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**INSTITUTO
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DE LISBOA**

EQUITY VALUATION: Corticeira Amorim

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Master in Finance

Supervisor:

PhD. Pedro Manuel de Sousa Leite Inácio, Assistant professor, ISCTE
Business School

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Department of Finance

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# 1 Abstract:

Corporate valuation has been always a topic that influences various areas of finance. In fact when discussions about companies are made, one of the most critical issues must be how the firm is creating value and how to assess this value.

Therefore, this project will illustrate the procedures for determining the target price of the company Corticeira Amorim.

Where Corticeira Amorim is the world largest cork transforming company and its core business is based on extracting the cork from cork oak forests to make it uniquely possible to operate in various parts of life.

The Discounted Cash Flow and the Multiples were the chosen valuation methods. To demonstrate the company's valuation and to effectively realize if Corticeira Amorim is trading its shares at a discount or a premium regarding the market value.

First, in this project, the DCF will be implemented for the whole firm taking into consideration the growth rate of the company's sales in each part of the world. Thereafter, the enterprise value is calculated by subtracting the net debt from the present value of the FCFF. Eventually, we can obtain the target share price of Corticeira Amorim by computing the equity value divided by the number of shares outstanding.

Afterwards, we will try to obtain the fair value of CA by using the valuation multiples to compare it with its peers.

 Indeed, the project will undertake a sensitivity analysis to manifest how the value of the firm will differ due to changes in the components of the valuation process.


**Keywords**: Valuation, Discounted cash flow, multiples and Corticeira Amorim

# 2 RESUMO:

A avaliação de empresas é um tópico que influencia várias áreas das Finanças Empresariais. Na verdade, quando se analisam empresas um dos aspetos mais críticos é a forma como a empresa cria valor e como medi-lo.

Assim, este projeto ilustra o procedimento para determinar o preço alvo das ações da Corticeira Amorim.

A Corticeira Amorim é a maior empresa mundial transformadora de cortiça e o seu negócio principal baseia-se na extração da cortiça dos sobreiros para a sua utilização em várias aplicações do dia-a-dia.

O Discounted Cash Flow e os multiplos foram os métodos escolhidos para avaliar a empresa Com vista a detetar se as ações da companhia estão a ser transacionadas ao seu justo valor.

Primeiro, neste projeto o DCF foi implementado aos calores consolidados do Grupo considerabdo a taxa de crescimento das vendas em cada região geográfica. Depois calculou-se o valor do negócio a partir do valor atual dos FCFF futuros, ao qual se subtraiu a divida liquida, para se obter o calor dos capitais próprios. Finalmente, dividiu-se este último pelo número de ações para obter o valor de cada uma.

Depois, tentou-se obter o justo valor da CA através da utilização dos múltiplos das suas congéneres.

 Por ultimo, realizou-se uma analise de sensibilidade para ver como a alteração de alguns pressupostos afeta o valor da ação da CA.

**Palavras Chave**: Avaliação, Valor Atual dos Cashs Flows, Multiplos e Corticeira Amorim

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# 3 Abbreviations:

**SGPS:** Sociedade Gestora de Participações Sociais.

**DCF:** Discounted cash flow

**FCFF**: Free cash flow to the firm

**CFROI**: Cash flow return on investment

**CCA**: Comparable companies' approach

**CTA**: Comparable transaction approach

**P/E**: Price to Earnings ratio

**P/S**: Price to Sales

**P/BV**: Price to book value

**EV/S**: Enterprise Value to Sales

**EV/EBITDA**: Enterprise Value to Earnings Before Interest, Taxes, Depreciation, and Amortization.

**EV/EBIT**: Enterprise Value to Earnings Before Interest, and Taxe

# 4 Introduction:

This project is a valuation case study, which is carried out under the scope of the Master's Degree. Therefore, we will conduct a valuation of the company Corticeira Amorim SGPS, S.A., in order to determine its value per share by the end of 2020. Day after day the world is flourishing and becoming less polluted due to the rise of environmentally friendly industries and Corticeira Amorim is one of the companies that extract and fabricate the world most sustainable material (Cork).

What should be the target share price of the company Corticeira Amorim, SGPS, SA in 2020? Therefore, the major objective of this project is to define the procedures for estimating the equity value of Corticeira Amorim.

This project is an opportunity to employ the knowledge that was built during the author's years of education. Additionally, equity valuation is the subject that has captivated him the most since the first day of his master in Finance.

Corticeira Amorim (CA) is a family-controlled Portuguese company headquartered in Mozelos, Portugal. It is listed on the Lisbon stock exchange.

The company started in 1870, with the establishment of the cork stoppers factory by Antonio Alves Amorim in Vila Nova de Gaia in Porto.

Corticeira Amorim's core business is based on extracting the cork from cork oak forests and applying it to a wide range of uses, such as bottle closures, buildings, vehicles, cruises, and spacecraft, among others.

Corticeira Amorim has always maintained a relevant presence in the areas of corporate responsibility and sustainability. It has supported both education and scientific research projects in the cork industry and other related fields, such as economy, society, and humanity.

This project includes four main sections. A literature review section aimed to analyze the main valuation models, a data section, presenting the more relevant information about CA, a methodology section, detailing the approach to value to be employed in this project and a final section regarding the valuation results and their analysis.

# 5  Literature review:

According to Brealey et al. (2011), valuation is the assessment of present and future investments of the firm, and the company's value is indicative of the performance both inside and outside the firm. Therefore, a manager's main objective is to create value and attract investors by generating a return higher than other investment opportunities, whereas Frykman et al. (2003) extended the benefit of valuation to investors and members of the board.

As quoted by Luehrman (1997a:132) "Today valuation is the financial analytical skill that general managers want to learn and master more than any other." Damodaran (2006), in his research, defined value as the core of finance and the most significant process to make rational decisions in the finance area and added that it is crucial to understand what drives the value of the company.

Damodaran (2006) also emphasized that pricing assumptions differ among analysts and experts since they apply several methods of valuation that lead them to understand the big picture. Furthermore, Fernandez (2007) declared that the value of the company can diverge between buyers and sellers, and amongst different buyers.

## 5.1  -Valuation approaches overview

Corresponding to Damodaran in 2012, valuation is a tremendous science, and its approaches vary from one asset to another depending on experts` perspectives. Therefore, any bias in the analyst's assumptions will result in a price misestimation.

Moreover, Damodaran (2002) divides the valuation models into three main approaches; (i) the discounted cash flow valuation, (ii) the relative valuation, and (iii) the contingent claim valuation that uses option-pricing models.

The DCF model is considered the heart of other valuation models as it contains the free cash flow to the firm (FCFF); the free cash flow to the equity (FCFE); the dividend discount model (DDM); and the adjusted present value (APV).

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The company's fair price given by DCF is the present value of the projected cash flow discounted back at the rate that reflects the risk of obtaining income. Furthermore, the relative valuation model estimates the price of the firm by comparing the financial multiples of each firm with the peer group of the underlying company. Moreover, the contingent claim valuation method hypothesizes that the fair value of an asset may outpace the present value of the future cash flow.

Fernandez (2007) split the valuation methods: the balance sheet method; income statement methods; mixed goodwill methods; value creation and options. The balance sheet-based methods involve book value; adjusted book value; liquidation and substantial value. These methods gauge the value of the company based on its assets. Furthermore, the income statement-based methods determine the value by analyzing earnings, sales, and other indicators. Equally important, intangible assets are considered a critical element in the mixed goodwill-based methods, which imply intangible assets in defining value.

He also stated that the DCF model exhibits the company as a cash generator and it is employed extensively nowadays among other approaches.

From another perspective, Frykman et al. (2003) reported that the valuation approaches are divided into fundamental and relative. The former obtains the fair price of the firm by using its fundamentals and economic information. Whereas the latter depends on the company's performance compared to other companies in the industry.

He split the valuation models into the way presented First, the dividend discount model (DDM) attains the firm's equity value by discounting back to today the projected dividend`s values at the cost of equity.

Second, free cash flow to the firm, which is the most famous DCF's method, where the enterprise value is estimated by discounting the expected cash flow at the weighted average cost of capital (WACC) back to today.

Third, the cash flow return on investment (CFROI) that was designed by the Boston Consulting Group, detects the firm's ability to generate a sustainable cash flow in the future. Hence, CFROI is considered as the weighted average internal rate of return of the firm's projects.

Fourth is the returns-based valuation.

Fifth, the asset-based method.

Sixth, the option-based valuation;

Last; the multiples-based valuation.

Janiszewski (2011) sorted the valuation techniques taking into account his perception of corporate finance, which is presented below:

First, the multiples approach consists of the comparable companies approach CCA and the comparable transaction approach CTA; second, the discount cash flow approach DCF includes (FCFF, FCFE, DDM), third the book value approach (adjusted net book value, liquidation value, replacement value); last the option and mixed methods.

## 5.1.1 -Discount cash flow (DCF)

According to Rosenbaum et al (2013), DCF is the most reliable model among others and many experts apply it first to value companies. He mentioned that analyzing the firm`s financial details such as growth rate of sales, capital expenditure, net working capital, and profit margin is critical to obtain the cash flow that may be generated in the future. For this reason, DCF is eligible to work widely in many fields such as mergers and acquisitions, IPO (initial public offering), restructuring, and investment decisions.

Janiszewski (2011) emphasized that the DCF method defines the value of the firm as the present value of the future cash flows discounted at a rate.

$$value = \sum_{t=1}^{t=n} \frac{CF\ t}{(1+r)^n} \tag{1}$$

Where:

-n is the life of the asset

-CF is the expected cash flow at period t

-r is the discount rate that reflects the risk related to the cash flow

As reported by Damodaran (2002), DCF is dedicated to estimating the intrinsic value of the firm and it includes three main approaches which are, the free cash flow to the equity; the free cash flow to firm; and the adjusted present value.

The free cash flow to equity determines the equity value of the firm by discounting back the cash flows to the equity after deducting all investment, debt, and tax expenses at the cost of equity. The dividend discount model DDM is a distinctive method of the equity valuation model.

$$value = \sum_{t=1}^{t=n} \frac{CF \ to \ Equity \ t}{(1 + Ke)^n} \qquad (2)$$

Where:

-n is the life of the asset/company

-CF to equity t is the expected cash flow to equity in period t

-Ke is the cost of equity

The free cash flow to the firm is the cash left for both creditors and shareholders which contradicts with the cash to equity. Thus, the firm valuation model is undertaken by discounting the free cash flow to the firm at the weighted average cost of capital.

$$value = \sum_{t=1}^{t=n} \frac{CF \ to \ Firm \ t}{(1 + wacc)^n} \qquad (3)$$

Where:

-n is the life of the firm

-CF to firm t - is the expected cash flow to the firm at the period t

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-WACC is the weighted average cost of capital

According to the adjusted present value APV, the value of the firm is obtained by the formula below:

$$
\begin{aligned}
value\ of\ the\ firm \\
&= value\ of\ all\ equity\ financed\ firm + pv\ of\ tax\ benefits \qquad (4) \\
&+ expected\ bankruptcy\ cost
\end{aligned}
$$

According to Wilson (1997), DCF is simple and eligible to employ in various types of companies. However, it is possible to achieve the wrong value if both the free cash flow and the discount rate were misestimated.

Notwithstanding, the DCF model is still immune to accounting values manipulation as stated by Frykman (2003) since it concentrates on what is related to free cash flows and neglects any accounting measures that do not affect DCF. Additionally, he clarified that applying DCF will raise the understanding of external and internal drivers of value such as the (industry and the economy) and (revenue and costs), respectively.

To sum up, DCF and the financial multiples approaches were chosen to carry out the equity valuation of Corticeira Amorim.

## 5.1.1.1 - Free Cash Flow to the Firm valuation method

### 5.1.1.1.1 a) obtaining free cash flow

As quoted by Rosenbaum et al. (2013,219) "The free cash flow is all the cash generated by a company after paying all cash operating expenses and taxes, as well as the capital expenses and working capital, but prior to the payment of any interest expenses". Furthermore, Damodaran (2002) stated that the free cash flow to the firm is the sum of the cash flows to all claim holders in the firm and it is calculated by:

**FCFF = EBIT (1 - tax rate) + Depreciation - Capital Expenditure**

**- Δ Working Capital**

(5)

The same author mentioned that there is no tax benefit in calculating the FCFF associated with interest payment because the WACC estimation considers the debt after taxes.

In consonance with Fernandez (2007), it is the cash flow created by the firm's operations, without subtracting the financial charges after taxes as if the company had no debt. This means the distributable money after meeting the working capital, capital expenditure and reinvestment requirement assuming there is no other obligation.

### 5.1.1.1.2 -Obtaining the weighted average cost of capital WACC

Rosenbaum et al. (2013) affirmed that the WACC is the rate that investors expect to receive from an alternative investment with similar risk characteristics. Additionally, Luherman (1997) cited that the weighted average cost of capital is a tax-adjusted discount rate since it contains the tax benefit of debt.

Frykman et al. (2003) pointed out that the weighted average cost of capital currently is a widely used discount rate along with other ratios. Moreover, it signifies the risk inherent in the anticipated cash flow.

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

(6)

Where:

-E is the equity

-D is debt

-Ke is the cost of equity

-Kd is the cost of debt

-T is the tax rate

Koller et al (2015) elucidated that the equation of WACC above has three major elements which are the cost of equity; the cost of debt; and the capital structure of the company. The cost of equity is considered the most challenging to approximate among other elements.

### 5.1.1.1.3 - Cost of Equity

Rosenbaum et al. (2013) defined the cost of equity as the return required by investors which offsets them for investing in the company's shares. As well, the cost of equity is the expense of attracting more funds from equity shareholders, as reported by Frykman et al. (2003).

Where he named two main components in obtaining the cost of equity. First, the risk-free rate which is the return on riskless assets; second, an extra return which compensates for the additional risk of investing in the corporate`s equity.

Conforming to Damodaran (2002), the cost of equity is the required return by the shareholders which compensates for their exposure to the company's risks.

It can be assessed in many methods such as the capital asset pricing model (CAPM), arbitrage pricing model (APM), and the Multi-Factors Model. Rosenbaum et al. (2013) mentioned that CAPM is broadly employed and this is its equation:

$$Re = Rf + \beta l \, (Rm - Rf) \qquad\qquad (7)$$

Where:

Re is the cost of equity

Rf is the risk-free rate

βl is levered  beta

Rm is the market return

Koller et al. (2010) determined two steps to get the cost of equity; first, define the risk-free rate and the market risk premium; second, estimate (Beta) either by CAPM or Fama French three-factor model.

