding an undervalued stock would always be 50:50, reflecting the randomness of pricing errors. At best, the benefits from information collection and equity research would cover the costs of doing the research.
- A strategy of randomly diversifying across stocks or indexing to the market, carrying little or no information cost and minimal execution costs, would be superior to any other strategy that created larger information and execution costs. There would be no value added by portfolio managers and investment strategists.
- A strategy of minimizing trading (example: create a portfolio and not trade unless cash is needed) would be superior to a strategy that required frequent trading.

It is therefore no wonder that the concept of market efficiency evokes such strong reactions on the part of portfolio managers and analysts, who view it, quite rightly, as a challenge to their existence.

Most investors have no investment philosophies, and the same can be said about many money managers and professional investment advisers. They adopt investment strategies that seem to work (for other investors) and abandon them when they do not. Why, if it is possible, do an investor needs an investment philosophy? The answer is simple. In the absence of an investment philosophy he will tend to shift from strategy to strategy simply based on a strong sales pitch from advocate or perceived recent success. Consequently, there are three negative consequences:

- 1) Lacking a core set of beliefs, an investor will be an easy prey for money pretenders, with each one claiming to have found the magic strategy that beats the market.
- 2) As an investor switches from strategy to strategy, he will have to change his portfolio, resulting in high transaction costs, and he will pay more in taxes.
- 3) While there may be strategies that do work for some investors, they may not be appropriate for others, given their objectives, risk aversion, and personal characteristics.

With a strong sense of core beliefs, the investor will have far more control over his destiny. Not only will he be able to reject strategies that do not fit their beliefs about markets, but he will also be able to tailor investment strategies to his needs. In addition, he will be able to get much more of a big picture view of both what it is that is truly difference across strategies and what they have in common.

## **1.1. MAIN INVESTMENT PHILOSOPHIES**

### **1.1.1. Technical Analysis**

Charts have been around as long as there have been markets. Some investors have always believed that charts of past prices provide signals of the future, and have based upon them looking for patterns that predict price movements. Notwithstanding the disdain with which they are viewed by other investors and many academics, easy access to data combined with an increase in computing capabilities – charting and graphing programs abound – has meant that more investors look at charts now than ever before. In addition, data on trading volume and from derivatives markets<sup>2</sup> have provided chartists with new indicators of the future. In fact, they can use tick volume, or the number of changes in a contract's price, since prices tend to change more frequently with a higher volume of trade. To summarize the assumptions that underlie technical analysis, the following are listed:

- a) Solely the interaction between supply and demand determine market value;
- b) Supply and demand, in conjunction, are governed by numerous factors, both rational and irrational. The market continually and automatically weighs all these factors;
- c) Not taking into account slight fluctuations in the market, prices of stocks tend to move in trends that persist for an appreciable length of time;
- d) Shifts in demand and supply cause changes in trends. These shifts, no matter why they occur, can be detected sooner or later in the action of the market itself. This is the heart of technical analysis. Charts, the believers argue, send advanced warning of shifts in demand and supply in the form of price and volume patterns.

For technical analysts the market price reflects not only the differing fears, guesses and moods, rational and irrational, of hundreds of potential buyers and sellers, but it also reflects their needs and resources. These are nevertheless all synthesized, weighted and finally expressed in the one precise figure at which a buyer and seller get together and make a deal. The resulting price is the only figure that counts. Both subjective and empirical evidence seem to suggest that investors often are irrational, at least based upon the economic definition of rationality. Whether this irrationality results in systematic price patterns is a little more difficult to assess, though the serial correlation

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<sup>2</sup>A security whose price is dependent upon or derived from one or more underlying assets.

in prices (*figure 2*), both over short and long periods, and the periodic appearance of price bubbles<sup>3</sup> (*figure 3*) in asset markets seems to indicate that irrational behavior has price effects.

Finally, even if there are systematic price patterns caused by irrationality, there is the possibility that investors can take advantage of these price patterns. It is entirely possible that the price patterns are so unpredictable that no investor can take advantage of these to receive surplus returns. Technical analysts and chartists would disagree.

Over the years, technical analysts have developed hundreds of technical indicators and detected dozens of chart patterns that they argue help them forecast future price changes. While it is impossible to describe or even list all of them, they can be categorized based upon the nature of irrationality that is attributed to markets:

- Market participants over react to new information: If this is true (prices rise too much on good news and fall too much on bad news) investors would draw on contrarian indicators which would help them to gauge the direction in which the crowd is going and to go against it.
- Market participants are slow learners: In many ways, this is the polar opposite of the first grouping. If investors are slow learners, prices will under react to new information and investors would expect price direction to persist and use momentum strategies, which would gauge market direction and move with it.
- Investors change their minds frequently and often irrationally, causing significant shifts in demand and supply, causing prices to move. If one believes that this is the way markets work, he would use technical indicators and charting patterns to detect these shifts.
- There is a group of investors who lead markets, and finding out when and what they are buying and selling can provide a useful leading indicator of future price movements. Investors would then track the trading of these leading investors and try to follow them.
- There are external forces that govern up and down movements in markets that override fundamentals and investor preferences. Technical indicators and charting

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<sup>3</sup> An economic cycle where security prices rise above their true value and will continue to do so until prices go into freefall and the bubble burst.

patterns that allow seeing cycles in stock prices can allow investors to get ahead of other investors.

Within each, there can be considered different technical indicators that are broadly categorized into three groups – price indicators, which are based upon past price movements; volume indicators, that look at trading volume; and sentiment indicators, that use qualitative measures of how bullish or bearish investors feel about stocks.

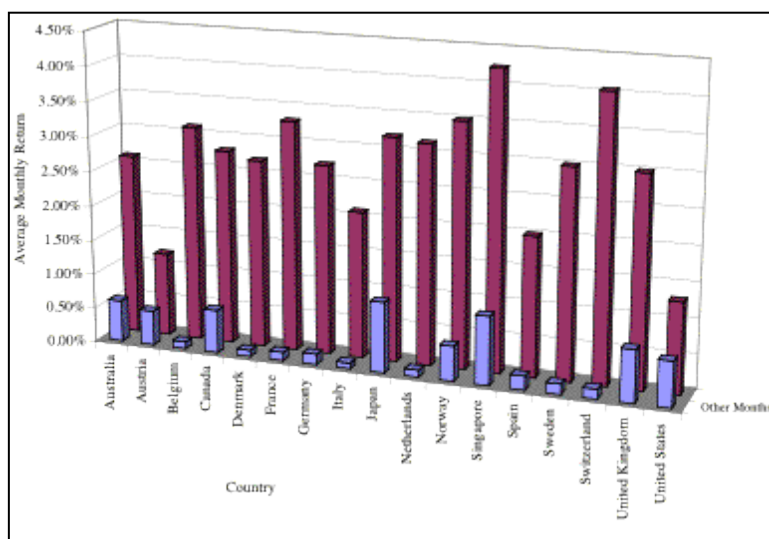


Figure 2 – Serial Correlation in Prices (January Effects)

(Source: [http://pages.stern.nyu.edu/~adamodar/New\\_Home\\_Page/invfables/pricepatterns.htm](http://pages.stern.nyu.edu/~adamodar/New_Home_Page/invfables/pricepatterns.htm))



Figure 2 – Speculative Bubble

(Source: <http://noahpinionblog.blogspot.pt/2012/01/why-do-bubbles-happen.html>)

### 1.1.2. Value Investing

It is very important to begin with the proposition that the value of a company is derived from two sources to understand Value Investing – expected future investments (growth opportunities) and investments that the company already made (assets in place). What differentiates value investors from other investors is their desire to buy companies for less than what their assets in place are worth. Therefore, value investors are normally doubtful of large premiums paid by markets for growth opportunities and search for their best bargains in more mature companies that are out of favor (this is not always the case). Even so, Value Investing can assume three distinct forms. The first and perhaps simplest form of Value Investing is Passive Screening in which companies are put through investment screens (assets that are easily marketable, low PE ratios, low risk etc.) and those that pass the screens are categorized as good investments. Secondly, there is Contrarian Value Investing, where assets are bought if they are viewed as abandoned by others investors because of bad news about them or poor precedent performance. In its third form, investors buy equity in undervalued or poorly managed companies but then use the power of their position to encourage change that will unchain this value. These investors are often called Activist Value Investors (example: Warren Buffet).

Value Investing initially defined by Benjamin Graham and David Dodd rests on three key characteristics of financial markets:

- The prices of financial securities are subject to significant and capricious movements. Mr. Market, Graham’s famous personification of the impersonal forces that determine the price of securities at any moment, shows up to buy or sell any financial asset. “He is a strange fellow, subject to all sorts of unpredictable mood swings that affect the price at which he is willing to do business (Graham 1949)”.
- Despite these movements in the market prices of financial assets, many of them do have fundamental economic value that is relatively stable and that can be measured with reasonable accuracy by a disciplined investor. In other words, the intrinsic value of the security is one thing; the current price at which it is trading is something else. Value and price may be identical, but they often diverge.
- A strategy of buying securities only when their market prices are significantly below the calculated intrinsic value will produce higher returns in the long run. Graham

referred to this gap between value and price as “the margin of safety”; ideally, the gap should amount to about one-half, and not be less than one-third, of the fundamental value.

Starting with these three assumptions, the central process of Value Investing is disarmingly simple. A Value Investor estimates the fundamental value of a financial security and compares that value to the current price Mr. Market is offering for it. If price is lower than value by a sufficient margin of safety, the value investor buys the security. Some of the steps involved on the process are the following:

1. Selecting securities for valuation.
2. Estimating their fundamental values.
3. Calculating the appropriate margin of safety required for each security (It depends on each investor desirability for risk).
4. Deciding how much of each security to buy, which encompasses the construction of a portfolio and a choice about the amount of diversification the investor desires.

### **1.1.3. Growth Investing**

Growth Investors are defined as those who buy companies whose growth potential<sup>4</sup> is being undervalued by the market. Growth Investors care just as much about value as Value Investors do. What then is the distinction between Growth and Value Investors? The key difference lies in where the focus for finding value lies. As stated before, Value Investors believe that they are more likely to find under valuation of assets in place and tend to invest in mature firms with substantial existing assets, even though underperforming ones. Growth Investors believe that they are more likely to find bargains in growth investments.

In Passive Growth Investing, as in Passive Value Investing, investors use screens to find stocks that are undervalued by the market. The simplest version of passive growth investing is investing in small growth companies, small defined in terms of market capitalization.

The next form is investing in Initial Public Offerings, with the intent of capturing any excess returns associated with the stock going up after the offering. In Initial Public Offerings, private firms make the transition to being publicly traded firms by offering

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<sup>4</sup>A company future ability to generate larger profits and increase production.

their shares to the public. In contrast with equity issues by companies that are already publicly traded, where there is already a market price for the stock that acts as an anchor, an Initial Public Offering has to be priced by an investment banker based upon supply and demand perceptions. There are some investors who believe that they can exploit both the uncertainty in the process and the biases brought to the pricing by investment bankers to make excess returns. The most logical strategy for most Growth Investors is to buy stocks with high growth rates in earnings. Investors can look at past growth in earnings as a predictor of future growth and buy companies with high historical earnings growth rates or they can look for companies where analysts are predicting high expected earnings growth.

In Activist Growth Investing, investors not only take a position in a growth business but also play an active role in making it successful. Since most growth businesses start off as small and privately owned, the most common forms of Activist Growth Investing involve taking positions in these businesses before they go public and in encouraging them towards eventual public offerings and large profits.



## **1.2. GREAT REFERENCES IN VALUE INVESTING**

### **❖ David Dodd**

Was an American educator, financial analyst, author, economist, professional investor, and in his student years close colleague of Benjamin Graham at Columbia Business School. The Wall Street Crash of 1929 (Black Thursday) almost wiped out Benjamin Graham, who had started teaching the year before. This was the reason that moved Graham to search for a more conservative, safer way to invest. Graham agreed to teach with the stipulation that someone take notes. Dodd volunteered. Those transcriptions served as the basis for the 1934 *Security Analysis* book, which incited the concept of Value Investing. It is the longest investment text ever published. From 1921 to 1922, he was a research assistant for an economist at National Bank of Commerce, New York. In 1928, he advised private clients in investments. From 1950 to 1958, he was Limited partner, Newman & Graham Ltd. an unregulated hedge fund. From 1958 to 1959, he was General partner, Graham-Newman & Co. a regulated Investment Trust formed in 1929.

### **❖ Seth Klarman**

Is an American billionaire who founded the Baupost Group, a Boston-based private investment partnership, and the author of a book on value investing titled *Margin of Safety: Risk-Averse Value Investing Strategies for the Thoughtful Investor*.

Klarman started The Klarman Family Foundation (\$255 million in assets as of 2010) which donates money to medical causes, Jewish organizations (such as the American Jewish Committee, Boston's Combined Jewish Philanthropies and Gann Academy), and Israeli causes. Klarman is the chairman of *Facing History and Ourselves*, which develops classroom programs to combat anti-Semitism and bigotry. His 2013 total earnings were \$350 Million which ranks him the 20th among the 25 top earning hedge fund managers.

### **❖ John Neff**

Is one of the best known mutual fund investors of the past 40 years, notable for his value investing style as well as heading Vanguard's Windsor Fund. Windsor was the best performing mutual fund in that time and became the largest fund closing to new

investors in the 1980s. Neff has referred to his investing style as a low price-to-earnings (P/E) methodology, though others consider Neff a variation of the standard value investor. He is also considered a tactical contrarian investor who placed emphasis on low-tech security analysis, that is, digging into a company and its management and analyzing the books. One area in which Neff is similar to Value Investors such as Warren Buffett is in emphasizing return on equity (ROE).

