FINAL PROJECT

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Abstract:

Company valuation is a fundamental process in the world of finance and business. It involves determining the value of a company at a given point in time, with the purpose of making informed decisions about business transactions such as M&A, IPO, bond issuances and others. The relevance of this topic lies in its impact on strategic and financial decision-making for companies and investors, as well as other stakeholders.

In this research project, we will explore the two primary methods for valuing a company: intrinsic valuation and relative valuation. We will examine their key advantages and disadvantages, and ultimately conduct a practical valuation of Applus, a company currently involved in a takeover bid with two private equity firms competing to acquire it.

Key words: Discounted Cash Flow, Enterprise Value, Equity Value, Intrinsic Value, WACC, Free Cash Flow

Resumen:

La valoración de empresas es un proceso fundamental en el mundo de las finanzas y los negocios. Consiste en determinar el valor de una empresa en un momento dado, con el objetivo de tomar decisiones informadas sobre transacciones comerciales como fusiones y adquisiciones (M&A), ofertas públicas iniciales (IPO), emisiones de bonos y otras. La relevancia de este tema radica en su impacto en la toma de decisiones estratégicas y financieras para empresas e inversores, así como otros interesados.

En este proyecto de investigación, exploraremos los dos métodos principales para valorar una empresa: la valoración intrínseca y relativa. Examinaremos sus principales ventajas y desventajas y, finalmente, realizaremos una valoración práctica de Applus, una empresa que actualmente está siendo objeto de una oferta pública de adquisición, con dos firmas de capital privado compitiendo por adquirirla.

Palabras clave: Descuento de Flujos de Caja, Valor de Empresa, Valor del Capital, Valor Intrínseco, CMPC, Flujo de Caja Libre

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INTRODUCTION

This chapter establishes the basis for the research work by stating the relevance of the chosen topic, outlining the objectives of the study and describing the methodological approach to achieve the research objectives.

Relevance of the topic

"Price is what you pay, value is what you get". This statement developed by Warren Buffet, one of the most important investors in history, highlights the importance of company valuation: determining the value of a company beyond its market price.

Assessing a company's value is crucial for various market participants. Investors seek stocks priced below their intrinsic value, while corporate executives use these valuations to guide their companies towards long-term growth and sustainability. Despite the various valuation methods and perspectives, they all share the same goal: to use valuation to make informed and optimized decisions.

The goal of this study is to examine the commonly used valuation methodologies in finance, evaluate their advantages and disadvantages, and apply them to a specific case: determining whether the price offered by private equity firms to acquire Applus is justified based on its current market capitalization.

Objectives

This research study aims to review existing valuation methods and to perform a practical demonstration through the valuation of Applus.

In summary, the general objectives are as follows:

1. Understanding the importance of company valuation and the difference between price and value.
2. In-depth and comparative description of the two most used valuation methods: the Discounted Cash Flow method (DCF) and Comparable Multiples valuation
3. Application of the most appropriate valuation method with the company Applus and assessing if the price offered by the potential buyers of the company is justified.

Methodology

Regarding the methodology to be employed, two clearly differentiated parts can be established. On one hand, there will be a more theoretical first part, consisting of a literature review of valuation methods. On the other hand, there will be a second part involving practical and quantitative aspects, through the valuation of Applus.

In the first part, there will be an individual analysis of each valuation method, highlighting their respective strengths and weaknesses. To accomplish this, theoretical studies on valuation methods will be gathered through books related to this matter such as *"The Little Book of Valuation"* by Aswath Damodaran (2012) and research works such as "Company valuation methods: The most common errors in valuations" by Pablo Fernández (2002).

Once this theoretical analysis is complete, a comprehensive valuation of Applus will be conducted. To perform this valuation, the financial statements of the company and information about its business model will need to be collected, which can be sourced directly from its website (*applus.com)* and *CNMV*. Moreover, to ensure the accuracy of the valuation, valuation reports elaborated by independent experts will be used, specifically those developed by KPMG and Kroll, which have been engaged by the private equities Apollo and Amber, respectively, which are interested in buying Applus.

1. LITERATURE REVIEW

In this chapter we will understand the main concepts related to valuation and the two main methods to value a company: intrinsic and relative valuation.

1.1. Value concepts

Valuing a company is a common practice in the financial sector, and it requires a solid foundation in finance and accounting to perform it effectively. To understand this process properly, first we need to explain the fundamental concepts that support company valuation.

1.1.1. Price and value

When valuing a company, we must first distinguish between two concepts that many people use interchangeably, even though they are different: price and value.

According to Fernández (2002), price is an objective and quantitative term, representing the amount agreed between a buyer and a seller in a transaction. On the other hand, value is what an individual is willing to pay or receive for that asset or, in other words, value is assigned by each person based on their own subjective circumstances.

Then, price and value may not match. In fact, the same company may have different values for different potential buyers and for the seller. This gap may be due to various reasons: different perceptions of the future of the sector and the company, different strategies, potential synergies, etc… (Fernández, 2002).

Nevertheless, as Damodaran (2011) wrote in his book *"The little book of valuation"*, a company is not an abstract entity like a work of art, but a financial asset capable of generating cash flows. Therefore, the value of a company is based on its ability to generate cash flows over time, but the subjectivity of the term "value" may remain in the variables that affect the company's ability to generate these cash flows.

1.1.2. Categories of valuation methods

Most corporate finance books mention multiple methodologies to value a company, from the simple to the complex. However, as Fernández (2002) explains in his works, they share certain common features and can be grouped into broader categories.

In his research study *"Company valuation methods"* (2002), Fernández defines two general methods of valuation: intrinsic and relative. In intrinsic valuation, it is assumed that the intrinsic value of an asset is determined by the expected cash flows discounted to present value. In contrast, in relative valuation, assets are valued by observing the market prices of similar assets, as it is assumed that with the same characteristics, they should be valued equally.

1.1.3. Value perspectives: Enterprise and Equity value

Companies can be financed in two primary ways: through internal financing (equity) and through external financing (debt). The method of financing influences how a company is valued.

When we consider only the equity attributable to shareholders, we are determining the Equity Value. Conversely, if we assess the total value provided by all financing sources, including both shareholders and debtholders, we arrive at the Enterprise Value (Gutman, 2013).

To fully understand these perspectives and their interrelationship, it is important to define and differentiate between Equity Value and Enterprise Value.

Chart 1. Relationship between Enterprise Value and Equity Value
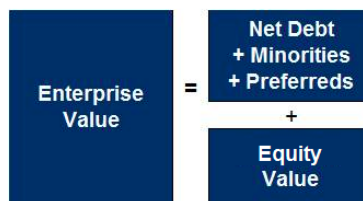
Source: Own elaboration

Equity Value

Equity Value represents the portion of a company's value that is attributed to its shareholders. This value is commonly referred to as "Market Capitalization" or "Market Cap," which is determined by multiplying the company's current share price by the total number of ordinary shares outstanding (Gutman, 2013).

According to Gutman (2013), the formula to calculate Equity Value is:
*Equity Value = Market Capitalization = Number of Ordinary Shares * Share Price*

Equity Value should not be confused with Shareholders' Equity or Equity Book Value. In fact, Shareholders' Equity reflects the net worth of a company calculated as the total assets minus total liabilities. Furthermore, it is based on accounting standards and does not take into account the potential future earnings of the company (Schmidle, 2010).

In his works, Gutman also defines an alternative way of calculating Equity Value, which is by looking at the total value of the business (Enterprise Value) and removing the value of non-equity claims.

The formula is provided below:

Equity Value = Enterprise Value (EV) - Net Financial Debt - Preferred Shares - Minority Interests
where:
- *Enterprise Value (EV): Total value of the company, reflecting the interests of all stakeholders.*
- *Net Financial Debt (Financial Debt - Cash): Amount of debt after considering cash and equivalents to reduce debt.*
- *Preferred Shares: Shares that offer specific advantages over common stock, including priority for dividend payments and asset claims upon liquidation, acting as a hybrid between equity and debt.*
- *Minority Interests: Share of ownership in a subsidiary not held by the parent company.*

Furthermore, unlike the Enterprise Value, Equity Value is impacted by the capital structure of the company since it directly reflects the residual value available to shareholders after accounting for all financing obligations (Damodaran, 2012).

Enterprise Value

Enterprise Value (EV) represents the total value of a company, combining the value of its debt and equity (Fernández, 2002).

Enterprise Value is calculated by taking the Equity Value of a company, and then adding non-equity claims, such as net debt, preferred stock, and minority interest (Fernández, 2002).

According to Damodan (2012), the formula for calculating Enterprise Value is:

Enterprise Value (EV) = Equity Value + Net Financial Debt + Preferred Shares + Minority Interests

Enterprise Value is seen as capital structure-neutral since it does not depend on how the company is financed—whether through debt or equity. This neutrality makes Enterprise Value a useful metric for comparing companies with different financing structures, as it focuses on the business's overall value rather than the specifics of its capital structure (Damodaran, 2012).

1.2. Intrinsic value: Discounted Cash Flow

Discounted Cash Flow (DCF) is a valuation method based on searching for the intrinsic value of a company. Under this method, a company's intrinsic value is calculated by estimating the future cash flows it will generate and discounting them at a rate appropriate to the risk associated with those cash flows (Damodaran, 2012).

This method involves valuing the company as the sum of (Kroll, 2024):
- The present value of the estimated future cash flows for the forecast period, discounted at a rate that reflects the relative risk of achieving the cash flows and the time value of money.
- The present value of the Terminal Value, which captures the value of the cash flows beyond the forecast period, where applicable.

