Lisbon School of Economics & Management
Universidade de Lisboa

MASTER OF SCIENCE IN FINANCE

MASTERS FINAL WORK

PROJECT

INVESTMENT POLICY STATEMENT FOR INDIVIDUAL INVESTORS: SILVA'S FAMILY

RAPHAELLA FERNÁNDEZ RABELO

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Abstract

This Investment Portfolio Statement presents a comprehensive portfolio proposal for a Portuguese couple aiming to invest for their son's future over a 15-year time horizon. The primary objective is to achieve a return of at least $250,000 from an initial investment of $70,000 while aligning with the couple's moderate risk tolerance.

The investment strategy focuses on allocating the majority of the portfolio to stocks, excluding short selling strategies, to capitalize on growth and value investing opportunities. The portfolio aims to achieve potential capital appreciation and take advantage of undervalued assets.

The portfolio consists of a diversified mix of 19 stocks carefully selected from Europe and the United States. Each stock was chosen after thorough analyses of financial ratios and considering various industries and market sectors.

The portfolio composition was computed using the Mean Variance Theory, optimizing for the desired return while minimizing risk. The resulting portfolio not only meets the clients' return expectations but also exhibits a lower risk profile compared to the tangent portfolio. To enhance stability, a risk-free asset was included in the portfolio allocation.

By adhering to this investment approach, the proposed portfolio provides the potential for achieving the desired return while managing risk within the clients' moderate risk profile. The combination of growth investing, value investing, careful stock selection, and risk management strategies aims to optimize the portfolio's performance over the 15-year investment horizon.

JEL classification: C6, G1.

Keywords: Asset Management, Portfolio Theory, IPS; Individual investors, Growth Investing, Value investing, Mean Variance Theory.

Resumo

Este Relatório do Portfólio de Investimentos apresenta uma proposta abrangente de portfólio para um casal português que pretende investir no futuro do seu filho ao longo de um horizonte de tempo de 15 anos. O objetivo principal é alcançar um retorno de pelo menos $250.000 a partir de um investimento inicial de $70.000, ao mesmo tempo em que se alinha com a tolerância moderada ao risco do casal.

A estratégia de investimento concentra-se em alocar a maioria do portfólio em ações, excluindo estratégias de venda a descoberto, para capitalizar oportunidades de crescimento e investimento em valor. O portfólio visa alcançar apreciação potencial de capital e aproveitar ativos subvalorizados.

O portfólio é composto por uma mistura diversificada de 19 ações cuidadosamente selecionadas da Europa e dos Estados Unidos. Cada ação foi escolhida após análises detalhadas de índices financeiros e levando em consideração diversas indústrias e setores de mercado.

A composição do portfólio foi calculada usando a Teoria da Variância Média, otimizando o retorno desejado ao mesmo tempo em que se minimiza o risco. O portfólio resultante não apenas atende às expectativas de retorno dos clientes, mas também apresenta um perfil de risco menor em comparação ao portfólio tangente. Para aumentar a estabilidade, um ativo livre de risco foi incluído na alocação do portfólio.

Ao adotar essa abordagem de investimento, o portfólio proposto oferece potencial para alcançar o retorno desejado ao mesmo tempo em que gerencia o risco dentro do perfil de risco moderado dos clientes. A combinação de investimento em crescimento, investimento em valor, seleção cuidadosa de ações e estratégias de gerenciamento de risco visa otimizar o desempenho do portfólio ao longo do horizonte de investimento de 15 anos.

Classificação JEL: C6, G1.

Palavras-chave: Gestão de activos, Teoria da Carteira, IPS, Investidores individuais, investimentos de crescimento, investimentos de valor, Mean Variance Theory.

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1 Executive Summary

1.1 Scope and Purpose

The purpose of this Investment Policy Statement (IPS) is to allocate Silva's family funds enabling them to increase their wealth and support their son's future education choices. As the advisor to the Silva family, the consultancy is dedicated to prioritizing the client's best interests by establishing a clear framework of roles and responsibilities.

1.2 Governance

The IPS may be refreshed depending on client circumstances and market conditions, with any necessary amendments suggested by the consultancy and ultimately approved by the family. The consultancy reviews the asset allocation of the family's investment accounts annually, considering expected returns, correlations, inflation, and tax rates. They evaluate and manage risk in accordance with the clients' risk profile, promptly taking corrective action for variances beyond tolerable limits.

1.3 Investment Return and Risk Objectives

The objective return of the portfolio is 9.82% *(calculation in annex)* over a 15-year timeframe. Considering the initial investment amount and the target time horizon, the expected return for the family is USD 285,311.73. After accounting for taxes, the projected return is USD 266,794.92. The portfolio consists of 19 stocks, primarily focusing on equities from the US and Europe, with additional investments in fixed income, predominantly sovereign debt. They are willing to accept a certain degree of risk in pursuit of potential growth but also prefer to maintain a reasonable level of stability in their portfolio.

1.4 Risk Management

The portfolio was constructed in a way of minimizing risk. The aim is to continuously monitor our portfolio's performance, since our investment period is lengthy, and the market conditions are constantly changing. Thus, the performance of each asset will be measured according to The Global Investment Performance Standards (GIPS®) and a monthly report will be sent to our clients.

2 Investment Policy Statement

2.1 Scope and Purpose

The purpose of this Investment Policy Statement (IPS) is to support the mission of providing a reliable source of funds for the current and future use of Silva's family (Client).

Manuel Silva and his wife Maria saved a total amount of USD 70.000 over the years and is their intention to invest this money and increase their wealth in a way that allows their son to freely choose his education program worldwide.

This IPS governs the personal assets of the family constituted by Manuel Silva, Maria Silva, and their son. Mr. and Ms. Silva, a Portuguese couple who have been together for ten years and married for five, have a three-year-old son named João Silva. Manuel Silva, 35, is a physiotherapist with his own clinic. The clinic is having its best moment since its beginning 9 years ago, with a strong brand and a good reputation. Maria Silva, 34, works as a medical doctor in a well-known hospital. She has a long-term contract, which provides certain stability to the family. Although both have a strong educational background, neither of them has a strong knowledge of Finance-related fields, therefore the family decided to seek advice from our group.

Prime Consultancy Group, acting in its capacity as advisor to the Silva family, is primarily focused on following the client's best interests as outlined in this IPS by creating a clear framework of roles and duties that enables both the company/consultants and clients to keep track of all the portfolio management activities. Therefore, the advisor is responsible for guiding the Client through a disciplined and rigorous investment process, consisting of:

- Preparation and maintenance of this investment policy statement.
- Selecting sufficient asset classes with different and distinct risk/return profiles so that the Portfolio can be wisely diversified.
- Controlling and accounting for all investment expenses associated with the Portfolio, namely Custodians' fees.
- Provide monthly reports that detail transactions, cash flows, securities held and their current value, and % change in the value of each.

2.2 Governance

Prime Consultancy Group is primarily focused on following the client's interests as outlined in this Investment Policy Statement by creating a clear framework of roles and duties that allows both the company and clients to monitor all the portfolio management activities.

The partners and supervisors for the Prime Consultancy Group are in charge of approving the investment policy and all future changes to it. The Prime Consultancy Group, in its capacity as an Investment Consultant, shall advise Mr. and Ms. Silva on the formulation of the Investment Policy, recommend necessary adjustments to the Policy, monitor and report monthly the results obtained through the strategy implemented.

Since the investment horizon is lengthy, refreshing the IPS might be necessary depending on the circumstances of our clients and/or market conditions. The Consultancy Group is in charge of monitoring Mr. And Ms. Silva's requirements and if any changes are needed, our group will suggest the necessary amendments for the revision and update of the IPS, at least once per year. These amendments should be clearly identified and explained to the family, which will have the final saying on it.

Prime Consultancy Group shall review the asset allocation of the Family Investment

Accounts at least once a year and recommend revisions for final approval by Mr. and Ms. Silva. This Investment Policy Statement contains the asset allocation plan. Prime Consultancy Group will consider expected returns and correlations of returns for a diverse range of assets in capital markets, as well as anticipated changes in inflation and marginal tax rates.

Prime Consultancy Group, as investment adviser, is responsible for evaluating whether the risk profile of Silva's family is consistent with the risk management policies established and implemented on the portfolio allocation using the investors' profile questionnaire results. Prime Consultancy Group is responsible for identifying risk position variances that exceed tolerable limits as specified in risk management policies and taking prompt corrective action. Prime Consultancy Group shall provide Mr. And Ms. Silva with a quarterly report on all such variances in the preceding quarter.

Taking into consideration the objectives, preferences, and restrictions of Mr. Silva and his family, and the fact they delegated exclusive authority over their investment assets to our consultancy group, we hereby commit to developing a transparent Investment Policy Statement (IPS) on behalf of our clients, always acting with their best interest in mind.

2.3 Investment Return and Risk Objectives

2.3.1 Investment Objective

The investment program presented on this IPS intends to maximize the wealth of Silva's family in a manner that allows them to generate enough money so their 3-year-old son can freely choose his education when he goes to college, in a 15-year time. Since the clients are considering their son might want to go to another country where the education is more expensive, like the USA, therefore is their intention to have more than USD 250.000 in their savings account when the son turns 18, constructing a well-diversified portfolio. All investments shall be made in dollars (USD).

2.3.2 Expected Return

The portfolio chosen by our consultancy group for our clients includes 19 stocks. The family will invest more in the equities from U.S. and Europe; however, they will also have investments in Fixed Income, mostly in Sovereign Debt. In general, the companies will be classified as Mega and Big cap, but the portfolio will have a small exposure to smaller firms with growth potential.

The portfolio was created for Mr. and Ms. Silva in 2023, with a return of 9,82%. It satisfies the needs and concerns of the family that wants to invest in a period of 15 years. Considering the initial amount, the family wants to invest and the 15-year time-horizon, the family should have a return of USD 285.311,73. If we consider the Return After Taxes, it should be of USD 266.794,92.

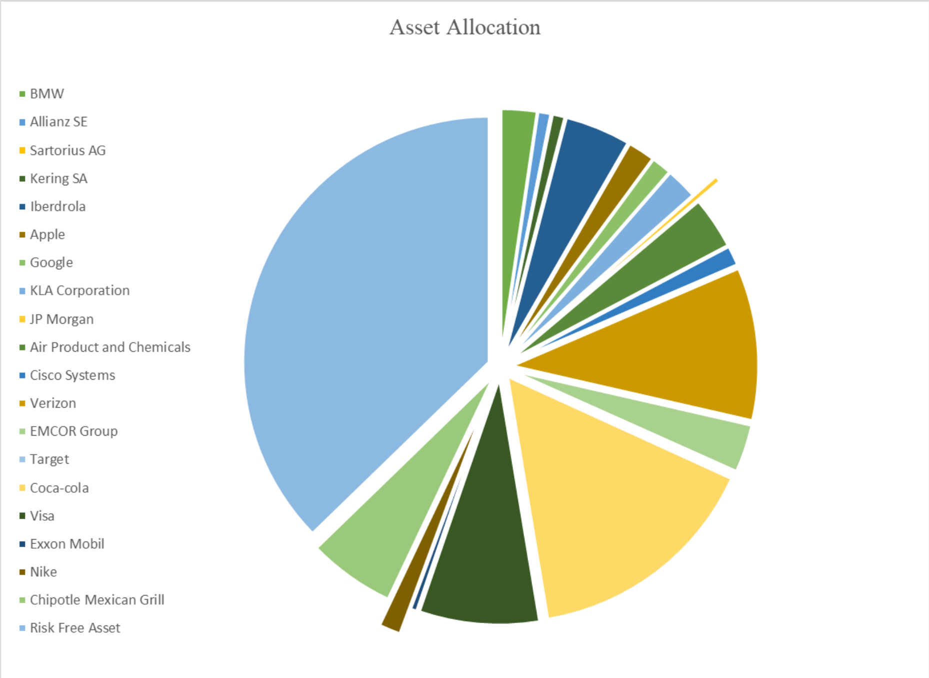
The asset allocation will be periodically reviewed. Our team was responsible for obeying the optimal weights of the assets and for the maintenance of the asset classes between the limits previously established. Each report for Mr. and Ms. Silva should confirm actual asset distributions as of the period and confirm that the distributions obey what was previously defined. Table 1 and Figures 1 below shows the optimal portfolio allocation for the family.

