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# Trabajo Fin de Grado

Evaluación de Empresas Líderes en España: Análisis Fundamental y  
Construcción de Portafolio.

Evaluating Spanish Leading Companies: Fundamental Analysis and Portfolio  
Construction.

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# ABSTRACT

## Spanish version:

Este trabajo explora la aplicación del análisis fundamental para evaluar el valor intrínseco de cinco empresas que cotizan en el IBEX 35: Inditex, Banco Santander, Iberdrola, Amadeus IT y Ferrovial. El estudio emplea el método de Descuento de Flujos de Caja como la principal técnica de valoración, mientras que el Modelo de Valoración de Activos Financieros (CAPM) y el modelo de tres factores de Fama-French se utilizan como herramientas complementarias para definir el coste del capital propio. Posteriormente, se utiliza la Teoría Moderna de Carteras para construir una cartera optimizada, que busca equilibrar el riesgo y el retorno a través de la diversificación. El estudio revela que los valores intrínsecos de Inditex, Banco Santander, Iberdrola, Amadeus IT y Ferrovial superan sus valores de mercado, lo que indica que presentan oportunidades de inversión al estar infravaloradas. Sin embargo, el análisis de la MPT sugiere que solo Inditex, Iberdrola y Ferrovial deben incluirse en la cartera óptima, lo que demuestra la importancia de considerar las correlaciones entre acciones al tomar decisiones de inversión.

Palabras clave: Análisis fundamental, Descuento de Flujos de Caja, Teoría Moderna de Carteras, Valor intrínseco y Diversificación.

## English version:

This work explores the application of fundamental analysis to assess the intrinsic value of five companies listed on the IBEX 35: Inditex, Banco Santander, Iberdrola, Amadeus IT, and Ferrovial. The study employs the Discounted Cash Flow (DCF) as the main valuation technique, while the Capital Asset Pricing Model (CAPM) and the Fama-French three-factor model are used as complementary tools to define the cost of equity. Subsequently, the Modern Portfolio Theory (MPT) is utilized to construct an optimized investment portfolio, which aims to balance risk and return through diversification. The study reveals that the intrinsic values of Inditex, Banco Santander, Iberdrola, Amadeus IT, and Ferrovial surpass their market values, indicating that they present investment opportunities, as they are undervalued. However, MPT's analysis suggests that only Inditex, Iberdrola, and Ferrovial should be included in the optimal portfolio, demonstrating the importance of considering inter-stock correlations when making investment decisions.

Key words: Fundamental analysis, Discounted Cash Flow, Modern Portfolio Theory, Intrinsic Value, Diversification.

# INTRODUCTION

## I. CONTEXTUALIZATION AND FIRM SELECTION

In the wide spectrum of investment options, equity markets stand out as an appealing choice for investors. Its combination of risk and reward positions it as an attractive option for investors seeking substantial returns in exchange for active participation. Given the dynamic environment of the stock market, it is essential for the individual investor to possess the necessary skills to make well-informed decisions, particularly given the overwhelming influx of financial information available nowadays. This dissertation, titled "Evaluating Spanish Leading Companies: Fundamental Analysis and Portfolio Construction" aims to delve into the realm of fundamental analysis while providing a practical approach for individual investors to employ robust tools in order to navigate the complexity of the stock market.

Fundamental Analysis can be defined as the examination of a firm's financial robustness, which involves analyzing its historical performance, sector standing, managerial competence, dividend track record, capitalization, and future growth prospects; involving quantitative and qualitative methods. This assessment constitutes a set of information that extends beyond stock prices, serving as the foundation for value investing and facilitating the comparison of different stocks (Thomsett, 2006, p. 6).

This work embarks on an in-depth exploration of fundamental analysis. The essence of the research lies in the practical application of this approach to value five companies of the IBEX 35. The process begins with the careful selection of these companies, followed by their valuation using rigorous and recognized methodologies, comprising the Discounted Cash Flow valuation (DCF), and Capital Asset Pricing Model (CAPM), which is extended with the Fama-French three-factor model (Fama & French, 1993). The information obtained will be taken into account to construct an optimized investment portfolio with the Modern Portfolio Theory (Markowitz, 1952), balancing the weight of each company to maximize risk-adjusted returns. The document will continue from this introduction to detail each step of the process, from the company selection, through the valuation techniques, to the construction and simulation of the investment portfolio. This comprehensive approach ensures a deep understanding of firm valuation and investment portfolio management from a fundamental analysis perspective.

Concerning the selection of the firms for analysis, the chosen companies are the five with the highest market capitalization from each of the most relevant sectors from the IBEX 35. This approach aims to construct a diversified portfolio that captures the essence of the most representative index of the national equity market. Moreover, it also allows to delve deep enough into the valuation of each firm, being five a manageable number of companies.

The selected companies and their respective sectors are as follows:

1. Industria de Diseño Textil SA (INDITEX): Services and Consumer Goods Sector.
2. Banco Santander SA: Banking Sector.
3. Iberdrola SA: Energy Sector.
4. Amadeus IT Group SA: Information and Technology Sector.
5. Ferrovial SA: Infrastructure and Construction Sector.

This methodical approach to select companies from the IBEX 35, based on their market capitalization and sectoral representation, reinforces the creation of a diversified investment portfolio, reducing risk by mitigating the impact of sector-specific downturns on the overall portfolio and addresses the breadth and depth of the Spanish equity market landscape through its most influential players. This framework not only aligns with academic rigor but also with practical investment principles, offering a solid foundation for examining how fundamental analysis can guide the optimization of an investment portfolio.

## **II. OBJECTIVES**

The work is articulated around two fundamental objectives: the first one is the exhaustive valuation of INDITEX, Banco Santander, Iberdrola, Amadeus IT, and Ferrovial and the second one is the construction of a simulated investment portfolio comprising these firms. The meticulous selection and valuation of these companies using recognized methodologies, such as the Discounted Cash Flow, the Capital Asset Pricing Model, and the Fama and French model, seek to determine their intrinsic value accurately, establishing the basis for the portfolio construction.

The exploration and analysis of the risk-return tradeoff within the simulated portfolio is also a crucial aim of this dissertation. Employing Modern Portfolio Theory, the study seeks to strike an effective balance between risk and return, emphasizing the importance of adjusting risk in the simulation process.

Additionally, it is essential to explore how shifts in sector specific variables impact firm valuation and investment strategies. This exploration of risk factors, conducted through a detailed analysis of the different markets, is vital for understanding the sector dynamics that affect investment performance. By dissecting the unique characteristics of each sector, the study underlines the importance of robust risk management. This sectoral analysis enhances the understanding of the complexities of each market, ensuring a balanced approach to portfolio construction and risk mitigation.

In a nutshell, the work aims not only to provide an accurate valuation of the selected companies but also to demonstrate how these valuations can be applied to create a diversified and balanced investment portfolio.

### **III. MOTIVATION AND RELEVANCE**

The motivation behind this study originates from the convergence of two aspects: a personal interest in the world of investments and the conviction that a deeper understanding of fundamental analysis can not only provide tangible benefits in my role as a small investor but also contribute to my academic and professional development.

On a personal level, the fascination with financial markets and business dynamics has been a constant driving force throughout these years studying ‘Administración y Dirección de Empresas’ (ADE). I believe that the elaboration of this dissertation represents an opportunity to deepen my knowledge in this area that I am passionate about. In addition, it also offers the possibility to apply theoretical concepts to practical situations, an experience that I consider essential for a possible future career in the financial field.

This work holds significant relevance in the field of finance and investment, as it provides a practical exploration of fundamental analysis applied to equity investments. The simulation of an investment portfolio offers a unique opportunity to bridge theoretical concepts with real-world implications.

Engaging in portfolio simulation and fundamental analysis for the development of this dissertation will allow me not only to enrich my learning experience but also to provide valuable tools for making well-informed financial choices as an individual investor.

## **IV. METHODOLOGIES**

The methodologies employed in this research seek to construct and simulate an equity portfolio using fundamental analysis as the guiding principle. The objective of the methodology selected is to leverage a comprehensive understanding of individual companies, considering both quantitative and qualitative factors, to make informed investment decisions. The chosen methods for analysis encompass a multi-faceted approach, combining prior industry analysis, Discounted Cash Flow valuation (DCF), the Capital Asset Pricing Model (CAPM), the Fama & French three-factor model, and finally the Modern Portfolio Theory.

Firstly, deep data collection and analysis have been carried away. This has involved examining financial statements, industry reports, market data, and other pertinent sources to gather quantitative and qualitative information. The research has analyzed quantitative metrics such as financial ratios or growth projections, added to qualitative factors such as industry dynamics.

The DCF method forms the pillar of the valuation that is going to be made, regarded for its focus on the future cash flows that firms are expected to generate. By projecting these cash flows and discounting them back to their present value, the DCF will be utilized to forecast future cash flows and estimate the intrinsic values of the selected firms. To successfully apply this methodology, it is required to analyze each firm's financial statements and determine the appropriate cost of capital, for which the Weighted Average Cost of Capital (WACC) is employed as the discount rate.

Complementing the DCF, the CAPM plays a crucial role in understanding the relationship between risk and expected return, particularly in the context of the cost of equity for each firm, which is used to adjust the discount rates (WACC) in the DCF calculations, ensuring that they accurately reflect the sensitivity to systematic risk by each company. The CAPM will be instrumental to estimate the expected return of each stock based on its beta (volatility compared to the market), the risk-free rate, and the expected return of the market.

The Modern Portfolio Theory or Markowitz Model has been used to construct an optimized portfolio comprising the five selected firms that strikes a balance between risk and return through diversification. The model has determined the most efficient allocation of assets among the selected companies, considering the covariance and correlation to create a diversified portfolio that harmonizes the trade-off between high returns and risk management. By assessing the correlation between the firms and their risk-return profiles, the resulting portfolio maximizes the expected return for a given level of risk.

The integration of these methods establishes a robust framework for portfolio simulation deeply rooted in fundamental analysis. The combination of these methodologies seeks to provide a comprehensive understanding of selected companies, optimize asset allocation, and enhance decision-making in the construction and management of the equity portfolio.

# LITERATURE REVIEW

The literature review of the thesis starts by providing a brief historical context to fundamental analysis, which is the foundation of the valuation methods that are going to be used in this project. Following this, the review delves into the valuation of firms, their objectives, and the current valuation methodologies of fundamental analysis, highlighting its application and limitations in the investment environment. This section lays the theoretical groundwork for different valuation techniques, of which some will be explained more deeply and employed later in the work. The examination of these methods will provide a solid understanding of fundamental analysis and firm valuation techniques.

Fundamental analysis, alongside technical analysis, stands as one of the two main strategies in the realm of equity investment. This methodological approach enables investors to discern undervalued stocks or predict future stock performance by assessing the company's financial health, growth prospects, and operational efficiency. Moreover, the relevance of fundamental analysis extends beyond mere financial metrics, incorporating a strategic assessment of market conditions, regulatory environments, and macroeconomic trends.

Pathade (2017) emphasizes the importance of evaluating economic conditions, industry performance, and company performance before making long-term investment decisions. This approach not only minimizes investment risk but also maximizes return on investment by grounding decisions in a solid understanding of fundamental factors. Fundamental analysis, therefore, serves as an indispensable tool for investors aiming to navigate the complexities of the equity market with informed, strategic decisions (Pathade, 2017).

## **I. Historical context of fundamental analysis**

The roots of fundamental analysis can be traced back to the early 20th century, with Benjamin Graham and David Dodd establishing its foundational principles in their work, "Security Analysis" (1934). Graham and Dodd introduced the concept of intrinsic value, advocating for investments in undervalued stocks based on financial analysis, considering a company's financial statements, economic indicators, and industry conditions. This fundamental analysis principle of emphasizing long-term growth over short-term speculation has profoundly influenced investment strategies (Graham & Dodd, 1934).

As capital markets developed, so did the methods used to value equity. Early valuation techniques were primarily focused on dividend yield and asset backing. Over time, these methods evolved to include earnings yield and price-to-earnings (P/E) ratios, reflecting a shift towards more dynamic and forward-looking valuation models (Rutterford, 2004). This evolution was characterized by a gradual adoption of discounted cash flow (DCF) methods, which became one of the core techniques of equity valuation, emphasizing the present value of future cash flows (Rutterford, 2004).

The historical progression of valuation methods reflects a continuous search for more accurate and reliable ways to assess the value of companies.

## **II. Valuation of firms**

The distinction between the value and price of a company is a fundamental concept in the field of business valuation. According to Fernández (2008), this difference lies in the fact that a company's value is subjective and can significantly vary among different buyers and sellers, depending on a multitude of factors such as perceptions of the future of the sector, business strategies, and advantages from economies of scale or complementarity, among others. On the other hand, the price is the amount agreed upon between buyer and seller to carry out the transaction of buying and selling the company, being a more tangible and concrete figure that reflects the meeting point in the negotiations between the parties involved.

Fernández (2008) illustrates this distinction with the example of a large foreign company wishing to purchase a national company. The buyer may primarily value the brand recognition of the national company, disregarding aspects like facilities or machinery if it possesses technologically more advanced assets. Meanwhile, the seller will highly value these material resources for their production capacity. Thus, the value of the company significantly varies between the buyer and the seller, reflecting different priorities and assessments.