### 5.1.1.1.4  -risk-free rate

An asset is classified as risk-free when its actual return matches the expected one. Therefore, the risk-free rate is the basis in determining the investment's expected rate of return. According to Damodaran (2012). Those kinds of assets should possess two main characteristics which  are:

- First, no default risk.
- Second, no reinvestment risk to get the same expected return.

Hence, the 10 to 15-year government bond and treasury bonds in the homeland of the valued company are ideal examples as recommended by Frykman et al. (2003).

From a statistical perspective, Koller et al. (2010) emphasized that an asset with a risk-free rate is the one whose return has zero covariance with the market return.

Massari et al. (2016) mentioned two significant components, which may be  included in the risk-free rate:

1. The financial value of time reimburses the loss in non-invested cash due to inflation.
2. The probability of default, which in this case should be zero or negligible.

### 5.1.1.1.5  -Market Risk Premium:

According to Damodaran (2012), the origin of risk premium is the behaviour of the risk aversion investors since they prefer less risky investments to riskier ones.

Rosenbaum (2013) declared that the market risk premium is the spread between the expected market return from the risk-free rate.

$$risk\ premium = Rm - Rf \qquad\qquad (8)$$

The market risk premium is a crucial factor in determining the value of any investment as stated by Damodaran (2012) since it affects the portfolio's expected return and might change asset allocation.

Koller et al. (2015) revealed three ways to estimate the market risk premium:

1- By extrapolating the historical returns.
2- Utilizing a regression analysis to link current market variables.
3- Using an estimation of the DCF method, return on investment, and the growth rate.

Damodaran (2012) recalled some factors that influence the risk premium, and they are risk aversion and consumption preferences, economic risk, information, liquidity, catastrophic risk, and government policy.

### 5.1.1.1.6  -Beta β

Beta, or the systematic risk, is the covariance between the asset's expected return and the overall market return as identified by Rosenbaum et al (2013). In addition, they described two kinds of betas: unlevered beta, and levered beta.

Psychologically speaking risk means unpleasant for the individual. Whereas, from a financial perspective it is the inconsistency and uncertainty in an investment's return. In other words, risk depends on what investors ask as compensation for taking this gamble. Massari et al. (2016).

As reported by Koller et al. (2010, 239), "Beta represents a stock's incremental risk to a diversified investor, where risk is defined as the extent to which the stock moves up and down in conjunction with the aggregate stock market."

According to Damodaran (2006), three approaches were created to find beta; The first one is estimating beta by performing a regression between the historical returns of the asset against the historical returns of the market, such as the S&P500, by the equation below:

$$Rj = a + b * Rm \tag{9}$$

Where:

- -a is the intercept
- Rj is the stock return
- Rm is the market return
- -b is the slope of the regression $\frac{Cov(Rj,Rm)}{\sigma_m^2}$

The intercept is called Jensen's Alpha and it detects whether the investment's performance is better than the market performance or worse. Furthermore, by comparing the equation mentioned before with the CAPM model we reach that:

1- If $\alpha > Rf * (1- \beta)$ stock did better than expected
2- If $\alpha = Rf * (1- \beta)$ stock did as well as expected
3- If $\alpha < Rf * (1- \beta)$ stock did worse than expected

In addition, measure $R^2$ provides information about how significant the regression equation is, and how much the market impacts on the firm's risk. Likewise, the standard error of the beta estimate manifests the deviation in this estimation.

The second approach of determining beta is the fundamental one which it gauges beta considering the characteristics of the firm:

$$\beta l = \beta u * \left(1 + \frac{D}{E} * (1 - T)\right) \tag{10}$$

Where:

-βl is beta levered of the equity of the firm

-βu is beta unlevered of a non-debt-financed company

-D/E is the debt to equity ratio

-T is the corporate tax rate

Note that in this equation we are assuming the Beta of Debt is zero.

The third way is by accounting data where the accounting value of earnings is applied instead of the market one to attain the market risk parameter.

### 5.1.1.1.7 - Cost of debt

Damodaran (2002) defined the cost of debt as the expenses of issuing bonds and loans to finance the company's projects, and he determined three variables that affect this cost:

- First, the risk-free rate.
- Second, the default risk of the firm.
- Third, the tax rate thus when the tax rate increases the cost of debt decreases.

$$after - tax\ cost\ of\ debt = pre - tax\ cost\ of\ debt * (1 - tax\ rate) \qquad (11)$$

As emphasized by Koller et al. (2010), the cost of debt is the yield to maturity on the company's long-term bonds multiplied by one minus the corporate tax rate.

### 5.1.1.2 -Free Cash Flow to the Equity FCFE

It is the cash flow that is left to shareholders after subtracting all operating, capital and debt expenses. The equity value of the firm is achieved by discounting the free cash flow to equity at the cost of equity instead of the cost of capital (WACC).

$$FCFE = net\ income - capital\ expenditures + depreciation$$
$$- (change\ in\ non - cash\ working\ capital) \qquad (12)$$
$$+ (new\ debt\ issued - debt\ repayments)$$

Attending to Koller et al. (2010) there is another approach to obtain the cash flow to equity and it is:

$$FCFE = Dividends + share\ repurchases - non\ equity\ issues \qquad (13)$$

Both approaches should generate identical results then the equity value is derived by this equation:

$$equity\ value = \sum_{t=1}^{t=\infty} \frac{FCFE}{1 + R_e} \qquad (14)$$

### 5.1.1.3 TV the Terminal value:

According to Frykman et al. (2003), the terminal value or the continuing value is the free cash flow of the year after the last year discounted back at the cost of capital minus growth rate where it represents the major part of the enterprise value.

$$TV = \frac{FCF_{t+1}}{WACC - g} \qquad (15)$$

Where:

$FCF_{t+1}$ is the free cash flow of the year after the forecasted period.

WACC is the weighted average cost of capital and (g) is the perpetuated growth rate.

Bearing in mind that the company may not last forever or at least their future might be difficult to assess in more detail, analysts tend to stop the DCF valuation in the future and gauge the terminal value which refers to the value of the firm at the last year of the valuation`s period.

$$value\ of\ the\ firm = \sum_{t=1}^{t=n} \frac{CF}{(1+k)^n} + \frac{terminal\ value\ n}{(1+k)^n} \tag{16}$$

The terminal value is developed in three ways, the first one is assuming that the business is looking to liquidate its assets in the terminal year and checking how much it would receive in return. The second is to employ earnings, revenues, or book value multiples to estimate the terminal value. The third is by applying the perpetual growth model where it is believed that the business will grow at a stable growth rate.

### 5.1.1.4  - EV the enterprise value:

After obtaining the projected cash flow of the firm and the weighted average cost of capital (WACC), the EV is derived in two ways:

$$EV = \sum_{t=1}^{t=\infty} \frac{FCFF_t}{(1+WACC)^n} \tag{17}$$

Or by (in the case of a listed company):

$$EV = market\ value\ of\ equity + market\ value\ of\ debt \\ - cash\ and\ equivalent \tag{18}$$

Hence, the equity value may be  calculated in a second way, according to Frykman:

$$Equity\ value = EV - market\ value\ of\ interest\ bearing\ debt \\ + non\ operating\ assets \tag{19}$$

Then the value per share is:

$$share\ price = \frac{equity\ value}{number\ of\ shares\ outstanding} \tag{20}$$

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## 5.1.2  -Adjusted present value (APV):

According to Koller et al. (2015), the adjusted present value APV is a valuation model that estimates the value of the project by splitting it into two elements: (i) the value of the company as if it were all-equity financed and (ii) the value of tax shield of debt financing.

The model was first suggested by Myers in (1974) where he focused on two categories: (i) the cash flow related to business operation and (ii) the cash flow associated with the financing strategy. Moreover, Luehrman (1997), represented APV as the model that divides the firm into segments to value each one apart, then their values are aggregated which makes managerial sense. The same author added that the basic idea behind APV is value additivity which helps managers and executives to know where the value came from.

Damodaran (2002) represented the adjusted present value equation:

$$APV = unlevered\ firm\ value + PV\ of\ tax\ benefits \\ - Expected\ bankruptcy\ costs \tag{21}$$

Therefore, the first step is to calculate the unlevered enterprise value (the value of the firm if it had no debt and in this simple illustrative case considering a constant perpetual FCFF) by discounting the expected free cash flow to the firm at the unlevered cost of equity.

$$value\ of\ unlevered\ firm = \frac{FCFF_o}{\rho_u} \tag{22}$$

Where the FCFF is the current after-tax operating cash flow to the firm and $\rho_u$ is the unlevered cost of equity, which can be estimated using the CAPM model (Parrino, 2005):

$$r_u = r_f + \beta_u \big[E(r_m) - r_f\big] \tag{23}$$

Where:

- $r_u$ the unlevered cost of equity
- $r_f$ the risk-free rate

- $\beta_u$ the beta unlevered
- $[E(r_m) - r_f]$ the market risk premium

The unlevered beta is obtained by the equation below:

$$\beta_{unlevered} = \frac{\beta_{current}}{1 + (1-t)\frac{D}{E}} \tag{24}$$

Where:

- $\beta_{unlevered}$ = unlevered beta of the firm
- $\beta_{current}$ = current equity (usually levered) beta of the firm
- $t$ = tax rate for the firm
- $\frac{D}{E}$ = current debt to equity ratio

The next step is to calculate the expected tax benefit from a given level of debt. It is a function of the tax rate of the company and is discounted at the cost of debt to indicate the riskiness of this cash flow. The tax rate used here is the firm's marginal tax rate and it is supposed to continue constantly over time.

$$\text{Value of Tax Benefits} = (\text{Tax Rate})(\text{Debt}) \tag{25}$$

Assuming a constant level of Debt.

The last step is to assess the impact of the given level of debt on the default risk of the firm and expected bankruptcy costs. Where:

$$\text{PV of Expected Bankruptcy cost} = (\text{Probability of Bankruptcy}) (\text{ PV of Bankruptcy Cost }) \tag{26}$$

Obtaining the probability of bankruptcy is not as simple as the other elements of the APV model. Nevertheless, it can be estimated in two different styles; first, is the bond rating approach, second is the statistical approach.

Hence, the bankruptcy cost can be projected from research that has been done by many authors. Studies regarding the direct cost of bankruptcy assume that they are small relative to firm value. For instance, studies by Weiss (1990), Warner (1977), Altman (1977), and Betker (1997) identified a direct cost of bankruptcy range of about 3.1–4.3%, and Branch (2002) projected a range of 4.45-6.35%. Nevertheless, the indirect costs of bankruptcy are more considerable, and they are not straightforward to achieve. Overall, Branch (2002) detected a pre-bankruptcy cost scale equal to 12% to 20% of the firm's value. Kortweg (2007) defined, for more realistic levels of leverage at default, a cost between 12-28% of firm value at bankruptcy. Shapiro and Titman (1985) reported that the indirect costs could be as large as 25% to 30% of the firm value.

## 5.1.3 -Valuation multiples

Kaplan et al. (1995) describe multiples valuation as an approach that achieves the value of the firm by multiplying its guideline ratio by its performance. Those are usually frequently used measures; (earnings before interest, taxes, depreciation and amortization EBITDA, earnings before interest and taxes EBIT, net income, and revenues). Furthermore, they clarified two assumptions to carry out the relative valuation; first, the comparable companies should resemble the firm being valued in cash flow and risk expectations; second, those measures are a proportion to value.

According to Massari et al. (2016), it is a manner that finds the equity and the enterprise value of the company by comparing it with its peer group. It depends on, first, the proportional changes between the firm's value and its internal measures; second, the expected growth rate and the risk level which should be steady over the valuation period.

Frykman et al. (2003) stated that the value of the company is a combination of many variables such as sales, earnings, EBIT, and book value, and there are two ways to find multiples; the fundamental and the relative. Besides, they added the advantages and disadvantages of using multiples:

First, the efficiency in valuing firms, since it is uncomplicated, which is why it is faster than DCF. Second, it is crucial if both ways (fundamental and relative) are used properly. Third, it is a

complementary approach to get a quick comprehension of the company and decide if it is worth the time because choosing the first DCF model may waste time.

On the other hand, multiples are too simple since as they concentrate on only one variable at a time then they can be misleading. Besides, using only multiples means letting other investors value on your behalf and leads to inaccuracy.

Koller et al (2010) mentioned that investors should use the right multiple and recommended starting with enterprise value to EBITDA rather than the widely used multiple P/E ratio since it is distorted by capital structure. After that, they should consistently calculate the multiple and use the right peer group based on growth and return on invested capital (ROIC). Therefore, they split multiples into two kinds: enterprise multiples and equity multiples.

In this context, Damodaran (1994), added that the relative valuation's objective is to assess the firm's value based on a comparison with similar assets traded in the market.

He clarified three reasons to prove the efficiency of relative valuation:

1- This method needs fewer assumptions than the DCF approach.
2- It is humbler than the DCF to understand and to introduce to the clients.
3- it signifies the presence of the firm clearer than DCF.

Therefore, to apply those multiples professionally, Damodaran determined four steps:

First, the multiples must be specified consistently and equally among firms. Second, consider the same industry and the entire market to choose those multiples. Third, analyze the multiple`s fundamentals and understand how changes in those fundamentals influence the ratio. Finally, find similar companies to compare with the target firm.

### 5.1.3.1  -Price Earning Ratio (PE)

Corresponding to Damodaran (2002), the price earning ratio is one of the most used among multiples. Also, it is highly misused because of its simplicity.

$$PE = \frac{market\ price\ per\ share}{EPS} \tag{27}$$

Where: EPS are the earnings per share

Furthermore, there are various types of earnings per share, such as current earnings per share, trailing earnings per share, forward earnings per share, diluted earnings per share and primary earnings per share. Thus, it is tricky to analyze one specified ratio and ignore others which may be confusing.

### 5.1.3.1.1  -P/BV

It is dividing the market price per share by the book value of equity per share:

$$PBV = \frac{Price\ per\ share}{Book\ value\ of\ equity\ per\ share} \tag{28}$$

Indeed, the price to book value ratio is important because; First, PBV provides a significant indicator of the market value before using the DCF model. Second, it grants insights into overvalued or undervalued companies since it depends on accounting numbers. Third, firms with negative earnings can be valued by the price-book value ratio which is opposite to P/E.

Notwithstanding, there are a few disadvantages of the P/BV ratio:

First, it is affected by accounting decisions and accounting standards. Second, it might not be efficient when used in technology and service companies' valuations since they have less tangible assets. Third, the book value of equity may become negative if the company obtained a sequence of negative earnings resulting in a negative PBV.