Table 1 – Optimal Portfolio Weight

Optimal Portfolio	Weight	Money Invested (Risky Assets)
BMW	2,33%	1 630,45 USD
Allianz SE	0,81%	569,90 USD
Sartorius AG	0,09%	63,98 USD
Kering SA	0,80%	561,86 USD
Iberdrola	4,29%	3 006,43 USD
Apple	1,76%	1 229,01 USD
Google	1,30%	912,20 USD
KLA Corporation	2,05%	1 438,38 USD
JP Morgan	0,40%	278,08 USD
Air Product and Chemicals	3,42%	2 392,18 USD
Cisco Systems	1,27%	888,96 USD
Verizon	10,05%	7 031,77 USD
EMCOR Group	3,12%	2 186,06 USD
Target	0,12%	85,69 USD
Coca-cola	15,57%	10 896,49 USD
Visa	7,86%	5 504,49 USD
Exxon Mobil	0,39%	269,93 USD
Nike	1,40%	978,16 USD
Chipotle Mexican Grill	5,70%	3 990,94 USD
Risk Free Asset	37,26%	26 085,03 USD
	100,00%	**70 000,00 USD**

Source: Author

Figure 1 – Optimal Portfolio Asset Allocation



Source: Author

2.3.3 Risk tolerance

Considering the questionnaires handed in by Mr. Silva and Ms. Silva our team was able to map out the levels of willingness to take risks from our clients.

Mr. Manuel Silva and Ms. Maria Silva have limited knowledge about the financial markets although they understand that the portfolio is always exposed to some risk, so they feel comfortable if their investment has negative returns at the beginning of the investment. They are willing to accept a certain degree of risk in pursuit of potential growth but also prefer to maintain a reasonable level of stability in their portfolio.

Manuel and Maria Silva can be categorized as having a moderate risk profile, while they both recognize the existence of risks associated with financial markets, they understand that taking calculated risks is necessary to ensure the growth of their savings and protect against the erosive effects of inflation over time. Manuel Silva is willing to embrace a certain level of risk in pursuit of potential growth. On the other hand, Maria Silva prefers a more stable investment approach, with lower portfolio volatility. She expresses a desire to minimize the extent to which their savings could decline, particularly during the initial stages of their investment horizon. Both agree and do not wish to take excessive risks beyond what is necessary to reach their predetermined financial goal.

The couple's cautious approach to investment is evident as they prioritize minimizing unnecessary risks. However, their capacity to handle the risks associated with this particular investment is not a cause for concern. Both individuals have stable employment and promising career prospects which suggest well for their future and eventual retirement. Additionally, they have already set aside an emergency fund to handle unforeseen expenses, ensuring they are financially prepared for any unexpected circumstances. The money they want to invest is therefore extra and not needed for their immediate requirements. It is significant to notice that this investment's main goal is to fund their son's education, indicating their responsible and forward-thinking approach to financial planning.

2.3.4 Relevant Constraints

All constraints imposed by Mr. Silva and his wife were addressed on this IPS. Our team will provide one yearly report to keep in touch with the family and explain how the performance was so they can know how their money is being invested.

The investment will occur in life insurance with Bâloise where we can do all the orders through the years, if necessary, without the need to pay taxes, because the family only needs the money on the 18th birthday of their son, they will have a tax saving with this method, paying just 8.6% of the profits. With this strategy, we can take less investment risk and have better final returns.

Regarding the portfolio, the family did have a restriction regarding financial securities. The family only wants to invest in simpler products. Therefore, we will not invest in any type of derivatives. Considering the preference for non-complex financial securities, we will invest most of the money in USD and EUR, which are the least volatile. Even though Mr. and Ms. Silva have jobs related to the health sector, we will not restrict that industry because they do not work in a riskier area such as Biotech, so they would not be double exposed to the sector.

The benchmark used was composed of 100% of the S&P 100 Index. This choice was based on our client's preference for companies with high market caps. So, instead of just an overall index of the world, we consider the top 100 S&P companies with the most market capitalization, because these companies are the most comparable to the chosen ones. A comparison between the index and the portfolio was made by tracking the returns of both portfolio and Benchmark over the past 5 years.

No loans or short-selling techniques were considered to find the optimal portfolio for the family. In terms of currency, the composition of the optimal portfolio does not bear currency risk as all investments are made in dollars.

2.4 Risk Management

At first, our team's calculations were done considering 5-year of historical data from reliable sources. We computed the average returns for all the stocks and then we opted for the securities with the highest Sharpe Ratio per country as a way of minimizing risk.

Another way of managing risk is to continuously monitor our portfolio's performance, since our investment period is lengthy, and the market conditions are constantly changing. Thus, the performance of each asset will be measured according to The Global Investment Performance Standards (GIPS®) and a monthly report will be sent to our clients.

On a quarterly basis, risk will also be calculated as the annualized standard deviation of portfolio returns relative to S&P 100 Index – our benchmark Index.

The allocation of assets will similarly be reviewed on a quarterly annual basis and rebalancing transactions to rebound the investment to its target allocation will occur once per year.

3 Investment Design

3.1 Investment Philosophy

The investment philosophy for this portfolio combines the principles of value investing and growth investing. I believe that integrating these two philosophies provides a well-rounded approach to capital allocation and can potentially improve risk-adjusted returns for the client.

Value investing is a long-term investment strategy that involves identifying undervalued companies with strong fundamentals and buying their stock at a discount.

Value investors use fundamental analysis to identify businesses with strong financials, stable earnings, and consistent cash flows, and the strategy is to invest in those that are trading at a discount to their intrinsic value, which can help produce long-term returns.

Considering the benefits of value investing:

Potential for higher returns: by investing in undervalued assets, we position ourselves to potentially benefit from their price appreciation when the market recognizes their true value. This approach offers the potential for higher returns when the market corrects.

Margin of safety: value investing provides a margin of safety by buying assets at a discount to their intrinsic value. This mitigates downside risks and provides a buffer against potential losses.

Growth investments focus on identifying companies with strong growth potential.

As well as the benefits of growth investing include:

Potential for high returns: By focusing on companies with high growth potential, we aim to participate in their exponential growth and generate high returns. Successful growth stocks have the potential to experience significant price appreciation over time.

Capitalizing on innovation and disruption: growth investing allows us to invest in companies that are at the forefront of innovation and disruptive industries. These companies have the potential to revolutionize their sectors, introduce breakthrough products or services, and capture significant market share.

Favourable market trends: our growth investment strategy is guided by market trends that favour companies in high-growth industries. By focusing on these trends, we can benefit from the overall growth potential of sectors such as technology, healthcare, renewable energy and emerging markets.

I have chosen to combine both value investing and growth investing philosophies in this portfolio for several reasons:

Diversification and risk management: by combining these two investment approaches, we aim to diversify the portfolio across different investment styles. This diversification helps spread risk and reduces the potential impact of underperformance of any single investment strategy. The complementarity of value and growth investments provides a more balanced portfolio.

Potential for higher returns: Value investing and growth investing have historically delivered strong long-term returns. By integrating these approaches, we seek to capture opportunities across different market cycles and potentially generate higher total portfolio returns.

Flexibility to Adapt: Utilizing both philosophies provide the portfolio with the flexibility to adapt to changing market conditions. During times when value investing is preferred, we can take advantage of undervalued opportunities. Conversely, in growth-oriented market phases, we can benefit from the potential of high-growth companies. This approach allows us to better navigate different market environments.

In summary, the decision to use both value and growth investments in this portfolio is based on the advantages of the two philosophies. By incorporating both strategies, we aim to optimize risk-adjusted returns, diversify the portfolio, and align our investment approach with the client's objectives.

3.2 Strategic Asset Allocation

The investment objective is to achieve long-term growth while managing risk. The client has a significant time horizon of 15 years, which allows to capitalize on the potential of equities to generate substantial returns.

The strategy for this portfolio focuses exclusively on equities as an asset class. Equities offer the potential for long-term capital appreciation and the opportunity to earn dividend income. By focusing on equities, I aim to maximize growth potential while acknowledging the volatility associated with this asset class.

To ensure diversification and access to global markets, I have spread the investments across two major regions: European countries and the United States. These regions offer robust equity markets, ample liquidity, and a wide range of investment opportunities, taking advantage of their economic growth potential.

3.2.1 Number of stocks in the portfolio

When it comes to the number of stocks in a portfolio, it is important to find the right balance. Too few stocks can expose the portfolio to significant company-specific risks, while too many stocks can dilute the potential for significant returns.

The concept of diversification is covered by Graham et al. (2013) where he also suggests a range of 10 to 30 stocks for building a well-diversified portfolio. He promotes diversification as a way to lessen the effects of unanticipated events or poor performance of particular stocks. Investors may mitigate the effect of any single stock's negative performance on the entire portfolio by holding a variety of 10 to 30 stocks.

According to Antonacci (2013), holding between 15 and 30 stocks can provide a reasonable balance between concentration and diversification. Antonacci underlines that when a portfolio has fewer stocks, the performance of each stock has a greater impact on the portfolio as a whole.

Additionally, Reilly et al. (2019) stated that owning 12 to 18 stocks will provide you with more than 90% of the advantages of diversity.

In this portfolio, I have selected 19 stocks, and here's some considerations on why I believe this number is appropriate.

Risk diversification: the Modern Portfolio Theory, have shown that including enough stocks in a portfolio can effectively reduce unsystematic (company-specific) risk. By selecting 19 stocks from different sectors and industries, I expect achieve a level of diversification that mitigates the impact of negative events affecting any single company.

Concentrated Portfolio Benefits: Although a larger number of stocks can improve diversification the marginal benefits of adding stocks diminish rapidly, and a well-diversified portfolio can be achieved with just 15 to 30 stocks, according to Michaud and Michaud (2008). Beyond that point, the additional benefits of diversification are minimal. Most portfolio risk is attributable to asset allocation decisions, not individual security selection. With 19 stocks, I can focus on strategic asset allocation decisions that have a more significant impact on portfolio performance.

Active Management and Monitoring: Managing a portfolio with a manageable number of stocks allows for effective monitoring and active management. Sharpe (1991) illustrates the challenges of active management and points out that excessive diversification can lead to a portfolio that closely mirrors the benchmark index. With 19 stocks, I can actively monitor the selected companies, analyse their financial performance, evaluate market trends, and make informed decisions to optimise the portfolio's risk-adjusted returns.

Time Efficiency and Costs: Managing a portfolio involves time and effort for research, monitoring and rebalancing. The costs of gathering information and analysing many stocks may outweigh the potential benefits. With 19 stocks, I expect a balance between capturing diversification benefits and efficiently managing the portfolio within available resources.

3.2.2 Selecting sectors

In selecting sectors, I have considered factors such as market consolidation, brand recognition, and growth potential. The aim is to invest in sectors that exhibit stability, robust market presence, and future growth prospects.

In the article from Yahoo! Finance (https://finance.yahoo.com/news/top-20-industries-world-heading-203721830.html) the author considered market cap, invested capital and total revenue of each industry to determine the biggest 20 industries for 2023. The table below shows those 20 industries as well the expected growth in EPS in the next 5 years for each one. And also the Expected Growth in EPS for the next 5 years from Damodaran (https://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/histgr.html).

