PONTIFÍCIA UNIVERSIDADE CATÓLICA DO RIO DE JANEIRO

DEPARTAMENTO DE ECONOMIA

MONOGRAFIA DE FINAL DE CURSO

VALUE INVESTING – THE ANALYSES USED BEHIND THE WORLD´S MOST WELL-KNOWN INVESTMENT METHOD

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Julho, 2023

"Declaro que o presente trabalho é de minha autoria e que não recorri para realizá-lo a nenhuma forma de ajuda externa, exceto quando autorizado pelo professor tutor".

Guilherme Chamoun Vodovoz

“As opiniões expressas neste trabalho são de exclusiva responsabilidade única e exclusiva do autor.”

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Contents

Figures

1. Introduction

The correlation between risk and return is key to investment theories. Among laymen, the expression "stock exchange is a casino" has become something true, and for us, economists and investors, to prove the opposite, we look for explanations to justify the fluctuation in the price of assets, which has led to a large number of theories and models that seek to price assets and explain market price fluctuations and the risk involved in investments.

For the investor, the objective is to obtain the highest return while incurring the least risk. Standard deviation and Beta are the main risk measures used, and Capital Asset Pricing Model (CAPM) is the primary asset pricing model. The thesis is based on the fact that investment can only obtain a superior return if exposed to greater risk. There is an optimal combination of risky and risk-free assets for each investor's risk appetite level, forming an efficient frontier of optimal portfolios.

However, this theory did not always prove to be true. Some studies have emerged demonstrating inconsistency between the historical returns of asset portfolios and their risk levels. In short, they concluded that the standard deviation and the Beta indicators could not explain the past return of these portfolios, or were not sufficient to it. In addition, they pointed out that a specific investment strategy, which consisted of selecting portfolios composed of assets with low multiples of some indicators, such as price/earnings and price/equity, demonstrated significantly superior performance over the analyzed periods. In general, these stocks possess, in the market overview, low expectations of earnings growth and therefore trade at low prices.

This method is nothing more than simplifying the investment principles developed by Benjamin Graham. Graham was the forerunner of fundamental analysis and based his theory on carefully analyzing the balance sheet and financial indicators. Value Investing followers place less importance on expected earnings growth, preferring to focus on the solidity of the companies' businesses and their consistency of results. This investment method gains ground when investors tend to over-project past results into the future, causing overvaluation of companies with high recent growth and undervaluation of companies with low recent growth rates, leading to distortions of asset prices and creating investment opportunities for investors with non-standard strategies.

This essay aims to clarify and address the analysis behind the Value Investing method, demystifying the most used way to invest globally. But before this is done, a general overhaul of much of the finance content will proceed. In Chapter 2, it will be seen how the main quantitative methods for dealing with risk and return on assets are structured, namely, the Beta method and the CAPM. Then, in Chapter 3, it will be looked at asset diversification topics, its benefits, the best strategies to implement it, and ways to measure it. Chapter 4 provides a description of the two main types of analysis in finance: fundamental analysis and technical analysis. With all these elements worked out, Chapter 5 covers the topic of Value Investing, with all its intricacies and details. Finally, Chapter 6 brings the conclusion of this work.

In order to clarify and address the analysis behind the Value Investing method, demystifying the most used way to invest globally, this essay will make use of renowned bibliographies that are related to Value Investing, such as “The Intelligent Investor” by Benjamin Graham, “Value Investing: From Graham to Buffett and Beyond” by Bruce C. Greenwald *et al.*, “Margin of Safety: Risk-Averse Value Investing Strategies for the Thoughtful Investor” by Seth A. Klarman, and many other alternative bibliographies.

2. Risk *vs.* Return

Risk and return are essential variables of investment decision-making. Risk is a measure of volatility or uncertainty in returns, and return is the expected return on any investment. In short, risk can be defined as the degree of uncertainty associated with an investment. The greater the volatility of an investment's returns, the greater its risk.

Risk can present itself in two ways — the first is when the potential losses are clearly presented. We can classify this way of looking at risk as the "possibility of loss". Second, the risk may present itself differently, where any variation in results, whether higher than expected or lower, may have onerous consequences for the risk-taker. We can classify this way of looking at risk as "variability of returns".

In the investment universe, rational investors are considered risk-averse concerning the variability of returns, which means that the investor will always choose the one with the lowest risk between two projects with the same expected return. However, it does not mean that investors refuse to invest in assets that present risk, only that to invest in these assets, the expected return has to be greater than the expected return on a risk-free investment.

An investor who purchases risk-free assets, such as a one-year US Treasury bond with an 8% return, will earn 8% at the end of one year. Therefore, this can be classified as a risk-free investment. However, it is worth mentioning that an asset is risk-free only considering its reference currency and if it is carried to maturity.

On the other hand, an investor who buys a share of a company expecting to obtain a return of 25% will very likely obtain a return different from the expected 25%, which may be much higher or lower.

The results variability is measured by the variance or standard deviation of the distribution of returns concerning the expected return. The standard deviation has the advantage of being expressed in the same unit in which the average and expected returns are calculated. The greater these measures, the greater the risk of carrying these assets.

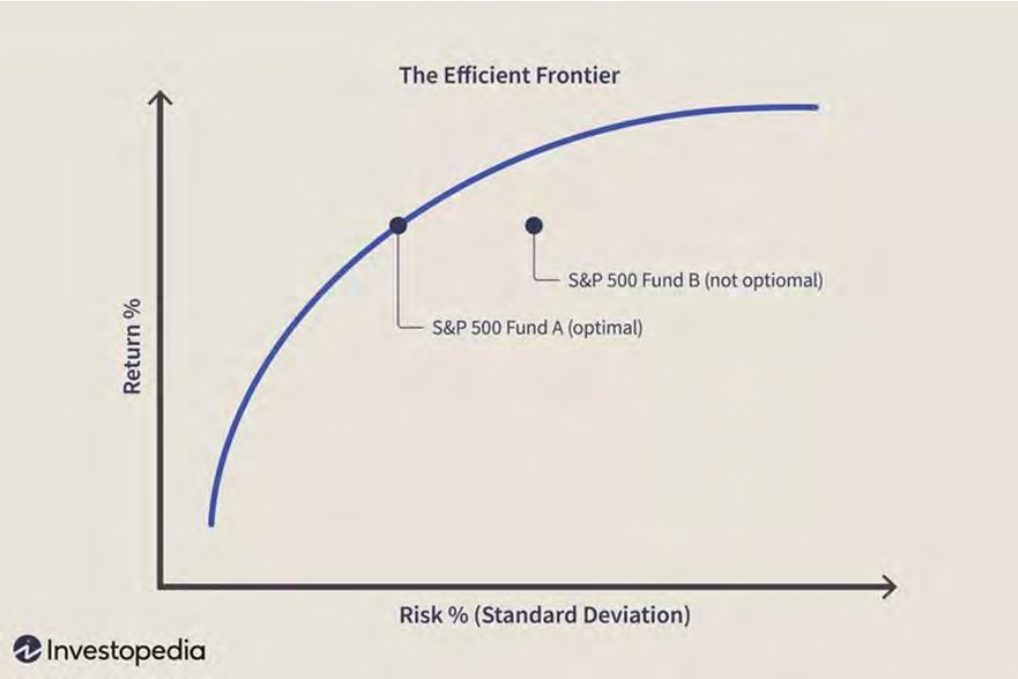
Important concepts:

- Variance = mean of squares of standard deviations from the mean;
- Standard Deviation = square root of the variance;

- Return in year *x* = (Price at the end of year *x* - Price at the end of year *x-1* + dividends received in year *x*) / Price at the end of year *x-1*

Diversification is an instrument that makes it possible to reduce exposure to risk without reducing the expected return of a portfolio.