### 5.1.3.1.2  -PS ratio

The price-to-sales ratio is the market value of equity divided by revenues and is one of the revenue multiples where it can be extracted in two ways. The first one is the stable growth dividend discount model for the firms that pay a dividend, which is defined in this equation:

$$PS = \frac{(Net\ margin)(payout\ ratio)(1 + g_n)}{r - g_n} \qquad (29)$$

Where:

-r is the cost of equity, $g_n$ is the stable growth rate

The second way is the free cash flow to equity for firms that do not pay a dividend, therefore:

$$PS = net\ margin \frac{\left(\frac{FCFE}{Earnings}\right)(1 + g)(1 - \frac{(1 + g)^n}{(1 + k_{e,hg})^n})}{k_{e,hg} - g} + \frac{(\frac{FCFE}{Earnings})(1 + g)^n(1 + g_n)}{(k_{e,st} - g_n)(1 + k_{e,hg})^n} \qquad (30)$$

Where:

-$g_n$ is the stable growth rate

-$k_{e,hg}$ is the cost of equity in high growth

-$k_{e,st}$ is the cost of equity at a stable growth

### 5.1.3.1.3  -EV/Sales

One of the revenue multiples, according to Damodaran, is the value of the firm including debt and equity to the sales.

$$\frac{EV}{SALES} = \frac{market\ value\ of\ equity + market\ value\ of\ debt - cash}{Revenues} \qquad (31)$$

Thus, it is more resilient than the price-to-sales ratio because it is internally rational as it consists of the whole firm (debt and equity).

### 5.1.3.1.4  - EV/EBITDA

EV/EBITDA is a firm value multiple and analysts started depending on it during the past two decades. The reasons behind this being.  First, there are fewer companies with negative EBITDA

20

than negative EPS. Second, the depreciation value affects net income and the PE ratio whereas EBITDA stays unchanged. Third, this ratio works well in firms with different levels of leverage, because the numerator is the firm value including debt and equity, and the denominator is pre-debt earnings.

Frykman et al. (2003) declared the advantages of the EV/EBITDA:

First, it can be used for firms that suffer earnings loss if EBITDA is positive. Second, it approaches the DCF valuation since it resembles cash flow. Third, it allows access to compare firms with different debt levels.

According to Koller et al. (2010), the PE ratio is influenced by the capital structure and net income, therefore they prefer to rely on this alternative multiple.

$$\frac{EV}{EBITDA} = \frac{Market\ value\ of\ equity + market\ value\ of\ debt - cash}{EBITDA} \qquad (32)$$

#### 5.1.3.1.5 -EV/EBIT

It is one of the earnings multiples and it is expressed as:

$$\frac{EV}{EBIT} = \frac{Market\ value\ of\ equity + market\ value\ of\ debt - cash}{EBIT} \qquad (33)$$

After covering the DCF and multiple methods it has been decided that those are the approaches that will be undertaken to value Corticeira Amorim.

### 5.1.4 -Contingent claim valuation:

It is one of the most innovative valuation methods among other traditional approaches since it uses the option pricing models to apply to all asset type valuations, according to Damodaran (2002).

Luehrman (1997) emphasized that applying options-based analyses in sequence with a DCF analysis is more efficient than using each one aside. He defines two ways: first, is to carry out the option pricing after doing the DCF analysis, to complement, not replace, the latter; and second, employ the outputs from a DCF analysis (such as present values and capital expenditures) as inputs for option-pricing (such as the underlying asset value and exercise price).

# 6 Macroeconomic outlook:

As a widespread company present in five continents, a change in global GDP affects its businesses. The year 2020 was unprecedented due to the impact of the trade war between China and the USA and COVID-19. Both lead to a deep recession that hit the whole world. Notwithstanding, the global economy is projected to grow at 5.2 in 2021 after a harsh contraction of 4.2 in 2020.

The advanced economies' GDP shrunk by 5.8% due to the travel restrictions caused by the so-called pandemic, where it is expected to grow by 3.9 in 2021. Nonetheless, the emerging markets and the developing economies are projecting a 6.0% expansion in 2021 after a -3.3% in 2020.

The Eurozone stands as the weakest against recession since its real GDP contracted by 8.3% and it is projecting a modest rise of 5.2% in 2021. In contrast, China stood among other economies with a 1.9% growth, and it is anticipated to flourish by 8.2% in 2021. Besides, the Portuguese economy has suffered from travel restrictions where it decreased by 10% in 2020 and it is estimated to expand by 6.5% in 2021.

Regarding inflation, consumer prices have scored an expansion of 2.1% and 1.4% in the US and China, respectively in 2020, and it is expected to boost in 2021 by 2.2% and 2.5% due to the expected economic expansion post covid. Nonetheless, in 2020 prices rose by 0.1% in the euro area where it is projected to increase by 1.1% in 2021. Additionally, prices in Portugal may grow by 1.2% after easing restrictions in 2021.

Speaking of the labour market, the unemployment rate has risen drastically by 8.9% in the US and the euro area but it is expected to grow to 7.3% and 9.1%, respectively in 2021. Whereas, the Chinese unemployment rate expanded to 3.8% but it is projected to reach 3.6%  in 2021.

Furthermore, a high portion of employees lost their jobs where unemployment increased by 8.1% and it may keep on mounting by 7.7% in 2021.



*IMF Forecast report*

# 7 Industry overview:

Cork has proved itself in the environment and the economy where it stands as the new solution for the world to guarantee better performance and more sustainability.

According to APCOR, the global association of cork, cork oak forest covers 2,123 thousand hectares in the world, while Portugal has the highest stake in cork oak forest with 34%. Portugal emerges as a producer of 100,000 tons of 201,428 tons globally which is 49.6%.

Portugal owns 642 companies (2017) in the cork industry where cork stoppers firms are the majority among others in the cork sector. Moreover, they produce 40 M cork stoppers per day and have 8310 workers. Portugal is the leader among cork exporters in the international market where its exports reached 1071.5 M€ from global exports of 1714 M€ in the year 2018. Notwithstanding, it is ranked as the third cork importer with 216.2 M€ after France and the USA.

Locally in the Portuguese market, besides cork's significant role in the environment, cork forest incorporates as well in the Portuguese GDP and employment rate. Therefore, its products aim most at the wine industry by natural and extraordinary cork stoppers and the second most

exported products are wall and floor covering and insulation. In 2018 the Portuguese cork exports improved to 201 thousand tons with a value of 1067.6 M€. Whereas it slumped slightly in the first half of 2019 by 0.1 per cent. Georgia imports more than 58.9% of cork Portuguese exports followed by Moldavia.

**EVOLUÇÃO DAS EXPORTAÇÕES PORTUGUESAS DE CORTIÇA**
EVOLUTION OF PORTUGUESE CORK EXPORTS



| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valor | 848,5 | 853,8 | 823,7 | 698,3 | 765,6 | 817,0 | 836,8 | 833,1 | 846,0 | 901,5 | 935,5 | 987,7 | 1067,6 |
| Massa | 164,7 | 159,4 | 158,8 | 144,8 | 170,0 | 180,7 | 193,1 | 201,2 | 182,0 | 176,3 | 183,9 | 197,3 | 201,0 |

● Exportações de cortiça em valor (milhões de €)
Exports of cork in value (million €)

⠿ Exportações de cortiça em massa (milhares de toneladas)
Exports of cork in mass (thousand tonnes)

Fonte: INE Source: INE

**PESO DAS EXPORTAÇÕES DE CORTIÇA NAS EXPORTAÇÕES TOTAIS PORTUGUESAS - 2018**
WEIGHTING OF CORK EXPORTS IN TOTAL PORTUGUESE EXPORTS - 2018



*Corticeira Amorim annual report*

The biggest importer of Portuguese cork exports is France in value and Spain in quantity.
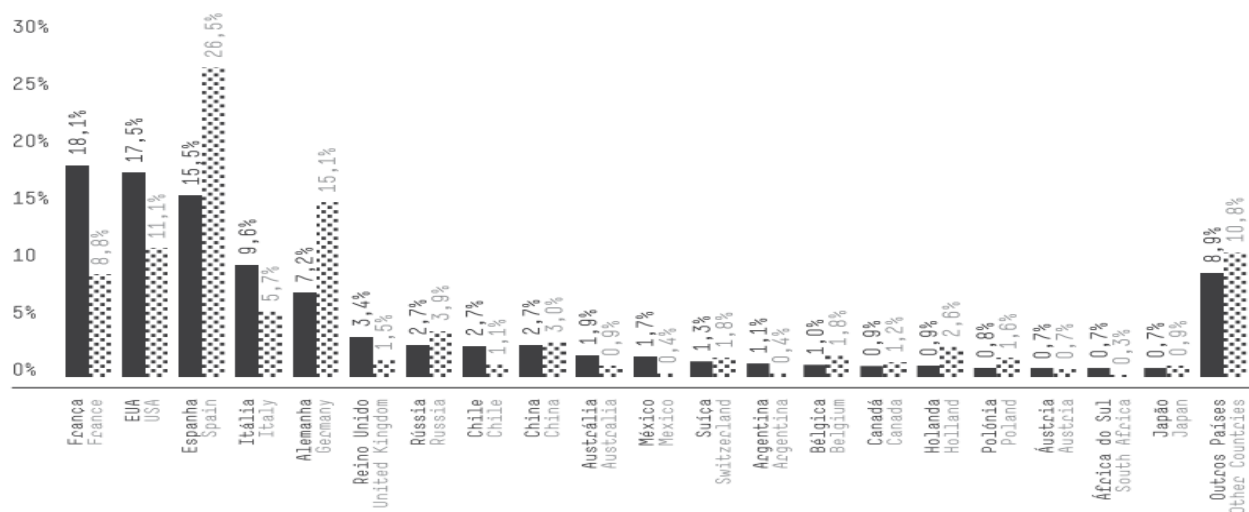
*Corticeira Amorim annual report*

Regarding value, cork stoppers are considered the highest among Portuguese cork exports and construction materials lead in amount. Both value and volume of cork grew gradually in 2017 and 2018. In the first half of 2019, exports of cork stoppers continue to lead exports, with 18% up from 2018 and reaching 476.9M€. Construction materials grew by 22 per cent compared to the same period in 2018. Besides that, APCOR reported that 60% of the cork exports are from natural cork stoppers which are intensively exported to the USA followed by France, and the rest 40% is of other stoppers' kinds.

PRINCIPAIS PRODUTOS EXPORTADOS (MILHÕES €)
MAIN PRODUCTS EXPORTED (MILLION €)
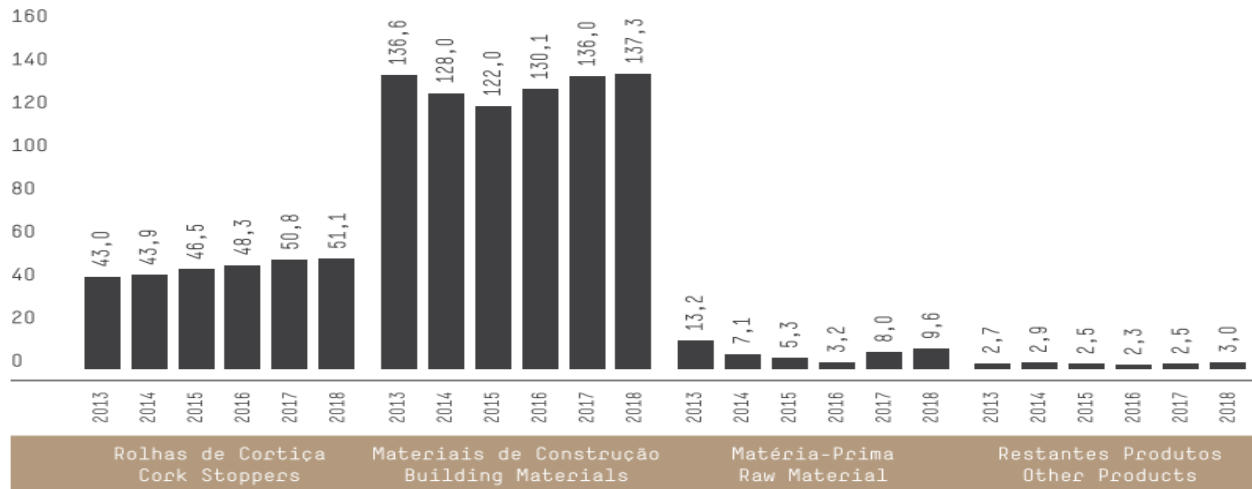
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The exports of construction materials are tiles, cubes, blocks and other vital substances which represent 152.2 M€ and the waste cork exports made 79.5 M€. Spain, Germany, and the USA are the largest importers of cork construction materials.

EXPORTAÇÕES DE MATERIAIS DE CONSTRUÇÃO E DECORAÇÃO POR PRINCIPAIS PAÍSES DE DESTINO - 2018 [MILHÕES DE €]
EXPORTS OF CONSTRUCTION AND DECORATION MATERIALS BY MAIN DESTINATION COUNTRIES - 2018 [MILLION €]
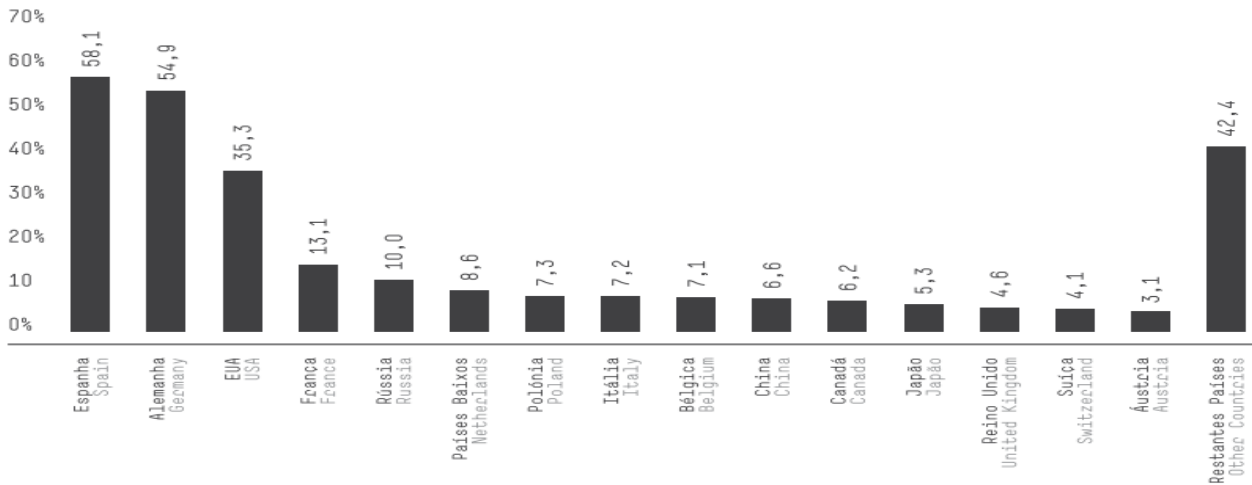


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## 7.1 The main cork markets:

Natural cork stoppers exports to France diminished by 11% between 2008 and 2011 whereas they rose 16% from 2015 till now, while other stoppers and construction materials maintained a slightly gradual growth rate. Besides, a robust growth rate of 78% and 83% in the cork stoppers and construction materials exports, respectively, to the USA in the last 10 years. Also, Spain is the third cork importer from Portugal and from 2009 until 2018 its imports of cork stoppers increased dramatically by 93% and construction materials had an astonishing rise of 586% over the same period. Nonetheless, Italy has recorded a considerable increase of 54% in cork materials imports from Portugal. Moreover, Germany is the second importer of cork construction materials from Portugal with a 13% rise in the last 10 years, whereas the other cork imports declined by 40% during the same period.

