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Equity Valuation: The Navigator Company, S.A.

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Master in Finance

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ISCTE Business School

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Abstract

The Navigator Company, S.A. is a Portuguese company founded in 1953 with the mission to be a worldwide company, recognized for the innovative and sustainable way it transforms the forest into products and services that contribute to people's well-being. It is currently a world reference in the Paper and Pulp Industry, selling to 130 countries over five continents, focusing on Europe and the USA.

The objective of this project, which is an equity valuation of The Navigator Company, S.A., is to determine the fair value of the company's shares on 31 December 2021, after a pandemic period, in order to provide an investment recommendation to possible investors. The conclusion will be a recommendation on whether investors should buy, sell, or hold the company's shares, considering the potential appreciation or depreciation relative to the market.

After an analysis of the most commonly used methods in the financial field to value a company, the methodologies that will be applied to The Navigator Company are The Free Cash Flow to the Firm, followed by a Relative Valuation that will help to achieve more accurate results.

As of 31 December 2021, The Navigator Company has 711.183 million shares listed for trading on NYSE Euronext Lisbon, with a price of 3,35 euros per share. We further considered this price as undervalued in the course of the discussion of the valuation results. Therefore, our final recommendation stands that investors should buy/hold the shares of Navigator.

Keywords: The Navigator Company; Equity Valuation; Discounted Cash Flow (DCF); Multiples

JEL Classification: G30 – Corporate Finance; G32 – Value of Firms

Resumo

A The Navigator Company, S.A. é uma empresa portuguesa fundada em 1953 com a missão de estar presente mundialmente e ser reconhecida pela forma inovadora e sustentável como transforma a floresta em produtos e serviços que contribuem para o bem-estar das pessoas. Atualmente, é uma referência mundial na indústria do papel e pasta de papel, vendendo para cerca de 130 países dos cinco continentes, com destaque para a Europa e os EUA.

O objetivo deste projeto, que é uma avaliação da The Navigator Company, é determinar o justo valor das ações da empresa a 31 de dezembro de 2021, após um período pandémico, com o intuito de dar uma recomendação de investimento a potenciais investidores. A conclusão será uma recomendação sobre se os investidores devem comprar, vender, ou manter as ações da empresa, considerando a potencial valorização ou desvalorização, em relação ao seu valor mercado.

Após uma análise dos métodos mais utilizados na área financeira para avaliar uma empresa, as metodologias que serão aplicadas à The Navigator Company são a dos Fluxos de Caixa Descontados na ótica da Empresa, seguida de uma Avaliação Relativa que ajudará a alcançar resultados mais precisos.

A 31 de Dezembro de 2021, a Navigator tinha 711.183 milhões de ações cotadas para negociação na NYSE Euronext Lisbon, com um preço de 3,35 euros por ação. Considerámos este preço como subavaliado no decurso da discussão dos resultados da avaliação. Por conseguinte, a nossa recomendação final é de que os investidores devem comprar/deter as ações da Navigator.

Palavras-chave: The Navigator Company; Avaliação de Empresas; Cash Flow Descontados; Múltiplos

JEL Classification: G300 – Corporate Finance; G32 – Value of Firms

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Glossary

APV - Adjusted Present Value

BEKP - Bleached Eucalyptus Kraft Pulp

CAGR – Compounded Annual Growth Rate

CAPEX – Capital Expenditure

CAPM – Capital Asset Pricing Model

CEPI – Confederation of European Paper Industries

DCF – Discounted Cash Flow

DDM – Dividend Discount Model

DWP – Dissolving Wood Pulp

EBIT - Earnings before interest and taxes

EBITDA - Earnings before interest, taxes, depreciation, and amortization

EV - Enterprise Value

EV/EBITDA – Enterprise Value to EBITDA

FCFE – Free Cash Flow to the Equity

FCFF – Free Cash Flow to the Firm

GDP – Gross Domestic Product

MRP – Market Risk Premium

Navigator – The Navigator Company S.A.

NOPLAT - Net operating profit less adjusted taxes

NYSE – New York Stock Exchange

PER – Price to Earnings Ratio

TGR – Terminal Growth Rate

USA – United States of America

UWF – Wood free uncoated paper

WACC - Weighted Average Cost of Capital

1. Introduction

Valuation is one of the key topics in finance. It is the process of estimating the intrinsic value of an asset to support investors in the decision-making process. In this sense, Equity Valuation assumes a vital role in the daily life of any investor.

This master project aims to perform an equity research applied to The Navigator Company, S.A. Therefore, the main goal is to estimate Navigator's stock's intrinsic value on 31 December 2021 and compare it with the actual share close price.

The Navigator Company S.A., former Portucel Soporcel S.A., is a Portuguese Listed Company headquartered in Setubal, considered a worldwide leader in the Paper and Pulp Industry. It is an integrated forest producer of pulp, paper, tissue, and energy, managing 112.000 hectares of forest and the largest eucalyptus plant nursery in Europe. The company is a distinguished brand in Portugal and around the world as it is the third Portuguese top exporter, with 1.3 billion € exports, which corresponds to almost 1% of Portuguese GDP and 3% of total Portuguese Exports in 2021. It also contributes to the Portuguese economy by employing 3.150 workers and contributing to more than 30 thousand direct and indirect jobs, with 74% of its suppliers being Portuguese.

After the outbreak of coronavirus disease that appeared in 2019, many companies were forced to adapt to the new situations. Every company on the planet was affected in some way by COVID-19, and pulp and paper were no exception. This disease significantly impacted global industrial supply chains, presenting some challenges for the pulp and paper industry worldwide. On the other hand, this pandemic may offer pulp and paper manufacturers opportunities in areas such as the growing demand for personal care paper products, food packaging products, and others.

Therefore, the importance of the Navigator in the Portuguese economy and its relevance in the paper and pulp industry justify an equity valuation of this company, especially after a pandemic period.

This project is structured as follows: in the first section, a literature review is presented, covering the importance of valuation and overviewing the main valuation methods; in the next section, an analysis of the company and industry is undertaken, covering its business areas, company performance and market outlook; afterwards, we present the methodology and the main assumptions; next, a valuation of the company is performed; and the final section, contains the conclusion drawn from the project and the respective recommendation to be given to the investors.

2. Literature review

2.1. Valuation

Valuation is one of the most discussed topics in finance since it plays a key role in transactions and companies' decisions. As Damodaran (2012) states, “Valuation lies at the heart of finance”.

In every business, the main objective of the companies is long-term value creation. Thus, the purpose of equity valuation is to give owners, potential buyers, and other stakeholders an approximate value of the company. Every asset has value, and we must understand how to increase it by changing a firm's investment, financing decisions, and dividend policy to maximize profits and reach goals (Steiger, 2008). Therefore, understanding what determines the value of a company, where it comes from and how to estimate it is crucial for a company to be successful (Damodaran, 2012).

According to Fernandez (2007), it is important not to confuse the value of a company with its price. The price of a company is the amount agreed between the buyer and the seller when selling a company. In contrast, the value is the present value of the future cash flows of the analyzed asset and depends on the valuation method. This value is only valid at a certain point in time. After this date, another amount is the actual value (Natalwala, 2011). This said, price is not equal to value, but it can be the same under certain conditions.

Over the years, different authors have defined valuation and presented how to compute the value of a specific business using different approaches, ranging from the simplest to the most complicated method but sharing some common characteristics. Typically, the value of a company depends on many factors such as industry, the performance of the company and valuation methods. However, there is no one way to find a certain company’s value, and the best fit to determine the value of a company is to use more than one approach (Fernandez, 2013).

According to Damodaran (2012), there are three main valuation approaches, which are the most well-known used in finance: Discounted Cash Flow, Relative Valuation and Contingent Claim Valuation. Thus, in this section, we will discuss these models.

2.1.1. Discounted Cash Flow Model

Damodaran (2012) argues that DCF “is the foundation on which all other valuation approaches are built”. It is a model used to estimate the value of an asset based on its expected future cash flows.

Regarding this model, the main methods are the following: the Free Cash Flow to the Equity (FCFE), which measures the cash available to the equity shareholders of a company after all expenses; the Dividend discount model (DDM), which is a particular case of the FCFE model; Free Cash Flow to the Firm (FCFF), a method that values the entire firm, which includes besides equity the other claim holders in the firm; and finally the Adjusted Present Value (APV), method that values the firm in pieces, beginning with its operations and adding the effects on the value of debt.

These methods will achieve similar values since they analyse the same reality, differ only in the cash flows taken as the starting point of the valuation (Fernandez, 2007). They can be described as follows:

2.1.1.1 Free Cash Flow to the Firm (FCFF)

Free Cash Flow to the Firm (FCFF) is the most widely accepted approach to discounted cash flow model (Luehrman, 1997). This method consists of the sum of the cash flows to all claim holders in the firm, including stockholders, bondholders, and preferred stockholders, using the weighted average cost of capital (WACC) as the discount rate (Damodaran, 2012).

According to Steiger (2008), determining the value of the discount rate requires an intensive analysis of the company's financing structure and current market conditions. In addition, the discount rate is a critical input once it is "the function of riskiness of the estimated cash flows, with higher rates for riskier assets and lower rates for safer assets" (Damodaran, 2002). Therefore, small changes in the discount rate (WACC) will cause significant changes in the company's value.

Koller et al. (2005) argue that the Discounted Cash Flow methodology is the most used by specialists since it is based only on the company's cash inflows and outflows. Specifically, by using the same WACC for the entire period and the terminal value, the Free Cash Flow to Firm methodology assumes that the company maintains the capital structure implicit in the discount rate. Therefore, it is ideal for mature companies where a significant change in the relative weights of equity and debt capital is not expected, as is the case of The Navigator Company.
It can be described as follows:

$$Value\ of\ firm = \sum_{t=1}^{n} \frac{FCFF_n}{(1+WACC)^n} + \frac{Terminal\ Value_n}{(1+WACC)^n} \quad (1)$$

Where,

$$n = Life\ of\ the\ firm$$
$$FCFF_t = Free\ Cash\ Flow\ of\ the\ Firm\ in\ period\ t$$
$$WACC = Weighted\ Average\ Cost\ of\ Capital$$

The FCFF are the operational cash flows that represent the cash flow that is available to the firm after all expenses. It can be represented as:

$$FCFF = NOPLAT + Depreciation - Capital\ Expenditures - Variation\ in\ Working\ Capital \quad (2)$$

Weighted Average Cost of Capital

The WACC is the opportunity cost that an investor has by investing in similar investments with a similar risk profile.

Fernandez (2011) argues that WACC is "neither a cost nor a required return, but a weighted average of a cost and a required return". Most companies are simultaneously financed with debt and equity, so the WACC considers the firm's cost of capital to be equal to the weighted average between the cost of debt and the cost of equity, as we can see as follows:

$$WACC = \frac{E}{E+D} * Ke + \frac{D}{E+D} * Kd * (1-t) \quad (3)$$

Where,

Ke – Cost of Equity
Kd – Cost of debt
t – effective tax rate

E – Market value of equity
D – Market value of Debt

By observing the formula, we can see that the WACC includes the tax shield effect, which is an advantage of having debt since higher debt means a higher tax shield.

The WACC is criticized for only being applicable to companies with a stable capital structure (Luehrman, 1997). Also, the existence of exotic instruments within a company's capital structure can reduce the reliability of this model. However, it is still considered by most the best approach in terms of simplicity and reliability.