Figure 1: Optimal Relation between Risk and Return



Source: Investopedia.

According to Damodaran (2016), there are two types of risk: risks arising from specific actions of a firm, which affect one or a few investments, and risks arising from general market events that affect several or all assets.

Firm-specific risks can be, for example, when a firm launches a service having overestimated its potential demand. This valuation error will certainly negatively affect this company's results but will have little or no effect on other companies in the market. This type of risk is called firm-specific risk. Firm-specific risk is a risk that can be diversified.

On the other hand, risks arising from general market events, such as an unexpected drop in interest rates or a general weakening of the economy, as we have seen with the COVID-19 pandemic, affect all investments. This type of risk is called market risk and is considered to be a non-diversifiable risk.

2.1. Quantitative Methods: Valuation and Valuation Indicators

2.1.1. Valuation

Valuation is the quantitative determination of an asset or company's fair market worth. There are several methods for doing an appraisal. Among many indicators, there are the composition of its capital structure, the outlook for future profits, and the market value of its assets. Several methodologies, such as the capital asset pricing model (CAPM) or the dividend discount model (DDM), may also be used in valuation. However, the fundamental analysis is the most common.

The discounted cash flow method (DCF) is one of the most widely used techniques in corporate finance to determine a company's intrinsic value. This technique assumes that a company's intrinsic value is its future projected cash flows discounted to the present by a risk-adjusted rate. The Discounted Cash Flow model is an excellent tool for valuing more established firms whose future cash flows are more predictable. Furthermore, it is a more appropriate technique for valuing enterprises with a small percentage of intangible assets on the balance sheet. Still, the DCF model applies to all companies.

The CAPM is another often-used approach. According to the CAPM, the expected return on an asset is the risk-free rate in addition to a risk premium, or greater expected return, for investing in a riskier asset. The risk premium can thus be seen as the compensation required for an investor to purchase a risky asset rather than investing in a risk-free asset.

2.1.2. Capital Asset Pricing Model (CAPM)

According to Damodaran (2016), the CAPM is founded on the following fundamental assumptions:

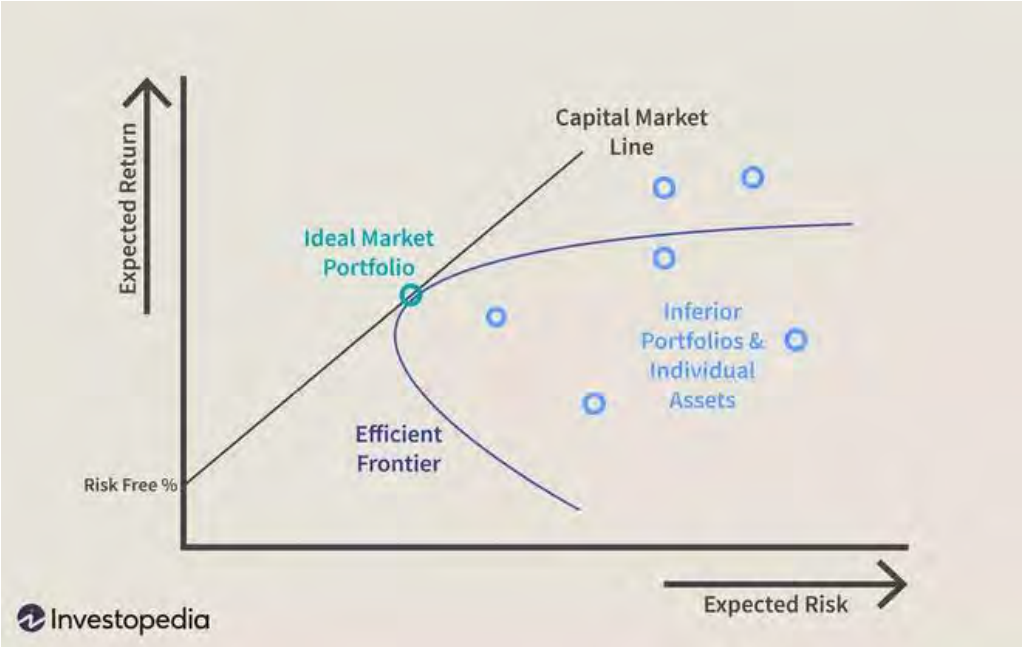
- All investors have access to the same information, and therefore it is not possible to find undervalued or overvalued assets;
- There are no transaction costs;
- All existing assets in the economy are tradable and infinitely divisible.

Investors could maintain their diversification without incurring in extra costs if there were no transaction fees. Given that diversification minimizes the portfolio's exposure to the firm's particular risk, it would theoretically make sense to hold every asset in the economy in a portfolio. The CAPM refers to this portfolio as the Market Portfolio.

How can the risk aversion of individual investors be distinguished if they all hold the market portfolio? Differentiation happens via the development of multiple portfolios that include proportions of both the market portfolio and the risk-free asset, according to the CAPM. For instance, less conservative investors may invest most of their capital in a market portfolio. In contrast, a risk-averse investor may invest most or all of their capital in risk-free assets.

There would be an optimal combination of risky and risk-free assets in the portfolio for each risk tolerance level. According to CAPM, investors in a market at equilibrium possess a proportional share of hazardous assets in the market portfolio. Therefore, it is possible to draw an optimal line that defines the optimal relationship between risk and return for each investor. The CAPM refers to this compensation line between risk and returns as the "capital market line" (CML).

Figure 2: Optimal Relation between Expected Risk and Expected Return



Source: Kenton (2022).