Discounted cash flow (DCF) has a variety of sub-methods, all of which share the same basic assumptions, but with minor nuances. In general terms, they all start from the expression (Fernandez, 2002):

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

where:

- *CF: Cash Flow*
- *r: Discount rate*
- *n: Last year projected in the DCF*

Since companies can last forever, theoretically, and we cannot estimate their cash flows indefinitely, we generally calculate a residual value which assumes that from the last cash flow projected, the cash flows will grow at a constant rate forever (Gutman, 2013)

The formula for calculating the Terminal Value (TV) is as follows (Gutman, 2013):

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

where:

- *CFn: Cash Flow of last year projected*
- *g: Constant growth rate*
- *r: Discount rate*

1.2.1. Cash Flow

To understand the DCF methodology, it is necessary to start with the foundation: the concept of cash flow itself, which basically represents the real money moving in and out of a business.

As DCF is based on a *"cash flow"* approach contrasting with accounting, which is based on accrual approach, we need to make some adjustments in the Financial Statements of a company in order to obtain the actual cash flow (Koller, T., and others, 2005).

Once we understand this, the application of DCF begins by determining what exactly we aim to evaluate: Are we assessing the entire value of the business, or are we focusing solely on its equity? This determination guides the selection of specific cash flows for analysis and the corresponding discount rates to be applied.

Table 1. Approaches for company valuation

Perspective	Cash Flow	Discount rate
Value the entire business (all financing sources)	Free Cash Flow to Firm (FCFF)	Weighted Average Cost of Capital (WACC)
Value the shares (shareholders)	Free Cash Flow to Equity (FCFE)	Cost of Equity (Ke)

Source: Own elaboration

Each perspective requires a specific type of cash flow projection to accurately reflect the value being assessed. For instance, if we aim to value the Enterprise Value, we use the Free Cash Flow to Firm (FCFF). Conversely, if we aim to value the Equity Value, we use the Free Cash Flow to Equity (FCFE).

<u>Free Cash Flow to Firm (FCFF)</u>
Free Cash Flow to Firm (FCFF) represents the cash generated by a company's operations that is available to all capital providers, including both equity holders and debtholders, after the business has reinvested in essential assets (capital expenditures or CAPEX) and has paid its cash operating expenses (Working Capital), under the hypothetical scenario of operating without debt (Kaplan, 2023).

The formula for calculating FCFF is given by (Kaplan, 2023):
FCFF = EBIT × (1−t) + D&A − CAPEX - ΔNWC
where:
- *EBIT (Earning Before Interest and Taxes): Operating Income. It measures the operating profitability of a company with all core operating costs deducted from revenue.*
- *t (Tax rate): Marginal Corporate Income Tax (CIT). Taxes are calculated directly on EBIT in order to obtain the net profit assuming no interest payments.*
- *D&A (Depreciation and Amortization): Non-cash expense, which means it does not require a cash outflow.*
- *Capex (Capital Expenses): Investments in fixed assets which reduce the free cash flow as they represent a cash outflow, not immediately expensed in the income statement.*
- *NWC (Net Working Capital): Represents the difference between operational current assets (receivables and inventories) and operational current liabilities (payables) from one period to another. It represents the cash operating expenses that a company must incur in order to operate.*

The discount rate we use when discounting FCFF is the Weighted Average Cost of Capital (WACC) as it represents the average expected return demanded by both shareholders (equity) and creditors (debt), offering a comprehensive cost of capital for the whole company (Koller, T., and others, 2005).

<u>Free Cash Flow to Equity (FCFE)</u>
Free Cash Flow to Equity (FCFE) measures cash generated by a company's operations that is available to shareholders after the business has reinvested in essential assets (capital expenditures or CAPEX), pays its cash operating expenses (Working Capital) and debt-related payments have been made (Kaplan, 2023).

The formula for calculating FCFE is given by (Koller, T., and others, 2005):
FCFE = Net Income + D&A - Capex - ΔNWC + Net borrowing (Debt Issued - Debt Repayments)

This figure is often used as a proxy for the amount that a company can return to its shareholders via dividends or share buybacks. FCFE could be equivalent to the FCFF if there is zero debt in the capital structure (Kaplan, 2023).

When discounting the FCFE, we are valuing the Equity Value, considering only shareholders. Therefore, the discount rate used should be the Cost of Equity (Kd) as it reflects the returns that equity investors expect to receive (Kaplan, 2023).

1.2.2. Discount rate

After estimating future cash flows, we should adjust them to their present value using a discount rate. The purpose of using it is to recognize the time value of money and to account for the opportunity costs and risks inherent in these future cash flows (Damodaran, 2012).

As the discount rate expresses the expected return of the cash flows and reflects the risks associated to obtain the return, depending on the cash flow being analyzed, the risk will be different, hence the discount rate as well.

Additionally, as previously mentioned, companies can be financed through equity, debt, or a combination of both. Then, each type of capital provider has a different required rate of return, which affects the discount rate used.

Cost of Equity (Ke)
Cost of Equity (Ke) is the minimum required rate of return for equity investors, which should compensate the investor appropriately for the degree of risk undertaken (Kaplan, 2023).

We rely on the Capital Asset Pricing Model (CAPM) to estimate the required return on equity, which is widely accepted. According to this model, the Cost of Equity consists primarily of three factors: the risk-free rate, the market risk premium, and the Equity Risk Premium (ERP) (Damodaran, 2012).

The mathematical formula for CAPM is (Kaplan, 2023):
Ke = Rf + β (Rm – Rf)
Where:
- *Rf: Risk-free rate*
- *β: Beta or systematic risk*
- *Rm: Expected market return*
- *(Rm – Rf): Equity Risk Premium (ERP)*

Now, we will examine each factor in detail.

Risk-free rate (rf)
Risk Free Rate (rf) is the theoretical rate of return received on zero-risk assets, which serves as the minimum return required on riskier investments (Koller, T., and others, 2005).

The time value of money or risk-free rate of each country is based on the yield of 10-year government bonds in the corresponding country, implicitly assuming that governments cannot go bankrupt. For example, for a Spanish company, we would take as risk-free rate the yield of 10-year government bonds in Spain (Gutman, 2013).

Equity Risk Premium (ERP)

Equity Risk Premium (ERP) represents the excess returns over the risk-free rate that investors expect for taking on the incremental risks associated with investing in the equity of companies. Another way to define ERP is as the difference between the returns from the overall stock market and the yields on risk-free assets (Damodaran, 2012).

The formula of Equity Risk Premium is as follows (Damodaran, 2012):

ERP = rm – rf

where:
- *rm = Expected Market Return*
- *rf = Risk Free Rate*

The Expected Market Return (rm) refers to the anticipated rate of return that investors expect to earn from the overall market over a specific period, typically represented by a broad market index such as the S&P 500 for US companies and IBEX 35 for Spanish companies (Fernández, 2002).

Beta (β)

Beta (β) represents a company's sensitivity to market volatility – otherwise referred to as systematic risk – compared to the broader market, which is usually a stock market index (Damodaran, 2012).

In other words, the beta coefficient determines whether it is more or less volatile than the market as a whole. The general rules for interpreting beta are as follows (Damodaran, 2012):
- β = 1: Shares are just as risky as the market (no market sensitivity)
- β > 1: Shares are riskier than the market (high market sensitivity)
- β < 1: Shares are less risky than the market (low market sensitivity)
- β = 0: Shares have no correlation to the market (no market sensitivity)

Cost of Debt (Kd)

Cost of Debt (Kd) is the minimum rate of return that a debt investor would require on the interest-bearing debt. Since interest on debt capital is typically a deductible expense for corporate tax purposes, we use the after-tax interest rate in our calculation. The tax rate used is the marginal tax rate effective tax rate since interest expenses save taxes at the margin - they are deducted from the last euros of income (Fernández, 2002).

According to Damodaran (2012), the Cost of Debt can be calculated as the Yield-To-Maturity (YTM) of the bonds raised in the market, which is a more accurate approximation of the current, updated interest rate if the company tried to raise debt as of today.

The formula of Cost of Debt would be (Damodaran, 2012):

*Kd = YTM of issued bonds * (1 - t)*

In scenarios where no bonds have been issued, the Cost of Debt can be calculated by adding to the risk-free rate (rf) a debt spread (or credit risk premium). This debt spread can be calculated by examining the YTM of 10-year bonds issued by comparable companies and then subtracting the risk-free rate (Damodaran 2012).

The formula of Cost of Debt would be (Damodaran, 2012):
$Kd = (rf + Spread) * (1 - t)$
where:
- *rf = Risk free rate*
- *Spread = YTM of bonds of comparable companies - rf*

<u>Weighted Average Cost of Capital (WACC)</u>
Weighted Average Cost of Capital (WACC) represents the average cost of financing a company taking into account the proportionate weights of each component of invested capital (debt and equity) and their respective costs. To calculate the WACC, the cost of debt and the cost of equity must be estimated and the weights of both are based on market value rather than book value (Gutman, 2013).

For publicly traded companies, multiplying the stock price by the number of shares outstanding will give the market value of equity. Estimating the value of debt is usually a more challenging exercise, as most companies have debt that is not publicly traded, however, the book value of debt is usually a reasonable proxy for the market value of debt (Damodaran, 2012).

The formula of WACC is (Damodaran, 2012):
$WACC = Ke * We + Kd * Wd$
where:
- *Ke = Cost of Equity*
- *We = Weight of Equity*
- *Kd = Cost of Debt after tax*
- *Wd = Cost of Equity*

1.2.3. Terminal Value (TV)

Terminal value (TV) refers to the residual value beyond the projected period estimated. The terminal value is calculated by treating a company's terminal year Free Cash Flow (FCF) as a growing perpetuity at a fixed rate (Fernández, 2002).

Usually, the terminal value contributes around three-quarters of the total implied valuation derived from a Discounted Cash Flow (DCF) model. Therefore, the estimated value of a company's free cash flows (FCFs) beyond the initial forecast must be reasonable for the implied valuation to have merit (Koller, T., and others, 2005).