#### ❖ **Benjamin Graham**

Great part of Value Investors argue to outline their background to Graham and to use his book written with David Dodd, *Security Analysis*, as their investment bible. But who was Benjamin Graham and was he so followed by investors? His professional life began as a financial analyst and he became later part of an investment partnership on Wall Street. Even as he was successful on both paths, his name was created in the classroom – He educated at Columbia and New York Institute of Finance for more than thirty years and during that period developed a loyal following among his students. In fact, the most part of Graham's fame derives from the success enjoyed by his students in the stock market. Benjamin Graham converted his views on markets to specific screens that could be used to find undervalued stocks in his first edition of *Security Analysis*.

#### ❖ **Warren Buffett**

Warren Buffet has grown to become one of the wealthiest men in the planet with his concise comments on the markets (which he does at stockholder meetings) and his investment intelligence. That is the reason why everybody is fascinated about him: no other investor is more glorified or followed like him. So, how did he become an investment idol? When he was 25, Warren Buffet initiated a partnership with seven other partners in 1956 with \$105.000 in funds. During that period (*figure 4*) and over the next 13 years, he generated a 29% return. Investing in American Express, after the company's stock price tumbled in the early 60s was one of his most triumphant investments during the period. Buffett justified the investment by pointing out that the stock was trading at far less than what the American Express generated in cash flows for the company for a couple of years. His partnership was valued by \$26.000.000 in 1965 and was widely viewed as successful.

Buffet's reputation was at its peak when he abandoned the partnership in 1969 because by following his Value Investing approach, he couldn't find any more stocks to buy. He said: "On one point, I am clear. I will not abandon a previous approach whose logic I understand, although I might find it difficult to apply. Even though it may mean foregoing large and apparently easy profits to embrace an approach which I don't fully understand, have not practiced and which possibly could lead to substantial loss of capital". Buffett then put his share of partnership (about \$25 million) into Berkshire Hathaway, a textile company. He used Berkshire Hathaway as a vehicle to acquire companies and to make investments in other enterprises (Example: Disney and Coca Cola).

Year	Overall Results From Dow (%)	Partnership Results (%)	Limited Partners' Results (%)
1957	- 8.4	10.4	9.3
1958	38.5	40.9	32.2
1959	20.0	25.9	20.9
1960	- 6.2	22.8	18.6
1961	22.4	45.9	35.9
1962	- 7.6	13.9	11.9
1963	20.6	38.7	30.5
1964	18.7	27.8	22.3
1965	14.2	47.2	36.9
1966	-15.6	20.4	16.8
1967	19.0	35.9	28.4
1968	7.7	58.8	45.6
1969	-11.6	6.8	6.6
<b>On a cumulative or compounded basis, the results are:</b>			
1957	- 8.4	10.4	9.3
1957-58	26.9	55.6	44.5
1957-59	52.3	95.9	74.7
1957-60	42.9	140.6	107.2
1957-61	74.9	251.0	181.6
1957-62	61.6	299.8	215.1
1957-63	94.9	454.5	311.2
1957-64	131.3	608.7	402.9
1957-65	164.1	943.2	588.5
1957-66	122.9	1156.0	704.2
1957-67	165.3	1606.9	932.6
1957-68	185.7	2610.6	1403.5
1957-69	152.6	2794.9	1502.7
<b>Annual Compounded Rate</b>	<b>7.4</b>	<b>29.5</b>	<b>23.8</b>

Figure 3 – Comparison between Dow Jones and Limited Partners Results  
(Source: The Superinvestors of Graham and Doddsville)

### **1.3. WHY VALUE INVESTING**

Many different approaches that offer no real vision of long term success are adopted by investors. Many are speculations or complete gambling instead of rational investment strategies: Investors fall victim to Wall Street as they are frequently fooled by the prospect of fast and easy profits.

For the Value Investor perspective, stocks symbolize fractional ownership of underlying businesses; and bonds are loans to those businesses. Value Investors make buy and sell decisions comparing current prices of stocks and their apparent value only. They make moves on the stock market when they believe they know something that others do not know, don't care about, or prefer to ignore. Value Investors buy securities that appear to offer attractive profits for the risk taken and sell when the profit no longer justifies the risk (for Value Investors, risk is related with downside and upside potential of a security – what is exposed to less risk? A stock that sells at 1 euro or a stock that sells at 40? The first one is correct because it has low downside potential and a very high upside potential). Over the long run, stock prices tend to reflect fundamental developments involving the underlying business they believe. They expect to profit in at least one of three possible ways: from free cash flow generated by the underlying business, which sooner or later will be distributed as dividend or reflected in a higher share price; by a narrowing of the gap between underlying business value and share price; or from an increase in the multiple that investors are eager to pay for the business as reflected in a higher share price.

By contrast, Speculators sell and buy securities based on whether they believe those securities will next rise or fall in price. Their judgment regarding future price activities is based on a prediction of the behavior of others and not on fundamentals. They observe stocks as pieces of paper to be traded on and on and are generally ignorant of or indifferent to investment fundamentals. Speculators buy stocks because they "act" well and sell when they don't – they are only preoccupied with guessing the direction of prices. Many speculators try to predict the market direction by means of past stock price fluctuations and technical analysis as a guide. Technical analysis relies on the assumption that past stock price (instead of underlying business value) holds the key to future stock prices. Actually, nobody knows what the stock market will do; attempting

to guess it is a waste of time and it is called speculating when investors are investing based upon predictions.

“There is the old story about the market trend in sardine trading when the sardines disappeared from their traditional waters in Monterey, California. The commodity traders bid them up and the price of a can of sardines soared. One day a buyer decided to treat himself to an expensive meal and actually opened a can and started eating. He immediately became ill and told the seller the sardines were no good. The seller said, “You don’t understand. These are not eating sardines, they are trading sardines!” (*Klarman 1991*)” This little story shows that, like sardine traders, many other traders are involved with speculation, never caring with the taste of what they are buying. Speculation offers the panorama rapid and easy enjoyment; “why get rich slowly if you can get rich quickly? (*Klarman 1991*)” Furthermore, speculation requires going along with the market and the crowds, not against them – the one in the bulk get confidence from their very number. And because of that, nowadays, many investors have become speculators without even knowing it. They don’t even realize that they are playing a “greater-fool game,” buying overvalued securities and expecting (hoping) to find somebody, a “greater fool” to buy stocks from them at an even bigger price. There is great attraction to treat securities as pieces of paper. Looking at them like this way requires neither rigorous analysis nor knowledge of the underlying businesses. In addition, trading in and of itself, as long as the stock market is rising, can be exciting and lucrative. Bu essentially, it is not investing – It is speculating.

As Value investors consider financial reality in constructing investment decisions, speculators have no such obedience. Since many of today’s market participants are speculators and not investors, business fundamentals are not necessarily a limiting factor in stock pricing.

Speculative activity can explode in stock markets at any time and is not frequently recognized as such until significant time as passed and much money has been lost. In the middle of 1983, to cite one example, the capital markets assigned a combined market value of over \$5 billion to twelve publicly traded, venture capital drive manufacturers. Between 1977 and 1984, 43 different manufacturers of Winchester Disk Drives received venture capital financing. A study from the Harvard Business School, named “Capital Market Myopia (*Sahlman and Stevenson 1985*)” calculated that few firms might ultimately be successful and rule the industry, while many others would

struggle or fall short. If emerged any high returns from the winners in this situation, these would not counterbalance the losses from the losers. In the mean time, investors didn't even realize that the shares of these disk-drive companies were essentially "trading sardines". This speculative bubble burst soon after that, with the total market capitalization of these companies declining from \$5.4 billion in 1983 to \$1.5 billion at 1984. Another example of such speculative activity took place in September 1989. Shares of the Spain Fund (a closed-end mutual fund investing in publicly traded Spanish stocks) were bid up in price from approximately Net Asset Value (NAV) to more than twice that level. This time, the greatest part of the buying came from Japan, where investors were more than ever paying little or no attention to underlying business value compared to other considerations. Although an identical portfolio to that owned by the fund mentioned above could have been purchased on the Spanish stock market for half of the price of Spain Fund shares, these Japanese speculators had no doubts. This fund, priced 2x the NAV was another example of trading sardines - the only possible reason for buying the Spain Fund rather than the underlying securities was the conviction that its shares would rise to an even more overpriced level.

Assets and Stocks can be characterized as either speculations and investments just as financial market participants can be divided into two groups. The difference is not clear to most people – both can be bought and sold and both normally fluctuate in price and can consequently appear to generate returns. But there is one important difference: Speculations do not throw off cash flow for the benefit of the owners, investments do. Bonds and stocks go down and up in price, but there should be no confusion as to which are the true investments. For example, collectibles (antiques, art and rare coins) are rank speculations and not investments. Even very long term investments like recently planted cork properties will sooner or later create cash flow; machines make products that are marketed; a building is occupied by tenants that pay rent.

Collectibles, by contrast, generate no cash flow; their eventual sale is the only way of creating cash. The value of collectibles varies only with supply and demand because the future buyer is dependent solely on his own prospects for resale. Because collectibles prices depend on the changes of taste, they have not been historically recognized as supplies of value – The only value collectibles can get is based on round logic: Someone buys because someone else has bought. This has the effect of bringing prices

up which creates publicity and the illusion gratifying returns – such reasoning can fail at any time.

After all, investing is not entertainment; it is a serious business. To be successful in it, it is required an appropriate mind set – if people participate in the financial markets at all, it is vital to do so not as a speculator but as an investor.

## **2. VALUE INVESTING ESSENCES**

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### **2.1. THE ROOTS**

There are 3 main elements to a Value Investing approach: First of all, it is a bottom up strategy that requires the recognition of specific undervalued investment opportunities; Secondly, it is not a relative performance but an absolute performance oriented strategy; Finally, it is paid attention to what can go wrong (risk) and to what can go right (return) – Risk averse approach.

#### ❖ A bottom up strategy:

Many today's investors apply a top down approach. This undertaking is risky and difficult, being very susceptible to error all the time. These kind of investor needs to accurately forecast macroeconomic conditions and then correctly interpret their impact on various sectors of the overall economy on particular industries, and finally on specific companies. As if that was not complicated enough, it is also essential for top-down investors to perform this exercise quickly as well as accurately, or others may get there first and, through their buying or selling, cause prices to reflect the forecast macroeconomic developments, thereby eliminating the profit potential for latecomers. The top-down investor thus faces the frightening task of predicting the unpredictable more accurately and faster than thousands of other bright people, all of them trying to do the same thing. It is not clear whether top-down investing is a greater-fool game, in which investors win only when someone else overpays, or a greater-genius game, winnable at best only by those few who regularly possess superior insight. In either case, it is not a good-looking game for risk averse investors. Top down investing does not recognize a margin of safety. Top down investors are buying based on a trend or concept, they are not buying based on value. There is no definable limit to the price they should pay, since value is not part of their purchase decision. It is not even clear whether top down oriented buyers are speculators or investors. If they buy shares in businesses that they really believe will do good in the future, they are investing; if they buy what they believe other will be soon buying, they are speculating.

By contrast, Value Investing employs a bottom up strategy where investment opportunities are acknowledged one at a time through fundamental analysis; value investors search for bargains stock by stock, examining each situation on its own merits.



While a top down investor makes several predictions in a decision making, a bottom up investor is not in the forecasting business at all. The entire strategy can be described as “buying a bargain and wait” and investors must learn to assess value in order to recognize a bargain when they see one. Then, they must exhibit the patience and control to wait until a bargain arises from their searches and buy it, regardless of the current direction of the market or their own views about the economy at large.

Another difference between the two approaches is that bottom up investors are able to spot precisely and simply what they are betting on. The uncertainties they face are limited – what is the underlying company worth?; will the underlying value last until shareholders can benefit from its realization?; what is the probability that the gap between price and value will narrow?; and, knowing the market price, what is the potential risk and reward? Bottom up investors try at their best to determine when the original reason for making an investment stops to be valid. When the underlying value changes, when management reveals itself to be incompetent or corrupt, or when the price appreciates to more fully reflect underlying business value, a disciplined investor can reevaluate the situation and, if appropriate, sell the investment. Huge sums have been lost by investors who held on stocks after the main reason for owning them is no longer convincing.

By contrast, top down investors may find it hard to know when their bet is no longer valid. If a person invests based on a judgment that interest rates will decline but they rise instead, how and when do he decide that he was wrong? His bet may eventually demonstrate to be correct, but then again it may not. Unlike judgments about Value that can easily be reaffirmed, the possible grounds for reversing an investment decision that was made based upon a top-down prediction of the future are simply not clear.

❖ An Absolute Performance Orientation:

Most institutional investors invest with the goal of outperforming the market, other, are simply indifferent as to whether the results achieved are absolute gains or losses. Positive relative performance, especially in the short term is usually sought by imitating what others are doing or by attempting to outguess what others will do. Value investors, by contrast, are absolute performance oriented; they are interested in returns only, meaning they only care about realizing their personal investment objectives; they do not care about the way the market and other investors are doing. Good absolute

performance is obtained by buying undervalued stocks and selling when they become fully valued.

Absolute performance oriented investors normally take longer term perspectives than other investors - a relative performance oriented investor is never tolerates long periods of underperformance and consequently invests in whatever is currently popular. Relative-performance-oriented investors may actually reject situations that clearly offer attractive absolute returns over the long run if making them would risk near-term underperformance. By contrast, absolute performance oriented investors are more expected to chose out of favor stocks that may take longer to come to fulfillment but also carry less risk of loss.