### 7.1.1 -Cork imports:

Cork imports continued to increase after 2009 reaching 215.4M€ in 2018 due to a 16% rise in weight of imports compared to 2017 which is inferred to by growth in demand after that in the first half of 2019 it slumped by 4% reaching 52.5 M€.



EVOLUÇÃO DAS IMPORTAÇÕES PORTUGUESAS DE CORTIÇA
EVOLUTION OF PORTUGUESE CORK IMPORTS

Importações de cortiça em valor (milhões de €)
Imports of cork in value (million €)

Importações de cortiça em massa (milhares de toneladas)
Imports of cork by weight (thousand tonnes)
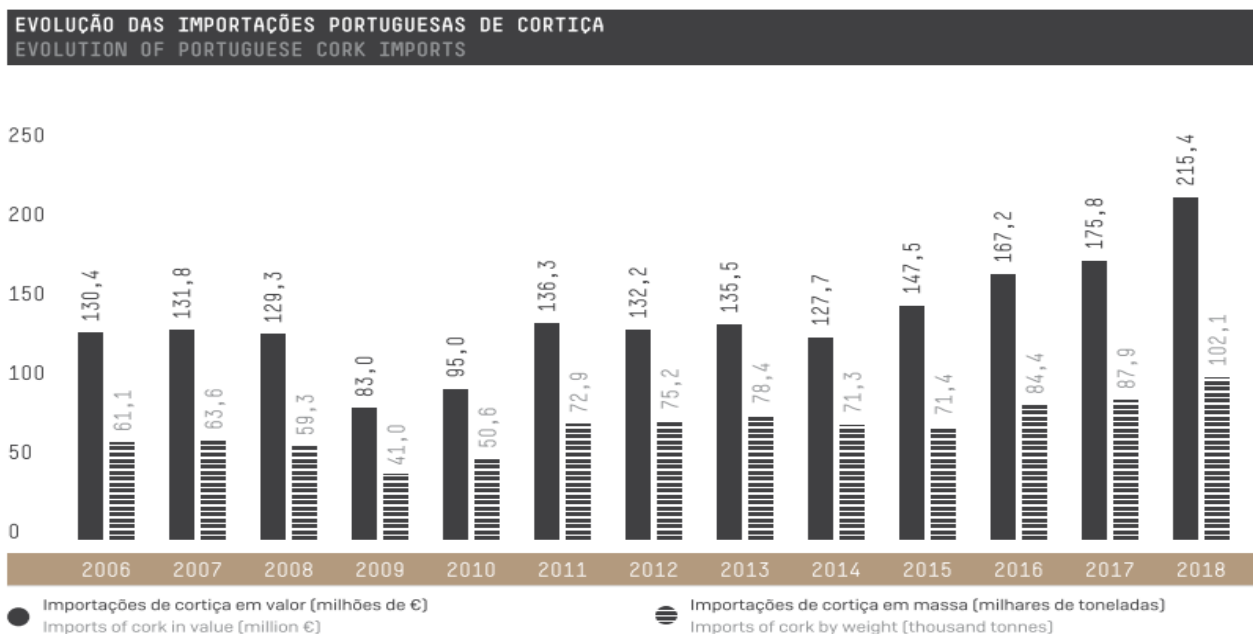
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Natural cork forms 79% of the total Portuguese cork imports which reached 170.8M€ in 2018, and the largest supplier is Spain with 70.7 % followed by Italy with (??) according to APCOR 2018.



PRINCIPAIS PAÍSES DE ORIGEM DAS IMPORTAÇÕES PORTUGUESAS DE CORTIÇA - 2018
MAIN COUNTRIES OF ORIGIN OF PORTUGUESE CORK IMPORTS - 2018
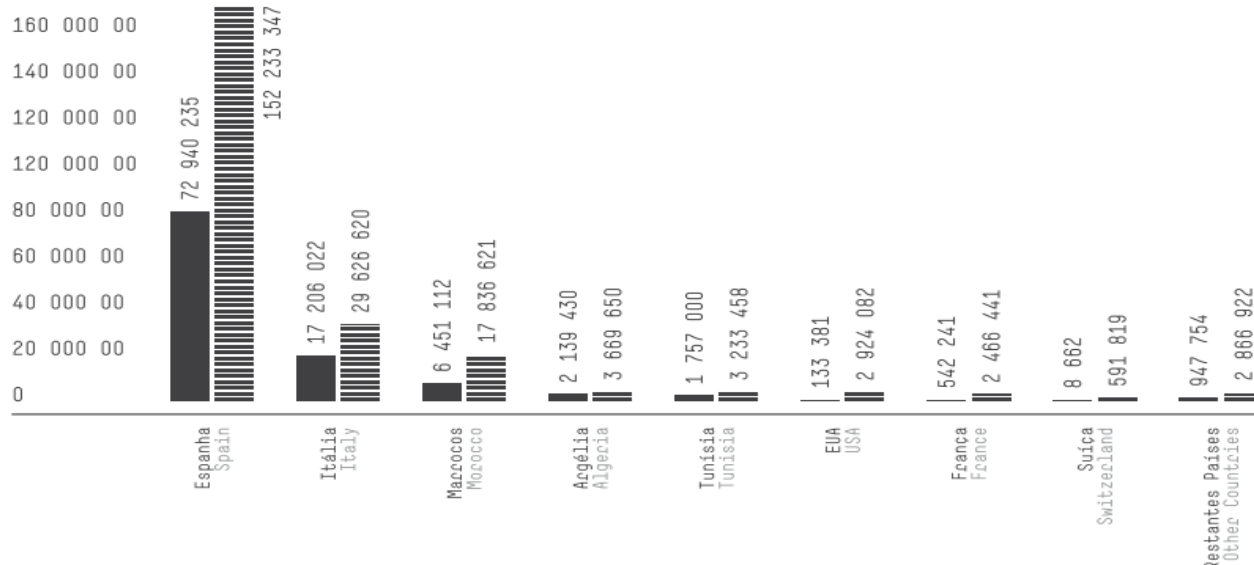


IMPORTAÇÕES PORTUGUESAS POR CLASSE DE PRODUTOS - 2018
PORTUGUESE CORK EXPORTS BY PRODUCT CLASS - 2018

● Valor (milhões €) value (million €)    ⬭ Massa (milhares toneladas) Volume (thousand tonnes)

*Corticeira Amorim annual report*
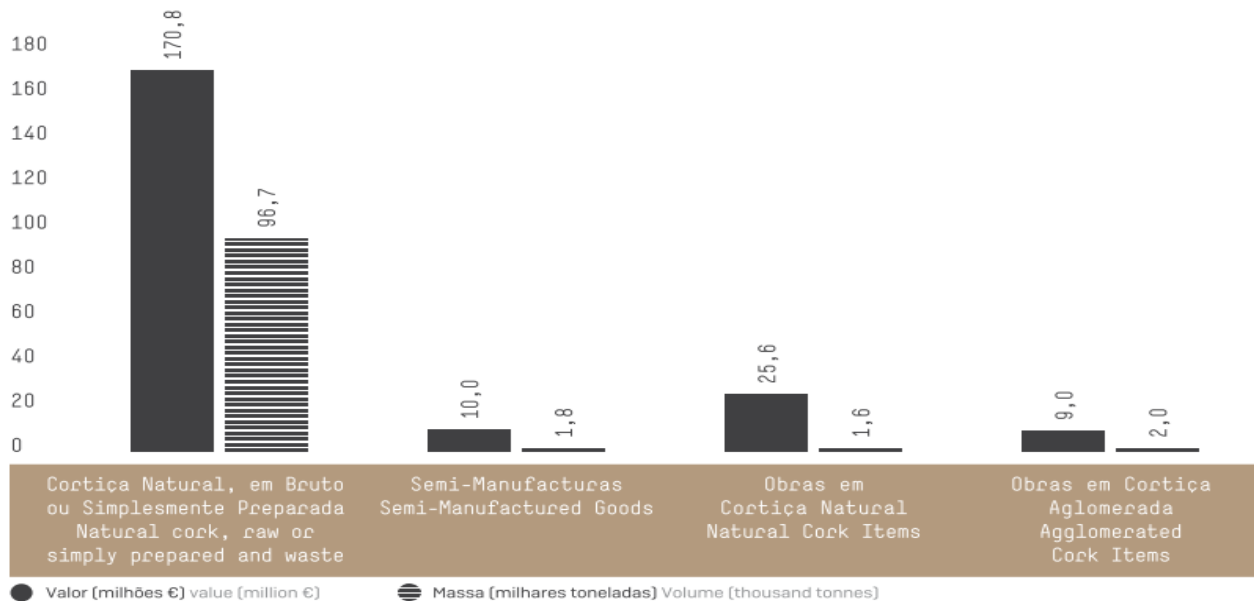
## 7.1.2 Wine market:

By monitoring the wine market, Spain continues to lead in the vineyard with 969000 hectares, followed by France with 793000 ha. Recently, results showed that the European vineyard dived 1.6% between 2017 and 2018 causing a decrease in the global wine production by 17%.
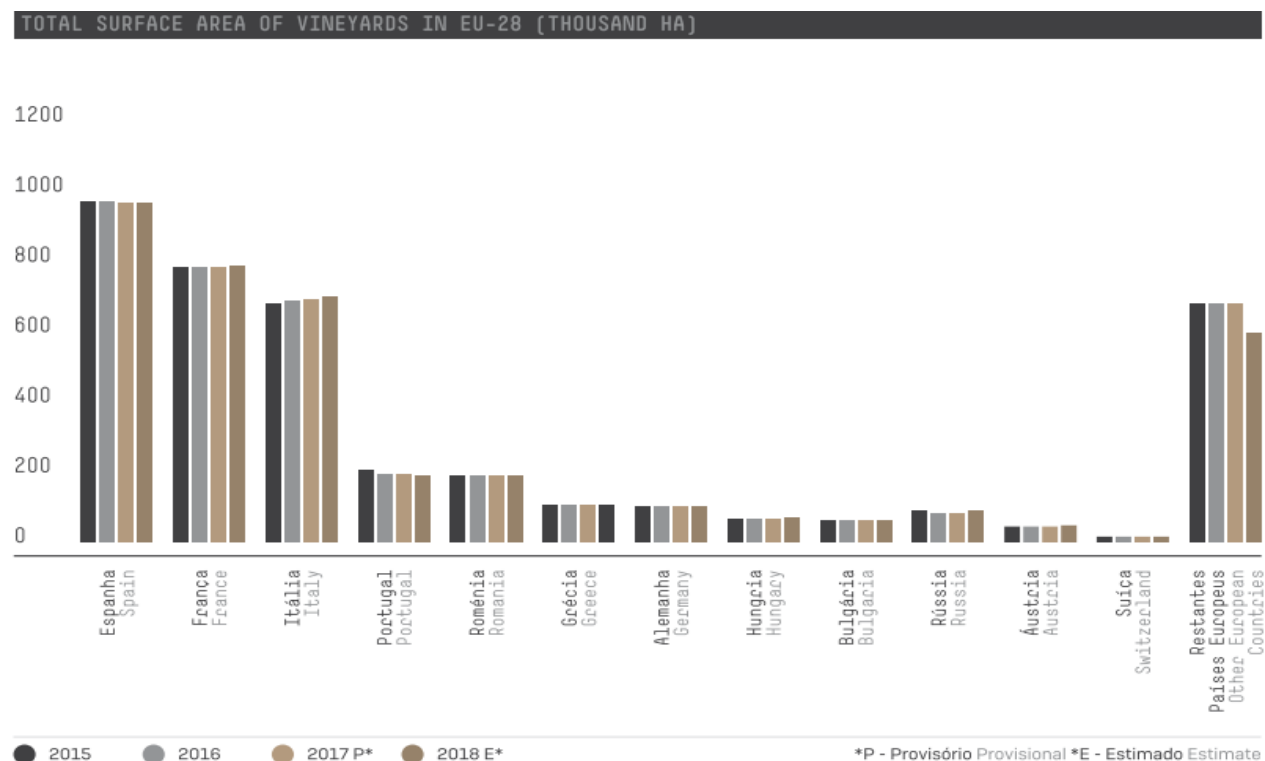


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However, vineyards were compensated outside of the European Union since China possess around 875000 ha followed by 439000ha in the USA.

Regarding wine production, Italy is the main wine manufacturer in the world with 54.8M hl and France comes next with 49.1M hl. At the same time, Hungary showed the highest jump in Europe with 44% in 2018. Moving outside the continent, a stunning growth of 36% in Chile due to its wine tradition and it soared to occupy 6th place worldwide.

The largest wine exporter regarding the amount is Spain, which recorded 21M hl in 2018 where it diminished 8.7% compared to 2017. Besides, France stands as the biggest regarding value with 9336 M€ and it is 2.8% compared to 2017 with a preference for the bulk wine.

In the last 10 years, sales grew gradually to reach 31000 M€ in 2018 due to the upsurge in wine consumption and a stable average price per litre. Hence, a 0.2% growth in the wine amount purchased by the major wine importer the USA, then the UK with a 1.2% in 2018. Regarding quantity Germany exceed others with 14.5 m hl and the UK is ranked second with 13.2 m hl.

Wine consumption decreased between 2017 and 2018 by around 1M hl, whereas production surged by 43M hl. Therefore, the difference between both variables increased compared to the previous year and amounts to 46M hl, which is a negative difference of 15.8%.
Furthermore, the global wine consumption is driven by the USA, France, and Italy with 33 M hl, 26.8 M hl and 22.4 M hl, respectively.