In the context of company valuation, understanding the distinction between value and price is crucial for analysing and justifying business valuations. It allows analysts and investors to recognize that the price agreed upon in a transaction does not necessarily reflect the intrinsic

value of the company for all interested parties but is the outcome of a negotiation that considers various factors and perspectives.

Drawing from the insights of Sivitska (2015), the purposes of business valuation are the following:

- **Determining the Company's Worth:** Establishing the true value of a business is a complex task that is often clouded by personal biases and emotional attachments. A professional business valuation can provide an unbiased estimate of a business's worth.
- **Competitive Positioning and Industry Analysis:** A comprehensive business valuation includes an in-depth analysis of the company's position within its industry, offering insights into the competitive landscape and the market dynamics of its sector, which aids strategic planning and investment decisions.
- **Financial Health and Asset Evaluation:** Considering both tangible and intangible assets in the analysis helps to verify or challenge existing perceptions of the company's financial stability and performance, serving as a basis for informed decision-making.
- **Facilitating Strategic Decisions:** A current and accurate business valuation allows to act decisively, leveraging opportunities for growth or investment.
- **Adaptability to Market Changes:** Regular business valuations ensure that stakeholders are equipped with current information for strategic adjustments and compliance with legal and financial standards.

### **III. Classification of valuation methodologies**

Over the years, different evolving methodologies have been used, attempting to find the most accurate one for faithfully valuing a company. This quest for the most precise methodology reflects that the value of a company can be determined from multiple perspectives and with different objectives in mind. For this exploration of methodologies, we will rely on the classification proposed by Professor Pablo Fernández (2009), which distinguishes six main approaches to business valuation. These methods vary in their ability to accurately reflect a company at a given point in time.

1. *Balance sheet-based methods (shareholders' equity)*: This approach values a company based on the information contained in its balance sheet. The premise is that the value of a company lies in the difference between the value of its assets (what it owns) and its liabilities (what it owes). Although this method provides a clear snapshot of the company's financial position at a given moment, it only reflects past financial conditions, so it may not reflect a company's real value (Misamore, 2017). Balance sheet-based valuation methods include the Book Value, Adjusted Book Value, Liquidation Value, and Substantial Value, each offering a unique perspective on a firm's worth by analyzing its assets and liabilities.

2. *Income statement-based methods (Multiples)*: These methods utilize the income statement's financial metrics to assess the company's ability to generate profits. These multiples are based on comparing a firm to similar ones in the market, assuming companies with similar characteristics should have comparable metrics. The income statement approach is especially useful to simplify the process of evaluating a firm, although it may not capture all the details of a company's financial health or prospects. The PER receives particular importance, as it measures a firm's share price relative to its earnings per share (Anderson & Brooks, 2005). Alongside, the value of the dividends, sales multiples, and other multiples (as EBIT or EBITDA) provide perspectives on company valuation.

3. *Mixed or goodwill-based methods*: They involve assessing the worth of a company's intangible assets or "excess value", that is, the value that exceeds the net book value. Valuing goodwill is challenging due to the variability and instability of intangible wealth, coupled with the absence of a standardized evaluation method (Lustosa, 2017). Essentially, mixed methods aim to calculate the company's overall value by first determining the present worth of its assets (static valuation) and then adding an estimated value derived from potential future profits (dynamic valuation).

4. *Value Creation-Based Methods*: These methods focus on the company's ability to generate value over time, beyond just financial metrics. A key metric in this category is Economic Value Added (EVA), which calculates the value created beyond the required return of its shareholders.

5. *Real Options-Based Methods*: They assess investments by valuing the flexibility to adapt decisions based on future market conditions, similar to financial options. This approach is

particularly useful for projects where future decisions could alter the course of the project (expand, defer, or abandon a project), to optimize decision-making in uncertain environments.

#### *6. Cash flow discounting-based methods:*

These methods focus on estimating the present value of the expected future cash flows of a firm. They are based on the principle that the value of a firm today is equal to the sum of its future cash flows, discounted back to its present value using a determined discount rate. This discount rate reflects the risk associated with those future cash flows. Applying cash flow discounting can offer a clear picture of a company's financial health and potential for growth. This method stands out for its focus on intrinsic value, moving away from the previously explained mixed methods that have become less popular over time (Fernández, 2009).

This thesis positions the cash flow discounting-based method as the main pillar of valuating the selected firms, as "the most suitable method for valuing a company is to discount the expected future cash flows" (Fernández, 2009, p. 12). The subsequent sections will delve into a comprehensive examination of this valuation technique, detailing its assumptions, specific methodological approach, and application to value INDITEX, Banco Santander, Iberdrola, Amadeus IT, and Ferrovial.

## **IV. Portfolio Management and Minimum Risk Portfolios**

Portfolio Management is considered a crucial investment strategy, especially when the optimization of the trade-off between risk and return is considered. The foundation of the modern portfolio theory (MPT), developed by Harry Markowitz in the 1950s, revolutionized investors' approach to asset allocation and risk management. Markowitz's seminal work, "Portfolio Selection" (1952), introduced the concept of diversification to reduce risk. His work introduced the idea that by diversifying investments across various assets with low correlations, investors could create portfolios that minimize risk for a given level of expected return. This theory challenged the traditional focus on individual securities for portfolio allocation, instead advocating for a broader view of a portfolio's risk-return profile, by considering how the relationship between assets affects the portfolio as a whole.

# **SECTORAL ANALYSIS: PORTER-PESTLE**

Intending to gain insights about the situation of the industries in which Inditex, Banco Santander, Iberdrola, Amadeus IT, and Ferrovial operate, it is essential to perform a thorough analysis of their sectors, comprising PESTLE and Porter's Five Forces frameworks.

On the one hand, the PESTLE analysis aims to identify the external variables that can have an impact on the firm, positively or negatively. PESTLE stands for Political, Economic, Sociocultural, Technological, Legal, and Environmental factors. By analyzing these six external influences, potential opportunities and threats in their external environment can be recognized. PESTLE analysis helps companies to adapt to the changing landscape of their industry, offering guidance to maintain sustainable growth and competitive advantage.

On the other hand, by analyzing the rivalry among existing competitors, the threat of new entrants, the threat of substitute products, and the bargaining power of suppliers and buyers, Porter's Five Forces framework aims to identify the level of competition within a specific sector and understand the potential profitability of operating in the industry, identify strategic opportunities and threats, and formulate effective strategies to navigate the industry.

## **Inditex: Textile and Fashion sector**

Industria de Diseño Textil S.A. (Inditex) operates in the textile industry and stands as one of the leading manufacturers and distributors of fast fashion in the world. Founded in Spain in 1985 by Amancio Ortega, the multinational operates through several brands, including Zara, Bershka, Pull&Bear, and Massimo Dutti, among others. Inditex's global presence, which extends over more than 90 countries, reflects its deep market penetration in the fashion industry, showing its capacity to adapt to different consumer preferences.

## **PESTLE ANALYSIS**

### **1. Political factors**

Internationalization: Inditex operates globally and is subject to different trade agreements and tariffs. Changes in trade policies, such as tariffs on imports or exports affect its production costs and profit margins.

Regulatory environment: As an employer in many countries, Inditex must comply with local labor laws and regulations, as well as environmental regulations and other laws from each specific country. Changes in labor and environmental regulations, such as minimum wage laws restrictions impact the company's operational costs.

## **2. Economic factors**

Economic Growth: Inditex's performance is closely tied to the economic conditions of the countries where it operates. Economic downturns may lead to reduced consumer spending on discretionary items like clothing.

Currency Fluctuations: Inditex sources products from various countries and operates stores worldwide. Fluctuations in currency exchange rates can affect its profitability, especially if the euro strengthens against other currencies.

Income levels: Inditex can benefit from the different income levels of each country or region through price discrimination, setting different prices for countries that have different income levels, for example, the price for the exact same Zara item is around 10% more expensive in Germany than in Spain, which allows Inditex to take advantage of the different opportunities that each market has to offer.

## **3. Social factors**

Fashion Trends: Consumer preferences in the fast-paced fashion industry evolve rapidly. Even so, Inditex has proven to be able to adapt to constantly changing fashion trends, allowing the company to sustain its competitive advantage.

Demographic shifts: Age distribution and lifestyle highly influence consumer behavior, and over the last decades, the interest in fashion, especially by younger segments of the population, has become greater.

Ethical and Social Responsibility: Increasing consumer awareness of sustainability, labor practices, and ethical sourcing influence purchasing decisions. The outsourcing to third-world countries by Inditex has created controversy due to concerns about labor and environmental conditions. Nevertheless, the company has implemented sustainability and transparency initiatives to enhance its image and address these issues.

#### **4. Technological factors**

E-commerce Growth: The rise of online retailing and digital platforms has transformed the fashion retail landscape, and this digitalization has provided Inditex the opportunity to experience tremendous growth.

Supply Chain Innovation: Investment in R&D has permitted Inditex to enhance supply chain efficiency, optimize inventory levels, and reduce costs through technologies like RFID tracking and inventory management systems (Rodríguez, 2020).

#### **5. Legal factors**

Legal factors, particularly concerning intellectual property rights, present a notable concern for Inditex. The company faces ongoing lawsuits related to trademark infringements, which could potentially threaten its brand reputation and financial stability for the payment of high unexpected fines.

#### **6. Environmental factors**

Sustainability Initiatives: Inditex has made commitments to sustainability, including using eco-friendly materials and attempting to reduce carbon emissions. Focusing on environmental concerns is going to be crucial in the next few years to influence consumer perceptions about Inditex.

## **PORTER ANALYSIS**

### **1. Rivalry among existing competitors:**

The textile fashion sector is characterized by intense competitive rivalry, Inditex faces formidable competition from prominent industry competitors such as H&M and Fast Retailing (owner of Uniqlo). Additionally, online retail giants like ASOS and Zalando pose a significant threat, leveraging their digital capabilities to capture an extensive market share. Even though the company holds the position of one of the main leaders in the fashion market, the competitive rivalry within the industry is very high.

### **2. Threat of new entrants:**

Inditex is backed up by economies of scale and an extensive global presence, which act as barriers to new entrants. The company possesses a strong position against potential newcomers thanks to its vertically integrated supply chain, efficient logistics, and extensive distribution network. Additionally, the high initial investment and the need for significant brand recognition

pose substantial challenges for new entrants. Moreover, Inditex continually invests in innovation and technology, enhancing its operational efficiency and solidifying its market position. Thereby, we can conclude that the threat of new entrants is low.

### **3. Threat of substitutes:**

As clothing is a fundamental need and cannot be replaced, the threat of substitutes for the textile sector is null.

### **4. Bargaining power of suppliers:**

As Inditex is vertically integrated, it maintains a strong control over its supply chain, including manufacturing and distribution. By leveraging its economies of scale and long-term relationships with suppliers, Inditex can negotiate favorable terms and prices for materials, thereby reducing the bargaining power of individual suppliers. The bargaining power of suppliers is low.

### **5. Bargaining power of buyers:**

Retailers in the fashion industry face the challenge of not only fulfilling customer requirements but also distinguishing themselves from rivals to attract and retain clientele, which contributes to a substantial buyer power within the market. Given the intense competition and the abundance of brands, consumers enjoy a broad array of choices and the freedom to switch between brands effortlessly and at minimal cost in pursuit of their preferences. Fortunately, Inditex operates with a diverse portfolio of brands, offering a wide variety of products. This diversification not only addresses different consumer segments but also reduces the bargaining power of individual buyers. For these reasons, the bargaining power of buyers is medium for Inditex.

## **Banco Santander: Banking sector**

Banco Santander S.A. is a banking institution founded in 1857 with headquarters in Santander, Spain. This multinational is one of the most important and biggest entities of the banking industry by market value, with a particular presence in Europe, and North and South America, and it is listed on the Madrid, New York, and London stock exchange markets. Its extended global network and diversified business model have positioned the company as a renowned firm in the international banking sector.

# PESTLE ANALYSIS

## 1. Political factors

Regulatory environment: Banco Santander operates in various countries, each with its own regulatory framework. The company can be affected by changes in government policies regarding banking regulations, such as capital requirements or lending activities

Political stability: Political instability in any of the countries where Banco Santander operates can affect investor confidence, currency exchange rates, and economic growth, influencing the firm's performance.

## 2. Economic factors

Economic growth: Economic growth drives demand for banking services such as loans and mortgages, while economic downturns can lead to higher loan defaults and reduced demand for financial products.

Interest rates: Fluctuations in interest rates set by central banks can affect Banco Santander. If interest rates are set high, it could lead to less demand for financial services by individuals and businesses.

Currency fluctuations: As a multinational company, Banco Santander is exposed to currency exchange risk.

## 3. Social factors

Demographic shifts: Banco Santander's business strategy is influenced by demographic trends such as population growth and aging populations. For example, an aging population may increase demand for retirement services while a younger population may increase the demand for loans in order to buy real estate.

Changing consumer preferences: Shifts in consumer preferences towards digital banking and online financial services have prompted Banco Santander to invest in digitalization and enhance its digital banking platforms to remain competitive.

## 4. Technological factors

Digital disruption: The increasing importance of digital banking is completely changing the banking industry. Embracing technology and innovation is crucial for Banco Santander to stay ahead.