Cost of Equity

The cost of equity can be obtained using a Risk and Return Model. The most used are the Capital Asset Pricing Model (CAPM), developed by Sharpe in 1964, the Arbitrage Pricing Model, developed by Ross in 1976 and the Multi-Factor Models, in which the Fama French three-factor model highlights. They all need the same three inputs: the Risk-free rate, the beta (or betas) and the risk premium.

According to Goedhart et al. (2010), the CAPM is the most used model due to its reliability and efficiency. Its general idea is that investors must be compensated due to two factors: time value of money, represented by the risk-free rate, which compensates the investor for placing an investment over a period of time, and risk, represented in the other half of the formula. It is computed as follows:

$$Cost\ of\ Equity = Risk\ free\ rate + Beta * (Market\ Risk\ Premium) \quad (4)$$

a) Risk-free rate

The risk-free rate corresponds to the rate of return paid on a risk-free investment. At the end of the day, it is the expected returns that investors know with certainty.

Thus, the risk-free rate has to be a default-free government zero coupon rate matched up to when the cash flows that are being discounted occur. Also, the currency of the risk-free rate should be the same as the cash flows currency (Damodaran, 2008).

b) Levered Beta

The levered beta is the risk added to the market portfolio, which means that beta tells us the exposure of an asset to market risk.

Damodaran (2002) helps us understand the meaning of beta values. A Beta of zero corresponds to a risk-free asset, which means that the asset is uncorrelated to the market return. On the other hand, if we obtain a value for beta close to one means that the asset return is strongly correlated with the market return.

The most used method to estimate beta consists of a regression on the returns of an asset against the returns of an index representing the market portfolio over a reasonable period (Damodaran, 1999). However, the choice of a market index, period and return interval constitute one of the limitations of this method since they will vary due to how the regression is defined (Fernández, 2008). Because of this, we have three alternatives to the regression betas: the modified regression betas, which reflect the firm current operating and financial features; the use of a measure of relative risk without the use of historical prices on the stock and index; and finally, the estimation of the bottom-up betas, that represent the business a firm is operating in and its current financial leverage (Damodaran 1999). Using the publicly estimated industry unlevered beta is a good approach, since this is typically more stable than individual company betas.

In beta's computation, it is also essential to be aware of the company's financing structure, since different structures will lead to different betas. For example, for a company that is only financed by equity, the value of levered beta will be equal to the value of unlevered beta, whereas if a company is financed by both, debt and equity, we have to compute the Levered Beta, which can be obtained by applying the following formula:

$$Levered\ Beta = Unlevered\ Beta * \left(1 + (1 - Tax\ Rate) * \frac{Debt}{Equity}\right) \quad (5)$$

This expression assumes that the beta of Debt is zero, therefore in that case Kd should be close to the risk-free rate.

c) Market Risk Premium

The market risk premium (MRP) is a significant input in all asset pricing models. It corresponds to the excess return obtained by bearing market risk compared with the risk-free rate (Damodaran, 2016).

MRP reflects the assumptions about the level of risk in a market and what value should be attributed to that risk. The main categories are historical and implied equity premiums. The historical premium, which corresponds to the difference between the actual returns earned on stocks over a long period and the actual returns earned on a default-free asset, is easy to use and constitutes the preferred one. However, the difficulties in getting reliable information in the markets create some limitations to this approach. However, Damodaran (2015) provides a formula that determines a developed country's historical premium and adds the country's risk

premium in question. The implied equity premium does not use historical data and assumes that the market is correctly priced. Therefore, it has the advantage of not using the historical context and reflects the current market perceptions.

Cost of Debt

The cost of debt represents the effective rate a company pays on its current debt. In other words, It measures the current cost to the firm of borrowing finance projects. It can be determined through the risk-free rate, the tax advantage associated with debt and with a firm's default risk or as the weighted average rate of the different sources of debt (Damodaran, 2002).

The cost of debt for firms will increase whenever the risk-free rate and the default risk of a firm increase. In conjunction with its coupon and maturity, the bond's market price can be used to compute a yield that is used as the cost of debt.

For listed companies, which is the case of the company under analysis, it is possible to obtain the default component through its credit rating and associated default spread. For unlisted companies, it is more difficult to obtain the default component, but Damodaran (2002) suggests to estimate a synthetic rating or analyze the company's recent borrowing history.

Usually, the cost of debt has different values every year due to changes in the company's debt structure.

Terminal Value

Terminal value implies that the company achieved a steady state, which means that the company remains qualitatively similar over the years after the valuation horizon and has a stable development of earnings and performance, as Levin and Olsson (2000) point out.

According to Damodaran (2002), terminal value can be calculated using three different approaches: the Liquidation Value, the Multiples and the Stable Growth Model. The last one is the most used since we just need to know the number of years that the company will take to achieve a stable state and estimate the growth rate that the company's cash flows will present going forward from that point. At its maturity stage, a firm's growth rate tends to be reached with the long-term economy growth rate of the country where the firm is located or with the global economic growth since no firm can grow perpetually at a rate higher than the growth rate of the economy (Damodaran, 2002).

$$Terminal\ Value\ at\ year\ n = \frac{FCFF\ n+1}{WACC - g} \quad (6)$$

2.1.1.2 Free Cash Flow to Equity (FCFE)

Free Cash Flow to Equity represents the cash flow available to common stockholders and can be obtained by deducting the debt holders' payments to FCFF. Contrary to the FCFF methodology, its present value is computed using only the cost of equity (the risk-adjusted rate of return for equity holders) and reflects the equity value of a company.

This methodology is recommended to value companies where the capital structure is directly associated with operations, such as financial institutions (Koller et al., 2005).

It can be described as follows:

$$EV = \sum_{t=1}^{n} \frac{FCFE_t}{(1+K_e)^t} \quad (7)$$

Where,

$$n = Life\ of\ the\ company$$
$$FCFE_t = Free\ Cash\ Flow\ to\ Equity\ in\ period\ t$$
$$K_e = Cost\ of\ Equity$$

2.1.1.2 Dividend Discounted Model (DDM)

According to Damodaran (2012), when an investor buys stocks from a publicly traded firm, the only cash flow he receives directly from the investment is expected dividends. Therefore, this model appears as a specialized equity cash flow valuation, where the equity value consists of present value of expected dividends, discounted at a rate that corresponds to the cost of equity, which represents the riskiness of the cash flows.

DDM can go from simple growing perpetuity models, such as the Gordon Growth model, where a stock's value is a function of its expected dividends next year, the correspondent cost of equity and a stable growth rate in the perpetuity, to complex three-stage models, where pay-out ratios and growth rates change over time.

The simplified dividend discount model is appropriate for companies characterized by being stable, where earnings patterns, retention rates and returns on investments are expected

to be constant over time. On the other hand, firms with cyclical earnings patterns, rapidly growing firms, or operating under adverse economic scenarios, like in a pandemic period, require a more complex dividend capitalization model framework that can accommodate changes (Farrel, 1985).

However, dividend distribution is not always tied to value creation, which can lead to estimate errors. For example, firms can hold back more earnings for investment purposes, or some firms pay more in dividends than they can, ending up funding the difference with new debt or equity issues. This model leads to an undervaluation in the first case, and in the second case, the estimates may be too optimistic (Damodaran, 2006).

In sum, it is important to bear in mind that dividend distribution is linked to each company's policy, which means that although this method can be reliable if there are alternatives, they should be used to complete and compare with this approach.

It can be described as follows:

$$Value\ per\ share\ of\ stock = \sum_{t=1}^{n} \frac{E(DPS_t)}{(1+K_e)^t} \quad (8)$$

Where,

$$n = Life\ of\ the\ asset$$
$$DPS_t = Expected\ dividends\ per\ share\ at\ period\ t$$
$$K_e = Cost\ of\ Equity$$

2.1.1.4 Adjusted Present Value (APV)

The Adjusted Present Value Model (APV) values the firm in two separate parts, starting with its operations and then summing the effects of debt and other non-equity claims. It assumes that firms are only financed with equity and then adds the value of debt, considering the present value of the tax benefits arising from the debt and the expected costs of bankruptcy (Damodaran, 2006).

According to Luehrman (1997), the APV is the most reliable, realistic and better method to use. That happens due to its value-additivity assumption that allows the managers to look at the firm from different perspectives and gives them more objective information about its

operations. It helps to analyze not only how much an asset is worth but also where the value comes from, as well as understand the impact of changing a company's capital structure.

It is widely used and suits better than the Free Cash-Flow approach to companies whose capital structure changes considerably over time. However, it is the most difficult method in terms of being executed.

It can be described as follows:

$$Value\ of\ firm = Value\ of\ all\ equity\ financed\ firm + PV\ of\ tax\ benefits - Expected\ Bankruptcy\ Costs \quad (9)$$

2.1.2 Relative Valuation

In relative valuation, a firm's valuation is based upon comparable firms, assuming that "the value of most assets is similar to assets that are priced in the marketplace, and that although the market individually may be wrong, on average, it gets it right pricing stocks" (Damodaran, 2012). Other assumptions are that a comparable firm operates within the same industry, has a similar expected cash flow, growth rate and risk.

In order to achieve the value of a firm, relative valuation establishes a parallel between a firm and another possible comparable firm. Therefore, with the underlying assumption of market efficiency, the value of a firm is obtained by first selecting a group of comparable firms (peer group). Then, it is observed how similar they are priced, and after, the prices are standardized by converting them into multiples (Damodaran, 2012).

Also, using different multiples leads to different values, and according to each sector, there is a suitable and more appropriate one to use. The main multiples used in relative valuation are EV/EBITDA and PER (Koller et al., 2010).

According to Damodaran (2012), the EV/EBITDA multiple has gained many supporters since the use of EBITDA as a reference indicator mitigates risks of lack of comparability of companies for reasons related to the use of different asset depreciation criteria. Additionally, the number of companies with negative EBITDA is much smaller than those with negative net income, which prevents its use for valuation purposes. Finally, this multiple allows comparing companies with different capital structures since EBITDA is an indicator that does not consider debt costs.

Fernández (2015) argues that although multiples broad dispersion might be a problem, it constitutes a helpful tool in a second valuation stage after performing it with the discounted cash flow method. That happens since comparing the multiples of similar firms allows

standardizing the valuation performed and points out differences among the firm values of the comparable firms.

In the same sense, Koller et al. (2005) state that specialists recognize DCF valuation as the most rigorous method, but the comparison of a company with its peers is important to test the consistency of projections, explain differences between the performance of a company and its competitors and understand the value generation drivers of a business. Thus, the relative valuation appears as a reality check to the Discounted Cash Flow valuation.

Finally, it is important to refer that the firm's value obtained with Relative Valuation will differ from the one obtained with DCF valuation. This happens because these two approaches have different market views. In DCF Valuation, we assume markets make mistakes, but we believe those mistakes will be corrected in the future. In contrast, in the Relative Valuation, we assume that markets are correct, at least on average. These different market views may lead to a situation where a stock may be overvalued on a discounted cash flow basis and undervalued on a relative basis if the firms used in the relative valuation are all overpriced by the market. The reverse would occur if an entire sector or market were underpriced. (Damodaran, 2006).

2.1.3 Contingent Claim Valuation

Contingent claim or option is a claim that pays off only under certain contingencies: if the value of the underlying asset exceeds a pre-defined value for a call option or is less than a specific value for a put option (Damodaran, 2012).

This method uses option pricing models to measure the value of assets that share option characteristics. The most common models are the Binomial Model and Black Sholes Model.