One important distinction between a relative absolute performance orientation lies in the different ways for investing available cash. Relative performance oriented investors will choose to be fully invested all time, since cash balances would likely cause them to lag behind a rising market – since the goal is at least to equal or optimally beat the market, any cash that is not promptly spent on specific investments must nevertheless be invested in a market relate index. By contrast, absolute performance oriented individuals will accept to hold cash reserves when no bargains are available. Cash provides a modest, sometimes attractive nominal return (normally above the rate of inflation) and is liquid – the liquidity of cash affords elasticity as it can be quickly channeled into other investment opportunities with minimal transaction costs.

❖ Risk and Return:

Value investors focus on risk as well as return, they are concerned with how much money they can make and how much they may possibly lose – other investors only care about how much they can make. In a way that great part of the investors think about risk, they appear confused about it. Some persist that return and risk are positively correlated – the greater the risk, the greater the return. In fact, this is a basic principle of the Capital Asset Pricing Model (CAPM)<sup>5</sup> taught in almost all business schools, yet it is not always true; this model tells the relationship risk and expected return. Other investors, mistakenly associate risk with volatility, highlighting the risk of stock price fluctuations while ignoring the risk of making overpriced investments.

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<sup>5</sup>CAPM is a model that describes the relationship between risk and expected return.

The positive correlation between return and risk would only hold constantly in an efficient market – any discrepancies would rapidly be corrected; this is what would make the market efficient. In inefficient markets, by other means, it is entirely possible to find investments offering high returns with low risk. These arise when information is not widely available, when an investment is particularly complicated to analyze, or when investors buy and sell for reasons unrelated to Value. On the other hand, inefficient markets also provide high risk investments offering low returns. Overpriced and therefore risky investments are often available because the financial markets are biased toward overvaluation and because it is difficult for market forces to correct an overvalued condition if enough speculators persist in overpaying.

## **2.2. SUCCESSFUL OVER TIME?**

Some years ago, investors could easily make money in the markets by looking for Value hidden away in financial statements. Thanks to the digital era, its ease of access to information and the destructive power of technology, those days are now past. But there's still a proven way to consistently earn a positive return in the market.

A classic case is Research in Motion (BlackBerry Canadian telecommunication and wireless equipment company). In January 2007, RIM was trading at 55 times the PE multiple<sup>6</sup>. Meanwhile, a computer company called Apple had reinvented itself as an MP3 player company and was now launching a new phone set to takeoff in the summer. By the end of December 2009, market share for Apple's iPhone Operating System as a percentage of US smartphone OS was 25% while RIM had increased from 28% to 41% in that same period. Though RIM had grown market share, fears of iOS growth had increased its PE multiple to 17 times.

Many traditional, value investors sat back and thought, "Well, RIM is holding up pretty well compared to the iPhone, yet their PE multiple is getting destroyed." It's trading at near the historical average S&P 500 PE multiple of 15 times. Apple hasn't historically been strong in the enterprise, so maybe iPhone will just be a consumer phenomenon that doesn't break through to business users. Android is irrelevant with 5% market share. The Smartphone market is growing rapidly and RIM is the clear leader. RIM is still growing north of 35% and generating nearly \$2.5B in net income. Maybe RIM looks cheap... Two years later, RIM was trading at a 3.5 times the PE multiple and topline growth had shrieked to an end. Market share for RIM had contracted to 16% while iOS and Android combined for 77% market share (*figure 5*). This way, in 2012, RIM posted a net income loss of \$847mm. Investors lost lots of cash.

How did this happen so quickly? Why did net income fall off a cliff? Why now?

### ❖ Technology adoption accelerating:

There are several factors that go in to how fast the technology gets adopted, including how discontinuous innovation is. The flip side of this is when new technologies get adopted faster, incumbent solutions die faster. Quicker adoption leads to quicker destruction of old technologies.

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<sup>6</sup> PE multiple (price to earnings ratio) is a valuation ration that compares the company's share price and its earnings per share.

❖ Internet way of life:

With the Internet controlling so much of our life, it's no wonder that everyone wants to be connected. The issue for current technologies is that what once cost thousands of dollars and several devices has all consolidated to a Smartphone. This type of enormous consolidation has detrimental effects on any company or industry that hasn't adapted to the massive structural shift.

❖ Software eating the world:

Software doesn't just challenge businesses through direct competition; they can upend businesses through a systematic digitization of the world, rendering goods and service that a company is offering obsolete.

While there may still be opportunities for Value Investing, investors need to be cautious of businesses that appear to be on a slow decline. With the rate of technology adoption accelerating, Internet being a way of life and software consuming the world, businesses that refuse to embrace or adapt don't just slowly decline; they fall off a cliff and take their cash flows with them.

Value has enjoyed a tremendous run since 2002. Easy access to credit and the booming global economy inflated the profits of the cyclical companies that typically make up the value universe. The private equity enthusiasm provided many value stocks with a buyout premium. By 2007, value stocks (has measured by price-to-book) had never been more expensive relative to the Market. Since the credit crunch hit in the summer of 2007, the cheapest segment of the US stock market has underperformed the most expensive stocks by roughly 30 percentage points.

Furthermore, the credit crisis is revealing a profound weakness in the value discipline. Graham maintained that analysis should be "concerned primarily with values which are supported by facts and not with those which depend largely upon expectations." The housing bubble, however, changed many facts. But some of the world's leading investors appear not to have noticed. Several piled into housing stocks when they were selling at about book value. This proved a disastrous move as falling land prices and slowing sales generated massive losses for homebuilders. Then some of the same investors charged into banks, figuring they were cheap. That also turned out to be a poor idea. The ongoing efforts of Value Investors raise the question of whether the

historically high returns from value are merely compensation received by investors for taking on more risk. This view was first expressed by Eugene Fama and Kenneth French. They both claimed that Value stocks came from a universe of smaller companies that were “more sensitive to economic conditions”.

The credit is bringing fundamental changes to the economy at a mind-numbing speed. Investors have been drawn into one value trap after another. With the crisis of credit and the global economy worsening, things could get a lot worse for Graham’s disciples.

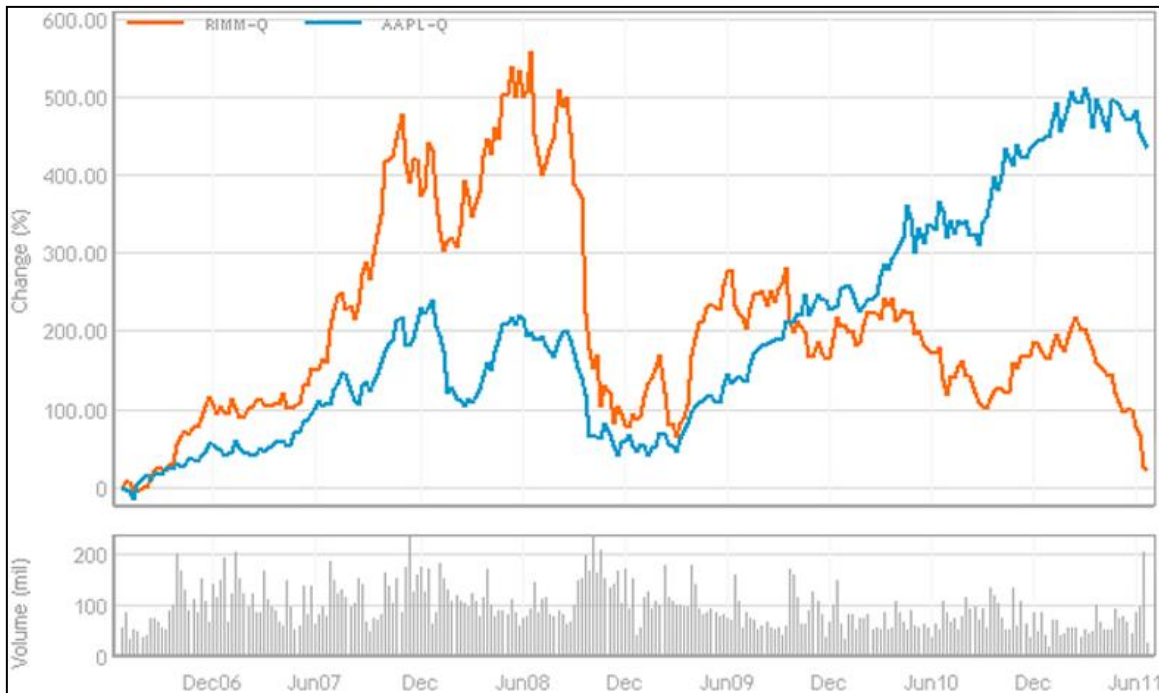


Figure 4 – Apple and RIM stock prices comparison

(Source: <http://bradpoulos.com/apple-vs-rim/>)

### **3. VALUE INVESTING MAIN PRINCIPLES**

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#### **3.1. MR. MARKET BY GRAHAM**

If all investors based their investment decisions on rational and conservative estimates of intrinsic value, it would be very difficult to make money in the stock market. Fortunately, the participants in the stock market are humans subject to the destroying influence of emotions. Investors are frequently characterized by attacks of over-optimism and greed, which causes stock prices to be bid up to very high levels. These same investors are also vulnerable to excessive pessimism and fear, in which case, stock prices are driven down substantially below intrinsic value.

Benjamin Graham offers intelligent investors an escape from the swift tides of greed and fear. He wrote: "Basically, price fluctuations have only one significant meaning for the true investor. They provide him with an opportunity to buy wisely when prices fall sharply and sell wisely when they advance a lot. At other times he will do better if he forgets about the stock market (*Security Analysis 1934*)".

Graham's attitude toward market fluctuations makes perfect sense, as irrational behavior that is applied in most aspects of life, such as buying products when their price is high instead of buying them in sale, is applied by investors in the stock market as well.

Graham succinctly took his liberating philosophy toward market fluctuations in the famous parable of Mr. Market. Graham said: "Imagine you had a partner in a private business named Mr. Market. Mr. Market, the obliging fellow that he is, shows up daily to tell you what he thinks your interest in the business is worth. On most days, the prices he quotes are reasonable and justified by the business's prospects (*The Intelligent Investor 1949*)". However, Mr. Market suffers from some rather incurable emotional problems; he is very temperamental. When Mr. Market is overcome by boundless optimism or bottomless pessimism, he will quote you a price that, as Graham noted, "Seems to you a little short of sense." As an intelligent investor, investors should not fall under Mr. Market's influence, but rather they should learn to take advantage of him.

The value of investors' interest should be determined by rationally appraising the business's prospects, and they can happily sell when Mr. Market quotes them a ridiculously high price and buy when he quotes them an absurdly low price. The best part of their association with Mr. Market is that he does not care how many times they

take advantage of him. No matter how many times investors encumber him with losses or rob him of gains, he will arrive the next day ready to do business with them again.

The lesson behind Graham's Mr. Market parable is obvious. Every morning, the market offers investors quotes on thousands of businesses, and investors are free either to ignore or take advantage of those prices. Intelligent investors must always remember that it is not Mr. Market's guidance they are interested in, but rather his wallet.



### **3.2. THE INVESTOR AND HIS EMOTIONS**

Successful investors are normally disconnected of emotions, letting the fear and greed of others to play into their benefit. By having confidence in their own analysis and decision, these investors respond to market forces with calculated explanation and not with blind emotion. Indeed, the way an investor sees the market and price fluctuations is a key factor to determine the successfulness of the investment.

Most investors follow and listen to Mr. Market for guidance - The reality is that Mr. Market knows nothing once it is the product of the combined actions of all buyers and sellers who are not always driven by investment fundamentals. Speculators and investors driven by emotion will certainly lose money and investors who take benefit of the market periodic irrationality, by contrast, have a good chance of benefit from long term success.

Mr. Market daily fluctuations may seem to provide reaction for investors' recent decisions: for a recent purchase decision, rising prices offer positive reinforcement and falling prices, negative reinforcement – If a stock is bought and subsequently rises in price, it is easy to allow the positive feedback provided by the market to influence the investors' judgment. He may start to believe that the security is worth more than he previously thought and give up from selling, effectively placing the judgment of Mr. Market above his own. He may even choose to buy more shares of the stock, predicting the market future movements. As long as the price appears to be rising, he may choose to hold, even ignoring weakening business fundamentals or a decrease in underlying value.

Equally, most investors, somewhat naturally, become concerned when the price of a stock declines after its initial purchase. They start to panic and thinking that the market may know more than they do or that their initial appraisal was completely wrong. It is easy to go crazy and sell right at the wrong time. Yet, if the security was truly a bargain when it was bought, the perfect way of action would be to take advantage of this even better deal and buy more.

It is extremely important for all investors to differentiate underlying business reality from stock price fluctuations. If the general tendency is for buying to encourage more buying and selling to create more selling, investors must fight the tendency to face market forces. Intelligent investors cannot ignore the market—ignoring a source of

investment opportunities would obviously be a mistake — but they must think for themselves and not allow the market to direct them. Not price alone, but price in relation to value must determine investor's investment decisions. If one looks to Mr. Market as a originator of opportunities (where price detaches from value), he has the mind of a value investor. If one insists on looking to Mr. Market for investment guidance, however, he will probably end short of money.

Stock prices move down and up for two main reasons: to mirror short term variations in supply and demand and to reflect the business reality (or investors' discernment of that reality). If Samsung's business expands or prospects improve and its stock price proportionally increases, this growth may simply reflect an increase in business value. If Allianz's share price drops when a hurricane causes billions of dollars in catastrophic losses, a decline in total market value approximately equal to the estimated losses might be suitable. When the stock of Fund American Companies rose as a result of the unexpected announcement of the sale of its major subsidiary, Fireman's Fund Insurance Company, at a very high price, the price increase reflects the sudden and nearly complete realization of underlying value.