Table 2 – Top 20 industries world heading and their expected growth

Industry	**Market Cap** (in billions $)	**Invested capital** (in billions $)	**Revenue** (in billions $)	**Expcted Growth in EPS - next 5 years (%)**
Biotechnology	1 918	311	260	-4.84
Information services	1 992	171	266	16.42
Electrical equipments	1 916	456	764	15.55
Healthcare products	2 429	360	432	14.84
Retail (Online)	2 812	426	740	11.25
Software (Entertainment)	4 008	614	527	23.59
Electronics (General)	2 192	699	1 153	15.55
Chemical (Specialty)	2 224	716	846	14.02
Software (System and application)	6 613	383	611	20.46
REIT	2 468	2 536	281	11.29
Semiconductor	4 259	644	664	16.16
Finanical services (Non-bank &Insurance)	2 154	11 623	805	4.63
Diversified	2 111	2 350	1 637	14.04
Food Processing	2 251	963	1 480	9.95
Computers	3 962	641	1 479	12.86
Pharmaceutical	4 387	1 129	1 114	10.35
Auto e Truck	2 662	2 032	2 138	17.37
Power	2 437	3 577	1 936	7.23
Oil Gas	3 619	2 712	2 897	9.47
Banks	7 101	16 271	2 414	11.15

Source: Author

Considering these figures, I have chosen a few sectors from the industries presented above to form the core of the portfolio:

Automobile: Despite cyclical trends, established automobile manufacturers offer stable earnings and global brand recognition.

Insurance: Insurance companies provide a reliable stream of premium income and can benefit from favourable underwriting conditions.

Biopharmaceutical: This sector leverages innovation, patents, and a growing demand for pharmaceutical products.

Luxury Goods: Brands with a strong presence in luxury goods often demonstrate resilience and pricing power even during economic downturns.

Semiconductors: As a vital component of technology infrastructure, semiconductor companies enjoy long-term growth potential driven by increasing demand.

Renewable Energy: With rising environmental concerns, renewable energy companies are poised for long-term growth.

Technology: Technology firms thrive on innovation and can generate substantial returns through disruptive advancements.

Financial Services: Well-established financial institutions offer stability and the potential for consistent dividend income.

Chemicals: Companies in the chemicals sector provide essential products used across various industries and benefit from a diverse customer base.

Cybersecurity: The increasing threat of cyberattacks creates a demand for cybersecurity solutions, making this sector a promising investment opportunity.

Telecommunications: Telecommunication companies play a crucial role in the digital era and enjoy steady cash flows.

Infrastructure: Investments in infrastructure offer stability and potential growth opportunities driven by government initiatives.

Consumer Defensive: Companies offering essential consumer products tend to perform well during economic downturns, providing stability.

Beverages: Well-known beverage companies enjoy brand recognition, strong cash flows, and a history of consistent dividend payments.

Credit Services: This sector benefits from the growing demand for credit and financial services.

Oil & Gas: While subject to volatility, select oil & gas companies with strong fundamentals can provide growth potential.

Footwear: Established footwear companies with recognizable brands can generate stable earnings and global appeal.

Restaurants: Well-managed restaurant chains with strong brand loyalty can provide steady cash flows and long-term growth potential.

3.3 Security Selection

The criteria for stock selection will consist of a combination of analyses. First, it is important to assess the financial health and profitability of the companies under consideration. Financial ratios provide valuable insights into a company's performance, valuation, profitability, and overall financial stability. I will explore the importance of some key financial ratios and explain how they can help make informed decisions.

1. **Profitability ratios** assess a company’s ability to generate profits and measure its financial performance.

- Profit Margin: The profit margin ratio indicates the portion of each dollar of revenue that is converted into profit. A higher profit margin indicates efficient cost management and a more lucrative business model.

- Return on Asset (ROA): ROA evaluates a company's efficiency in using its assets to generate profit. A higher ROA means effective use of assets.

- Return on Equity (ROE): ROE measures the return earned on equity invested by shareholders. It indicates how effectively a company uses shareholders' funds to generate profits. A higher ROE is generally preferable, indicating better profitability and value creation for shareholders.

- Earnings per Share (EPS): EPS represents the portion of a company's profit allocated to each outstanding share of common stock. It helps assess the company's profitability on a per-share basis and is important for comparing the earnings of different companies.

- Dividend Yield (DY): DY calculates the annual dividend pay-out relative to the stock price. It is significant for income-oriented investors seeking regular dividends but also for those who want to reinvest these pay-outs.

2. **Valuation Ratios** assess whether a stock is overvalued or undervalued relative to its market price and intrinsic value.

- Price-to-earnings (P/E): The P/E ratio compares the market price of a company’s stock to its earnings per share. It can be used to determine how much investors are willing to pay for each dollar of earnings.

Among companies in the same industry, the price-earnings ratio will be the exclusion criterion. In line with the article Assessing a Stock´s Future with the Price-to-earnings ratio and PEG (Murphy, C. B. Assessing a Stock’s Future With the Price-to-Earnings Ratio and PEG. Investopedia. https://www.investopedia.com/investing/use-pe-ratio-and-peg-to-tell-stocks-future/#:~:text=The%20P%2FE%20ratio%20is), the P/E ratio can be compared to the average P/E ratio of other companies in the same industry or sector to get a better understanding of how a company is valued compared to its peers. A low P/E ratio may indicate that a stock is undervalued, while a high P/E ratio may indicate that a stock is overvalued. So to choose the best option between companies in the same sectors, with good financials, I choose the company with the lowest P/E ratio.

- Price/Book Ratio (P/B): P/B ratio compares the market price of a stock to its book value per share. A lower P/B ratio may indicate a potentially undervalued stock.

3. **Liquidity ratios** help determine a company's ability to meet its short-term obligations.

- Current ratio: This ratio assesses the company's short-term liquidity. A ratio above 1 indicates that the company has sufficient current assets to cover its current liabilities.

- Debt-to-equity: The debt-to-equity ratio reflects the proportion of debt financing in relation to equity and indicates the risk associated with the company. A lower ratio indicates a more conservative capital structure, while a higher ratio indicates higher debt.

The portfolio will be reviewed annually to ensure that it remains aligned with the client's investment goals and risk tolerance. This review will include a detailed analysis of the performance of your portfolio and any changes in your personal circumstances that may affect your investment strategy.

In addition to the annual review, the portfolio will be rebalanced every 6 months. This process involves selling assets that have become overweighted relative to the target allocation and reinvesting the proceeds in underweighted assets, with the goal of maintaining the desired asset allocation and risk profile.

To identify potential investment opportunities, for each sector mentioned in the previous section I selected one company. These companies have been carefully chosen based on their strong brands, market presence, leadership positions, and apparent financial stability In order to assess their comparative performance and potential, I have conducted a thorough analysis of financial ratios for each company and the two peers in order to select the best of three to compose the portfolio.

This allowed for a comprehensive evaluation of their financial performance and relative position within their respective industries. The analysis focused on key financial ratios, including P/E, P/B, Profit Margin, ROA, ROE, Earnings per Share, DY, Debt to Equity, and Current Ratio. These analyses are shown below.

Table 3 – Three companies' analysis – Automobiles and Parts

Automobiles and Parts			
	D'Ieteren Group SA	**Volkswagen AG**	**BMW**
Valuation			
P/E	34.81	4.83	5.93
P/B	2.93	0.36	0.76
Profitability			
Profit Margin	7.18%	4.47%	7.56%
ROA	2.73%	2.29%	3.98%
ROE	10.91%	8.10%	13.10%
Earnings per share	4.89	24.89	17.44
Dividend Yeld	1.79%	7.29%	8.22%
Liquidity			
Debt to equity	50.37	113.99	95.54
Current ratio	1.73	1.23	1.14

Source: Author

Based on the analysis of the provided financial ratios, BMW appears to have the better financial ratios among the three companies. It demonstrates a higher return on assets, return on equity, and profit margin compared to the others, indicating that the company has better control over its cost and generates a larger proportion of revenue as profit. Although BMW has a relatively higher debt-to-equity ratio of 95.54 compared to D'Ieteren's 50.37, it still manages to maintain a strong financial position. Lastly, although BMW's current ratio appears relatively lower, a ratio above 1 indicates that that the company has sufficient current assets to cover its current liabilities, and the fact that the automotive sector is capital-intensive, companies often have substantial fixed assets that may not be included in current assets, a slightly current ratio can be acceptable. Considering all these factors, it is evident that BMW exhibits stronger financial performance, profitability, and potential returns for investors, making it the best choice among the three companies.

Table 4 – Three companies' analysis – Insurance

Insurance			
	Allianz	**AXA**	**Assicurazioni Generali**
Valuation			
P/E	10.42	10.35	10.32
P/B	1.49	1.46	1.77
Profitability			
Profit Margin	7.41%	6.44%	3.83%
ROA	0.54%	0.79%	0.65%
ROE	12.94%	9.95%	12.75%
Earnings per share	20.33	2.84	1.83
Dividend Yeld	5.54%	6.26%	6.46%
Liquidity			
Debt to equity		115.73	112.02
Current ratio	0.93	0.60	0.64

Source: Author

Allianz has a relatively low P/E ratio of 10.42, indicating that the stock is priced reasonably compared to its earnings. The P/B ratio of 1.49 suggests that the stock is trading close to its book value. Allianz also demonstrates a higher profit margin of 7.41% and a stronger ROE of 12.94%, indicating efficient profitability and effective use of shareholders' equity. Additionally, Allianz offers a dividend yield of 5.54%, providing an attractive return to shareholders. However, it is worth considering the current ratio of 0.93, which indicates a relatively lower liquidity position. Overall, considering the favourable P/E ratio, profitability metrics, dividend yield, and strong ROE, Allianz appears to have better financial strength.

Table 5 – Three companies' analysis – Luxury Goods

Luxury Goods			
	LVMH	**Kering SA**	**Compagnie Financiére Richemont**
Valuation			
P/E	31.73	19.97	33.83
P/B	8.08	5.11	4.94
Profitability			
Profit Margin	17.79%	17.76%	1.57%
ROA	10.11%	10.75%	7.78%
ROE	27.96%	26.07%	20.12%
Earnings per share	28.07	28.79	4.58
Dividend Yeld	1.37%	2.62%	0%
Liquidity			
Debt to equity	62.41	80.32	82.40
Current ratio	1.26	1.37	2.47

Source: Author

After analysing the financial ratios of LVMH, KERING SA, and Compagnie, it can be observed that LVMH and KERING SA have similar financial ratios in terms of profit margin, ROA, ROE, debt to equity ratio, and current ratio. Both companies exhibit solid profitability with high profit margins, strong return on assets and equity, and manageable debt levels. However, when comparing the P/E ratio Kering SA shows a more favourable ratio, and this classifies as a better stock to be in the portfolio.

Table 6 – Three companies' analysis – Biopharmaceutical

Biopharmaceutical			
	Sartorius AG	**Thermo Fisher Scientific**	**Agilent Technologies**
Valuation			
P/E	27.85	30.24	29.02
P/B	9.49	4.68	6.79
Profitability			
Profit Margin	13.95%	13.75%	19.09%
ROA	10.42%	4.98%	10.1%
ROE	33.55%	14.44%	24.58%
Earnings per share	9.92	15.35	4.43
Dividend Yeld	0.54%	0.24%	0.66%
Liquidity			
Debt to equity	101.83	83.28	55.80
Current ratio	1.21	1.27	2.11

Source: Author

Sartorius AG boasts impressive profitability, with a profit margin of 13.95% and robust ROA and ROE. Thermo Fisher Scientific, on the other hand, maintains a decent profit margin of 13.75%, though its ROA and ROE are slightly lower compared to Sartorius AG. Thermo Fisher Scientific also exhibits a lower debt-to-equity ratio of 83.28 but has a minimal dividend yield of 0.24%. Agilent Technologies stands out with the highest profit margin of 19.09% and strong ROA and ROE, indicating efficient asset utilization and favourable returns for shareholders. Agilent Technologies also maintains a relatively lower debt-to-equity ratio of 55.80 and a modest dividend yield of 0.66%. On the other hand, Sartorius AG has a lower P/E ratio than Agilent. As Sartorius AG debt-to-equity ratio figure is not a cause for concern, Sartorius AG is the best choice.