2.1.2.1. Beta (β)

The contribution of a particular asset to the overall risk of the market portfolio is dependent on the direction and magnitude of its variation in response to a change in the market portfolio. Suppose this asset tends to move in the same direction as the market portfolio, in that case, it will increase its risk since it will amplify, on average, the portfolio's fluctuations in a given direction. This added risk is calculated by the covariance between the asset and the market portfolio. The greater the correlation, the greater the risk increase caused by adding this asset to the portfolio. However, if this asset moves independently, the asset's primary risk is firm-specific and may be minimized by diversification since adding this asset to the market portfolio tends to mitigate the individual risk of other assets in the portfolio.

Covariance with the stock market of X percent tells us very little about whether an asset is riskier or less risky than average. To quantify the risk parameter, we divide the covariance between the asset and the market portfolio by the market portfolio's variance. The outcome is the asset's Beta (β), a fundamental risk measure when evaluating assets. According to Investonline, the formula to calculate the Beta Coefficient is the following:

$$\beta = \frac{Cov(r_a, r_b)}{Var(r_b)}$$

where:

$Cov = Covariance$;

$r_a = return\ of\ the\ asset$;

$r_b = return\ of\ the\ benchmark$;

$Var = Variance$.

Assets with above-average risk will have Betas greater than 1, and assets with below-average risk will have Betas smaller than 1. Risk-free assets have Beta 0.

2.1.2.2. The CAPM Equation

Suppose every investor has a combination between the market portfolio and the risk-free asset. In that case, it leads us to the conclusion that the expected return of an

asset has a linear relationship with the Beta of this asset. Moreover, the expected return of this asset can be obtained through the risk-free rate and the Beta:

$$ER_i = R_f + \beta_i(ER_m - R_f)$$

where:

$ER_i = expected\ return\ of\ investment;$

$R_f = risk\ free\ rate;$

$\beta_i = beta\ of\ the\ investment;$

$ER_m - R_f = market\ risk\ premium.$

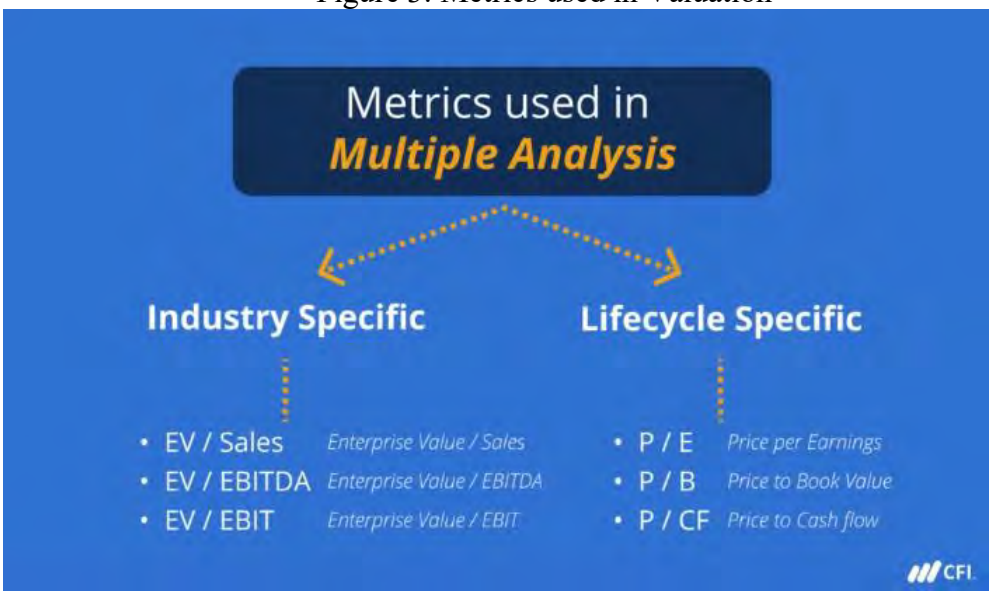
2.1.3. Valuation Indicators

Financial indicators help us to decide when buying an asset. Generally, assets that have indicators with low multiples trade at low prices. However, having low multiples does not mean the company is not worthy. For value investors, business solidity and consistency of past results are more critical factors than earnings growth. Some relevant indicators to analyze companies are:

- Price/Earnings (P/E): is obtained through the ratio between the market price *per* share and the company's earnings *per* share. It demonstrates the price the market is willing to pay for a stock based on its previous or future earnings.
- Debt/Equity: is obtained through the ratio between the debt of the company and the equity (Equity = Assets – Liabilities). The ratio indicates the percentage of the equity to debt used to fund a company's assets.
- Price/Earnings-to-growth: is obtained through the ratio between the market price and the company's earnings + earnings growth. It provides a broader perspective of whether the price of an asset is overpriced or underpriced by considering both current earnings and predicted growth.
- Debt/EBITDA: is obtained through the ratio between the debt of the company and the earnings before interest, taxes, depreciation, and amortization. It shows whether the company can pay off its current debt

- Price/Cash Flow (P/CF): this ratio is a multiple that compares a company's market value to its operating cash flow or its stock price *per* share to operating cash flow per share. The P/CF multiple works well for companies that have large non-cash expenses such as depreciation. A low P/CF multiple may imply that a stock is undervalued in the market.

Figure 3: Metrics used in Valuation



Source: CFI.

3. Asset Diversification

If an investor invested his entire capital in a single asset, he would be exposed to both firm-specific and market risks. Nonetheless, if this investor expands this portfolio to include other assets, it will diversify and reduce its exposure to the company's unique risk. Diversification reduces the firm-specific risk for two primary reasons: first, each new investment in a diversified portfolio constitutes a lesser proportion of the portfolio. The second reason is that the impact of a particular event on a company in a portfolio can be positive or negative, and the total of these impacts tends to zero in a diversified portfolio. Market risk, on the other hand, tends to influence all assets in the same manner, thus, diversification does not reduce this form of risk.

Asset diversification is a fundamental principle in investment management, aiming to reduce risk and optimize portfolio performance. It is a strategy used by investors to minimize risk by allocating investments across different asset classes, sectors, regions, and financial instruments. It is based on the premise that the performance of different assets tends to be uncorrelated or negatively correlated, offering potential benefits in terms of risk reduction and portfolio optimization.

3.1. Benefits of Asset Diversification

3.1.1. Risk Reduction

Numerous studies have demonstrated that asset diversification can significantly reduce portfolio risk (LIANG and RHOADES, 1991; PINTO *et al.*, 2011; SALMA and HUSSAIN, 2018). According to Markowitz's Modern Portfolio Theory (MPT), a well-diversified portfolio can achieve the same level of return with lower volatility compared to a concentrated portfolio (MARKOWITZ, 1952). Diversification helps mitigate the impact of adverse events or market fluctuations on individual investments by spreading risk across different assets.

3.1.2. Enhanced Risk-Adjusted Returns

Asset diversification also enables investors to achieve higher risk-adjusted returns. By combining assets with different risk profiles, investors can optimize their portfolios to achieve an optimal trade-off between risk and return. Diversified portfolios have the potential to generate more stable returns over the long term, reducing the impact of market downturns.