In order to prevent abuse, a constraint that should be imposed in the estimation of the perpetuity growth rate is that a company cannot grow forever at a rate higher than the growth rate of the economy in which it operates. Otherwise, the implicit assumption of an excessively high growth rate (i.e., >5%) is that the company is on track to someday outpace the growth of the global economy – which is an unrealistic scenario. Often, GDP growth or the risk-free rate can serve as proxies for the perpetuity growth rate (Damodaran, 2012).

The formula of Terminal Value is as follows (Damodaran, 2012):

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

where:
- *CFn: Last Cash Flow forecasted*
- *g: Perpetuity growth rate*
- *r: Discount rate*

1.2.4. Conclusions

Discounted Cash Flow (DCF) analysis is a valuation method that estimates a company's value based on its future cash flow projections, adjusted to their present value. This method is grounded in assessing the key factors that enable a company to generate cash in the future, offering investors a tool to evaluate a company's future potential beyond its current or past performance (Kaplan, 2023). Additionally, DCF is flexible; it allows analysts to make sensibility analysis by altering assumptions related to growth rates and future cash flows. Moreover, its widespread acceptance among finance professionals across the globe lends DCF a certain credibility (Damodaran, 2012).

However, DCF analysis faces significant challenges. The accuracy of this method depends heavily on the assumptions made about future cash flows, growth rates, and the discount rate, making it susceptible to changes in these variables as well as small adjustments in these assumptions can lead to substantial differences in the company's valuation. Another drawback is that DCF analysis is complex, it requires a solid understanding of financial and accounting principles (Damodaran, 2012).

1.3. Relative Valuation: Comparables Multiples Valuation

In relative valuation, the value of a company is derived from the pricing of comparable companies, standardized using a common variable such as earnings, cash flows, book value, or revenues (Fernández, 2002).

Unlike Discounted Cash Flow valuation, which aims to assess the intrinsic value of a company, relative valuation relies much more on the market being right. In other words, we assume that the market is correct in the way it prices stocks on average, but it makes errors on the pricing of individual stocks which will be corrected over time. (Damodaran, 2012).

The four essential steps in relative valuation are (Gutman, 2013):
1. Selecting multiples that reflect the value of the companies of the sector
2. Finding tradable comparable companies
3. Adjusting for differences between companies when comparing their standardized values
4. Obtaining the Enterprise Value or Equity Value of the target company

1.3.1. Selection of multiples

To begin and correctly choose multiples and comparable companies, it will be necessary to conduct an analysis of the target company itself. In this way, aspects such as the main economic activity, capital structure, and countries where it operates will need to be taken into account.

Different types of companies need different multiples. For instance, startups or companies in rapid growth phases would not be suitably valued using profit or EBITDA multiples, as they usually do not have earnings. In such cases, alternatives like sales multiples or user base metrics offer a more fitting reflection of the company's value (Fernández, 2002).

On the other hand, valuation multiples consist of two components (Gutman, 2013)
- Numerator: Value Measure (Enterprise Value or Equity Value)
- Denominator: Value Driver (Financial or Operating Metric such as EBITDA, EBIT, Revenue, etc.)

The valuation multiple could be expressed as (Gutman, 2013):

$$Valuation\ multiple = \frac{Value\ measure}{Value\ driver}$$

The numerator is going to be a measure of value, such as Equity Value or Enterprise Value, whereas the denominator will be a financial (or operating) metric. It is important that the multiple used aligns the type of capital it represents with both its numerator and denominator (Damodaran, 2012).

For example, when using Enterprise Value (EV) in the numerator, it is appropriate to use metrics like EBIT, EBITDA, revenue, or FCFF in the denominator, as these figures do not account for debt. On the other hand, Equity Value should be paired with metrics that consider debt, such as net income or FCFE, reflecting the value remaining for shareholders (Kaplan 2023).

Now we will examine the most used multiples in the Comparable Multiples valuation.

Table 2. Commonly employed valuation multiples

Enterprise Value multiples	Equity Value multiples
EV/EBITDA	Price/Earnings ratio
EV/EBIT	Price/Book ratio
EV/Revenue	Price/Sales ratio

Source: Own elaboration based on "The little book of valuation" by Damodaran A. (2012).

Price-to-Earnings ratio (P/E ratio)

Price-to-Earnings ratio (P/E ratio) is a common valuation multiple that compares the current stock price of a company to its earnings per share (EPS). It measures the amount that investors are willing to pay for a dollar of the company's net income as of the present date (Gutman, 2013).

The formula of P/E ratio is (Gutman, 2013):

$$PE = \frac{Market\ Capitalization}{Net\ income} = \frac{Price\ per\ share}{Earnings\ per\ share\ (EPS)}$$

A higher P/E ratio may suggest that investors expect higher earnings growth in the future compared to companies with a lower P/E ratio. Conversely, it could also hint that the stock is overpriced (Damodaran, 2012).

However, its effectiveness can be diminished by variations in accounting practices across different companies, which can affect earnings calculations. Moreover, the ratio does not account for the growth potential of a company directly, and differences in capital structure among companies can also lead to misleading comparisons (Damodaran, 2012).

Price-to-Sales ratio (P/S ratio)

Price-to-Sales ratio (P/S ratio) measures the market capitalization of a company in relation to the total amount of annual sales it has generated. It indicates how much investors are currently willing to pay for a dollar of sales generated by a company (Gutman, 2013).

The formula of P/S ratio is as follows (Gutman, 2013):

$$P/S = \frac{Market\ Capitalization}{Total\ Sales}$$

It reflects the value that the market places on the sales of a specific company, which is determined by its revenue quality (i.e. customer type, recurring vs. one-time), as well as expected performance (Damodaran, 2012).

However, the P/S ratio has its limitations, primarily because it does not consider whether a company is actually making a profit. The absence of profitability considerations means the P/S ratio might present an incomplete picture, especially for companies that generate significant sales but fail to translate these into net income. This aspect can make the P/S ratio less reliable for understanding the full financial health and future profitability of a company and can be misleading for unprofitable companies (Damodaran, 2012).

EV/EBITDA

EV/EBITDA multiple compares the total value of a company's operations or Enterprise Value (EV) relative to its Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA).

The formula for calculating this multiple is (Kaplan, 2023):

$$EV/EBITDA = \frac{Enterprise\ Value\ (EV)}{Earning\ Before\ Interest, Taxes, Depreciation\ and\ Amortization\ (EBITDA)}$$

One of the key advantages of this metric is its ability to offer a clear picture of a company's operational performance, free from the effects of financial structure, tax rates, and non-cash accounting items like depreciation and amortization. This makes it particularly useful for comparing companies within the same industry but with different financial structures (Gutman, 2013).

Moreover, EV/EBITDA is useful because it can be applied to companies that are not yet profitable in terms of net income but generate positive EBITDA. By excluding the impact of financing decisions, the EV/EBITDA multiple provides a cleaner measure of a company's operational efficiency and its ability to generate cash flow from its core business activities (Kaplan, 2023).

However, EV/EBITDA ratio has limitations, particularly when comparing companies that need significant investment in physical assets to generate earnings. A comparison using EV/EBITDA might not fully capture the efficiency or profitability of their operations. In such cases, a company with higher capital investments might appear more valuable than it really is as the actual free cash flow available to shareholders is much lower after accounting for Capex (Damodaran, 2012).

1.3.2. Selection of comparables companies

According to Damodaran (2012), selecting comparable companies involves finding businesses with similar characteristics to the one being valued, particularly in terms of cash flows, growth potential, and risk profiles.

In his works, several key factors are considered when determining if a company is suitable for comparison. These include:
- Industry: Ensures the companies operate in similar markets or sectors.
- Size: Reflects the company's market capitalization or revenue size, influencing its market dynamics and operational scale.
- Geography: Accounts for companies operating in the same regions or countries, acknowledging that location can affect market conditions and regulatory environments.

- Growth rate: Matches companies with similar projections in revenue or profit growth, indicating comparable future potential.
- Profitability: Compares companies with alike profit margins, suggesting similar efficiency in operations.
- Capital structure: Looks at the mix of debt and equity financing to ensure companies have comparable financial leverage and risk exposure.

This selection process ensures that valuations are based on appropriate benchmarks.

1.3.3. Comparison

After selecting the appropriate multiples and identifying comparable companies, the next step is to calculate these multiples for the chosen comparable companies and the target company itself.

Following this, it is important to examine the distribution of these multiples among the companies to understand their variability. Identifying the central figures, such as the median and mean, is crucial. Due to the potential for right-skewed distributions in valuation multiples, where a small number of high values can skew the average, the median is typically a more reliable indicator of the central value than the mean (Damodaran, 2012).

Once a benchmark is established, the next step is to apply the median valuation multiple to the financial figures of the target company to deduce its market value (Damodaran, 2012).

The formula to obtain the value of a company (either Enterprise Value or Equity Value) would be as follows (Fernández, 2002):
*Value of a company = Median valuation multiple * Financial metric of the target company*

1.3.4. Conclusions

Relative valuation is based on the idea that the value of a company is determined by comparing it with comparable companies in the market, using multiples which justifies the value of the company.

One of the main advantages of this approach is its relative simplicity and the direct applicability of its results. By relying on readily available financial data from comparable companies, it allows for a straightforward comparison and benchmarking process (Gutman, 2013).

However, the quality and relevance of the comparison heavily depend on the selection of truly comparable companies, which can be challenging due to differences in business models, growth prospects, and operational efficiencies (Damodaran, 2012). Furthermore, this approach does not account for the unique qualities and future potential of the target company beyond what is reflected in the selected multiples and is heavily influenced by market sentiment, which can turn to be irrational or inefficient at a point in time (Kaplan, 2023).

1.4. Intrinsic valuation or Relative valuation

Investors use both intrinsic and relative valuation methods to determine the value of companies, and these methods may present divergent valuations for the same company. For instance, during the internet company boom of the early 2000s, relative valuation could have shown a company like Amazon as undervalued relative to the market, whereas intrinsic valuation might have indicated it was overvalued based on its projected future cash flows.