**Cybersecurity:** As a custodian of sensitive financial and personal information, Banco Santander faces cybersecurity threats such as data breaches and cyber-attacks. Investing in robust cybersecurity measures and maintaining customer trust is essential for safeguarding its reputation and business continuity.

The rapidly evolving technological advancements in the industry pose both threats and opportunities for Banco Santander, but with the appropriate investment in R&D, the company could be able to leverage technological innovations for sustainable growth.

### **5. Legal Factors:**

**Regulatory Compliance:** Banco Santander operates in a highly regulated industry, requiring adherence to various legal and regulatory frameworks. Key regulations include Basel II, which sets international standards for capital adequacy to ensure banks can absorb shocks from financial and economic stress. Moreover, the MiFID (Markets in Financial Instruments Directive) impacts the bank's operations by demanding transparency and investor protection within European markets. Additionally, minimum capital requirements, such as the solvency ratio, are critical for ensuring stability. Compliance with these regulations significantly influences the bank's costs, procedures, and risk management practices.

**Litigation Risks:** Legal disputes, regulatory investigations, and compliance failures can result in financial penalties, reputational damage, and legal expenses for Banco Santander. Managing litigation risks and maintaining a strong legal and compliance framework is essential for mitigating such risks.

### **6. Environmental Factors:**

**Sustainability initiatives:** As a responsible corporation, Banco Santander has recognized the importance of environmental sustainability and has committed to incorporating environmental considerations into its business operations. This includes financing renewable energy projects, implementing green initiatives, and disclosing environmental risks. The company should continue through this path to ensure a good brand image and comply with regulatory requirements.

## **PORTER ANALYSIS**

### **1. Rivalry among existing competitors:**

There exists an intense rivalry in the banking sector, with Banco Santander facing pressure from both national and global competitors. In Spain, it competes with other major banks such as BBVA and CaixaBank, while globally, it encounters competition from multinational banks like HSBC and JPMorgan Chase. Factors like market saturation, low switching costs for customers, and similar product offerings among competitors intensifying rivalry. To address this strong rivalry, the company has taken part in strategic acquisitions of competitors, such as Banco Español de Crédito (Banesto) in 2013 and Banco Popular Español in 2018, increasing concentration and reducing industry competition, thereby strengthening its market presence. However, the rivalry among existing competitors is still very high in the industry.

### **2. Threat of new entrants:**

In the banking sector, the threat of new entrants is moderate thanks to several factors that act as barriers to entry, making it challenging for potential competitors to access the industry. These barriers include very rigorous regulations, requiring significant capital and regulatory compliance to establish operation. Moreover, brand loyalty and reputation play a crucial role in this sector, as customers are more likely to place their trust in strongly recognized companies such as Banco Santander. However, the emergence of new online banks such as Revolut adds another dimension to the threat of new entrants for Banco Santander. To respond to this threat, the company is required to invest in digitalization to remain competitive. For these reasons, we can affirm that the threat of new entrants is moderate in this sector.

### **3. Threat of substitutes:**

In the banking industry, substitute products or services can include institutions offering alternative financial instruments or non-banking financial services as alternative investment services. These institutions include asset management firms, brokerage houses, or investment funds. Unlike traditional banking services, these substitutes offer specialized investment products such as mutual funds, ETFs, managed portfolios, or index funds with low commissions. The threat of substitute services for the banking sector is moderate-high.

### **4. Bargaining power of suppliers:**

In the banking sector, suppliers mainly refer to technology providers. As Banco Santander is a large financial institution, it holds significant bargaining power over its suppliers. It can

negotiate favorable terms with capital providers due to its strong position and creditworthiness. Additionally, the bank's size allows it to leverage economies of scale in technology solutions, enabling cost efficiency. As a result, the bargaining power of suppliers is very low for Banco Santander.

#### **5. Bargaining power of clients:**

The bargaining power of clients in this sector is determined by switching costs, customer loyalty and product differentiation. As the competition in the industry is high, customers have numerous choices when it comes to selecting banks that meet their financial needs, so we can infer that the bargaining power of clients is relatively high.

## **Iberdrola: Energy sector**

Iberdrola S.A. is a leading multinational electric utility company, it was founded in 1992 and is headquartered in Bilbao, Spain. Iberdrola's business model emphasizes the integration of renewable energy production, distribution, and retail. Its main focus in clean energy projects and infrastructure, specifically on wind and solar power emphasizes its role in advancing the global transition towards a low non-renewable energy use worldwide. Iberdrola is one of the largest clean energy operators, with a particular presence in Europe and the Americas.

## **PESTLE ANALYSIS**

### **1. Political factors**

Regulatory environment: Changes in energy regulations, including environmental standards and emissions targets, can significantly impact Iberdrola's operations, potentially making existing investments obsolete. The European energy efficiency roadmap, influenced by agreements like the Kyoto Protocol in 1997 and the Paris Agreement in 2015, has driven the push for cleaner energy. This has directly shaped Iberdrola's strategy, which has encouraged the company to focus on renewable energy sources and ensure compliance with evolving regulations across the different countries where it operates.

Renewable energy policies: Iberdrola's operations are mainly renewable energy based. As a result, favorable policies, such as subsidies and incentives for clean energy production, can enhance its growth prospects.

Community relations: Iberdrola's relationships with local communities where it operates are crucial for project approvals and public acceptance of its energy infrastructure.

## **2. Economic factors**

Economic growth: Iberdrola's financial performance is linked to overall economic conditions. Economic downturns may reduce energy demand.

Currency fluctuations: As a multinational company, Iberdrola is also exposed to currency risks due to fluctuations in exchange rates.

Energy prices: Fluctuations in commodity prices, particularly the prices of oil and gas, can affect Iberdrola's competitiveness in the energy market. For example, the Russia-Ukraine war has led to significant volatility in energy prices, exacerbated by supply-side inflation pressures.

## **3. Social Factors:**

Environmental awareness: Increasing awareness of climate change has led to growing demand for renewable energy sources. By sticking to the path of renewable energy, Iberdrola will maintain its position as one of the leaders in the renewable energy sector.

## **4. Technological Factors:**

Innovation: Technological advancements in renewable energy technologies and smart grid technologies, can drive down costs and improve efficiency, so Iberdrola must continue investing in R&D activities to optimize energy obtention, storage and distribution.

Digitalization: Integration of digital technologies in energy management and customer services enhances Iberdrola's operational efficiency and customer experience.

## **5. Legal Factors:**

Energy regulations: Compliance with energy laws, including licensing requirements and environmental standards, is essential for Iberdrola to ensure future expansion plans.

Antitrust regulations: Iberdrola also operates in a highly regulated industry, and compliance with antitrust laws is necessary to avoid legal disputes and penalties.

## **6. Environmental Factors:**

Climate change awareness: Iberdrola's business strategy is aligned with global efforts to mitigate climate change, focusing on reducing carbon emissions and investing in renewable energy projects.

Natural resource management: Sustainable management of natural resources, such as water and use of land, is crucial to minimizing environmental impacts.

## **PORTER ANALYSIS**

### **1. Rivalry among existing competitors:**

The energy provider sector is characterized by an intense level of rivalry among the established competitors such as Endesa or Naturgy. Iberdrola competes against both traditional fuel based energy and renewable energy providers, which creates pressure to maintain cost competitiveness, but thanks to its heavy investment in renewable technologies Iberdrola stands as one of the main leaders of renewable energy providers. Moreover, Iberdrola has taken part in partnerships and acquisitions to increase market share and reduce the degree of rivalry in the industry, for example, in 2020 Iberdrola and TotalEnergies formed a strategic alliance and in 2021 Iberdrola acquired Avangrid. We can deduce then that the rivalry among existing competitors is moderate-high.

### **2. Threat of new entrants:**

There exist very high barriers to entry in the energy provider sector due to significant capital requirements to construct infrastructure and invest in renewable energy technologies. However, the increasing need for renewable energy sources and government policies to promote the adoption of these energies may encourage new competitors to enter the sector. In order to counter this threat, Iberdrola counts on established infrastructure, experience, and investments in green energy, which allows the company to have a competitive edge against potential new entrants.

### **3. Threat of substitutes:**

There are different types of energy alternatives, but mainly they can be divided into renewable (like wind or solar power) and non-renewable (like natural gas), and Iberdrola operates with both of them. This diversification reduces its reliance on any single energy source, thereby lowering the overall threat of substitutes. Iberdrola faces little threat of substitutes, as the only alternative that consumers have to energy providers as Iberdrola are self-generation options such as solar panels for individual or community use, and usually if installed they are complemented with the services of an energy provider.

#### **4. Bargaining power of suppliers:**

Iberdrola's reliance on manufacturers of technological solutions and infrastructure, particularly in renewable energy projects, can expose the company to a certain supplier bargaining power. Key suppliers may have leverage due to limited alternative sources for specialized components or materials. However, Iberdrola benefits from economies of scale, its large scope of activities and long-term contracts with suppliers can allow the company to negotiate favorable terms, mitigating the bargaining power of individual suppliers.

#### **5. Bargaining power of clients:**

The bargaining power of clients in the energy industry is generally low due to several factors. Firstly, significant switching costs, such as minimum-term contracts and the extensive paperwork required to change energy suppliers, create a strong provider-client bind. Additionally, most clients cannot produce their own electricity, making them reliant on energy providers. Although clients are sensitive to price changes, the scarcity of direct alternatives limits their ability to exert significant pressure on Iberdrola.

However, the growing adoption of solar panels and other forms of private energy generation is gradually empowering consumers to produce their energy, which could, over time, reduce dependency on traditional energy suppliers and increase the bargaining power of clients.

## **Amadeus IT Group: Technology provider Sector**

Amadeus IT Group S.A. is a technology provider for the tourism industry, supplying advanced technology solutions for travel companies, including booking systems, advertising, client and tourist management and other essential services. Amadeus is headquartered in Madrid, and it serves various sectors within the travel industry, such as airlines, hotels, and hostelry among others, facilitating connectivity and efficiency. The company's innovative approach to technology and its focus on research and development has positioned it as one of the main facilitators of digital services.

## **PESTLE ANALYSIS**

### **1. Political Factors:**

Regulatory environment: The industry of the company is subject to various regulations related to data privacy, cybersecurity, and antitrust laws. Moreover, exceptional events like the ones

that happened during the COVID crisis forced governments to set very strict policies that deeply impacted the tourism industry.

Political stability: Political instability or conflicts in regions where Amadeus operates can disrupt travel patterns and reduce demand for its services.

## **2. Economic Factors:**

Economic growth and income levels: The performance of the company is tied to global economic conditions, as the demand for the company's services highly relies on the aggregate travel expenditure of individual households.

Currency Fluctuations: Amadeus IT operates in countries with different currencies, so as a multinational enterprise it is exposed to currency risk.

## **3. Social Factors:**

Environmental awareness: Growing concerns about climate change and sustainability are influencing consumer attitudes towards travel. Amadeus IT may face pressure to develop eco-friendly solutions and support sustainable travel practices.

Social concerns: Social responses to crises such as the COVID-19 pandemic decreased the need for Amadeus's services, as even after restrictions were abolished many travelers were still reluctant to go back to normality. Failure to address social concerns adequately can result in negative publicity and damage to the company's reputation, affecting customer trust.

## **4. Technological Factors:**

Innovation and disruption: Rapid technological advancements and the emergence of disruptive technologies pose both opportunities and threats to Amadeus IT. As a technology provider, Amadeus IT has the assignment to develop disruptive technologies to ensure that the companies that contract their services have state-of-the-art tools to manage their activities.

## **5. Legal Factors:**

Intellectual property rights: Given the importance of proprietary software and technology in the company's operations, legal disputes over patents or copyrights could impact the firm's competitive position.

Data protection regulations: Amadeus IT handles large volumes of sensitive corporate customer data, requiring compliance with strict protection regulations.

## **6. Environmental Factors:**

Climate Change Impact: Given the increasing importance of reducing carbon emissions, the company must adopt environmentally sustainable practices and initiatives to stay ahead in the green travel race.

## **PORTER ANALYSIS**

### **1. Rivalry among existing competitors:**

Rivalry among existing competitors in the technology provider sector, particularly concerning travel technology, has a very great intensity. Amadeus faces competition from its two major rivals, Sabre Corporation and Travelport Worldwide, which are providers that offer similar solutions to the travel industry companies. This rivalry is exacerbated by the high costs associated with developing and maintaining technology infrastructure. Moreover, the rapid technological advancements and the emergence of disruptive innovations intensify the pressure in the innovation race. Additionally, clients can easily switch between providers based on pricing, features, and service quality, so we can conclude that Amadeus IT faces fierce competition to attract and retain customers.

### **2. Threat of new entrants:**

The threat of new entrants into the specific niche of technology providers for the travel sector is relatively low due to significant barriers to entry. Firstly, establishing a global network of airline and hospitality partners requires complex relationships with clients, and developing sophisticated technology solutions requires an important financial investment. Amadeus IT is already established as a dominant company in this industry, the firm benefits from economies of scale and has an extensive customer base built over decades. Its social network and its investment in infrastructure serve as an obstacle to potential newcomers.