Asset diversification plays a crucial role in enhancing risk-adjusted returns. By spreading investments across different asset classes, sectors, and regions, investors can potentially reduce the impact of individual investment risks and improve the overall risk-return profile of their portfolio. Diversification allows for a more efficient allocation of capital, as it aims to combine assets with different risk and return characteristics in a way that maximizes returns for a given level of risk or minimizes risk for a desired level of return.

The concept of risk-adjusted returns is rooted in modern portfolio theory (MPT) developed by Markowitz (1952). MPT suggests that by constructing portfolios with assets that have low or negative correlations, investors can achieve an optimal trade-off between risk and return. The efficient frontier, a key concept in MPT, represents a set of portfolios that offer the highest possible expected returns for a given level of risk, or conversely, the lowest possible risk for a desired level of return.

3.2. Strategies for Implementing Asset Diversification

3.2.1. Asset Class Diversification

Asset class diversification refers to the practice of allocating investments across different asset classes, such as stocks, bonds, real estate, commodities, and cash equivalents. The purpose of asset class diversification is to reduce risk and potentially enhance returns by spreading investments across different types of assets that have varying risk and return characteristics.

The rationale behind asset class diversification is based on the principle that different asset classes tend to perform differently under various market conditions. For example, stocks may provide higher returns but also carry higher volatility and risk, while bonds may offer lower returns but provide stability and income. By combining

assets with different risk profiles, investors aim to create a portfolio that can potentially generate consistent returns while minimizing the impact of any single asset's performance.

3.2.2. Geographic Diversification

Geographic diversification of portfolios is a strategy of spreading your investments across different regions or countries to reduce the risk of being exposed to a single market. Geographic diversification can help investors to benefit from different growth opportunities, economic cycles and market conditions in different parts of the world. Geographic diversification can also help to hedge against currency fluctuations and political instability.

Some examples of geographic diversification are:

- Investing in emerging markets that have higher growth potential than developed markets, such as China, India, Brazil, *etc.*;
- Investing in different regions within a country, such as the east coast, west coast and midwest of USA;
- Investing in different sectors or industries that are dominant in different regions, such as technology, energy, agriculture, *etc*.

Geographic diversification can be achieved by investing directly in foreign stocks or bonds, or by using mutual funds, exchange-traded funds (ETFs) or index funds that track the performance of a specific region or country. Geographic diversification can also be achieved by investing in multinational corporations that have operations and revenues from different regions or countries.

3.2.2. Sector Diversification

Sector diversification involves spreading investments across different sectors or industries. It is a risk management strategy that aims to reduce the impact of sector-specific risks on the overall portfolio performance. By diversifying investments across various sectors, investors seek to benefit from the potential growth and stability of different industries while minimizing exposure to the risks inherent in any single sector.

Some examples of sector diversification are:

- Investing in different sectors of the economy, such as technology, energy, health care, consumer staples, *etc*.;
- Investing in different subsectors within a sector, such as software, hardware, biotechnology, pharmaceuticals, *etc*.;
- Investing in different companies within a subsector, such as Microsoft, Apple, Google, *etc*.

In summary, sector diversification is a risk management strategy that involves allocating investments across different sectors to reduce the impact of sector-specific risks and enhance portfolio resilience. By spreading investments across sectors, investors can potentially benefit from sector-specific growth opportunities while mitigating the potential downsides of any particular industry.

3.3. Measuring Asset Diversification

Diversification impacts may be indicated by analyzing the effect of increasing the number of assets in a portfolio on its variance. The variance of a portfolio is defined mutually by the variances of the individual assets that constitute it and the covariance between these assets, with covariance being the primary element behind diversification. The lower the covariance between assets, the greater the effect of diversification.

Considering a portfolio with two assets, X and Y, where μ_X is the expected return of X, σ_X^2 the variance of X, μ_Y the expected return of Y, σ_Y^2 the variance of Y, and the correlation between X and Y is ρ_{XY}. The expected return and the variance of this portfolio of two assets can be written as a function of these variables and the proportion between the two assets in the portfolio:

$$\mu_{portfolio} = w_X\mu_X + (1 - w_X)\,\mu_Y$$

$$\sigma^2_{portfolio} = w_X^2\sigma_X^2 + (1 - w_X)^2\,\sigma_Y^2 + 2w_X(1 - w_X)\rho_{XY}\sigma_X\sigma_Y$$

where w_X is the proportion of the portfolio in the asset X.

The covariance between two assets is described by the formula:

$$\sigma_{XY} = \rho_{XY}\sigma_X\sigma_Y$$

Diversification gains are, therefore, a function of the correlation of returns between assets, so the lower the correlation, the greater the benefit of diversification.

4. Types of Valuation: Fundamental Analysis *vs.* Technical Analysis

There are two basic methods of valuation: fundamental analysis and technical analysis.

Fundamental analysis tries to discover the real value of a financial instrument, such as a stock, by analyzing all the factors that can influence it, such as the financial situation and management of the company or expectations about interest rates. This type of analysis seeks to know whether a financial instrument is worth more or less than it should, taking into account the current value and future potential of a share.

Technical analysis, on the other hand, is based solely on the history of the price of a financial instrument to predict whether it will rise or fall in the future and thus decide how to trade it. This type of analysis uses time series to observe the behavior of the price of a share and estimate the most likely trend for that share in the next time periods, which can be weeks, days, hours or minutes.

According to Waring:

> "While technical analysis focuses solely on the analysis of historical price action, fundamental analysis focuses on everything else including things such as the overall state of the economy, interest rates, production, earnings, and management." (WARING, 2007).

Although there are exceptions, generally long-term investors use fundamental analysis more and short-term traders use technical analysis more. Each of these two types of analysis will be described in more detail below.

4.1. Fundamental Analysis

Fundamental analysis is a way of evaluating stocks that is based on the company's financial, economic and market information. Fundamental analysis wants to know if the price of a stock reflects expected future earnings considering its cash flow in a given period. The originator of fundamental analysis was Benjamin Graham. He advocated that the price of a share should be proportional to its future earnings taking into account its cash flow at a certain time.

Fundamental analysis uses financial metrics such as earnings *per* share, price-to-earnings ratio, net debt and equity, among others, to assess a company's financial situation and its ability to grow. This is done through the study and analysis of financial indicators, economy, sector and market data. In addition, the company's balance sheets and results and its history are considered.

When analyzing a stock, currency or commodity using fundamental analysis, there are two basic methods that can be used, called "bottom-up" analysis and "top-down" analysis. Bottom-up analysis means starting with the details, like earnings if we're talking about a stock, and then going into the big picture, looking at things like the industry of the company whose stock you're trading, and then finally the big picture, the general economic situation of the country and even of the world. Top-down analysis, on the other hand, means starting with the big picture, like the economy, and then moving on to the details, like earnings if you're talking about a stock.