THE WORLD'S MAIN WINE EXPORTING COUNTRIES (MILLION €)

350

300

279 266 257 264 298 278 283 268 269 273 264 268 258 290 270 275 270 249 292

250

226 228 230 237 237 239 243 250 250 244 243 242 243 243 241 243 244 246 246

200

150

2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018

Provisório
Provisional

Estimado
Estimate

● Produção de vinho Wine production          ● Consumo de vinho Wine consumption

6500

5500

4500

3500

2500

1500

500
0

Reino Unido
United Kingdom

Alemanha
Germany

Países Baixos
Netherlands

Bélgica
Belgium

Rússia
Russia

França
France

EUA
USA

China
China

Canadá
Canada

Japão
Japan

● 2016          ● 2017 P*          ● 2018 E*

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Volume | 65,0 | 68,0 | 72,0 | 77,0 | 79,0 | 84,0 | 89,0 | 90,0 | 88,0 | 96,0 | 103,3 | 103,3 | 101,6 | 103,8 | 105,5 | 104,4 | 107,9 | 108,0 |
| Valor | 12 | 15 | 15 | 15 | 16 | 18 | 20 | 20 | 18 | 21 | 23 | 25 | 26 | 26 | 28 | 29 | 30 | 31 |

Provisório / Provisional

Estimado / Estimate

● Volume (milhões hectolitros) Volume (million hectolitres)   ● Valor (mil milhões de €) Value (billion €)

THE WORLD'S MAIN WINE EXPORTING COUNTRIES (MILLION HL)



Espanha / Spain · Itália / Italy · França / France · Alemanha / Germany · Portugal / Portugal · Chile / Chile · Austrália / Australia · África do Sul / South Africa · EUA / USA · Argentina / Argentina · Nova Zelândia / New Zealand · Resto do Mundo / Rest of the World

● 2016   ● 2017 P*   ● 2018 E*

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32
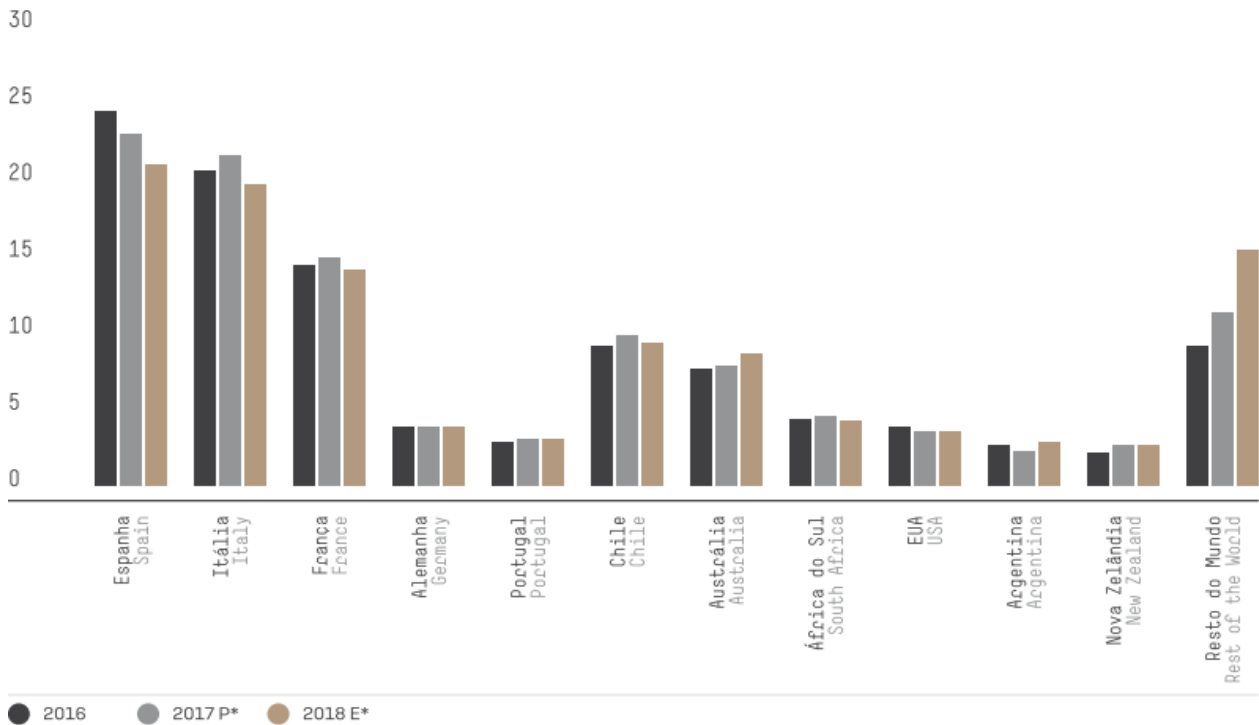
# 8 Corticeira Amorim Overview:

## 8.1 Profile:

Corticeira Amorim SGPS, SA is a family holding Portuguese company that was established as a wine cork stoppers factory in Vila Nova de Gaia in Porto then it decided to expand and take a new dimension in the cork industry. The company headquartered is in Mozelos Portugal.

It is considered the most international Portuguese company and the world largest cork producer since it operates on 5 continents in over one hundred countries. Furthermore, it adopts a strategy of contributing to the economy and makes cork viable by applying a unique example of the green economy in preserving cork oak forest.

What makes CA the leader of the cork industry is its sustainability since it invested in innovation and R&D to apply cork in many aspects of life such as (wine, sustainable construction, aeronautics and aerospace, transport, fashion, design, sport, and endless applications in high profile world projects). Therefore, it established five business units (cork stoppers, raw material, floor & wall covering, composite cork, and insulation). The chart presented below shows those units.

Corticeira Amorim is listed in the Euronext Lisbon stock exchange and traded in PSI20 which covers the best 20 Portuguese companies. Furthermore, its market cap reached 1500.24 M in 2020 and it has 50% of the national exports with 4200 employees. Corticeira Amorim has supplied more than 4357 job positions in 28 countries and increased forest employees by 51%. It contributes to the Portuguese economy by a multiplier of 2.17x, with a net value of participation of 1,175M€ annually.

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## 8.2 History:

Ancient Egyptians and Roman civilization used cork in their daily life a long time before Antonio Alves Amorim established the first cork stoppers in Portugal in 1870. After that, he joined his brothers and created officially the Amorim & Irmãos with a share capital of 90000 Escudos.

In 1935 the company made a pioneering initiative where it introduced a staff refectory that offered daily food and medical services to its labour force.

Although CA is the leader of the cork industry before 1963 it was exporting stoppers and raw materials until it established an industrial unit to fabricate cork granules and agglomerates from its waste. Then in 1978, it entered the floor covering and parquet market by creating Amorim Revestimentos. SA. It fulfilled this business unit in 1997 and 2007 when it entered the insulation with Amorim Isolamentos, SA and created the Amorim cork composites, respectively.

All the company`s strategies needed more capital and success, thus in 1988, CA went public to be listed in the Lisbon stock exchange.

CA was always keen on keeping budget to maximize profit, therefore in 2002, it merged many factories that were scattered across the country to reduce costs and standardize production. After that, the year 2010 came with an emphasis that without research and development the company

would never succeed and survived the different crises. For that reason, it created a department of R&D to handle the process from cork oak forest to final products.

## 8.3  Shareholder structure:

Amorim Investimentos Participações, SGPS, SA is half held by Heirs of Americo Ferreira de Amorim family and the other half by Antonio Ferreira de Amorim family.

Amorim Investimentos is holding 50.1% of Corticeira Amorim, SGPS, SA where Americo has 10.32% and Antonio has 10.09%, therefore the family of Americo has more votes in management.

The rest of the shares 28.59% are the market free-float.
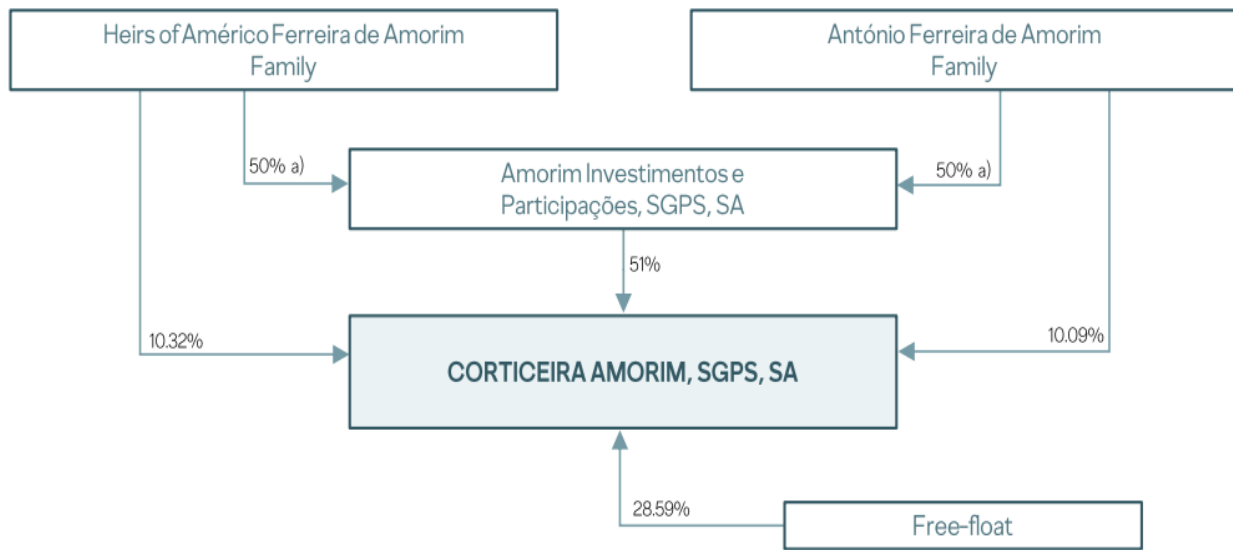


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## 8.4  Business Units:

### 8.4.1  -Raw materials:

This business unit undertakes the conservation of the cork oak forest from pests and diseases. Where CA allocates part of its capital in research and innovation to incubate the genome for a

better version of cork to curb future harm to trees. Furthermore, CA is developing an irrigation network to deliver water to each tree in the forest. It has obtained a diversification strategy to hedge against the risk specific regions of cork oak forests.

Corticeira Amorim established a new project called forest intervention project FIP to concentrate on quality & quantity by enhancing the production of optimal cork raw materials and to lead the sector and dominate the cork industry.

## 8.4.2 -Cork stoppers:

"A life cycle that begins in the oak forest, goes through a technical process and ends in a bottle of wine". Carole André. Cheval Blane Saint Emilion.

Over 150 years of dominance on the cork stoppers market where CA has maintained its trust with wine producers all over the world. The company launched pioneering technologies such as the Helix wine packaging system, Ndtech analysis technology and Twintop or Neutrocork to guarantee quality and consistency and to detect cork TCA rapidly because it affects the wine smell and taste, then taking off the infected stoppers. Moreover, it is incorporated in production and distribution in various countries with a wine tradition to meet the increasing demand for wine, champagne and spirits stoppers. As well, it revolutionized this market by contributing to the combination between cork and glass; therefore, allowing the bottle to be opened without a corkscrew.

## 8.4.3 -Floor and wall covering:

Corticeira Amorim is considered the leader in manufacturing and distributing the floor and wall products of cork. Where it combined traditional with modern technological approaches to provide quality and advanced goods in more than 70 countries. Recently, CA has implemented a sustainable and functional project that blends waterproof cork in the flooring industry by using a Press-fit compression system technology. Therefore, it improves the coating fabrication and enhances cork attributes such as silence, resilience, thermally insulating and shock resistance.

### 8.4.4 -Composite cork:

Exploiting the recyclable cork materials and the non-used cork stoppers in many life aspects such as (aerospace, panels, composites, automobiles, electric power and construction) transferred the firm to a higher level of sustainability. As a result, it expanded its client's base to approach the European Space Agency ESA, fashion designers, Lisbon Cruise Terminal with the combination between cork and concrete to obtain a more functional product, modern Meter by Siemens that attained a lighter product after using cork and the maritime industry for a cleaner ocean and less energy consumed.

### 8.4.5 -Insulation:

Corticeira Amorim established the insulation Business Unit to meet the necessity of acoustic and thermal insulation. Thus, it guarantees conservation of environmental and professional performance.

It has conducted many projects to thrive this BU such as first the Portuguese pavilion in Hanover and Shanghai, second the interaction with Building Green (the largest North American for sustainable product construction), and it is considered the main product of this BU portfolio, and third CorkSorb to control and clean the hydrocarbon spills in rivers, lakes, seas, and oceans.

Without a doubt, cork stands out against competitors because it is solid, convenient, 100% natural recyclable and requires less energy to be fabricated.

## 8.5 -Performance:

### 8.5.1 -Profitability

The firm's business was hit by COVID-19 due to lifting transportation costs and non-cork raw materials prices. However, Amorim's operations and factories showed resilience and robustness which was inferred to geographic diversification.

CA's sales have been growing for more than 10 years to reach 781.6M€ in 2019. Nonetheless, revenues shrunk to 740.1M€ in 2020 due to unprecedented circumstances which hit the firm's exports. Therefore, the Insulation cork and Raw materials sales had the highest impact on the

firm's sales, where they altered by -12.8% and -12.1%, respectively in 2020 because of lower activity levels and cork prices. Moreover, Cork stoppers decreased by 5.7% due to the drop in wine consumption and especially the sparkling wine segment. Floor and wall covering revenues improved by 3.2% due to the surge of demand in Germany, Portugal, and North America compared to Russia, France, Italy, and Spain. Composite cork business unit has launched new products such as sports surface children playground, however, revenues fell by 8.9% in 2020.

EBITDA has been changing upwardly for many years but it dropped to 122.5M€ in 2020 due to lower cork prices. Furthermore, Net income has been rising at a considerable pace with a 41.89% 10Y average growth rate but it decreased in 2020 to 64.3M€ and retained earnings grew to 416.7 M€ but its payout ratio decreased to 32.8% due to the adverse market conditions.