However, this method presents some limitations, such as the assumptions about constant variance and dividend yield, which are not contested for short-run options but are much different in the long run. Moreover, when underlying assets are not traded, the inputs for valuing cannot be extracted and have to be estimated. Therefore, this method becomes less reliable.

According to Luerhman (1997), this type of valuation is less intuitive, and it is hard to apply it to corporate problems.

3. Methodology

In the literature review, the most well-known models to value a firm were discussed as possible tools. After an analysis of what has been developed in the finance field about company's valuation, two different methodologies will be applied to The Navigator Company.

The first one will be the Free Cash Flow to the Firm method since it is the most used by investors and financial analysts in the world, and it suits well to companies with a practically fixed capital structure, like in the case of Navigator. Thus, the FCFF method will be applied to a time horizon of five years since more than five years can create a high uncertainty about future performance and increase the level of bias.

The second methodology applied to Navigator will be a Relative Valuation that works as a reality check and helps to achieve more accurate results. In the Relative Valuation, we will use the most widely accepted multiples to value a firm, PER and Enterprise value/EBITDA.

To perform the methodologies mentioned above, we will first analyze the paper and pulp industry and its main trends, as well as the company's business areas and the respective strategy of the management team. In addition, an analysis of the company's financial performance over the last years will be presented to understand the value drivers and perform future projections.

4. Market Overview

The paper and pulp industry is one of the largest industries worldwide. Its market size was valued at $351.53 billion in 2021.

The market is dominated by North American, Northern European, and East Asian countries. Latin America and Australia also have significant pulp and paper industries. The industry contains around 300 companies worldwide, of which 34 companies with a market capitalization of over 1 billion euros. Therefore, the major companies in the industry, as well as in Europe as globally, are reasonably concentrated. Considering this information, the market can be considered an oligopoly, with some elements of monopolistic competition. There are a few significant and smaller players, the product is homogeneous, and the barriers to entering the market are high because of initial capital requirements.

This industry manufactures pulp and paper products mainly from wood and other materials such as bamboo, rice husk and wheat straw. The main products include wrapping paper, packaging material, writing, and printing paper, tissue paper, rolls, and others.

The industry is characterized by being labour-intensive and playing a vital role in socio-economic as well as sustainable environmental development.

4.1. Opportunities and threats

The general idea that the pulp and paper industry will eventually become extinct due to the digital age in which we live makes sense but is not what has been happening. Experts say that the pulp and paper industry has been thriving and will continue to do so in 2022. Industry leaders are continually innovating to meet the new demands.

Actually, technology has contributed to the development of a global market that consists of consumers who are committed to sustainability. Efforts have been made to reduce the use of plastic for packaging. This anti-plastic mindset is beneficial to the pulp and paper industry in that it encourages biodegradable alternatives. Therefore, these problems associated with plastic result in many opportunities in the pulp and paper industry to develop alternative products. The industry is constantly searching for the best solutions to increase production without generating negative environmental impacts.

In 2022, the global production of various packaging and paper products will either remain stable or increase, following the growing trend observed since 2000 (Figure 1).

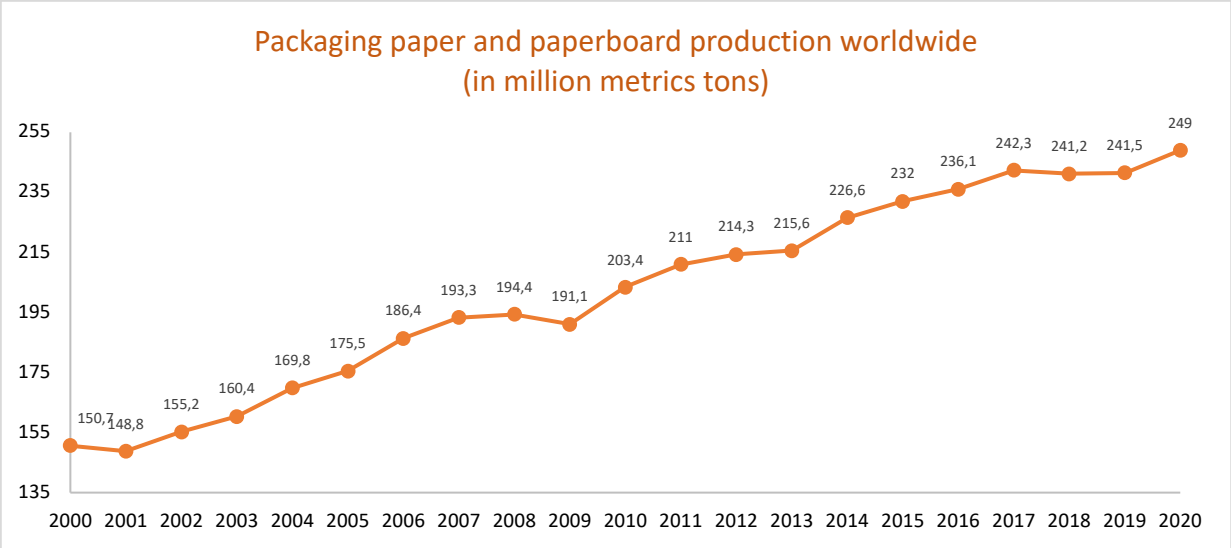


Figure 1 - Packaging and paperboard production worldwide (2000-2020)
Source: Statista

This production includes mostly Japan, China, European countries and the United States. The continuously expanding demand for packaging products is one of the strengths of the paper and pulp industry. This is stimulated on the one hand by the need for plastic replacement, as mentioned above, and on the other hand, by the boost in online shopping in recent years, being the paper packaging lightweight and convenient for logistics. Furthermore, in the last two years, the social distancing caused by COVID-19 has further boosted e-commerce, causing consumer behaviour changes, as shown in Figure 2.

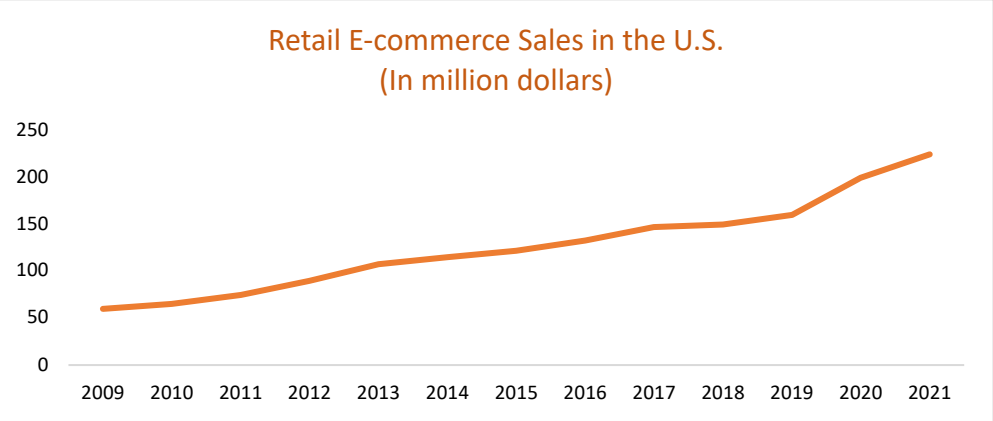


Figure 2 - Retail E-Commerce sales in the US (2019-2021)
Source: Statista

4.2. Industry Outlook

As the economy recovers, a positive outlook on market conditions is expected in the pulp, paper and tissue sectors. The Covid-19 vaccination plan is already implemented, and immunity starts to be achieved, so conditions in the industry are expected to remain positive overall. However, uncertainties still remain as to the impact of the logistical bottlenecks in global trade and the sharp upturn in inflation in different countries.

Nevertheless, pulp and paper will continue to play a significant role worldwide. Although the changes occurred because of the digital revolution, this is an industry that has thrived and will continue to do in the following years as we already said. As the world continues to evolve, the industry will follow this evolution, with emphasis on the packaging segment.

Because of the increasing adoption of paper packaging materials, the wrapping and packaging segment is expected to lead the market in the upcoming years. The rapid penetration of e-commerce and retail sectors across the globe has created a massive demand for both wrapping and packaging paper. For instance, the demand for paper bags has increased as a potential and cheap substitute for plastic bags. Also, consumers and manufacturers are adopting paper packaging products with rising ecological mindfulness. On the other hand, the newsprint segment has been decreasing and is expected to continue due to changes in consumer behaviour (Figure 3).

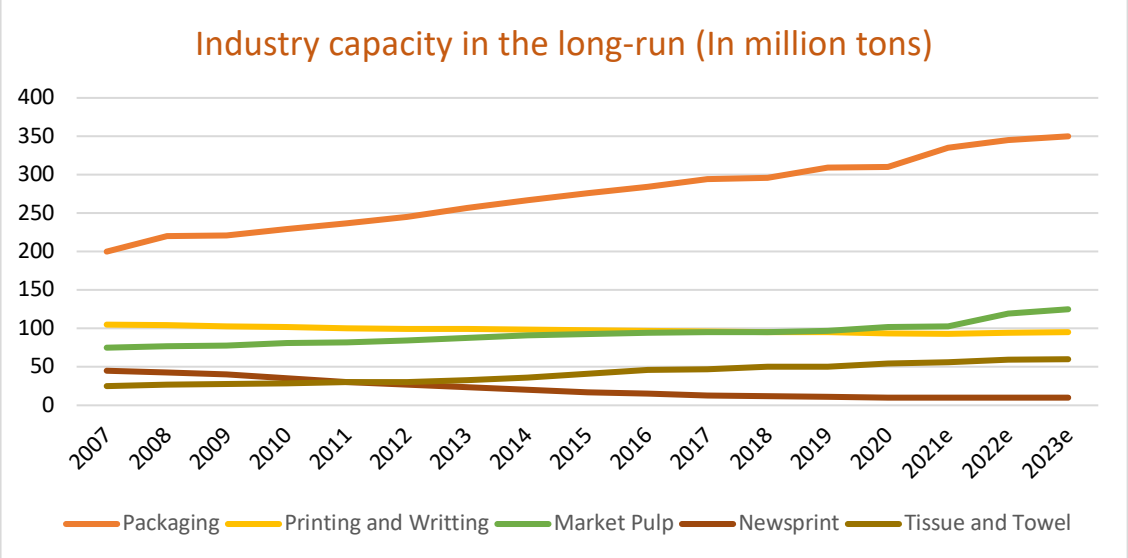


Figure 3 - Industry capacity in the long run
Source: Fisher

4.2.1. Paper and Pulp

We find paper in our lives so present that we take it for granted without understanding its complex nature. It is so important that the per capita consumption of paper for a country reflects the state of development of its society.

In the paper sector, the expected economic upturn combined with a better balance between supply and demand indicates positive prospects for 2022. This recovery will allow the majority of the population to gradually return to the office, leading to increased consumption of office paper, a segment that has performed less strongly than other papers in recent years due to the lockdown.

In the pulp market, price indexes in China have been moving upwards since the end of 2021 (Figure 4), driven by the relative scarcity of pulp supplies, constrained by logistical difficulties. At the same time, constraints on printing paper exports and smaller domestic market dynamics (difficulty in increasing prices) continue to limit pulp consumption in China. Usually, prices in Europe follow, with a lag, the trend occurring in China. Prices in Europe are expected to be sustained by the post-pandemic economic upturn, the healthy demand level, and the continuing logistical difficulties encountered in exporting from Latin America to Europe. In 2022, a significant increase in supply in Latin America and a possible degree of improvement in the logistical situation is expected to create downward pressure on prices.