Some of the concepts used in fundamental analysis are the following.

4.1.1. Intrinsic Value

Value is different of price. The fundamental analysis is based on the premise that all firms, regardless of their market price, have an intrinsic value, which can be calculated by a thorough review of the company's balance sheet and outcomes. For that, we have valuation methods. The company's intrinsic value can be considered its fair market price. The significant challenge for investors is to calculate this value as accurately as possible and then compare it to the market price to identify pricing errors in the price at which the company is traded.

4.1.2. Safety Margin

For Graham (2017), the Margin of Safety is considered the central pillar of his investment precepts and how he assesses acquisition risk. The idea is that the price paid for an asset represents a sufficient discount from the intrinsic value calculated to create a safety margin if the analysis and the assumptions used prove incorrect. An investment made in a company that is valued in the market at a price lower than the price calculated for its intrinsic value is essentially safer than an investment in which the price paid

presents a premium over the fair value, therefore dependent on assumptions about future growth for this investment to become profitable.

According to Graham (2017), the intrinsic value must be tested for a considerable number of years to guarantee that the asset in question seems cheap due to temporary reasons and may prove to be non-resilient when market conditions are no longer favorable.

Moreover, Graham (2017) argues that investing in growth stocks usually contrasts with the margin of safety principle. The growth stock buyer considers the company's EPV. The difference is that this investor assumes future earnings that are greater than those presented in the past. The risk for this investor is precisely the misassumption mentioned, since the market tends to pay high prices for these companies. As a result, they are not protected by a conservative projection of future profits, presenting considerable losses once these projections are not confirmed.

4.1.3. Discounted Cash Flow (DCF)

The Discounted Cash Flow method aims to determine a company's fair value by estimating the present value of all future cash flows generated by the company's assets. This analysis begins with an attempt to estimate the cash flows generated by the firm from the current date to a significant number of periods in the future. For this estimation, a growth rate must be defined. Following this assessment, a discount rate must be determined to discount this future flow to the present value. This rate must be a function of the estimated cost of equity, which in turn is a function of the opportunity cost and the risk assessed by the market for the company.

Intellectuals highlight the central vulnerability of this method: the empirical impossibility of estimating these variables with any degree of precision for many years into the future, given that these predictions depend on a large number of variables that are beyond the control of whoever is estimating them. For instance, a new technology that renders the product obsolete or a significant change in the economic scenario.

The DCF formula is the following:

$$DCF = \frac{CF_1}{1+r} + \frac{CF_2}{(1+r)^2} + \frac{CF_3}{(1+r)^3} + \cdots + \frac{CF_n}{(1+r)^n}$$

where:

$DCF = Discounted\ Cash\ Flow;$

$CF_i = Cash\ Flow\ of\ period\ i;$

$r = interest\ rate;$

$n = time\ in\ years\ before\ future\ Cash\ Flow\ occurs$

4.1.4. Balance Sheet

The balance sheet plays a crucial role in fundamental analysis, providing information about a company's financial health over a given period. It is an essential tool for assessing the company's ability to meet its financial obligations, its financial soundness and its potential for profitability.

When performing the analysis, it is important to examine the relationship between the company's assets and liabilities, its level of indebtedness, its ability to generate profits, its investment and debt policies, as well as the prospects for the industry in which the company operates. This information helps to understand the company's financial health, its stability and its ability to face challenges and take advantage of opportunities in the market.

4.1.5. Profit and loss statement (P&L)

The profit and loss statement, also called income statement, plays a key role in fundamental analysis, providing insights into a company's financial performance. This statement presents the company's revenues, expenses and profits in a specific period, allowing a detailed analysis of its profitability and management efficiency.

Through the analysis of revenues and expenses, it is possible to determine the profit margin, evaluate operational efficiency and measure the profitability of investments. When examining the income statement, it is important to observe the evolution of income and expenses over time, as well as to compare the company's profitability and efficiency against its competitors.

The P&L provides a comprehensive view of a company's financial performance, allowing investors and analysts to identify trends, assess the company's ability to

generate profit and measure management effectiveness. It is a valuable tool for understanding a company's financial outlook and informing investment decisions.

4.1.6. EBITDA

EBITDA (Earning Before Interest, Taxes, Depreciation and Amortization) is an index used to analyze the operational performance of a company, measuring its productivity and efficiency within the sector in which it operates. The formula for calculating EBITDA is as follows:

$$EBITDA = Net\ Operating\ Income\ before\ Taxes + Depreciation + Amortization + Interest$$

4.1.7. EV/EBITDA

The EV/EBITDA indicator is a valuable tool in fundamental analysis, used to assess the value of a company in relation to its operating profit before discounting interest, taxes, depreciation and amortization (EBITDA). This calculation is obtained by dividing the company's value (Enterprise Value - EV), which includes its market capitalization and net debt, by EBITDA.

The EV/EBITDA is considered a comprehensive indicator, as it takes into account the company's debt. It provides a perspective on the company's upside potential and its attractiveness as an investment. Companies with a lower EV/EBITDA are generally seen as more attractive, indicating a relatively lower market cap relative to their operating earnings.

On the other hand, companies with a higher EV/EBITDA can be considered more risky, suggesting a higher market value in relation to their operating profit. It is important to note, however, that EV/EBITDA should not be used in isolation to make investment decisions. It is necessary to analyze other indicators and relevant information to obtain a complete and safe view.

4.1.8. Price/Earnings Ratio

The Price/Earnings indicator, also known as P/E, is widely used to assess the attractiveness of a stock's price in the market compared to the price of shares of other companies in the same industry. It is calculated by dividing the share price by earnings per share (EPS).

In general, when the calculation results in a low P/E, it indicates that the investor can acquire shares at a more attractive price in relation to the profits presented in the last 12 months. This situation may be a sign that the stock is underpriced, which may represent a buying opportunity.

4.1.9. Dividend Yield

Dividend yield is a financial ratio that indicates the annual return an investor can expect to receive in the form of dividends from owning a particular stock. It is expressed as a percentage and is calculated by dividing the annual dividend per share by the stock's current market price per share. The formula for dividend yield is as follows:

$$Dividend\ Yield = \left(\frac{Annual\ Dividend\ per\ Share}{Stock's\ Current\ Market\ Price\ per\ Share}\right) \times 100$$

4.1.10. Return on Equity (ROE)

Return on Equity is a financial ratio that provides insights into a company's profitability and efficiency in utilizing shareholders' equity to generate returns. It is a key metric used by investors, analysts, and financial professionals to assess the performance and financial health of a company. The formula for calculating ROE is simple:

$$ROE = \left(\frac{Net\ Income}{Shareholders' Equity}\right) \times 100$$

In this formula, net income represents the company's profit after deducting all expenses, including operating costs, interest, taxes, and other non-operating items. It indicates the bottom-line profitability of the company. Shareholders' equity, on the other hand, represents the residual interest in the assets of the company after deducting its

liabilities. It is the value that shareholders have invested in the company and includes items such as common stock, retained earnings, and additional paid-in capital.