Table 7 – Three companies' analysis – Semiconductors

Semiconductors			
	ASML Holding	**Applied Materials**	**KLA Corporation**
Valuation			
P/E	31.76	17.42	15.66
P/B	22.22	8.18	19.85
Profitability			
Profit Margin	28.23%	24.36%	33.01%
ROA	15.14%	17.96%	20.15%
ROE	74.04%	50.48%	103.77%
Earnings per share	18.81	7.46	24.57
Dividend Yeld	0.64%	0.41%	1.17%
Liquidity			
Debt to equity	40.60	40.04	225.93
Current ratio	1.24	2.26	2.35

Source: Author

KLA Corporation displays an impressive profit margin of 33.01%, and also exhibits a high return on assets (ROA) of 20.15% and an exceptional return on equity (ROE) of 103.77%, demonstrating efficient asset utilization and strong returns for shareholders. Furthermore, KLA Corporation has a relatively low P/E ratio of 15.66, indicating a favourable valuation compared to ASML Holding's P/E ratio of 31.76 and Applied Materials' P/E ratio of 17.42. KLA Corporation, despite demonstrating exceptional profitability, reveals a relatively higher debt-to-equity ratio of 225.93. However, KLA Corporation surpasses the other two companies with a higher current ratio of 2.35, signifying a stronger short-term liquidity position. Based on the comprehensive evaluation of these financial ratios, KLA Corporation emerges as the company with better financial strength and more attractive ratios for potential stock investment.

Table 8 – Three companies' analysis – Renewable energy

Renewable energy			
	EDP Renováveis	**Iberdrola**	**Enel Green**
Valuation			
P/E	30.27	18.09	19.54
P/B	2.17	1.78	1.91
Profitability			
Profit Margin	27.04%	8.32%	0.99%
ROA	1.74%	3.67%	3.09%
ROE	7.23%	9.38%	10.50%
Earnings per share	0.63	0.73	0.31
Dividend Yeld	0%	4.21%	6.71%
Liquidity			
Debt to equity	60.40	81.19	180.17
Current ratio	0.64	0.82	1.03

Source: Author

EDP Renováveis, Iberdrola, and Enel Green have varying strengths in different areas. EDP Renováveis has a higher profit margin of 27.04%, indicating strong profitability, but its ROA and ROE are comparatively lower. Iberdrola, on the other hand, has a lower profit margin but higher ROA and ROE, suggesting more efficient asset utilization and higher returns for shareholders. Enel Green has a lower profit margin as well, but its ROA and ROE are relatively stronger than EDP Renováveis. In terms of valuation, EDP Renováveis has a higher P/E ratio compared to Iberdrola and Enel Green, indicating a higher market expectation for future earnings. However, Iberdrola has a higher dividend yield of 4.21%, providing an attractive return to shareholders. Considering the overall financial ratios, including profitability, efficiency, valuation, and dividend yield, Iberdrola appears to have better financial strength ratios among the three companies.

Table 9 – Three companies' analysis – Technology

Technology			
	Apple	**Samsung**	**Microsoft**
Valuation			
P/E	28.43	10.34	33.66
P/B	46.70	1.33	11.86
Profitability			
Profit Margin	24.49%	15.61%	33.25%
ROA	20.56%	4.18%	14.83%
ROE	145.6%	10.37%	38.60%
Earnings per share	5.90		9.24
Dividend Yeld	0.53%		0.84%
Liquidity			
Debt to equity	176.35	2.76	40.74
Current ratio	0.94	2.82	1.91

Source: Author

Apple demonstrates a robust profit margin of 24.49%, indicating its ability to generate healthy profits from its operations. In terms of return metrics, Apple outperforms both Samsung and Microsoft with an impressive ROA of 20.56% and an astonishing ROE of 145.6%, indicating efficient utilization of assets and outstanding returns for shareholders. Additionally, although Apple has a higher debt-to-equity ratio of 176.35 compared to Samsung's lower debt-to-equity ratio and Microsoft's moderate ratio, its strong financial performance and immense cash reserves suggest that it is well-positioned to manage its debt obligations. While Samsung and Microsoft also demonstrate respectable financial ratios, Apple presents a more favourable financial strength overall and higher growth expectations. Apple's significantly higher P/B ratio of 46.70, reflect the premium investors are willing to pay over its book value, and corroborate with company's strong brand and market presence, innovation, expanding segment, and market leadership.

Table 10 – Three companies' analysis – Technology

	Technology		
	Google	**Amazon**	**Meta**
Valuation			
P/E	23.22	251.07	30.13
P/B	5.09	7	4.99
Profitability			
Profit Margin	20.58%	0.82%	18.72%
ROA	12.42%	1.91%	11.97%
ROE	22.76%	2.98%	17.29%
Earnings per share	4.76	0.42	8.22
Dividend Yeld	0%	0%	0%
Liquidity			
Debt to equity	11.31	115.54	22.65
Current ratio	2.35	0.92	2.07

Source: Author

After analyzing the financial ratios of Google, Amazon and Meta, it appears that Google has the better financial ratios and stronger growth expectations among the three companies. Google has a moderate P/E ratio of 23.33, indicating a reasonable valuation, and a favourable P/B ratio of 5.09, indicating that investors are willing to pay a premium for the company's book value. The company's profit margin and ROA and ROE are all solid, indicating efficient operations and profitability. With a lower debt-to-equity ratio of 11.31, Google has lower financial leverage, which can provide stability and flexibility for future growth initiatives. In addition, the current ratio of 2.35 indicates strong liquidity and the ability to meet short-term obligations. While Amazon and Meta have higher P/E ratios and leverage, their profit margins, ROA and ROE are significantly lower.

Table 11 – Three companies' analysis – Banks

Banks			
	Bank of America	**JP Morgan**	**Citi Group**
Valuation			
P/E	8.37	9.97	6.27
P/B	0.88	1.43	0.47
Profitability			
Profit Margin	30.28%	32.54%	21.22%
ROA	0.89%	1.09%	0.64%
ROE	10.47%	14.27%	7.61%
Earnings per share	3.33	13.56	7.28
Dividend Yeld	3.09%	2.87%	4.46%
Liquidity			
Debt to equity	-4.62	-0.29	0.24
Current ratio	-	-	-

Source: Author

JP Morgan showcases a reasonable P/E ratio of 9.97, indicating a relatively fair valuation compared to the lower P/E ratios of Bank of America and Citi Group. Additionally, JP Morgan exhibits a favourable P/B ratio of 1.43, suggesting a reasonable price relative to its book value. Moreover, JP Morgan demonstrates a robust profit margin of 32.54%, highlighting its ability to generate substantial profits from its operations. In terms of return metrics, JP Morgan outperforms both Bank of America and Citi Group with a higher ROA of 1.09% and a superior ROE of 14.27%, reflecting efficient asset utilization and stronger returns for shareholders. Furthermore, JP Morgan's debt-to-equity ratio of -0.29 and Citi Group's debt-to-equity ratio of 0.24 indicate favourable capital structures and reduced financial risk compared to Bank of America's negative ratio. JP Morgan presents a stronger overall financial position.

Table 12 – Three companies' analysis – Chemicals

Chemicals			
	Linde PLC	**Air Products and Chemicals**	**L'Air Liquid SA**
Valuation			
P/E	41.10	28.60	30.98
P/B	4.53	4.39	3.59
Profitability			
Profit Margin	13.46%	16.58%	9.22%
ROA	5.45%	5.72%	5.98%
ROE	10.79%	15.08%	12.47%
Earnings per share	8.98	9.71	5.26
Dividend Yeld	1.29%	2.37%	1.82%
Liquidity			
Debt to equity	45.42	67.11	54.87
Current ratio	0.73	2.05	0.93

Source:Author

Linde Plc has a relatively high profit margin of 13.46%, indicating strong profitability, but its ROA and ROE are lower compared to Air Products and Chemicals. Air Products and Chemicals demonstrate a higher ROA and ROE, suggesting more efficient asset utilization and higher returns for shareholders. L'Air Liquide SA also shows decent profitability with a profit margin of 9.22% and relatively stronger ROA and ROE compared to Linde Plc. In terms of valuation, Linde Plc has the highest P/E ratio, followed by L'Air Liquide SA and Air Products and Chemicals. Air Products and Chemicals provide a higher dividend yield of 2.37%, indicating a better return to shareholders. Considering the overall financial ratios, including profitability, efficiency, valuation, and dividend yield, Air Products and Chemicals appear to have the better financial ratios among the three companies.

Table 13 – Three companies' analysis – Cybersecurity

	Cybersecurity		
	Fortinet	**Cisco**	**Palo Alto**
Valuation			
P/E	53.74	17.66	2400
P/B	4.44	4.76	76.35
Profitability			
Profit Margin	20.46%	20.89%	0.56%
ROA	10.89%	9.37%	0.12%
ROE	23.01%	27.74%	8.10%
Earnings per share	1.20	2.73	0.08
Dividend Yeld	0%	0.77%	0%
Liquidity			
Debt to equity	-165.63	19.85	542.46
Current ratio	1.34	1.39	0.64

Source: Author

Cisco showcases a relatively lower P/E ratio of 17.66 compared to Fortinet and Palo Alto, indicating a potentially more favourable valuation. Furthermore, Cisco exhibits a favourable P/B ratio of 4.76, suggesting a reasonable price relative to its book value. Additionally, Cisco displays a solid profit margin of 20.89%, reflecting its ability to generate consistent profits. In terms of return metrics, Cisco outperforms both Fortinet and Palo Alto with a higher ROA of 9.37% and a superior ROE of 27.74%, indicating efficient asset utilization and stronger returns for shareholders. Cisco also has a lower debt-to-equity ratio of 19.85, indicating a healthier financial position in terms of leverage. Moreover, Cisco's current ratio of 1.39 suggests better short-term liquidity. Cisco presents a stronger overall financial position.

Table 14 – Three companies' analysis – Telecommunication

Telecommunication			
	Verizon	**AT&T**	**T-mobile US**
Valuation			
P/E	7.36	19.47	46.65
P/B	1.63	1.18	2.54
Profitability			
Profit Margin	15.85%	-7.51%	4.83%
ROA	5.20%	3.65%	4.02%
ROE	22.72%	-5.13	5.58%
Earnings per share	5.14	-1.16	3.09
Dividend Yeld	7.22%	6.78%	-
Liquidity			
Debt to equity	197.63	156.50	171.06
Current ratio	0.75	0.51	0.79

Source: Author

Verizon stands out with a low P/E ratio of 7.36, indicating an attractive valuation. It also boasts a healthy profit margin of 15.85% and strong returns on both assets (ROA) and equity (ROE), suggesting efficient operations and solid financial performance. Additionally, Verizon offers a high dividend yield of 7.22%, making it appealing to income-seeking investors. However, its high debt to equity ratio of 197.63 raises concerns about its leverage. On the other hand, AT&T shows a higher P/E ratio of 19.47 and negative profit margin and ROE, indicating challenges in profitability and shareholder returns. While it has a relatively lower debt to equity ratio of 156.50, its financial performance lags. T-Mobile US exhibits a higher P/E ratio of 46.65 and modest profitability ratios. With a debt-to-equity ratio of 171.06, T-Mobile US also carries significant debt. Considering these factors, Verizon appears to have better financial strength among the three companies, with a strong profitability profile and attractive valuation.

Table 15 – Three companies' analysis – Infrastructure

Infrastructure			
	Quanta Services	**EMCOR Group**	**AECON**
Valuation			
P/E	50.46	18.94	29.72
P/B	4.50	3.94	0.90
Profitability			
Profit Margin	2.86%	3.90%	0.8%
ROA	3.91%	7.16%	1.35%
ROE	9.82%	21.14%	4.20%
Earnings per share	3.38	9.04	0.61
Dividend Yeld	0.17%	0.38%	5.54%
Liquidity			
Debt to equity	79.36	31.07	68.78
Current ratio	1.62	1.34	1.27

Source: Author

EMCOR stands out with a relatively low P/E ratio of 18.94, indicating a reasonable valuation. It also demonstrates a solid profit margin of 3.90% and strong returns on both assets (ROA) and equity (ROE), suggesting efficient utilization of resources and favourable financial performance. Furthermore, EMCOR offers a modest dividend yield of 0.38%, providing some income potential. With a debt-to-equity ratio of 31.07, EMCOR maintains a relatively conservative level of leverage. Quanta Services exhibits a higher P/E ratio of 50.46, indicating a higher valuation, and a lower profit margin and returns compared to EMCOR. AECOM shows a similar pattern with a higher P/E ratio of 29.72, lower profitability ratios, and a relatively higher debt-to-equity ratio of 68.78. Considering these factors, EMCOR appears to have better financial strength among the three companies, with a balanced valuation, stronger profitability, and favourable returns on assets and equity.