Stock prices sometimes vary not based on any clear change in reality but on changes in investor perception – In the first months of 1991, the shares of many biotechnology companies doubled despite a lack of change in the companies' fundamentals that could possibly have explained that magnitude of increase. The only reasonable explanation for the rise was that investors were unexpectedly willing to pay much more than before to buy the same thing.

In the short term, supply and demand by themselves determine market stock prices – if there are many sellers and few buyers, prices fall, sometimes with no reason. Supply and demand movements can result from a run out of stock that just reported disappointing earnings, from year end tax selling, or from an unpleasant rumor. After all, most day-to-day price fluctuations arise from supply and demand discrepancies rather than from fundamental developments.

In the short term, investors' perception may be as important as reality itself in determining stock prices – it is almost never clear which future events are anticipated by investors and thus already reflected in today's security prices. Because security prices can change for any number of reasons and because it is impossible to know what

expectations are reflected in any given price level, investors must look beyond security prices to underlying business value, always comparing the two as part of the investment process.

Some investors, rather than responding coolly and with rationality to market changes, they are dominated by emotion – they react with fear and greed. We all know somebody who reacts responsibly and calculatingly when they are buying their groceries but go wild when investing their money. It may take them many years of hard work and controlled saving to collect money but only a few seconds to gamble it. The same people would read several consumer publications and visit numerous stores prior to purchase a motorcycle and paying no attention and investigation to the stock they are just about to buy because they've heard from a friend. This rationality that is nowadays applied in the buying of a mobile phone is often absent when it comes to investing.

This same investors, look at the security markets as a way to make lots of money without working instead of a way to invest capital in order to get an honest return. Everybody would like to have an easy and fast profit, and the panorama of an effortless return generates greed in investors. Greed takes many investors to search for shortcuts to their investment success. Rather than letting returns to compound over time, they try to make quick profits by acting on hot tips – they do not stop to consider how the tipster could possibly be in control of valuable information that is not illegally obtained or why it is being made available to them. Greed also manifests itself as excessive confidence or, more delicately, as satisfaction facing bad news. Finally, greed can move investors to transfer their focus away from the accomplishment of long term investing goals in favor of short term speculation.

Sometimes, greed produce new era thinking to be presented by market participants to justify buying or holding overvalued securities. Reasons are given as to why this time is different from everything that previously arisen. As the truth is stretched, investors' behavior is taken to an extreme. Conservative assumptions are revised in order to justify ever higher prices, and the mania can follow. In the short term, fighting the mania is not only psychologically but also financially difficult as the participants make a lot of money, at least on paper. Then, predictably, the mania reaches a climax, reverses the way and turns into a selling terror. Greed leads to fear and investor losses can be gigantic.

One example of such mania were Junk bonds<sup>7</sup>. Prior to the 1980s the entire junk bond market consisted of a lot of billion dollars of “Fallen angels”<sup>8</sup>. Although newly issued junk bonds were a 1980s invention and were thus experimental over a full economic cycle, they became widely accepted as a financial innovation of great importance, with total issuance exceeding \$200 billion. Buyers, lost in greed, abandoned historical principles of business valuation and even after the bubble burst, many, persistently embraced the validity of the concept.

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<sup>7</sup> Risky investments, but with speculative appeal because they offer much higher yields than safer bonds. Companies that issue junk bonds typically have less-than-stellar credit ratings, and investors demand these higher yields as compensation for the risk of investing in them.

<sup>8</sup> A bond that was once investment grade but has since been reduced to junk bond status.

### **3.3. MARGIN OF SAFETY**

Value Investing is related to the act of buying securities with a significant reduction of their current underlying values and holding them until their full value is realized. For Value Investors, this means buying a dollar for fifty cents. This thinking implies that Value Investors must be willing to wait and to be patient in order to buy the security only when it has an attractive discount from its value. The number of available opportunities and good deals varies, and the gap between the price and the value of any stock may be very slight or enormously wide. Therefore, investors need to be very persistence and long-suffering, since finding a good investment deal involves a lot of research and study because value is often well hidden.

This pursuit is what makes Value Investing a risk averse approach being the biggest challenge for them the maintenance of the required discipline which normally implies standing apart from crowds, challenging conventional wisdom. It can be, thus, a very lonely strategy and investors may even experience poor performance compared to others or the market itself during long periods of market overvaluation, although over the long term the value approach works successfully.

Businesses that are not easily understood or that are considered extremely risky are not attractive to Value Investors, for example few Value Investors will own shares of technology companies due to its future uncertainty. W. Buffet defines this as “Circle of Competence” and frequently communicated this to his shareholders.

In order to obtain a good absolute value, is essential that an investment must be bought at a discount from underlying worth. A company trading at one third of its underlying value may be attractive, but another trading at one fifth of its value is a better bargain. This discipline turns much harder the investment task for Value Investors compared with others. Value Investors through time keep comparing potential new investments with their current holdings in order to certify that they own only the most undervalued opportunities accessible. This implies a continuously reappraisal and reevaluation of their current holdings as new opportunities emerge, and this also means to sometimes assume some losses on the sale of current holdings. In other words, an investment should not be considered blessed when a better one comes along.

Ben Graham knew that a stock or business worth 1 euro today, could be worth 75 cents or 1.25 Euros in the proximate future, he also knew that he might even be mistaken

about the present value. Therefore, Graham had no interest in buying 1 euro for 1 euro of value – there was no advantage in doing so and losses could appear. By investing with a discount he would be unlikely to experience losses. The mentioned discount provided therefore a Margin of Safety. Margin of Safety is achieved when securities are purchased at prices significantly below underlying value to allow human error, bad luck and volatility in a rapidly, complex and unpredictable world. Buffett defined Margin of Safety in terms of tolerances: “When you build a bridge, you insist it can carry 30,000 pounds, but you only drive 10,000 pound trucks across it. And the same principle works in investing”.

What is the Margin of Safety an investors would require? The response varies from investor to investor – how much bad luck are they willing and able to tolerate? What is their tolerance for error? How much volatility in values can they absorb? It can be concluded that the answer relies on how much investors can afford to lose.

Many investors do not seek investments with margin of safety, even between value investors there is ongoing disagreement concerning the appropriate margin. Some highly successful investors, including Buffett, have come increasingly to recognize the value of intangible assets—broadcast licenses or soft-drink formulas, for example. In reality, all cash generated is cash flow. The issue with Intangible assets is that they contain little or no margin of safety.. The most valuable assets of Seven-Up, by way of example, are all the formulas that make those soft drinks have their distinctive flavor. If something goes wrong, tastes changes for example, the Margin of Safety is quite low. By contrast, Tangible Assets are easily and precisely valued and thus providing investors with greater protection from loss. If a chain of retail stores becomes unprofitable, for example, the inventories can be liquidated, leases transferred, real estate sold and receivables collected. In the other hand, if consumers lose their taste for Seven-Up, Tangible assets will not meaningfully cover investor’s losses.

How can investors be assured of their margin of safety? By always buying at a considerable discount to business value and by giving preference to tangible assets (this does not mean that there aren’t great investment opportunities in businesses with valuable intangible assets). By replacing current stock as better bargains appear. By selling when the market price of any investment comes to reflect its value and by holding cash until other attractive investment becomes suitable.

Investors should pay attention not only to whether but also to why current holdings are undervalued. It is very important to know why they have made an investment decision and to sell when the reason for that decision is no longer valid; search for stocks with catalysts that may help directly in the realization of underlying value; give preference to companies with good managements with personal stake in the company and finally, diversify their holdings and hedge when it is financially attractive to do so.

To appreciate the Margin of Safety concept, let's consider the stock of Erie Lackawanna<sup>9</sup> in late 1987, when it was backed by nearly \$140 per share in cash as well as a sizable and well-supported tax refund claim against the IRS. The stock sold at prices as low as \$110 per share, a discount from the net cash per share even exclusive of the refund claim. The downside risk was estimated to be 0. The only foreseeable loss on the stock would be a temporary market-price decline, a development that would merely render the shares a still better buy. Ultimately, Erie Lackawanna won its tax case. Through mid-1991 cumulative liquidating distributions of \$179 per share had been paid (\$115 was paid in 1988, returning all of a buyer's late 1987 cost), and the stock still traded at approximately \$8 per share.

When the overall market is strong, the rising tide lifts most ships. Profitable investments are easy to come by, mistakes are not costly, and high risks seem to pay off, making them seem reasonable in retrospect. A market downturn is the true test of an investment philosophy. Securities that have performed well in a strong market are usually those for which investors have had the highest expectations. When these expectations are not realized, the securities, which typically have no Margin of Safety, can drop. Stocks that fit this description are sometimes referred to as "torpedo stocks" (*figure 6*), a term that describes the disastrous effect owning them can have on one's investment results. Compaq Computer Corporation traded at \$72 on March 6, 1991. By April 24 the shares had fallen to 61%. The next day they plunged 9%. Then on May 14 they closed at \$36. The March 6 share price had reflected investor expectations of high earnings growth. When the company subsequently announced a decline in first-quarter earnings, the stock was torpedoed.

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<sup>9</sup>An American Railway company that operated from 1960 to 1987.

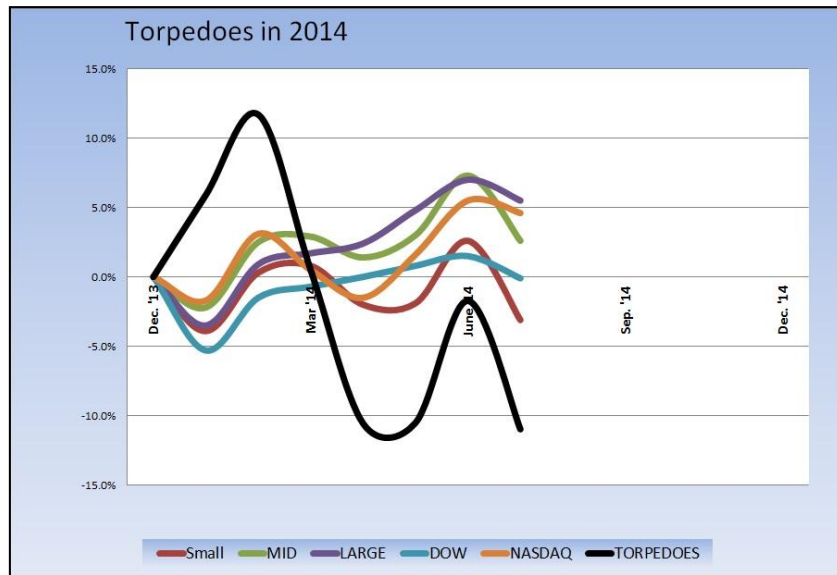


Figure 5 – Torpedoes Stocks

(Source: (<http://webuser.bus.umich.edu/tradingfloor/earningstorpedo/torpedo100/>))

The securities owned by Value Investors are not sustained by such high expectations. To the contrary, they are usually unheralded or just ignored. In depressed financial markets, it is said, some securities are so out of favor that investors cannot give them away. Some stocks sell below net working capital per share, and a few sell at less than net cash (cash on hand less all debt) per share; many stocks trade at an unusually low multiple of current earnings and cash flow and at a significant discount to book value.

A notable feature of Value Investing is its strong performance in periods of overall market decline. Whenever the financial markets fail to fully incorporate fundamental values into securities prices, an investor's Margin of Safety is high. Stock and bond prices may anticipate continued poor business results, yet securities priced to reflect those depressed fundamentals may have little room to fall further. Moreover, securities priced as if nothing could go right stand to benefit from a change in perception. If investors refocused on the strengths rather than on the difficulties, higher security prices would result. When fundamentals do improve, investors could benefit both from better results and from an increased multiple applied to them.

In early 1987 the shares of Telefonos de Mexico, S.A., sold for prices as low as ten cents. The company was not doing badly, and analysts were forecasting for the shares annual earnings of fifteen cents and a book value of approximately seventy-five cents in 1988. Investors seemed to focus only on the continual dilution of the stock, stemming from quarterly 6.25 percent stock dividends and from the issuance of shares to new tele-



phone subscribers, ostensibly to fund the required capital outlays to install their phones. The market ignored virtually every criterion of value, pricing the shares at extremely low multiples of earnings and cash flow while completely disregarding book value. In early 1991 Telefonos's share price rose to over \$3.25 (*figure 7*). The shares, out of favor several years earlier, became an institutional favorite. True, some improvement in operating results did contribute to this enormous price appreciation, but the primary explanation was an increase in the multiple investors was willing to pay. The higher multiple reflected a change in investor psychology more than any fundamental developments at the company.