4.2. Technical Analysis

Technical analysis is a method used in financial markets to forecast the future direction of prices and identify potential trading opportunities. It involves studying historical market data, primarily price and volume information, to identify patterns, trends, and signals that can help investors and traders make informed decisions. At its core, technical analysis assumes that market prices follow trends and that these trends tend to repeat over time. This approach is based on the belief that past price behavior can provide insights into future price movements. Technical analysts study charts, graphs, and various technical indicators to analyze market data and make predictions.

Basically, technical analysis is employed to identify trends in asset price movements. Its purpose is to pinpoint stocks with significant potential for short-term price appreciation. Since these trades are executed within a single day or even just a few hours, there is limited time available for in-depth analysis. Furthermore, such a detailed examination is unnecessary as all positions will be closed by the end of the day. Factors such as a company's long-term management quality are not relevant in this scenario. Consequently, technical analysis is extensively utilized by investors who favor day trading.

Unlike fundamental analysis, which examines a company's financial and economic information, technical analysis relies on historical trends and market behavior to forecast price movements. The core principles of technical analysis include the belief that price and volume reflect all available information about a company and that market behavior tends to repeat itself. Furthermore, technical analysis is rooted in the theory that the trend is your friend, indicating that an asset is likely to continue its current trend until clear signs of a trend reversal emerge.

One of the fundamental principles of technical analysis is the concept of support and resistance levels. Support refers to a price level at which buying pressure is expected to be strong enough to prevent the price from falling further. Resistance, on the other hand, is a price level at which selling pressure is anticipated to be strong

enough to prevent the price from rising further. By identifying these levels, technical analysts aim to determine potential entry and exit points for trades.

Another important aspect of technical analysis is the use of chart patterns. Chart patterns are graphical formations that occur in price charts and can provide insights into the future direction of prices. Common chart patterns include head and shoulders, double tops and bottoms, triangles, and flags. These patterns are believed to indicate a potential reversal or continuation of an existing trend.

Technical analysts also rely on a wide range of technical indicators. These indicators are mathematical calculations based on price and volume data and are used to generate trading signals. Examples of popular indicators include moving averages, relative strength index (RSI), stochastic oscillators, and Bollinger Bands. These indicators help traders identify overbought or oversold conditions, momentum shifts, and other key market signals.

It is important to note that technical analysis is primarily concerned with price and volume data, and it does not consider fundamental factors such as company financials, economic indicators, or news events. Technical analysts believe that all relevant information is already reflected in the price and that studying price patterns and indicators is sufficient to make trading decisions.

Critics of technical analysis argue that it is based on subjective interpretations and lacks a solid theoretical foundation. They claim that historical price patterns and indicators have no predictive power and that markets are efficient, meaning that prices already reflect all available information. These critics favor fundamental analysis, which focuses on evaluating the intrinsic value of an asset based on its underlying factors.

However, technical analysis continues to be widely used by traders and investors around the world. Many individuals and institutions incorporate technical analysis into their decision-making process, combining it with other forms of analysis to form a comprehensive trading strategy. While it is not without its limitations, technical analysis provides a framework for understanding market behavior and can be a valuable tool for those who believe in its principles.

5. Value Investing: A Special Case of Fundamental Analysis

According to Elmerraji (2022), “Value Investing is a strategy for identifying undervalued stocks based on fundamental analysis”. It will be presented below a little more about this type of analysis, given that it is a market analysis tool widely used in the financial sector, being one of the most important in the world.

Succeeding in investing has always been the goal for every investor. Consequently, every investor seeks a magic strategy to guarantee the expected return to achieve it. Numerous methods have been developed since the inception of financial markets, with varying degrees of success. The primary issue is that the most effective approaches were widely dispersed, which caused them to converge to the market's average performance.

At the time of the 1929 crisis, when financial markets collapsed, Benjamin Graham and David Dodd developed an investing strategy, a predecessor to fundamental analysis. The method caught attention when numerous adherents of Graham and Dodd's beliefs achieved remarkable long-term success. This set of financial principles eventually became known as “Value Investing”. This strategy varies from others due to its in-depth research of each company's operation and its reliance on actual statistics on the assets and performance of the firms, as opposed to efforts to predict results, mathematical formulas, or graphical analysis.

Value Investing is an investment method that selects stocks that seem to be trading at a discount to their intrinsic or book value. Value investors seek companies they believe the market undervalues. They think the market overreacts to both positive and negative news, resulting in stock price volatility that does not reflect a change in the company's long-term fundamentals. The overreaction provides an opportunity to profit by buying stocks on sale at reduced prices.

At the core of Value Investing lies the concept of intrinsic value. Intrinsic value represents the true worth of an asset, determined by factors such as the company's earnings, cash flow, assets, and potential for growth. Value investors meticulously analyze financial statements, scrutinize industry trends, and assess management quality to estimate the intrinsic value of a company. Their objective is to identify stocks trading at a price significantly lower than their intrinsic value, indicating a margin of safety. According to Greenwald *et al.*:

> Adherents to value investing as a discipline focus on measuring the intrinsic value of a security through careful analysis of business fundamentals from a long-term perspective. They believe opportunities for profitable investments are available when the current market price of a security deviates significantly from its intrinsic value. The essential task of the value analyst is to determine intrinsic value with enough accuracy to take advantage of the market's mispricing and to have the patience to wait for the market or some event, such as a take-over, to close the gap between price and value. (GREENWALD et al., 2020, p. 42)

A key tool employed by value investors is fundamental analysis. This involves a thorough examination of a company's financial health, competitive position, and industry dynamics. By scrutinizing metrics such as price-to-earnings ratio, price-to-book ratio, and dividend yield, value investors aim to uncover hidden gems that may have been overlooked or undervalued by the broader market.

The method for picking companies for valuation involves considering only the companies whose market value is less than their equity or have low multiples of the valuation indicators. Value investors see stocks as effective participation in firms' capital, having intrinsic value, instead of just being tickers on the stock market whose prices fluctuate every second. A company must be evaluated as a business whose intrinsic value is unrelated to its current market price.

The market fluctuates between extreme optimism, which causes stocks to be overpriced, and excessive pessimism, which causes stocks to be unjustifiably cheap. The future performance of the investment is directly proportional to the price paid for it since the cheaper the asset is compared to its intrinsic value, the higher the expected return. The intelligent investor must purchase from pessimists and sell to optimists.