Besides, invested capital decreased to 755.1M€ due to the decline in working capital to 406.6M€ but the return in invested capital (ROIC) fell to 9.9% due to the contraction in net operating profit after tax (NOPAT). ROA swelled dramatically until 2016 and fell slightly to 7.65% in 2019, 6.4% in 2020. As well, ROE was moving aside from ROA but at higher levels reaching 15.36% in 2019 and 12.15% in 2020.
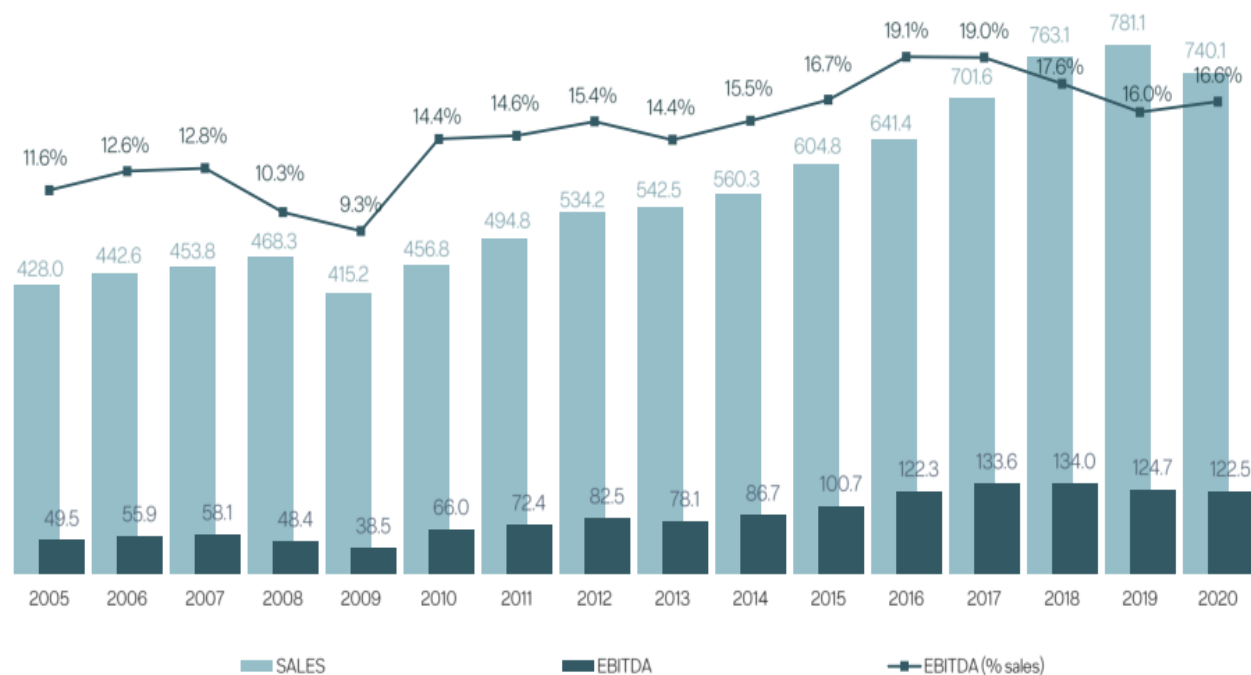
**Sales by geographic areas**

6.4%

18.7%

58.5%

5.1%

6.0%

3.9%

1.4%

■ EU* ■ USA ■ Rest of America ⊞ Austrálasia ■ Portugal ⊞ Rest of Europe ■ Africa

**Sales by currency**

66.5%

20.3%

3.4%

0.9%

2.5%

1.8%

2.0%

2.5%

■ EUR ⊞ USD ■ CLP ⊞ DKK ■ ZAR ⊞ AUD ■ GBP ■ Others
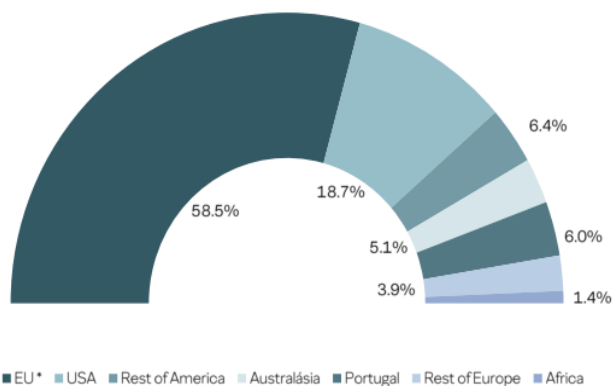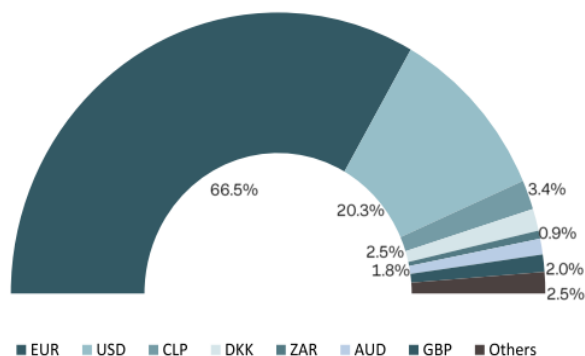
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As noticed in the previous chart that the EU consumes 58.5% of CA's sales, then the USA follow with an 18.7% that is 1.3% higher than 2019. As well, Argentina scored a higher cork stoppers sales compared to other regions. Additionally, the devaluation of the USD had an impact on the company's revenues by 8.5M€.

## 8.5.2 -Liquidity

The inventory turnover has maintained a downward trend since 2010 reaching 0.92 in 2020 which is lower than the 10Y average of 1.13. Meaning that the firm is facing obstacles in selling its products in the market. Therefore, the DIO was expanding gradually until it peaked at 398.2 in 2020. Besides, the Account Receivable turnover ratio has stayed flat with a slight rise touching 4.59 in 2019 and 4.53 in 2020. This ratio surpassed the 10Y average of 4.48 and this refers to the effectiveness in collecting account receivables from its debtors. Moreover, the DSO in 2020 was 80.82 that is lower than the 10Y DSO average of 81.58 which impacts the CA's productivity in cumulating the account receivables in a short time. Furthermore, the cash conversion cycle reached 338.8 in the same year and exceeded the 10Y average, thus, CA is less efficient in converting its inventories and account receivable into cash than before, which hurts the company's competitiveness.

The current ratio sustained a gradual escalation in the last 10 years peaking at 2.5 in 2020. Also, the quick ratio and the cash ratio reached 0.89 and 0.27 in 2020, where they exceeded the 10Y average of 0.62 and 0.09, respectively.

### 8.5.3  -Solvency

The debt to equity ratio has been decreasing gradually since 2010 and recorded a 10Y average of 37.81% and it shrank in 2016 and returned to increase slightly in 2020 to 31.35%. As well, the debt to capital peaked in 2012 at 35.23% and dropped dramatically to 23.88% in 2020. The debt to assets ratio has been moving in the same pattern for the last 10 years where it ended in 2020 with 17.99% where it underperformed 18.76% of the 10Y average. Hence, it is notable that the indebtedness of CA is robust where the Altman Z-score peaked in 2016 as debt bottomed with a 4.28 then it contracted to 3.80 in 2020. Furthermore, net debt/EBITDA and gearing underperformed the last year which ended at 0.9 and 19.2% in 2020 and the EBITDA/Net interest ratio rose to 105.7 due to the upsurge in EBITDA and the decrease in the cost of issuing new debt.

# 9  Valuation:

Corticeira Amorim is a mature company with consistent growth. Therefore, the DCF-FCFF method will be implemented to project the future cash flow from (2021 to 2025) based on the last five years. Whereas the sum of the parts method is the optimal one to assess such a company, but CA does not provide a detailed financial statement for each business unit. Moreover, the financial multiples approach will follow the former to support the valuation process by comparing the EV/EBITDA and P/E ratios of CA with its peer.

## 9.1  Valuation Assumptions:

### 9.1.1  Revenues:

Corticeira Amorim's sales are expected to pursue expanding at its average growth rate before 2020 which was 3%. This rate was obtained after deducting the forex exchange (FX) impact on revenues due to the depreciation of the USD. Moreover, the upward trend of CA's sales was taken into consideration despite the shrunk in 2020 due to the contagious pandemic.

| | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|
| Revenue | 641.4 | 701.6 | 763.1 | 781.1 | 748.6 |

| | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|
| **Revenue** | **771.1** | **794.2** | **818.0** | **842.6** | **867.8** |

*Bloomberg*

## 9.1.2  COGS:

The company perceived that the more it devotes to machines the higher the productivity and this will be reflected in higher margins. Taking this into consideration, a range between 0% and 1.5% margin gain was assumed. Additionally, the historical record of margin swung around 50% for more than 7 years and it is seen to grow slightly due to technology application**.**

| | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|
| **Cost of Goods Sold** | 386 | 393 | 401 | 411 | 421 |
| **Gross Margin** | 50.00 | 50.50 | 51.00 | 51.20 | 51.50 |
| **Gross Profit** | 385.529 | 401.0658 | 417.1879 | 431.3886 | 446.9338 |

*Bloomberg*

## 9.1.3  Operational Items and EBITDA:

The operational items were forecasted in relative terms since these items are deeply associated with the volume of sales. Thus, they are anticipated to keep the same percentage over sales in the forecasted period. Bear in mind that EBITDA is maintaining a steady rise and it is expected to follow the previous years.

| | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|
| Salaries Wages and Employee Benefits | 142.1956 | 146.4615 | 150.8553 | 155.381 | 160.0424 |
| Write-Down/Impairment of Assets | -0.66435 | -0.68428 | -0.70481 | -0.72595 | -0.74773 |
| Other Purchases And External Charges | 126.896 | 130.7029 | 134.624 | 138.6627 | 142.8226 |
| Other Operating Expenses | 6.95353 | 7.162136 | 7.377 | 7.59831 | 7.826259 |
| Other Operating Income | 13.91427 | 14.3317 | 14.76165 | 15.2045 | 15.66063 |
| **EBITDA - IS** | 124.0625 | 131.7553 | 139.798 | 145.6771 | 152.6509 |

### 9.1.4 Depreciation and Amortization:

Both tangible and intangible assets have been the company's main investments since it is keen on innovating and creating new ideas to dominate the cork market. Therefore, depreciation and amortization are projected to rise because they are correlated with tangible and intangible assets.

|  | **2021** | **2022** | **2023** | **2024** | **2025** |
|---|---|---|---|---|---|
| **Depreciation and Amortization** | 37.595 | 38.72285 | 39.88454 | 41.08107 | 42.3135 |
| **Operating Income (Loss) EBIT** | 86.46747 | 93.03244 | 99.91349 | 104.596 | 110.3374 |

### 9.1.5 Taxes:

According to the KPMG report on taxes, the base tax equals 21% of EBIT. However, there is an incremental factor depending on the profit volume. In the case of Corticeira Amorim SGPS, S.A., the incremental factor equals 7%, totalling 28% of the effective tax rate since its profit is over 35 million euros.

|  | **2021** | **2022** | **2023** | **2024** | **2025** |
|---|---|---|---|---|---|
| Tax rate | 28.00% | 28.00% | 28.00% | 28.00% | 28.00% |
| Operating income after taxes | 62.26 | 66.98 | 71.94 | 75.31 | 79.44 |

### 9.1.6 Working capital:

It is notable that Corticeira Amorim keeps healthy coordination between cash in and cash out in the short term. Where its capital structure remained constant for a long time which points to a vigorous balance sheet the company has. Additionally, it managed to meet its short-term obligations with no delays, and this was taken into consideration for the working capital

estimation for the next 5 years. Also, it was assumed that the micro and macroeconomic conditions will remain stable.

| | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|
| **Total Current Assets** | 657.86 | 677.5958 | 697.9236 | 718.8614 | 740.4272 |
| **Total Current Liabilities** | 267.1954 | 275.2113 | 283.4676 | 291.9716 | 300.7308 |
| **working capital** | 390.665 | 402.385 | 414.456 | 426.890 | 439.696 |
| **NWC** | 11.379 | 11.720 | 12.072 | 12.434 | 12.807 |

*Bloomberg*

## 9.1.7  Capex:

CA provides neither much data regarding its investments in the cork sector nor the impact on the efficiency of both tangible and intangible assets. Therefore, it is expected to retain its level of investment assigned to revenues, based on the assumption that with higher sales, the more the company will invest indeed as long Corticeira Amorim is making a profit. Consequently, the optimal percentage of revenues of 7% (which was the 5-year average) was executed for the forecasted period.

| | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|
| **Capital Expenditures** | -53.97 | -55.59 | -57.26 | -58.98 | -60.75 |

*Bloomberg*

## 9.1.8  Weighted Average Cost of Capital:

### 9.1.8.1  Cost of Equity:

For the sake of pursuing the FCFF method, it was needed to analyze the WACC, initially by obtaining the cost of equity as it is shown below. Therefore, every element will be scrutinized in the following chapters.

| | |
|---|---|
| **Risk-free rate** | **1.431%** |
| **Levered Beta** | 0.697 |

| | |
|---|---|
| **PSI20 20Y average return** | 6.75% |
| **country risk premium** | 2.13% |
| **D/E ratio 5Y average** | 28.3695% |
| **tax rate** | 28.00% |
| **unlevered beta** | 0.578778408 |
| **cost of equity** | 6.6396% |

*Bloomberg*

### 9.1.8.2 Risk-free rate:

The proxy used for the risk-free asset was the average monthly 10-year German Bond. Since the company is Portuguese and international, it is plausible for the case of Corticeira Amorim. Thus, the risk-free rate is 1.431%, according to the German bond yield data as of December 2020.

### 9.1.8.3 Risk premium:

The market risk premium of 6.75% employed in the result was based on an investigation by KPMG. Where, it analyses the historical implied equity returns of many stock indices such as (the S&P 500, FTSE100, STOXX 600 and AEX) and the yield of long-term bonds of highly developed countries (UK, Germany, U.S. and Netherlands).

Besides the market risk premium, the country risk premium for Portugal of 2.13% was combined to add credibility to the cost of equity fundamentals.

### 9.1.8.4 Beta:

As it was mentioned in the literature review, there are many ways to obtain the unlevered beta for the cost of equity. However, the fundamental method was chosen since all the necessary data are approachable.

| | |
|---|---|
| **Levered Beta** | **0.697** |

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| | |
|---|---|
| **D/E ratio 5Y average** | 28.3695% |
| **tax rate** | 28.00% |
| **unlevered beta** | 0.578778408 |

*Bloomberg*

### 9.1.8.5 Cost of debt:

Damodaran's (2002) recommendations were followed to assess the cost of debt by summing the risk-free rate to the default spread associated with the company's coverage ratio.