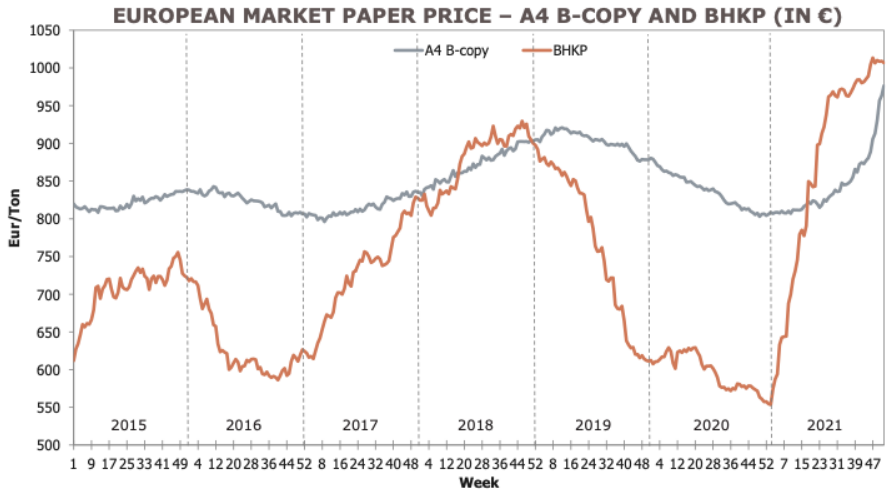


Figure 4 – Paper and Pulp Prices (2015-2021)
Source: Company data

Pulp demand is expected to continue to rise in the upcoming years (Figure 5). Its demand is not much correlated with macroeconomic factors since it is not a final product but rather a consumable used in the paper production process, being only sold to international paper

producers. Therefore, its demand is more related to the production capacity of the buyers and the general paper demand. China is one of this segment's most critical demand drivers, representing one-third of the world's total demand.

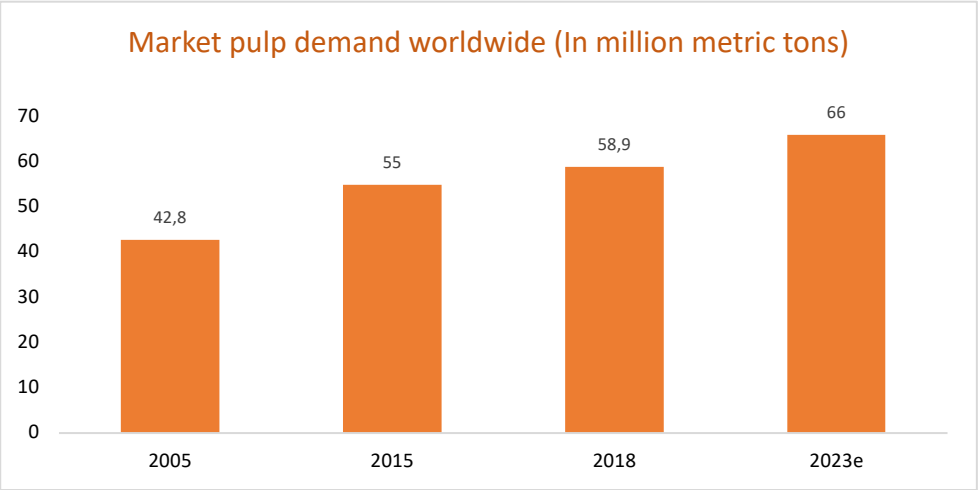


Figure 5 - Global market pulp demand from 2005 to 2023
Source: Statista

As for paper, its demand is more affected by macroeconomic factors such as GDP growth, employment and demographic variables, age stratification or education level. Paper is a stable product, and the product life cycle is mature as it is an old-used product, so advertising is less necessary. The influence on price is limited. In this industry, there are two types of end consumers: businesses and individuals. Individuals have no switching costs, so they will not be loyal to the product. In the case of companies, they buy paper in larger quantities, which can lead to higher switching costs.

The total pulp and paper market was valued at 348.83 billion U.S. dollars in 2019, a decline of roughly 0,1% compared with the previous year. This decline was a result of the outbreak of COVID19. However, the market recovered in 2020 and 2021 and is expected to continue to grow in the following years, to reach a value of 370 billion U.S. dollars by 2028. (Figure 6).

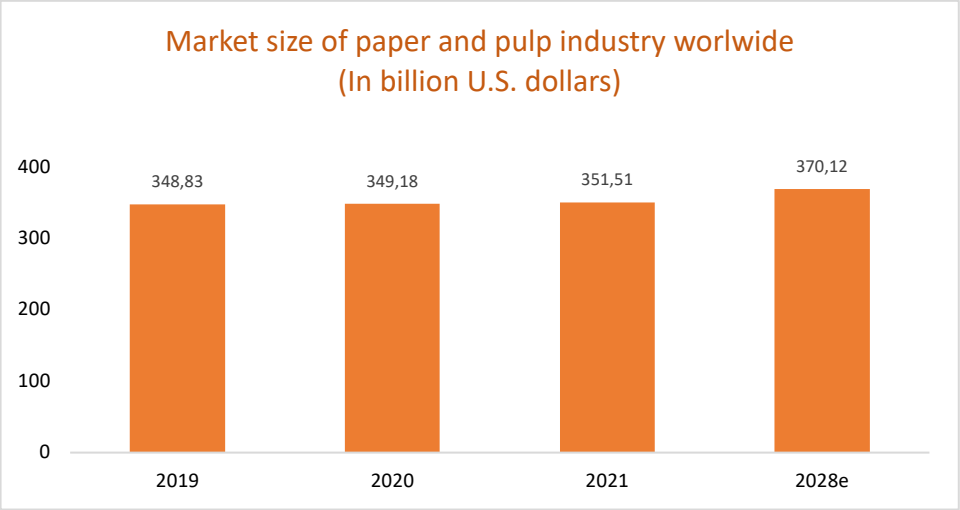


Figure 6 - Market size of paper and pulp industry worldwide in 2019 and 2028
Source: Statist

4.2.2. Tissue

In the tissue segment, in view of improving prospects for a gradual return to pre-pandemic reality, it is expected to see in 2022 a progressive upturn in demand for tissue products as a result of a recovery in tourism.

As illustrated below, the growth of the tissue segment will continue to be a long-term process driven by evolving consumer behaviour patterns. According to Statista, tissue consumption worldwide will reach 53M tons in 2031, following a growing pattern since 2000 (Figure 7).

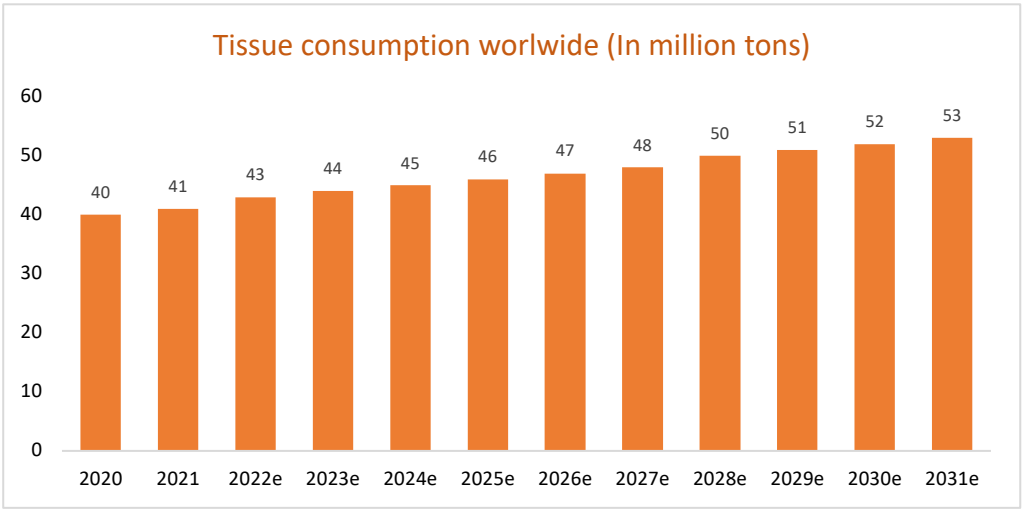


Figure 7 - Tissue Consumption worldwide from 2020 to 2031
Source: Statista

The demand for tissue paper is not very sensitive to economic cycles, despite its tendency to grow faster in a high economic growth environment. This is more evident in developing

countries, as economic growth allows greater product penetration in populations with lower income.

The tissue capacity is expected to expand in the upcoming years, especially in Asia, as shown in Figure 8. There is great long-term development potential for China's tissue industry.

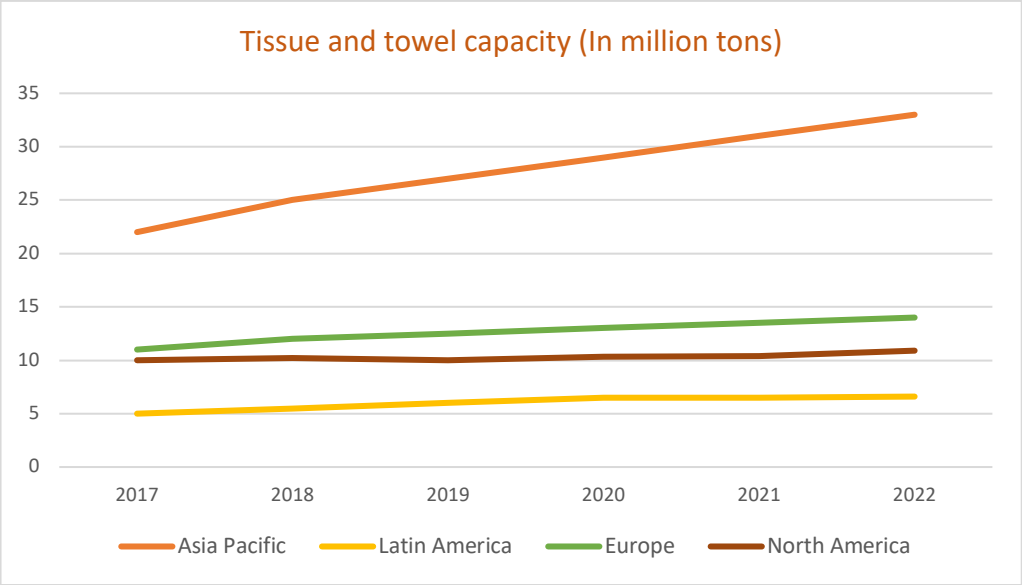


Figure 8 – Tissue and towel capacity
Source: Fisher

4.2.3. Energy

In the last decade, there has been a growing corporate concern about the global impact of business on climate change and, therefore an associated objective of decreasing greenhouse gas emissions, as well as reducing the consumption of energy originated from fossil sources.

In line with these objectives, the investment in renewable energy has grown exponentially, increasing the R&D investment in optimizing power production methods and extending the possibility of green energy production.

According to DGEG (2021), renewable energy represents 63% of the total energy produced in Portugal (3GWh in 20221), while Biomass accounts for 10% of that production. Figure 9 below shows the increasing production of renewable energy worldwide.