Table 16 – Three companies analysis' – Consumer Defensive

Consumer Defensive			
	Costco	**Walmart**	**Target**
Valuation			
P/E	29.72	35.47	25.46
P/B	0.90	5.33	18.02
Profitability			
Profit Margin	0.8%	1.82%	2.49%
ROA	1.35%	6.48%	4.78%
ROE	4.20%	13.41%	24.32%
Earnings per share	0.61	4.15	5.86
Dividend Yeld	5.54%	1.13%	2.73%
Liquidity			
Debt to equity	68.78	80.37	164.85
Current ratio	1.27	0.82	0.88

Source: Author

Costco demonstrates a relatively low P/E ratio, indicating a more favourable valuation compared to its earnings. Additionally, Costco has a lower debt-to-equity ratio, suggesting a more conservative capital structure. However, its profit margin, ROA, and ROE are relatively lower compared to Walmart and Target. On the other hand, Walmart has a higher profit margin, ROA, and ROE, indicating better profitability and efficiency in utilizing its assets. Although Walmart has a higher P/E ratio and debt-to-equity ratio, its earnings per share and dividend yield are more attractive. Lastly, Target exhibits strong performance with a higher P/E ratio, P/B ratio, and ROE. It also has a comparatively lower debt-to-equity ratio. However, its profit margin and ROA are slightly lower than Walmart's. Considering all these factors, Target appears to have the better financial strength of the three companies.

Table 17 – Three companies analysis' – Beverages

Beverages			
	Coca-cola	**Pepsi**	**Monster Bev Corp**
Valuation			
P/E	28.33	40.81	48.94
P/B	11.03	15.70	8.45
Profitability			
Profit Margin	22.69%	7.47%	19.95%
ROA	7.99%	8.16%	12.26%
ROE	36.83%	37.46%	18.16%
Earnings per share	2.27	4.76	1.21
Dividend Yeld	2.89%	2.46%	0%
Liquidity			
Debt to equity	163.27	243.18	0.51
Current ratio	1.15	0.87	4.46

Source: Author

Coca-Cola stands out with a relatively low P/E ratio, indicating a favourable valuation in relation to its earnings. Coca-Cola also boasts strong profitability, with a high profit margin, ROA, and ROE. Its debt-to-equity ratio is moderate, suggesting a reasonable capital structure, and the current ratio indicates a healthy liquidity position. Pepsi, on the other hand, has a higher P/E ratio and debt-to-equity ratio compared to Coca-Cola, which may raise concerns about valuation and leverage. However, it still maintains decent profitability, like Coca-Cola, and its ROE is on par with Coca-Cola's strong performance. The current ratio is slightly lower, indicating slightly lower short-term liquidity. Monster, although not directly comparable to Coca-Cola and Pepsi in terms of size and product range, still exhibits respectable financial ratios. It has a higher P/E ratio, indicating a higher valuation, and its debt-to-equity ratio is extremely low, suggesting a conservative capital structure. Monster demonstrates strong profitability, with a high profit margin, ROA, and ROE. Additionally, it has a remarkably high current ratio, highlighting strong short-term liquidity. Considering all these factors, Coca-Cola appears to have the better financial strength among the three companies.

Table 18 – Three companies' analysis – Credit Services

Credit services			
	Visa	**Mastercard**	**American Express**
Valuation			
P/E	30.50	37.97	15.99
P/B	12.40	67.58	4.35
Profitability			
Profit Margin	50.95%	42.33%	13.87%
ROA	15.35%	21.33%	3.35%
ROE	42.35%	154.1%	29.9%
Earnings per share	7.47	10,00	9.52
Dividend Yeld	0.75%	0.55%	1.39%
Liquidity			
Debt to equity	53.43	287.92	165.72
Current ratio	1.50	1.20	1.57

Source: Author

Mastercard stands out with relatively high profitability metrics. It boasts a strong profit margin, ROA, and especially ROE, indicating efficient utilization of assets and high returns for shareholders. However, Mastercard has a significantly higher P/B ratio, suggesting a higher valuation compared to Visa and American Express. Visa, although slightly lower in terms of profitability compared to Mastercard, still demonstrates robust financial ratios. It has a favourable P/E ratio and P/B ratio, indicating a reasonable valuation and market perception. Visa's profit margin, ROA, and ROE are also commendable, reflecting solid performance. Additionally, it maintains a moderate debt-to-equity ratio and a healthy current ratio, signaling stability and liquidity. American Express, while presenting a lower P/E ratio and P/B ratio compared to Mastercard, shows decent profitability with a notable ROE. However, its profit margin and ROA are relatively lower than the other two companies. American Express has a higher debt-to-equity ratio, suggesting a higher level of leverage, and a slightly higher current ratio compared to Visa. Considering these factors, both Visa and Mastercard exhibit strong financial strength. However, Visa's more favourable valuation, solid profitability, and moderate leverage position make it a preferable choice among the three.

Table 19 – Three companies’ analysis – Oil & Gas

Oil & Gas			
	BP Plc	**Exxon Mobil**	**Chevron Corporation**
Valuation			
P/E	20.63	7.31	8.47
P/B	1.60	2.20	1.86
Profitability			
Profit Margin	10.59%	15.48%	15.3%
ROA	10.30%	13.29%	10.60%
ROE	32.75%	19.32%	23.37%
Earnings per share	8.20	14.77	18.53
Dividend Yeld	0.70%	3.41%	3.79%
Liquidity			
Debt to equity	65.61	20.08	14.46
Current ratio	1.17	1.46	1.43

Source: Author

Exxon Mobil exhibits an impressively low P/E ratio, indicating an undervalued stock compared to BP PLC and Chevron Corporation. It also demonstrates higher profitability metrics, including a higher profit margin, ROA, and ROE, suggesting efficient operations and solid returns for shareholders. Additionally, Exxon Mobil offers a relatively higher dividend yield, providing potential income for investors. While Chevron Corporation shows competitive ratios, Exxon Mobil's lower valuation and superior profitability make it a more favourable option to consider when buying the stock.

Table 20 – Three companies’ analysis – Footwear & Acessories

Footwear & Acessories			
	Nike	**Adidas**	**Puma**
Valuation			
P/E	35.69	128.08	24.19
P/B	13.10	5.73	3.46
Profitability			
Profit Margin	10.82%	0.4%	4%
ROA	10.02%	0.57%	6.09%
ROE	37.34%	-1.87	16.43%
Earnings per share	3.46		2.23
Dividend Yeld	1.17%	2.6%	1.73%
Liquidity			
Debt to equity	86.48	0.31	77.12
Current ratio	2.73	1.27	1.42

Source: Author

Nike demonstrates strong profitability with a higher profit margin, ROA, and ROE compared to Adidas and Puma, indicating efficient operations and better returns for shareholders. Nike also has a relatively lower P/E ratio compared to Adidas, suggesting a more attractive valuation. Additionally, Nike boasts a higher current ratio, indicating better short-term liquidity and the ability to meet its financial obligations. Although Adidas and Puma exhibit competitive ratios, Nike's superior profitability and solid liquidity position make it the more favourable choice to consider when buying the stock.

Table 21 – Three companies' analysis – Restaurants

Restaurants			
	McDonald's	**Yum! Brands**	**Chipotle Mexican Grill**
Valuation			
P/E	31.74	30.05	55.02
P/B	-36.20	-4.20	22.60
Profitability			
Profit Margin	29.36%	17.67%	11.49%
ROA	12.92%	23.84%	12.60%
ROE	-119.03%	-13.97%	44,74%
Earnings per share	9.29	4.26	36.03
Dividend Yeld	2.00%	1.29%	0%
Liquidity			
Debt to equity	-	-	151.98
Current ratio	1.47	0.99	1.41

Source: Author

Chipotle Mexican Grill appears to have better financial ratios. Chipotle Mexican Grill demonstrates strong profitability with a healthy profit margin, ROA, and ROE, indicating efficient operations and higher returns for shareholders. Additionally, Chipotle has a significantly higher P/E ratio, suggesting a higher valuation and market confidence in the company's growth prospects. While McDonald's and Yum! Brands also display competitive ratios; Chipotle's strong profitability and higher valuation make it a more attractive choice for investors considering the stock.

After careful analysis of the client's investment objectives, risk tolerance and time horizon, I have selected 19 stocks in the US market that I believe meet their investment objectives. In making this selection, I have analysed several factors, including the company's financial health, its growth potential, its market share and its competitive situation. The goal is to assemble a well-diversified portfolio of securities that can generate long-term growth while controlling downside risk. And those are the stocks selected:

1. BMW AG (BMW): A leading German automobile manufacturer with a strong global presence and a history of innovative vehicle offerings.

2. Kering SA (KER): A French luxury goods company with a diverse portfolio of brands, including Gucci, Saint Laurent, and Balenciaga.

3. Allianz SE (ALV): A prominent German multinational financial services company, specializing in insurance and asset management.

4. Sartorius AG (SRT): A German company specializing in laboratory and pharmaceutical equipment, with a strong focus on innovation and research.

5. KLA Corporation (KLAC): A global leader in process control and yield management solutions for the semiconductor industry.

6. Iberdrola SA (IBE): A Spanish multinational electric utility company focusing on renewable energy and sustainable solutions.

7. Apple Inc. (AAPL): One of the largest technology companies globally, Apple has a robust financial position and a strong brand name, making it a solid long-term investment.

8. Alphabet Inc. (GOOGL): Alphabet, the parent company of Google, is a dominant player in the digital advertising market and has strong growth potential.

9. JPMorgan Chase & Co. (JPM): A prominent US bank, providing a range of financial services, including investment banking, asset management, and retail banking.

10. Air Products and Chemicals, Inc. (APD): A global provider of industrial gases and related equipment, serving various industries.

11. Cisco Systems, Inc. (CSCO): A multinational technology conglomerate, specializing in networking hardware, software, and related services.

12. Verizon Communications Inc. (VZ): A leading telecommunications company with a strong financial position and a wide range of services.

13. EMCOR Group, Inc. (EME): A US-based provider of electrical and mechanical construction, industrial maintenance, and energy infrastructure services.

14. Target Corporation (TGT): A US retail corporation, operating a chain of department stores offering a wide range of products.

15. The Coca-Cola Company (KO): A global beverage company with a well-known brand and a stable financial position.

16. Visa Inc. (V): A dominant player in the payment processing industry, Visa has strong growth potential and a solid financial position.

17. Exxon Mobil Corporation (XOM): One of the largest publicly traded international oil and gas companies, engaged in the exploration, production, refining, and marketing of petroleum products.

18. Nike, Inc. (NKE): A global sports apparel and equipment company with a strong brand name and a history of consistent growth.

19. Chipotle Mexican Grill, Inc. (CMG): A US-based restaurant chain, known for its fast-casual Mexican cuisine and commitment to sustainable sourcing.

Overall, this portfolio provides exposure to a variety of sectors and countries, allowing for diversification and risk management. We believe these stocks are well-positioned to generate long-term growth and are suitable for your investment objectives and risk tolerance. Please note that these selections are subject to market volatility and other factors, and we may recommend adjustments to the portfolio as needed.

3.4 Portfolio Composition

The method used to compute the portfolio composition, weight of each stock in the portfolio, was the Mean Variance Theory (MVT). To implement the MVT I considered 5-year of historical data from Yahoo! Finance and calculated the expected returns and variances of individual stocks. The set of portfolios that achieve optimal risk-return trade-off is the efficient frontier of the model and the tangent portfolio is the one with the highest Sharpe ratio. In my analysis, I found the tangent portfolio with expected return of 13.62%, volatility of 7.4% and Sharpe ratio of 1.3734.

While the tangent portfolio offers an attractive risk-return profile, the investment objectives and investor's risk profile must be taken into account. Considering the desired annual return of 9.82% and moderate risk profile, the optimal portfolio is not the tangent portfolio. Instead, I have identified a different portfolio allocation that aligns better with the investor requirements.