According to the same author, considering a coverage ratio above 12.5 thus, the default spread of CA should be 0.75%. The table below shows how the cost of debt was determined.

| | |
|---|---|
| **Risk free rate** | **1.431%** |
| **Default spread** | 0.75% |
| **pre-tax cost of debt** | 2.181% |
| **after-tax cost of debt** | 1.5705% |

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### 9.1.8.6 Debt to capital / Equity to capital:

Corticeira Amorim's capital structure has remained constant in time, with a little decline in debt, thus, it is unlikely to alter the combination between debt and equity as the company finds it the most suitable considering its activities. Hence, the current capital structure was applied based on the 5 years average of the debt-to-equity ratio.

| | |
|---|---|
| **EQUITY/CAPITAL** | 78% |
| **DEBT/CAPITAL** | 22% |

*Bloomberg*

### 9.1.8.7 WACC:

In order to perform a DCF valuation, the WACC is a necessary variable to be determined. The obtained discount rate equals 5.52%, which is a relatively low cost of capital, explained by the the strong financial state of Corticeira Amorim.

## 9.1.9 FCFF:

At this stage, the elements required were estimated to execute the DCF valuation. The first part requires verifying the free cash flow to the firm for each forecasted period. The second part contains clarifying the WACC to assess the present value of the FCFF. Where the third part consists of adding up all the present values of the FCFF.

| | 2021F | 2022F | 2023F | 2024F | 2025F |
|---|---|---|---|---|---|
| **EBIT (Operating Results)** | 86.47 | 93.03 | 99.91 | 104.60 | 110.34 |
| **Tax rate** | 28.00% | 28.00% | 28.00% | 28.00% | 28.00% |
| **Operating income after taxes** | 62.26 | 66.98 | 71.94 | 75.31 | 79.44 |
| **Depreciation and Amortization** | 37.595 | 38.72285 | 39.88454 | 41.08107 | 42.3135 |
| **Working capital** | 390.665 | 402.385 | 414.456 | 426.890 | 439.696 |
| **NWC** | 11.379 | 11.720 | 12.072 | 12.434 | 12.807 |
| **Capital Expenditures** | -53.97 | -55.59 | -57.26 | -58.98 | -60.75 |
| **FCF** | 57.26 | 61.83 | 66.63 | 69.84 | 73.81 |

*Bloomberg*

## 9.1.10 Terminal value:

The value of CA's cash flow is expected to grow at a perpetual growth rate. This rate was achieved by summing the weighted average of sales growth in all regions around the world. Therefore, the company is expected to grow at a steady rate of 2.2% which is higher than the expected inflation rate in Portugal of 1.8% in 2025. Accordingly, a terminal value of 1,404.67 M€ was achieved as the value of the company after 5 years discounted at WACC.

| Region | 3Y Growth average | weighted average |
|---|---|---|
| European Union | 3.013% | 1.763% |
| United States | 2.214% | 0.414% |
| Portugal | 5.982% | 0.359% |
| Rest of the Americas | -2.268% | -0.145% |
| Australia & Asia | -2.952% | -0.151% |
| Rest of Europe | 0.423% | 0.017% |
| Africa | -3.364% | -0.047% |
| SUM | | 2.2% |

*Bloomberg*

## 9.1.11 Enterprise value and equity value:

The equity value was found after deducting the net debt from the enterprise value which was acquired by summing up the present values of the cash flows including the terminal value. Afterwards, the DCF method has achieved €11.85 per share after dividing the firm's equity value by the number of shares outstanding. Consequently, according to market value which was (€11.4 as of December 31st, 2021), the company is undervalued.

| | |
|---|---|
| ENTERPRISE VALUE | € 1,686.99 |
| net debt | € 110.72 |
| equity value | € 1,576.28 |
| shares outstanding | 133.00 |
| equity value per share | € 11.85 |

*Bloomberg*

## 9.2  Sensitivity analysis:

To execute an equity valuation, lots of assumptions must be made to replicate the truth of Corticeira Amorim, concerning both internal and external factors and variables. However, those assumptions may not be the perfect indication of reality. Therefore, the sensitivity analysis turns to be beneficial so that investors can comprehend the influence of changes in different fundamentals on the share price of CA. As shown below a factor of 0.25% is chosen based on the logic that both Corticeira Amorim and the cork industry are currently and historically stable.

| | | Perpetual Growth Rate | | | | | |
|---|---|---|---|---|---|---|---|
| | € 11.85 | 1.70% | 1.95% | 2.20% | 2.45% | 2.70% | 2.95% |
| | 5.02% | € 12.13 | € 13.01 | € 14.05 | € 15.29 | € 16.80 | € 18.66 |
| | 5.27% | € 11.24 | € 11.99 | € 12.86 | € 13.89 | € 15.11 | € 16.60 |
| wacc | 5.52% | € 10.47 | € 11.11 | € 11.85 | € 12.71 | € 13.72 | € 14.93 |
| | 5.77% | € 9.79 | € 10.35 | € 10.98 | € 11.71 | € 12.56 | € 13.56 |
| | 6.02% | € 9.19 | € 9.68 | € 10.23 | € 10.85 | € 11.58 | € 12.42 |
| | 6.27% | € 8.65 | € 9.08 | € 9.56 | € 10.11 | € 10.73 | € 11.44 |

## 9.3  Relative valuation:

The fact that DCF is the best valuation method was revealed in many sources. Nevertheless, the DCF's result should be tested with other valuation approaches as it might involve misassumptions regarding the cost of capital, growth rates or other notions. Therefore, the relative valuation section is committed to assessing the consistency of the DCF estimations. This project will present two separate multiples to achieve a price range and compare it with the DCF valuation price.

Bear in mind that Corticeira Amorim stands as the best in the cork industry, thus, no comparable companies are operating in the same industry. Hence, the peer group was achieved by considering different industries and variables such as sales, profit, growth, and capital structure. Additionally, Bloomberg was used mainly to obtain the peer group of CA to perform the relative valuation on a standard basis.

### 9.3.1 EV/EBITDA:

Starting with the peer's median of EV/EBITDA multiple, the enterprise value of Corticeira Amorim of 2020 was obtained by multiplying the company's EBITDA with the multiple. Therefore, the share price of 8.19 € resulted after subtracting net debt from EV and dividing by the numbers of shares outstanding. This represents a downside of -28% when compared to the market value of CA as of 31/12/2020.

| Company | EV/EBITDA |
|---|---|
| **Corticeira Amorim** | 12.21 |
| **Stella-Jones INC** | 10.14 |
| **DURATEX SA** | 9.93 |
| **POTLATCHDELTIC CORP** | 7.74 |
| **UFP INDUSTRIES** | 9.79 |
| **LOUISIANA-PACIFIC CORP** | 4.82 |
| | |
| **Median** | 9.79 |

*Bloomberg*

### 9.3.2 P/E Ratio:

Additionally, the peer's Median was multiplied by Corticeira Amorim's net income of 2020. This resulted in an implied equity value of 812.44 M€ which was divided by the number of outstanding shares to result in € 6.11. This price represents a downside of -46% comparatively to the actual share close price of €11.4 as of December 2020.

| Company | P/E |
|---|---|
| **Crticeira Amorim** | 23.35 |
| **Stella-Jones INC** | 12.63 |

| | |
|---|---|
| **DURATEX SA** | 27.96 |
| **POTLATCHEL CORP** | 11.34 |
| **UFP INDUSTRIES** | 14.47 |
| **LOUISIANA- PACIFIC CORP** | 8.29 |
| | |
| **Median** | 12.63 |

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# 10 Conclusion:

This project delivered the valuation of the international Portuguese company Corticeira Amorim SGPS, SA to define a target value per share of the firm, and thus it can be recommended as either a decent investment to buy or hold according to DCF (or sell according to the relative valuation).

Mainly for this project, two approaches were followed. First, DCF valuation, using the FCFF method, which is the method that makes more sense since Corticeira Amorim is a mature company its capital structure has showed a constant pattern in the past years. Hence, the estimated future cash flows were discounted at a rate that mirrored the uncertainty for both equity and debt holders. Secondly, the relative valuation, which is concentrated on discovering the range of CA's values per share through a comparison with its peer group based on market valuation, capital structure, profit, and industry.

Corticeira Amorim is considered a reference in the cork sector. It has been actively monitoring and proving for a long history that it owns a strong balance sheet with a low financing risk. Additionally, it is creating value to shareholders as this project showed previously through analyzing and assessing the company's fundamentals to obtain a plausible share value.

The DCF method developed a price per share of € 11.85 which is higher than the firm value as of 31/12/2020. Hence CA is considered slightly undervalued, and it has the potential to raise its market value by € 11.4. Notwithstanding, the relative valuation multiples presented a range between € 6.11 to € 8.19 which point that CA is overvalued compared to its market price.

Since Corticeira Amorim is the leader in its sector and operates in various business units. Thus, there are no real competitors to compare with to deliver reliable multiple valuations. The project suggests Corticeira Amorim as an investment opportunity to buy and hold.

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# 12 Appendixes

## 12.1 Annex A (Income statement)

| | 2016 | 2017 | 2018 | 2019 | 2020 | 2021F | 2022F | 2023F | 2024F | 2025F |
|---|---|---|---|---|---|---|---|---|---|---|
| Revenue | 641.41 | 701.61 | 763.12 | 781.06 | 748.60 | 771.06 | 794.19 | 818.02 | 842.56 | 867.83 |
| Cost of Goods Sold | 294.35 | 333.03 | 408.78 | 398.33 | 364.70 | 385.53 | 393.12 | 400.83 | 411.17 | 420.90 |
| Gross Profit | 347.06 | 368.58 | 386.50 | 387.40 | 376.40 | 385.53 | 401.07 | 417.19 | 431.39 | 446.93 |
| - Operating Expenses(total) | -238.67 | -269.52 | -283.75 | -297.83 | -290.40 | -299.11 | -308.09 | -317.33 | -326.85 | -336.65 |
| Salaries Wages and Employee Benefits | 113.29 | 125.63 | 134.24 | 139.90 | 138.05 | 142.20 | 146.46 | 150.86 | 155.38 | 160.04 |
| Write-Down/Impairment of Assets | 0 | 0 | -0.07 | 1.19 | -0.65 | -0.66 | -0.68 | -0.70 | -0.73 | -0.75 |
| Other Purchases And External Charges | 103.00 | 116.52 | 124.14 | 124.75 | 123.20 | 126.90 | 130.70 | 134.62 | 138.66 | 142.82 |
| Other Operating Expenses | 5.66 | 10.11 | 5.76 | 6.85 | 6.75 | 6.95 | 7.16 | 7.38 | 7.60 | 7.83 |
| Other Operating Income | 9.60 | 12.35 | 11.60 | 10.05 | 13.51 | 13.91 | 14.33 | 14.76 | 15.20 | 15.66 |
| EBITDA - IS | 134.71 | 128.66 | 134.03 | 124.75 | 122.55 | 124.06 | 131.76 | 139.80 | 145.68 | 152.65 |
| Depreciation and Amortization | 26.31 | 29.60 | 31.28 | 35.18 | 36.50 | 37.60 | 38.72 | 39.88 | 41.08 | 42.31 |
| Operating Income (Loss) EBIT | 96.04 | 104.00 | 102.71 | 89.55 | 86.00 | 86.47 | 93.03 | 99.91 | 104.60 | 110.34 |
| - Non-Operating (Income) Loss | -46.56 | 3.15 | 0.70 | -1.87 | 5.85 | 6.03 | 6.21 | 6.39 | 6.59 | 6.78 |
| - Income Tax Expense (Benefit) | 37.88 | 24.26 | 19.39 | 11.95 | 11.50 | 11.85 | 12.20 | 12.57 | 12.95 | 13.33 |
| Income (Loss) Incl. MI | 104.71 | 76.58 | 82.61 | 79.46 | 68.61 | 68.59 | 74.62 | 80.95 | 85.06 | 90.22 |
| - Minority Interest | 2.01 | 3.55 | 5.22 | 4.51 | 4.29 | 4.41 | 4.55 | 4.68 | 4.82 | 4.97 |
| Net Income, GAAP | 102.70 | 73.03 | 77.39 | 74.95 | 64.33 | 64.18 | 70.08 | 76.27 | 80.24 | 85.25 |

## 12.2 Annex B (Balance sheet)

| Total Assets | 2016 | 2017 | 2018 | 2019 | 2020 | 2021F | 2022F | 2023F | 2024F | 2025F |
|---|---|---|---|---|---|---|---|---|---|---|
| + Cash, Cash Equivalents & STI | 51.12 | 17.004 | 21.695 | 22.144 | 70.266 | 72.374 | 74.545 | 76.782 | 79.085 | 81.458 |
| + Accounts & Notes Receiv | 141.876 | 167.604 | 174.483 | 165.484 | 161.36 | 166.201 | 171.187 | 176.322 | 181.612 | 187.060 |
| + Inventories | 268.691 | 359.141 | 406.09 | 397.84 | 364.11 | 375.033 | 386.284 | 397.873 | 409.809 | 422.103 |
| + Raw Materials | 153.391 | 212.042 | 226.922 | 218.654 | 206.702 | 212.903 | 219.290 | 225.869 | 232.645 | 239.624 |
| + Work In Process | 15.126 | 24.91 | 31.736 | 34.431 | 21.757 | 22.410 | 23.082 | 23.774 | 24.488 | 25.222 |
| + Finished Goods | 103.077 | 120.14 | 154.091 | 152.247 | 144.04 | 148.361 | 152.812 | 157.396 | 162.118 | 166.982 |
| + Other Inventory | -2.903 | 2.049 | -6.659 | -7.492 | -8.389 | -8.641 | -8.900 | -9.167 | -9.442 | -9.725 |
| + Other ST Assets | 33.463 | 51.476 | 47.722 | 51.846 | 42.963 | 44.252 | 45.579 | 46.947 | 48.355 | 49.806 |
| + Taxes Receivable | 4.214 | 13.297 | 8.915 | 11.773 | 4.838 | 4.983 | 5.133 | 5.287 | 5.445 | 5.609 |
| + Misc ST Assets | 29.249 | 38.179 | 38.807 | 40.073 | 38.125 | 39.269 | 40.447 | 41.660 | 42.910 | 44.197 |
| Total Current Assets | 495.15 | 595.225 | 649.99 | 637.314 | 638.699 | 657.860 | 677.596 | 697.924 | 718.861 | 740.427 |
| + Property, Plant & Equip, Net | 197.454 | 227.906 | 259.433 | 284.638 | 287.918 | 296.556 | 305.452 | 314.616 | 324.054 | 333.776 |
| + Property, Plant & Equip | 649.991 | 720.965 | 781.162 | 727.002 | 853.479 | 879.083 | 905.456 | 932.620 | 960.598 | 989.416 |
| - Accumulated Depreciation | 452.537 | 493.059 | 521.729 | 546.49 | 565.561 | 582.528 | 600.004 | 618.004 | 636.544 | 655.640 |
| + LT Investments & Receivables | 7.1 | 5.678 | 7.113 | 6.937 | 7.006 | 7.216 | 7.433 | 7.656 | 7.885 | 8.122 |
| + LT Investments | 7.1 | 5.678 | 7.113 | 6.937 | 7.006 | 7.216 | 7.433 | 7.656 | 7.885 | 8.122 |
| + Other LT Assets | 27.169 | 40.596 | 49.538 | 65.263 | 72.061 | 74.223 | 76.450 | 78.743 | 81.105 | 83.538 |
| + Total Intangible Assets | 3.776 | 13.925 | 21.572 | 24.596 | 29.916 | 30.813 | 31.738 | 32.690 | 33.671 | 34.681 |
| + Goodwill | 0 | 9.848 | 13.987 | 13.744 | 13.746 | 14.158 | 14.583 | 15.021 | 15.471 | 15.935 |
| + Other Intangible Assets | 3.776 | 4.077 | 7.585 | 10.852 | 16.17 | 16.655 | 17.155 | 17.669 | 18.199 | 18.745 |