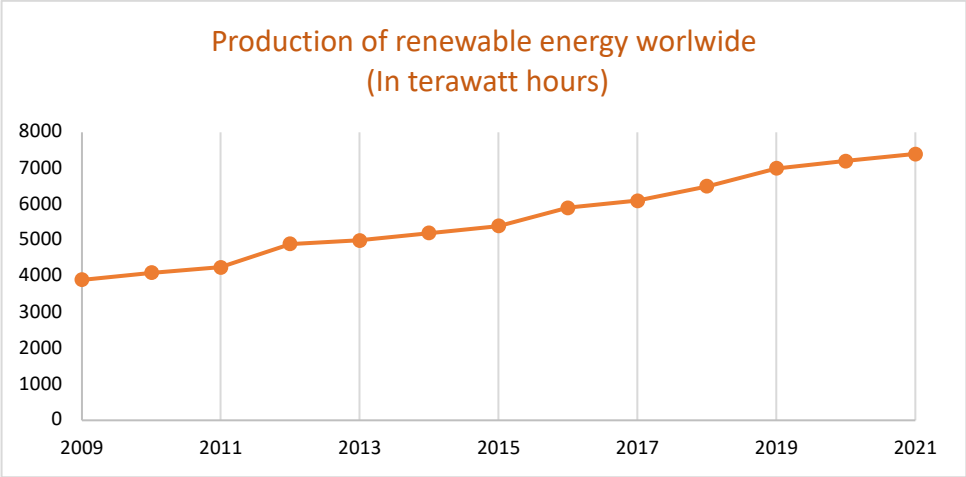


Figure 9 – Production of renewable energy worldwide (2009-2019)
Source: Statista

Biomass is organic material that comes from plants and animals. It was the largest source of energy consumption in the US until the mid-19th century and remains an essential fuel in many countries, especially for cooking and heating in developing countries. In addition, the use of biomass fuels for transportation and electricity generation is expanding in developed countries to avoid carbon dioxide emissions from the use of fossil fuels.

For the pulp and paper industry, biomass production comes as vertical integration. They produce the energy they consume, from scraps of the raw material they use in their core business. It is also an opportunity to reduce their CO_2 emissions and consequent ecological footprint while assuming the goal of becoming a sustainable environmental corporation.

4.3. Competitors

According to the bank of Portugal, the paper and pulp industry in Portugal is mainly dominated by two leading players: The Navigator Company and Altri Group. Altri only produces pulp, specifically BEKP pulp and DWP, with a production capacity of 1 million tons per year.

Globally, the competition in paper and pulp markets has been increasing, which may significantly impact prices and, consequently, the companies' profitability. The global markets are more competitive, with countries from the southern hemisphere with lower production costs starting to gain market share.

The most significant competitors of the Navigator Company S.A. worldwide are UPM-Kymmene Corporation, Storaenso, Mondi and Svenska Cellulosa (Figure 10), they are all

European companies that export to all the world and operate in the same business areas as the company under analysis.

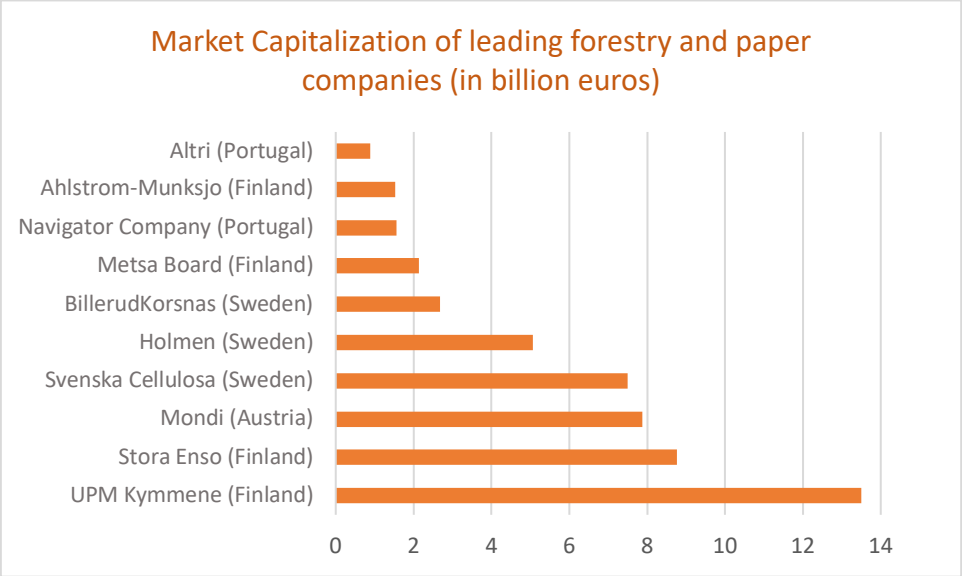


Figure 10 - Leading forestry and paper companies in Europe in 2020
Source: Statista

5. Company Overview

5.1. History

The Navigator Company, S.A., former Portucel Soporcel S.A., is a Portuguese company founded in 1953.

Its history goes back to when a team of specialists at the Cacia mill were the first in history to produce paper pulp from eucalyptus using the Kraft process. This was the beginning of a path to transform a Portuguese company, known as Companhia Portuguesa de Cellulose, into one of the world's leading manufacturers of BEKP and UWF, The Navigator Company S.A.

The growth achieved is due to several key moments, such as when, in 1975, Portucel was formed by merging some Portuguese pulp and paper mills and packaging factories. Another was in 2000 with the acquisition of Papéis Inapa and Soporcel in 2001, when they effectively consolidated the industry in Portugal.

In 2004, Semapa acquired a majority holding of the company and consolidatet its leading position in international markets. In 2006, the company announced the construction of a new paper mill at the Setúbal Industrial Complex. Three years later, the second paper mill started up in the industrial complex in Setúbal, which boosted the country's industrial capacity. As a result of this project, the company become Europe’s leading manufacturer of uncoated wood free printing and writing paper and one of the largest in the world.

The end of the first decade of the 21st century was followed by other investments in renewable energy production and in reducing consumption of fossil fuels, such as biomass power stations in Cacia and Setúbal, a combined cycle power station (Setúbal) and a steam turbo generator (Figueira da Foz). This new capacity has positioned The Navigator Company as the country's leading producer of electricity from forestry biomass. These projects reflect the company's commitment to an increasingly sustainable future.

In 2015, planning to diversify its business portfolio, the company acquired AMS as a fast track to enter in the tissue segment, where they planned to become European leaders.

Finally, in 2016, Portucel Soporcel transformed into The Navigator Company by implementing a rebranding strategy aiming a more international recognition, with the mission to be a global company recognized for its innovative and sustainable strategy that aims to transform the forest into products and services, which improve people's well-being.

5.2. Business Areas

Navigator is an integrated producer of forest, paper, pulp tissue and energy, whose business is driven by state-of-the-art mills on a global scale with the latest technology. It is known as a reference in its sector worldwide. The Navigator Company's production uses its forests, planted exclusively for this purpose.

Each year, Navigator's nurseries give life to almost 12 million trees. These nurseries, considered the largest in Europe, produce more than 100 species of plants and shrubs. Despite not being economically viable, many of them are financed by the company to preserve biodiversity and ensure the continuity of the species. The forestry business is vertically integrated, with its own forestry research institute.

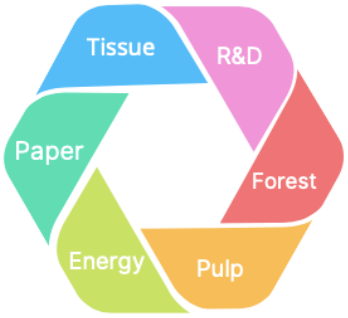


Figure 11 - Business model of Navigator
Source: Company Data

Nowadays, Navigator is one of Portugal's strongest presences in the world, playing an important role in the national economy by vertically integrating its business model. It includes applied research, forestry, pulp, renewable energy, paper and tissue. Each one of these segments is described below.

Research and Development: With a sustainable business model strongly focused on renewable and biodegradable raw materials, this segment is vital to the company. The research and development segment is assured by the private non-profit Forest and Paper Research Institute (RAIZ), that enhances the company's competitive advantages while promoting sustainable development.

Forest: One of the most precious assets of the company. Navigator is responsible for managing more than 112,000 hectares of certified Forest in Portugal and Azores, occupied mainly by eucalyptus and protected by high investments in forest fire protection. This segment includes producing and selling ornamental and forest plants in its nurseries in Espirra, Caniceira and Ferreira, which have a total annual production capacity of 12 million plants.

Paper: Considered the largest manufacturer of UWF paper in Europe, Navigator has 50% of European market share in the premium office paper segment. As a sales strategy, the

company offers a wide range of brands, representing different price levels and, this way, different customer segments to reach the market better.

By 2021, total annual paper production capacity was about 1.6 million tons of paper, making it Europe's largest manufacturer of UWF printing and writing paper and the sixth largest in the world.

Pulp: Produced from eucalyptus wood, in Setúbal or Figueira da Foz, Navigator´s paper pulp fits the BEKP type, with only 20% being sold out to the market. With a production capacity of 1.5 million tons of pulp, where 80% is integrated into paper production, following the vertical strategy. Navigator sustains its place in the market, while the facility in Aveiro already integrates part of its pulp production into tissue production.

In 2021, the company was Europe's top manufacturer of BEKP and the fifth in the world.

Energy: With an annual production capacity of 2.5 Twh of energy, Navigator is the lead producer of energy from Biomass in Portugal, being responsible for more than 50% of all the national power generated from Biomass. This allows the company to be self-sufficient, with the remaining energy being sold in the market. The Biomass used in the production of electricity and heat, also known as cogeneration, is derived essentially from forestry operations waste or the black liquor resulting from the cooking of wood.

Tissue: In 2015, The Navigator Company acquired the Portuguese family business AMS-BR Star Paper S.A., to enter the tissue segment, as mentioned above. With an annual production of about 70.000 tons of reels and 65.000 tons of finished product, Navigator started producing various tissue paper items, such as napkins or toilet paper, dividing its production into "in-home" and "out-of-home".

In 2018, an investment of 83.4 million euros was made in a new tissue mill in Cacia, taking Navigator to third place among the largest tissue producers in the Iberian. This new mill strengthens the company's position in this segment, with a production capacity of 130.000 tons of reels and 120.000 tons of converting.

5.3. Environmental, Social and Governance (ESG)

Navigator is one of the best companies in the world in sustainability.

The company achieved a Sustainalytics' ESG Risk Rating score of 14,3 in 2021. This value reflects an improvement over previous years, as usually, allowing the company to maintain its

status as a "Low ESG Risk Company". The ESG Risk Ratings by Sustainalytics measure the sustainability performance of a company. Navigator ranks 3rd among a list of 81 global companies assessed by Sustainalytics in the Paper and Forestry industry cluster and 4th in the subset of 60 global companies in the Paper and Pulp industry. The Navigator Company's classification and high position in this ranking result from the company's strategy of integrating sustainability as a priority in its business model, anticipating the ESG risk in its activities.

The company has taken on the formal commitment of achieving carbon neutrality at its industrial complexes by 2035 by reaching the targets laid out by the European Union and Portugal 15 years early. With a value chain stretching worldwide, The Navigator Company owes its business success to constantly monitoring these challenges.

In November 2021, the company launched a new line of packaging products under the new gKRAFT brand, created with the purpose of accelerating the transition from the use of plastics to the use of sustainable and biodegradable fibers, meeting once again its commitment to sustainability and environmental protection.

In 2022, Navigator aims to integrate the Task Force on Climate-Related Financial Disclosures to assess climate change's financial and strategic implications and develop the best responses.