In such cases, a critical question arises: which method more accurately reflects the true value of a company? To answer this, we can begin by comparing both valuations and summarizing the key points previously discussed.

Intrinsic valuation is based on the company's fundamentals rather than market fluctuations. However, it also involves complexity and subjectivity due to the need for assumptions and projections about the future, which may be uncertain or inaccurate. On the other hand, relative valuation is simpler and more intuitive, relying on observable and comparable market data. Yet, this method is potentially failing to capture the fundamentals of a company, or may reflect market irrationality or inefficiency.

Then, the differences in value between intrinsic and relative valuation proceed from differing viewpoints regarding market efficiency. In Discounted Cash Flow valuation, we assume that markets make mistakes, which they correct over time, and that these mistakes can occur across entire sectors or even the whole market. In relative valuation, we assume that although markets make errors in individual stocks, on average, they are correct (Damodara, 2002).

In summary, the choice of valuation method used depends on the valuation's purpose and context, as well as the availability and quality of data and information. Generally, intrinsic valuation is preferable for long-term investors focused on a company's intrinsic value, independent of market conditions. Relative valuation suits short-term traders more, who are interested in a company's market price in comparison to similar companies. However, employing both methods together enhances the ability to corroborate and validate findings, providing a more comprehensive and balanced assessment of a company's value (Damodaran, 2002).

2. PRACTICAL CASE: APPLUS VALUATION

In this chapter we will consolidate our understanding of the literature review by performing a valuation of Applus, a company currently subject to a takeover bid between two private equity firms.

Through this valuation performance, we aim to understand how company valuation is done and assess if the price proposed by both private equity entities is fairly justified according to the current market capitalization of the company and its intrinsic value.

To conduct the valuation of Applus, we will use a variety of resources including our literature review, valuation reports of Applus by the independent experts engaged by the two potential buyers and financial information published by Applus.

2.1. Context

As the corporate web of Applus (2024) mentions: "Applus is a global company founded in 1996, headquartered in Spain, operating in the Testing, Inspection, and Certification (TIC) sector. It offers a wide range of services to clients across various industries to ensure their assets and products comply with quality, health and safety, and environmental standards and regulations. The company currently operates in over 70 countries across all continents and has around 26.000 employees."

Also, recent news inform, Applus is currently the target company for a takeover bid by two private equities: Apollo Global Management, INC (by its subsidiary Manzana BicCo S.L.U) and I Squared Capital and TDR Capital (by their joint entity Amber Capital).

The takeover bid process started in June 2023, when Apollo announced a public tender offer for all shares of Applus at a price of €9,5 per share and, in September 2023, I Squared Capital and TDR Capital launched a counteroffer for Applus, proposing €9,75 per share.

The current status of the takeover bid is that both private equity firms have submitted their final offers to purchase Applus. Apollo offered 12.51 euros per share, while Amber offered 12,78 euros per share, making Amber the winner in the battle to acquire all the shares of Applus after the shareholder submit their approval in the next months.

Moreover, since the takeover bid started in June 2023, there has been an appreciation in the stock price of Applus, climbing from €9 per share to €12,72 per share as of June 1, 2024. This represents a 40% approximately increase in value in less than a year.

Table 3. Price evolution of Applus (2023 - 2024)
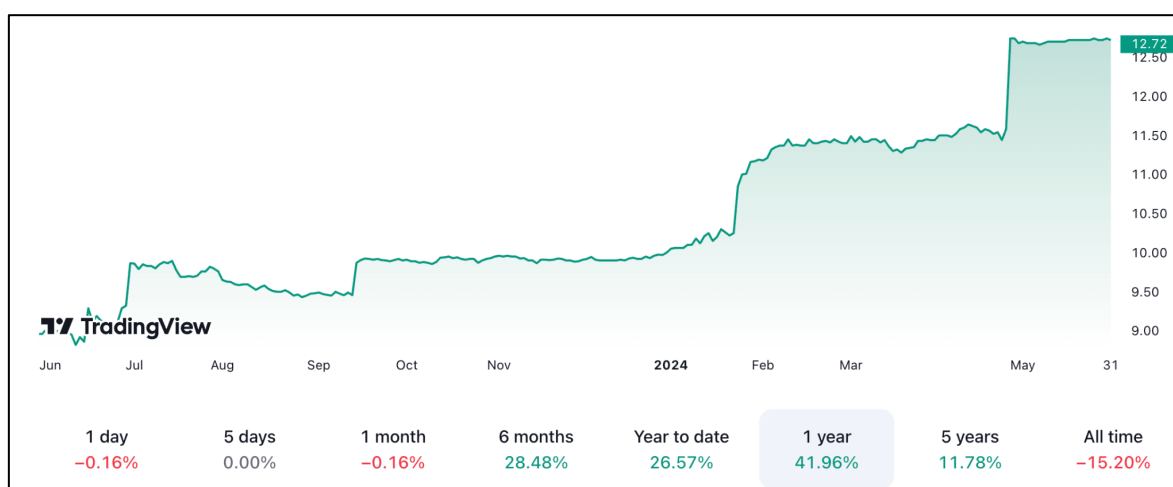
Source: TradingView web

3.2. Methodology

The valuation of Applus is crucial in the context of the ongoing takeover bids, which highlight a discrepancy between the initial price proposed by the private equity firms and their final offer. In addition, the Applus share price has risen significantly during this process.

Also, a detailed valuation of Applus will help to understand these proposed prices, their variance from the current market value and assess the accuracy of the private equities valuation methodologies to determine whether their bids may be under- or overvalued.

To establish the fair market value of Applus, both private equities appointed independent experts to perform a valuation report of Applus. The methodologies employed by both independent experts, Kroll for Amber and KPMG for Apollo, are in compliance with the methods prescribed by Article 10 of Royal Decree 1066/2007, which regulates takeover bids.

The methodologies employed and included in their valuation reports are as follows:
- Net asset value
- Weighted average trading price of the share (for the six-month period prior to the announcement of the Proposed Transaction)
- The value of the consideration offered previously, in the event that a public acquisition offer has been made in the preceding 12 months
- Other valuation methods applicable to the specific case and commonly accepted by the international financial community, such as:
  - Discounted cash flow analysis
  - Analysis of multiples of a selection of listed companies
  - Analysis of multiples of a selection of merger or acquisition transactions
  - Others

Table 4. Results of Apollo's and Amber's valuation reports

	Apollo	Amber
Discounted Cash Flow	**8,30 - 10,67**	**8,80 - 10,40**
Average price (for the 6 months prior to the announcement of the Takeover Bid)	7,63 (June 2023)	7,63 (June 2023)
Considerations offered in Takeover Bids in the previous year	9,75 (September 2023 - Amber offer)	10,65 (Januray 2024 - Apollo offer)
Equity Book Value	4,54 (December 2022)	4,19 (December 2023)
Multiples of comparable publicly traded companies	No adequate	No adequate
Multiples of comparable M&A transactions	No adequate	No adequate
Liquidation Value	Lower than the others	Lower than the others

Source: Own elaboration based on the valuation report of Applus made by KPMG (Apollo) and Kroll (Amberl) as independent experts

Both firms have advocated the Discounted Cash Flow (DCF) method as the most appropriate valuation method, highlighting its effectiveness in reflecting the company's potential to deliver returns to shareholders. Conversely, "the use of comparable multiples is considered inappropriate due to the challenge of finding similar companies given differences in business lines, profit margins or market capitalisation" (Kroll, 2024).

From the valuation reports elaborated by both private equities, we can observe that there is a discrepancy between the final offered prices and the highest valuation given in their reports.

Table 5. Comparison between intrinsic value results and prices offered by Apollo and Amber

	Apollo	Amber
Highest price obtained in DCF	10,67	10,4
Last price offered	12,51	12,78
Premium	17,24%	22,88%

Source: Own elaboration based on valuation reports of Applus and CNMV communications

By performing a Discounted Cash Flow (DCF) analysis of Applus, we will assess our results and understand why there is frequently a disparity between price and value.

Discounted Cash Flow approach

To value Applus, we will use the same approach as Kroll and KPMG. This is due primarily to gain insight into the valuation techniques utilized by private equities and investment banks when assessing a company's value.

As we have mentioned in the literature review, there are two approaches to perform a DCF: valuing the entire company (Enterprise Value) or valuing only the shares (Equity Value). In this case, following the private equity's approach, we will value the Enterprise Value and then we will make some adjustments to obtain the Equity Value and the price per share.

In addition, as Applus has four differentiated business lines (E&I, Automotive, IDIADA and Laboratories), the private equities have calculated the value of Applus as the sum of each of its main business segments, also known as break-up value (Fernández, 2002). Essentially, they have conducted a DCF for each segment separately and then add up the results. However, to enhance comprehension and simplify the process, we will assess Applus value as a single entity rather than aggregating the values of its individual segments.

2.3. Description of Applus

The initial step in conducting a DCF analysis of a company is to provide a comprehensive overview of the company itself and the sector in which it works in order to understand its business model, geographic presence, and industry context. The next information can be found on the company's corporate website and in their 2023 results presentation.

Applus is a global company founded in 1996, headquartered in Madrid (Spain), operating in the Testing, Inspection, and Certification (TIC) sector. It offers a broad range of services to clients across various industries to ensure that their assets and products comply with quality, health and safety, and environmental standards and regulations. The Company currently operates in more than 70 countries across all continents.

In 2014, Applus conducted its Initial Public Offering (IPO) at €14.5 per share and began trading on the Madrid Stock Exchange.

Applus operates through four segments:
- Energy & Industry: Specializes in non-destructive testing, industrial and environmental inspection, quality assurance and control, engineering and consulting, supplier inspection, and asset integrity and certification services.
- Laboratories: Provides testing, certification, product development, and engineering services to clients across a wide range of industries, including aerospace, IT, and the electrical and electronic sectors.
- Automotive: Offers vehicle technical inspection services in areas where transportation and systems must comply with legal regulations regarding technical safety and the environment. (ITV in Spanish)
- IDIADA: Offers services related to testing, engineering, homologation and R&D services to the leading vehicle manufacturers.