### **3. Threat of substitutes:**

Amadeus IT offers solutions for airlines, hotels, travel agencies, and other travel service providers, so this level of specialization and customization in the solutions act as a significant barrier to substitution. Its extensive portfolio of products, including reservation and booking systems, and travel management software or payment solutions among others is tailored to meet the specific needs of the travel industry, making it challenging for other potential substitute services to replicate its offerings.

#### **4. Bargaining power of suppliers:**

Amadeus IT Group relies on suppliers for technology hardware, but the company's bargaining power with suppliers is moderately high due to its size and market position. However, as the technology sector evolves rapidly, the company must continually ensure supplier relationships to have access to state-of-the-art technology infrastructure at competitive prices, so it can be inferred that the bargaining power of suppliers is moderate.

#### **5. Bargaining power of clients:**

Even though Amadeus IT has an established customer base, the switching costs for customers between technology providers are low. For this reason, Amadeus IT faces pressure from its customers, including airlines and travel agencies, to provide innovative solutions at competitive prices. To counteract the high bargaining power of clients, the company employs pricing strategies and loyalty programs to retain customers and mitigate the risk of losing market share to competitors.

## **Ferrovial: Infrastructure and Construction Sector**

Ferrovial, S.A. is one of the world's leading infrastructure services companies, it was founded in 1952, and its headquarters are located in Madrid, Spain. The company operates through four main divisions: Toll Roads, airports, construction and energy infrastructure and other mobility services, demonstrating a diverse portfolio of high global impact. Its global footprint, including significant operations in Europe, North and South America, and Australia, highlights Ferrovial's capacity to manage different kinds of projects across multiple geographies.

## **PESTLE ANALYSIS**

### **1. Political Factors:**

Infrastructure investment policies: Ferrovial's operations extend through various countries, and its projects often rely on government contracts and funding. For this reason, the company deeply relies on government policies regarding infrastructure spending and public-private partnerships (PPPs).

Political stability: Ferrovial often engages in PPPs for infrastructure projects, where political support and stability are crucial. Ferrovial's ability to navigate government regulations and secure contracts may depend on its commitment to political leaders.

**Fiscal Headquarters Relocation:** In March 2023, Ferrovial announced its decision to relocate its fiscal headquarters from Spain to the Netherlands. This move was justified by the company as part of its internationalization strategy, aimed at facilitating its listing on the New York Stock Exchange and accessing more favorable conditions. However, this decision sparked significant controversy in Spain, causing criticism, as the relocation may be viewed as an attempt to avoid Spanish taxes. The relocation has highlighted the importance of political relations and regulatory environments in the strategic decisions of multinational companies like Ferrovial. It also underscores the potential political risks that companies may face when making such significant structural changes.

## **2. Economic Factors:**

**Interest rates and financing costs:** Ferrovial often relies on debt financing for large-scale projects. Changes in interest rates can impact borrowing costs and profitability, affecting investment decisions.

## **3. Social Factors:**

**Community engagement and corporate social responsibility (CSR):** Ferrovial's reputation and project acceptance often hinge on its CSR initiatives and community engagement efforts. For this reason, the company could address community needs and enhance transparency by incorporating CSR principles into its business practices, such as promoting environmental sustainability or supporting social development projects.

## **4. Technological Factors:**

**Innovation and digitalization:** Technological advancements, such as digital infrastructure solutions are transforming the infrastructure and construction sector. Ferrovial must invest in innovative technologies to remain competitive, enhance project efficiency, and meet evolving client demands.

**Sustainable infrastructure practices:** Growing emphasis on sustainability requires Ferrovial to adopt ecofriendly construction methods, renewable energy solutions, and green infrastructure designs.

## **5. Legal factors:**

**Regulatory Compliance:** Ferrovial operates in multiple countries, each with its own regulatory framework regarding construction standards, environmental protection and safety. Compliance with regulations is a must to avoid legal risks, fines, and project delays.

## **6. Environmental Factors:**

Climate change and resilience: Environmental factors pose challenges and opportunities for Ferrovial. Climate resilience, carbon footprint reduction, and biodiversity conservation are critical considerations for the company's long-term sustainability strategy.

## **PORTER ANALYSIS**

### **1. Rivalry among existing competitors:**

The rivalry among existing competitors in the infrastructure and construction sector is notable, including giants such as ACS, Acciona, and VINCI among others. Firstly, the market concentration is high, which leads dominant players to compete fiercely to secure contracts for large-scale infrastructure projects, often leading to price wars and thin profit margins. Furthermore, the sector's rapid growth, driven by technological advancements, intensifies pressure on the firms that aim for innovation leadership, requiring high R&D investments to keep pace. Moreover, the rivalry is fuelled by long-term commitments, as exit barriers are significant due to substantial investments in infrastructure, intellectual property, and client relationships. For these reasons, there is no doubt that the level of competition in the market is high.

### **2. Threat of new entrants:**

The threat of new entrants to the industry is mitigated by several factors acting as barriers to entry. These factors include significant capital investment, specialized knowledge and established relationships with clients and suppliers. Moreover, Ferrovial and other established competitors capitalize on economies of scale, so new entrants would struggle to match the company's experience, reputation and established relationships with government entities and other industry customers.

### **3. Threat of substitutes:**

At the moment, the threat of substitutes in the sector is very low due to the essential nature of the service provided. However, alternative construction methods, materials, and technologies such as 3D printing and modular construction continue to emerge, posing a potential threat to current practices.

#### **4. Bargaining power of suppliers:**

Even though the policies of suppliers of raw materials and equipment in the construction sector have a great impact on the industry, Ferrovial is a major player and thanks to its large-scale projects and relation network, possesses enough bargaining power to mitigate the force of the suppliers. However, fluctuations in commodity prices can still pose challenges, so we can conclude that the suppliers hold moderate bargaining power.

#### **5. Bargaining power of clients:**

The bargaining power of clients in the industry is high for several reasons. Firstly, clients in this sector often have multiple contractors to choose from for projects, which gives them important leverage to negotiate and the possibility to switch to the one that offers better terms or pricing. Moreover, it is usual in the industry for projects to be awarded through competitive bidding processes, in which clients can exert a lot of pressure on the firms to lower prices or improve terms to win contracts.

# CAPITAL ASSET PRICING MODEL (CAPM)

Developed by William Sharpe in 1964, the Capital Asset Pricing Model provides a framework for determining the expected return on an asset taking into account its inherent risk relative to the market, represented by its beta (Sharpe, 1964). The model incorporates the risk-free rate, the market risk premium, and the asset's beta to evaluate the expected return. In addition, the CAPM is also used to estimate the cost of equity of a company, which is the same as the return required by investors to compensate for the risk of holding a firm's stock.

In the context of this work, this model is being employed to calculate the cost of equity ( $K_e$ ) for the five selected companies: Inditex, Banco Santander, Iberdrola, Amadeus IT, and Ferrovial. The cost of equity is a crucial component in determining the Weighted Average Cost of Capital (WACC), which serves as the discount rate for evaluating the net present value of two types of future cash flows: the free cash flows (FCF) and capital cash flows (CCF).

It should be noted that the limitations of the CAPM are taken into account. Pablo Fernández (2017) argues that this model does not reflect real market behavior, and it is not precise to calculate the cost of equity. Therefore, this model is extended by the Fama and French model in the next section, which incorporates additional factors and provides a more accurate estimation of the cost of equity. However, the CAPM will still be developed to build a deeper comprehension, as Fama and French (2004) state that this model is often the first step in understanding portfolio theory and asset pricing before progressing to more complex ones.

The Capital Asset Pricing Model (CAPM) is built on several fundamental assumptions (Investopedia, 2023). These assumptions include:

1. Investors are rational and risk-averse.
2. Efficient markets & Homogeneous expectations: All information is available and reflected in stock prices, implying that stocks are fairly valued. Therefore, all investors have the same expectations and agree on the prices of assets.
3. Perfect markets: The model assumes that there are no taxes or transaction costs, which allows investors to trade freely without any impediments.
4. Unlimited borrowing and lending at a risk-free rate: Investors can borrow or lend unlimited amounts of money at the same risk-free interest rate for all investors.

5. Single-Period Investment Horizon: Investors are assumed to plan their investments over a single period, typically a year. This means they only consider the returns and risks associated with this single period, ignoring any potential multi-period effects.

According to the CAPM, the cost of equity is equal to the return of a risk-free asset plus a risk premium. The risk premium is the product of the investment's beta (a measure of its volatility compared to the market) and the market risk premium.

The formula is expressed as follows:

$$E(R_i) = K_e = R_f + \beta_i (E(R_m) - R_f)$$

where:

- $E(R_i)$  is the expected return or Cost of equity ( $K_e$ ).
- $R_f$  is the Risk-free rate.
- $\beta_i$  is the Beta, which represents its sensitivity to market movements.
- $E(R_m)$  is the Expected market return
- $(E(R_m) - R_f)$  is the Market risk premium.

## I. RISK FREE RATE ( $R_f$ )

The risk-free rate represents the return obtained from investing in an asset that theoretically presents zero risk to the investor. This zero risk, however, comes with a drawback: the return provided by these assets is lower compared to those that involve risk.

There exists an ongoing debate regarding the determination of a truly risk-free rate, as no asset could be entirely free from risk. Consequently, the risk-free rate is typically linked with the assets that bear the minimum risk in the market, government bonds, but in this case, it will be established considering the data provided by experts in the subject, for higher precision.

The selected rate is the average risk-free rate for Spain provided in the document “*Survey: Market Risk Premium and Risk-Free Rate used for 96 countries in 2024*” by the authors Fernandez, P., Garcia de la Garza, D., & Fernández Acín, L. (2024). The Risk-Free Rate for Spain is estimated from the aggregated answers of a survey with 431 respondents including finance and economics professionals. The authors highlight that many participants rely on historical data and textbook advice rather than standard theoretical models to determine their estimates of required equity returns (Fernández et al, 2024). Therefore, the risk-free rate ( $R_f$ ) for Spain is:

$$R_f = 0,035$$

## II. MARKET RISK PREMIUM ( $E(R_m) - R_f$ )

The market risk premium (MRP) is the difference between the expected market return and the risk-free rate, that is, the additional return that investors require for investing in a risk asset over a risk-free asset. It reflects the extra compensation investors obtain for undergoing market volatility and uncertainty.

Regarding the estimation of the MRP, there are different approaches. Pablo Fernández (2004) designates three main MRP perspectives: historical, required, and expected. However, all these approaches present some problems: on the one hand, historical MRP may not accurately reflect future risks and returns, and on the other hand, required and expected MRPs differ among investors due to their unique risk assessments and return expectations.

In addition to the mentioned methods, a more direct way to estimate the market risk premium is to extract it from survey data. However, this approach presents some limitations. Ilmanen (2003) notes that “survey-based expected returns may tell us more about hoped-for returns than about required returns,” highlighting the potential disconnect between survey responses and actual market expectations. Despite criticisms of survey-based approaches and given the lack of consensus on a definitive method, for this work it is considered that data from expert surveys provide a useful reference benchmark for the estimation of the market risk premium.

The market risk premium is derived from the average for Spain in 2024 provided in the document “*Survey: Market Risk Premium and Risk-Free Rate used for 96 countries in 2024*” by the authors Fernandez, P., Garcia de la Garza, D., & Fernández Acín, L. (2024). The Market Risk Premium (MRP) is estimated in this paper using the same survey methodology as for the risk-free rate. Both metrics are derived from responses collected from 431 respondents including finance and economics professionals in Spain, reflecting current market expectations. Therefore, the market risk premium (MRP) for Spain is:

$$(E(R_m) - R_f) = 0,064$$

Consequently:

$$E(R_m) = 0,099$$

### III. BETA ( $\beta_i$ )

The factor-beta ( $\beta$ ) quantifies a stock’s volatility in relation to the overall market. Therefore, the value of beta shows how sensitive the asset's returns are to the variations in the market. The beta measures systematic risk, this is the risk to which the whole market assets are exposed, the one that cannot be diversified, showing how a particular stock will respond to market movements.

The formula for the calculation is expressed as follows:

$$\beta_u = \frac{Cov(R_i, R_m)}{Var(R_m)}$$

where:

- $R_i$  is the return of the asset
- $R_m$  is the return of the market, in this study represented by the IBEX 35 index.

The value of the beta ( $\beta$ ) leads to the following interpretations:

- $\beta = 1$ : Indicates that the stock has the same behavior as the market, it would be a neutral asset, so the risk and return are market average.
- $\beta > 1$ : Indicates that the stock is more volatile (higher risk) than the market. High beta assets are considered more aggressive, they imply high risks but may offer higher

returns. For example, if a stock has  $\beta = 1.2$ , it is expected to move 20% more than the market. If the market goes up by 10%, the stock will go up by 12%. Conversely, if the market goes down by 10%, the stock will go down by 12%.

- $\beta > 1$ : Indicates that the stock is less volatile (lower risk) than the market. Low beta assets are considered more conservative, they imply low risks but may offer lower returns. For example, if a stock has  $\beta = 0.8$ , it is expected to move 20% less than the market. If the market goes up by 10%, the stock will go up by 8%. Conversely, if the market goes down by 10%, the stock will go down by 8%.