This commitment arises from a sustainability strategy that the former Carbon Disclosure Project has already distinguished, now Disclosure Insight Action, with the classification of a global leader in combating climate change. Thus, The Navigator Company won recognition for its achievements in cutting emissions, reducing climate risks, and developing a low carbon impact economy, which contribute to maintaining a positive reputation around the brand.

5.4. Stockholder structure

Navigator Company's share capital, as of the end of 2021, comprised 711.183.069 ordinary shares with a market value of 3,35€ per share. All shares are admitted to trading on the Euronext Lisbon regulated market, managed by Euronext Lisbon – Sociedade Gestora de Mercados Regulamentados, S.A.

Semapa Group is the major shareholder, owning 70% of the company’s share capital. Institutional investors own 15% of the remaining shares (about 170 institutional shareholders), and private investors 12%. (Figure 12). Navigator’s institutional investors are mostly from Europe, being the majority represented by Portugal (33%).

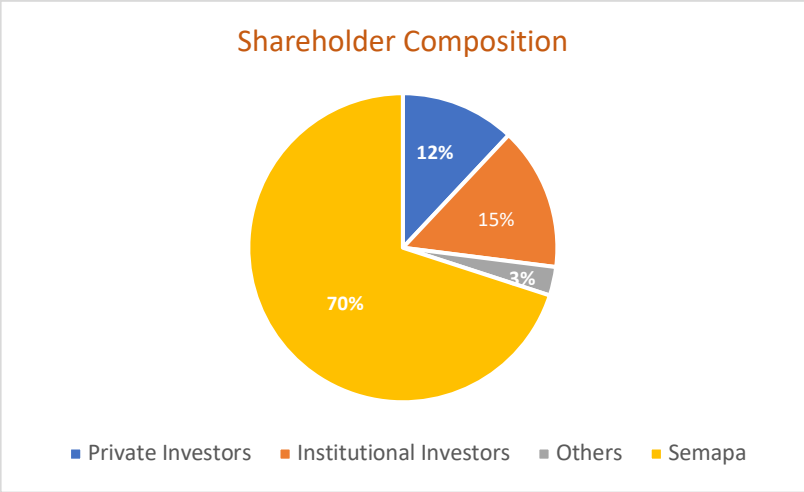


Figure 12 - Navigator's Shareholder composition
Source: Company data

5.5. Covid-19

The COVID-19 pandemic was a huge challenge for The Navigator Company's organizational skills. In 2020, a year when the global health emergency completely changed the life of organizations and individuals, the company took early actions with a focus on the protection of its employees and community. The first step was to implement a contingency plan with new procedures and possibilities for responding to a range of scenarios.

The Contingency Plan set out some 80 measures, constantly adjusted to the evolving situation and designed to pool resources and respond to the organization's most pressing needs. In addition to a constant flow of information on disinfection procedures and tips on how to deal with social isolation, they provided all the necessary personal protective equipment and also set up medical and psychological helplines.

From a financial point of view, global paper consumption suffers a substantial reduction. Printing and writing, and newsprint segments were adversely affected due to the continued falling demand from the end consumers. However, the company mitigates the drop in UWF sales through increased diversification of its business, with growth in pulp and tissue sales. The company diversified its products and markets in reaction to the pandemic situation in Europe, channeling more of its sales to overseas markets.

The year of 2021 was seen as a return to normality after this pandemic period, leading to the reopening of markets and rapid growth in demand, to which supply had difficulty responding. As a result of this imbalance in markets, worsened by the increase in energy and

natural gas prices, there was also a significant increase in the prices of chemicals and packaging raw materials. Thus, the teams were fully focused on minimizing the impact of these increases in raw materials.

This said, the company reacted well to the challenges of the pandemic, minimizing costs as much as possible.

5.6. Performance

In 2021, The Navigator Company recorded a turnover of € 1.596 million, with paper sales accounting for approximately 72% of turnover (vs 68% in 2020), pulp sales 11% (vs 11% in 2020), tissue sales 9% (vs 10% in 2020) and energy sales 8% (vs 10% in 2020). The year was marked by increasing demand for UWF, particularly in Europe, after a year where global paper consumption had steeply dropped due to the pandemic, as we mentioned earlier.

Another key feature of the year was the sharp rise in the cost of raw materials, energy, and logistics, mainly in the second half of the year. Navigator succeeded in offsetting the sharp hike in costs thanks to its continued cost containment efforts reinforced in 2020 through increased UWF volumes and the implementation of price rises across all businesses. Successive price increases were implemented over the course of 2021. In UWF business, the average price went up almost 30%. The cost containment efforts, rising prices across company products and increased UWF volumes offset the sharp rise in production factors prices, allowing for an EBITDA in 2021 of € 355 million, compared to €286 million in 2020 (up 24%). The EBITDA / Sales margin stood at 22,2% and compares with a margin of 20,6% in 2020.

Currently, the company is the third-largest exporter in Portugal, accounting for approximately 1% of the nation’s GDP and 3% of national goods exported and generates the greatest National Added Value. In 2021, The Navigator Company’s turnover was €1.596 million, with more than 90% of the group's products sold outside of Portugal in approximately 130 countries.

5.7. Outlook

The year 2022 is expected to be a year in which the company continues to expand its client base in packaging from its current portfolio of 125 clients and expands into new regional markets. Therefore, the company will continue to step up its commercial presence in this segment, investing in differentiated products and creating new sustainable and environmentally responsible paper ranges, offering an innovative response to its customers' needs. At the same

time, Navigator's current position allows it to examine strategic opportunities for boosting business growth.

The current scenario of highly volatile and rising costs, particularly in wood, chemicals, energy, packaging and logistics, led Navigator to increase its prices in 2021 and again in 2022 for products dispatched as of 1 January. Further increases are very likely and will contribute to consolidating profitability, especially in the UWF and tissue segments.

In the energy sector, the shift in sales from all cogeneration facilities to market sales in 2022 will compensate rising prices for the energy purchases component, which is not yet fixed for the period.

Navigator will maintain an active approach to managing its fixed and variable costs across the organization, developing its capex and diversification plan, as well as its sustainability projects.

6. Valuation

As mentioned previously, we will start by valuing Navigator with the FCFF model, with cash flow projections for the period of 2022-2026 discounted at the WACC. After this period, a terminal growth rate is assumed in line with the growth rate of the economy as well as inflation. After obtaining the price of shares, a sensitivity analysis will be carried out to understand the impact that the assumed TGR and WACC had on the results obtained.

Relative Valuation will be the second model to be applied to Navigator. We will use PER and Enterprise value/EBITDA multiples. We will start by defining a Peer Group constituted by companies belonging to the same industry and sharing similar characteristics as the company under analysis. Then, the respective multiples will be computed, and the results will subsequently be compared with those from the previous model.

6.1. Valuation Assumptions and Forecasts

In order to apply both models, future forecasting is necessary, and correspondingly, several assumptions have to be made. These assumptions are a fundamental part of the process since they will have a significant impact on the results. Thus, in this section, we will explain each assumption and its rationality.

6.1.1. Revenues

Since 2013, revenues have been increasing, which is a good indicator for the company, except in 2019 and 2020, when there was a decrease in sales due to the impact of COVID-19. However, in 2021 it was possible to see a recovery in the values of revenues again, and the same trend is expected for future years.

This said, for the analysis purpose and considering that the last few years have been atypical due to the pandemic, we will assume that Navigator's segments revenues will have market-like growth.

The company reports its sales segregated in four segments: Pulp, UWF Paper, Tissue and Energy:

UWF Paper

In 2021, the company kept pace with the increased demand for paper in Europe and the USA, with sales growing in these markets, closing the year with an order book of over 80 days, an all-time record.

A positive outlook is expected in this segment with the economic recovery, return to office work and strong balance between supply and demand occurring in the first months of 2022 in both Europe and the U.S.

The UWF paper market has a growth potential of €5.97M during 2022-2026, causing the market to accelerate at a CAGR of 2,56% (UWF Paper Market by Application and Geography - Forecast and Analysis 2022-2026).

Pulp

Pulp prices in 2021 have risen to the highest levels of this century (€1013/ton). China, one of the most critical demand drivers, registers an index price increase from the end of 2021, driven by supply and logistical disruptions. In Europe, prices will be supported by economic recovery, a healthy level of demand and logistical constraints on exports from Latin America to Europe. A significant increase in supply in Latin America and a possible improvement in the logistics situation should create downward pressure on prices.

According to the Global Pulp Market 2022-2026 report, analysts have been monitoring the pulp market and expect it to grow at 47.45 billion € during 2022-2026, estimating a CAGR of 4,08% during the forecast period.

Tissue

Tissue business continues to perform, with total revenue increasing 3%, above the market performance. In 2020 Tissue business already recorded a turnover increase of approximately 7%.

In 2021 Navigator launched new differentiated and innovative products such as Amoos Naturally Soft, offering a high standard of softness without using chemical bleaching agents, Amoos AquactiveTM, a new generation of tissue paper incorporating soap, and Amoos Air SenseTM, with a perfume activated on every usage.

As tissue consumption normalizes from 2020 levels, demand for tissue products is expected to gradually take up in Iberia, as tourism and Away-From-Home segment activities recover. Navigator will continue to analyze strategic opportunities to grow its business in this segment.

According to the Global Tissue Market 2022-2026 report, analysts have been monitoring the tissue market and expect it to grow by 25.86 billion € during 2022-2026, estimating a CAGR of 5,79% during the forecast period.

Energy

Energy production is a result of harnessing the full potential of the production chain, using Biomass to produce energy and consuming that same energy in the production lines, selling the surplus to the national grid line.

For that reason, this segment is expected to grow in accordance with the same assumptions as UWF Paper, Pulp and Tissue market. This said, the estimated CAGR for the energy segment was calculated by considering the CAGR of each segment, weighted by the sales of each segment in 2021 (Appendix A).

In the following table, we can see the estimated revenues for each of the segments mentioned above, based on the revenues of 2021, taken from the 2021 annual report of the company.

	Forecast Period					
(in million €)	2021	2022E	2023F	2024F	2025F	2026F
UWF Paper	1 153,70	1 183,23	1 213,53	1 244,59	1 276,45	1 309,13
Pulp	161,20	167,78	174,62	181,75	189,16	196,88
Tissue	145,80	154,24	163,17	172,62	182,61	193,19
Energy	135,20	138,97	142,85	146,84	150,94	155,16
Revenues	1 595,9	1 644,2	1 694,2	1 745,8	1 799,2	1 854,4

Table 1 - Navigator's Revenues projections
Source: Navigator's annual report 2021, Own estimates

6.1.2. EBITDA Margin

Earnings Before Interest, Taxes, Depreciation and Amortization were computed considering that the cost of sales increases proportionally with the revenues increase, an affirmation that we can confirm when we analyze Navigator's past financials. Thus, we computed the average of EBITDA considering Navigator's Financials from 2017 to 2021, reaching a value of 23,29%

(Appendix B). After, we just multiplied this value by the forecasted revenues estimated in the previous section to obtain the EBITDA.

In the following table, we can see the EBITDA projections for the forecast period.