From Chart, we can conclude that the largest share of revenue comes from the Energy & Industry (E&I) segment, which contributes over half, indicating this is the company's core area of business.

Chart 2. Revenue breakdown by segment (2023)

Source: Own elaboration based on 2023 results presentation

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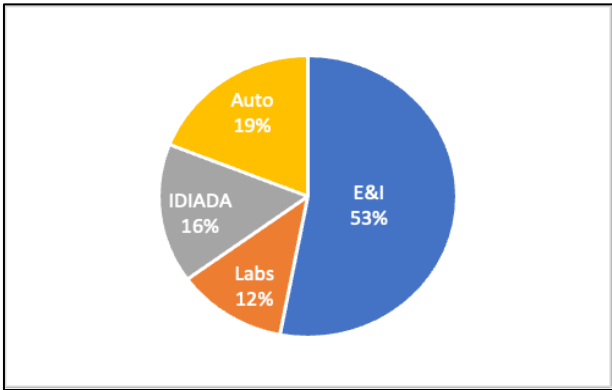
As Chart 6 shows, Spain is a significant market for Applus, accounting for 22% of its total revenue, indicating a strong domestic presence. However, the test of Europe surpasses other regions with the highest revenue contribution of 27%. In conclusion, it reflects Applus global reach and its strategic emphasis on expanding into a mix of different regions, encompassing both developed and emerging markets.

Table 6. Revenue breakdown by geography (2023)
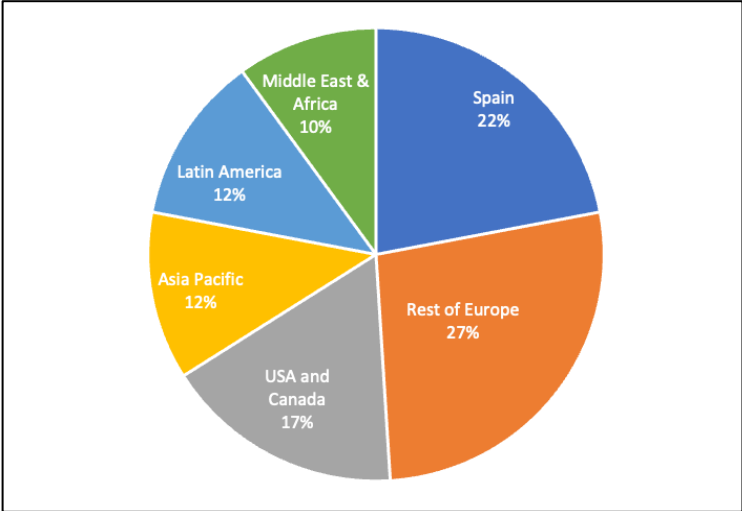
Source: Own elaboration based on 2023 results presentation

TIC sector

The TIC industry provides conformity assessment services for regulatory reasons and to assist in the development of best practices, whether to protect people and the environment or to help companies comply with regulatory standards (Applus, 2024).

The TIC sector has continued to experience steady growth in 2023 for several reasons: the increase in regulation at international level, which leads to an increase in the outsourcing of these activities as opposed to their performance by the different industries; the increase in digital services and products on the market, which involves the implementation of new TIC sector services applied to new areas and which can also be carried out digitally; finally, among others, the developments in the areas of infrastructure and renewable energy generation, in which TIC sector activities are fundamental (Applus, 2024).

However, the TIC sector is a service industry and, although the rise in energy prices has not affected the sector as much as other high-energy-consuming industries, TIC operators are exposed to high inflation. This has impacted profitability, and although the prospects for revenue growth are positive, with solid prospects for organic growth for European companies, the outlook for margins is not as good (KPMG, 2024).

2.4. Financial Analysis

Next step is to analyze the historical figures Applus has presented over the past few years. For this purpose, figures from the Financial Statements from the year 2018 to the year 2023 have been collected in order to perform the Free Cash Flow analysis.

For the financial analysis,, we will primarily focus on the evolution of factors influencing the Free Cash Flow to Firm (FCFF). This will enable us to analyze Applus' historical performance and evaluate whether these conditions are sustainable in the future or likely to change. Most of the explanations for this evolution can be found in Applus' annual results presentations.

Table 7. Consolidated Income Statement of Applus (2018 - 2023)

Milions of EUR	2018	2019	2020	2021	2022	2023
Sales	**1.675,9**	**1.777,9**	**1.557,6**	**1.776,7**	**1.898,5**	**2.057,9**
% growth		*6,1%*	*-12,4%*	*14,1%*	*6,9%*	*8,4%*
Procurements	*(159,6)*	*(156,5)*	*(145,7)*	*(154,4)*	*(198,1)*	*(223,2)*
Personal costs	*(919,2)*	*(979,4)*	*(886,2)*	*(1.002,2)*	*(1.035,8)*	*(1.115,3)*
Other operating expenses	*(379,5)*	*(345,6)*	*(307,3)*	*(334,2)*	*(347,2)*	*(383,2)*
Operating Expenses	(1.458)	(1.482)	(1.339)	(1.491)	(1.581)	(1.722)
EBITDA	**217,6**	**296,4**	**218,4**	**285,9**	**317,4**	**336,2**
% EBITDA margin	*13,0%*	*16,7%*	*14,0%*	*16,1%*	*16,7%*	*16,3%*
D&A	(106,3)	(158,5)	(158,4)	(164,9)	(170,2)	(179,4)
Other results	(6,8)	(7,2)	(177,4)	(19,7)	(11,8)	(46,6)
EBIT	**104,5**	**130,8**	**(117,4)**	**101,4**	**135,4**	**110,2**
% EBIT margin	*6,2%*	*7,4%*	*-7,5%*	*5,7%*	*7,1%*	*5,4%*
Financial Result	(21,2)	(23,9)	(24,8)	(25,9)	(33,3)	(41,9)
EBT	**83,3**	**106,9**	**(142,2)**	**75,5**	**102,1**	**68,3**
Taxes	(23,4)	(30,4)	1,2	(25,6)	(29,1)	(28,7)
% effective tax rate	*28,1%*	*28,4%*	*0,8%*	*33,9%*	*28,5%*	*42,0%*
Net consolidated result from continous operations	**59,9**	**76,5**	**(141,0)**	**49,9**	**73,0**	**39,6**
Result from discontinous operations					(10,9)	(5,9)
Net consolidated result	**59,9**	**76,5**	**(141,0)**	**49,9**	**62,1**	**33,7**
Result attributable to non-controlling interests	19	20,9	17,2	17,8	13,3	13,2
Net result attributable to the Parent	**40,9**	**55,6**	**-158,2**	**32,1**	**48,8**	**20,5**

Source: Own elaboration based on consolidated Financial Statements of Applus Group (2018 - 2023)

Table 8. Consolidated Free Cash Flow statement of Applus Group (2018 - 2023)

Milions of EUR	2018	2019	2020	2021	2022	2023
Sales	**1.675,9**	**1.777,9**	**1.557,6**	**1.776,7**	**1.898,5**	**2.057,9**
% growth rate		*6,1%*	*-12,4%*	*14,1%*	*6,9%*	*8,4%*
EBITDA	**217,6**	**296,4**	**218,4**	**285,9**	**317,4**	**336,2**
% EBITDA margin	*13,0%*	*16,7%*	*14,0%*	*16,1%*	*16,7%*	*16,3%*
D&A	(106,3)	(158,5)	(158,4)	(164,9)	(170,2)	(179,4)
% sales	*6,3%*	*8,9%*	*10,2%*	*9,3%*	*9,0%*	*8,7%*
Adjusted EBIT (removing Other results)	**111,3**	**138,0**	**60,0**	**121,1**	**147,2**	**156,8**
% EBIT margin	*6,6%*	*7,8%*	*3,9%*	*6,8%*	*7,8%*	*7,6%*
Taxes	(27,8)	(34,5)	0,0	(30,3)	(36,8)	(39,2)
NOPAT	**83,4**	**103,5**	**60,0**	**90,8**	**110,4**	**117,6**
+ D&A	106,3	158,5	158,4	164,9	170,2	179,4
- CAPEX	(51,3)	(70,7)	(55,8)	(63,1)	(66,1)	(79,3)
% sales	*3,1%*	*4,0%*	*3,6%*	*3,6%*	*3,5%*	*3,9%*
- Change in NWC	(28)	4	90	-46	-10	43
% sales	*1,7%*	*-0,2%*	*-5,8%*	*2,6%*	*0,5%*	*-2,1%*
Free Cash Flow to Firm (FCFF)	**110,2**	**195,3**	**252,6**	**146,9**	**205,0**	**260,3**

Source: Own elaboration based on consolidated Financial Statements of Applus Group (2018 - 2023)

Sales

In 2019, the company's revenues grew by 6.1% as a result of organic growth and the impact of exchange rates. However, in 2020 due to COVID-19, the group saw its revenues affected, experiencing a 12.4% decrease in sales. In 2021, the company was able to reactivate its acquisition and expansion strategy resulting in a 14.1%. In 2022 and 2023, Applus continued with this strategy and had a sales growth of 6,9% and 8,4% respectively.