The estimation of betas is a topic of debate among academics and professionals. On the one hand, Pablo Fernández criticized the use of calculated betas, arguing that they can be unstable and very sensitive to the time period and reference index used, potentially leading to inaccurate estimates (Fernández, 2006). Therefore, Fernández (2006) recommends alternative approaches like the qualitative beta calculation, which incorporates subjective judgments and qualitative factors into the estimation. In contrast, authors like Bodie et al. (2014) defend the use of calculated betas, arguing that betas derived from historical market data provide a practical and valuable measure for estimating the required return for investors.

Considering these perspectives, it is considered that the qualitative calculation of the beta proposed by Fernández (2006) can introduce significant biases and lack of empirical rigor if not conducted by an expert. For this reason, it has been decided to use the beta calculation in this study, as it relies on a widely accepted empirical basis.

To estimate the betas ( $\beta$ ), a five-year period with weekly interval frequency has been selected. This choice is grounded in the findings of Agrawal et al. (2022), who demonstrated that shorter return intervals, such as weekly returns, combined with longer estimation periods, yield more stable and robust beta coefficients. Their study analyzed data from 2000 to 2021, concluding that weekly return-based betas over five years lead to lower tracking errors, particularly for large-cap stocks (Agrawal et al., 2022).

Therefore, beta coefficients have been calculated using five-year weekly historical stock prices, considering data from January 2019 to December 2023 obtained from *Yahoo Finance*. The beta values were derived through a regression analysis of the individual firm's returns against the returns of the IBEX 35 index, which serves as the market benchmark.

The calculated betas are as follows (check appendix):

1. Inditex: ( $\beta = 1,0476$ ).
2. Banco Santander: ( $\beta = 1,5667$ ).
3. Iberdrola: ( $\beta = 0,6357$ ).
4. Amadeus IT: ( $\beta = 1,2635$ ).
5. Ferrovial: ( $\beta = 0,9370$ ).

Table 1: Betas ( $\beta$ ) for ITX, SAN, IBE, AMS and FER.

	ITX	SAN	IBE	AMS	FER
$\beta$	1,0476	1,5667	0,6357	1,2635	0,9370

Source: Own elaboration

The estimated betas measure the exposure of each of the firms to systematic risk, but they do not consider the company's capital structure. Levered beta, on the other hand, does reflect the effects of its capital structure, particularly financial leverage, and may provide greater accuracy in some cases. However, in this case, Banco Santander, Amadeus IT, and Ferrovial operate in industries where high debt ratios are standard due to their business models. In these industries, high leverage is a normal aspect of operations and may not necessarily indicate higher risk. In my opinion, relying on levered beta might disproportionately inflate the cost of equity of these firms, so unlevered betas will be used for the calculation of the cost of equity for the five companies to maintain a consistent and comparable framework across all the firms under analysis. This approach isolates the operational risk of the companies and aligns with their industries' nature.

#### IV. COST OF EQUITY ( $K_e$ )

Now that all the variables required to calculate the cost of equity are known, we can proceed to estimate the cost of equity for each company with the formula:

$$E(R_i) = K_e = R_f + \beta_i (E(R_m) - R_f)$$

the common variables for all the companies are:

$$R_f = 0,035$$

$$(E(R_m) - R_f) = 0,064$$

The Cost of equity ( $K_e$ ) derived for each company:

$$K_e (\text{ITX}) = 0,035 + 1,0476 * 0,064 = 10,20 \%$$

$$K_e (\text{SAN}) = 0,035 + 1,5667 * 0,064 = 13,53 \%$$

$$K_e (\text{IBE}) = 0,035 + 0,6357 * 0,064 = 7,57 \%$$

$$K_e (\text{AMS}) = 0,035 + 1,2635 * 0,064 = 11,59 \%$$

$$K_e (\text{FER}) = 0,035 + 0,9370 * 0,064 = 9,50 \%$$

Table 2: Cost of equity ( $K_e$ ) for ITX, SAN, IBE, AMS, and FER (methodology: CAPM).

	ITX	SAN	IBE	AMS	FER
$K_e$	10,20 %	13,53 %	7,57 %	11,59 %	9,50 %

Source: Own elaboration.

# FAMA & FRENCH THREE-FACTOR MODEL

The Fama & French three-factor model is a more complex methodology constructed from the Capital Asset Pricing Model, which introduces two more factors (SMB and HML) that serve to provide a more accurate estimation of the cost of equity ( $K_e$ ). While the Fama & French model is often considered more precise, as supported by studies like Fama and French (1993, 2004), the CAPM remains a fundamental tool for understanding asset pricing. Therefore, in the following sections of this work, results from both the CAPM and the Fama & French three-factor model will be employed. By comparing the outcomes of both methods, I will evaluate whether the Fama & French model indeed offers greater accuracy, as suggested by academic research, while also gaining insights from the traditional CAPM approach.

The Fama & French model explains the cost of equity (or return for the investor) with three factors:

- Market risk premium (MRP): This factor also used in the CAPM represents the excess return of the market portfolio over the risk-free rate, capturing the additional return that investors require for investing in a risk asset over a risk-free asset.
- Small Minus Big factor (SMB): This factor captures size risk, this is, the excess returns of small-cap stocks over large-cap stocks. On average, small-cap stocks tend to outperform large-cap stocks. SMB is calculated as the difference in returns between a portfolio of small-cap stocks and a portfolio of large-cap stocks.
- High Minus Low (HML): This factor measures value risk, this is, the excess returns of value stocks over growth stocks. Value stocks are characterized by high book-to-market ratios, while growth stocks have low book-to-market ratios. HML is calculated as the difference in returns between a portfolio of high book-to-market stocks (value) and a portfolio of low book-to-market stocks (growth).

The formula of the Fama & French three factor model is as follows:

$$K_e = R_f + \beta_m (E(R_m) - R_f) + \beta_{SMB} * E(SMB) + \beta_{HML} * E(HML)$$

where:

- $K_e$  is the cost of equity or expected return ( $E(R_i)$ )
- $R_f$  is the Risk-free rate.
- $\beta$  is the factor's coefficient, which represents the sensitivity of the stock to its factor's variations.
- $(R_m - R_f)$  is the Market risk premium.
- SMB (Small Minus Big) is the historic excess returns of small-cap over large-cap companies.
- HML (High Minus Low) is the historic excess returns of value stocks (high book-to-price ratio) over growth stocks (low book-to-price ratio).

## **Methodology for the Fama-French Three-Factor Model**

The estimation of the cost of equity for Inditex, Banco Santander, Iberdrola, Amadeus IT, and Ferrovial is carried out by running five (one for each company) linear regression analyses in Microsoft Excel, integrating both company-specific and market-wide data.

### **I. Data Collection:**

The data for this analysis comprises historical stock prices for each firm and the Fama-French three factors, which include the market risk premium (MRP), the size premium (SMB), and the value premium (HML). The historical stock prices have been obtained from *Yahoo Finance*, and the Fama-French factors and the risk-free rates ( $R_f$ ) have been sourced from the Fama & French Data Library. Concerning the time horizon, following the findings of Agrawal et al. (2022), a weekly basis over a five-year period is selected, as it is considered a robust sample size that reduces the impact of short-term volatility.

### **II. Data Preparation:**

The collected data is organized into a time series format suitable for regression analysis. The monthly return ( $R_i$ ) for the five companies is calculated from the historical stock prices, and subsequently, the monthly excess return ( $R_i - R_f$ ) is determined by subtracting the risk-free rate from the monthly return. This excess return serves as the dependent variable in the five regression models.

### III. Regression Analysis:

Now, the five regression analyses are conducted using the excess returns ( $R_i - R_f$ ) as the dependent variables and the three Fama-French factors (MRP, SMB, HML) as independent variables. The regression provides the estimation of the coefficients  $\beta_m$ ,  $\beta_{SMB}$ , and  $\beta_{HML}$  for each company (check the appendix for the regression results).

Table 3: Three-factor betas ( $\beta_m$ ,  $\beta_{SMB}$ ,  $\beta_{HML}$ ) for ITX, SAN, IBE, AMS, and FER:

	ITX	SAN	IBE	AMS	FER
$\beta_m$	0,6393	0,8350	0,4132	0,9359	0,8335
$\beta_{SMB}$	0,5075	0,6598	0,0039	0,5609	0,2422
$\beta_{HML}$	0,3394	0,8531	0,0119	0,6406	0,2420

Source: Own elaboration.

### IV. Estimation of the three factors (MRP, SMB, and HML):

The factors ( $R_f$ ), ( $E(R_m) - R_f$ ), ( $E(SMB)$ ) and ( $E(HML)$ ) are calculated as the average values of the risk-free rate ( $R_f$ ), market risk premium (MRP), SMB, and HML factors, respectively, and then multiplied by 12 months to get the annual factors. These averages are computed from the historical data provided by the Fama & French Data Library.

Table 3: Expected annual factors ( $R_f$ , MRP, SMB, HML):

$R_f$	0,0193
$E(R_m) - R_f$	0,1443
$E(SMB)$	-0,0083
$E(HML)$	-0,0036

Source: Own elaboration.

## V. Estimation of the cost of equity (Ke):

Now that all the variables required to calculate the cost of equity are known, we can proceed to estimate the cost of equity for each company with the formula:

$$K_e = R_f + \beta_m (E (R_m) - R_f) + \beta_{SMB} * E (SMB) + \beta_{HML} * E (HML)$$

The Cost of equity (Ke) derived for each company is:

$$K_e (ITX) = 0.0193 + 0.6393 \times 0.1443 + 0.5075 \times (-0.0083) + 0.3394 \times (-0.0036)$$

$$K_e (SAN) = 0.0193 + 0.8350 \times 0.1443 + 0.6598 \times (-0.0083) + 0.8531 \times (-0.0036)$$

$$K_e (IBE) = 0.0193 + 0.4132 \times 0.1443 + 0.0039 \times (-0.0083) + 0.0119 \times (-0.0036)$$

$$K_e (AMS) = 0.0193 + 0.9359 \times 0.1443 + 0.5609 \times (-0.0083) + 0.6406 \times (-0.0036)$$

$$K_e (FER) = 0.0193 + 0.8335 \times 0.1443 + 0.2422 \times (-0.0083) + 0.2420 \times (-0.0036)$$

Table 4: Cost of equity (Ke) for ITX, SAN, IBE, AMS, and FER (Fama & French compared to CAPM):

	ITX	SAN	IBE	AMS	FER
F&F (Ke)	10,61%	13,12%	7,88%	14,74%	13,67%
Compared to					
CAPM (Ke)	10,20 %	13,53 %	7,57 %	11,59 %	9,50 %

Source: Own elaboration.

The different approaches of the CAPM and the Fama & French models are appreciated in the varying cost of equity (Ke) results provided by these two models for the five companies. The F&F model, by incorporating additional factors (size and value), captures broader dimensions of risk that may be more relevant for companies with firm and sector-specific risks. While the Ke for ITX, SAN, and IBE are very similar to the CAPM results, there are substantial variations for AMS and FER, where the F&F yields higher Ke estimates. The F&F model often provides a more precise and broad estimation of the cost of equity, as it considers additional risk factors that the CAPM does not.

# DISCOUNTED CASH FLOWS AS VALUATION TECHNIQUE

The Discounted Cash Flow (DCF) is a valuation technique used to determine the value of companies, projects, or any asset that generates cash flows over time. The DCF method is based on the principle that the value of a company today is equal to the sum of its future cash flows discounted back to its present value with the appropriate discount rate, considering the firm's risk level. This is because the value of a company depends on its capacity to generate profit in the future.

In order to understand the DCF, it is crucial to explain the concept of what cash flows represent. Cash flows are the amount of cash generated or consumed by a company during a specific period. As categorized in the Cash Flow Statement, there exist three types of cash flows: operating cash flows, investing cash flows, and financing cash flows. Operating cash flows might include revenue from sales and operating expenses like salaries or rent, investing cash flows could involve purchases or sales of assets, while financing cash flows might include issuing debt or equity and paying debt or dividends.

According to Fernández (2008), there are many different cash-flow discounting methods to value a company, however, they all start with the following expression:

$$V = \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \frac{CF_3}{(1+r)^3} + \dots + \frac{CF_n + TV_n}{(1+r)^n}$$

where:

- $V$  is the intrinsic value of the company.
- $CF_i$  is the cash flow generated by the company in the period  $i$ .
- $TV_n$  is the terminal value of the company in period  $n$ .
- $r$  is the appropriate discount rate for the cash flows' risk.

Pablo Fernandez (2008) delineates three primary types of cash flows that can be considered in company valuation:

- The debt cash flow ( $CF_d$ ) comprises the sum of the principal repayments and the interest payments on the debt. To calculate the present market value of the existing debt,  $CF_d$  must be discounted at the cost of debt ( $K_d$ ).
- The equity cash flow ( $CF_e$ ) represents the market value of the equity, this is, the cash intended for equity holders. The appropriate discount rate for ECF is the required return on equity ( $K_e$ ).
- The free cash flow (FCF) determines the total value of the firm without considering its debt and equity ( $D + E$ ). Therefore, debt and equity are considered in this method when discounting FCF with the appropriate discount rate, which is the weighted average cost of capital (WACC), reflecting the average rate of return required by all the company's investors (debt and equity holders), weighted by the equity and debt proportion in the company's capital structure.