	Forecast Period					
(in million €)	2021	2022E	2023F	2024F	2025F	2026F
Revenues	1 595,9	1 644,2	1 694,2	1 745,8	1 799,2	1 854,4
EBITDA Margin	22,23%	23,29%	23,29%	23,29%	23,29%	23,29%
EBITDA	354,7	383,0	394,6	406,6	419,1	431,9

Table 2 - Navigator's EBITDA projections
Source: Navigator's annual report of 2021, Own estimates

6.1.3. Depreciation and Amortization

Regarding Depreciation and Amortization of assets, we took the same approach. The historical annual depreciation and Amortization rates over Revenues were computed (2017-2021). Then, we applied the average ratio of this period, 8,64% (Appendix C), to the forecast period, considering the revenues previously estimated, obtaining the following values:

	Forecast Period					
(in million €)	2021	2022E	2023F	2024F	2025F	2026F
Revenues	1 595,9	1 644,2	1 694,2	1 745,8	1 799,2	1 854,4
Depreciation and Amortization/ Revenues	7,64%	8,64%	8,64%	8,64%	8,64%	8,64%
Depreciation and Amortization	122,0	142,0	146,3	150,8	155,4	160,2

Table 3 - *Navigator's Depreciation and Amortization projections*
Source: Navigator's annual report of 2021, Own estimates

6.1.4. EBIT

Earnings before interest and taxes is one of the elements used in the Free Cash Flow to the Firm model. We will not make any assumptions about it since we already have all the necessary information for its computation. EBIT simply corresponds to the difference between EBITDA and Depreciation and Amortization costs.

In the table below, we can see EBIT computation by considering the projections made previously for EBITDA and depreciation and amortization costs.

	Forecast Period					
(in million €)	2021	2022E	2023F	2024F	2025F	2026F
EBITDA	354,7	383,0	394,6	406,6	419,1	431,9
Depreciation and Amortization	122,0	142,0	146,3	150,8	155,4	160,2
EBIT	232,7	241,0	248,3	255,8	263,7	271,7

Table 4 - Navigator's EBIT projections
Source: Navigator's Annual Report of 2021, Own estimates

6.1.5. CAPEX

Navigator is focused on its growth strategy and mindful of investment opportunities for developing its business. In the last years, the execution of the capex plan was constrained by the pandemic. However, company says that capex plan will return to previous year's level.

This said, for the projection of Capex we took a similar approach to the one used previously. We projected the CAPEX from 2022 to 2026 by applying the average of CAPEX / Revenues ratio between 2017 and 2021 to the revenues already projected (Appendix D). We obtained an average of 8%. The following table shows the projection of Navigator's CAPEX in line with the assumptions explained.

	Forecast Period					
(in million €)	2021	2022E	2023F	2024F	2025F	2026F
Revenues	1 595,9	1 644,2	1 694,2	1 745,8	1 799,2	1 854,4
CAPEX/ Revenues	5,01%	8,00%	8,00%	8,00%	8,00%	8,00%
CAPEX	80,0	131,6	135,6	139,7	144,0	148,4

Table 5 - Navigator's Capex projections
Source: Navigator's Annual Report of 2021, Own estimates

6.1.6. Working Capital

Net working capital compares the current operating assets of a company with its operating liabilities. It measures a company's liquidity, short-term financial health, and operational efficiency.

The current operating assets considered in the computation of Navigator's net working capital include the items of "Inventories", "Trade receivables", and "State and public entities". As per the current operating liabilities, were considered the items "Trade payables" and "State and public entities".

The forecasts for these items are computed considering the 2017-2021 average revenue weight (13%) and forecasted using the estimated revenues (Appendix E). We can see the values obtained in the table below.

	Forecast Period					
(in million €)	2021	2022E	2023F	2024F	2025F	2026F
Revenues	1595,90	1644,23	1694,17	1745,80	1799,17	1854,35
WC/Revenues	10%	13%	13%	13%	13%	13%
Working Capital	160,74	213,65	220,14	226,85	233,79	240,96
V. WC	2,82	52,91	6,49	6,71	6,94	7,17

Table 6 - Navigator's WC projections
Source: Navigator's Annual Report of 2021, Own estimates

6.1.7. Terminal Growth Rate (TGR)

As stated in the literature review, the terminal growth rate is the constant rate at which a company is expected to grow in perpetuity.

This growth rate starts at the end of the last forecasted cash flow period in a discounted cash flow model, 2026 in this case and goes into perpetuity. To determine the value of this variable, we considered the expected inflation rate of 2021. Since the company operates almost everywhere in the world, we considered the expected inflation rate of each region, weighted by Navigator's revenues of 2021. Therefore, we are assuming that the future nominal growth rates of these regions are going to be equal to the inflations rates they registered in 2021. This is a prudent assumption as we feel the current 2022 inflation rates are abnormal, and even some of those of 2021 already were unusually high, probably due to the pandemic effect. In this way we are considering that, though inflation in the long run may drop it is likely to be compensated by some real economic growth, and their joint effect is expected to translate into nominal growth rates equivalent to 2021 inflation rates.

The table below shows the calculations performed that allow us to achieve a terminal growth rate of 2,37%.

(in %)	Revenues Weight 2021	Expected Inflation Rate	Inflation Rate Weighted
Portugal	17%	1,30%	0,22%
Europe	50%	2,10%	1,05%
America	12%	2,25%	0,27%
Africa	13%	4,50%	0,59%
Asia	8%	3,00%	0,24%
Total	100%		**2,37%**
TGR			**2,37%**

Table 7 - Terminal Growth Rate calculation
Source: IMF, Own estimates

6.1.8. Tax Rate

The corporate income tax rate applied in the forecasted results is the same used in the annual report of previous years, 21%, the one given by Portugal government.

6.2. Free Cash Flow to the Firm Valuation

6.2.1. Free Cash Flow to The Firm

After determining all the assumptions mentioned above, we are able to compute the free cash flow to the firm for forecasted period (2022-2026).

In the following table, we can see all the computations and FCFF obtained for each year. At the perpetuity, we made an adjustment to the capex value, since this value should be equal to or higher than the annual amount of depreciation to reflect the renovation of the non-current assets. Thus, we considered capex value at perpetuity equal to the value of depreciation and amortization at perpetuity multiplied by (1+TGR).

	Forecast Period						
(in million €)	2021	2022E	2023F	2024F	2025F	2026F	Perpetuity
EBIT	232,70	240,95	248,27	255,84	263,66	271,75	278,2
EBT = EBIT*(1-Tax Rate)	183,8	190,4	196,1	202,1	208,3	214,7	219,8
(+) Depreciation and Amortization	122	142,0	146,3	150,8	155,4	160,2	164,0
(-) Capex	80	131,6	135,6	139,7	144,0	148,4	167,8
(-) V.WC	2,82	52,91	6,49	6,71	6,94	7,17	7,3
FCFF	223,0	147,9	200,4	206,5	212,8	219,3	208,5

Table 8 - Free Cash Flow to the firm Calculation
Source: Own calculations

6.2.2. Weighted Average Cost of Capital

6.2.2.1. Cost of Debt

The cost of debt was directly taken from the annual report of 2021, which mentioned that the average interest rate of long-term debt is 1,50%, being this value constant over the last years.

6.2.2.2. Cost of Equity

The cost of equity was computed using the CAPM risk-return model, described in the literature review. To use this model, more inputs are needed.

First, the 10-year German Bonds rate is the proxy used for the risk-free rate, which according to Damodaran website, is 0,49%. After, we used the unlevered beta of the industry to compute the levered beta, using formula 5 mentioned in literature review, since companies operating in the same industry present similar operating risk and consequently, similar unlevered betas. As a result, the value of levered beta obtained was 1,114 (Appendix F), which means that Navigator is riskier than the market. Finally, the last outputs we need are equity risk premium and country risk premium, that we also obtained from Damodaran Website, considering each region where Navigator operates and weighted by sales of 2021 (Appendix E). Thus, we achieved a cost of equity equal to 9,74%, as we can see below:

risk free rate	0,49%
Levered Beta	1,114
ERP	6,27%
CRP	2,03%
Cost of equity	**9,74%**

Table 9 - Calculation of Cost of Equity
Source: Damodaran Website, Navigator's Annual Report of 2021, Own calculations

6.2.2.3. Market Value of Equity and Debt

The market value of equity is obtained by multiplying the closing share price of 31 December 2021 by the number of shares outstanding on the same date. This way, it was possible to compute the market value of equity equal to 2.382M€.

Regarding the market value of debt, we used the formula below and obtained a value equal to 722M€ (Appendix H).

$$Market\ Value\ of\ Debt = I_E * \frac{1-\left(\frac{1}{(1+K_d)^t}\right)}{K_D} + \frac{BV_D}{(1+K_D)^t} \quad (10)$$

Where,

I_E = Interest Expenses;
K_D = Cost of Debt;
BV_D = Book Value of Debt;
T = Weighted Average Maturity of Long-Term Debt.

6.2.2.4. Summary

Given all the outputs, a value of WACC equal to 7,75% was computed, as we can see in the table below.

Tax rate	21,00%
Cost of debt	1,50%
Cost of equity	10%
MV of debt	722
MV of equity	2 382
E/(E+D)	76,75%
D/(E+D)	23,25%
WACC	**7,75%**

Table 10 - WACC calculation
Source: Own estimates

6.2.3. Discounted Cash Flow – FCFF

Now, we already have all the inputs we need to compute enterprise value (table 12). After, to determine Navigator's equity value, it is necessary to deduct from the enterprise value the value of net debt and add the value of non-operating assets, all the assets that are not considered to be part of a company's core operations (Appendix I).

Finally, the share price of Navigator was obtained by dividing the equity value of 3.425M€ by the 711.183 common shares outstanding. Thus, we reached a share price of 4,82€, as of 31 December 2021.

Forecast Period							
(in million €)	2021	2022	2023	2024	2025	2026	Perpetuity
FCFF	223,0	147,9	200,4	206,5	212,8	219,3	208,5
WACC							7,75%
TGR							2,37%
Terminal Value							3 870
Present Value	223,0	137,2	172,6	165,0	157,8	150,9	2 664,4
Enterprise Value	3 671,0						
(-) Net Debt	596,4						
(+) NOA	350,3						
Equity Value	3 425						
Shares Outstanding	711,183						
Price target	4,82						

Table 11 - DCF - FCFF model
Source: Navigator's Annual Report of 2021, Own estimates

6.2.4. Sensitivity Analysis

Throughout the DCF-FCFF valuation, several assumptions were made that impacted the results, being the WACC and TGR two of the variables that usually have the most influence on the final value. Therefore, to have more confidence in the results obtained, we select these variables to perform a sensitivity analysis and understand the impact that both variables have on Navigator's share price.

In our analysis, we estimated a TGR of 2,37% and a WACC of 7,75%, which led to a share price of 4,82€. In the following table, we can see the impact that a deviation of ± 1% in the TGR and in the WACC has on Navigator's share price.

Price Target	WACC					
TGR	**4,82**	5,75%	6,75%	**7,75%**	8,75%	9,75%
	0,37%	5,26	4,42	3,81	3,34	2,97
	1,37%	6,20	5,03	4,23	3,65	3,21
	2,37%	7,69	5,93	**4,82**	4,06	3,50
	3,37%	10,45	7,36	5,68	4,62	3,90
	4,37%	17,20	9,99	7,04	5,44	4,43

Table 12 - Sensitivity analysis with TGR and WACC
Source: Own estimates

As we can see in the table, the terminal growth rate could decrease up to 1%, *ceteris paribus*, and the implicit share price would still represent a value above the actual share price,

3,35€. Likewise, the weighted average cost of capital could increase up to 1%, *ceteris paribus*, and the implicit share price would still represent a value above the actual share price. Also, we can see from the results that share price will hit its maximum as the TGR increases and the WACC decreases.