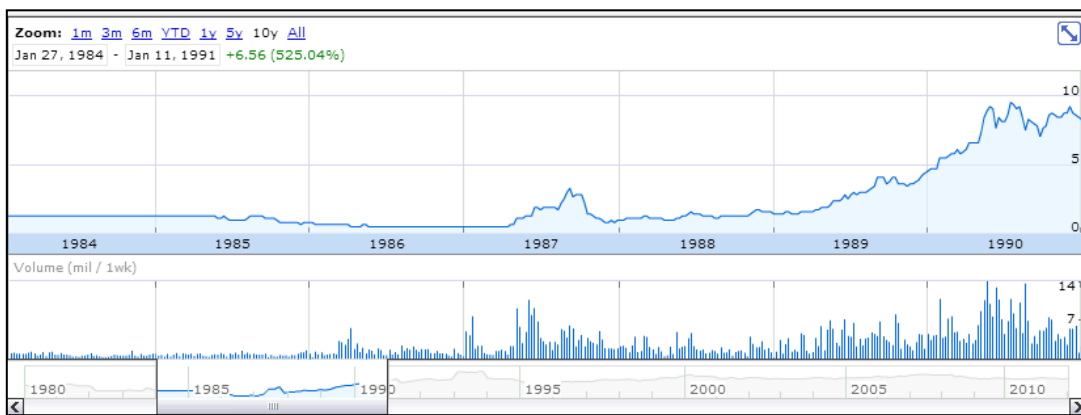


Figure 6 – Telefonos de Mexico Share Price

(Source: [https://www.google.com/finance?q=NASDAQ%3ATFONY&ei=1z1NVLDVCOGfwwPY\\_oGoBA](https://www.google.com/finance?q=NASDAQ%3ATFONY&ei=1z1NVLDVCOGfwwPY_oGoBA))

### **3.4. VALUE INVESTING PROCESS**

Some of the steps involved in the Value Investing process are the following:

- i) Selecting securities for valuation.
- ii) Estimating their fundamental values.
- iii) Calculating the appropriate Margin of Safety required for each security.
- iv) Deciding how much of each security to buy, which encompasses the construction of a portfolio and a choice about the amount of diversification the investor desires.

#### **Selecting the securities for valuation:**

The investment world offers so many choices that any serious investor needs to slice out a limited part of that world before beginning his analysis. The task will get simpler by ignoring some regions of the investment universe: government and federal agency debt issues, state and municipal bonds, bank savings accounts and certificates of deposit, currencies, collectibles, direct investments, derivatives, mutual funds of every imaginable stripe, and just everything that is not a stock or corporate bond. Even here, the focus is going to be selecting equity investments, although there are certain times in which value investors buy bonds, convertibles and other kinds of securities. This step will work as filter as it will look for opportunities and hidden value.

First, there are securities that are obscure. They tend to be the stock of smaller companies, untouchable by large investment funds and therefore lacking in coverage by securities analysts who want to get paid for their work. Companies spun off from larger firms fit into this category, and they have the extra attraction that they may be actively discarded by the large funds that don't want the concerned. Boring companies make for boring stocks and lower levels of interest. The company that has been doing the same thing for years, growing slowly and profiting modestly, is not going to spend its funds courting attentions from analysts. A change in the fortunes of this kind of firm is more likely to go unnoticed than if the firm were doing something with a lot more flash.

Undesirability has other signs. Companies in bankruptcy<sup>10</sup> or suffering from severe financial distress are clearly undesirable, except to the knowledgeable investor who sees the real Value of the assets and the business that may emerge after reorganization.

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<sup>10</sup> A legal proceeding involving a person or business that is unable to repay outstanding debts.

Companies in the industries that are suffering from overcapacity, a sudden increase in imports, general decline, or the threat of legislative or regulatory punishment, may also be undesirable. Lawsuits, both current and potential, may make companies undesirable. This is not referring to stocks whose price drops by 50 percent in a week, or even a day, but to one that has substantially lagged the market for two or three years. These indicators of undesirability identify potential areas of opportunity; as investors flee from bad news or poor performance, they discard stock at prices that may exaggerate the company's distress.

Finally there are securities that are mispriced because of institutional constraints or mandates. Investors who had the expertise and made the effort to value this assets, weather real estate, junk bonds, or the savings institutions themselves, where able to purchase them at sales prices. There are also companies with divisions performing so poorly that the record of the whole company suffers. If the stock price reflects the earnings (often losses) of the whole company, than the only thing management needs to do to turn things around and boost the share price is to kill the division. Many of these situations do not escape notice from the sharp eyes of wall Street analysts, but there are always a few situations novel or complicated enough to avoid detection. They await the Value Investor with the knowledge and time to disaggregate the company's results and spot the earnings potential. They require as well some catalyst to encourage the company's executives to rid themselves of the poor division and let the true Value arise.

All of this work is a starting point. The purpose of the search effort is to reduce the investment universe to a manageable size so that a valuation analysis can begin in depth. Investors can use computerized screens of company or stock databases. They can look at the financial press for notice of spin-offs<sup>11</sup>, other restructurings, or new bankruptcy filings. They can read trade publications to see which industries are distresses and where potential for consolidation and other value-enhancing changes is. They examine possibilities for their portfolio, and those that pass these screens have made a "short list".

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<sup>11</sup> The creation of an independent company through the sale or distribution of new shares of an existing business or division of a parent company

**Estimating the fundamental value & calculating the appropriate Margin of Safety:**

Many investors maintain on adding exact values to their investments, looking for accuracy in an inaccurate world, but, underlying value cannot be precisely calculated. Reported earnings, book value and cash flow are, after all, only the best guesses of accountants who follow a fairly strict set of standards and practices designed more to achieve conformity than to reflect economic value; estimated results (in the future) are even less precise. Not only is this value imprecisely knowable, it also changes over time, changing with numerous macroeconomic, microeconomic, and market-related factors. So while investors at any given time cannot determine business value with precision, they must nevertheless almost continuously re-evaluate their estimates of value in order to incorporate all known factors that could influence their appraisal.

The issue is that it is difficult to understand the difference between the capability to make precise forecasts and the ability to make accurate ones. Anyone with a simple calculator can perform Net Present Value (NPV) and Internal Rate of Return (IRR). The NPV calculation presents a single point value of an investment by discounting forecasts of future cash flow back to the present. IRR is a calculation of the rate of return on an investment to as many decimal places as preferred. This apparent precision given by NPV and IRR can provide investors a fake sense of certainty for them. Normally, investors give much importance to the output and forget about the assumptions. These two calculations are great at summarizing the returns for a given series of cash flows. When cash flows are fully determined, as in the case of a bond, and when all payments are received when due, IRR provides the precise rate of return to the investor while NPV describes the value of the investment at a given discount rate. In the case of a bond, these calculations allow investors to quantify their returns under one set of assumptions, that is, that contractual payments are received when due. These tools, however, are of no use in determining the likelihood that investors will actually receive all contractual payments and, in fact, achieve the projected returns.

Thanks to differences of opinion between investors, markets exist and if securities could be precisely valued, there would be almost no differences of opinion, market prices wouldn't fluctuate much often and trading activity would be significantly reduced. To investors that are oriented by fundamental valuation, the value of a stock to the buyer much be higher than the price paid for it and the value to the seller must be lower or no trading would take place. The discrepancy between the buyer's and the seller's

perceptions of value can result from such factors as differences in assumptions regarding the future, different intended uses for the asset, and differences in the discount rates applied. Every asset being bought and sold therefore has a possible range of values surrounded by the value to the buyer and to the seller: The real transaction price would be somewhere in the middle.

Many methods of business valuation exist, but only one will be addressed in this project - Liquidation Value - in my opinion is the most reliable and realistic one.

The liquidation value of accompany is a conservative measurement of its value in which only tangible assets are taken into account and intangibles (going concern value) are not. It corresponds to value as if the company was to be liquidated. Therefore, when a stock is selling at a discount to per share liquidation value it is frequently a good-looking investment.

The Liquidation value approach is a hypothetical exercise in valuation but usually not an actual approach to value realization. The assets of a company are typically worth more as part of a going concern than in liquidation, so, the liquidation value is a worst case scenario. Even when a company is taken apart, many of its assets are not liquidated but as an alternative are sold intact as operating entities.

How should assets be valued in a liquidation analysis? An orderly liquidation over time is almost certain to appreciate greater profits than a “fire sale”, but time is not always available to a company in liquidation. When a business is in financial distress, a fast liquidation (fire sale) may maximize the land value. Receivables should be significantly discounted as well – the nature of the business, the identity of the client and the amount to receive all influence the ultimate realization from each receivable. When no crisis is at hand, liquidation earnings are normally maximized through a more orderly selling of the company. In an orderly liquidation, the values realized from the selling of current assets will more closely approximate stated book value. Cash, as in all liquidation valuations, is worth every dollar just as it is. Financial assets should be valued at market price less forecasted transaction costs in selling them. Accounts receivable are almost always valued at their face amount. The realizable value of inventories may well be less than the book value – it depends on whether the inventories consist in raw materials, work in process or finished goods, and whether or not there is the risk of technological or fashion obsolescence. The value of a warehouse full of computers would fluctuate

much, but the value of the inventory in the supermarket would certainly not. Naturally, a liquidation sale would yield less for inventory than would an orderly sale to regular customers. The liquidation value of a company's fixed assets is not easy to calculate – the value of plant and equipment, for example, depends on its ability to create cash flow; some machines and facilities have multiple purposes and are widely owned, others may create value only to the current owner; the value of restaurant equipment, is more faster determinable than the value of an aging railway.

In approximating the liquidation value of an enterprise, some value investors (Benjamin Graham disciples) calculate “Net Net Working Capital” as a shortcut. Net working capital consists of current assets (cash, marketable securities, receivables, and inventories) less current liabilities (accounts, notes, and taxes payable within one year.)

Net Net Working Capital is calculated by subtracting all long term liabilities to Net Working Capital. Even when a company as poor ongoing business value, who buys at a price under the Net Net Working Capital are protected by the estimated Liquidation value of current assets alone. As long as working capital is not overstated and operations are not rapidly consuming cash, a company could liquidate its assets, extinguish all its liabilities, and still distribute proceeds in excess of the market price to investors. However, ongoing business losses can quickly corrode Net Net Working Capital, so, investors must always pay attention to the state of the company's current operations before buying as well as any off-balance sheet liabilities such as underfunded pension plans as well as any liabilities that might be used in the path of an actual liquidation.

A company liquidation usually means business collapse, but ironically, it may correspond to investment success. The reason is that the liquidation of a company works as a catalyst for the achievement of underlying business value. Since Value investors goal is to buy securities trading at a reasonable discount from the value of the underlying assets, liquidation is one way for investors to realize profits. It is, in a sense one of the few edges where the truly essences of the stock market are revealed: Are stocks pieces of paper to be traded on and on, or are they proportional interests in underlying businesses? A liquidation settles this debate, distributing afterwards to owners of those pieces of paper the actual cash earnings resulting from the sale of corporate assets to the highest bidder. A liquidation thereby acts as a tether to reality for

the stock market forcing either overvalued or undervalued share prices to move into line with actual underlying value.

### **Earnings and Book Value:**

Earnings per share have since long time ago been the valuation technique most used by investors. Sadly, it can be an imprecise calculation, subject to manipulation and accounting errors. Corporate managements are generally aware that many investors focus on growth in reported earnings, and a number of them gently transform reported earnings to create a consistent upward trend. A few particularly dishonest managements play with accounting to turn poor results into improved ones, losses into profits, and small profits into large ones. This is why, as well as paying attention to numbers, investors must learn how the management of a company works and if it is reliable.

What a stock cost in the past is not necessarily a good measure of its value in the present. Book Value, the residual after subtracting liabilities from assets, is the historical accounting of shareholders' equity. Sometimes historical book value (carrying value) provides an accurate measure of current value, but often it doesn't happen. Current assets, such as receivables and inventories, for example, are usually worth close to carrying value, although certain types of inventory are subject to rapid obsolescence. However, plant and equipment may be obsolete and therefore worth considerably less than ongoing value. On the other hand, a company with fully depreciated plant and equipment may have an ongoing value below real underlying value. Technology, regulation and inflation for example can influence value of assets in ways that historical cost can't capture.

Real Estate bought many years ago, for example, and carried on a company's books at historical cost may be worth considerably more. Book Value can also be affected by management actions, share issuance and repurchases. Another operation that can have impacts on reported book value are write-offs of money losing which are to some extent random. Many companies in the 1980s, for example, performed recapitalizations, whereby money was borrowed and distributed to shareholders as an extraordinary dividend. Even the choice of accounting method for mergers can affect reported book value. To be useful, an analytical tool must be consistent in its valuations. Yet, as a result of accounting rules and discretionary management activities, different companies with equal tangible assets and liabilities could have very different reported book values.

### **3.5. RELEVANCE OF INFLATION**

Even if the present could somehow be perfectly understood, most investments are dependent on outcomes that cannot be accurately foreseen, and for that, it is serious mistake to think that all the details that illustrate a particular investment are or could be known. Even if an investment was perfectly known, the obscure and confusing reality is that business values are not impressed in stone. Investing would be much simpler if only stock prices revolved predictably around business values which by themselves remained constant. If investors cannot be certain of value, then, how can they be sure that they are buying at a discount? The fact is that they cannot.

Volatility in business value can be explained by several reasons – in a way of example, the “credit cycle” which is the periodic tightening and relaxation of the accessibility of credit, because it influences the cost and terms upon which money can be borrowed. This affects the multiples that buyers are willing to pay for businesses. Trends in deflation and inflation also cause business values to go up and down.

If for 50 cents an investor can buy one euro of value in the shape of an asset such as properties, real estate or natural resource which increases in value with inflation, a 50 cent investment today can create a realization of value greater than one euro – that is why value investing can work very well with inflation. In this environment, however, investors may become careless, as long as assets are growing in value, it would appear to be attractive to relax the standards and buy one euro of assets not for 50 cents, but for 60 or 70 cents (or maybe 1.20 cents). Such lack of care could prove costly, however, in the event that inflation comes to be predictable by many investors, who respond by bidding up stock prices, a consequent slowdown in the rate of inflation could cause several price declines.

In a deflationary background assets have a tendency to decline in value – buying one euro worth of assets for 50 cents might not be a bargain if the value of the asset is dropping. Historically investors have found attractive opportunities in companies with “hidden” assets and in the situation of a broad-based decline in business and asset values, some of these hidden assets become less valuable and in some case may become unexpected liabilities. Pension fund assets value would be reduced due to a decline in the stock market and real estate carried on companies’ reports may no longer be undervalued.