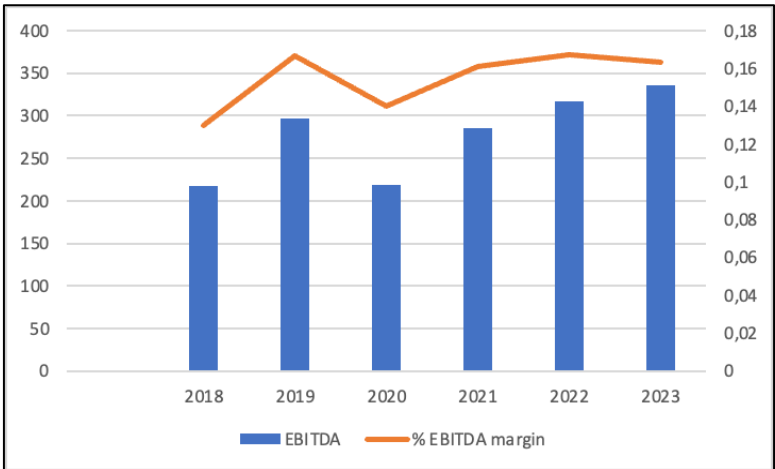**Table 9. Sales (in millions of Euros) (2018 - 2023)**
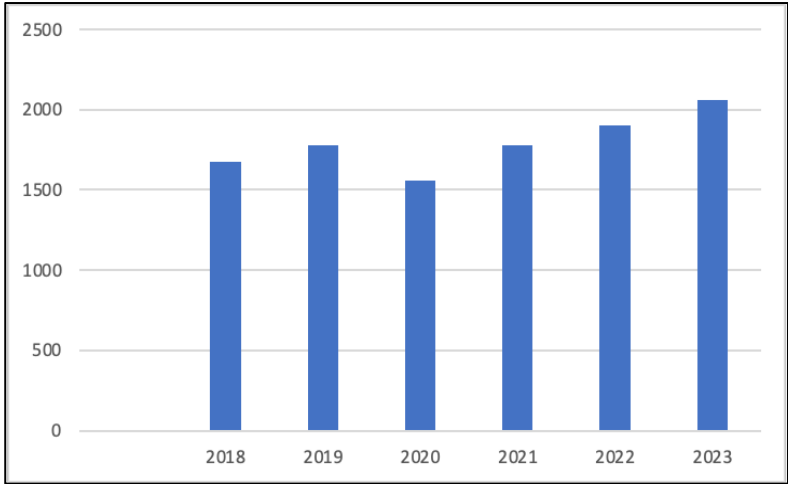
Source: Own elaboration based on consolidated Financial Statements of Applus Group (2018 - 2023)

EBITDA

In 2019, there is an increase of both EBITDA and EBITA margin. In 2020, there is a big decrease in both metrics due to COVID-19. In 2021 and 2022, there is an increase in both metrics mainly due to active portfolio strategy and operational enhancements. In 2023, there is a decrease in EBITDA margin due to inflationary pressures and by important Auto contract ends.

Table 10. EBITDA and EBITDA margin (in millions of Euros) (2018 - 2023)
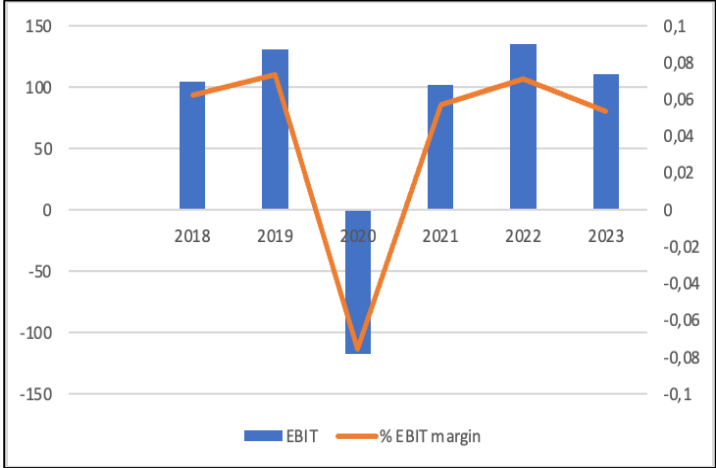

Source: Own elaboration based on consolidated Financial Statements of Applus Group (2018 - 2023)

EBIT

The EBIT level 2020 experienced a decline due to the effects of the pandemic and its impact on the TIC sector. During 2021 and 2022, as operations were reactivated and returned to historical activity levels, margins began to increase again, almost reaching pre-pandemic levels. In 2023, the EBIT margin decreased due to expenses in "Other results" of 46,6 millions, mainly to extraordinary termination benefits due to restructuring and costs related to inorganic operations.

Table 11. EBIT and EBIT margin (in millions of Euros) (2018 - 2023)

Source: Own elaboration based on consolidated Financial Statements of Applus Group (2018 - 2023)

Investment in Fixed Assets (CAPEX)

In 2019, there is a considerable increase in CAPEX because Applus made a series of extraordinary investments primarily focused on the Laboratories and IDIADA divisions. In 2020, there is a noticeable decline in CAPEX due to the reduced investments due to economic factors, influenced by the COVID-19. From then, the investment in CAPEX has increased due to the expansion of Applus in new markets. We can see that Applus' investment policy is stable with an average Capex to sales ratio of 3.5%.

Table 12. CAPEX and % CAPEX to sales (in millions of Euros) (2018 - 2023)
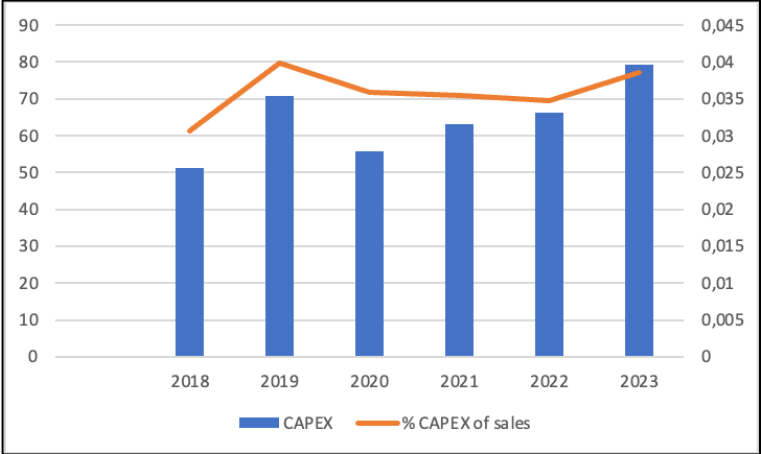
Source: Own elaboration based on consolidated Financial Statements of Applus Group (2018 - 2023)

Working Capital

The net working capital position as a percentage of sales has decreased throughout the historical period analyzed.

The results for 2020 are not representative since they are impacted by the COVID-19 situation.

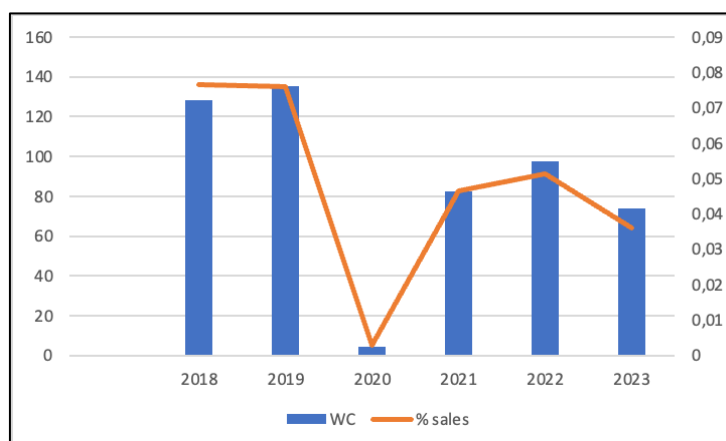**Table 13. Working Capital and % Working Capital to sales (in millions of Euros) (2018 - 2023)**

Source: Own elaboration based on consolidated Financial Statements of Applus Group (2018 - 2023)

2.5. Discounted Cash Flow

Following a comprehensive analysis of Applus, we proceed with the Discounted Cash Flow (DCF) analysis. In the following sections, we will identify and define the key variables that impact the DCF, such as the discount rate and free cash flow projections.

We will determine these values based on the methodologies discussed in the literature review and detailed in Kroll's and KPMG's reports.

2.5.1. Discount rate

One of the main steps in valuing a company using the DCF method is determining the discount rate (k). This rate allows for calculating the present value of future cash flows and represents the opportunity cost for investing in Applus.

To determine the Enterprise Value of Applus, the discount rate applied will be the Weighted Average Cost of Capital (WACC) as the discount rate.

As discussed before, the formula for WACC is as follows:

*WACC = Ke * We + Kd * Wd*

where:
- *Ke = Cost of Equity*
- *We = Weight of Equity*
- *Kd = Cost of Debt after tax*
- *Wd = Cost of Equity*

Cost of Equity (Ke)

The Cost of Equity (Ke) will be calculated using the Capital Asset Pricing Model (CAPM). The formula to determine the Cost of Equity is outlined as follows:

Ke = Rf + β (Rm – Rf)

Where:

- *Rf: Risk-free rate*
- *β: Beta or systematic risk*
- *Rm: Expected market return*
- *(Rm – Rf): Equity Risk Premium (ERP)*

Risk-free rate (Rf)

For the risk-free rate (Rf), the return on the risk-free asset of the country or area of the company is used as a reference. In this case, as Applus is a Spanish company, the Spanish 10-year government bond is used. Currently, this bond has a yield of 3,31% as reported by the Banco de España for the year 2024.

Beta coefficient (Bf)

The IBEX-35 has been used as the benchmark to calculate the Beta coefficient, reflecting the overall market performance. Applus performance has been compared against the IBEX-35 over a five-year period by Yahoo Finance, which determined a Beta coefficient of 1,26 for Applus.

Equity Risk Premium (ERP)

We will adopt the Equity Risk Premium (ERP) used by KPMG, which has utilized the average of ERPapplied by stock market analysts in the TIC sector, both within Spain and globally, along with external sources that include recent takeover bids. This aggregation of ERPs is detailed in Table 14. The selected ERP for our calculations will be 6,45%.