In a scenario where the WACC is as high as 8,75%, the return of investing in Navigator shares is negative for a terminal growth rate below 0,37%. On the other hand, in a scenario where the WACC is below 8,75%, the return on investing in Navigator shares is positive for all the perpetuity growth rate scenarios considered. From the analysis of the results, we can also conclude that the share price is more sensitive to changes in the discount rate than in the terminal growth rate.

6.3. Relative Valuation

To achieve more accurate results, a relative valuation was performed, to complement the DCF valuation. For this purpose, we selected two multiples, as we mentioned previously, PER and EV/EBITDA.

Firstly, we chose a peer group, which includes exclusively European companies from the paper and pulp industry present in the production and commercialization of paper. We selected the 10 leading European forestry and paper companies, according to Statista Website (figure 10). Then, we collected the value of multiples for all these companies. Next, we computed the average for each multiple and tried to identify the outliers.

Since Holmen's PER is considerably above the average group, it was excluded from the computation of the peer group average. EV/EBITDA ratio of Svenska Cellulosa is also considerably above the average group. Therefore, we considered these two companies as outliers.

Next, using the average of the PER, excluding outliers, we multiplied this value by the earnings per share of Navigator, reaching a share price of 3,83€. Finally, using Navigator's EBITDA and EV/EBITDA average value obtained, excluding outliers, we reach the enterprise value and, with the adjustments for debt and NOA, already calculated in the previous model, we get a share price of 4,59€.

Peer Group	PER	EV/EBITDA
The Navigator Company	16,1	10
Altri Group	11,1	8,9
UPM - Kymenne Corporation	15,7	10
Mondi	11,6	7,2
Storaenso	14,4	10,5
Metsa Board	11,3	7,4
BillerudKorsnas	25,1	11,4
Svenska Cellulosa	23,1	20
Ahlstrom-Munksjo	14,8	15,9
Holmen	26,8	7,9
Comparable Average	15,9	9,9
Navigator		
EPS	0,241	
EBITDA		354,7
EV		3511,53
(-) Net Debt		596,4
(+) NOA		350,3
Equity Value		3265
Shares outstanding	711,183	711,183
Target Price	**3,83**	**4,59**

Table 13 - Relative Valuation model
Source: Finbox, Own estimates

6.4. Discussion of the results

To value Navigator's shares, two models were applied: The free cash flow to the firm and Relative Valuation. The results obtained and the actual close share price are summarized in the following table:

Valuation Model	Value per share	Difference (%)
FCFF	4,82	44%
PER	3,83	14%
EV/EBITDA	4,59	37%
Close Price (31.12.2021)	3,35	

Table 14 – Summary of results
Source: Yahoo Finance, Own calculations

The share price value obtained through the DFC-FCFF was 4,82€, whereas, from the Relative valuation, we obtain values equal to 3,83€ by PER multiple and 4,59€ by EV/EBITDA multiple. Taking into consideration that Navigator's share price on 31 December 2021 was 3,35€, both models show us that company's share price was undervalued at that date.

Given the results, we can conclude that Navigator's shares were undervalued on 31 December 2021. This could mean that market growth future expectations regarding Navigator are lower than the one considered in this project, or the company has a higher WACC, which means more risk than the one we considered.

Navigator is a stable company with positive results and good growth perspectives, constantly investing in new projects, which reinforce the results obtained. This said, our recommendation is to buy Navigator's Shares.

To assess the accuracy of this recommendation, it was also analysed how the price of Navigator's shares has been evolving in 2022. The following graph shows how the share's closing price evolved from the end of 2021 until 31 August 2022.

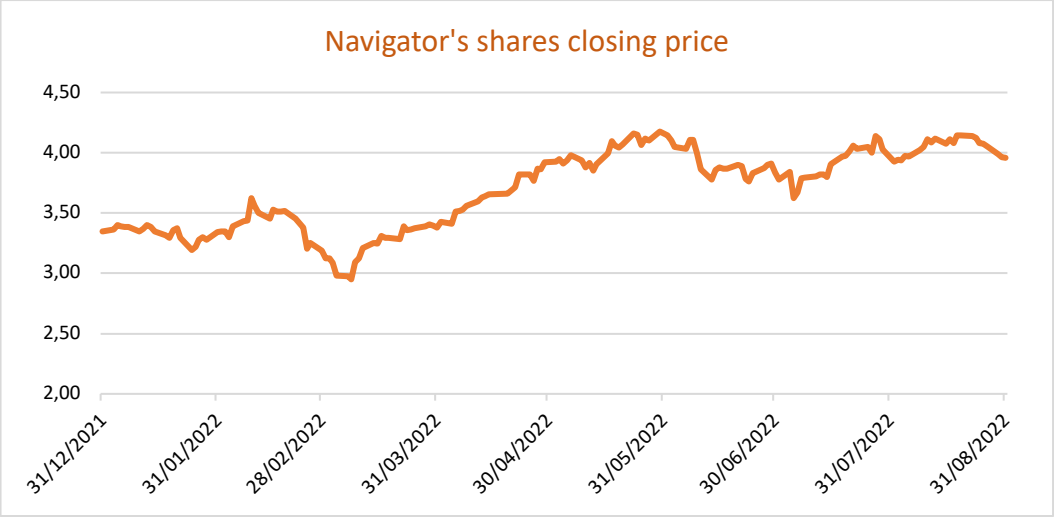


Figure 13 - Navigator's share closing price
Source: Yahoo Finance

By the end of August, Navigator's share's closing price was 3,9580€. This means an increase of 18% in the price of shares in 8 months, which corroborates the previous recommendation. Thus, considering the research conducted, the valuation methods, the calculations we made, and all other relevant data utilized throughout this project, we can conclude that Navigator's shares were undervalued on 31.12.2021.

7. Conclusion

This project aimed to determine an approximation for the fair value of Navigator's share price. For that purpose, all the different parts of the project were essential to understand the business, the market, how it has evolved over the years and how it is expected to evolve in the upcoming years. All this information gave us insights to build the assumptions we needed during the project.

In order to obtain Navigator's share price, we analyzed the most commonly used methods to value a company, and two different models were applied to Navigator, DCF-FCFF and Relative Valuation, intending to have more confidence in the results. Both models lead us to the same conclusion that Navigator's share price was undervalued on 31 December 2021.

The DCF-FCFF model uses assumptions that were developed under uncertainty. For this reason, a sensitivity analysis was performed to understand the impact of variations in the TGR and WACC in the final result. We verified that share price would hit its maximum as the TGR increases and the WACC decreases, and that the share price is more sensitive to changes in the discount rate than in the terminal growth rate.

Like every company in the world, Navigator faced challenges due to the pandemic. However, as the crisis began to ease, a recovery was observed, which should continue in the near future with a return to normal. Thus, it is expected that the company will continue to expand and adapt to new market trends as it has done, which has allowed it to maintain a strong position in the market.

In conclusion, based on the analysis and results obtained above the actual close share price, we can say that Navigator's shares were undervalued at that date. Thus, our final recommendation to the investors is that they should buy/hold Navigator's shares.

It is important to bear in mind that this project's results depend on the limitations of the valuation methodologies applied and on the assumptions we made. Although we supported the assumptions on data publicly available about the company, there are always information gaps that can affect the valuation outcome.

Finally, one of the things that we could improve in our project is using an additional method to corroborate the results. Also, we suggest a new equity valuation as new information for the company and market is made available.

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9. Appendixes

Appendix A - Estimation of Energy CAGR (2022-2026)

(in million €)	Revenues 2021	Revenues Weighted	CAGR	CAGR Weighted
paper	1 153,7	72%	2,56%	1,9%
pulp	161,2	10%	4,08%	0,4%
tissue	145,8	9%	5,79%	0,5%
Energy	135,2	8%	-	-
	1 595,9	100%		2,79%

Source: Navigator's Annual Report of 2021, reports, own calculations

Appendix B - Computation of the historical EBITDA margin's average

Historical Results					
(in million €)	2017	2018	2019	2020	2021
Revenues	1636,8	1691,6	1687,9	1385,4	1595,9
EBITDA	403,8	455,2	372,1	285,5	354,7
EBITDA Margin	24,67%	26,91%	22,05%	20,61%	22,23%
Average of EBITDA Margin					23,29%

Source: Navigator's Annual Report (2017-2021), own calculations

Appendix C - Computation of the historical ratio average of Depreciation and Amortization/ Revenues

Historical Results					
(in million €)	2017	2018	2019	2020	2021
Revenues	1636,8	1691,6	1687,9	1385,4	1595,9
Depreciation and Amortization	144,7	138,5	138,5	142,8	122,0
Depreciation and Amortization/ Revenues	8,84%	8,19%	8,21%	10,31%	7,64%
Depreciation and Amortization					8,64%

Source: Navigator's Annual Report (2017-2021), own calculations

Appendix D - Computation of the historical ratio average of Capex/Revenues

Historical Results					
(in million €)	**2017**	**2018**	**2019**	**2020**	**2021**
Revenues	1636,8	1691,6	1687,9	1385,4	1595,9
CAPEX	115,0	216,0	158,0	81,0	80,0
CAPEX/ Revenues	7,03%	12,77%	9,36%	5,85%	5,01%
Average of CAPEX/ Revenues					8,00%

Source: Navigator's Annual Report (2017-2021), own calculations

Appendix E - Computation of the historical ratio average of WC/Revenues

Working Capital	**2017**	**2018**	**2019**	**2020**	**2021**
Trade Receivables	175,7	226	156	133,59	210,79
Inventories	187,8	222,4	217,9	176,7	186,5
State and public entities	75,1	65,5	42,18	45,9	44,6
Current Assets	438,6	513,9	416,08	356,19	441,89
Trade payables	157,3	182,78	190,97	165,87	253,9
State and public entities	43,6	46,56	19,93	32,4	27,25
Current Liabilities	200,9	229,34	210,9	198,27	281,15
NWC	237,7	284,56	205,18	157,92	160,74

Revenues	1636,8	1691,6	1687,9	1385,4	1595,9
WC/Revenues	15%	17%	12%	11%	10%
Average					**13%**

Source: Navigator's Annual Report (2017-2021), own calculations

Appendix F - Computation of Levered Beta

Industry Unlevered Beta	0,93
Levered Beta	1,114
Bd	0,161

Source: Damodaran Website, own calculations

Appendix G - Computation of CRP and ERP

(in %)	Revenues Weight 2021	CRP by region	ERP by region	CRP weighted	ERP weighted
Portugal	17%	1,88%	6,12%	0,32%	1,04%
Rest of Europe	50%	1,47%	5,71%	0,74%	2,86%
North America	8%	0,00%	4,24%	0,00%	0,34%
Latin America	4%	5,31%	9,55%	0,21%	0,38%
Africa	13%	5,25%	9,49%	0,68%	1,23%
Asia	8%	1,04%	5,28%	0,08%	0,42%
Total	100%			**2,03%**	**6,27%**

Source: Navigator's Annual Report of 2021, Damodaran Website, own calculations

Appendix H - Computation of market value of debt

interest expenses	13
cost of debt	1,50%
book value of debt	714
weighted average maturity of long term debt	3,7
Market value of debt	722

Source: Navigator's Annual Report of 2021, own calculations

Appendix I - Computation of Non-Operating Assets

NOA	
Investiment properties	92,6
Cash and cash equivalents	239,2
Short term investments	18,5
	350,3

Source: Navigator's Annual Report of 2021, own calculations