For this work, the chosen cash flow discounting method is the free cash flow (FCF) approach, as it provides a broad view of the company's overall value, and by discounting FCF to WACC the risk of both debt and equity is included.

## **DISCOUNTED FREE CASH FLOWS (FCF)**

Free cash flows represent the amount of cash generated by the operations of the firm that is available to distribute between its security holders, including both debt and equity holders. This is, it indicates the cash available for dividends, debt repayment, or reinvestment into the business, independently from its capital structure.

Before discounting the FCF, three elements should be calculated:

1. Projected Free Cash Flows (FCF): They are estimates of the cash flows a company is expected to generate in the future.
2. Weighted Average Cost of Capital (WACC): It is used as the discount rate to calculate the present value of projected free cash flows, reflecting the required return by debt and equity investors.
3. Terminal Value (TV): It represents the estimated value of the cash flows that are going to be generated beyond the forecast period, extending into perpetuity.

## I. PROJECTION OF FREE CASH FLOWS

### PROJECTION PERIOD:

The period to which the cash flows will be projected is a decision that depends on the study's objective. Short periods, such as three years, are useful to capture near-term operational trends with higher certainty, however, it is deemed insufficient for encompassing the full spectrum of the operations of a firm. Conversely, longer projection periods, such as ten years or more, were contemplated for their potential to capture long-term growth trajectories, but they have been discarded due to the inherent uncertainty associated with forecasting cash flows over such extended periods, especially in dynamic market environments.

According to Damodaran (2002), a five-year forecast horizon is commonly utilized, as it strikes a balance between capturing near-term operational dynamics of the company and providing a reasonable projection window for longer-term strategic planning. For these reasons, a five-year projection horizon is considered the optimal choice.

### PROJECTING THE FCF BASED ON ITS RELATION WITH NET PROFIT:

To project the future cash flows of the selected companies in this study, net profit has been chosen as the reference variable due to its relevance and availability in historical financial reports. This methodology involves calculating the weighted average growth of the Net Profit (NP) over a ten-year historical period (to smooth out fluctuations and capture a more stable growth trend) and forecasting future net profits by applying this growth rate.

The free cash flows are projected into the future from the forecasted net profits by measuring the historical relationship between FCF and Net Profit (using the average FCF to NP ratio, calculated from the available historical data), assuming that this relationship will be maintained during the forecast period. This historical relationship establishes a well-founded connection between net income and FCF, simplifying the projection process and ensuring consistency with the historical performance.

To carry out this calculation, it is required to obtain the historical Net Profits and the Free Cash Flows from each company from December 2014 to December 2023 (10 years). The data for each company has been extracted from the following sources. Inditex: "*INDITEX GROUP ANNUAL REPORT (2014-2023)*". Banco Santander: "*Auditors' report and annual*

*consolidated accounts (2014-2023)*". Iberdrola: "*Annual financial report Iberdrola, S.A., and subsidiary companies (2014-2023)*". Amadeus IT: "*Amadeus IT Group, S.A. and Subsidiaries. Auditor's report, Consolidated annual accounts, and Directors' report (2014-2023)*". Ferrovial: "*Ferrovial, Consolidated Management Report and Financial Statements, INTEGRATED ANNUAL REPORT (2014-2023)*".

The reports of every company have provided their net profit figure in their consolidated income statements, but only the reports from Inditex and Amadeus IT provided the final amount of their FCF. For the rest of the companies, historical FCF were calculated using the formula  $FCF = Operating\ CF - CapEx$ . The operating CF and CapEx for each firm were obtained from their consolidated statements of cash flows.

Table 5: Free Cash Flow 5-year forecast (check the appendix for an extended version of the calculations):

*In million €	2024	2025	2026	2027	2028
FCF Inditex	5.113,57	5.663,88	6.273,41	6.948,54	7.696,32
FCF Santander	1.404,11	1.512,43	1.629,11	1.754,79	1.890,16
FCF Iberdrola	2.833,25	3.072,26	3.331,45	3.612,50	3.917,26
FCF Amadeus IT	1.102,50	1.285,58	1.499,05	1.747,96	2.038,21
FCF Ferrovial	847,26	890,63	936,22	984,14	1.034,51

Source: Own elaboration.

## II. SPECIAL MENTION: BANCO SANTANDER

Before calculating the WACC for the five companies, it is essential to acknowledge that the valuation of Banco Santander differs significantly from non-bank entities and requires additional considerations, particularly regarding the capital structure typical of banking institutions. According to Damodaran (2013), debt and debt payments cannot be easily identified for financial services firms. From the author's perspective, debt is more than a source of capital for a financial firm, it is the raw material used to create financial products. This unique characteristic combined with the high financial leverage of the industry creates challenges in defining and measuring debt, complicating the estimation of the WACC and the valuation of financial services firms. Consequently, the author recommends using cashflows to equity discounted at the cost of equity to value a financial service firm (Damodaran, 2013).

Despite Damodaran's (2013) recommendation, the Free Cash Flow methodology discounted at the WACC will be employed for Banco Santander in this work. This approach is crucial to maintaining a consistent valuation framework across the five firms, ensuring comparability and objectivity. Gropp and Heider (2009) address the limitations of measuring debt highlighted by Damodaran (2013), by providing a simple approach to identifying debt for financial institutions. Unlike non-financial firms, banks' capital structures include deposits, which should not be treated as typical debt for valuation purposes. Gropp and Heider (2009) recommend focusing on non-deposit liabilities, as these are more analogous to the long-term debt of non-financial firms.

Gropp and Heider (2009) suggest that when assessing the valuation of a financial service firm, not all debt components should be considered. According to the authors, deposits do not accurately represent actual leverage because they are influenced by regulatory factors rather than by market forces. Additionally, they serve as a unique source of financing for banks that do not apply to non-financial firms. Instead, the authors propose to include non-deposit liabilities in the valuation, which are more comparable to the long-term debt used in the capital structure of non-financial firms and are more reflective of the bank's actual leverage (Gropp & Heider, 2009).

Even after excluding deposits from the capital structure of Banco Santander, banks still exhibit a much higher proportion of debt compared to non-financial firms. This phenomenon is consistent with the findings of Diamond and Rajan (2000), who argue that banks' high levels of debt are compensated by their lower-risk asset base and the nature of their business model, which involves optimizing their capital structures to balance liquidity creation with stability. This high leverage is not indicative of financial instability but rather reflects the normal functioning of banks, where lower risk enables them to maximize the benefits of leverage more effectively than non-financial firms (Diamond & Rajan 2000).

Based on the insights provided by Gropp and Heider (2009), the estimation of debt for Banco Santander is derived using data obtained from Yahoo Finance. Specifically, debt is calculated as the difference between total liabilities and total deposits, expressed as:

$$\text{Debt (SAN)} = \text{Total liabilities} - \text{Total deposits}$$

Moreover, interest expenses should also be adjusted to ensure that only interest costs associated with non-deposit liabilities are included. The calculation of interest expenses for Banco Santander is derived from the Auditors' Report and Annual Consolidated Accounts (2023) as:

$$\begin{aligned} \text{Interest expense (SAN)} &= \text{Total Interest expense} - \text{Interest expense Central Bank Deposits} \\ &\quad - \text{Interest expense Credit Institution Deposits} - \text{Interest expense Customer Deposits} \end{aligned}$$

### III. WEIGHTED AVERAGE COST OF CAPITAL (WACC)

The Weighted Average Cost of Capital (WACC) represents the overall firm's cost of capital, combining the cost of equity and debt, weighted by their respective proportions in the company's capital structure. It represents the required rate of return that investors expect for the risk they are taking by investing in the company (debt or equity investors).

The formula for the WACC calculation is as follows:

$$WACC = K_e * \frac{E}{E + D} + K_d \frac{E}{E + D}$$

where:

- $K_e$  is the cost of equity
- $K_d$  is the cost of debt
- $E$  is the total equity of the firm and  $D$  is the total debt of the firm

The debt and the equity for each firm have been extracted from *Yahoo Finance*, the cost of equity ( $K_e$ ) is derived from the CAPM or Fama & French methodologies, and the cost of debt ( $K_d$ ) is calculated using the following expression (the data for the calculation has been extracted from the 2023 annual report of each company stated before):

$$K_d = \frac{\text{Interest Expense}}{\text{Average debt}} * (1 - t)$$

where:

- Interest Expense is the cost paid by the firm for borrowed money.
- Average debt is the average between  $\text{Debt}(n)$  and  $\text{Debt}(n-1)$ .
- $t$  is the effective tax rate for each company. <sup>1</sup>

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<sup>1</sup> The effective tax rate ( $t$ ) is calculated from the formula “ $t = \text{Income Tax} / \text{Profit Before Tax}$ ”. It is independent for each company, as each one of them operates in a specific set of countries with different tax rates.

Table 6: Weighted Average Cost of Capital (WACC) for ITX, SAN, IBE, AMS, and FER. The Cost of equity ( $K_e$ ) is derived from the CAPM methodology:

*In million €	ITX	SAN	IBE	AMS	FER
Equity $n$	18.672	104.241	60.292	4.483	5.879
Cost of equity ( $K_e$ )	10,20%	13,53%	7,57%	11,59%	9,50%
Debt $n$	14.063	664.320	89.741	6.313	20.439
Debt $(n-1)$	12.950	634.652	92.000	7.129	19.991
Average Total Debt	13.507	649.486	90.871	6.721	20.215
Interest expense	271	19.403	3.722	92	467
Pre-tax cost of debt (i)	2,01%	2,99%	4,10%	1,37%	2,31%
Tax rate (t)	21,5%	26,0%	22,9%	17,8%	22,0%
Cost of debt ( $K_d$ )	1,58%	2,21%	3,16%	1,13%	1,80%
WACC	6,50%	3,75%	4,93%	5,47%	3,52%

Source: Own elaboration.

Table 7: Weighted Average Cost of Capital (WACC) for ITX, SAN, IBE, AMS, and FER. The Cost of equity ( $K_e$ ) is derived from the Fama & French methodology:

*In million €	ITX	SAN	IBE	AMS	FER
Equity $n$	18.672	104.241	60.292	4.483	5.879
Cost of equity ( $K_e$ )	10,61%	13,12%	7,88%	14,74%	13,67%
Debt $n$	14.063	664.320	89.741	6.313	20.439
Debt $(n-1)$	12.950	634.652	92.000	7.129	19.991
Average Total Debt	13.507	649.486	90.871	6.721	20.215
Interest expense	271	19.403	3.722	92	467
Pre-tax cost of debt (i)	2,01%	2,99%	4,10%	1,37%	2,31%
Tax rate (t)	21,5%	26,0%	22,9%	17,8%	22,0%
Cost of debt ( $K_d$ )	1,58%	2,21%	3,16%	1,13%	1,80%
WACC	6,73%	3,69%	5,06%	6,78%	4,45%

Source: Own elaboration.

## IV. TERMINAL VALUE

The terminal value represents the estimated value of the cash flows that will be generated beyond the forecast period, extending to perpetuity. This is, the terminal value captures the value of all future cash flows after the projection period ( $n$ ), and is then discounted back to the present value for the firm's intrinsic value calculation.

Fernández (2008) suggests that to account for indefinite future cash flows, a constant growth rate ( $g$ ) can be assumed. Additionally, Fernández argues that cash flows theoretically continue indefinitely, so their present value becomes progressively smaller as the time horizon extends further into the future, so it is acceptable to ignore their value after a certain period.

The formula to calculate the Terminal Value (TV) for each firm is as follows:

$$TV_n = \frac{CF_n * (1+g)}{(r-g)}$$

where:

- $CF_n$  is the last year's projected cash flow.
- $g$  is the constant growth rate.
- $r$  is the discount rate, in this case, the WACC.

In this work, the growth rate ( $g$ ) is common for all five firms, and it is calculated using the GDP growth projections for Spain from 2028 to 2043, by averaging the annual GDP growth rates projected for this 15-year period. Considering the period 2028 to 2043 allows us to capture an estimate of long-term growth. The information on the Spanish GDP projection has been obtained from the OECD's long-term GDP forecast (OECD, 2020).

The estimated growth rate ( $g$ ) is (check appendix for the estimation):

$$g = 1,30 \%$$

Table 8: Terminal Value ( $TV_n$ ) for each firm derived from the CAPM methodology:

*In million €	ITX	SAN	IBE	AMS	FER
CF <sub>n</sub>	7.696	1.890	3.917	2.038	1.035
WACC	6,50%	3,75%	4,93%	5,47%	3,52%
Growth rate (g)	1,30%	1,30%	1,30%	1,30%	1,30%
Terminal value (TV)	149.910	78.177	109.221	49.475	47.120

Source: Own elaboration.

Table 9: Terminal Value ( $TV_n$ ) for each firm derived from the Fama & French methodology:

*In million €	ITX	SAN	IBE	AMS	FER
CF <sub>n</sub>	13.823	1.783	4.310	2.472	1.035
WACC	8,15%	3,32%	5,79%	6,89%	4,50%
Growth rate (g)	1,30%	1,30%	1,30%	1,30%	1,30%
Terminal value (TV)	204.332	89.107	97.240	44.742	32.723

Source: Own elaboration.