| | 2016 | 2017 | 2018 | 2019 | 2020 | 2021F | 2022F | 2023F | 2024F | 2025F |
|---|---|---|---|---|---|---|---|---|---|---|
| + Deferred Tax Assets | 10.004 | 13.146 | 13.346 | 14.396 | 14.672 | 15.112 | 15.566 | 16.032 | 16.513 | 17.009 |
| + Investments in Affiliates | 9.45 | 11.006 | 9.537 | 22.366 | 24.046 | 24.767 | 25.510 | 26.276 | 27.064 | 27.876 |
| + Misc LT Assets | 3.939 | 2.519 | 5.083 | 3.905 | 3.427 | 3.530 | 3.636 | 3.745 | 3.857 | 3.973 |
| Total Noncurrent Assets | 231.723 | 274.18 | 316.084 | 356.838 | 366.985 | 377.995 | 389.334 | 401.014 | 413.045 | 425.436 |
| Total Assets | 726.873 | 869.405 | 966.074 | 994.152 | 1005.684 | 1035.855 | 1066.930 | 1098.938 | 1131.906 | 1165.863 |
| | | | | | | | | | | |
| Liabilities & Shareholders' Equity | 2016 | 2017 | 2018 | 2019 | 2020 | 2021F | 2022F | 2023F | 2024F | 2025F |
| + Payables & Accruals | 151.461 | 202.558 | 204.757 | 172.41 | 149.305 | 153.784 | 158.398 | 163.150 | 168.044 | 173.085 |
| + Accounts Payable | 109.985 | 157.096 | 165.008 | 132.086 | 110.402 | 113.714 | 117.125 | 120.639 | 124.258 | 127.986 |
| + Accrued Taxes | 11.155 | 8.374 | 8.453 | 7.818 | 8.44 | 8.693 | 8.954 | 9.223 | 9.499 | 9.784 |
| + Other Payables & Accruals | 30.321 | 37.088 | 31.296 | 32.506 | 30.463 | 31.377 | 32.318 | 33.288 | 34.286 | 35.315 |
| + ST Debt | 48.399 | 61.695 | 121.2 | 124.108 | 88.792 | 91.456 | 94.199 | 97.025 | 99.936 | 102.934 |
| + ST Borrowings | 48.399 | 61.083 | 120.85 | 122.425 | 86.899 | 89.506 | 92.191 | 94.957 | 97.806 | 100.740 |
| + ST Lease Liabilities | 0 | 0.612 | 0.35 | 1.683 | 1.893 | 1.950 | 2.008 | 2.069 | 2.131 | 2.195 |
| + Other ST Liabilities | 13.872 | 11.787 | 19.678 | 19.862 | 21.316 | 21.955 | 22.614 | 23.293 | 23.991 | 24.711 |
| + Deferred Revenue | 0 | 0 | 0.139 | 0.093 | 0.302 | 0.311 | 0.320 | 0.330 | 0.340 | 0.350 |
| + Misc ST Liabilities | 13.872 | 11.787 | 19.539 | 19.769 | 21.014 | 21.644 | 22.294 | 22.963 | 23.651 | 24.361 |
| Total Current Liabilities | 213.732 | 276.04 | 345.635 | 316.38 | 259.413 | 267.195 | 275.211 | 283.468 | 291.972 | 300.731 |
| + LT Debt | 38.609 | 48.094 | 39.503 | 59.126 | 92.192 | 94.958 | 97.806 | 100.741 | 103.763 | 106.876 |
| + Other LT Liabilities | 47.589 | 85.281 | 82.702 | 79.103 | 77.423 | 79.746 | 82.138 | 84.602 | 87.140 | 89.754 |
| + Deferred Tax Liabilities | 6.856 | 7.187 | 7.737 | 50.37 | 50.57 | 52.087 | 53.650 | 55.259 | 56.917 | 58.624 |
| + Misc LT Liabilities | 40.733 | 78.094 | 74.965 | 28.733 | 26.853 | 27.659 | 28.488 | 29.343 | 30.223 | 31.130 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Total Noncurrent Liabilities** | 86.198 | 133.375 | 122.205 | 138.229 | 169.615 | 174.703 | 179.945 | 185.343 | 190.903 | 196.630 |
| **Total Liabilities** | 299.93 | 409.415 | 467.84 | 454.609 | 429.028 | 441.899 | 455.156 | 468.810 | 482.875 | 497.361 |
| **+ Share Capital & APIC** | 171.893 | 171.893 | 171.893 | 171.893 | 171.893 | 177.050 | 182.361 | 187.832 | 193.467 | 199.271 |
| **+ Common Stock** | 133 | 133 | 133 | 133 | 133 | 136.990 | 141.100 | 145.333 | 149.693 | 154.183 |
| **+ Additional Paid in Capital** | 38.893 | 38.893 | 38.893 | 38.893 | 38.893 | 40.060 | 41.262 | 42.499 | 43.774 | 45.088 |
| **+ Retained Earnings** | 118.906 | 91.797 | 98.884 | 99.418 | 90.925 | 93.653 | 96.462 | 99.356 | 102.337 | 105.407 |
| **+ Other Equity** | 120.251 | 166.776 | 195.586 | 238.151 | 286.89 | 295.497 | 304.362 | 313.492 | 322.897 | 332.584 |
| **Equity Before Minority Interest** | 411.05 | 430.466 | 466.363 | 509.462 | 549.708 | 566.199 | 583.185 | 600.681 | 618.701 | 637.262 |
| **+ Minority/Non Controlling Interest** | 15.893 | 29.524 | 31.871 | 30.081 | 26.948 | 27.756 | 28.589 | 29.447 | 30.330 | 31.240 |
| **Total Equity** | 426.943 | 459.99 | 498.234 | 539.543 | 576.656 | 593.956 | 611.774 | 630.128 | 649.031 | 668.502 |
| **Total Liabilities & Equity** | 726.873 | 869.405 | 966.074 | 994.152 | 1005.684 | 1035.855 | 1066.930 | 1098.938 | 1131.906 | 1165.863 |
| | | | | | | | | | | |
| **Net Debt** | 35.888 | 92.785 | 139.008 | 161.09 | 110.718 | 114.040 | 117.461 | 120.985 | 124.614 | 128.353 |
| **Net Debt to Equity** | 8.4058 | 20.1711 | 27.9001 | 29.8567 | 19.2 | 19.776 | 20.369 | 20.980 | 21.610 | 22.258 |
| **Total Debt/Equity** | 20.3793 | 23.8677 | 32.2545 | 33.961 | 31.3851 | 32.327 | 33.296 | 34.295 | 35.324 | 36.384 |
| **Total Debt/Capital** | 16.9292 | 19.2687 | 24.3882 | 25.3514 | 23.8879 | 24.605 | 25.343 | 26.103 | 26.886 | 27.693 |

## 12.3Annex C (Cash flow)

| | 2016 | 2017 | 2018 | 2019 | 2020 | 2021F | 2022F | 2023F | 2024F | 2025F |
|---|---|---|---|---|---|---|---|---|---|---|
| **Cash from Operating Activities** | | | | | | | | | | |
| + Net Income | 102.70 | 73.03 | 77.39 | 74.95 | 64.33 | 66.26 | 68.24 | 70.29 | 72.40 | 74.57 |
| + Depreciation & Amortization | 26.31 | 29.60 | 31.28 | 35.18 | 36.55 | 37.64 | 38.77 | 39.94 | 41.13 | 42.37 |
| + Non-Cash Items | -70.48 | -29.11 | -50.15 | -24.43 | 17.59 | 18.12 | 18.66 | 19.22 | 19.80 | 20.39 |
| + Other Non-Cash Adj | -70.48 | -29.11 | -50.15 | -24.43 | 17.59 | 18.12 | 18.66 | 19.22 | 19.80 | 20.39 |
| **Cash from Operating Activities** | 58.54 | 73.52 | 58.51 | 85.70 | 118.47 | 122.02 | 125.68 | 129.45 | 133.33 | 137.33 |
| | | | | | | | | | | |
| **Cash from Investing Activities** | | | | | | | | | | |
| + Change in Fixed & Intang | -33.77 | -42.28 | -56.37 | -57.93 | -41.82 | -43.07 | -44.36 | -45.70 | -47.07 | -48.48 |
| + Disp in Fixed & Intang | 1.52 | 1.99 | 0.93 | 1.08 | 2.87 | 2.96 | 3.05 | 3.14 | 3.23 | 3.33 |
| + Disp of Fixed Prod Assets | 1.52 | 1.99 | 0.93 | 1.08 | 2.87 | 2.96 | 3.05 | 3.14 | 3.23 | 3.33 |
| + Acq of Fixed & Intang | -35.29 | -44.27 | -57.31 | -59.01 | -44.69 | -46.03 | -47.41 | -48.84 | -50.30 | -51.81 |
| + Acq of Fixed Prod Assets | -33.56 | -42.76 | -53.72 | -54.86 | -38.80 | -39.97 | -41.16 | -42.40 | -43.67 | -44.98 |
| + Acq of Intangible Assets | -1.73 | -1.51 | -3.59 | -4.14 | -5.89 | -6.07 | -6.25 | -6.44 | -6.63 | -6.83 |
| + Net Change in LT Investment | 53.36 | -31.28 | -13.57 | -9.50 | 0.24 | 0.25 | 0.26 | 0.26 | 0.27 | 0.28 |
| + Dec in LT Investment | 53.68 | 0.15 | 0.87 | 2.59 | 0.44 | 0.45 | 0.47 | 0.48 | 0.50 | 0.51 |
| + Inc in LT Investment | -0.32 | -31.42 | -14.44 | -12.09 | -0.20 | -0.21 | -0.21 | -0.22 | -0.23 | -0.23 |
| + Other Investing Activities | 0.15 | 0.58 | 0.21 | 0.24 | 0.54 | 0.55 | 0.57 | 0.59 | 0.60 | 0.62 |
| **Cash from Investing Activities** | 19.74 | -72.98 | -69.73 | -67.19 | -41.04 | -42.27 | -43.54 | -44.85 | -46.19 | -47.58 |
| | | | | | | | | | | |
| **Cash from Financing Activities** | | | | | | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| + Dividends Paid | -32.80 | -35.37 | -38.36 | -38.09 | -26.55 | -27.35 | -28.17 | -29.02 | -29.89 | -30.78 |
| + Cash From (Repayment) Debt | -8.00 | -19.24 | 12.83 | 38.87 | -2.08 | -2.14 | -2.20 | -2.27 | -2.34 | -2.41 |
| + Other Financing Activities | 0.54 | 14.07 | 3.44 | -4.91 | -0.17 | -0.17 | -0.18 | -0.18 | -0.19 | -0.19 |
| Cash from Financing Activities | -40.26 | -40.53 | -22.08 | -4.13 | -28.80 | -29.66 | -30.55 | -31.47 | -32.41 | -33.38 |
| | | | | | | | | | | |
| Effect of Foreign Exchange Rates | 2.03 | -0.75 | -0.10 | 0.37 | -0.33 | -0.34 | -0.35 | -0.36 | -0.37 | -0.38 |
| | | | | | | | | | | |
| Net Changes in Cash | 40.04 | -40.73 | -33.39 | 14.75 | 48.30 | 49.75 | 51.24 | 52.78 | 54.36 | 55.99 |
| | | | | | | | | | | |
| Cash Paid for Taxes | 25.66 | 24.61 | 9.85 | 13.36 | 4.90 | 5.04 | 5.20 | 5.35 | 5.51 | 5.68 |
| Cash Paid for Interest | 1.74 | 2.26 | 1.66 | 1.94 | 2.10 | 2.16 | 2.23 | 2.29 | 2.36 | 2.43 |
| | | | | | | | | | | |
| Reference Items | | | | | | | | | | |
| EBITDA | 122.35 | 133.60 | 133.99 | 124.72 | 122.51 | 126.19 | 129.97 | 133.87 | 137.89 | 142.02 |
| Trailing 12M EBITDA Margin | 19.07 | 19.04 | 17.56 | 15.97 | 16.55 | 17.05 | 17.56 | 18.09 | 18.63 | 19.19 |
| Interest Received | 0.08 | 0.43 | 0.17 | 0.37 | 0.13 | 0.14 | 0.14 | 0.15 | 0.15 | 0.15 |
| Free Cash Flow | 24.97 | 30.76 | 4.80 | 30.83 | 79.66 | 82.05 | 84.52 | 87.05 | 89.66 | 92.35 |
| Free Cash Flow to Firm | 26.18 | 31.78 | 7.36 | 32.73 | 81.69 | 84.14 | 86.67 | 89.27 | 91.95 | 94.70 |
| Free Cash Flow to Equity | 18.50 | 13.51 | 18.56 | 70.79 | 80.46 | 82.87 | 85.36 | 87.92 | 90.56 | 93.28 |
| Free Cash Flow per Basic Share | 0.19 | 0.23 | 0.04 | 0.23 | 0.60 | 0.62 | 0.64 | 0.65 | 0.67 | 0.69 |
| Price to Free Cash Flow | 45.27 | 44.54 | 249.58 | 48.74 | 19.37 | 19.95 | 20.55 | 21.16 | 21.80 | 22.45 |
| Cash Flow to Net Income | 0.57 | 1.01 | 0.76 | 1.14 | 1.84 | 1.90 | 1.95 | 2.01 | 2.07 | 2.13 |