Table 14. Analysts reports of Equity Risk Premiums

Company	Analyst	Date	ERP
Applus	UBS	28/07/2023	5,50%
Applus	Kepler Cheuvreux	28/07/2023	7,90%
Intertek	Kepler Cheuvreux	09/03/2023	7,90%
SGS	Kepler Cheuvreux	09/03/2023	7,30%
ALS Limited	JP Morgan	29/04/2023	6,00%
ALS Limited	Credit Suisse	29/03/2023	5,00%
Eurofins	HSBC	17/03/2023	4,50%
Eurofins	Kepler Cheuvreux	02/03/2023	7,50%
Mean			**6,45%**

Source: Valuation report of Applus elaborated by KPMG (2024)

With this data, we can now calculate the Cost of Equity (Ke):

Ke = Rf + β (Rm – Rf)

Ke = 3,31 + 0,96 * 6,45% = 9,50%

According to the CAPM model, the Cost of Equity for Applus will be 9.50%.

Cost of Debt (Kd)

The Cost of Debt is calculated as the cost at which a company could finance itself. Since Applus does not issue bonds, we calculate the Cost of Debt as the risk-free rate with a debt spread (or credit risk premium) added.

According to the reports by Kroll and KPMG, the credit spread for Applus is determined by the average of the credit spreads from bond issues that mature after 2027 from companies similar to Applus. This involves comparing the yields of these long-term bonds to those of a similar local government bond with similar maturity. Then, the spread used in our calculations will be 1,50%.

Table 15. Credit spread of bond issuance of comparable companies

Company	Maturity Date	Credit Spread
Eurofins Scientific SE	06/07/2029	1,40%
SGS SA	05/09/2029	1,60%
SGS SA	08/05/2030	1,60%
Eurofins Scientific SE	19/05/2031	1,40%
Mean		**1,50%**

Source: Valuation report of Applus elaborated by Kroll (2024)

Now that we have established both the risk-free rate and the spread, we can proceed to calculate the pre-tax cost of debt. The calculation is as follows:

Kd before tax = (rf + Spread)

Kd before tax = 3,31% + 1,50% = 4,81%

Moreover, since interest expenses are deductible from taxes, the Cost of Debt should be adjusted for the tax shield provided by this deduction. The applicable tax rate is 25%, which corresponds to the Corporate Income Tax rate for Spanish companies.

The after-tax Cost of Debt is calculated using the following formula:

Kd = (rf + Spread) * (1 - t)

Kd = (3,31 + 1,50) * (1- 0,25) = 3,3%

Thus, the Cost of Debt considered in the WACC is 3,90%.

Capital Structure

To complete the WACC formula, we need to determine the capital structure of Applus, which establishes how the company is financed, that is, what percentage of the company's resources are equity or debt.

By analyzing the level of financial debt from the latest balance sheet and adding the company's market capitalization, the total capital of the company is obtained as shown in Table 16.

Table 16. Weight calculation of the financing capital of Applus (in thousands)

	Amount	Weight
Debt	1.074	40%
Equity	1.639	60%
Total Capital	**2.713**	**100%**

Source: Own elaboration based on consolidated Financial Statements of Applus (2023)

Then, WACC used in the DCF is 8,34%. The details for the calculation are shown in Table 17.

Table 17. WACC calculation

Risk-free rate (Rf)	3,31%
Beta (B)	1,26
Equity Risk Premium (ERP)	6,45%
Cost of Equity (Ke)	**11,44%**
Weight of Equity	60%
Risk-free rate (Rf)	3,31%
Spread	1,50%
Tax rate	25,00%
Cost of Debt (Kd)	**3,61%**
Weight of Debt	40%
WACC	**8,34%**

Source: Own elaboration

2.5.2. Projections

Next, we need to project the Free Cash Flow to the Firm (FCFF) from the current year for a period that typically ranges from 5 to 10 years. In our case, we will project from 2024 to 2028, which means a projection of 5 years, similar to what KPMG and Kroll have done and is common among many private equity firms.

For projecting the FCFF, we need to consider which factors influence it. As we explained in the literature review, the formula to obtain the FCFF is as follows:

$$FCFF = EBIT \times (1-t) + D\&A - CAPEX - \Delta NWC$$

To develop our projections, we utilize Applus's historical financial data, insights from the valuation reports provided by KPMG and Kroll and market and industry reports.

In addition, as the variables affecting the DCF may vary in the future and are difficult to predict, we establish two different scenarios to assess the potential value of Aplus under different economic conditions.

Once the projections are done, we calculate the Terminal Value, which treats the last Free Cash Flow projected as a growing perpetuity at a fixed rate (Fernández, 2002).

The perpetuity growth rate that we use is 2%, which corresponds to the long-term CPI reference for the Eurozone as indicated by the European Central Bank.

Then, we obtain the Enterprise Value, which is the sum of the discounted Free Cash Flows plus the Terminal Value. The formula used to discount back the cash flow is the following:

$$Enterprise\ Value = \frac{FCFF_1}{(1+r)^1} + \frac{FCFF_2}{(1+r)^2} + \dots + \frac{FCFF_n + TV}{(1+r)^n}$$

Next, to find the Equity Value, we subtract the value of non-equity claims such as net financial debt, preferred shares, and minority interests from the Enterprise Value:

Equity Value = Enterprise Value (EV) - Net Financial Debt - Preferred Shares - Minority Interests

The Net Financial Debt is determined by subtracting the company's cash and equivalents from its total financial debt. The minority interests will be calculated according to the projections set by Kroll.

Finally, to determine the price per share, we divide the Equity Value by the number of shares outstanding which currently are 129.074.133 shares.

Now, we will establish the main assumptions for two different scenarios: an optimistic scenario and a pessimistic scenario.

1. Optimistic Scenario

In an optimistic scenario, Applus is set to grow due to the growth in the testing, inspection and certification (TIC) sector. This expansion is driven by an increased focus on safety and quality, and rapid infrastructure development in emerging markets.

Moreover, Applus is likely to diversify its revenue streams by expanding into emerging regions and new service areas like cybersecurity testing and environmental consulting, aligning with current market demands.

Therefore, based on this scenario, we will proceed with the following assumptions:

Sales growth rate:
Our sales forecasts will be aligned with the market growth rates detailed in Kroll's valuation report, which calculate these rates as the weighted average growth of each Applus business line.

In general terms, we anticipate that revenue growth will decrease due to the potential entry of more operators into the market, and it is likely that Applus will lose market share as competition increases. From that point on, we assume that the business will grow in line with inflation (Kroll, 2024)

EBITDA margin:

We will assume that Applus will sustain an EBITDA margin of 16.5% on sales as Applus integrates newly acquired companies that have higher EBITDA margins and achieves greater operational efficiency. Then, following the expected market opening to new operators, we assume that the EBITDA margin will decrease in the last year projected.

Depreciation:

We will assume that the depreciation rate as a percentage of sales for Applus is 8.7%, which is the average observed from 2018 to 2023.

Capex:

We will assume that the Capex relative to sales at Applus is set to remain steady throughout the projection period, reflecting the company's consistent investment strategy. The Capex is set at 4% of sales, slightly above the average of recent years. This increase aligns with Applus's strategic initiatives to construct new facilities and penetrate new markets, as outlined in their strategic plan (Applus, 2022).

Change in Operating Working Capital:

We will assume a net working capital of 4.5% over sales, which is based on the company's management expectation (KPMG, 2024).

With these assumptions, the Discounted Cash Flow analysis is shown in Table 18:

Table 18. Discounted Cash Flows analysis in an optimistic scenario (2023 - 2028)

Milions of EUR	2023	2024E	2025E	2026E	2027E	2028E
Sales	**2.057,9**	**2.210,2**	**2.342,8**	**2.467,0**	**2.548,4**	**2.599,3**
% growth	*8,4%*	*7,4%*	*6,0%*	*5,3%*	*3,3%*	*2,0%*
EBITDA	**336,2**	**364,7**	**386,6**	**407,0**	**420,5**	**402,9**
% EBITDA margin	*16,3%*	*16,5%*	*16,5%*	*16,5%*	*16,5%*	*15,5%*
D&A	(179,4)	(196,7)	(208,5)	(219,6)	(226,8)	(231,3)
% sales	*8,7%*	*8,9%*	*8,9%*	*8,9%*	*8,9%*	*8,9%*
Adjusted EBIT (removing Other results)	**156,8**	**168,0**	**178,1**	**187,5**	**193,7**	**171,6**
% EBIT margin	*7,6%*	*7,6%*	*7,6%*	*7,6%*	*7,6%*	*6,6%*
Taxes (25%)	(39,2)	(42,0)	(44,5)	(46,9)	(48,4)	(42,9)
NOPAT	**117,6**		**133,5**	**140,6**	**145,3**	**128,7**
+ D&A	179,4	196,7	208,5	219,6	226,8	231,3
- CAPEX	(79,3)	(88,4)	(93,7)	(98,7)	(101,9)	(104,0)
% sales	*3,9%*	*4,0%*	*4,0%*	*4,0%*	*4,0%*	*4,0%*
- Change in NWC	43	(3)	(5)	(4)	(3)	(2)
% sales	*-2,1%*	*0,2%*	*0,2%*	*0,2%*	*0,1%*	*0,1%*
Free Cash Flow to Firm (FCFF)	**260,3**	**104,9**	**243,7**	**257,2**	**267,3**	**254,3**
Terminal Value						2.268,9
NPV	**260,3**	**96,5**	**206,2**	**200,2**	**191,4**	**1.662,7**

Enterprise Value	**2.357,1**
- Net Financial Debt	(871,0)
- Minority Interests	(100,0)
Equity Value	**1.386,1**
Shares outstanding (in millions)	129,0
Price per Share	**10,7**

Source: Own elaboration

In this scenario, the Enterprise Value is 2.357,1 euros and the price per share is 10,70 euros.

2. Pessimistic scenario

In a pessimistic scenario, Applus will lose its IDIADA division in 2024 as the main concession contract expires in September 2024. At that time, the current entity, in which Applus has an 80% ownership and the Catalan government owns the remaining 20%, will be dissolved. A new contract will then be issued through a public tender initiated by the Catalan government, with significant competition expected from international bidders. This would make Applus lose its IDIADA division, which represents 16% of its revenue and which has the highest profitability in terms of EBITDA margin.