## V. INTRINSIC VALUE

The estimation of the intrinsic value is the last step in completing the discounted cash flow analysis. The intrinsic value represents the fundamental worth of a company based on its capacity to generate cash flows over its lifetime. It is estimated as the present value of all the expected future cash flows discounted at the appropriate rate.

The intrinsic value serves as a reference figure for investment decision-making. It provides an estimate of a firm's value, allowing investors to compare it with the market value. If the intrinsic value is higher than the market capitalization, the stock may be undervalued, indicating that the stock represents a good buying opportunity. Conversely, if the intrinsic value is lower than the market value, the stock may be overvalued.

Table 10: Market capitalization, Number of shares, and Closing share price for ITX, SAN, IBE, AMS, and FER on 31/12/2023 (obtained from *Yahoo Finance*):

	ITX	SAN	IBE	AMS	FER
Market Cap. *In million €	123.762	61.168	75.378	29.228	24.458
Number of Shares	3.117	16.184	6.350	450	741
Market Price per Share (€)	39,71	3,78	11,87	64,88	33,02

Source: Own elaboration.

Now that the projected Free Cash Flows (FCF), the weighted average cost of capital (WACC), and the Terminal Value ( $TV_n$ ) have been estimated for Inditex, Banco Santander, Iberdrola, Amadeus IT, and Ferrovial, we can proceed with the calculation of the Intrinsic Value ( $V$ ) of each firm (check appendix for an extended version of the estimation for each firm).

The formula of the DCF analysis to calculate the intrinsic value is:

$$V = \frac{CF1}{(1+r)^1} + \frac{CF2}{(1+r)^2} + \frac{CF3}{(1+r)^3} + \dots + \frac{CFn + TVn}{(1+r)^n}$$

Table 11: Intrinsic value and Price for ITX, SAN, IBE, AMS, and FER derived from CAPM:

	ITX	SAN	IBE	AMS	FER
Intrinsic Value ( $V$ ) *In million €	134.085	72.535	100.394	41.848	43.841
Estimated Price per Share (€)	43,02	4,48	15,81	92,89	59,19

Source: Own elaboration.

Table 12: Intrinsic value and Price for ITX, SAN, IBE, AMS, and FER derived from Fama & French:

	ITX	SAN	IBE	AMS	FER
Intrinsic Value ( $V$ ) *In million €	129.478	74.029	97.516	33.344	32.155
Estimated Price per Share (€)	41,54	4,57	15,36	74,01	43,41

Source: Own elaboration.

As it can be observed, the intrinsic value of the five firms exceeds their market capitalizations using both the data derived from the CAPM methodology and the data derived from the Fama & French. This indicates that the market value of the companies is undervalued, presenting good buying opportunities for these stocks. Thus, these firms fulfill the criteria to be considered strong candidates for the simulated investment portfolio.

Numerous studies, including the seminal research by Fama and French (1993, 2004), support the Fama-French multifactor model as a more accurate methodology compared to the CAPM for asset pricing, as it better captures the variations in stock returns by introducing additional risk factors, such as size and value. This can be observed in the intrinsic values for ITX, SAN, IBE, AMS, and FER if we compare the results derived from the CAPM to the results from the Fama & French. While both methodologies indicate that the five companies are undervalued (intrinsic value exceeds market value), the Fama & French model offers a more precise estimate of intrinsic value. The estimated prices using the Fama & French model are closer to actual market prices (check Table 13) compared to the larger deviation seen with CAPM estimates. Therefore, it would be prudent to use the results from Fama & French as a stronger basis for decision-making, ensuring that investment choices are grounded in a more reliable and comprehensive analysis.

Table 13: Estimated Share Price Compared to Market Share Price, derived from Fama & French:

	ITX	SAN	IBE	AMS	FER
Estimated Price per Share (€)	41,54	4,57	15,36	74,01	43,41
Market Price per Share (€)	39,71	3,78	11,87	64,88	33,02
Margin: Estimation over Market Price	4,62 %	21,03 %	29,37 %	14,08 %	31,47 %

Source: Own elaboration

# **MODERN PORTFOLIO THEORY (MPT)**

The Markowitz Optimal Portfolio Theory aims to construct investment portfolios that maximize expected returns while minimizing the level of risk through the principle of diversification. The theory posits that investors should not rely solely on individual expected returns as a conclusive metric when deciding whether to include a stock in an investment portfolio. Instead, this model emphasizes the importance of considering the interactions between stocks to determine the optimal weights of each stock in a portfolio for achieving balance between risk and return

These interactions are captured by the correlation between asset returns. When different stocks are combined in a portfolio, the overall risk can be reduced if the assets have an inverse relation. In other words, assets that have low or negative correlations do not respond to market changes in the same way, which smooths out ups and downs, reducing risk, and providing a more stable overall return. This approach encourages investors to think about their investments in terms of the portfolio as a whole, rather than focusing solely on individual assets.

For this reason, even though the DCF analyses for Inditex, Banco Santander, Iberdrola, Amadeus IT, and Ferrovial indicate that these companies represent favourable investment opportunities, it is essential to consider the correlation of these assets before deciding on their inclusion in the portfolio and respective weights. Therefore, while individual valuations may suggest strong investment prospects, the Modern Portfolio Theory will serve to evaluate how these assets interact, optimizing the portfolio performance.

## **Methodology for Optimally Weighted Portfolio Calculation**

The methodology employed to calculate the Optimally Weighted Portfolio involves several systematic steps, outlined below, applied to the five selected companies: Inditex, Banco Santander, Iberdrola, Amadeus IT, and Ferrovial. This methodology has been carried out through Microsoft Excel.

## I. Data collection and preparation:

The data required for the portfolio optimization analysis consists of historical stock prices for the five companies, retrieved from Yahoo Finance. Concerning the time horizon, a weekly basis over a five-year period is selected, as it is considered that shorter return intervals combined with longer estimation periods (such as 5 years) yield a stable and robust sample size that leads to lower tracking errors (Agrawal et al., 2022).

From the stock prices, returns are computed for each company across the entire five-year period, establishing a time series dataset of weekly returns. These returns serve as the basis for all the subsequent calculations of the MPT.

## II. Annual Return and Variance

The annual return for each company is calculated as the arithmetic average of its weekly returns and then scaled to an annual basis. Similarly, the annual variance is also computed to measure the degree of volatility of the returns, with higher variance suggesting greater risk.

Table 14: Annual returns and Annual variances for ITX, SAN, IBE, AMS and FER:

	ITX	SAN	IBE	AMS	FER
Annual Return	18,14%	11,55%	17,86%	8,49%	18,92%
Annual Variance	0,0857	0,1706	0,0564	0,1343	0,0762

Source: Own elaboration.

## III. Variance-Covariance Matrix

To capture the correlation between the returns of the five stocks, the Variance-Covariance matrix is constructed from the 5-year weekly returns of each firm.

Table 15: Variance - Covariance matrix for ITX, SAN, IBE, AMS, and FER:

	ITX	SAN	IBE	AMS	FER
ITX	0,0857	0,0647	0,0276	0,0675	0,0539
SAN	0,0647	0,1706	0,0252	0,0903	0,0595
IBE	0,0276	0,0252	0,0564	0,0296	0,0276
AMS	0,0675	0,0903	0,0296	0,1343	0,0648
FER	0,0539	0,0595	0,0276	0,0648	0,0762

Source: Own elaboration.

## IV. Portfolio Optimization

The optimized portfolio is the one with the highest possible value of the Sharpe Ratio, which is the measure used to evaluate the risk-adjusted return. It quantifies the excess return received for the extra volatility exposure.

The Sharpe Ratio is computed from the formula:

$$\text{Sharpe Ratio} = \frac{E(R_p) - R_f}{\sigma_p}$$

where:

- $E(R_p)$  is the expected return of the portfolio, calculated as the weighted average of the individual expected returns of each stock.
- $R_f$  is the risk-free rate, extracted from the Fama & French analysis ( $R_f = 1,77\%$ ).
- $\sigma_p$  is the standard deviation of the portfolio, calculated as  $\sqrt{\text{Var}_p}$ .
- $\text{Var}_p$  is the variance of the portfolio, calculated as the weighted average of the individual variances of each stock.

To estimate the optimized portfolio in Excel, first, it is necessary to measure the Sharpe ratio of a supposed portfolio. Let this be an equally weighted portfolio.

Table 16: Equally weighted portfolio and its Sharpe Ratio:

Equally weighted portfolio	
ITX	20%
SAN	20%
IBE	20%
AMS	20%
FER	20%
Portfolio	100%
Portfolio Return	14,99%
Portfolio Variance	0,0618
Portfolio Risk ( <i>Std</i> )	0,2485
Sharpe Ratio	0,5255

Source: Own elaboration.

Once the Sharpe ratio has been calculated for the equally weighted portfolio, it can be maximized using the Solver add-in in Excel, subject to the following parameters:

1. The objective function is set to maximize the Sharpe Ratio of the supposed portfolio.
2. The changing variables are the portfolio weights for each stock.
3. Constraints: The sum of the portfolio weights must equal 1, ensuring that all available capital is allocated, and each portfolio weight must be non-negative.

Table 17: Optimally weighted portfolio and its Sharpe Ratio:

<b>Optimally weighted portfolio</b>	
ITX	14,67%
SAN	0%
IBE	54,85%
AMS	0%
FER	30,49%
Portfolio	100,00%
Portfolio Return	18,23%
Portfolio Variance	0,0444
Portfolio Risk ( <i>Std</i> )	0,2107
Sharpe Ratio	0,7734

Source: Own elaboration.

The optimally weighted portfolio demonstrates significant improvements in performance metrics compared to the equally weighted portfolio. By allocating 54,85% to Iberdrola (IBE), 30,49% to Ferrovial (FER), and 14,67% to Inditex (ITX), and excluding Banco Santander (SAN) and Amadeus IT (AMS), the portfolio achieves a return of 18,23%, which is notably higher than the 14,99% return of the equally weighted portfolio. Additionally, the standard deviation of 0,2107 in the optimized portfolio is lower compared to 0,2485 in the equally weighted portfolio, showing a risk reduction. This optimization results in a superior Sharpe Ratio of 0,7734, indicating a higher risk-adjusted return.

# CONCLUSIONS

The aim of this study had a twofold approach: The first objective was to perform an exhaustive valuation of Inditex (ITX), Banco Santander (SAN), Iberdrola (IBE), Amadeus IT (AMS) and Ferrovial (FER) using fundamental analysis methodologies. Additionally, the goal was to construct and optimize a simulated investment portfolio considering these valuations, utilizing Modern Portfolio Theory (MPT). The analysis and subsequent portfolio construction yielded several key insights.

The Discounted Cash Flow (DCF) analysis has been used as the main valuation technique, revealing that the intrinsic values of Inditex, Banco Santander, Iberdrola, Amadeus IT, and Ferrovial exceeded their market capitalizations. The discrepancy presented by the difference between their intrinsic and market values indicated that the five firms are undervalued in the market, presenting attractive investment opportunities.

However, if there's something the Markowitz Optimal Portfolio Theory has taught me throughout this study, it is that investors should not rely on individual valuations as a conclusive metric when deciding whether to include a stock in an investment portfolio. This is because when it comes to constructing a portfolio, the interaction between stocks is the main thing to keep in mind in order to maximize return and minimize risk. This has been clearly demonstrated by the results obtained from applying the MPT to obtain the optimal combination of the five companies for constructing a portfolio.

Even though Inditex, Banco Santander, Iberdrola, Amadeus IT, and Ferrovial were considered good investment opportunities according to the discounted cash flows valuation technique, the Markowitz Theory has only selected Inditex (ITX), Iberdrola (IBE) and Ferrovial (FER) to construct an optimized portfolio, discarding Banco Santander (SAN) and Amadeus IT (AMS) from the combination. The resultant portfolio, conformed by Inditex (in a 14,67%), Iberdrola (in a 54,85%), and Ferrovial (in a 30,49%); shows a 3,23% higher return and a 3,78% lower risk than an equally weighted portfolio of all five firms.

However, these results have not arrived without proposing several limitations and challenges throughout the study. The main limitation of the study is related to the reliance of the discounted cash flow valuation methodology on some assumptions, including the estimated forecast of future cash flows, terminal values, and discount rates; all of which are inherently subject to uncertainty and variability. So, it should be acknowledged that while DCF methodology provides valuable guidance on the range within which the company's value may fluctuate, it should not be regarded as an absolute measure of value. On the other hand, significant challenges have been faced during the research process, highlighting the complexities of navigating and interpreting financial data. Moreover, adapting the methodologies employed to reflect real-world market conditions has also been challenging, requiring iterative adjustments to ensure admissible valuation outcomes.

The findings of this work have contributed to the understanding of how fundamental analysis shapes investment decisions and portfolio outcomes. Consequently, this paper offers individual investors, including myself, a practical framework to overcome the intricacies of the stock market. The study bridges the gap between theoretical concepts and the day-to-day decision-making process, providing a reference for those navigating the dynamic landscape of equity investments, and empowering individual investors with the tools and understanding needed to make informed investment decisions.

In conclusion, the elaboration of this work has not only enriched my knowledge of the financial realm but has also provided valuable tools for making well-informed financial decisions as an individual investor. Crafting this thesis has been an opportunity to delve into fundamental analysis and apply theoretical concepts to practical situations, essential for a possible professional trajectory in this field.