The possible sustained decreases in value are daggers in the value investing heart (and are not favorable as well for other investment approaches either). Value investors put great confidence in the principle of appraise value and then buying at a discount – but if value is subject to considerable corrosion, how large a discount is enough? Should investors care about the possibility that a company value may decline? Absolutely. Should they do anything about it? The following three answers might be effective: First, since investors cannot predict when values will rise or fall, valuation should always be performed conservatively, giving considerable weight to worst-case liquidation value as well as to other methods. Second, investors fearing deflationary environments could ask for a greater than usual discount between underlying value and price in order to make new investments or to hold current positions. The meaning of this lies on the fact that conservative investors would certainly let even more pitches than normal go by. In conclusion, a deflationary environment places a delicate importance on investment decisions and investors facing it can't find out whether and when they will appreciate underlying value and they may not want to get involved at all.

### **3.6. GRAHAM AND BUFFET YARDSTICKS**

#### **Graham's Screens**

By the first time, Benjamin Graham putted is mind to convert his views on markets to specific screens that could be used to find undervalued stocks in the first edition of “*Security Analysis*”. Even dough many time passed, they preserved their original form and are summarized below:

- 1) *Earnings-price ratio that is two times the AAA bond yield;*
- 2) *Price-earnings of a stock has to be less than 40% of the average PE for all stocks over the last 5 years;*
- 3) *Dividend Yield > Two thirds of the AAA bond yield;*
- 4) *Price < two thirds of Tangible book value;*
- 5) *Price < Two thirds of Net Current Asset Value (NCAV) where NCAV is defined as liquid current assets including cash minus current liabilities;*
- 6) *Debt-to-Equity ratio (book value) has to be less than 1;*
- 7) *Current Assets > Twice Current Liabilities;*
- 8) *Debt < Twice Net Current Assets;*
- 9) *Historical growth in EPS (over last ten years) > 7%;*
- 10) *No more than 2 years of declining earnings over the previous 10 years;*

Any company that goes by all 10 screens, Graham argued, would make a fantastic investment. Even if Graham's classes relied on practical examples, he also had a Benjamin Graham classes were based upon practical examples, he also had a chain of maxims that he emphasized on investing:

- Be an investor, not a speculator. Graham believed that investors bought companies for the long term, but speculators looked for short term profits.
- Know the asking price. Even the best company can be a poor investment at the wrong (too high) price.
- Search the market for bargains. markets make mistakes.
- Stay disciplined and buy the formula:  $E (2g + 8.5) * T$ . Bond rate/Y. Where E = Earnings per share, g = Expected growth rate in earnings, Y is the yield on AAA rated corporate bonds and 8.5 is the appropriate multiple for a firm with no growth. For example consider a stock with \$ 2 in earnings in 2002 and 10% growth rate,

when the Treasury bond rate was 5% and the AAA bond rate was 6%. The formula would have yielded the following price:

- Price =  $\$2.00 (2 (10) + 8.5) * (5/6) = \$47.5$
- If the stock traded at less than this price, you would buy the stock.
- Regard corporate figures with suspicion, advice that carries resonance in the aftermath of recent accounting scandals.
- Diversify. Don't bet it all on one or a few stocks.
- When in doubt, stick to quality.
- Defend your shareholder's rights. This was another issue on which Graham was ahead of his time. He was one of the first advocates of corporate governance.
- Be patient. This follows directly from the first maxim.

**Buffett's Principles**

<b>Business</b>	<b>Management</b>
<ul style="list-style-type: none"> <li>▪ The business the company is in should be simple and understandable. In fact, one of the few critiques of Buffett was his refusal to buy technology companies, whose business he said was hard to comprehend.</li> <li>▪ The firm should have a consistent operating history, manifested in operating earnings that are stable and predictable.</li> <li>▪ The firm should be in a business with good long term projections.</li> </ul>	<ul style="list-style-type: none"> <li>▪ The managers of the company must be honest. As evidenced by the way he treated his own shareholders, Warren Buffett places a premium on managers he trusted.</li> <li>▪ The managers of the company should not be leaders but followers. In practice, he was looking for companies that mapped out their own long term strategies rather than mirroring other firms.</li> </ul>
<b>Financial</b>	<b>Market</b>
<ul style="list-style-type: none"> <li>▪ The Company should have a high ROE, but instead of using Net Income, Buffett used a modified version of what he called owner earnings:</li> <li>▪ Owner earnings = Net Income – Capital Expenditures + Depreciation &amp; Amortization.</li> <li>▪ The Company should have high and stable profit margins and a good history of creating value for its shareholders.</li> </ul>	<ul style="list-style-type: none"> <li>▪ In determining value, much has been made of Buffett's use of a risk-free rate to discount cash flows.</li> <li>▪ In keeping with Buffett's views of Mr. Market as capricious and moody, even valuable companies can be purchased at good prices when investors turn away from them.</li> </ul>

*Figure 8 – Buffet's Principles*

## **4. CATERPILLAR FIVE YEAR VALUATION**

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In this section it will be used a very simple and straight forward 5 year analysis of Caterpillar Inc based upon Value Investing pillars as well as Benjamin Graham way of evaluating corporations. This valuation will determine whether to invest or not in this company stock using some ratios. The data presented is taken from Caterpillar's 10K-2009, 10K-20110, 11K-2011, 10K-2012, 10K-2013 forms. It is also shown in the Appendix section a table with the Caterpillar's Industry Average of most important ratios.

### **4.1. CATERPILLAR OVERVIEW**

Caterpillar is an American corporation manufacturer of construction and mining equipment, which includes loader, tractors and excavators, as well as paving, forestry and tunneling machinery. It also manufactures natural gas engines and diesel, industrial gas turbines, and diesel-electric locomotives. Caterpillar also includes subsidiary financial services that offer leasing, insurance, financing, warranty products and services for dealers and customers. Among Caterpillar's other services are remanufacturing through Caterpillar Remanufacturing Services and rail-related upgrade, repair, and maintenance services through Progress Rail Services.

Caterpillar Inc. traces its origins to the 1925 merger of the Holt Manufacturing Company and the C. L. Best, creating a new entity, the California based Caterpillar Tractor Company. In 1986, the company re-organized itself as a Delaware corporation under the current name: Caterpillar Inc. Caterpillar's headquarters are located in Peoria, Illinois, USA.

Caterpillar has a corporate governance structure where the Chairman of the board also acts as CEO. The Board of Directors is fully independent and is made up of non-employee directors selected from outside the company.

**4.2. INCOME STATEMENT & BALANCE SHEET**

The Income Statement presents information on the financial results of a company's business activities over a period of time. It communicates how much revenue the company generated during that period and what cost it incurred in connection with generating that revenue.

**INCOME STATEMENT****(End of Year Data in Million \$)**

	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
Sales of Machinery and Power Systems	29.540	39.867	57.392	63.068	52.694
Revenues of Financial Products	2.856	2.721	2.746	2.807	2.962
<b>Total Sales and Revenues</b>	<b>32.396</b>	<b>42.588</b>	<b>60.138</b>	<b>65.875</b>	<b>55.656</b>
Cost of Goods Sold	23.886	30.367	43.578	47.055	40.727
Selling, General and Administrative Expenses	3.645	4.248	5.203	5.919	5.547
Research and Development Expenses	1.421	1.905	2.297	2.466	2.046
Interest Expense of Financial Products	1.045	914	826	797	727
Goodwill Impairment Charge	0	0	0	580	0
<b>Total Operating Costs</b>	<b>29.997</b>	<b>37.434</b>	<b>51.904</b>	<b>56.817</b>	<b>49.047</b>
<b>EBITDA</b>	<b>2.399</b>	<b>5.154</b>	<b>8.234</b>	<b>9.058</b>	<b>6.609</b>
Other Operating Expenses (Depreciation)	1.822	1.191	1.081	485	981
Operating Profit (EBIT)	577	3.963	7.153	8.573	5.628
Other Income (or Expenses)	381	130	-32	130	-35
Interest Expense Excluding Financial Products	389	343	396	467	465
<b>EBT</b>	<b>569</b>	<b>3.750</b>	<b>6.725</b>	<b>8.236</b>	<b>5.128</b>
Income Taxes	-270	968	1.720	2.528	1.319
Profit of Consolidated Companies	839	2.782	5.005	5.708	3.809
Equity In Profit (loss) on Unconsolidated Affiliated Companies	-12	-24	-24	14	-6
Profit of Consolidated and Affiliated Companies	827	2.758	4.981	5.722	3.803
Minority Interest Shares	-68	58	53	41	14
<b>Profit Attributable to Common Stockholders</b>	<b>895</b>	<b>2.700</b>	<b>4.928</b>	<b>5.681</b>	<b>3.789</b>

*Table 1 – Income Statement*

The Statement of Financial Position (Balance Sheet) provides investors and analysts with information on company's resources (Assets) and its sources of capital (Equity and Liabilities). Assets are resources controlled by the company as a result of precedent events and from which future economic benefits are expected to flow to the company. Equity represents the funds contributed by the stockholders. Liabilities represent obligations of a company arising from past events, the settlement of which is expected to result in an outflow of economic benefits from the entity.

Value Investing and Financial Statement Analysis

**BALANCE SHEET**

(End of Year Data in Million \$)

	2009	2010	2011	2012	2013
<b>ASSETS</b>					
<i>Current Assets</i>					
Cash and Short Term Investments	4.867	3.592	3.057	5.490	6.081
Receivables - trade and other	5.611	8.494	10.285	10.092	8.413
Receivables – finance	8.301	8.298	7.668	8.860	8.763
Deferred and Refundable Income Taxes	1.216	931	1.580	1.547	1.553
Prepaid Expenses and Other Current Assets	862	908	994	988	900
Inventories	6.360	9.587	14.544	15.547	12.625
<i>Total Current Assets</i>	<i>27.217</i>	<i>31.810</i>	<i>38.128</i>	<i>42.524</i>	<i>38.335</i>
<i>Non Current Assets</i>					
Property, Plant and Equipment – Net	12.386	12.539	14.395	16.461	17.075
Long Term Receivables - trade and other	971	793	1.130	1.316	1.397
Long-Term Receivables – finance	12.279	11.264	11.948	14.029	14.926
Investments in Unconsolidated Affiliated Companies	105	164	133	272	272
Non Current Deferred and Refundable Income Taxes	2.714	2.493	2.157	2.011	594
Intangible Assets	465	805	4.368	4.016	3.596
Goodwill	2.269	2.614	7.080	6.942	6.956
Other Assets	1.632	1.538	2.107	1.785	1.745
<i>Total Non Current Assets</i>	<i>32.821</i>	<i>32.210</i>	<i>43.318</i>	<i>46.832</i>	<i>46.561</i>
<b>Total Assets</b>	<b>60.038</b>	<b>64.020</b>	<b>81.446</b>	<b>89.356</b>	<b>84.896</b>
<b>EQUITY</b>					
Issued Shares - at paid-in amount	3.439	3.888	4.273	4.481	4.709
Treasury Stock - at cost	-10.646	-10.397	-10.281	-10.074	-11.854
Profit Employed in the Business	19.711	21.384	25.219	29.558	31.854
Accumulated Other Comprehensive Income (loss)	-3.764	-4.051	-6.328	-6.433	-3.898
Non controlling Interests	83	40	46	50	67
<b>Total Equity</b>	<b>8.823</b>	<b>10.864</b>	<b>12.929</b>	<b>17.582</b>	<b>20.878</b>
<b>LIABILITIES</b>					
<i>Current Liabilities</i>					
Short Term Borrowings					
Machinery and Power Systems	433	204	93	636	16
Financial Products	3.650	3.852	3.895	4.651	3.663
Accounts Payable	2.993	5.856	8.161	6.753	6.560
Accrued Expenses	2.641	2.880	3.386	3.667	3.493
Accrued Wages, Salaries and Employee Benefits	797	1.670	2.410	1.911	1.622
Customer Advances	1.217	1.831	2.691	2.978	2.360
Dividends Payable	262	281	298	0	382
Other Current Liabilities	1.281	1.521	1.967	2.055	1.849
Long Term Debt due within one year:					
Machinery and Power Systems	302	495	558	1.113	760
Financial Products	5.399	3.430	5.102	5.991	6.592
<i>Total Current Liabilities</i>	<i>18.975</i>	<i>22.020</i>	<i>28.561</i>	<i>29.755</i>	<i>27.297</i>
<i>Non Current Liabilities</i>					
Long term Debt due after one year:					
Machinery and Power Systems	5.652	4.505	8.415	8.666	7.999
Financial Products	16.195	15.932	16.529	19.086	18.720
Liability for Postemployment Benefits	7.420	7.584	10.956	11.085	6.973
Other Liabilities	2.973	3.115	4.056	3.182	3.029
<i>Total Non Current Liabilities</i>	<i>32.240</i>	<i>31.136</i>	<i>39.956</i>	<i>42.019</i>	<i>36.721</i>
<b>Total Liabilities</b>	<b>51.215</b>	<b>53.156</b>	<b>68.517</b>	<b>71.774</b>	<b>64.018</b>

Table 2 – Balance Sheet

Examining the income statement and balance sheet most significant items, some conclusions were made:

- ❖ Caterpillar's **Sales of Machinery and Power Systems** increased significantly from 2009 to 2012 (\$29.540 to \$63.068 Million) but then declined significantly from 2012 to 2013 (to \$52.694 Million). This means that the aggregate revenue recognized during the valuation period decreased in the last year.
- ❖ Caterpillar's **EBIT**, or **Operating Profit**, increased significantly in the first 4 years of the analysis (\$577 to \$8.573 Million) and declined in the last year to \$5.628 Million. This item represents the net result for caterpillar deducting Operating Expenses from Operating Revenues.
- ❖ Caterpillar's **Profit of Consolidated and Afiliated Companies** increased from 2009 to 2012 (\$827 to \$5.722 Million) and decreased in the last year to \$3.803 Million. This item shows the consolidated Profit already net of Income Taxes, including the portion attributable to the Non-Controlling Interest.
- ❖ Caterpillar's **Profit Attributable to Common Stock Holders**, or **Net Income**, increased from 2009 to 2012 (\$895 to \$5.681 Million) and again, decreased significantly to \$3.789 Million.