Furthermore, persistent high inflation may prevent Applus from effectively adjusting its prices, which could impact profit margins. Also, persistent high interest rates could have a further negative impact on the company's finances by increasing borrowing costs.

Therefore, based on this scenario, we will proceed with the following assumptions:

Sales growth rate:
Our sales forecasts will be aligned with the market growth rates detailed in Kroll's valuation report (2024), which calculates these rates as the weighted average growth of each Applus business line.

In general terms, by 2025, Applus is expected to experience a significant reduction in its sales growth rate due to the loss of the IDIADA division, which represents 16% of its total revenue. In addition, the growth rate will decrease due to the increase of competition and the underperformance of newly acquired companies.

EBITDA margin:
We will assume an EBITDA margin of 15,5%, which is lower than last year's figure. This reduction is attributed to persistent high inflation, heightened competition, and the loss of IDIADA, the company's most profitable division.

Depreciation:
We will make the same assumptions as in the optimistic scenario.

Capex:
We will make the same assumptions as in the optimistic scenario.

Change in Operating Working Capital:
We will make the same assumptions as in the optimistic scenario.

With these assumptions, the projected Free Cash Flows are as follows:

Table 18. Discounted Cash Flows analysis in an pessimistic scenario (2023 - 2028)

Milions of EUR	2023	2024E	2025E	2026E	2027E	2028E
Sales	**2.057,9**	**2.119,6**	**1.956,4**	**2.050,3**	**2.101,6**	**2.154,1**
% growth	*8,4%*	*3,0%*	*-7,7%*	*4,8%*	*2,5%*	*2,5%*
EBITDA	**336,2**	**328,5**	**303,2**	**317,8**	**325,7**	**323,1**
% EBITDA margin	*16,3%*	*15,5%*	*15,5%*	*15,5%*	*15,5%*	*15,0%*
D&A	(179,4)	(188,6)	(174,1)	(182,5)	(187,0)	(191,7)
% sales	*8,7%*	*8,9%*	*8,9%*	*8,9%*	*8,9%*	*8,9%*
Adjusted EBIT (removing Other results)	**156,8**	**139,9**	**129,1**	**135,3**	**138,7**	**131,4**
% EBIT margin	*7,6%*	*6,6%*	*6,6%*	*6,6%*	*6,6%*	*6,1%*
Taxes	(39,2)	(35,0)	(32,3)	(33,8)	(34,7)	(32,9)
NOPAT	**117,6**	**104,9**	**96,8**	**101,5**	**104,0**	**98,6**
+ D&A	179,4	188,6	174,1	182,5	187,0	191,7
- CAPEX	(79,3)	(84,8)	(78,3)	(82,0)	(84,1)	(86,2)
% sales	*3,9%*	*4,0%*	*4,0%*	*4,0%*	*4,0%*	*4,0%*
- Change in NWC	43	(0)	6	(3)	(2)	(2)
% sales	*-2,1%*	*0,2%*	*0,2%*	*0,2%*	*0,1%*	*0,1%*
Free Cash Flow to Firm (FCFF)	**260,3**	**208,6**	**198,4**	**198,7**	**205,2**	**202,3**
Terminal Value						2.082,3
NPV	**260,3**	**191,9**	**167,9**	**154,7**	**147,0**	**1.505,4**

Enterprise Value	**2.166,9**
- Net Financial Debt	(871,0)
- Minority Interests	(100,0)
Equity Value	**1.195,9**
Shares outstanding (in millions)	129,0
Price per Share	**9,3**

Source: Own elaboration

In this scenario, the Enterprise Value is 2.166,9 Euros and the price per share is 9,3 Euros.

2.6. Results overview

Having calculated the price per share for each scenario, we will assign a likelihood of 50% to each. As a result, the share price varies between 9.3 and 10,7 euros, with an average share price of 10 euros.

Based on our Discounted Cash Flow (DCF) analysis of Applus, several key conclusions can be made. Our valuation of 10 euros per share is lower than the current market price of 12.72 euros as of June 1, 2024, suggesting that the market may currently be overvaluing Applus relative to its intrinsic value.

Furthermore, Apollo and Amber have conducted their own DCF valuations, with the highest result being 10,67 and 10,40 euros per share. Nevertheless, Amber and Apollo have offered to buy the company at 12,78 and 12,50 euros per share, respectively. This suggests they are willing to pay a premium over their own valuation estimates, likely due to the competitive nature of the takeover bid and the counteroffers exchanged between them

The current trading price of 12,72 euros per share reflects the influence of the takeover bid, aligning closely with the offered price rather than the intrinsic value of the company. For current and potential investors, it is crucial to understand the context of the takeover bid. While the market price is currently high due to the bid, our DCF analysis suggests a lower intrinsic value.

If the takeover does not go through, it is possible that the market price of Applus could adjust downward closer to the intrinsic values calculated by our analysis and the private equities' reports. Conversely, if the takeover is successful, shareholders might benefit from the premium offered.

In summary, our DCF valuation of Applus at 10 euros is lower than the current market price and the takeover offer price. This highlights that the market price is currently influenced by this potential acquisition.

3. Conclusions

This research project focuses on examining the main approaches to value a company and the concepts related to valuation. In the practical case, these concepts are applied with a valuation of Applus.

In this chapter, we will outline the research process, detailing the steps taken and the results achieved.

Process of the research work

In this research work, a literature review of business valuation methods was conducted alongside a practical valuation exercise of the Spanish company Applus.

The literature review provided a detailed explanation of the valuation process and the two most used methods: the Discounted Cash Flow and the Comparable Multiples. The literature review aimed to present the information simply and orderly so that someone without prior financial knowledge could achieve a basic understanding of business valuation. Each method was explained to better understand the critical variables involved, their importance, and the theoretical explanation for each of these variables.

The practical valuation exercise of Applus played a fundamental role in the acquired knowledge and understanding of business valuation. Applying the concepts exposed in the literature review, we faced real valuation challenges while enhancing both theoretical understanding and practical application.

Research objectives and results achieved

Having finished both the theoretical and practical aspects of our research, as outlined in the preceding chapter, we can now address and find conclusions regarding the research objectives set at the first stage of this study.

O1. Understanding the importance of company valuation and the difference between price and value.

Company valuation can employ various methods and serve different purposes, but its primary goal is to facilitate informed and optimized decision-making. As demonstrated in the practical valuation of Applus, company valuation is crucial in business transactions such as takeover bids, helping private equities and investment banks understand a company's value independently of its market price and to offer a fair price to buy a company.

Understanding the distinction between price and value is crucial in company valuation, as they can vary over time. There are two main reasons for this: first, there is no single, constant intrinsic value since multiple methods can be used to value a company; and second, valuation inherently involves subjectivity and uncertainty. Additionally, the market price does not always reflect the intrinsic value as it can be influenced by market sentiment, which may sometimes be irrational or affected by external factors unrelated to the company's fundamentals, such as a takeover bid.

These concepts where evident in the case of Applus, where Apollo and Amber valued the company at a maximum of 10,67 and 10,40 euros per share but ultimately offered 12,51 and 12,78 euros per share, respectively. These prices offered included a premium over the intrinsic value, influenced by external factors like competitive pressures. Additionally, the market price of Applus aligned more closely with the takeover bid price rather than its intrinsic value, illustrating that market price can be influenced by external factors beyond a company's fundamental worth.

O2. In-depth and comparative description of the two most used valuation methods: the Discounted Cash Flow method (DCF) and Comparable Multiples valuation

There are various approaches to valuing a company, but two main methods predominate: intrinsic valuation and relative valuation.

Intrinsic valuation is based on the idea that the true value of a company is the sum of the present value of the expected cash flows and the most common method is the discounted cash flow (DCF). Conversely, relative valuation is based on valuing companies by comparing them to similar companies in the market, assuming that companies with similar characteristics are valued equally and the most used method is the comparable multiples.

Both methods have sub-methods; for example, DCF analysis may involve projecting Free Cash Flow to Firm (FCFF) or Free Cash Flow to Equity (FCFE), while Comparable Multiples method may use a range of multiples.

Also, each method has its own strengths and weaknesses. However, in terms of their underlying assumptions, it is noticeable that DCF is better suited to long-term investors due to its reliance on fundamental analysis and Comparable Multiples are considered ideal for short-term analysis as they rely more on market sentiment.

O3. Application of the most appropriate valuation method with the company Applus and assessing if the price offered by the potential buyers of the company is justified.

The practical part of our research was to determine the value of Applus, with the objective of achieving a valuation as accurate as those conducted by investment banks and private equities.

The initial phase of the valuation process involved a consideration of the most appropriate valuation methodology. Ultimately, the discounted cash flow (DCF) method was selected as it emphasizes on the company's core fundamentals, rather than market fluctuations. Conversely, comparable multiples were inadequate due to the absence of sufficiently similar companies for comparison.

The DCF analysis resulted in a valuation range of 9,30 to 10,70 euros per share, with an average of 10 euros per share. Notably, the average fell below the current market price of 12,72 euros per share. In addition, the valuations proposed by Apollo and Amber were even lower, reaching a maximum of 10,40 to 10,67 euros per share, respectively, based on their DCF models. Nevertheless, despite the lower valuations, Apollo and Amber finally offered 12,51 and 12,78 euros per share for Applus, indicating a strategic premium over the intrinsic value of Applus.

In conclusion, the final price offered by the private equity firms, although is higher than both intrinsic and market values, appears to be justified. This premium is likely to reflect strategic considerations and the competitive nature of the bidding process between the two private equity entities. In the absence of a single private equity firm, the final price may have been considerably lower. Ultimately, a company's valuation should not be viewed as a fixed or absolute figure but as an indicative value.

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