The optimal portfolio constructed has an expected return of 9.82% and a volatility of 4.66%. It is important to note that this portfolio offers a lower volatility compared to the tangent portfolio, which provides greater stability and aligns with the moderate risk profile.

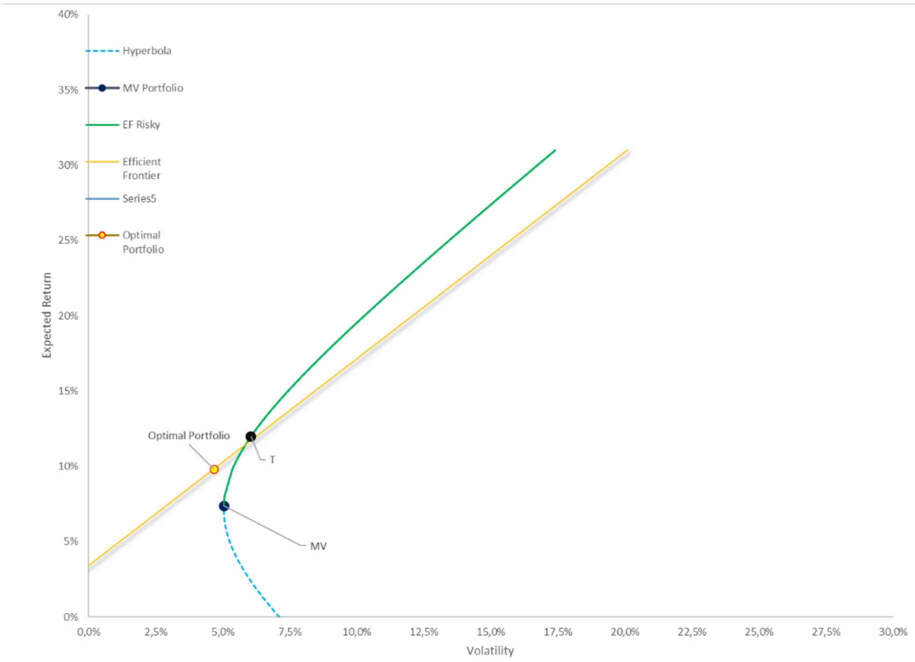
A risk-free asset was added to the optimal portfolio. The risk-free rate and the portfolio's anticipated return are linearly related, as shown by this addition. By combining risk-free and risky assets, it illustrates the risk-return trade-off that investors might make. Now, based on their risk tolerance, the ideal portfolio allocation is a combination of risky assets and the risk-free asset that maximizes their utility.

According to the Mean Variance Theory, including a risk-free asset in a portfolio has diversification advantages since it enables investors to find a balance between risk and return based on their risk appetite and preference for risk-free returns.

No loans or short-selling techniques were considered to find the optimal portfolio for the family. In terms of currency, the composition of the optimal portfolio does not bear currency risk as all investments are made in dollars.

The investment portfolio I have assembled consists of 19 stocks from a variety of industries and countries that match the investment objectives and risk tolerance. The allocation to each stock reflects the risk-return profile of the investment and the growth potential of each company and it is shown in Table 1 and Figure 1, on section 2. The Figure below represents the opportunity set and efficient frontier for the Silva's family investments.

Figure 2 – Opportunity set and Efficient Frontier



Source: author

3.5 Expected Performance

The portfolio that has been constructed consists of 19 stocks and aims to achieve a target expected return of approximately 9.82% per year over the next 15 years, with a volatility of 4.66%. To manage risk and align with the investor's moderate risk profile, the portfolio is divided into two categories: risk-free assets and risky assets. The allocation is set at 37.26% in risk-free assets and 62.74% in risky assets.

The portion allocated to risk-free assets is designed to provide stability and a guaranteed return. These assets typically include government bonds or other low-risk fixed-income securities. By allocating 37.26% to risk-free assets, the portfolio aims to preserve capital and provide a consistent return, acting as a hedge against market volatility and economic uncertainties.

The remaining 62.74% of the portfolio is allocated to risky assets, which include the 19 selected stocks. These stocks are expected to generate higher returns but come with a higher level of risk due to market fluctuations. The stocks have been chosen based on careful analysis of their financial performance, industry outlook, and growth prospects.

The expected return of 9.82% per year for the portfolio reflects the weighted average return of both the risk-free assets and the risky assets. The volatility of 4.66% indicates the level of fluctuations or variability in the portfolio's returns. It is essential to monitor and manage this volatility to ensure the portfolio remains within the desired risk tolerance.

Over the next 15 years, the portfolio's performance will be influenced by various factors such as economic conditions, market trends, and company-specific events. The expected performance of the portfolio is subject to market risk, and there are no guarantees that the desired returns will be achieved.

3.6 Risk Analysis

Investing in financial markets inherently involves risk, and it is important that investors understand and effectively manage these risks. A comprehensive risk analysis is crucial to assess the potential vulnerabilities and uncertainties of a portfolio.

Each risk factor presents challenges and opportunities that can have a significant impact on the performance and stability of a portfolio. By understanding and assessing these risks, investors can make informed decisions, adapt to changing market dynamics and protect their investments from potential pitfalls.

Firstly, there are some risks specifics to individual securities such as, Liquidity risk, Default risk, Regulatory and Political risk, and Operational risk.

Liquidity risk (low probability; low impact) can arise from a variety of factors, including low trading volumes, market volatility, and low market depth. Liquidity risk may vary among stocks depending on their trading volume, market capitalization and the overall liquidity of the markets in which they are listed. There are some stocks in this portfolio that are less liquid than others, but all have solid trading volume so probability of occurrence of this risk can be rated as low. Although liquidity risk can have substantial repercussions, with this portfolio in particular, the impact of losing the liquidity of some stocks would not be as severe.

Default risk (low probability; high impact) refers to the possibility that an entity will be unable to meet its financial obligations. In the context of this portfolio, credit risk arises from the creditworthiness of the companies represented by the stocks. Companies with high debt levels, weak financial fundamentals, or companies operating in industries prone to economic downturns may be more susceptible to credit risk and require continuous monitoring. When analysing the default risk for each individual stock in the portfolio, the possibility of occurrence can be classified as low because nearly all of the shares mentioned are worldwide market-consolidated businesses with strong brands and financials. Default risk can have serious repercussions because it might cause huge losses for shareholders. This could have a detrimental effect on the portfolio's overall performance, particularly if a significant proportion of the portfolio is invested in the defaulter company.

Regulatory and political risk (medium probability, medium impact) refers to the potential impact of government policies, political events, and regulatory changes on investment performance. This risk factor encompasses a wide range of variables, including changes in tax policy, trade agreements, labour regulations, environmental regulations, and political stability. Regulatory and Political decisions can have a significant impact on the profitability, operations and competitiveness of companies and thus affect the performance of their shares. Companies in highly regulated industries such as financial services (JP Morgan, Allianz SE) and technology (Apple, Google) may be more vulnerable to regulatory risks, as changes in regulations can impose compliance costs or limit market opportunities. Additionally, companies operating in countries with higher political instability or regulatory uncertainties, such as emerging markets, may face elevated risks. In this portfolio we can classify the probability of occurrence of this risk medium, as well as the impacts in the portfolio performance.

Operational risk (high probability, medium to large impact) can stem from various sources, including technological failures, supply chain disruptions, regulatory compliance issues, fraud, or management inefficiencies. These risks can negatively impact a company's financial performance, reputation, and overall stability. Operational risk is present in this portfolio's individual companies, and as a result, it is highly likely to occur. Even though many large firms have robust operational procedures in place, operational risks can still happen as a result of unplanned events, technology flaws, or human error. The consequences of operational risk could be medium to large, depending on the seriousness and severity of the operational incidents. Financial losses, reputational damage, legal and regulatory implications, and disgruntled investors can all be caused by operational errors. Since diversification can reduce this risk, the significant impact on the company does not necessarily suggest that it would have a similar impact on the portfolio.

All these individual security risks can be easily mitigated by diversifying the portfolio. For this reason, this portfolio is composed of different companies from different sectors and countries.

Broader portfolio risks can affect the entire portfolio. Managing these risks requires more creative diversification and other strategies. These main risks are Market risk, Concentration risk, Inflation risk, Currency risk, Interest rate risk and Event risk.

Market risk (high probability, high impact) arises from fluctuations in the overall stock market, which is influenced by macroeconomic factors, geopolitical events, industry trends and investor sentiment. Companies that are highly market sensitive may be particularly affected by market movements. In this portfolio, all companies have varying degrees of exposure to the market. The portfolio's betas vary between 0.34 and 1.37, helping to spread the negative and positive effects of market movements. The occurrence of market risk in this portfolio is considered high since market prices can be influenced by a wide range of factors that are difficult to predict or control. The consequences of market risk can also be high. Adverse market conditions can lead to significant declines in stock prices, resulting in potential losses for the portfolio. Market risk can impact the overall performance of the portfolio and can affect both individual stocks and the portfolio as a whole.

Concentration risk (low probability, low impact) can arise when a significant portion of investments is concentrated in a few stocks or sectors, exposing the portfolio to the specific risks associated with those companies or sectors, resulting in a larger portfolio loss. To reduce concentration risk, the portfolio is well diversified, and the total amount of money invested is spread across securities in different percentages. The occurrence of concentration risk can be classified as low. This portfolio was well-diversified, and since it will be regularly reviewed, the risk is always minor. The effects of concentration risk may be felt to some extent depending on the size and significance of the concentrated holdings within the portfolio, but even that is considered low.

Inflation risk (medium probability, medium to high impact) refers to the potential impact of rising prices and falling purchasing power on investment returns. Higher inflation rates may have a negative impact on corporate profitability and consumer purchasing power, leading to lower share prices. This portfolio is subject to various changes in interest rates. To mitigate risk, it is best to monitor inflation trends in the US and Europe and consider adjusting the portfolio allocation accordingly. Even that the expected rentability is calculated considering an inflation rate of 2,4%, the occurrence of inflation risk in this portfolio can be classified as medium and the consequences of inflation risk can range from medium to high. Inflation erodes the purchasing power of future cash flows, including dividends and interest payments received from investments. If the rate of inflation exceeds the rate of return on investments, the real value of investment returns can decline over time. This can affect both incomes generated from the portfolio and the potential capital appreciation of the underlying stocks.

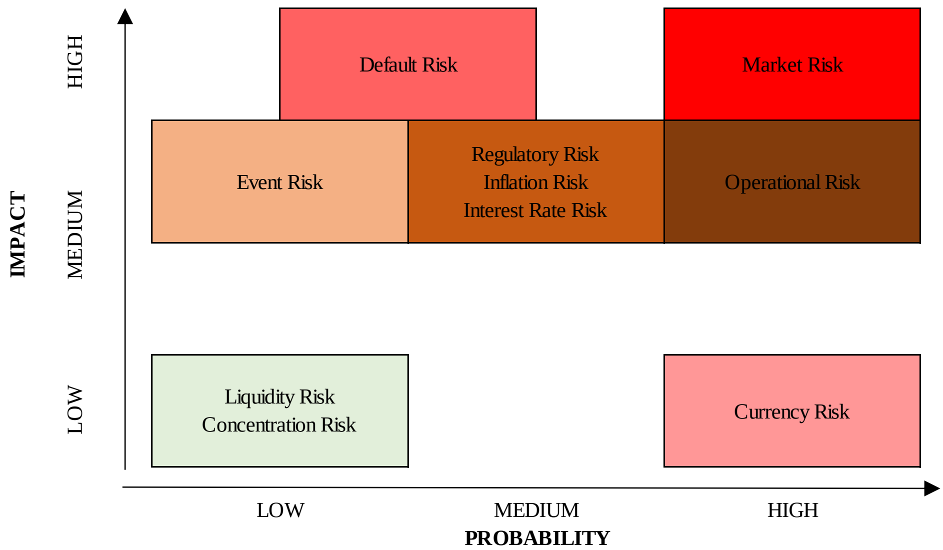
Currency risk (high probability, low impact) refers to the potential impact of exchange rate fluctuations on the value of investments denominated in different currencies. Since the portfolio contains stocks from different countries, exchange rate fluctuations between the U.S. dollar and the euro may affect investment returns. The occurrence of currency risk for this portfolio is classified as high because it is exposed to euro and dollar. Even that, the consequences are low considering that historically the euro depreciation in relation to dollar is not significant.