(in Million \$)

	2009	2010	2011	2012	2013
<b>Total Revenues</b>	29.540	39.867 <i>34,96%</i>	57.392 <i>43,96%</i>	63.068 <i>9,89%</i>	52.694 <i>-16,45%</i>
<b>EBIT</b>	577	3.963 <i>586,83%</i>	7.153 <i>80,49%</i>	8.573 <i>19,85%</i>	5.628 <i>-34,35%</i>
<b>Net Income</b>	895	2.700 <i>201,68%</i>	4.928 <i>82,52%</i>	5.681 <i>15,28%</i>	3.789 <i>-33,30%</i>

Table 3 – Items Income Statement

After analyzing the Income Statement most important items and looking at the table above, it can be concluded that Caterpillar's business activity financial results are not favorable because the revenue the company generated compared to the cost it incurred in generating that revenue is decreasing at a fastest growth rate. Even so, Caterpillar's reported Net Income is higher than the industry average of \$1.454 Million in the last year (Source: Bloomberg).



- ❖ Caterpillar's **Current Assets** had a slight increase from 2009 to 2012 (\$27.217 to \$42.524 Million) and decreased in the last year to \$38.335 Million not reaching 2011 level. This means that the total sum of assets that can be realized in cash in less than one year was increasing until 2012 and then decreased 9,85%.
- ❖ **Non-Current Assets** represent the total sum of assets that are expected to be realized in cash, sold or consumed after one year. Caterpillar's Noncurrent assets increased until 2012 (\$32.821 to \$46.832 Million) despite a slight decline in 2010 (1.86%) and then decreased in the last year to \$46.561 Million.
- ❖ Caterpillar's **Current Liabilities** increased from 2009 to 2012 (\$18.975 to \$29.755 Million) and decreased significantly in the last year to \$27.297 Million meaning that the total obligations incurred as part of normal operations that are expected to be paid during the following twelve months decreased in the last year 8.26%.
- ❖ **Non-Current Liabilities** represent the total obligations incurred as part of normal operations that is expected to be paid beyond the following year. Caterpillar's Non-Current Liabilities increased until 2012 (from \$32.240 to \$42.019 Million) and decreased significantly (to \$36.721 Million) in 2013.
- ❖ **Total Equity** represents the amount by which the company is financed through common and preferred shares and it is equal to Total Assets minus Total Liabilities. Caterpillar's Total Equity increased from 2009 to 2013 (\$8.823 to \$20.878 Million) which means that its invested capital through Equity has increased in average 24.03% since 2009.

(in Million \$)

	2009	2010	2011	2012	2013
<b>Total Current Assets</b>	27.217	31.810 <i>16,88%</i>	38.128 <i>19,86%</i>	42.524 <i>11,53%</i>	38.335 <i>-9,85%</i>
<b>Total Non Current Assets</b>	32.821	32.210 <i>-1,86%</i>	43.318 <i>34,49%</i>	46.832 <i>8,11%</i>	46.561 <i>-0,58%</i>
<b>Total Equity</b>	8.823	10.864 <i>23,13%</i>	12.929 <i>19,01%</i>	17.582 <i>35,99%</i>	20.878 <i>18,75%</i>
<b>Total Current Liabilities</b>	18.975	22.020 <i>16,05%</i>	28.561 <i>29,70%</i>	29.755 <i>4,18%</i>	27.297 <i>-8,26%</i>
<b>Total Non Current Liabilities</b>	32.240	31.136 <i>-3,42%</i>	39.956 <i>28,33%</i>	42.019 <i>5,16%</i>	36.721 <i>-12,61%</i>

Table 4 – Balance Sheet Items

Now that the Balance Sheet most important items are analyzed and looking at the table above, it can be concluded that Caterpillar operates in great part with Non Current Assets which is normal basically because Property and plants are very big due to the dimension of the business and also because it includes subsidiary Financial Services that offer financing, leasing and insurance for dealers and customers which payments are received after one year. Total Equity compared to Total liabilities is low but it has been increasing throughout the years.

#### **4.3. KEY INDICATORS**

	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
<b>1. Cash Flow Margin</b>	0,08	0,13	0,14	0,14	0,13
<b>2. Earnings Per Share</b>	1,45	4,28	7,64	8,71	5,87
<b>3. Dividends Per Share</b>	0,43	0,45	0,46	-	0,60
<b>4. Dividend Pay Out Ratio</b>	29,27%	10,41%	6,05%	-	10,08%
<b>5. Dividend Yield</b>	0,75%	0,48%	0,51%	-	0,65%

Table 5- Key Indicators

**1. Cash Flow Margin** measures the money a company generates from its core operations per dollar of sales and can be calculated through the following formula:

$$\text{Cash Flow Margin} = \frac{\text{EBITDA}}{\text{Sales of Machinery and Power Systems}}^{(1)}$$

The results above show that for each dollar in sales, caterpillar creates approximately \$0,08 in cash in 2009 and \$0,13 in 2013 meaning that the company was not efficient in converting sales to cash.

**2. Earnings per Share (EPS)** correspond to the fraction of a company's profit allocated to each outstanding share of common stock and it is calculated through the following formula:

$$\text{EPS} = \frac{\text{Net Income}}{\text{Number of Shares}}^{(2)}$$

The results above show that Caterpillar's EPS decreased in a fast growth rate, even so, the company generates \$5,87 of profit per outstanding share.

3. **Dividends per Share (DPS)** is the sum of declared dividends for every ordinary share issued (a form of profit distribution to the shareholder) and is calculated as shown:

$$DPS = \frac{\text{Dividends Payable}^{(3)}}{\text{Number of Shares}}$$

Caterpillar's DPS increased from \$0.43 to \$0,60 (positive growing) which is good, meaning that management believes that the growth can be sustained and distributed a sort of "prize" to shareholders. It is also important to note that in 2012 Caterpillar did not paid dividends (\$0).

4. **Dividend Payout Ratio** is the percentage of earnings paid to shareholders in dividends and is calculated by the following:

$$\text{Dividend Payout Ratio} = \frac{\text{Dividends Payable}^{(4)}}{\text{Net Income}}$$

Caterpillar's Dividend Payout Ratio decreased from 2009 to 2011 (29.27% to 6.05%) which means that the company did not increase Dividends payable in the same proportion as Net Income did. In 2012 the company didn't distribute any dividends, so the ratio is 0 and in 2013 it increased to 10.08%.

5. **Dividend Yield** shows how much a company pays out in dividends relative to its share price. In other words, it is a way to measure how much cash flow an investor is getting for each dollar invested in equity. Caterpillar's dividend yield decreased from 2009 to 2011 (0.75% to 0.51%) not because it paid less dividends but because its share price increased from \$56,99 to \$90,60. In 2013 dividend yield increased to 0.65%.

$$\text{Dividend Yield} = \frac{\text{Dividends per Share}^{(5)}}{\text{Price per Share}}$$

**4.4. SHORT TERM ACTIVITY**

	2009	2010	2011	2012	2013
<b>1. Inventory Turnover</b>	3,76	3,17 <i>-15,66%</i>	3,00 <i>-5,41%</i>	3,03 <i>1,01%</i>	3,23 <i>6,58%</i>
<b>2. Receivables Turnover</b>	2,33	2,54 <i>8,91%</i>	3,35 <i>32,08%</i>	3,48 <i>3,77%</i>	3,24 <i>-6,78%</i>
<b>3. Payables Turnover</b>	7,98	5,19 <i>-35,02%</i>	5,34 <i>2,97%</i>	6,97 <i>30,49%</i>	6,21 <i>-10,90%</i>

Table 6- Short Term Activity

**1. Inventory Turnover** shows how many times a company's Inventory is sold and replaced over a period of time and it is calculated as below:

$$\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}_{(6)}}{\text{Inventories}}$$

Caterpillar's Inventory Turnover is constant, varying in the 5 years period from \$3,76 to \$3,22 which when compared to its industry average is low (industry inventory turnover in 2013: \$4,21) meaning that Caterpillar sold and replaced its Inventory approximately 3 times in 2013. Caterpillar's Inventory seems good taking into account their strong Sales, but this ratio cannot decrease much further because their products tend to deteriorate as they stay in the warehouse.

**2. Receivables Turnover** quantifies the company's effectiveness in extending credit as well as collecting debts. In this case, caterpillar's Receivables turnover increased from 2009 to 2012 (\$2,33 to \$3,24) but still a very low turnover comparing to the industry average (\$7,48 to \$7,10) meaning that the company is not collecting in time the credit given to clients. This also shows that Caterpillar works less with Cash than other companies of the same industry.

$$\text{Receivables Turnover} = \frac{\text{Total Sales and Revenues}}{\text{Receivables Trade and Other} + \text{Receivables Finance}} \quad (7)$$

**3. Payables Turnover** quantifies the rate at which a company pays off its suppliers and it is measured as follows:

$$\text{Payables Turnover} = \frac{\text{Cost of Goods Sold}_{(8)}}{\text{Accounts Payable}}$$

Caterpillar's Payables Turnover decreased from 2009 to 2013 (\$7,98 to \$6,21) meaning that the company is taking longer to pay off its suppliers than it paid off before. Again, the industry average of payables turnover is higher than Caterpillar's meaning that they pay off their suppliers faster.

#### 4.5. LONG TERM ACTIVITY

	2009	2010	2011	2012	2013
<b>1. Net Fixed Asset Turnover</b>	2,39	3,18 <i>33,31%</i>	3,99 <i>25,40%</i>	3,83 <i>-3,90%</i>	3,09 <i>-19,45%</i>
<b>2. Total Asset Turnover</b>	0,49	0,62 <i>26,56%</i>	0,71 <i>13,16%</i>	0,71 <i>0,16%</i>	0,62 <i>-12,06%</i>
<b>3. Equity Turnover</b>	3,35	3,67 <i>9,60%</i>	4,44 <i>20,97%</i>	3,59 <i>-19,19%</i>	2,52 <i>-29,64%</i>

Table 7 – Long Term Activity

1. **Net Fixed Asset Turnover** measures a company's ability to generate net sales from fixed assets and it is calculated as shown below:

$$\text{Net Fixed Asset Turnover} = \frac{\text{Sales of Machinery and Power Systems}^{(9)}}{\text{Property, Plant and Equipment - Net}}$$

Caterpillar's Net Fixed Asset Turnover was inconstant during the 5 years period but in general it increased from 2009 to 2013 (\$2,38 to \$3) meaning that for every dollar invested in Property, Plant and Equipment Caterpillar generates \$3 in sales in 2013 which is under the industry average (\$4,06).

2. **Total Asset Turnover** is the amount of sales or revenues generated per dollar of Assets. It is an indicator of the efficiency with which a company is deploying its assets and is calculated as shown:

$$\text{Total Asset Turnover} = \frac{\text{Sales of Machinery and Power Systems}^{(10)}}{\text{Total Assets}}$$

Caterpillar's Total Asset Turnover increased from 2009 to 2011 (\$0.53 to \$0.73) and then decreased until 2013 (\$0.65). Again, the industry average is able to generate more sales per dollar of Total Assets (\$0.77 in 2013).

**3. *Equity Turnover*** shows the effectiveness of shareholders equity employed and is calculated as shown below:

$$\text{Equity Turnover} = \frac{\text{Sales of Machinery and Power Systems}_{(11)}}{\text{Total Equity}}$$

Caterpillar's Equity turnover decreased from 2011 to 2013 (\$4.43 to \$2.52) meaning that in the last year, for each 1 \$ employed in the business from shareholders, it generated \$2.5 in Sales. Shareholders equity is generating less sales but it is still higher than the industry average (\$1.93 in 2013).

**4.6. LIQUIDITY ANALYSIS**

	2009	2010	2011	2012	2013
<b>1. Current Ratio</b>	1,43	1,45	1,34	1,43	1,40
<b>2. Quick Ratio</b>	1,10	1,01	0,83	0,91	0,94
<b>3. Debt to Equity Ratio</b>	5,81	4,89	5,30	4,08	3,07
<b>4. Interest Coverage Ratio</b>	1,48	11,55	18,06	18,36	12,10
<b>5. Net working capital</b>	8242	9790	9567	12769	11038

Table 8 – Liquidity Analysis

**1. Current Ratio** measures a company's capacity to pay its short term obligations and is calculated by the below formula:

$$\text{Current Ratio} = \frac{\text{Total Current Assets}}{\text{Total Current Liabilities}} \quad (12)$$

Caterpillar's current ratio was very stable during the 5 years period, but still, it is not very high, meaning that the company has \$1,4 to cover its liabilities. Even so, Caterpillar has more Current Assets to cover its Current Liabilities than the industry average (\$1,32).