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# APPENDIX

## CAPITAL ASSET PRICING MODEL

Calculation of Betas:

	Inditex	Santander	Iberdrola	Amadeus IT	Ferrovial
Var (IBEX 35)	0,00091018				
Cov (asset, IBEX 35)	0,000953	0,001426	0,000579	0,001150	0,000853
Beta ( $\beta$ )	1,0476	1,5667	0,6357	1,2635	0,9370

## FAMA & FRENCH THREE-FACTOR MODEL

Regression analysis Inditex:

Estadísticas de la regresión	
Coefficiente correlación	0,5806707
Coefficiente R <sup>2</sup>	0,3371785
R <sup>2</sup> ajustado	0,3294413
Error típico	0,0331730
Observaciones	261

### ANÁLISIS DE VARIANZA

	Grados libertad	Suma cuadrados	Promedio cuadrados	F	Valor crítico F
Regresión	3	0,1438689	0,0479563	43,5787875	0,0000000
Residuos	257	0,2828158	0,0011005		
Total	260	0,4266847			

	Coefficientes	Error típico	Estadístico t	Probabilidad	Inferior 95%	Superior 95%
Intercepción	0,001444178982	0,0020646	0,6994915	0,4848775	-0,0026215	0,0055099
Mkt-RF	0,6393	0,0751437	8,5077669	0,0000000	0,4913291	0,7872806
SMB	0,5075	0,1394198	3,6397861	0,0003298	0,2329075	0,7820087
HML	0,3394	0,0800739	4,2385349	0,0000314	0,1817114	0,4970802

Regression analysis Banco Santander:

Estadísticas de la regresión	
Coefficiente correlación	0,6316906
Coefficiente R <sup>2</sup>	0,3990330
R <sup>2</sup> ajustado	0,3920178
Error típico	0,0445991
Observaciones	261

### ANÁLISIS DE VARIANZA

	Grados libertad	Suma cuadrados	Promedio cuadrados	F	Valor crítico F
Regresión	3	0,3394254	0,1131418	56,8813654	0,0000000
Residuos	257	0,5111945	0,0019891		
Total	260	0,8506198			

	Coefficientes	Error típico	Estadístico t	Probabilidad	Inferior 95%	Superior 95%
Intercepción	-0,000288965164	0,0027757	-0,1041036	0,9171683	-0,0057551	0,0051771
Mkt-RF	0,8350	0,1010261	8,2656209	0,0000000	0,6360991	1,0339879
SMB	0,6598	0,1874414	3,5202703	0,0005098	0,2907278	1,0289611
HML	0,8531	0,1076544	7,9241221	0,0000000	0,6410698	1,0650641

### Regression analysis Iberdrola:

<i>Estadísticas de la regresión</i>	
Coefficiente correlación	0,3573282
Coefficiente R <sup>2</sup>	0,1276834
R <sup>2</sup> ajustado	0,1175008
Error típico	0,0310011
Observaciones	261

#### ANÁLISIS DE VARIANZA

	<i>Grados libertad</i>	<i>Suma cuadrados</i>	<i>Promedio cuadrados</i>	<i>F</i>	<i>Valor crítico F</i>
Regresión	3	0,0361532	0,0120511	12,5392727	0,0000001
Residuos	257	0,2469939	0,0009611		
Total	260	0,2831471			

	<i>Coefficientes</i>	<i>Error típico</i>	<i>Estadístico t</i>	<i>Probabilidad</i>	<i>Inferior 95%</i>	<i>Superior 95%</i>
Intercepción	0,00203104295	0,0019294	1,0526627	0,2934843	-0,0017685	0,0058306
Mkt-RF	0,4132	0,0702237	5,8835859	0,0000000	0,2748800	0,5514543
SMB	0,0039	0,1302914	0,0296894	0,9763378	-0,2527064	0,2604429
HML	0,0119	0,0748311	0,1590453	0,8737581	-0,1354586	0,1592617

### Regression analysis Amadeus IT:

<i>Estadísticas de la regresión</i>	
Coefficiente correlación	0,6832078
Coefficiente R <sup>2</sup>	0,4667729
R <sup>2</sup> ajustado	0,4605485
Error típico	0,0372687
Observaciones	261

#### ANÁLISIS DE VARIANZA

	<i>Grados libertad</i>	<i>Suma cuadrados</i>	<i>Promedio cuadrados</i>	<i>F</i>	<i>Valor crítico F</i>
Regresión	3	0,3124741	0,1041580	74,9903383	0,0000000
Residuos	257	0,3569609	0,0013890		
Total	260	0,6694350			

	<i>Coefficientes</i>	<i>Error típico</i>	<i>Estadístico t</i>	<i>Probabilidad</i>	<i>Inferior 95%</i>	<i>Superior 95%</i>
Intercepción	-0,001149967191	0,0023195	-0,4957793	0,6204738	-0,0057176	0,0034177
Mkt-RF	0,9359	0,0844211	11,0859451	0,0000000	0,7696422	1,1021325
SMB	0,5609	0,1566328	3,5810354	0,0004092	0,2524605	0,8693549
HML	0,6406	0,0899599	7,1205575	0,0000000	0,4634124	0,8177174

### Regression analysis Ferrovial:

<i>Estadísticas de la regresión</i>	
Coefficiente correlación	0,6780577
Coefficiente R <sup>2</sup>	0,4597622
R <sup>2</sup> ajustado	0,4534560
Error típico	0,0282438
Observaciones	261

#### ANÁLISIS DE VARIANZA

	<i>Grados libertad</i>	<i>Suma cuadrados</i>	<i>Promedio cuadrados</i>	<i>F</i>	<i>Valor crítico F</i>
Regresión	3	0,1744731	0,0581577	72,9054910	0,0000000
Residuos	257	0,2050124	0,0007977		
Total	260	0,3794856			

	<i>Coefficientes</i>	<i>Error típico</i>	<i>Estadístico t</i>	<i>Probabilidad</i>	<i>Inferior 95%</i>	<i>Superior 95%</i>
Intercepción	0,001007697263	0,0017578	0,5732621	0,5669685	-0,0024539	0,0044693
Mkt-RF	0,8335	0,0639780	13,0282401	0,0000000	0,7075329	0,9595086
SMB	0,2422	0,1187032	2,0405434	0,0423183	0,0084642	0,4759740
HML	0,2420	0,0681756	3,5491140	0,0004594	0,1077090	0,3762169

# DISCOUNTED CASH FLOWS VALUATION TECHNIQUE

*Five-year Free Cash Flow projection:*

*FCF projection Inditex:*

Inditex	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Net profit	2510	2882	3161	3372	3448	3647	1106	3.243	4.147	5.395	5976	6619	7331	8120	8994
Weighted Growth		14,82%	9,68%	6,68%	2,25%	5,77%	-	-11,08%	27,88%	30,09%					
Average growth							(Outlier)			10,76%					
Ratio FCF/NP	0,58	1,03	0,86	0,65	0,74	1,08	0,57	1,22	0,88	0,94					
Average FCF/NP										0,86					
FCF (million €)	1452	2958	2731	2205	2567	3951	631	3959	3638	5062	5114	5664	6273	6949	7696

*FCF projection Banco Santander:*

Banco Santander	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Net profit	6935	7.334	7.486	8.207	9.315	8.116	-7.708	9.653	10.764	12.183	13123	14135	15226	16400	17666
Weighted Growth		5,75%	2,07%	9,63%	13,50%	-12,87%	-	18,94%	11,51%	13,18%					
Average growth							(Outlier)			7,71%					
Ratio FCF/NP	-0,57	0,23	1,80	3,80	-0,94	-1,33	-7,48	4,69	1,57	-0,71					
Average FCF/NP										0,11					
FCF (million €)	-3974	1720	13483	31200	-8779	-10754	57633	45288	16866	-8628	1404	1512	1629	1755	1890

*FCF projection Iberdrola:*

IBERDROLA	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Net profit	2323	2.422	2.705	2.804	3.014	3.406	3.611	3.885	4.339	4.803	5208	5648	6124	6641	7201
Weighted Growth		4,10%	11,68%	3,66%	7,49%	13,01%	6,02%	7,59%	11,69%	10,69%					
Average growth										8,44%					
Ratio FCF/NP	-	0,90	0,63	-0,16	0,41	0,39	0,69	0,31	0,84	0,89					
Average FCF/NP	(Outlier)									0,54					
FCF (million €)	3234	2169	1703	-439	1236	1336	2496	1188	3656	4253	2833	3072	3331	3612	3917

*FCF projection Amadeus IT:*

AMADEUS IT	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Net profit	315	344	701	596	608	643	-191	-350	381	576	672	783	913	1065	1242
Weighted Growth		9,21%	103,78%	-14,98%	2,01%	5,76%	-	-	-40,76%	51,22%					
Average growth							(Outliers)			16,61%	672	783	913	1065	1242
Ratio FCF/NP	1,89	1,92	1,16	1,54	1,63	1,62	2,83	-0,28	2,11	1,99					
Average FCF/NP										1,64					
FCF (million €)	597	659	811	917	989	1044,8	-541	99	805	1149	1103	1286	1499	1748	2038

*FCF projection Ferrovial:*

FERROVIAL	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Net profit	402	720	376	454	-399	250	-375	1.335	302	630	662	696	732	769	809
Weighted Growth		79,10%	-47,78%	20,74%	-198,68%	155,80%	-	-	20,80%	108,61%					
CAGR							(Outliers)			5,12%					
Ratio FCF/NP	3,27	1,32	2,65	2,52	-1,66	3,90	-2,61	0,51	3,00	1,87					
Average FCF/NP										1,28					
FCF (million €)	1314	953	995	1145	663	976	977	686	907	1177	847	891	936	984	1035

## Terminal Value:

### Growth Rate (g) estimation:

*in billion \$	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Projected GDP (Spain)	1,97	2,00	2,02	2,05	2,08	2,11	2,14	2,17	2,20	2,22	2,25	2,28	2,31	2,34	2,37	2,39
Variation %		1,52%	1,00%	1,49%	1,46%	1,44%	1,42%	1,40%	1,38%	0,91%	1,35%	1,33%	1,32%	1,30%	1,28%	0,84%
Growth rate (g)	1,30%															

## Intrinsic Value:

### Derived from CAPM:

ITX		2024	2025	2026	2027	2028	TV <sub>2028</sub>	INTRINSIC VALUE
FCF		5.114	5.664	6.273	6.949	7.696	149.910	
WACC =	6,50%							
Discounted FCF		4.791	4.972	5.160	5.355	5.557	108.249	134.085

  

SAN		2024	2025	2026	2027	2028	TV <sub>2028</sub>	INTRINSIC VALUE
FCF		1.404	1.512	1.629	1.755	1.890	78.177	
WACC =	3,75%							
Discounted FCF		1.354	1.407	1.461	1.518	1.577	65.218	72.535

  

IBE		2024	2025	2026	2027	2028	TV <sub>2028</sub>	INTRINSIC VALUE
FCF		2.833	3.072	3.331	3.612	3.917	109.221	
WACC =	4,93%							
Discounted FCF		2.697	2.784	2.873	2.966	3.729	85.346	100.394

  

AMS		2024	2025	2026	2027	2028	TV <sub>2028</sub>	INTRINSIC VALUE
FCF		1.103	1.286	1.499	1.748	2.038	49.475	
WACC =	5,47%							
Discounted FCF		1.033	1.128	1.231	1.345	1.468	35.643	41.848

  

FERR		2024	2025	2026	2027	2028	TV <sub>2028</sub>	INTRINSIC VALUE
FCF		847	891	936	984	1.035	47.120	
WACC =	3,52%							
Discounted FCF		811	853	896	827	869	39.585	43.841

### Derived from F&F:

ITX		2024	2025	2026	2027	2028	TV <sub>2028</sub>	INTRINSIC VALUE
FCF		5.114	5.664	6.273	6.949	7.696	143.530	
WACC =	6,73%							
Discounted FCF		4.791	4.972	5.160	5.355	5.557	103.642	129.478

  

SAN		2024	2025	2026	2027	2028	TV <sub>2028</sub>	INTRINSIC VALUE
FCF		1.404	1.512	1.629	1.755	1.890	79.968	
WACC =	3,69%							
Discounted FCF		1.354	1.407	1.461	1.518	1.577	66.712	74.029

  

IBE		2024	2025	2026	2027	2028	TV <sub>2028</sub>	INTRINSIC VALUE
FCF		2.833	3.072	3.331	3.612	3.917	105.537	
WACC =	5,06%							
Discounted FCF		2.697	2.784	2.873	2.966	3.729	82.468	97.516

  

AMS		2024	2025	2026	2027	2028	TV <sub>2028</sub>	INTRINSIC VALUE
FCF		1.103	1.286	1.499	1.748	2.038	37.670	
WACC =	6,78%							
Discounted FCF		1.033	1.128	1.231	1.345	1.468	27.139	33.344

  

FERR		2024	2025	2026	2027	2028	TV <sub>2028</sub>	INTRINSIC VALUE
FCF		847	891	936	984	1.035	33.210	
WACC =	4,45%							
Discounted FCF		811	853	896	827	869	27.899	32.155