Interest rate risk (medium probability, medium to high impact) refers to the potential impact on investments due to changes in interest rates. The occurrence of interest rate risk is this portfolio can be classified as medium. The consequences of interest rate risk can range from medium to high. Changes in interest rates can have an impact on a company's ability to borrow money and profitability, which can affect earnings and stock prices. Additionally, changes in interest rates may have an impact on the present value of projected cash flows used in valuation models, which may influence the value that the portfolio's stocks are worth.

Event risk (low probability, medium to high impact) refers to the possibility of unexpected and significant events that may have a material impact on individual companies or markets. Such events may include, but are not limited to, natural disasters, political instability, terrorist attacks, regulatory changes, or corporate scandals. However, it is not easy to minimise this risk. The intensity of the impact of event risk can range from medium to high. The consequences of event risk also can vary from medium to high. Significant events have the potential to interrupt business operations, change consumer perception, cause financial losses, and bring up market volatility. The results are determined by the nature, severity, and exposure to the affected companies in the portfolio of the event.

The portfolio's risk matrix is shown in the picture below. The likelihood that each of the risks given are going to occur is represented by the probability axis. The potential impact of a risk, if it occurs, is shown on the impact axis.

Figure 3 – Risk Matrix



Source: Author

To assess potential outcomes and measure the risk associated with this portfolio, a Monte Carlo simulation was used. The outputs of a Monte Carlo simulation are a variety of potential outcomes or scenarios produced by running a model repeatedly with arbitrary inputs. These results provide insight into the variability and uncertainty of the portfolio's outcomes.

In the Table below are the results of the simulation.

Table 22 – Monte Carlo Simulation results

Percentile Table

5%	214 934,06
25%	252 440,77
75%	314 266,21
95%	367 983,51

Median	282 223,74
Mean	285 311,38
St. Dev.	46 794,05

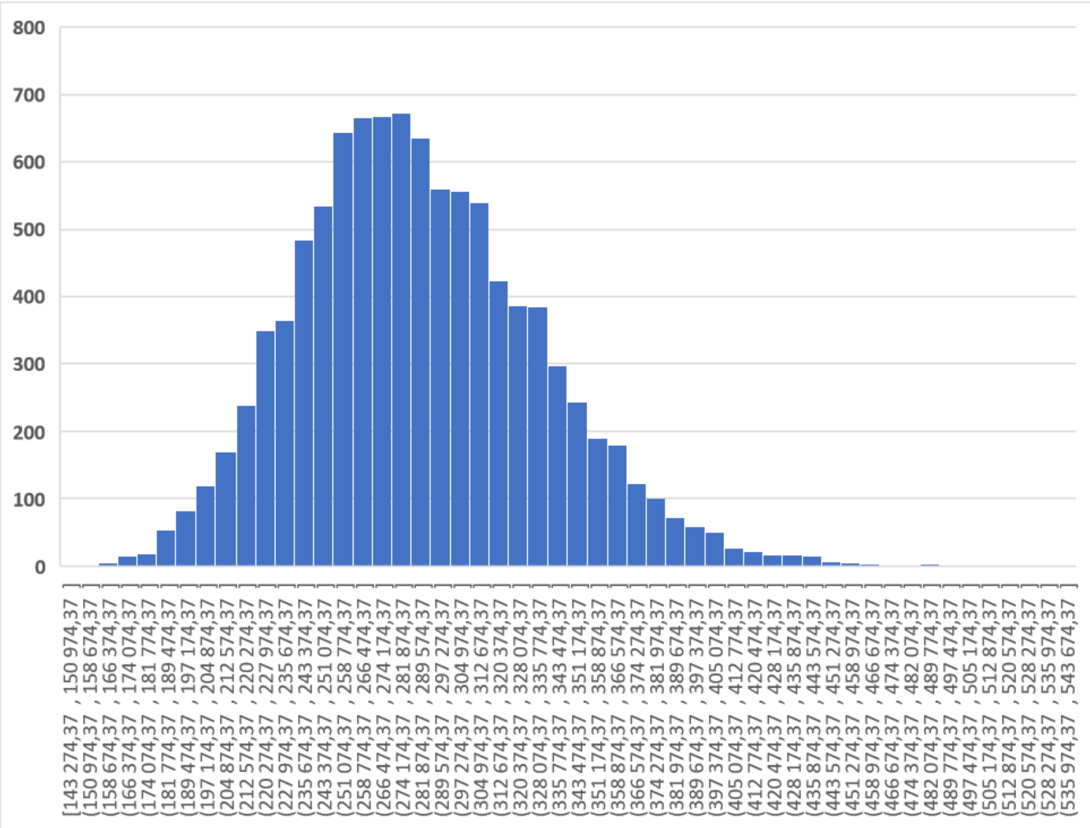
Source: Author

The family is expecting $250,000 at the end of the investing period. According to the test conducted above, both the Median and the Mean of the results are significantly higher than what was predicted.

The 25th Percentile indicates that 25% of the simulated outcomes had values below $252 148,51, meaning there is a 75% likelihood that the portfolio value will exceed what the family is expecting.

The figure below represents the histogram of this Monte Carlo simulation. The histogram provides a visual representation of the distribution of outcomes generated by the simulation. The x-axis of the histogram represents the range of possible outcomes, divided into intervals or bins. The y-axis represents the frequency or count of outcomes falling within each interval.

Figure 4 – Monte Carlo Simulation histogram



The histogram exhibits a normal distribution shape, which explain the mean and median very close to each other. The standard deviation indicates small dispersion around the mean.

The Monte Carlo Simulation corroborate with the expect result showed in this IPS and despite the risk that invest in financial market has, there is a great probability that the Silva's family will achieve their objective.

Annex

Expected Return Calculation:

Expected inflation: 2,4% *(based on projections from European Central Bank)*

Today's money goal: 200,000 Present value of the money that the family expect

Money invested: 70,000

Money needed for education: 200,000 x (1 + 0.024)^15 = 285,449.54

Annual Return Objective: 70,000 x (1+x)^15 =285,449.54

X= 9.82%

Appendices

Appendice 1. Client's Profile

Manuel Silva, 35, is a Portuguese physiotherapist with his own clinic. The clinic is having its best moment since its beginning 9 years ago, with a strong brand and a good reputation. Mr. Silva does not have extensive knowledge about financial markets, and his understanding is limited to stocks, bonds, and ETF's. He knows that are some risks in investing in the financial market, but he understands that are necessary risks to make their savings grow and loose to inflation throught the years. He understands that markets are volatile and even for a well build portfolio can have negative returns.

Maria Silva, 34, is a Portuguese medical doctor in a well-known hospital. She has a long-term contract, which provides certain stability to the family. Ms. Silva does not have extensive knowledge about financial markets, and ger understanding is limited to stocks and bonds. She knows that are some risks in investing in financial markets, but she understands that are necessary risks to make their savings grow through the years. Although, Ms, Silva prefers to have more stability in their portfolio's volatility, and do not like to see their savings losing much value even in the beginning of the investment.

Manuel Silva and his wife Maria saved a total amount of USD 70.000 over the years and is their intention to invest this money and increase their wealth in a way that allows their son to freely choose his education program worldwide. They expect to achieve at the end of the period USD 250.000, and do not wish to take excessive risks beyond what is necessary to reach their predetermined financial goal.

Based on their investor profile and responses to the provided questionnaire (Appendice 2), Manuel and Maria Silva can be categorized as having a moderate risk profile. While they both recognize the existence of risks associated with financial markets, they understand that taking calculated risks is necessary to ensure the growth of their savings and protect against the erosive effects of inflation over time. Manuel Silva is willing to embrace a certain level of risk in pursuit of potential growth. On the other hand, Maria Silva prefers a more stable investment approach, with lower portfolio volatility. She expresses a desire to minimize the extent to which their savings could decline, particularly during the initial stages of their investment journey.

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Universidade de Lisboa

Appendice 2. Profiling Questionnaire

Please, see in the end.

References

Graham, B., Buffett, W. E., & Zweig, J. (2013). The intelligent investor : a book of practical counsel. Harper Collins. (Original work published 1949)

Antonacci, G. (2013). Absolute Momentum: A Simple Rule-Based Strategy and Universal Trend-Following Overlay. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.2244633

Reilly, F. K., Brown, K. C., & Leeds, S. J. (2019). Investment analysis and portfolio management. Australia Cengage.

Sharpe, W. F. The Arithmetic of Active Management. Financial Analysts Journal 1991, 47 (1), 7–9. https://doi.org/10.2469/faj.v47.n1.7.

Top 20 Industries in the World Heading into 2023. Yahoo Finance. https://finance.yahoo.com/news/top-20-industries-world-heading-203721830.html.

Murphy, C. B. Assessing a Stock's Future With the Price-to-Earnings Ratio and PEG. Investopedia. https://www.investopedia.com/investing/use-pe-ratio-and-peg-to-tell-stocks-future/#:~:text=The%20P%2FE%20ratio%20is.

Damodaran, A. Historical Growth Rates. Nyu.edu. https://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/histgr.html.

Michaud, R., & Michaud, R. (2008). The 1/N Diversification Principle. Journal of Portfolio Management, 34(3), 72-84.

Abbreviations

DY: Dividend Yield

EPS: Earnings per share

EUR: Euro

GIPS: Global Investment Performance Standards

IPS: Investment Portfolio Statement

MVT: Mean Variance Theory

P/B: Price to book ratio

P/E: Price earnings ratio

ROA: Return on assets

ROE: Return on equity

USD: United States Dollar

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INVESTORS PROFILE QUESTIONNAIRE

ISEG Lisbon School of Economics & Management, Universidade de Lisboa

CLIENT IDENTIFICATION

NAME

Manuel dos Santos Silva

TAXPAYER IDENTIFICATION NUMBER (TIN)

2 5 4 4 2 8 9 8 2

1. INVESTORS KNOWLEDGE AND EXPERIENCE

1.1 QUALIFICATIONS:

- [ ] NO FORMAL EDUCATION
- [ ] PROFESSIONAL/ ARTISTIC COURSE
- [X] MASTER
- [ ] ELEMENTARY SCHOOL
- [ ] BACHELORS DEGREE
- [ ] PhD
- [ ] SECONDARY SCHOOL
- [ ] POST-GRADUATION
- [ ] FINANCIAL AND CAPITAL MARKETS GRADUATION DEGREE

1.2 DO YOU HOLD A JOB OR HELD A POSITION IN THE FINANCIAL SECTOR THAT REQUIRES OR REQUIRED KNOWLEDGE OF INVESTMENT SERVICES AND FINANCIAL INSTRUMENTS?

- [ ] YES
- [X] NO

1.3 KNOWLEDGE AND/OR EXPERIENCE AS AN INVESTOR/USER:

FINANCIAL INSTRUMENTS, PRODUCTS AND SERVICES	YOU ARE FAMILIAR WITH		I HAVE INVESTED/ INVEST ON	
	YES	NO	YES	NO
SHARES	X			X
TERM DEPOSITS	X			X
INDEXED AND DUAL DEPOSITS (STRUCTURED DEPOSITS)		X		X
ETFs	X			X
MUTUAL FUNDS		X		X
PENSION FUNDS / RETIREMENT SAVINGS PLANS / UNIT LINKED		X		X
BONDS	X			X
POSTAL SAVINGS CERTIFICATES, TREASURY BILLS, ETC		X		X
COMPLEX FINANCIAL PRODUCTS (WARRANTS, CFDs, OPTIONS, FUTURES, SWAPS)		X		X
ADVISORY [1]		X		X
PORTFOLIO MANAGEMENT SERVICE [2]		X		X

[1] Adisory on transactions in financial instruments or investment plans
[2] Discretionary portfolio management mandate.