**2. Quick Ratio** measures a company's capacity to meet its short term obligations with its most liquid assets and can be calculated as shown below:

$$\text{Quick Ratio} = \frac{\text{Total Current Assets} - \text{Inventories}}{\text{Total Current Liabilities}} \quad (13)$$

Caterpillar's Quick Ratio shows that since 2010, the company no longer covers its current liabilities with its most liquid assets. 2013 value (\$0,94) means that the company has \$0,94 of liquid assets to cover each 1\$ of current liabilities. Caterpillar's Quick Ratio is also higher than the industry average in all years of the analysis.

**3. Debt to Equity Ratio** shows what portion of equity and debt the company uses to finance its assets and it is calculated as follows:

$$\text{Debt to Equity Ratio} = \frac{\text{Total Liabilities}}{\text{Total Equity}} \quad (14)$$

Caterpillar’s Debt to Equity Ratio decreased from 2009 to 2013 (\$5,09 to \$3,07) which is good, but still a very high ratio meaning that the company has been financing its growth with a lot more debt than equity. This can result in inconstant earnings as a result of the additional interest expense. Compared to the industry average (\$0,41 in 2013), this ratio very high meaning that there may be safer opportunities than this one.

**4. Interest Coverage Ratio** is used to determine how well a company can pay interest on outstanding debt and it is measured as shown below:

$$\text{Interest Coverage Ratio} = \frac{EBIT}{\text{Interest Expense excluding Financial Products}}^{(15)}$$

Caterpillar’s Interest coverage ratio increased a lot from 2009 to 2012 (\$1,48 to \$18,36 ) and then it decreased in 2013 to \$12,1 which means that the company have been increasing its ability to generating sufficient revenues to cover its Interest payments. However, it shows lower results that the industry average in 2013 (\$15,48).

**5. Net Working Capital** as shown before is used to measure cash flow and the ability to service debts. If it is above 0, it indicates that the company has enough money to maintain or expand its operations and it is calculated as shown below

$$\text{Net Working Capital} = \text{Total Current Assets} - \text{Total Current Liabilities}^{(16)}$$

The ratio indicates that Caterpillar has enough money to maintain its operations because it is positive (\$11.038 Million in the last year). As affirmed before, Net Working Capital can be used to emulate the liquidation value of a company – by dividing it for the total amount of shares and compare it to the market share price. If Net Working Capital per Share > Share Price, then, the investment decision should be “Buy the stock” because it is undervalued.

	2009	2010	2011	2012	2013
<b>Net Working Capital per share</b>	13,40	15,50	14,83	19,58	17,10

Table 9 – Net Working Capital per share

As the Share Price is always higher than Net Working Capital per Share, following this method, the stock is overvalued and the investor must not invest money.



**4.7. PROFITABILITY ANALYSIS**

	2009	2010	2011	2012	2013
<b>1. Operating Profit Margin</b>	1,78%	9,31%	11,89%	13,01%	10,11%
<b>2. Net Profit Margin</b>	2,76%	6,34%	8,19%	8,62%	6,81%
<b>3. ROE</b>	10,14%	24,85%	38,12%	32,31%	18,15%
<b>4. ROA</b>	1,49%	4,22%	6,05%	6,36%	4,46%
<b>5. Gross Margin</b>	5.65	9.50	13.81	16.01	11.97

*Table 10 – Profitability Analysis*

**1. Operating Profit** margin measures what proportion of a company's revenues is left after paying variable costs of production to pay its fixed costs such as interest on debt and is calculated as shown:

$$\text{Operating Profit Margin} = \frac{EBIT}{\text{Total Revenues}} \quad (17)$$

Caterpillar's Operating Profit Margin increased from 2009 to 2012 (1,78% to 13,01%) which means that the company is earning more per dollar of sales. Even so, it is a low margin, decreasing in 2013 to 10,11%.

**2. Net Profit Margin** measures how much out of every dollar of sales a company keeps in earnings and is calculated as shown below:

$$\text{Net Profit Margin} = \frac{\text{Net Income}}{\text{Total Sales and Revenues}} \quad (18)$$

Caterpillar's Net profit margin increased from 2009 to 2013 (2.76% to 8.62%) and then decreased in 2013 to 6.81% which means that the company only has a net income of \$0,0681 for each 1 dollar of sales.

**3. Return On Equity (ROE)** reveals how much profit a company generates with the money shareholders have invested. It is calculated as follows:

$$ROE = \frac{\text{Net Income}}{\text{Total Equity}} \quad (19)$$

Caterpillar's ROE increased from 2009 to 2011 (10,14% to 38,12%) meaning that in 2011, the company was generating approximately \$0.38 for every dollar invested by shareholders. From then until 2013 ROE decreased to 18,15%. In comparison to the industry average, Caterpillar is generating more profit with the money invested by shareholders.

**4. Return on Assets (ROA)** shows how efficient management is in using its assets to generate earnings. It is calculated as the formula shows:

$$ROA = \frac{Net\ Income^{(20)}}{Total\ Assets}$$

Caterpillar's ROA increased from 2009 to 2012 (1,49% to 6,36%) and then decreased in 2013 to 4,46% meaning that in the last year, for every dollar invested (because ASSETS = Equity + Debt) the company generated approximately 4 cents. Caterpillar's ROA is lower than the industry average in all years.

**5. Gross Profit Margin** reveals the portion of money left over from revenues after accounting cost of goods sold. It is the source for paying additional expenses and future savings. It is calculates follows:

$$Gross\ Profit\ Margin = \frac{Sales\ of\ Machinery\ and\ Power\ Systems - Cost\ of\ Goods\ Sold^{(21)}}{Sales\ of\ Machinery\ and\ Power\ Systems}$$

Caterpillar's Gross Profit Margin was unstable during the 5 years period, and it is considered to be a low margin compared to the industry average. In 2013 its Gross Profit Margin was 11,97% meaning that the company only has left 11,97% after accounting Cost of Goods Sold to pay additional expenses.

**4.8. PRICE MULTIPLES**

	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
<b>Share Price</b>	\$56,99	\$93,66	\$90,60	\$89,61	\$90,81
<b>Number of Shares Outstanding (in Million)</b>	615,2	631,5	645	652,2	645,5
<b>Earnings Per Share</b>	\$1,45	\$4,28	\$7,64	\$8,71	\$5,87
<b>Total Sales Per Share</b>	\$48,02	\$63,13	\$88,98	\$96,70	\$81,63
<b>Book Value per Share<sup>12</sup></b>	\$14,34	\$17,20	\$20,04	\$26,96	\$32,34

Table 11- Financial Data

	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
<b>1. Price to Earnings Ratio</b>	39,17	21,91	11,86	10,29	15,47
<b>2. Price-Sales Ratio</b>	1,19	1,48	1,02	0,93	1,11
<b>3. Price to Book Value Ratio</b>	3,97	5,44	4,52	3,32	2,81

Table 12 – Price Multiples

**1. Price to Earnings Ratio** compares a company stock price with its Earnings per Share and is calculated as shown below:

$$\text{Price-Earnings} = \frac{\text{Share Price}^{(22)}}{\text{EPS}}$$

Caterpillar's Price-earnings ratio was extremely high in 2009 (39,17) meaning that the price investors were paying for each share was 39,17 times higher than the reported EPS. In 2012 its Price-earnings ratio was 10,29 which is considered good because it is under 15 and in 2013 investors were paying 15,47 times more the reported earnings. Comparing the last two years of valuation with the industry average (17,71 and 18,88) Caterpillar Price to Earnings ratio performs better.

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<sup>12</sup> Book Value = Equity

2. **Price-Sales Ratio** is an indicator of the value placed on each dollar of a company's sales and is calculated as shown by the following formula:

$$\text{Price-Sales Ratio} = \frac{\text{Share Price}}{\text{Total Sales and Revenues per Share}} \quad (23)$$

Caterpillar's Price-Sales Ratio is constant throughout the analysis and very close to one, being 1,19 in 2009 and 1,11 in 2013. This means that investor or more or less paying 1 dollar for each dollar of sales. Combining this fact with the industry average of this ratio (which is always higher), the company is undervalued.

3. **Price-Book Value Ratio** gives an idea of whether investors are paying too much for what would be left if the company went bankrupt immediately. It is calculated by the following formula:

$$\text{Price-Book Value Ratio} = \frac{\text{Share Price}}{\text{Book Value per Share}} \quad (24)$$

Caterpillar's Price-Book Value Ratio is low in the 5 years valuation period as well as the average ratio of the industry. In 2013, if the company went bankruptcy, for each 1 dollar liquidated, investors are paying \$2,81.

#### **4.9. APPLYING GRAHAM'S SCREENS**

- 1) Earnings to price ratio that is double the AAA Bond Yield: In fact, Earnings Price Ratio was more than (AAA bond yield times 2) in all years of valuation except the first one. Assuming that AAA Bond Yield is 1,79 (Source: Yahoo Finance).
- 2) PE of the stock has to be less than 40% of the average PE for all stocks over the last 5 years: Considering that the average Price-Earnings ratio for all stocks is 25 (Source: Yahoo Finance), Caterpillar's Price-Earnings ratio was never higher than 10 (40% of 25).
- 3) Dividend Yield > Two-thirds of the AAA Corporate Bond Yield: Caterpillar's Dividend Yield is lower than two-thirds of the AAA Corporate Bond Yield (1,19%)
- 4) Price < Two-thirds of Tangible Book Value: Caterpillar's share price is always higher than Tangible Book Value.
- 5) Price < Two-thirds of Net Current Asset Value (NCAV), where net current asset value is defined as liquid current assets including cash minus current liabilities: Caterpillar's Price is always higher than NCAV.
- 6) Debt-Equity Ratio (Book Value) has to be less than one: Caterpillar's Debt to Equity ratio is always higher than one.
- 7) Current Assets > Twice Current Liabilities: Caterpillar's Current Assets lower than twice its Current Liabilities.
- 8) Debt < Twice Net Current Assets: Caterpillar's Debt is always higher than Net Current Assets.

## CONCLUSION

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Value Investing is not an easy strategy and it takes lots of years to improve, although, it is a very safe way of investing money, a conservative approach and after all, it is not speculating, it is investing. Investors main objective is to find a safety margin to protect them self's from price fluctuations, inflation and other factors not predictable by man. As stated before, investors must buy 50 cents for \$1. Caterpillar's 5 Years Valuation will work as an example for a Value Investing approach by analysing its core business and competitors. At first, it is essential to mention that at the beginning of the valuation period, Caterpillar's overall results were really poor as well as the entire industry because of the previous world economic crisis. So, these less good results should not have a major impact in the investor decision.

Caterpillar's shows very low Earnings per Share and a very low Cash Flow margin in the overall 5 years period. It is proved that the company has a good dividend policy because its dividends distribution is constant all over the years without taking into account 2012 (Dividends Payable = 0). It is also important to state that dividends did not grow in the same measure as Net Income did (decreasing Dividend Payout). Regarding Caterpillar's short term activity in general, the company is not collecting in time the credit given to clients and comparing with the industry, they operate with a small amount of cash. Caterpillar's long term activity valuation tells that the Net Fixed Asset Turnover is lower than the industry average and it is being more capable deploying their Assets.

Analysing the company liquidity, the Current Ratio is higher than the industry, still, it is very low; Caterpillar shows to be financing the business with a lot more Debt than Equity, which is no good; and Net Working Capital is very low compared to the Market Share Price, meaning that investors are paying a very high price for the company's liquidation value. When it comes to profitability, Net Profit Margin is very low compared to the industry average, as well as Return on Assets is. Return on Equity is higher than the industry average but still, a very low ratio.

Regarding Price multiples, Price to Earnings is very unstable and considered high. Even so, it is lower than the Industry Average. Both Price to Sales and Price to Book Value show good results. Putting this together with Benjamin Graham's Screens it can be concluded that Caterpillar is overvalued and is no good investment for stock holders.

## Value Investing and Financial Statement Analysis

The company Share Price is extremely high compared to the business fundamentals so the phrase “Buy \$1 for 50 cents” cannot be applied.

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[www.caterpillar.com](http://www.caterpillar.com)



## APPENDIX

### Industry Ratio Averages

	2009	2010	2011	2012	2013
<b>Inventory Turnover</b>	6,16	5,18	4,62	4,36	4,21
<b>Receivables Turnover</b>	7,48	7,04	6,90	7,13	7,10
<b>Payables Turnover</b>	8,27	7,12	6,77	7,19	6,95
<b>Net Fixed Asset Turnover</b>	4,11	4,20	4,30	4,19	4,06
<b>Total Asset Turnover</b>	0,80	0,79	0,79	0,76	0,77
<b>Equity Turnover</b>	2,16	2,11	2,26	2,23	1,93
<b>Current Ratio</b>	1,24	1,33	1,26	1,30	1,32
<b>Quick Ratio</b>	0,79	0,83	0,74	0,77	0,78
<b>Debt to Equity Ratio</b>	0,46	0,41	0,45	0,52	0,41
<b>Interest Coverage Ratio</b>	10,66	12,69	15,84	13,87	15,48
<b>Operating Profit Margin</b>	10,11%	12,03%	11,73%	10,68%	11,89%
<b>Net Profit Margin</b>	6,96%	8,44%	9,10%	8,05%	9,07%
<b>ROE</b>	15,05%	17,78%	20,59%	17,94%	17,55%
<b>ROA</b>	5,57%	6,63%	7,20%	6,12%	6,96%
<b>Gross Margin</b>	19,14%	23,83%	24,07%	25,39%	22,71%
<b>Price To Earnings Ratio</b>	17,74	17,95	15,31	17,72	18,88
<b>Price To Sales Ratio</b>	1,23	1,52	1,39	1,43	1,71
<b>Price To Book Value Ratio</b>	2,67	3,19	3,15	3,18	3,31

(Source: Bloomberg)