The behavior of investors is more crucial than market behavior. An investor must never pay an unreasonable premium for a stock, regardless of how promising the company's forecast may initially seem.

As it is impossible for an investment method to be always correct, Graham developed the "margin of safety" concept. According to this principle, an investment must be made at a price that represents a sufficient discount to the estimated intrinsic value in order to minimize loss if the valuation is incorrect. Graham (2017) states that a significant portion of the intrinsic value of stocks with high multiples is based on an

uncertain projection of current growth into the future, leading investors to overpay for these equities. Klarman says that:

> Value investors […] have as a primary goal the preservation of their capital. It follows that value investors seek a margin of safety, allowing room for imprecision, bad luck, or analytical error in order to avoid sizable losses over time. A margin of safety is necessary because valuation is an imprecise art, the future is unpredictable, and investors are human and do make mistakes. It is adherence to the concept of a margin of safety that best distinguishes value investors from all others, who are not as concerned about loss. (KLARMAN, 2013, p. 19)

Contrary to other investment approaches that emphasize short-term market trends or speculative behavior, Value Investing takes a long-term perspective. Value investors typically have a patient and disciplined approach, willing to hold onto an undervalued asset until the market recognizes its true worth. This strategy requires a considerable degree of conviction, as value stocks may not immediately reflect their intrinsic value and could face temporary setbacks. According to Klarman:

> [Value Investing] is simply the process of determining the value underlying a security and then buying it at a considerable discount from that value. It is really that simple. The greatest challenge is maintaining the requisite patience and discipline to buy only when prices are attractive and to sell when they are not, avoiding the short-term performance frenzy that engulfs most market participants. (KLARMAN, 2013, p. 18)

Another important aspect of Value Investing is risk management. While seeking undervalued assets, value investors also focus on managing risks and minimizing potential losses. The margin of safety principle plays a crucial role in this regard, as it allows investors to protect themselves against adverse market conditions or unforeseen events. By purchasing assets at a significant discount to their intrinsic value, value investors aim to limit downside risks and increase the probability of generating positive returns over the long term.

Value Investing is not limited to individual stocks but can also be applied to other investment vehicles such as bonds, real estate, or exchange-traded funds (ETFs). The underlying principle remains the same: identifying assets that are trading below their intrinsic value. This approach offers investors the opportunity to build a diversified portfolio and potentially enhance overall returns.

While Value Investing has proven to be a successful strategy over time, it is important to acknowledge that it requires discipline, patience, and thorough research. It may take time for the market to recognize the value of an undervalued asset, and investors need to be prepared for short-term fluctuations or periods of underperformance. However, for those willing to put in the effort and adhere to the principles of Value Investing, it can be a rewarding strategy that aligns with the concept of buying low and selling high.

5.1. Main techniques used in Value Investing

Value Investing employs various techniques and approaches to identify undervalued assets. Fundamental analysis is a cornerstone of Value Investing, involving the analysis of a company's financial statements, including its income statement, balance sheet, and cash flow statement. Key financial ratios and metrics such as price-to-earnings ratio (P/E), price-to-book ratio (P/B), and dividend yield are examined to determine the intrinsic value of the company.

Discounted Cash Flow (DCF) analysis is a valuation method used in Value Investing, estimating the present value of a company's future cash flows. Factors like projected earnings, growth rates, and discount rates are considered. Comparing the estimated intrinsic value with the current market price helps identify undervalued stocks.

The concept of a margin of safety is important in Value Investing. It refers to the difference between the intrinsic value and market price of an asset. Value investors aim to purchase assets at a significant discount to their intrinsic value, providing a buffer against downside risks and increasing the chance of positive returns.

Value investors often adopt a contrarian approach, looking for opportunities in out-of-favor sectors or companies facing temporary setbacks. By investing when others are pessimistic, they take advantage of market inefficiencies and potentially buy quality assets at lower prices.

In some cases, value investors assess the value of a company based on its tangible assets. This involves analyzing the company's balance sheet, including its book

value, property, plant, equipment, and other tangible assets. If the market price is significantly lower than the company's asset value, it may be considered undervalued.

Qualitative factors are also considered by value investors when evaluating potential investments. This includes assessing management quality, analyzing the company's competitive position, evaluating brand value, and understanding long-term growth prospects. Qualitative analysis helps gauge the overall strength and sustainability of the company's business model.

Value Investing requires a patient and long-term perspective. Investors are willing to hold undervalued assets until their true worth is recognized by the market. This approach focuses on the intrinsic value of a company and emphasizes the compounding effect of long-term growth over short-term market fluctuations.It's important to note that value investors often combine multiple techniques and adapt their approach based on market conditions and individual investment goals. The overarching objective is to identify undervalued assets that have the potential to deliver long-term value and generate favorable returns.

5.2. Upsides and downsides of Value Investing

Value Investing, like any investment strategy, has its share of upsides and downsides. Understanding both sides of it is essential for investors considering adopting a Value Investing approach.

5.2.1. Upsides of Value Investing

One of the primary advantages of Value Investing lies in its ability to identify undervalued assets. By purchasing these assets at a discount to their intrinsic value, value investors position themselves for potential price appreciation. As the market gradually recognizes the true worth of the investment, investors can benefit from capital appreciation and achieve above-average returns.

The concept of a margin of safety is central to Value Investing. It offers a cushion against potential downside risks, protecting investors from the risk of permanent loss of capital. By purchasing assets below their intrinsic value, value

investors inherently reduce the level of risk, as the market has already factored in a certain level of pessimism. This principle provides a sense of security and confidence in one's investment decisions.

Value Investing advocates for a patient and long-term approach. By focusing on a company's underlying fundamentals rather than short-term market trends, value investors can capitalize on the market's short-sightedness. This long-term perspective allows investors to benefit from the compounding effect of sustained growth and unlock the full potential of their investments.

Value investors often find opportunities in sectors or companies that are out of favor or facing temporary setbacks. Going against the crowd, value investors can take advantage of market inefficiencies and purchase quality assets at lower prices. By adopting a contrarian approach, investors position themselves to reap the rewards when the market sentiment eventually shifts, leading to potential capital appreciation.

While seeking undervalued assets, value investors place a strong emphasis on risk management. The margin of safety principle plays a crucial role in this regard, enabling investors to protect themselves against adverse market conditions or unforeseen events. By purchasing assets at a significant discount to their intrinsic value, value investors strive to limit downside risks and increase the probability of generating positive long-term returns.

Value investing is not confined to individual stocks but can be applied to various types of investments. This offers investors the opportunity to build a diversified portfolio, spreading risk across different asset classes and potentially enhancing overall returns. By identifying undervalued assets in different segments of the market, value investors can capture opportunities and maximize their investment potential.