1.4 AVERAGE NR. OF MONTHLY TRANSACTIONS CARRIED OUT LAST YEAR

	0	1-12	13-50	>50
SHARES	X			
INDEXED AND DUAL DEPOSITS	X			
ETFs	X			
MUTUAL FUNDS	X			
SAVINGS PLANS: PPRs AND / UNIT LINKED	X			
BONDS	X			
TRADING PLATFORMS (WARRANTS, CFDs, OPTIONS AND FUTURES)	X			
POSTAL SAVINGS CERTIFICATES, TREASURY BILLS, ETC	X			
COMPLEX FINANCIAL PRODUCTS (SWAPS AND OTHERS)	X			

2. FINANCIAL / ASSET SITUATION

2.1 WHAT ARE YOUR SOURCES OF INCOME? (CHOOSE THOSE THAT APPLY)

- [ ] EMPLOYED
- [x] SOLE PROPRIETOR / SELF-EMPLOYED PERSON
- [ ] INCOME FROM ASSETS (E.G. RENTS)
- [ ] RETIREMENT FUNDS
- [ ] WITHOUT REGULAR INCOME / OTHER INCOME

2.2 WHAT IS YOUR MONTHLY NET INCOME (€)?

- [ ] LESS THAN 1,500
- [x] BETWEEN 1,500 - 5,000
- [ ] ABOVE 5,000
- [ ] ABOVE 10,000
- [ ] ABOVE 25,000

2.3 WHAT ARE YOUR REGULAR FINANCIAL COMMITMENTS (€)?

- [ ] LESS THAN 500
- [x] BETWEEN 500 - 2,500
- [ ] ABOVE 2,500

2.4 WHAT IS THE VALUE OF YOUR FINANCIAL ASSETS (€)?

- [ ] < 25,000
- [ ] 25,000 - 50,000
- [x] 50,000 - 250,000
- [ ] 250,000 - 500,000
- [ ] > 500,000

2.5 WHAT IS THE VALUE OF YOUR REAL ESTATE ASSETS (€)?

- [ ] DO NOT HAVE
- [ ] < 50,000
- [x] 50,000 - 250,000
- [ ] 250,000 - 500,000
- [ ] > 500,000

2.6 WHOW MANY DEPENDENTS DO YOU CURRENTLY HAVE (ACCORDING TO THE PERSONAL INCOME TAX (IRS) RETURN)?

- [ ] 0
- [x] 1
- [ ] 2
- [ ] 3
- [ ] 4 OR MORE

2.7 WHAT IS THE CURRENT COMPOSITION OF YOUR SAVINGS?

	0%	0% - 30%	30% - 60%	> 60%
TERM DEPOSITS/LIQUIDITY				X
BONDS	X			
ETFs AND/OR MUTUAL FUNDS	X			
SAVINGS PLANS: PPRs AND/ UNIT LINKED	X			
SHARES	X			
OTHERS	X			

3. INVESTMENT PURPOSES

3.1 OF THE AMOUNT RESERVED FOR SAVINGS/INVESTMENT, HOW MUCH DO YOU WANT TO PLACE IN BiG?

- [ ] 0% - 25%
- [ ] 25% - 50%
- [ ] 50% - 75%
- [x] 75% - 100%

3.2 HOW DO YOU INTEND TO ALLOCATE THAT VALUE IN TERMS OF TIME?

	LESS THAN 25%	BETWEEN 25% AND 50%	OVER 50%
SHORT TERM (UP TO 12 MONTHS)			
MEDIUM TERM (BETWEEN 1 YEAR AND 3 YEARS)			
LONG TERM (> 3 YEARS)			X

3.3 IF YOU COULD ONLY MAKE ONE TYPE OF INVESTMENT, WHICH WOULD YOU CHOOSE?

- [x] A SHARE (IN SPITE OF THE RISK, IT IS POSSIBLE TO OBTAIN A HIGHER RETURN IN THE LONG TERM)
- [ ] TREASURY BILLS AND/OR BONDS
- [ ] A MIXED MUTUAL FUND, WITH AVERAGE RISK [3]
- [ ] TERM DEPOSITS

3.4 THE STOCK MARKET FELL MORE THAN 10% IN ONE DAY AND YOUR INVESTMENT ENTERED IN AN AREA OF POTENTIAL LOSSES, HOW DO YOU REACT?

- [ ] I SELL MY ENTIRE PORTFOLIO
- [x] I MAINTAIN MY ENTIRE POSITION AND WAIT FOR IT TO PICK UP AGAIN
- [ ] I SELL A PORTION OF MY PORTFOLIO, THE RISKIEST PORTION
- [ ] I BUY MORE... AT THIS PRICE IT'S A GREAT OPPORTUNITY TO BUY

3.5 BY OPTING FOR AN INVESTMENT, WHICH OF THESE RISK/RETURN INTERVALS WOULD YOU CHOOSE?

- [ ] FROM 0% TO 2%
- [x] FROM -10% TO 30%
- [ ] FROM -3% TO 10%
- [ ] FROM -25% TO 50%

3.6 WHEN DECIDING TO INVEST, YOUR GREATEST CONCERN IS:

- [x] MAXIMISE GAINS
- [ ] BOTH IN EQUAL PROPORTIONS
- [ ] MINIMISE LOSSES

3.7 WHAT DO YOU ASSOCIATE THE WORD "RISK"?

- [x] LOSS
- [ ] OPPORTUNITY
- [ ] UNCERTAINTY
- [ ] EMOTION

I declare that I am responsible for the information contained in this questionnaire.

DATE

22 10 2022

CLIENT SIGNATURE

Manuel dos Santos Silva

INVESTORS PROFILE QUESTIONNAIRE

CLIENT IDENTIFICATION

NAME

Maria Silva

TAXPAYER IDENTIFICATION NUMBER (TIN)

2 5 6 2 8 5 4 2 6

1. INVESTORS KNOWLEDGE AND EXPERIENCE

1.1 QUALIFICATIONS:

[ ] NO FORMAL EDUCATION	[ ] PROFESSIONAL/ ARTISTIC COURSE	[ ] MASTER
[ ] ELEMENTARY SCHOOL	[ ] BACHELORS DEGREE	[X] PhD
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[ ] YES [X] NO

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	YES	NO	YES	NO
SHARES	X			X
TERM DEPOSITS		X		X
INDEXED AND DUAL DEPOSITS (STRUCTURED DEPOSITS)		X		X
ETFs		X		X
MUTUAL FUNDS		X		X
PENSION FUNDS / RETIREMENT SAVINGS PLANS / UNIT LINKED		X		X
BONDS	X			X
POSTAL SAVINGS CERTIFICATES, TREASURY BILLS, ETC		X		X
COMPLEX FINANCIAL PRODUCTS (WARRANTS, CFDs, OPTIONS, FUTURES, SWAPS)		X		X
ADVISORY [1]		X		X
PORTFOLIO MANAGEMENT SERVICE [2]		X		X

1.4 AVERAGE NR. OF MONTHLY TRANSACTIONS CARRIED OUT LAST YEAR

	0	1-12	13-50	>50
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ETFs	X			
MUTUAL FUNDS	X			
SAVINGS PLANS: PPRs AND / UNIT LINKED	X			
BONDS	X			
TRADING PLATFORMS (WARRANTS, CFDs, OPTIONS AND FUTURES)	X			
POSTAL SAVINGS CERTIFICATES, TREASURY BILLS, ETC	X			
COMPLEX FINANCIAL PRODUCTS (SWAPS AND OTHERS)	X			

2. FINANCIAL / ASSET SITUATION

2.1 WHAT ARE YOUR SOURCES OF INCOME? (CHOOSE THOSE THAT APPLY)

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- ☑ SOLE PROPRIETOR / SELF-EMPLOYED PERSON
- ☐ INCOME FROM ASSETS (E.G. RENTS)
- ☐ RETIREMENT FUNDS
- ☐ WITHOUT REGULAR INCOME / OTHER INCOME

2.2 WHAT IS YOUR MONTHLY NET INCOME (€)?

- ☐ LESS THAN 1,500
- ☑ BETWEEN 1,500 - 5,000
- ☐ ABOVE 5,000
- ☐ ABOVE 10,000
- ☐ ABOVE 25,000

2.3 WHAT ARE YOUR REGULAR FINANCIAL COMMITMENTS (€)?

- ☐ LESS THAN 500
- ☑ BETWEEN 500 - 2,500
- ☐ ABOVE 2,500

2.4 WHAT IS THE VALUE OF YOUR FINANCIAL ASSETS (€)?

- ☐ < 25,000
- ☐ 25,000 - 50,000
- ☑ 50,000 - 250,000
- ☐ 250,000 - 500,000
- ☐ > 500,000

2.5 WHAT IS THE VALUE OF YOUR REAL ESTATE ASSETS (€)?

- ☐ DO NOT HAVE
- ☐ < 50,000
- ☑ 50,000 - 250,000
- ☐ 250,000 - 500,000
- ☐ > 500,000

2.6 WHOW MANY DEPENDENTS DO YOU CURRENTLY HAVE (ACCORDING TO THE PERSONAL INCOME TAX (IRS) RETURN)?

- ☐ 0
- ☑ 1
- ☐ 2
- ☐ 3
- ☐ 4 OR MORE

2.7 WHAT IS THE CURRENT COMPOSITION OF YOUR SAVINGS?

	0%	0% - 30%	30% - 60%	> 60%
TERM DEPOSITS/LIQUIDITY				X
BONDS	X			
ETFs AND/OR MUTUAL FUNDS	X			
SAVINGS PLANS: PPRs AND/ UNIT LINKED	X			
SHARES	X			
OTHERS	X			

3. INVESTMENT PURPOSES

3.1 OF THE AMOUNT RESERVED FOR SAVINGS/INVESTMENT, HOW MUCH DO YOU WANT TO PLACE IN BiG?

- ☐ 0% - 25%
- ☐ 25% - 50%
- ☐ 50% - 75%
- ☑ 75% - 100%

3.2 HOW DO YOU INTEND TO ALLOCATE THAT VALUE IN TERMS OF TIME?

	LESS THAN 25%	BETWEEN 25% AND 50%	OVER 50%
SHORT TERM (UP TO 12 MONTHS)			
MEDIUM TERM (BETWEEN 1 YEAR AND 3 YEARS)			
LONG TERM (> 3 YEARS)			X

3.3 IF YOU COULD ONLY MAKE ONE TYPE OF INVESTMENT, WHICH WOULD YOU CHOOSE?

- [ ] A SHARE (IN SPITE OF THE RISK, IT IS POSSIBLE TO OBTAIN A HIGHER RETURN IN THE LONG TERM)
- [X] TREASURY BILLS AND/OR BONDS
- [ ] A MIXED MUTUAL FUND, WITH AVERAGE RISK [3]
- [ ] TERM DEPOSITS

3.4 THE STOCK MARKET FELL MORE THAN 10% IN ONE DAY AND YOUR INVESTMENT ENTERED IN AN AREA OF POTENTIAL LOSSES, HOW DO YOU REACT?

- [ ] I SELL MY ENTIRE PORTFOLIO
- [X] I MAINTAIN MY ENTIRE POSITION AND WAIT FOR IT TO PICK UP AGAIN
- [ ] I SELL A PORTION OF MY PORTFOLIO, THE RISKIEST PORTION
- [ ] I BUY MORE... AT THIS PRICE IT'S A GREAT OPPORTUNITY TO BUY

3.5 BY OPTING FOR AN INVESTMENT, WHICH OF THESE RISK/RETURN INTERVALS WOULD YOU CHOOSE?

- [ ] FROM 0% TO 2%
- [ ] FROM -10% TO 30%
- [X] FROM -3% TO 10%
- [ ] FROM -25% TO 50%

3.6 WHEN DECIDING TO INVEST, YOUR GREATEST CONCERN IS:

- [ ] MAXIMISE GAINS
- [X] BOTH IN EQUAL PROPORTIONS
- [ ] MINIMISE LOSSES

3.7 WHAT DO YOU ASSOCIATE THE WORD "RISK"?

- [X] LOSS
- [ ] OPPORTUNITY
- [ ] UNCERTAINTY
- [ ] EMOTION

I declare that I am responsible for the information contained in this questionnaire.

DATE

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CLIENT SIGNATURE

Maria Silva