Fundamental analysis forms the foundation of value investing. Investors delve into a company's financial health, competitive position, and industry dynamics to gain a deep understanding of the underlying business. This approach enables investors to make informed investment decisions based on actual statistics and company performance, rather than relying solely on market sentiment or short-term trends. By focusing on fundamentals, value investors can identify solid investment opportunities with strong growth prospects.

Value Investing offers numerous upsides for investors seeking long-term success and risk management. Its potential for higher returns, emphasis on the margin of safety, long-term orientation, contrarian opportunities, risk management strategies, diversification options, and focus on fundamentals make it an appealing investment approach. By adhering to the principles of Value Investing, investors can navigate the markets with confidence and increase their chances of achieving financial success in the ever-changing world of investing. By focusing on the intrinsic value of assets and employing rigorous research and analysis, value investors aim to generate favorable returns while managing risks. It is a strategy that aligns with the concept of buying low and selling high, making it an attractive option for many investors.

5.2.2. Downsides of Value Investing

Some of the downsides of Value Investing are the following. Timing challenges can be a significant hurdle for value investors. It is difficult to determine precisely when an undervalued asset will start reflecting its intrinsic value. This requires patience as the market may take time to recognize the true worth of an investment. As a result, value investors may experience prolonged periods of underperformance while waiting for their investments to realize their full potential.

Value traps are another concern for value investors. Not every undervalued asset turns out to be a successful investment. Some stocks may be cheap for a reason, such as poor management, declining industry prospects, or structural changes in the market. To avoid falling into value traps, value investors must conduct thorough research and analysis to assess the underlying risks and potential pitfalls.

One limitation of Value Investing is the potential for limited exposure to growth opportunities. Value investors often focus on established companies that may have slower growth rates compared to high-growth or technology-oriented stocks. While this approach provides stability and a margin of safety, it may result in missing out on significant market gains in sectors or companies experiencing rapid growth.

Emotional discipline is another obstacle that is vital for value investors. During market downturns or when an undervalued asset continues to decline in price, it can be challenging to maintain conviction and adhere to the long-term investment strategy.

Emotional decision-making can lead to selling investments prematurely or succumbing to fear and panic. Value investors need to remain focused, stay disciplined, and make rational decisions based on their analysis and the intrinsic value of their investments.

It is important for investors to consider these limitations and assess whether Value Investing aligns with their investment goals, risk tolerance, and market conditions. Some investors may choose to combine Value Investing with other strategies to diversify their portfolios and mitigate these limitations.

In conclusion, while Value Investing offers potential advantages, it also comes with its challenges. Timing difficulties, the risk of value traps, limited exposure to growth opportunities, and the need for emotional discipline are factors that value investors must navigate. By understanding these potential downsides and developing a disciplined approach, value investors can enhance their chances of long-term success and achieve their investment goals.

Value Investing offers the potential for attractive returns, a margin of safety, and a long-term perspective. However, it requires patience, thorough research, and the ability to withstand short-term market fluctuations. By understanding the upsides and downsides of Value Investing, investors can make informed decisions and determine if this strategy aligns with their investment goals and risk tolerance.

6. Conclusion

The present essays offered a thorough and informative overview of finance, and more specifically of Value Investing.

In Chapter 2 it was developed the relation between risk and return. These are fundamental concepts that are closely interconnected. Risk refers to the uncertainty and potential for loss associated with an investment, while return represents the gain or profit generated from that investment. Generally, the principle of risk and return states that higher potential returns are typically accompanied by higher levels of risk. This means that investors seeking greater returns must be willing to accept a higher degree of uncertainty and potential loss. Conversely, investments with lower levels of risk tend to offer lower potential returns. Balancing risk and return is a key consideration in financial decision-making, as investors must evaluate their risk tolerance and investment goals to determine an appropriate investment strategy that aligns with their desired level of return.

Chapter 3 proceeded to explain the concept of asset diversification. This is a fundamental principle in finance that involves spreading investments across a variety of assets to manage and reduce risk. The concept is based on the notion that different assets and asset classes have varying levels of risk and return potential. By diversifying their portfolio, investors aim to minimize the impact of any individual investment's performance on their overall portfolio. Diversification allows for the potential to earn more consistent returns over time and helps protect against significant losses in case of a downturn in a particular asset or sector. It involves allocating investments across different industries, geographic regions, and asset types, such as stocks, bonds, real estate, and commodities. Through asset diversification, investors can achieve a balance between risk and return, enhancing the resilience and stability of their investment portfolio.

Chapter 4 clarified the two main types of analysis in finance: fundamental analysis and technical analysis. Fundamental analysis focuses on evaluating the intrinsic value of an asset by examining factors such as financial statements, industry trends, competitive positioning, and management quality. It seeks to determine the underlying value of an investment based on its fundamental characteristics. On the other hand, technical analysis focuses on studying historical price and volume patterns to predict

future price movements. It relies on chart patterns, indicators, and market trends to make investment decisions. While fundamental analysis emphasizes the underlying fundamentals of an investment, such as earnings and cash flows, technical analysis places greater emphasis on market sentiment and price patterns. Both approaches have their strengths and limitations. Fundamental analysis is more suitable for long-term investors seeking to understand the value of an investment, while technical analysis may be used by short-term traders looking to capitalize on short-term price movements.

Finally, the essay then proceeded to highlight the main ideas behind the investing strategy known as Value Investing. The concept of Value Investing is a strategy for identifying undervalued stocks based on fundamental analysis. Its roots are traced back to Benjamin Graham and David Dodd during the 1929 crisis. The key principles and techniques employed in Value Investing were explored in this essay. It emphasized the importance of intrinsic value and how value investors meticulously analyze financial statements, industry trends, and management quality to estimate a company's intrinsic value. The concept of a margin of safety is also stressed, emphasizing the need to purchase assets at a significant discount to minimize losses.

It is stressed that fundamental analysis is a cornerstone of Value Investing, along with other techniques such as discounted cash flow analysis, contrarian investing, asset-based valuation, and qualitative analysis. It is important, for investors that follow this strategy, to be patient and to adopt a long-term approach that focus on the intrinsic value of a company rather than short-term market fluctuations.

In this essay, the upsides of Value Investing are well-documented, including the potential for higher returns, margin of safety, long-term orientation, and contrarian opportunities. The downsides are also acknowledged, such as timing challenges, value traps, limited exposure to growth, and the need for emotional discipline.

Thus, present work provided key concepts of the subject of finance, particularly about Value Investing. This technique stands as a time-tested approach that emphasizes the fundamental principles of investing: buying undervalued assets with solid intrinsic value and holding them for the long term. This investment strategy has proven its resilience and effectiveness in generating consistent returns, even in volatile markets. While it requires patience and discipline, Value Investing remains a steadfast strategy

that has rewarded diligent investors with sustainable wealth creation and financial success throughout history.

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